



1986年2月

MCB CAMP SMEDLEY D. BUTLER

CAMP COURTNEY

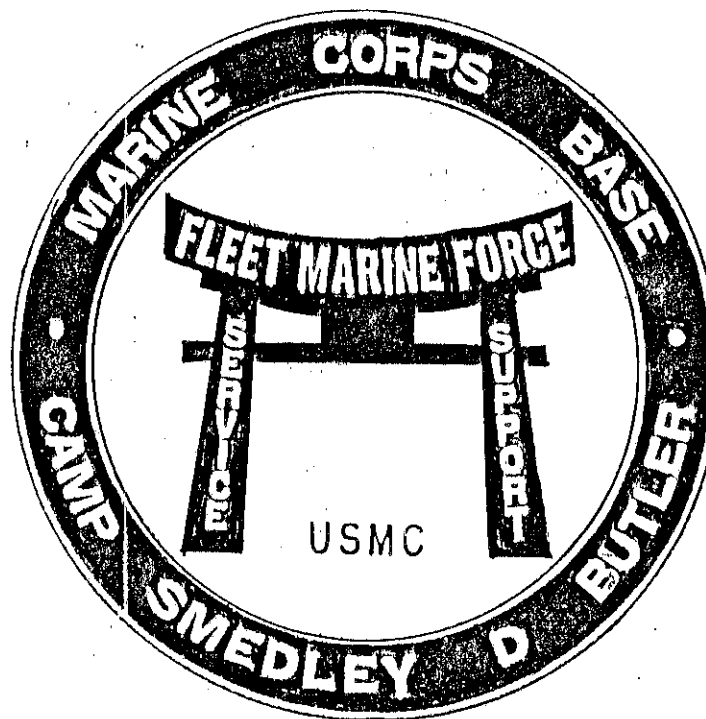
MASTER PLAN

OKINAWA
JAPAN

CAMP COURTNEY



MASTER PLAN



OKINAWA, JAPAN

PREPARED BY: FACILITIES ENGINEER MCB CAMP BUTLER OKINAWA, JAPAN

FEBRUARY 1986

RECORD OF CHANGES

[illegible]

1A✓

IN MEMORIUM

MAJOR HENRY A. COURTNEY

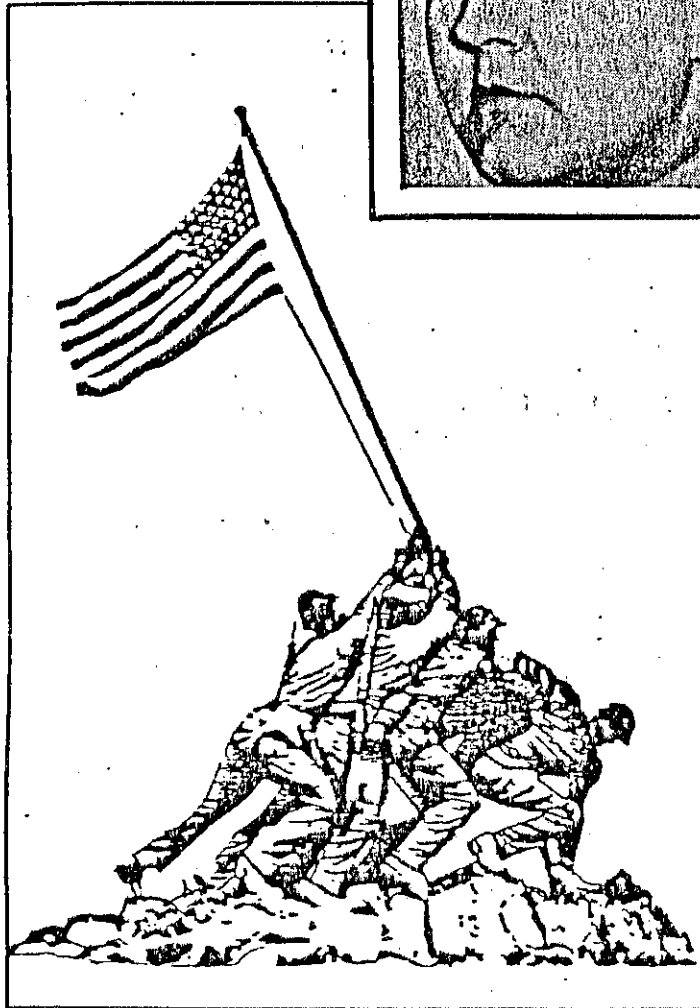
War is an ugly and tragic event. Many men have distinguished themselves at the risk of life, beyond the call of duty.

One brave man's act of heroism not only earned him the Medal of Honor, our nation's highest award, but was further honored when Camp Courtney was named after him.

Maj Henry A. Courtney, Jr., a native of Duluth, Minn., was executive officer 2d Bn., 22d Marines, 6th MARDIV during the battle of Okinawa. At age 29, he earned the Medal of Honor by distinguishing himself while in combat against Japanese Forces during the Okinawa Campaign.

It was the night of May 14, 1945. Courtney had been leading the forward element of his command in a prolonged fire fight when he received orders to hold in a static defense behind Sugar Loaf Hill. He weighed the effect of a hostile night counterattack by enemy forces against the tactical value of an immediate Marine assault.

Resolved that an immediate assault should be taken, he promptly obtained permission to advance and seize the forward slope of the hill. Quickly, he explained to the remaining forces of his intentions to move forward and proceed with the attack. Boldly he progressed, blasting nearby cave positions and neutralizing enemy guns.



Inspired by his courage, every man followed without hesitation. Together the fearless Marines braved terrific concentration of enemy gunfire to skirt the right side of the hill.

Temporarily halted, Courtney sent guides to the rear for more ammunition and possible replacements. Twenty-six Marines armed with an LVT load of grenades returned.

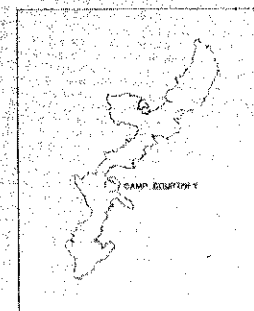
Determined to storm the crest of the hill and crush any counterattack before it gained momentum, Courtney pushed ahead, leading by example rather than command. He aggressively hurled grenades into cave positions on the slopes with devastating effect.

Upon reaching the crest, he observed many Japanese soldiers forming for action. He instantly attacked and waged a furious battle and succeeded in killing several and forcing the rest to take cover in caves. Determined to hold the position, he spat orders to his men to dig in. He coolly disregarded the constant hail of flying shrapnel to rally his troops, aid casualties and assign men to more advantageous positions.

Courtney was instantly killed by a mortar blast while moving among his men. His astute military acumen, indomitable leadership and decisive actions in the face of overwhelming odds contributed to the success of the Okinawa campaign.

Maj Henry A. Courtney Jr.'s great personal valor throughout the battle sustained and enhanced the highest traditions of the United States Naval Services. Even though Courtney died, his name, bravery and courageous spirit will forever linger in the minds of servicemen everywhere.

CAMP COURTNEY



EXECUTIVE SUMMARY

1. INTRODUCTION

This Plan was prepared by the Public Works Branch of the Facilities Engineer Division, Marine Corps Base Camp Smedley D. Butler. Its purpose is to act as a guide for the future use and facility development of USMC Camp Courtney, Okinawa, Japan.

2. MCB CAMP S.D. BUTLER

MCB Camp Smedley D. Butler, Japan, is comprised of eight major USMC camps on Okinawa and Camp Fuji on Honshu Island, as illustrated by Plates A-1 and A-2. Including maneuver areas, MCB Camp Butler constitutes more than 81,456 acres and 3,527 buildings and structures with a replacement value in excess of \$1.3 billion dollars.

3. CAMP COURTNEY

enlisted personnel. A summary of programmed strength is shown by Figure A-1.

Camp Courtney is the site for 546 units of military family housing, based on the Okinawa Housing Development Plan, a service-coordinated, multi-year development plan. This plan satisfies the directives of the 21 December 1983 Memorandum of Agreement between Headquarters, USAF and Headquarters, USMC, including the requirement to provide housing for the conversion of 3,581 USMC unaccompanied tours to accompanied tour status.

4. PURPOSE OF THE PLAN

The primary purpose of the Master Plan is to provide a realistic, orderly, and achievable development scheme for Camp Courtney, taking into account the interrelationships and needs of the component organizations and users within the installation, and recognizing the natural and man-made environmental constraints which limit and define construction opportunities. Other objects are the identification trends and potential growth importing on land utilization, and the inventory of information vital to future planning episodes.

5. METHODOLOGY

Because of the dynamic and volatile nature of host-nation construction programs, Facilities Engineer for MCB Camp Smedley D. Butler directed

INTRODUCTION

1. MISSION AND LOCATION

Access to Camp Courtney is provided by Local Highway 75, which is connected to National Highway 329 both northwest and southwest of the Camp about 3.5 kilometers north, along Highway 329, is an entrance to the Okinawa Expressway, running along the north-south central spine to Nago City. New construction will extend the Expressway southward to Naha City by September 1967.

2. ORIGIN OF CAMP COURTNEY

Camp Courtney originated as an Army facility at the close of World War Two, including a quonset hut village called Camp Tengan along the banks of the Tengan River. On 1 April 1957, Marine Corps Base Camp Courtney was established and named after USMC Major Henry A. Courtney, Jr. Major Courtney, posthumously awarded the Congressional Medal of Honor, served with the 2d Battalion, 22d Marines during World War Two. In 1960, Camp Courtney was designated as a permanent camp for USMC 3d Marine Division Headquarters Battalion forces.

3. NOMENCLATURE

Camp Courtney consists of 347.28 acres of land. For identification in this Master Plan, the installation is divided into three planning areas, as shown by Figure C-3. These areas are:

(a) "Camp Courtney" proper consisting of the administrative and billeting areas which support the Headquarters units, including a small detached parcel to the north separated by the Chimu-wan Tank Farm.

貯油施設

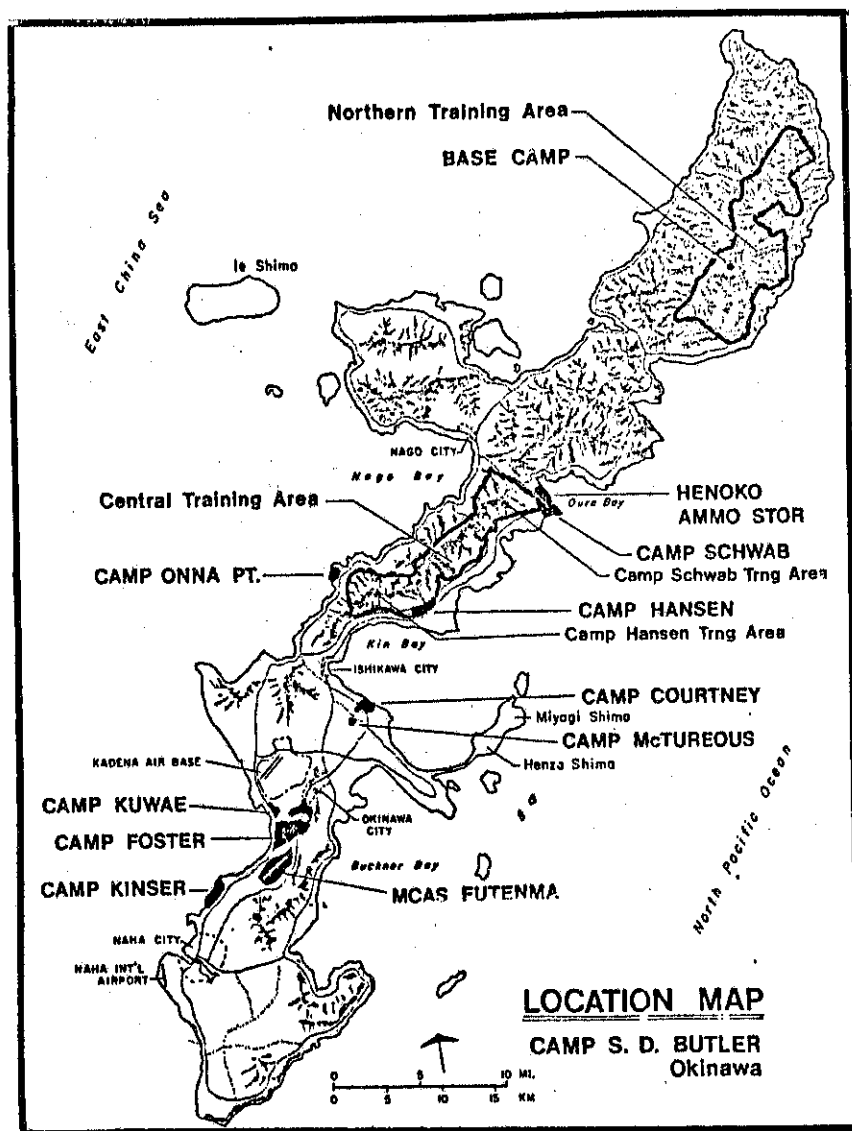


Figure C-1

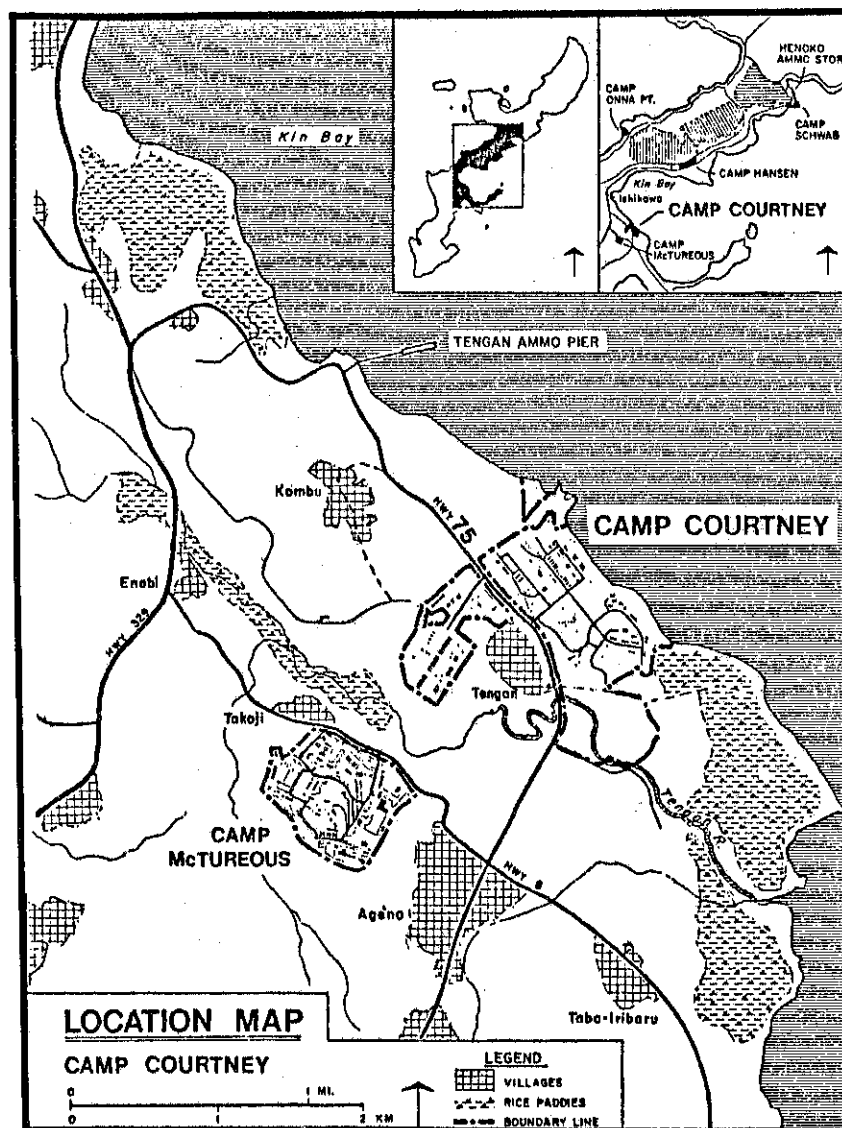


Figure C-2

(b) The "REX Area", consisting of land located west of Highway 75, mostly programmed for Community Support facilities to support accompanied housing at Camps Courtney and McTureous. This area takes its name from the "Ryuky Exchange", which predated the "Okinawa Area Exchange", and operated warehouse space on that property.

(c) "South Camp Courtney", located immediately south of "Camp Courtney" proper, and currently undergoing construction as a Military Family Housing site to support the Joint Services Development Plan for 6,300 new family housing units for Okinawa. The Tengan River runs through this parcel.

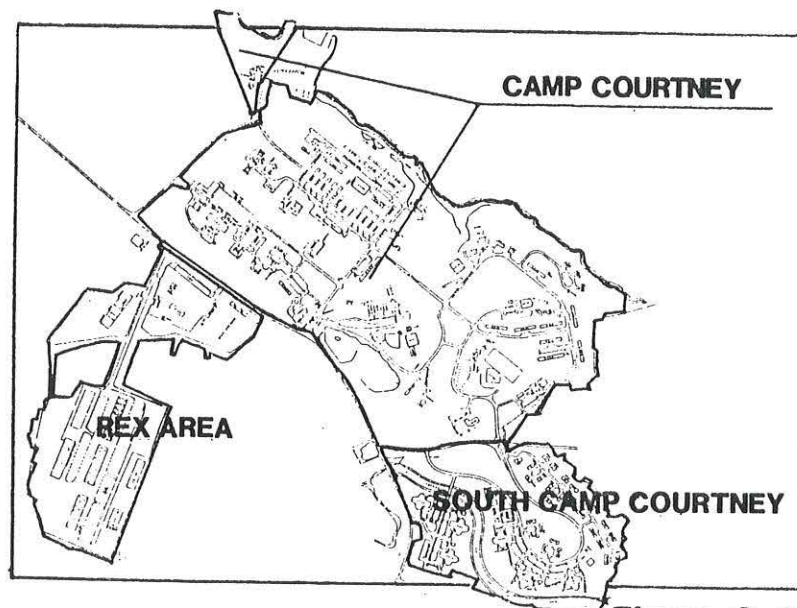


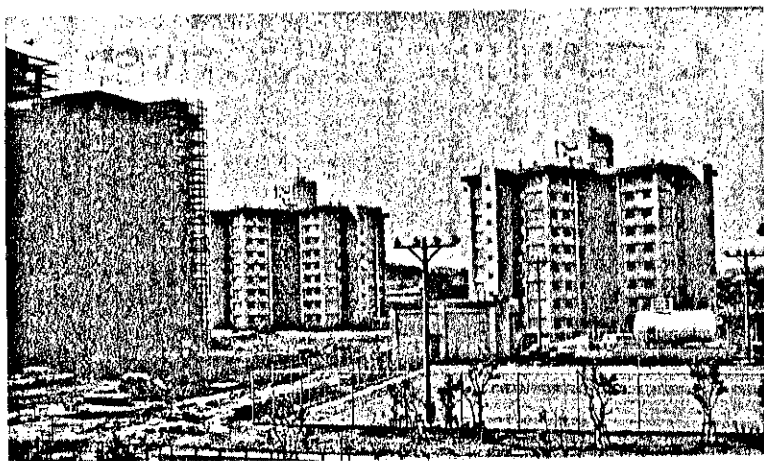
Figure C-3

4. PLANNING OBJECTIVES

The primary purpose of this Master Plan is to provide a realistic, orderly, and achievable development scheme for Camp Courtney, taking into account the interrelationships and needs of the component organizations and users within the installation, and recognizing the natural and man-made environmental constraints which limit and define construction opportunities. In conjunction with the development of conceptual land use, an implementation plan is proposed to insure a logical and unencumbered construction sequence.

A second objective is to identify trends and potential growth of functions having an impact on land utilization (including potential encroachment), and to provide a development scheme responsive to change.

An additional purpose of the Master Plan is to inventory and collect information useful to the planning process to insure its availability for future planning episodes. Having paid the cost of site investigation once, the taxpayer should not be obliged to pay it twice.



CAMP COURTNEY FAMILY HOUSING

5. SCOPE AND USE

This Master Plan is based on real-time requirements validated by the Facilities Engineer, MCB Camp Butler, as reflected in the Base Facilities Requirements List and other pertinent planning documents. The plan is intended to be a viable document that can be adjusted to accommodate changes, and will be updated by the Public Works Branch of the Facilities Engineer Division as required. The Plan is published in loose-leaf format to insure flexibility (please note the Record of Changes form provided at the front of the plan). The readership is requested to post changes as received.

6. METHODOLOGY

The MCB Camp Butler Master Plan, last completed in September 1980, required an update in accordance with NAVFACINST 11010.63B. Historically, Marine Corps Master Plans for Butler/Futenma have been published in three volumes: (a) Camp Fuji on Honshu Island, (b) MCAS Futenma on Okinawa Island, and (c) all remaining installations on Okinawa.

Mainly because of the dynamic and volatile nature of host-nation construction programs, a new concept was developed in 1983, warranting the publication of a family of Master Plans covering each installation in a separate volume. Special editions addressing the BEQ/BOQ Development Plan and a Recreational Master Plan were also envisioned. The advantages of in-house masterplanning include:

- a. Installation Master Plans are developed by order of priority, and individual planning issues can be fasttracked for timely resolution.
- b. Installation Commanders have easier access to information, which facilitates use.
- c. Flexibility in draft and final publication is achieved. Post-final update capability allows continued use of the document as a real-time reference.

d. Reduction of generic inventory and blanket recommendations which do not address developmental constraints such as construction sequencing and programming delays.

e. The establishment of a corporate approach to facilities planning at the Marine Corps Base level.

It must be recognized that the volatile and dynamic nature of host nation construction programming has maximized the degree of rework associated with each Master Plan. The draft Master Plan for Camp Courtney was published in September 1983. The "final" Master Plan, published in February 1986, itself represents only a fragile milestone subject to continued policy and programming change at an international level. With this in mind, the final Master Plans must be viewed as stepping stones in a dynamic intercourse expected to challenge facilities planners and installation Commanders through the 1990s.

7. FORMAT OF THE PLAN

The Master Plan is published in accordance with NAVFACINST 11010.63B, with several "user friendly" format changes. These include:

a. A graphical display of Basic Facilities Requirements in Section E, supplemented by a

complete family of Facilities Planning Documents in Appendix L-1.

b. A "best-guess" construction schedule for all capital improvements initiated by the Master Plan is articulated in Section H. This section is designed to assist the installation Commander in the management of change generated by construction, demolition, renovation, and reallocation of facilities.

8. RELATED PUBLICATIONS

The readership would benefit from cross-referencing the following publications:

a. Okinawa Regional Profile (draft), published by PACNAVFACENGCOM, November 1978.

b. Camp McTureous Master Plan (draft), published by Public Works, MCB Camp Butler May 1984.

c. BEQ/BOQ Development Plan (draft), published by Public Works, MCB Camp Butler, November 1985.

d. MCB Camp Butler Recreational Master Plan (draft), unpublished.

e. Joint Services Development Plan for Military Family Housing, published by USMC/USAF/USN/USA Okinawa, 12 September 1985.

EXISTING CONDITIONS

The purpose of this section is to report the data base developed during the Data Collection Phase of the Master Plan. Information is graphically portrayed by map plates, illustrations, and tables.

This section is divided into a Regional Overview of Okinawa, a discussion of the Natural Planning Factors at Camp Courtney, and a report on man-made infrastructure.

1. REGIONAL OVERVIEW

The Okinawa Regional Profile published in November 1978 by Pacific Division, Naval Facilities Engineering Command, is considered a companion document to this master plan. Readers are invited to review the regional profile for general background on Okinawa and military holdings.

A. INTRODUCTION

The Ryukyu Islands, of which Okinawa is the largest, are part of a chain extending from Japan to New Guinea and forming the geographic limits of the West Pacific Ocean from 45° North Latitude to 0° Latitude. The Sea of Japan, the East China Sea and the South China Sea separate these islands from mainland Asia.

The Ryukyus are strategically located in this island chain and are within easy reach of some of the most important cities in Asia. Okinawa is centrally located between Japan and Taiwan and consist of 72 islands divided into three major groups: Okinawa Gunto, Miyako Gunto and Yaeyama Gunto. The translation for "gunto" is "group of islands." These three guntos make up a total land area of 848 square miles. The Okinawa Gunto contains an area of 544 square miles with the main island of Okinawa having 454 square miles of this total.

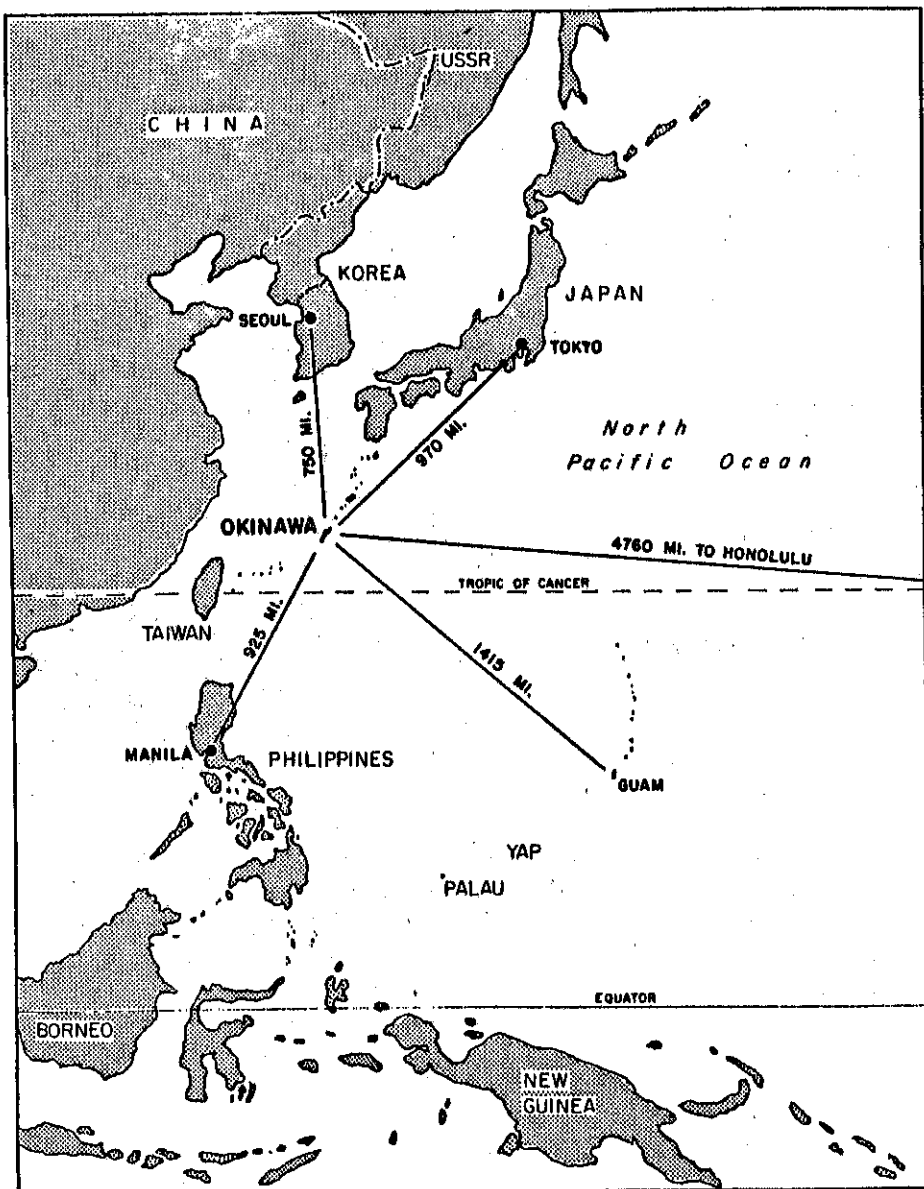
Figure D-1 shows the geographic relation of Okinawa to thereto of Japan and Asia.

B HISTORY

The original inhabitants of the Ryukyu Islands are believed to have moved southward from Japan proper some 3,000 years ago.

Ethnically, the people of Okinawa are a mixture of at least three groups: Mongolian, Ainu and Malayan. As writing was introduced from Japan in the 14th century, the history of Okinawa prior to that time is based on oral sagas, and is unfortunately incomplete.

Formal trade began with China in 1372 when the Okinawans paid tribute to the Ming Dynasty. The prosperous trade between the two countries proved a great benefit to Okinawa.



REGIONAL MAP
FIGURE D-1

Okinawa was divided into three kingdoms until the 15th century. At that time, Sho Hashi became king of the central kingdom and subsequently conquered all of Okinawa. He established his government in the new capital of Shuri.

A "golden age" for the Ryukyus extended from 1398 to 1573. During this period, the Okinawa people maintained contacts with Japan, China and as far away as Indonesia and Thailand. Okinawan folk crafts were perfected, and music, poetry and dance flourished.

In 1609, samurai warriors from Kyushu Island in southern Japan invaded Okinawa. For the next 270 years, Okinawa remained "independent" but was forced to pay tribute. Tightrope diplomacy was practiced as the Okinawans still payed tribute to China and did not want to offend neither the Japanese nor the Chinese.

The situation became trickier when Commodore Perry's fleet landed in Naha in 1851 to open trade and relations with the United States. Other European expeditions soon followed, and the Japanese feared losing control of Okinawa to "outside interests."

Japan sent a military expedition to the island in 1868. In 1879, Okinawa became a Japanese prefecture. The official language became Japanese, and the education and political system of the island were rapidly standardized with that of mainland Japan.

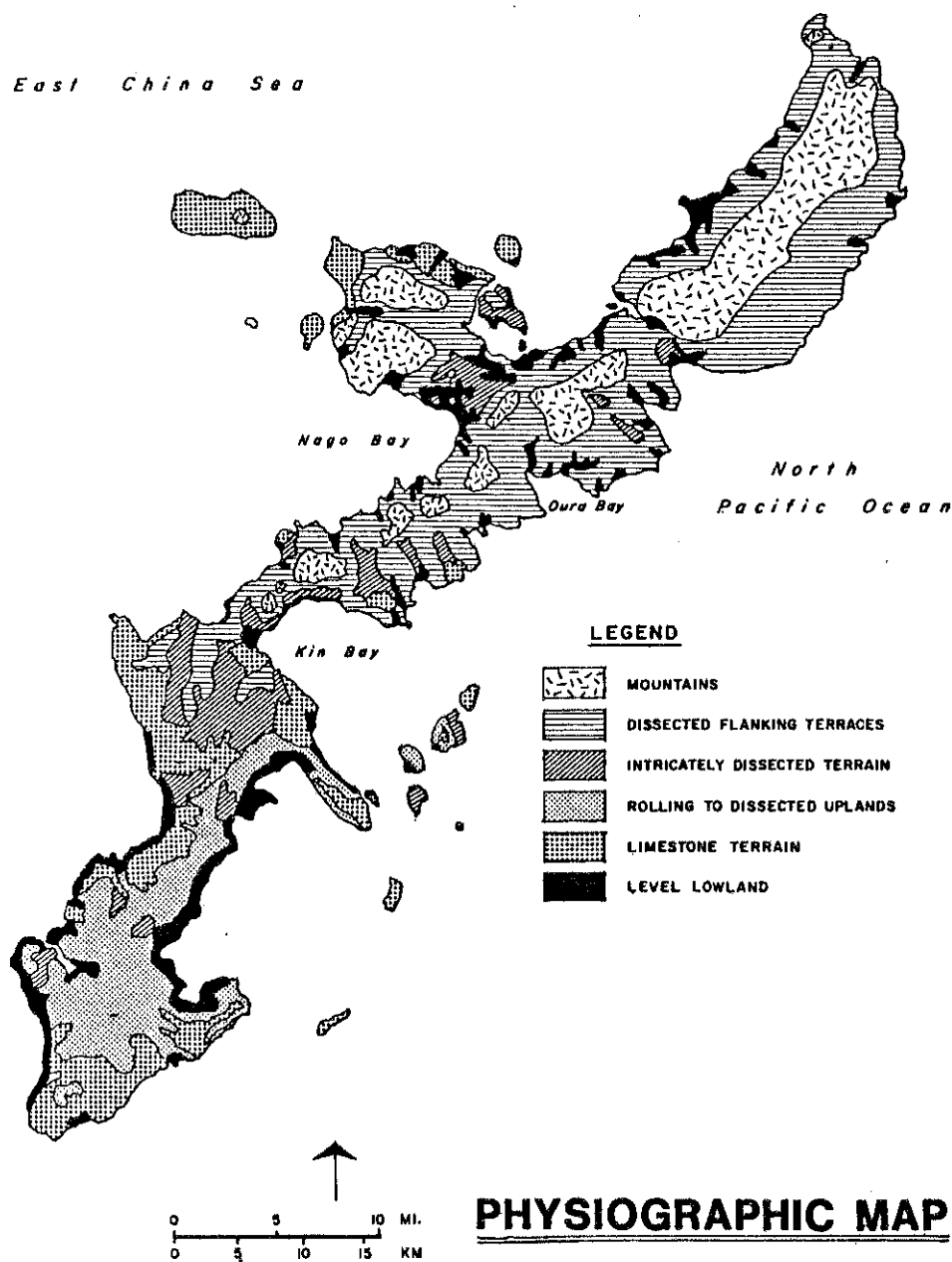


FIGURE D-2

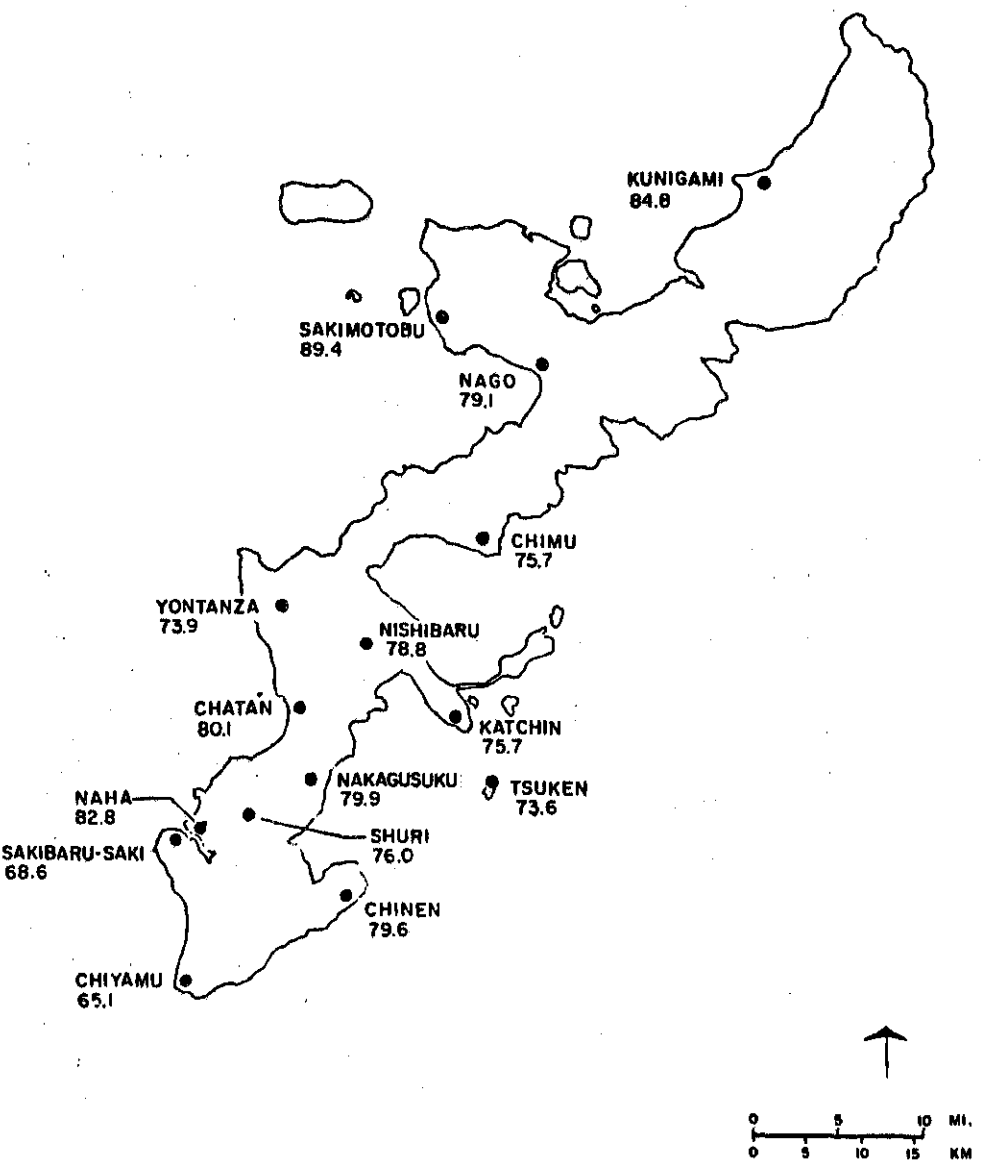
Due to its geographical situation, Japan turned Okinawa into a bastion to guard its southern approaches during World War II. The Okinawans suffered greatly at the close of the war in 1945. The three month Battle of Okinawa caused widespread destruction and the deaths of over 100,000 non-combatant Okinawans, in addition to military casualties of 60,000 Americans and 110,000 Japanese. The Ryukyu Islands were returned to Japanese sovereignty in 1972.

C. GEOLOGY

1. GEOLOGIC SETTING

Okinawa and most other islands of the Ryukyus are formed by an exposed crest of a large, curved submarine ridge that extends about 750 miles from the south tip of Kyushu Island, Japan, to the northeast coast of Taiwan. The ridge is separated from the Philippine Sea basin by steep slopes and the Ryukyu Trench, which lies more than 24,000 feet deep to the south of Okinawa. Another trough about 7,000 feet deep lies between the ridge and the shallow platform of the East China Sea to the northwest.

These formations are known collectively as the Ryukyu Arc. The arc is one of several geologically active zones along the western side of the Pacific Basin. It is the site of numerous earthquakes, and on its western side, active volcanoes. A physiographic map is illustrated by Plate D-2.



MEAN ANNUAL RAINFALL
cm

FIGURE D-3

2. HYDROLOGIC DATA

Conspicuous difference is observed between the central and southern districts and the northern district of Okinawa Island in terms of topography and geology. The central and southern districts feature gentle hills with few rivers. The soft pelite basement overlain by vesticular Ryukyu limestone forms an effective subterranean basin for ground water storage. On the contrary, the northern district features steep mountains mainly consisting of late Mesozoic slate, phyllite, and schist.

Approximately 300 rivers are found in Okinawa Prefecture. However, the size of these rivers is generally small and only 37 rivers have a significant watershed. Most of the rivers are steep brooks of shore streams, apt to result in abrupt inundation following a short-time downpour. Flash floods are a constant problem.

In the central and southern districts are large rivers such as the Ishikawa, Tengan, Hija, and Kokuba Rivers. Most rainfall penetrates into the ground and forms subterranean streams.

D. METEOROLOGY

Okinawa is characterized by a humid subtropical climate due to its proximity to the Tropic of Cancer and the warming influence of the Kuroshio, or Black Current. The Kuroshio is a major ocean current which originates from equatorial currents

east of Taiwan and passes west of Okinawa, northward to Japan. Temperatures, salinity and transparency of Kuroshio waters are typically high. The Kuroshio is the north Pacific's equivalent of the Gulf Stream and has a moderating effect on nearby coastal waters and climate. Winters are mild and summers humid. The yearly average temperature on Okinawa is 22.4°C (72.3°F). Wind blows from northeast in winter and southeast in summer.

1. TEMPERATURE

The average weather data indicates a mild average annual temperature of 22.4°C (72.5°F), an average summer temperature of 28.1°C (82.6°F) in July, and an average winter temperature of 16°C (60.8°F) in January.

2. PRECIPITATION

Large rainfall is generally observed in the rainy season (June) and the typhoon season (August). Total annual precipitation reaches 84 inches with an average monthly high of 11.5 inches in June and an average low of 4.6 inches in December. Distribution of mean annual rainfall is illustrated by Figure D-3. The average annual humidity is 77 percent.

3. WIND

Following the gradual diminishing of the northeast seasonal wind which peaks in January, the rainy season comes from spring to early summer. It is called "Sumanbosu" and is followed by the summer

seasonal wind which is known as "Kachipe". The sumanbosu is not unlike the tsuyu of mainland Japan. Yearly average wind velocity is 11.2 mph, mostly from the northeast. A wind rose is shown as Figure D-4.

4. SOLAR INFORMATION

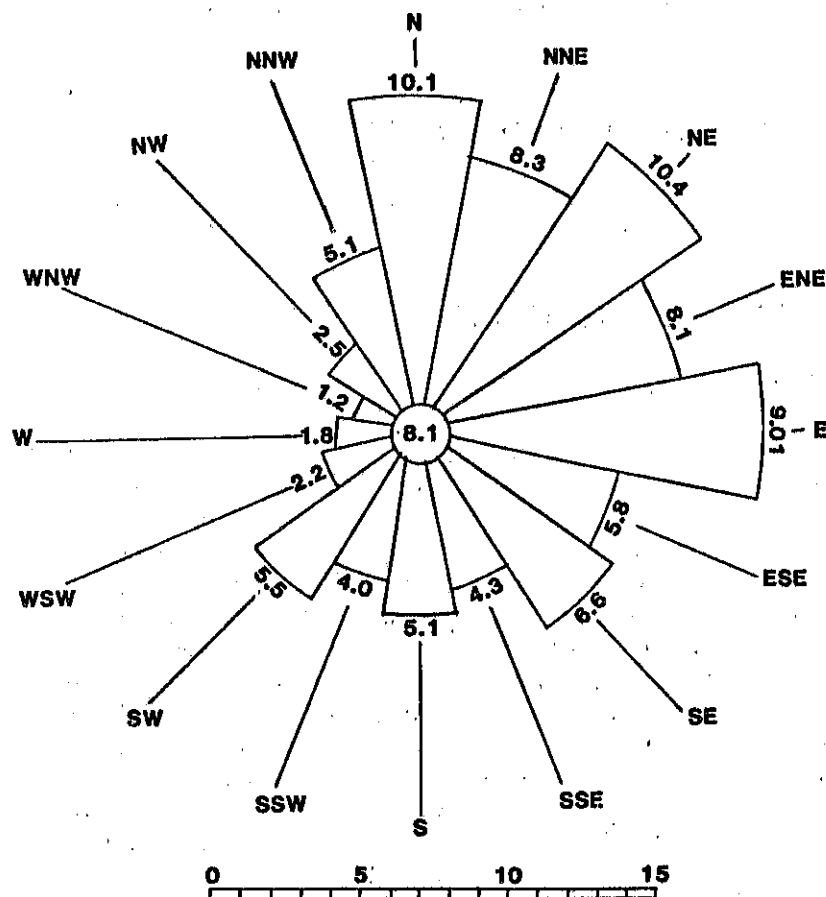
The duration of sunshine is 2,047 hours a year and the percentage of possible sunshine is 46% a year.

E. FLORA AND FAUNA

1. FLORA

The overall vegetation of Okinawa was surveyed in 1973-1975 by the Japan Environment Agency and includes several different general vegetative cover types. Much of northern Okinawa is characterized by a broad-leaved and needleleaved forest predominated by Castanopsis custidata and Pinus lutchuensis substitutional communities. Pines, firs, juniper, wax trees, hemp palms, cycads, bamboos, bananas, and ferns are found in the northern region. The southern third of Okinawa includes several weed communities and M. sinensis-zoysia japonica communities. Oak, mountain tea flower and tree ferns are found in the southern region, as well as mangrove swamps in undisturbed areas.

The vegetation on Okinawa varies from tropical at sea level to subtropical at elevations above 1,300 feet. Even at lower elevations however, the climate is not wet enough to support the rain



SCALE OF WIND DIRECTION PERCENTAGE

DIRECTIONAL WIND ROSE AT COURTNEY

FIGURE D-4

forest type growth of the true tropics. Both trees and shrubs are relatively small, and the natural cover is difficult to penetrate. In the limestone areas especially, normally tall trees are stunted by lack of water, and twisted and bent by winds. Many native forest stands in the south were destroyed during the Battle of Okinawa (1945) and in the north by overcutting.

2. FAUNA

A. LAND MAMMALS

There is the usual assortment of domesticated animals in Okinawa. Additionally, there are Japanese deer, mongooses which have been imported, and the indigenous Ryukyu wild pig and Amami black hare. There are also many types of rats, mice and bats.

B. REPTILES AND AMPHIBIANS

There are, at least, five species of venomous snakes on Okinawa. All are locally called "habu". There is also a marine snake with poisonous fangs, as well as several species of non-poisonous snakes. There are also frogs, toads, geckos and several species of turtles.

C. BIRDS

There are many varieties of land and sea birds of Okinawa, from sparrows and finches to ducks and herons.

D. ENDANGERED SPECIES

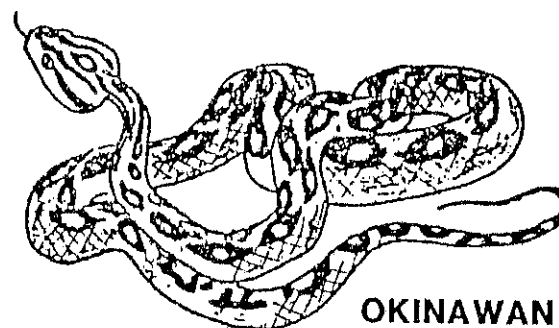
The latest published list of Endangered and Threatened Species pursuant to the Endangered Species Act of 1973, as amended, appear in the Federal Register of July 20, 1983. Three Okinawan species appear in the list: the Iriomote cat (Felis [Mayailurus] iriomotensis), the Ryukyu sika deer (C nippon keramae), and the Ryukyu rabbit (Pentalagus furnessi). None of these species are found on the main island of Okinawa. No plant species from the Ryukyu Islands appear in the list of endangered and threatened plants.

Plants and animals of the Ryukyus regarded by the Japanese Government as cultural assets are discussed in paragraph 1k.

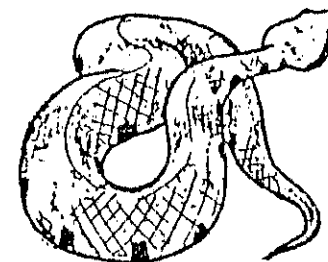
E. AQUATIC BIOLOGY AND MARINE RESOURCES

Freshwater fish populations on Okinawa are scarce, particularly in central and southern Okinawa where urban and agricultural activities have disturbed aquatic habitats. However, Okinawa is known for its diverse and plentiful marine resources. The mixing of the plankton-rich warm Kurochio current and the cool northern waters produces excellent fishing grounds. Tuna, marlin, swordfish, squid, cuttlefish, octopus, echinoder, shellfish, and seaweed are commonly harvested from offshore waters.

Coral reefs surround the island of Okinawa. Reef areas have been damaged by silt associated with upland development and runoff. The Crown of



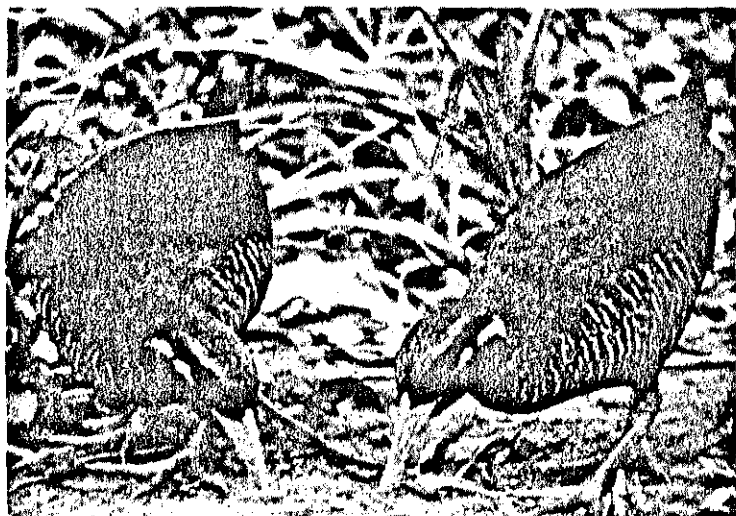
OKINAWAN HABU



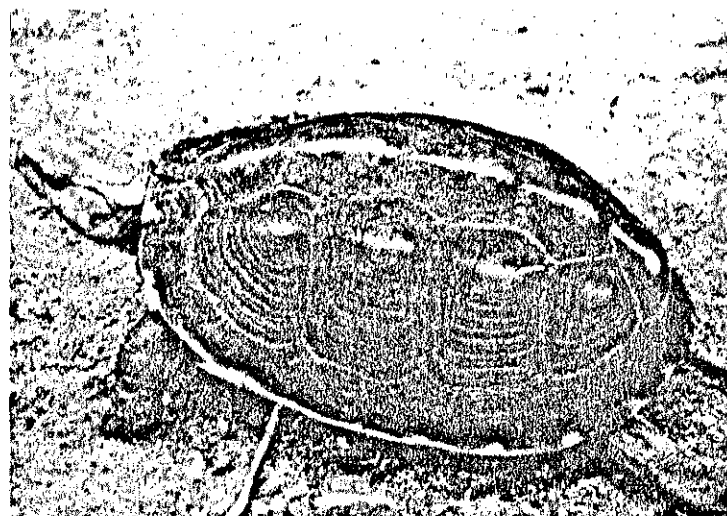
HIMEHABU



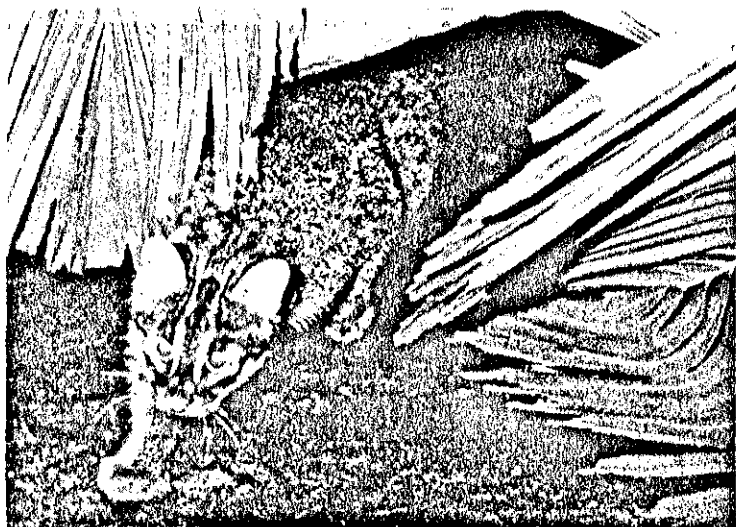
SAKISHIMA HABU



YANBARU KUINA (North Okinawa)



RYUKYU YAMAGAME TORTOISE (North Okinawa)



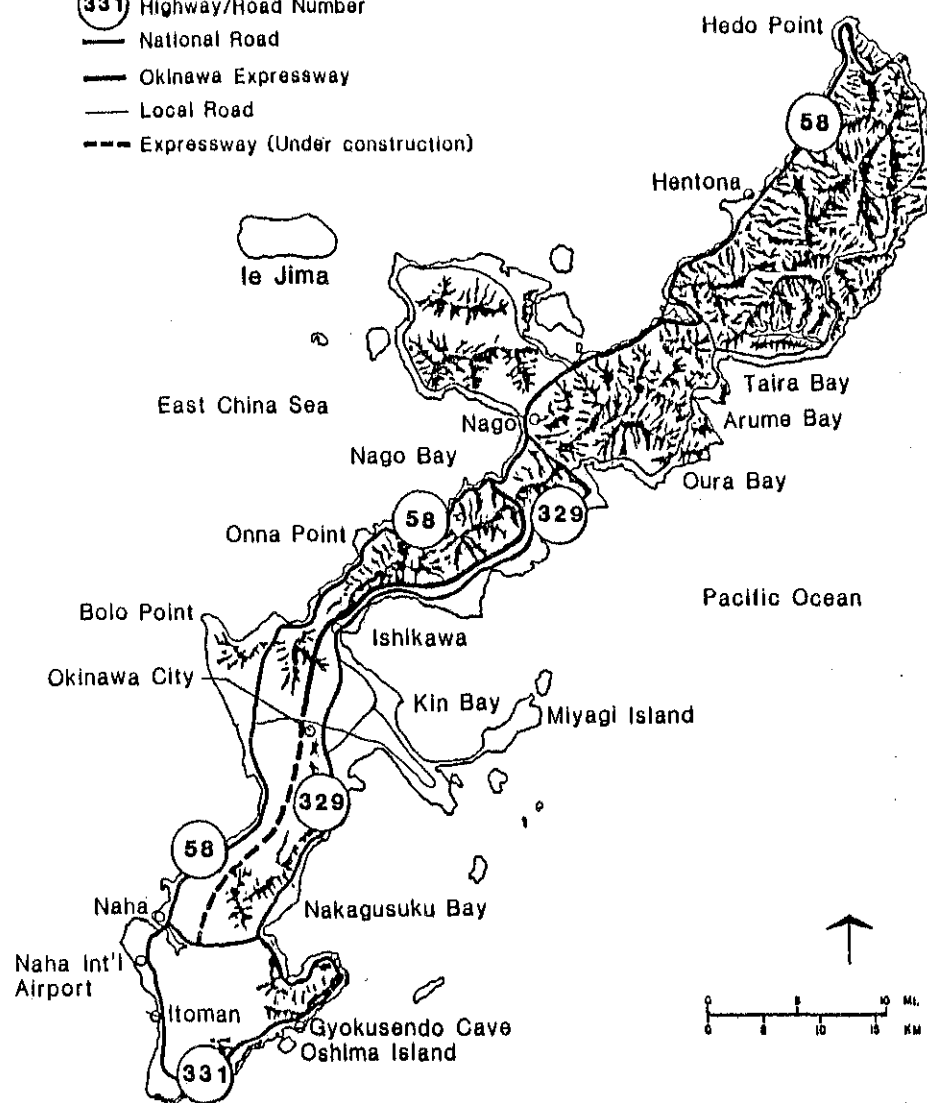
IRIOMOMOTE WILDCAT (Iriomote Island)



NOGUCHI GERA WOODPECKER (North Okinawa)

LEGEND

- (331) Highway/Road Number
- National Road
- Okinawa Expressway
- Local Road
- Expressway (Under construction)



ISLAND ROAD MAP

FIGURE D-5

Thorns starfish (*Acanthaster planci*) has also contributed to periodic damage and destruction of coral reefs.

F. POPULATION AND EMPLOYMENT

The population of Okinawa Prefecture was relatively stable at about 575,000 people from 1920 until 1940. During the Battle of Okinawa in 1945, some 100,000 civilians lost their lives. By the end of hostilities, another 50,000 Okinawans serving in the Japanese Armed Forces were killed. In late 1945, however, an estimated 150,000 people who had migrated to Japan or Japanese-held territories returned, offsetting the decimation of war. The total population then began increasing, topping one million people in the 1975 census.

According to the 1985 national census, Okinawa Prefecture has 1,179,116 residents, a 6.6 percent increase over 1980. The figures show there are 580,966 men and 598,150 women. Naha, the prefectural capital, is the most populous city with 303,680 people. Okinawa City has 101,205 residents; Urasoe (near Camp Kinser) has 81,612; Ginowan (near MCAS Futenma) 69,206; and Kin (near Camp Hansen) 10,006.

G. ECONOMICS

Traditionally, the Ryukyu Islands people have been farmers and fishermen. However, since World War II, other industries have expanded faster than agriculture and its relative economic importance has decreased. The U.S. military presence in support of the Korean and Vietnam conflicts precipitated this economic change, although urbanization has continued to accelerate since reversion in 1972.

Currently, about 20 percent of the total Okinawa area is cultivated.

Traditional Okinawa fishing practices have been displaced by modern commercial operations. Tuna fleets fish as far away as the coast of West Africa. However, the fishing industry accounts for about one percent of the Gross National Product and employs only a few thousand people.

Commercial mining is limited to cement and aggregate manufacturing. Two major oil companies, Gulf and Esso, have established refineries for processing crude oil brought from the Middle East. Service and tertiary industries make up the major sector of the economy. These include wholesale and retail trade, finance and investment, real estate, transportation, communication, services and utilities. Both the U.S. military presence and a growing number of mainland Japanese tourists help support these industries.

H. TRANSPORTATION

1. LAND TRANSPORTATION

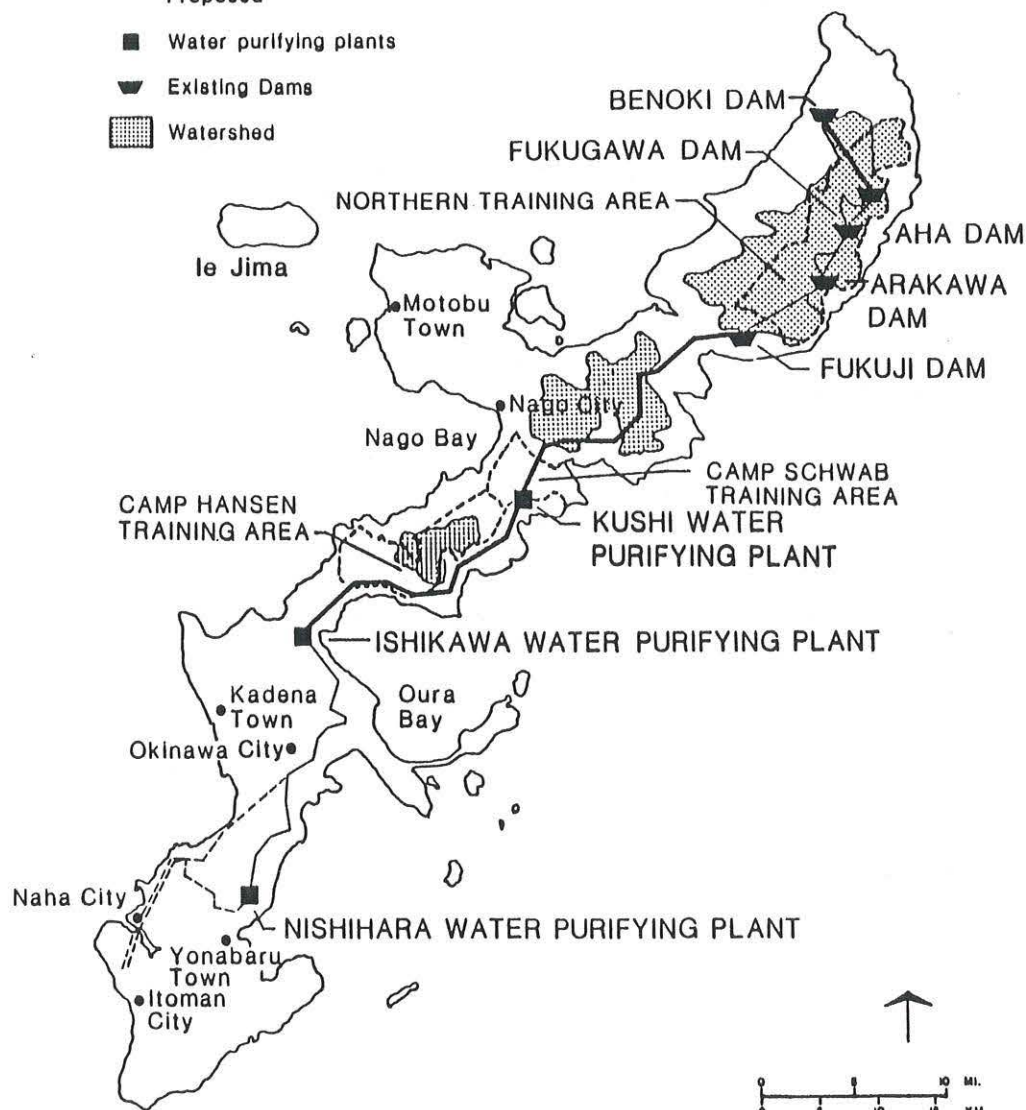
Land transportation on Okinawa is by highway vehicle except occasionally in the rural areas, where horses, water buffalos and tractors are sometimes used to draw a variety of vehicles. By the time of reversion in 1972, there were over 2,000 miles (3,200 km) of roads, both hard surfaced and coral surfaced. Some additional roads (such as the 15-mile long (25 km) Okinawa Expressway) and a 3-mile (5 km) causeway to Henze and Miyagi Islands have been built since, but the major efforts have been in upgrading existing roads. All major coast and cross-island roads are now hard surfaced. Figure D-5 shows the major roads and highways on Okinawa.

2. AIR TRANSPORTATION

Five scheduled airlines service Okinawa through the Naha International Airport (formerly NAF Naha). The U.S. Military Airlift Command (MAC) schedules flights between Kadena Air Base and such diverse destinations as Norton AFB, California; Yokota, Japan; Korea; and Clark Air Base, Philippines, with an average of three flights per day.

LEGEND

- Existing
- Proposed
- Water purifying plants
- ▼ Existing Dams
- ▨ Watershed



WATER DAMS & RELATED WATERSHEDS

FIGURE D-6

3. OCEAN TRANSPORTATION

Daily ocean passenger services is available between Naha and the outlying Ryukyu Islands as well as mainland Japan. Automobile ferry service is also available.

Ocean freight is delivered and picked up at Naha: at the old Army controlled port and the "New" Naha Harbor, 1 or 2 miles north. Shipments are either break-bulk or roll-on/ roll-off containers because there are no shoreside container cranes to handle loading and offloading operations.

I. UTILITIES

1. WATER

Water resources on Okinawa have traditionally been considered adequate, except for drought periods when potable water is rationed. The island-wide water resources are controlled by two political entities. The Government of Japan (GOJ) controls most of the supply, but until recently, was providing only 30 to 40 percent of the total supply except during periods of drought, when sources controlled by the Okinawa Prefecture Enterprise Bureau (OPEB) could not provide the balance of 60 to 70 percent of demand. In these cases, GOJ would increase the allocation to 50 or 60 million gallons per day, depending on the severity of the drought.

The Fukuji Reservoir, designed and constructed by the U.S. Army Corps of Engineers in the late 1960's to hold a maximum storage capacity of 13.6 trillion gallons, is the largest source of water in Okinawa and is fully controlled by GOJ. In recent years, GOJ started construction work to upgrade the storage capacity at Fukuji to cope with projected increased demand.

The development and modernization of Okinawa has resulted in a constant increase in demand for water by the local and military population as well as the industrial sector. The average daily demand for water in 1982 was 89 million gallons against a minimum average daily supply of water of 87 million gallons.

The average daily demand for water was projected to increase to 123 million gallons by 1985 and to 140 million by 1990.

As of mid-June 1985, the actual average daily demand, however, was below 100 million gallons per day. Also, as of mid-June 1985, GOJ was providing for 60 percent of the average daily demand from the Fukuji Reservoir, with the remaining 40% of supply originating at OPEB controlled sources.

The percentage of total demand provided by GOJ controlled sources is not a fixed permanent amount. This contribution is established based on agreement between GOJ and OPEB, with periodic adjustments depending on the season and available volumes stored in the reservoirs at that particular time.

GOJ increased the storage capacity of the Fukuji Reservoir using two different techniques. First, the dam and spillway height were raised to increase storage capacity. Second, the outlets of four new reservoirs were designed to empty directly into Fukuji reservoir. The completed reservoirs are Arakawa, Aha, Fukugawa, and Benoki, with a combined available raw water supply of 127 million gallons per day.

By 1990, the GOJ plans to increase the average daily water supply to 165 million gallons per day by improving the Hijagawa water supply and constructing additional dams at Heinan, Okukubi, Haneji and Kanna.

The OPEB controlled water resources consist of the Tengan, Kin, and Sukeyama Reservoirs, the run off from a few drainage ditches or streams which is collected during and after rainstorms (if the reservoirs are not overflowing), and deep wells (they have some inside Kadena Air Base).

The possibility of obtaining ground water in other areas south of Kadena has been explored but the treatment of quantities and quality of water available has been determined not to be cost effective. Presently, only a few gasoline service stations are using water from wells to wash automobiles.

The OPEB will not consider treating water from drainage ditches and streams within the heavily populated southern portion of Okinawa. The storm drainage systems in the southern portions of Okinawa is highly contaminated by industrial and household wastes. The quality of potable water generated from these sources would be poor when compared with existing OPEB and GOJ sources. Except for Camp Schwab, the Northern Training Area (NTA), and portions of Camps Foster/Lester, potable water provided to U.S. Bases on Okinawa by municipalities is from OPEB's distribution lines.

The water supply at NTA consists of a small stream intercepted and treated in a new water treatment plant constructed in 1984 and pumped into a pressure tank inside the plant.

Figure D-6 shows the water dams and related watersheds on Okinawa.

Typical water treatment includes coagulation, flocculation, clarification, filtration, pH adjustment and chlorination. The normal water supply to Camp Foster and the Air Station originates at the Koza Water Treatment Plant (Tybase) in the northeastern side of Kadena Air Base. However, to preclude complaints from the local population on the differences in hardness level of potable water produced by different treatment plants, water from different plants is mixed in an attempt to provide a uniform quality to all municipalities.

2. SEWAGE

The Okinawa Prefectural Government and Municipalities south of Kadena operate and maintain local sewage treatment plants and collection systems. Camps Hansen, Courtney and Schwab operate and maintain Marine Corps owned sewage treatment plants, constructed by the Government of Japan during the early 1980's. These plants are adequate for present and future requirements.

3. COMMERCIAL POWER SYSTEM

All of the island power is provided by the Okinawa Electric Power Corporation (OEPC), as shown by Figure D-7. OEPC has four power plants with the following capacities:

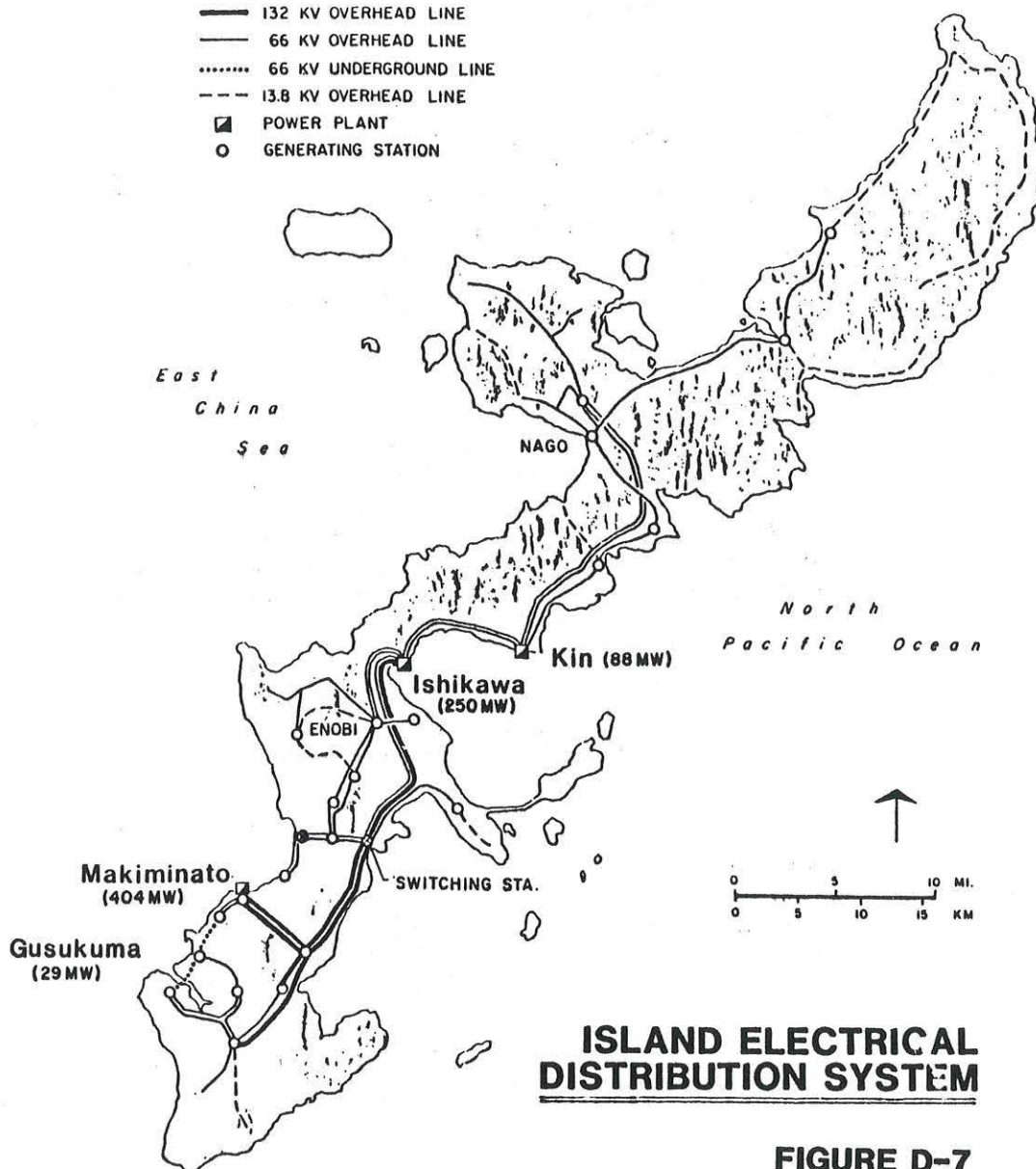
**TABLE D-1
OEPC GENERATORS**

	<u>NO.</u>	<u>CAPACITY (MW)</u>	<u>Total (MW)</u>
Gushukuma	1	29.0	29
Makiminato	4	130.0	520
Ishikawa	2	125.0	250*
Kin	4	22.0	88
TOTAL			887

* Note: To be increased to 406 MW in 1986, and to 562 MW in 1987.

LEGEND

- 132 KV OVERHEAD LINE
- 66 KV OVERHEAD LINE
- 66 KV UNDERGROUND LINE
- - - 13.8 KV OVERHEAD LINE
- POWER PLANT
- GENERATING STATION



ISLAND ELECTRICAL DISTRIBUTION SYSTEM

FIGURE D-7

4. SOLID WASTE

Solid waste disposal throughout Okinawa is by sanitary landfill. A maintenance service contract for solid waste disposal is issued through OICC Okinawa and managed by the Camp Butler Facilities Maintenance Officer. It requires proper disposal of solid wastes.

J. LAND OWNERSHIP

The singularity of Okinawan real estate lies in the subdivision of privately owned land divided into often minute fragments of varying shapes. For example, at one time, the U.S. held, under private lease arrangement, approximately 51,000 acres which consisted of about 139,000 separate parcels belonging to some 38,000 different landowners. Land utilization studies conducted by the Japanese Government in the 1970's indicate that most of northern Okinawa is covered by forest and scattered cultivated areas while most of southern Okinawa is characterized by cultivated and built-up (urbanized) areas, with paddies, scrublands and grassland scattered throughout the island. Land use on Okinawa is illustrated by Figure D-8.

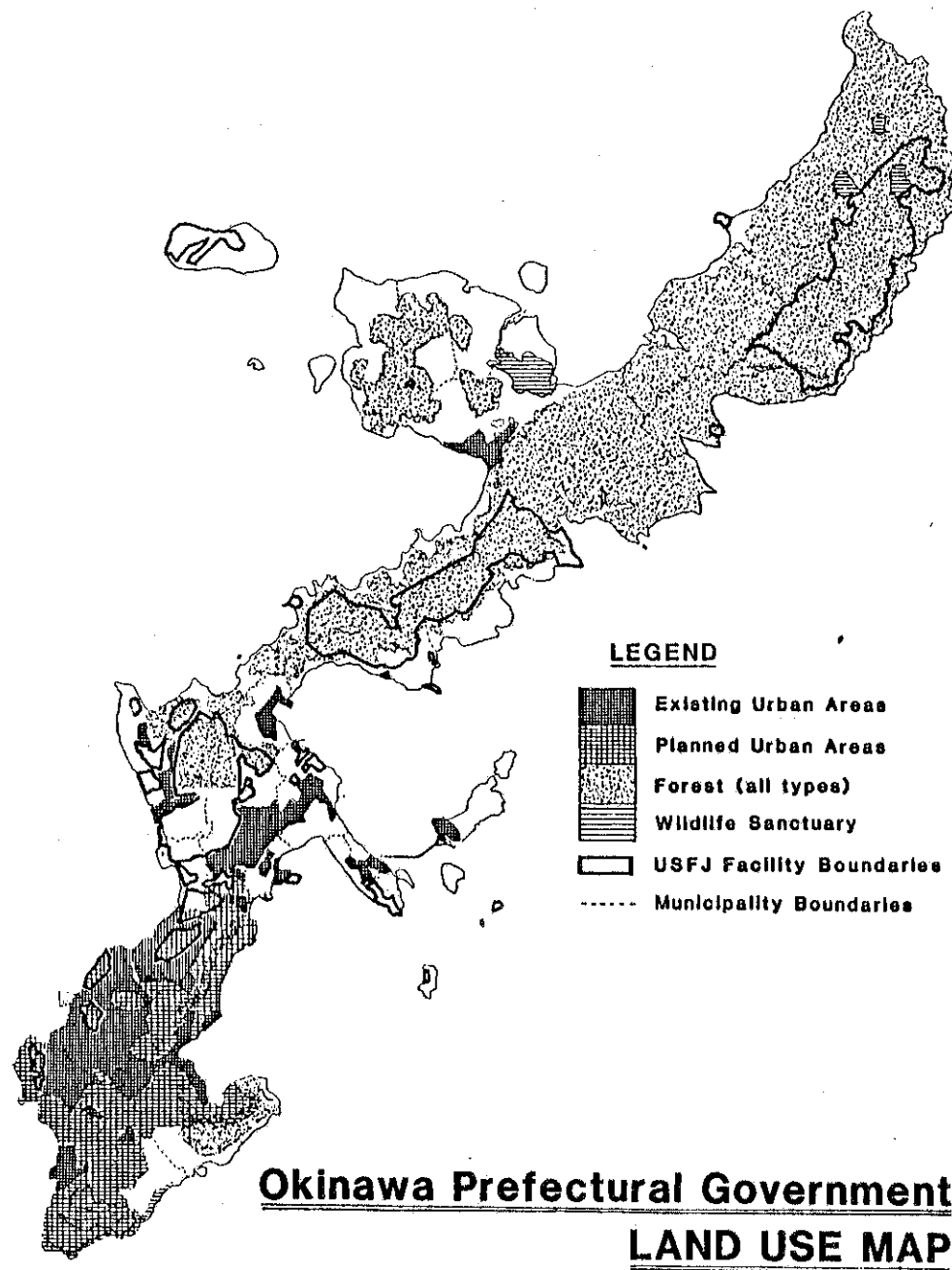


FIGURE D-8

K. CULTURAL PROPERTIES

The Cultural Properties Protection Law of April 1974 designates Historic Sites, Places of Scenic Beauty and Natural Monuments throughout Japan which are worthy of protection. Standards for the Historic Sites designation include shell mounds, ancient burial mounds, palace remains, Shinto shrine and Buddhist temple remains, checking station remains, etc., which are of scientific value in appreciating the history of Japan.

The "Places of Scenic Beauty" designation includes bridges, gardens, mountain torrents, beaches, mountains, etc., which are of scientific value or excel in scenic beauty.

The "Natural Monuments" designation includes animals (and their habitats) which are well known or unique to Japan. Flora designated as natural monuments include rare trees, giant trees, primeval forests, alpine flora zones, boundary areas for the distribution of flora, etc. Geological features and minerals which are designated natural monuments include rocks, minerals, dykes, river and marine erosional features, limestone topography, lava caves, thermal springs, etc.

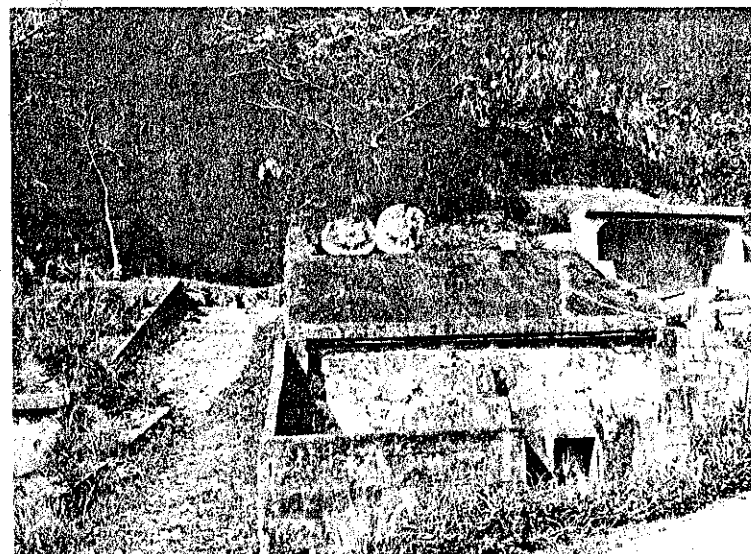
Eight animal species designated as National or Prefectural natural monuments for central and northern Okinawa islands are listed in Table D-2. Natural monuments which are known from other islands of the Ryukyus are not listed here, but are described in various publications of the Okinawa Prefecture Education Commission.

Natural parks are those parks which have been designated under the provisions of the Japan National Park Law. Three classes are designated, depending upon the degree and scale of scenic beauty: National Parks (NP); Quasi-National Parks (QNP) and Prefectural Parks.

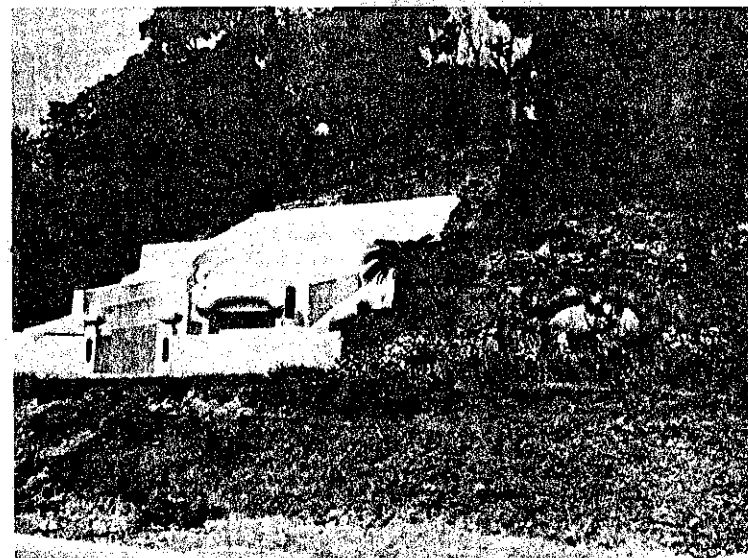
Okinawa island has two Quasi-National Parks. The larger QNP includes most of the western shoreline of central and northern Okinawa (Okinawa Kaigan QNP) while the smaller includes the southernmost tip of the island (Okinawa Senseki QNP). A national park has been designated south of the main island of Okinawa (Iriomote NP). Numerous public (City) parks are also found on Okinawa.

There are many intangible elements which contribute to Okinawa's unique and interesting culture. Some of these could be considered relevant to projects involving wooded areas, streams or other natural areas. Ancient customs often involved veneration of hearth deities and of sacred groves, trees, streams and mountains which were associated with good spirits. Potable water was particularly important to the early Okinawans, and the attribution of divinity of springs and fresh streams is still common. Many of Okinawa's religious beliefs still emphasize love of nature and harmony with the sun, moon tides, storms, trees and hills. These are also expressed in song, dance and oral history.

Tombs are conspicuous and culturally significant elements of the Okianwan landscape. Because of their increasingly important significance as cultural constraints (see Section F), a brief description of tombs and other archeological landscape features is provided as Appendix L-5.



TOMBS AT SOUTH CAMP COURTNEY



"TURTLE-BACK" TOMBS

TABLE D-2
NATIONAL AND PREFECTURAL CULTURAL ASSETS ON OKINAWA

<u>Level</u>	<u>Category</u>	<u>Name</u>	<u>Location</u>
Natl.	Historical Site	Ruins of Aghena Castle	Gushikawa City
Natl.	Historical Site	Iha Shellmound	Ishikawa City
Natl.	Natural Monument	Kenaganezumi (Rat)	Northern Okinawa
Natl.	Natural Monument	Noguchi gera (Woodpecker)	Northern Okinawa
Natl.	Natural Monument	Dugong	Waters off Ryukyus
Natl.	Natural Monument	Akahige (Bird)	Okinawa & Yaeyama
Pref.	Historical Site	Ruins of Iha Castle	Ishikawa City
Pref.	Natural Monument	Futao-chu (Butterfly)	Okinawa Is.
Pref.	Natural Monument	Konoha-cho (Butterfly)	Okinawa, Ishigaki, Iriomote
Pref.	Natural Monument	Togenezumi (Rabbit)	Northern Okinawa
Pref.	Natural Monument	Ryukyu Yamagame (Tortoise)	Northern Okinawa

From "Cultural Assets of Okinawa" by the Education Commission of the Okinawa Prefecture, 1975.

2. NATURAL FACTORS

A. LOCATION

Camp Courtney, facility number 6029, is situated along the eastern coastline in central Okinawa near Tengan Village and approximately 5 kilometers southeast of Ishikawa City.

B. PHYSIOLOGY

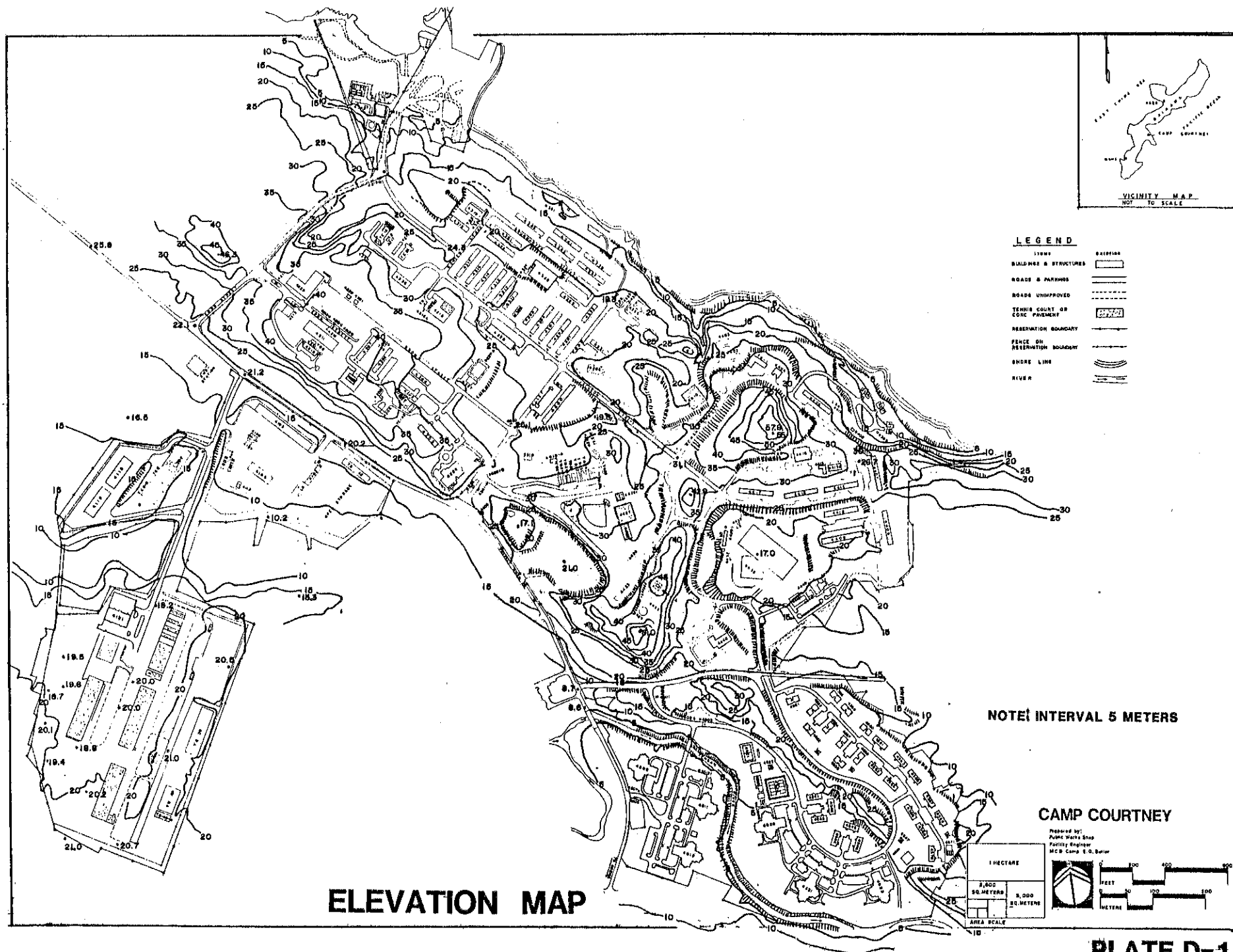
Camp Courtney is located on a low bluff overlooking Kin Bay and the Pacific Ocean. A narrow beach of coral sand borders the Bay, with terrain rising quickly 15 meters inland. Average elevation is about 30 meters with scattered knolls and steep slopes. A steep drop occurs along the southeast shoreline and tapers to a flat shoreline at the northeast corner of the camp. A north-south ridge parallels Highway 24 along the central part of Camp Courtney, while an east-west ridge bisects Camp Courtney, generally defining a separation of operational facilities to the north and residential/recreational facilities to the south. The Tengan River enters South Courtney from west of Highway 24 and winds through the site, forming a steep-sloped channel. A high point of 57.8 meters is found at Dieka Hill (see Elevation Map - Plate D-1). Constraining slopes of 10% or greater, generally considered unsuitable for construction, are illustrated on the Slope Map (Plate D-2), and constitute about 30 percent of the available land.



VIEW SOUTH TO LIMESTONE RIDGE

C. GEOLOGY

Camp Courtney is located in the southern physiographic province of Okinawa, essentially a benched and dissected upland which was initially a broad, elongated dome with its center in the vicinity of Kubasaki on the east coast. The camp is underlain by Tertiary and Quaternary limestone. As shown by the Geology Map (Plate D-3), a normal fault line runs along Highway 24 and cuts north-south through the South Courtney area. A feature of all limestone terrain is subsurface drainage, evidenced by sinkholes, undrained depressions, underground streams, and caves.



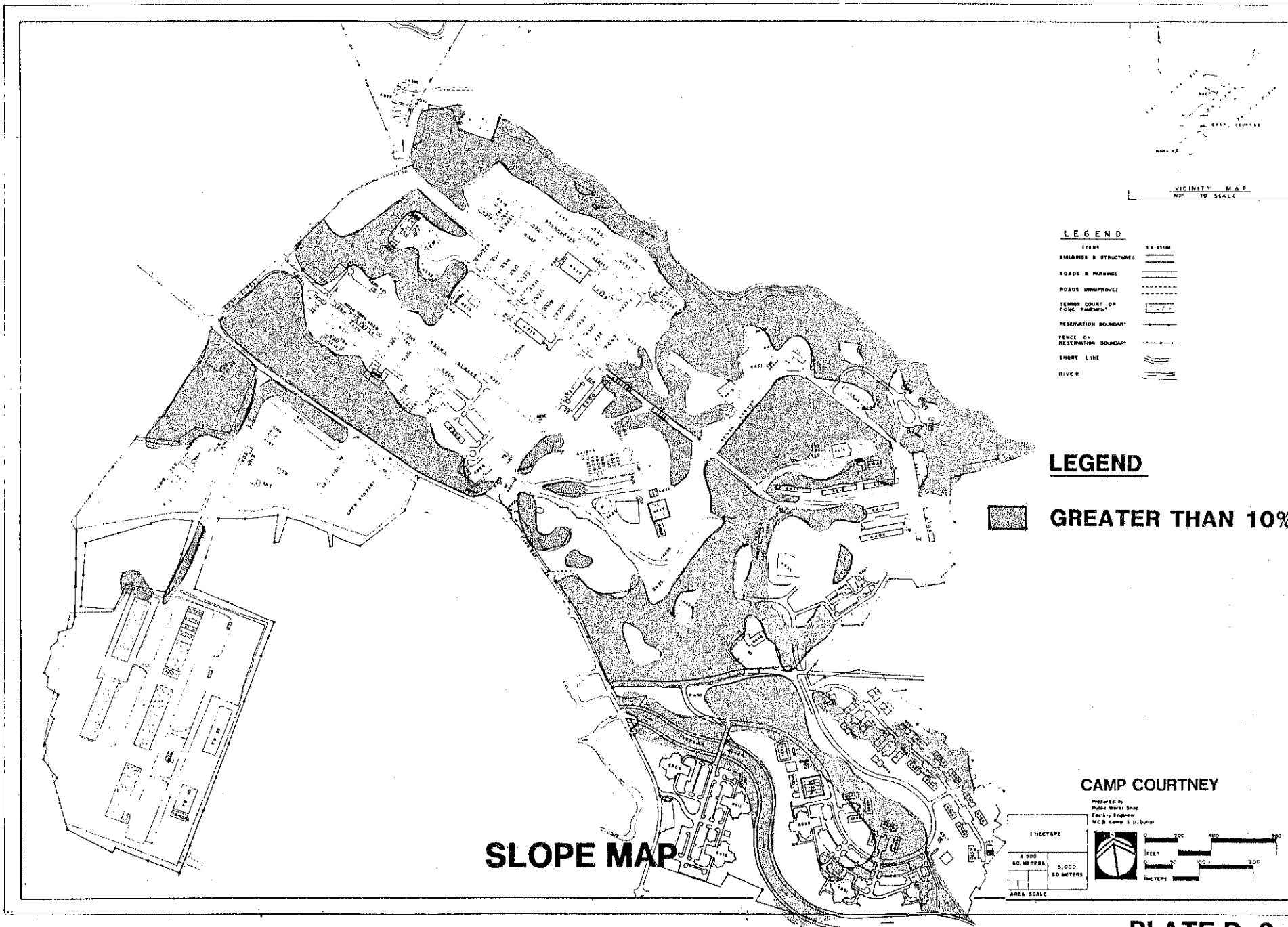


PLATE D-2

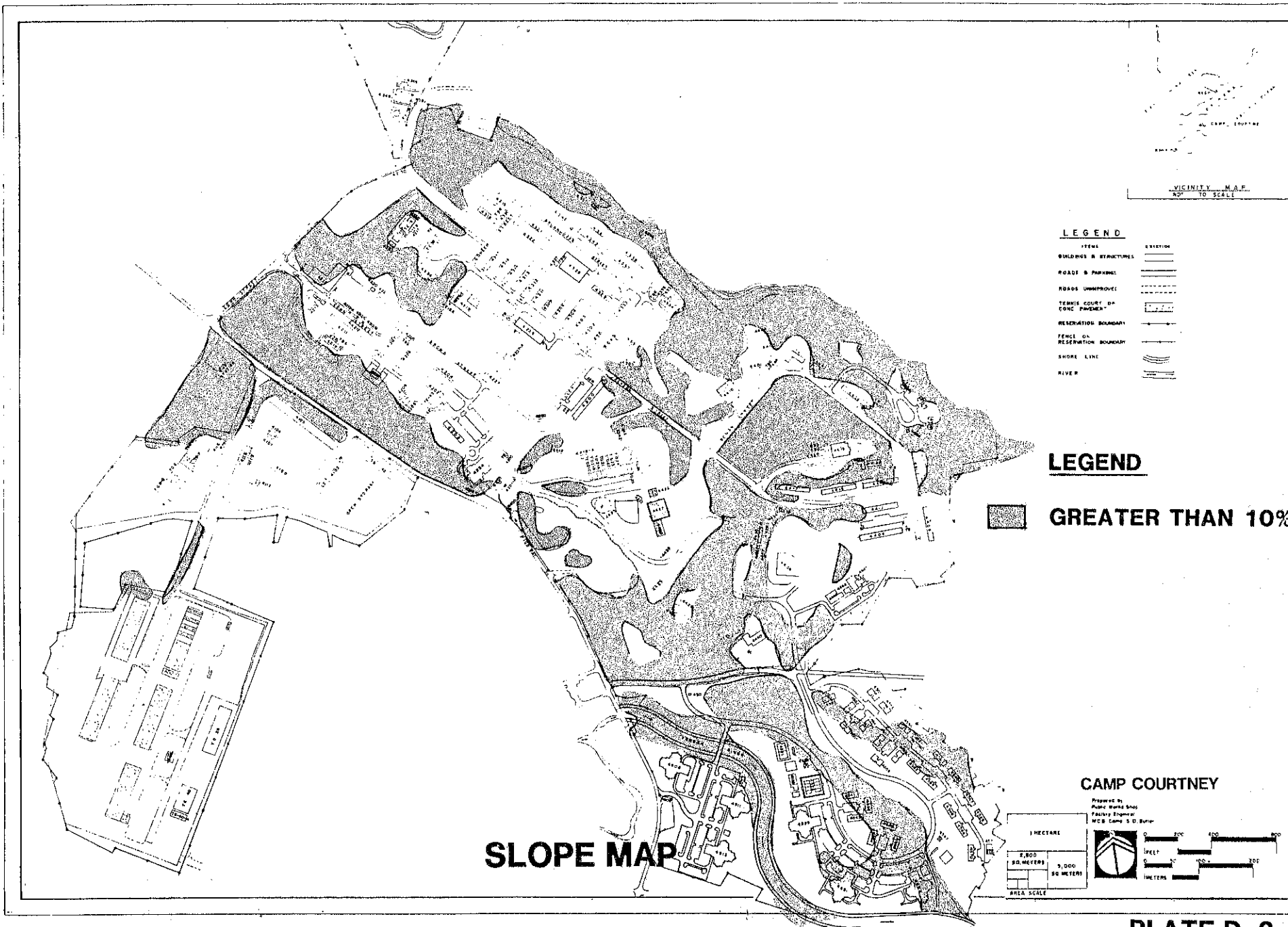


PLATE D-2

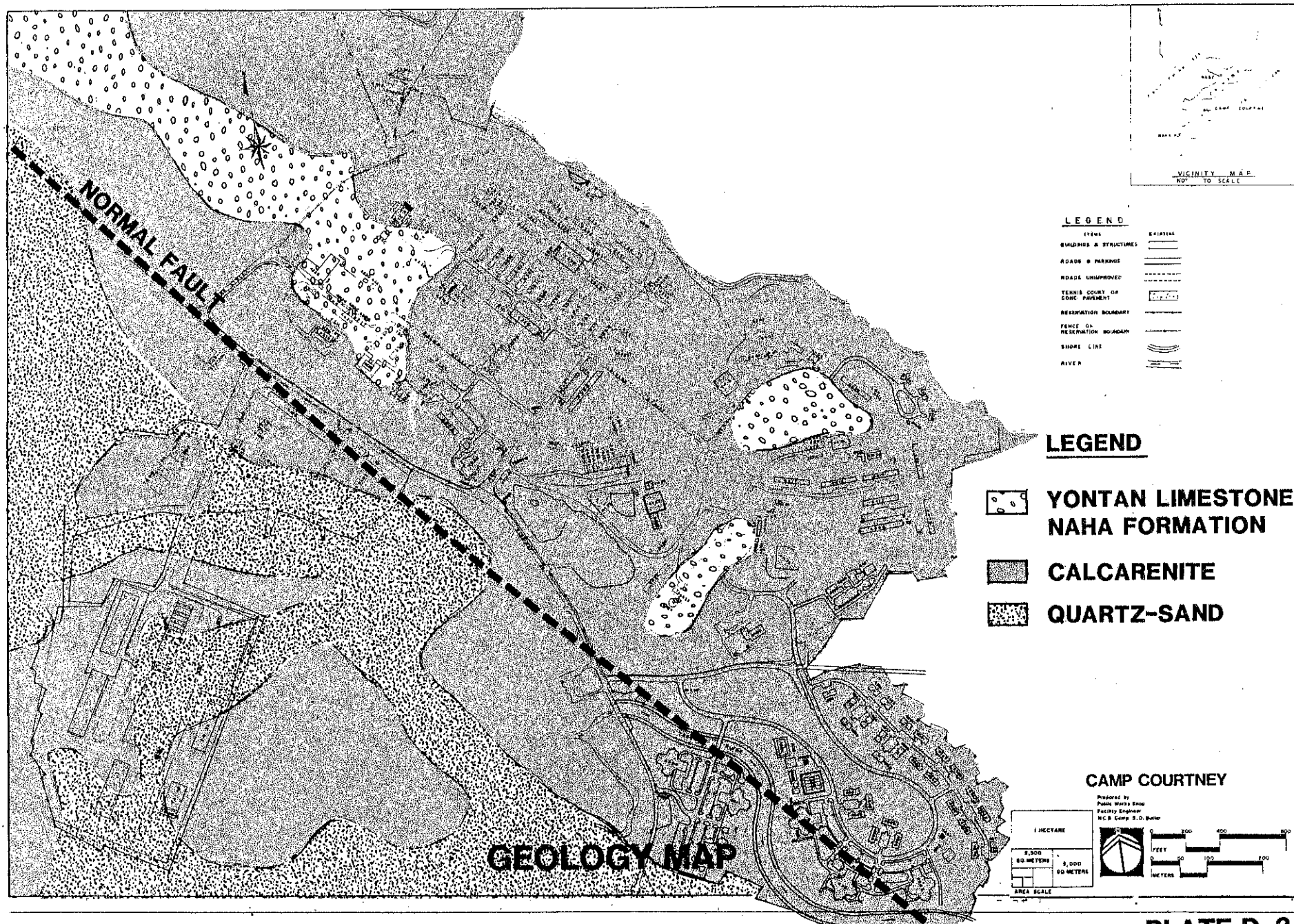


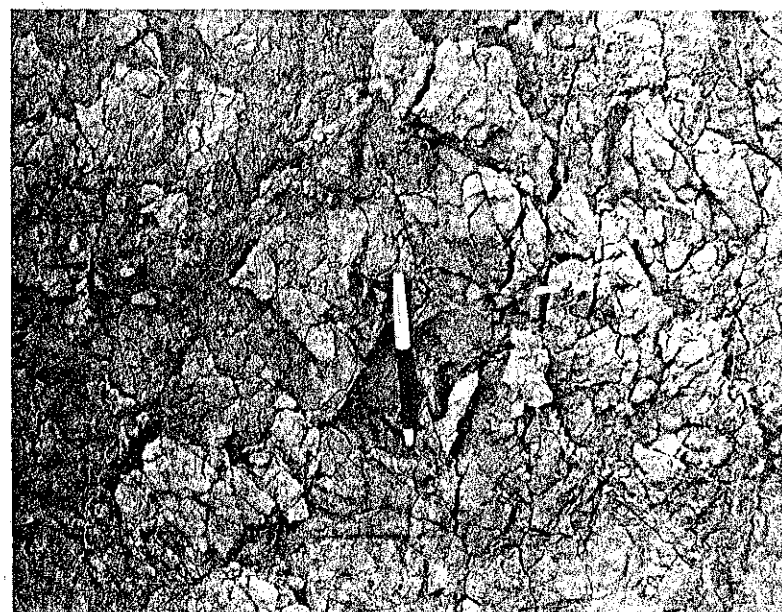
PLATE D-3

The late sedimentary rock formations underlying Camp Courtney (Pliocene deposits) are composed of buff to tan, poorly consolidated and cemented, organic limestone and calcareous gravel (Naha Formation).

The calcarenite member of this formation (Tn) is an indistinctly bedded, poorly consolidated, partially cemented, buff to yellowish-tan limestone composed of sand-sized particles with fine powdery calcium carbonate. The sand-sized particles are mostly shell fragments of foraminifers and mollusks. Poorly cemented when first exposed, a hardened surface of well-cemented but porous limestone develops whenever exposed to air for appreciable periods of time.

The Quartz Sand Member of the formation (Tns) is contaminated with terrigenous detritus. Non-Calcareous particles increase both in quantity and size.

Late pleistocene formations represented by Yonton limestone (QY) unconformably overlies the Naha formation. It is a white, coral-rich, rubbly limestone, of fringing-type roof deposit and calcareous debris. Less than 30 meters thick, it is well cemented in zones of irregular width along exposed surfaces, fault zones, joint planes, crevices, and caverns. It is represented at Camp Courtney by the north-south ridge (on which is sited III MAF Headquarters, building 4212), and by the east-west ridge, including Dieka Hill.



OKINAWA CLAY LOAM AT 2'-3' DEPTH

D. SOILS

As shown by the soils map (Plate D-4), four great groups are found on Camp Courtney: alluvial soils such as Akamaru/Aha soils and Shioya loamy sand, brown forest soils such as Okinawa clay loam and Chinen story clay, podzolic soils such as Ishikawa loam, and lithosols, or rough stony land.

1. Akamaru Soil (80% of alluvial soils) consists of strongly mottled grayish-brown to olive-gray loamy alluvial soil developed in sediments washed from hills and mountains in the north. The soils occur on low-lying, poorly drained flood plains and coastal flats. These soils are of excellent fertility. The reaction is from slightly acid inmost of the unit to alkaline locally.

The water table is at or near the surface of the ground most of the time.

The present use of the soil for riceland seems to be that for which this soil is best suited.

2. Aha Soil (20% of alluvial soils) consists of brown to grayish-brown, medium-textured, alluvial soils developed in recent alluvial sediments washed from the north. Fertility is excellent and reaction generally acid. Aha soils are washed mainly from phyllite and sandstone, similar to Akamaru soil, but Aha soil occurs on higher, poorly drained margins of the low-lying flood plains. Surface runoff is slow to medium, and the water table averages 2 to 5 below the soil surface. During harvest (July-November) and winter the water table may fall as low as 5 to 8 feet. Aha soil ranges from 3 feet to bedrock (on colluvial terraces) to 10 feet in larger flood plains and coastal flats.

3. Shioya Loamy Sand consists of deep, rapidly drained alkaline soil of low fertility, from loose lime sand with as much as 30% quartz and feldspar fragments. Reaction is pH 8.0 and soil is highly calcareous. It occurs in slightly elevated old beaches.

4. Okinawa Clay loam consists of dark-brown to brown crumbly clay loam, the residuum from raisedreef limestone. The surface gradient ranges from gentling sloping to hilly. The soil is deep, fertile, and well drained. Horizons are faintly developed. Reaction is neutral (pH 7.0) to slightly acid (pH 6.0). Okinawa clay loam is normally well drained (through internal percolation) and the soil depth ranges from 3 to 80 feet, with an average depth between 10 to 20 feet. This soil predominates most of Camp Courtney.

5. Ishikawa loam consists of deep acid soils, low fertility, well drained, and found on dissected high Marine-terrace remnants. Surface run off is medium to rapid and depth to water table 20-50 feet. Thickness of soil averages is 6 to 30 feet. This soil is found on Camp Courtney at the REX Area.

6. Rough stony land consists of steep or rough stony land with little soil development, made up of limestone outcrops among which are irregular patches of shallow soil, or pockets of deep soil, similar to Chinen stony clay. 30 - 75 percent of the land is occupied by limestone outcrops, blocks, and boulders. The prevailing slopes range from 50 - 100 percent, a substantial portion 25 - 50 percent, and a small portion 15 - 25 percent. Surface runoff is slow to medium, and internal drainage is rapid. Vegetation consists of cutover small pine, brush, grass and a few cycads, whereas original vegetation was probably

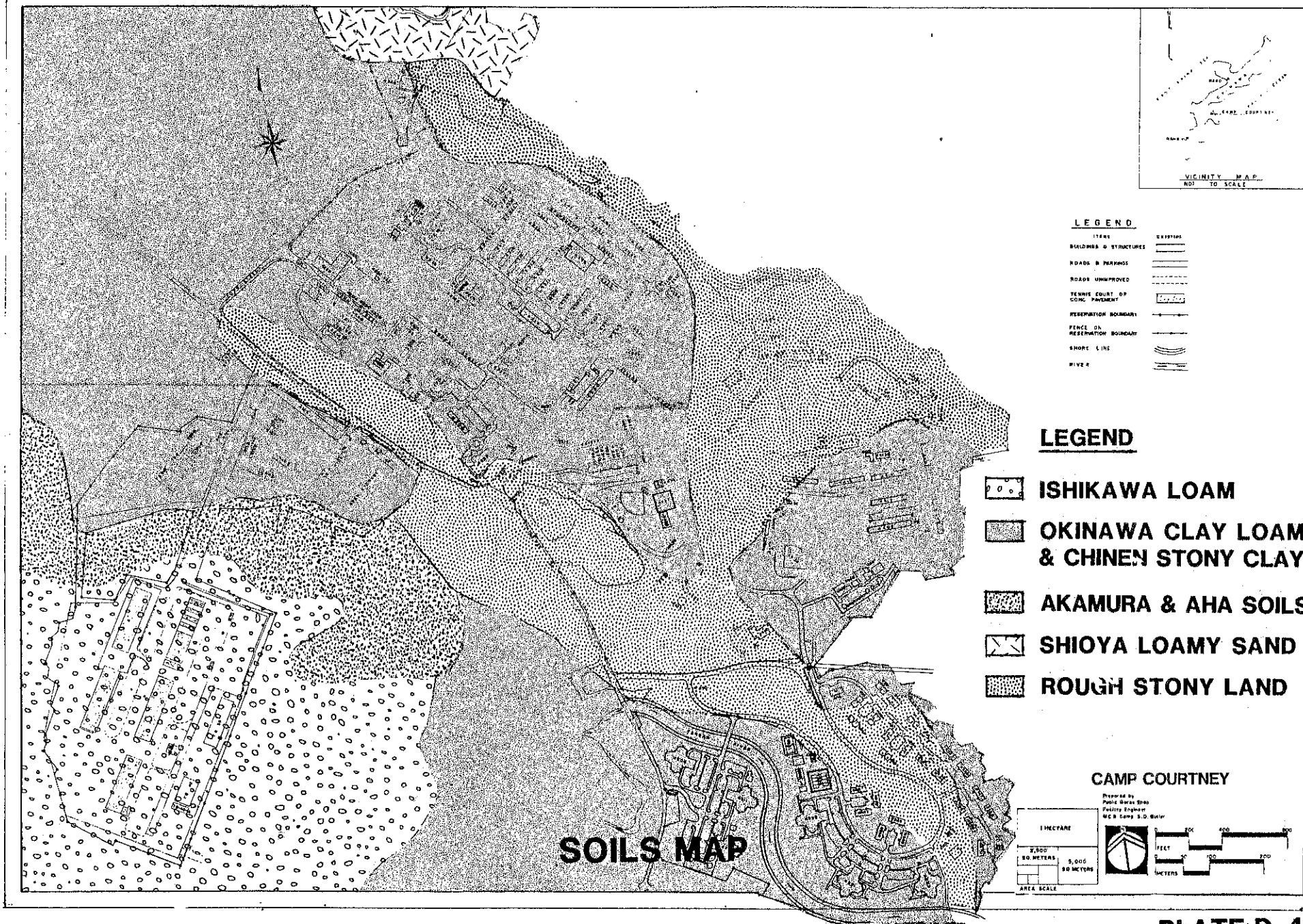


PLATE D-4

forest of broadleaved evergreen and pine. The land is unsuited for crops and is poorly suited for forest. At Camp Courtney, it is found along the ocean ledge and the east-west ridge, including Dieka Hill.

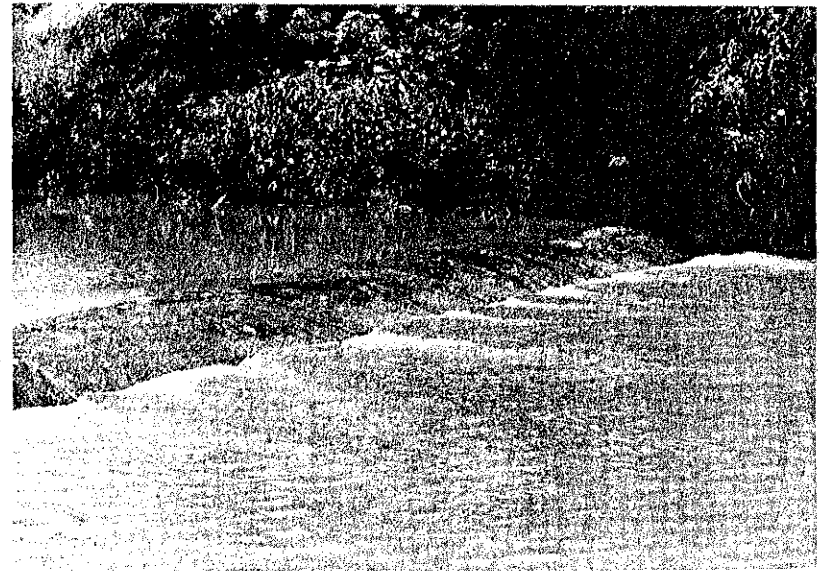
E. HYDROLOGY

As shown by the surface water map (Plate D-5), the predominant water feature on the site is Tengan-gawa (Tengan River), passing through the South Courtney area with a discharge of more than 5,000,000 gpd. Surface drainage takes most of the water from the Tengan-gawa basin of 12.7 square miles. Subsurface drainage carries some of the water laterally through limestone.

All surface & ground water must be treated for bacterial pollution. Flash high turbidities in surface streams follow heavy rains; therefore, conglomeration with alum before filtration is necessary.

The Tengan Treatment Plant has a design capacity of 4,000,000 gpd (with no overload capacity) and a clear-well capacity of 420,000 gpd.

Tengan-gawa drains an area of limestone, gravel and phyllite and shows little variation in flow. At least 75,000 gallons of fresh water per day would be available from single wells drilled in limestone on Camp Courtney. However, this water is potentially brackish and not useable as a potable source.



TENGAN RIVER AT TREATMENT PLANT INTAKE



**TENGAN RIVER AT SOUTH CAMP COURTNEY
(TAKEN AUGUST 1983)**

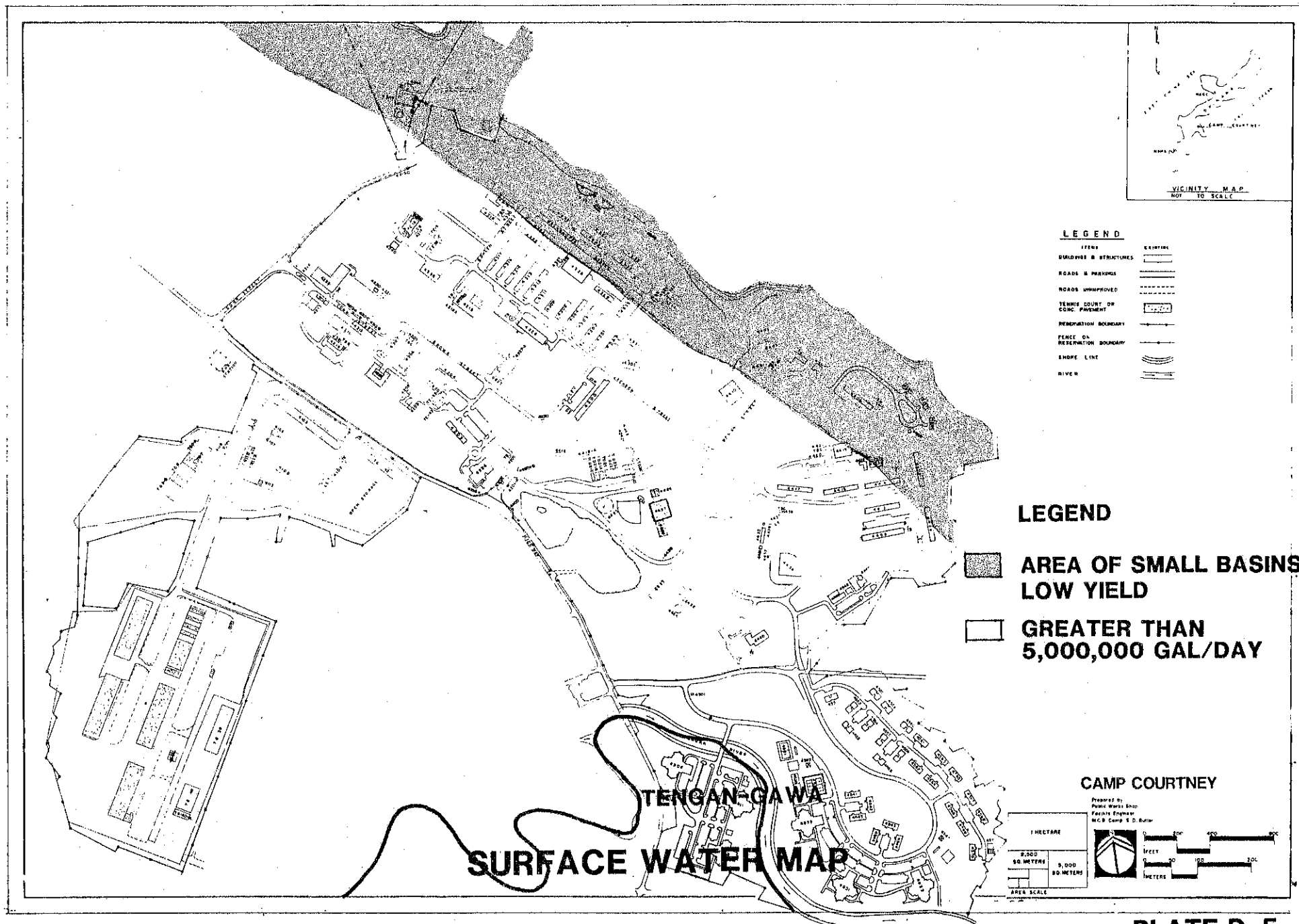


PLATE D-5

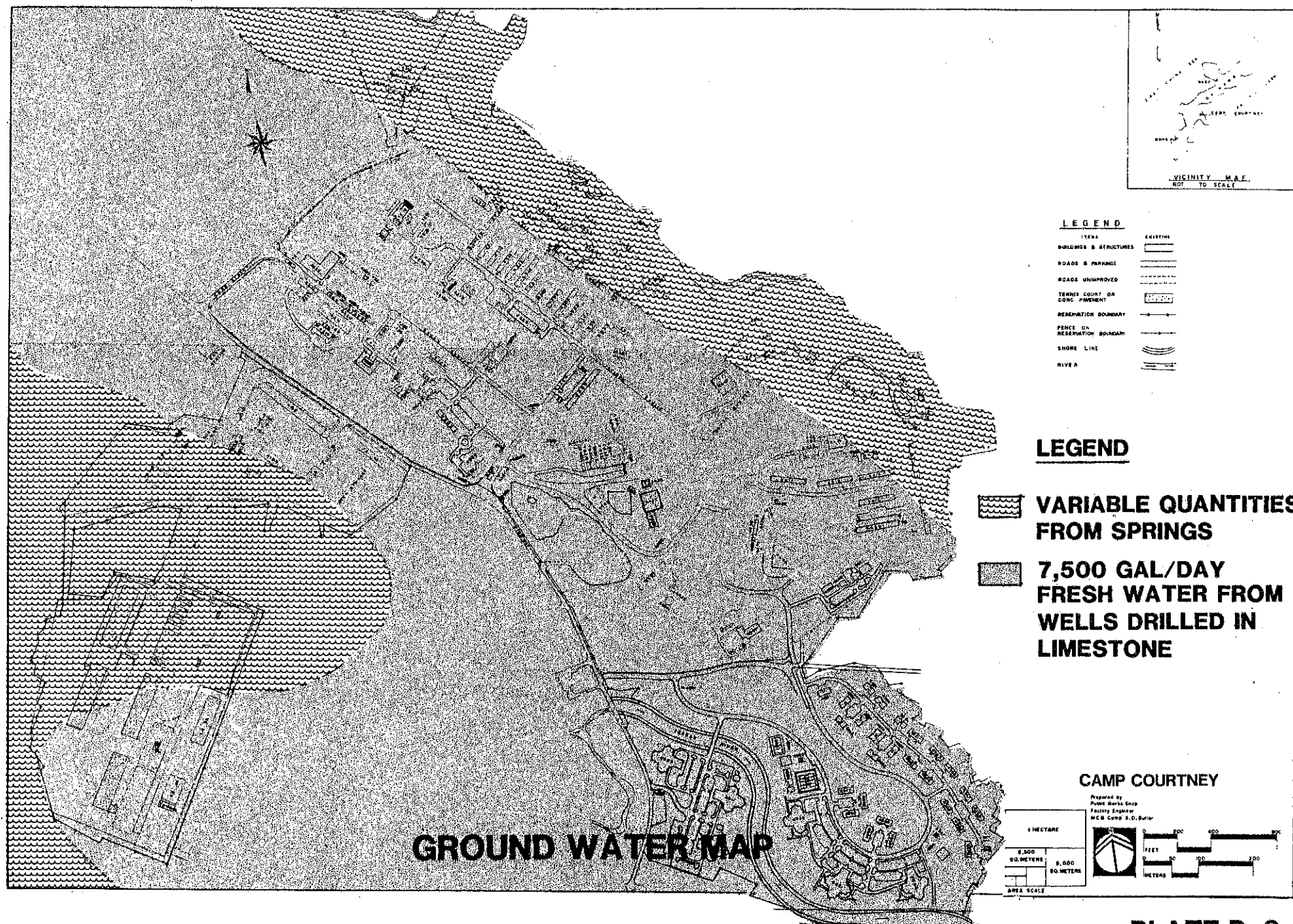


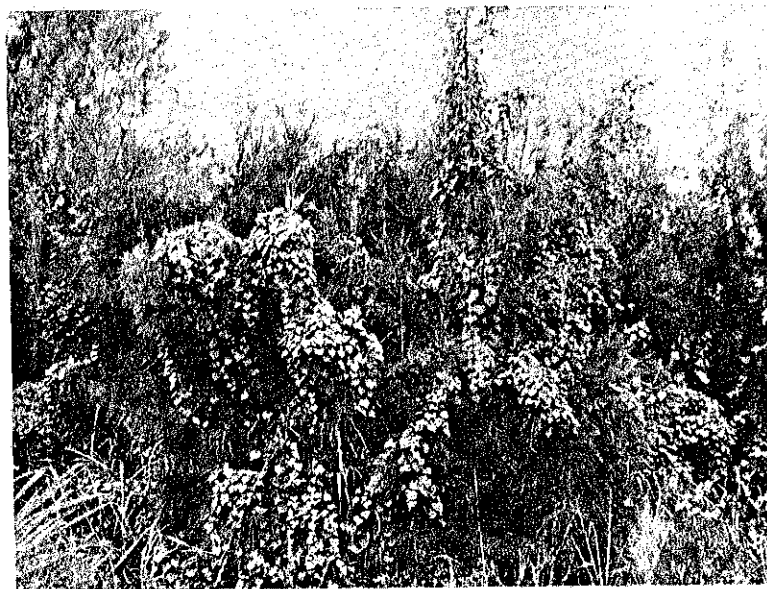
PLATE D-6

A natural spring south of the REX Area (greater than 100,000 gpd) drains into Tengan-gawa and is used as a source of raw water for the Tengan Treatment Plant.

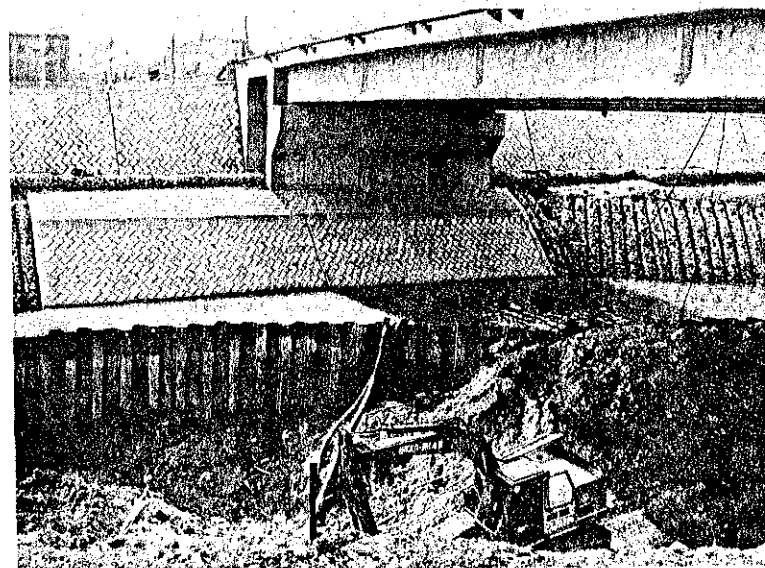
Ground water information is displayed on Plate D-6.

F. VEGETATION

Natural vegetation on the site remains mostly on rough stony land considered unuseable for development, and consists of pines, wax trees, Banyan trees, palms, and coast casuarina. Other open areas consist of turf lawns. A screen of coast casuarina (Casuarina aquisetifolia), locally called "Ironwoods", native pines, and coarse grasses (mostly Phragmites karka) provides a solid edge along Highway 24. However, this edge will soon be disturbed by the need for borrow and fill sites for the Japanese-funded Facilities Improvement Program, although the area will be reclaimed with natural vegetation upon completion of the disturbance. A thick early successional forest blankets most of south Camp Courtney, but again this area has been disturbed by the construction of military family housing. Areas of natural vegetation are shown by Plate D-7. An inventory of plant species is provided as Appendix L-3.



RIVERBANK VEGETATION ALONG TENGAN RIVER



RIVERBANK CONSTRUCTION AT SOUTH CAMP COURTNEY

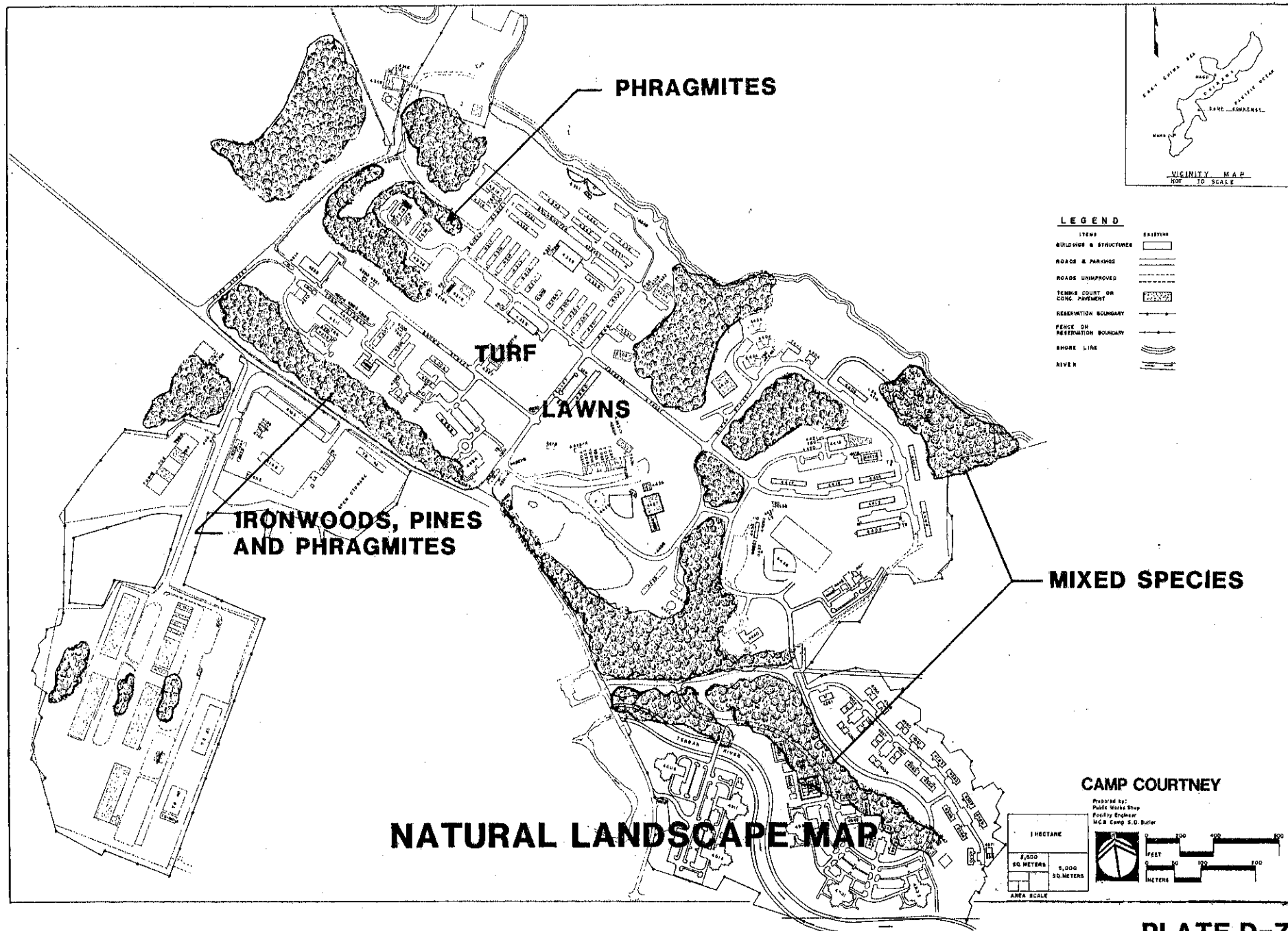
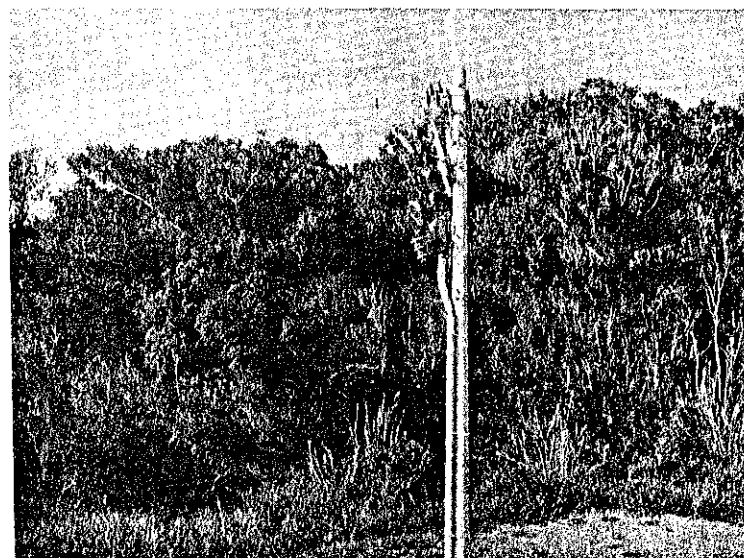
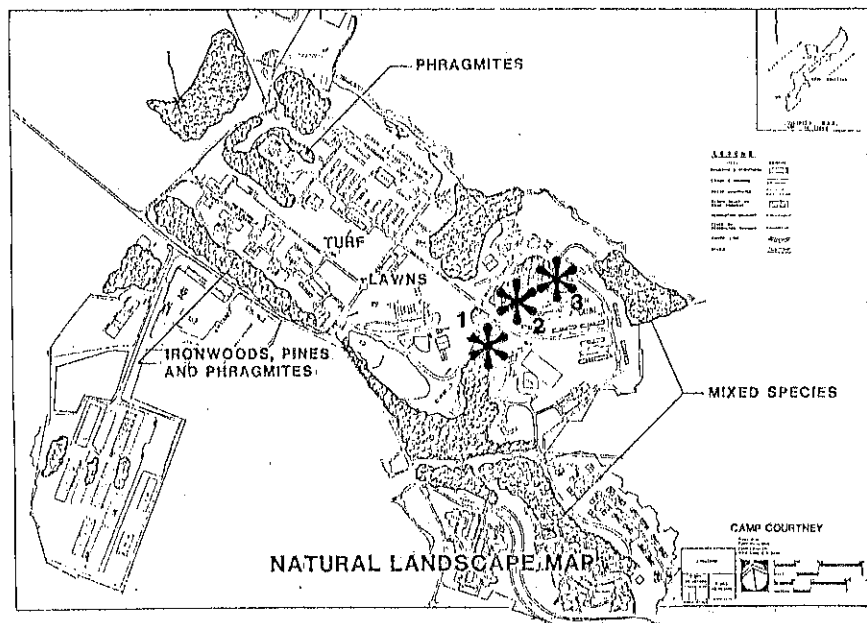


PLATE D-7



PHRAGMITES AND SCRUB VEGETATION AT AREA 2



RYUKYU PINE AT AREA 1



CYCADS ON LIMESTONE AT AREA 3

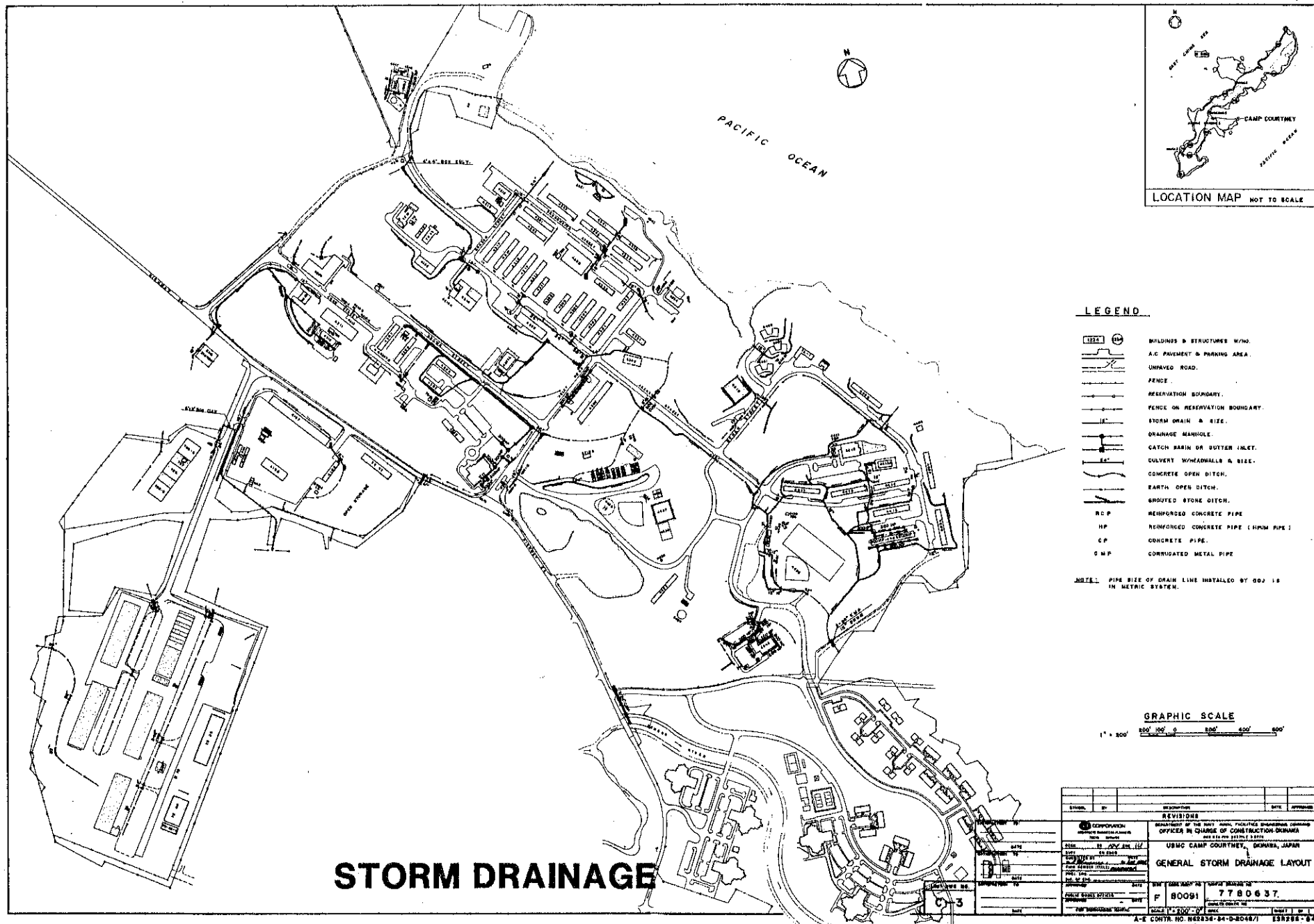


TABLE D-3
CAMP COURTNEY WATER CONSUMPTION 1977 - 1985

(1,000 GAL)

<u>Month</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
JAN	15,551	10,496	8,782	7,483	6,220	5,289	1,983	5,066	7,346
FEB	14,130	6,718	9,682	6,992	4,737	4,735	7,164	5,311	6,532
MAR	13,542	6,651	7,914	6,785	4,721	4,830	6,062	4,630	7,542
APR	12,076	6,249	8,671	8,340	6,030	5,472	5,028	5,272	6,790
MAY	13,116	6,438	8,507	8,970	7,937	5,769	5,826	7,134	8,419
JUN	9,342	8,124	9,587	9,086	7,438	5,589	6,471	6,401	9,807
JUL	11,009	10,903	9,190	9,518	8,533	6,719	7,047	6,267	10,121
AUG	11,895	15,002	10,308	9,115	6,350	7,278	8,244	6,841	11,468
SEP	12,081	13,606	11,161	7,693	5,667	7,365	6,689	8,155	9,733
OCT	9,890	9,590	7,997	9,622	3,870	5,946	8,881	11,726	8,300
NOV	8,857	9,106	9,042	8,343	4,752	5,623	11,726	8,708	7,926
DEC	<u>7,780</u>	<u>8,885</u>	<u>6,819</u>	<u>6,296</u>	<u>4,699</u>	<u>5,833</u>	<u>8,708</u>	<u>7,756</u>	<u>6,694</u>
Avg	11,606	10,281	8,972	8,186	5,913	5,871	7,856	6,947	8,390

By agreement between the Prefectural Government and U. S. Forces on Okinawa, during periods of anticipated water shortages, all military installations using potable water from the island wide system will comply with reduction in consumption goals established for the local population. To achieve these goals, each municipality cuts the water supply within their political boundary at pre-established intervals, varying in duration depending on the severity of water shortage.

During water rationing periods, the municipalities do not turn off the water supply to military installations. Water is turned off by the Facilities Engineer personnel at each Camp, except that periods without water are generally shorter than at local communities.

The last period of water rationing on Okinawa occurred from mid-July 1981 through Mid-June 1982. Camp Courtney exceeded the established reduction goals during the entire period.

Camp Courtney is periodically subjected to water use goal procedures developed by the OPEB. Thus, the above figures may not reflect normal consumptive rates.

Camp Courtney's water system consists of 6- to 12-inch transmission mains and a reservoir water storage tank. These transmission mains are constructed of steel, cast iron, and asbestos cement. Shut-off valves are located at most major

junctions; on the water distribution system. The majority of Camp Courtney's potable water system was installed during the late 1940's.

An 8-inch water meter is located at the municipal tap-point. This meter is operated and maintained by the Gushikawa Municipality and is the only device used to measure the amount of water actually supplied to Camp Courtney.

The reservoir is a reinforced concrete tank with a storage capacity of 400,000 GAL. This reservoir, located on one of the higher elevations of the base, provides static pressure ranging from 10 to 60 psi. The potable water system is illustrated by Plate D-13.

2. CONSERVATION MEASURES

Served by the municipality, Camp Courtney is subjected to the water use goal procedures of the OPEB as well as MCB Camp Butler's water conservation measures. Although water is secured from the OPEB system during periods of rationing, Camp Courtney's entire water system remains on line with flow and static pressure provided by the camp's 300,000 GAL reservoir.

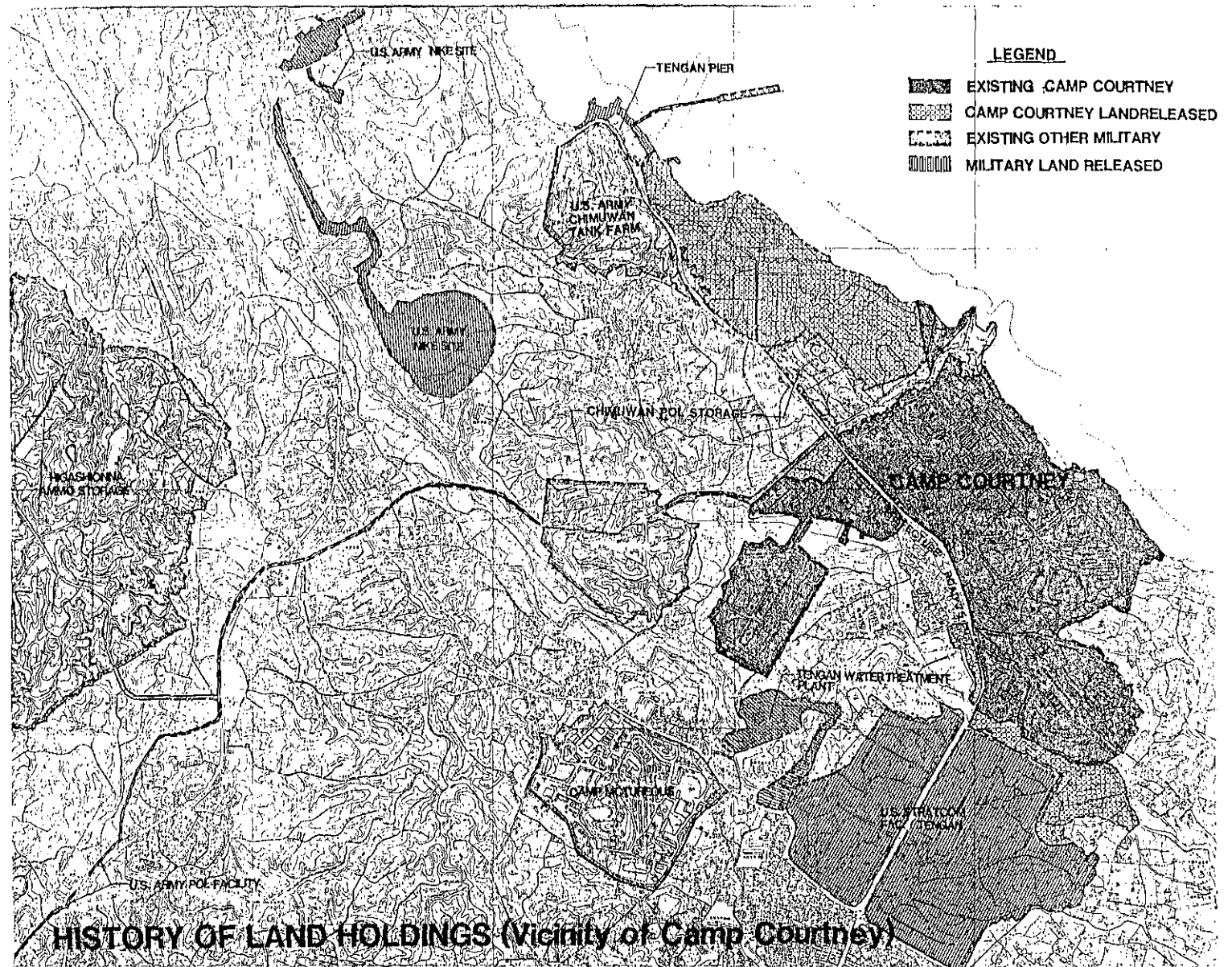
The Milwater-Oki Study (1983) developed a minimum condition requirement of 180,132 GPD, and a normal condition requirement of 405,297 GPD. An optimum condition requirement based on assumed growth

H. LAND USE AND REAL ESTATE

Class I Real Property at Camp Courtney consists of 347.28 acres. Improved acreage accounts for 184.22 acres, semi-improved acreage for 4.65 acres, unimproved acreage for 127.11 acres, and 31.30 acres are classified under other categories. The Camp was transferred to the Marine Corps 1 September 1974 and the land is appraised at \$1,000,000 (1982 appraised value). Figure D-11 illustrates the historic military land holdings in the Camp Courtney vicinity.

As shown by Plate D-15, Camp Courtney is predominantly an administrative facility supporting Headquarters functions of III MAF, 9th MAB, and 3rd Division. Storage and vehicle maintenance facilities are located in the REX Area, located on the west side of Highway 24.

Bachelor Officer Quarters (BOQs) are grouped along the southeastern corner of the camp along Behan and Jackson Streets. The Officers' Club is located beside the highest knoll on the camp yet still retains a scenic view of the Kin-wan Bay and the eastern coastline in to the north.



5. ADMINISTRATIVE FACILITIES

Administration functions occupy 76,453 square feet in 14 permanent and adequate concrete buildings, and 3,520 square feet in 4 temporary substandard structures. These spaces are used as unit headquarters for all organic units from the MAF Headquarters down to company-sized units.

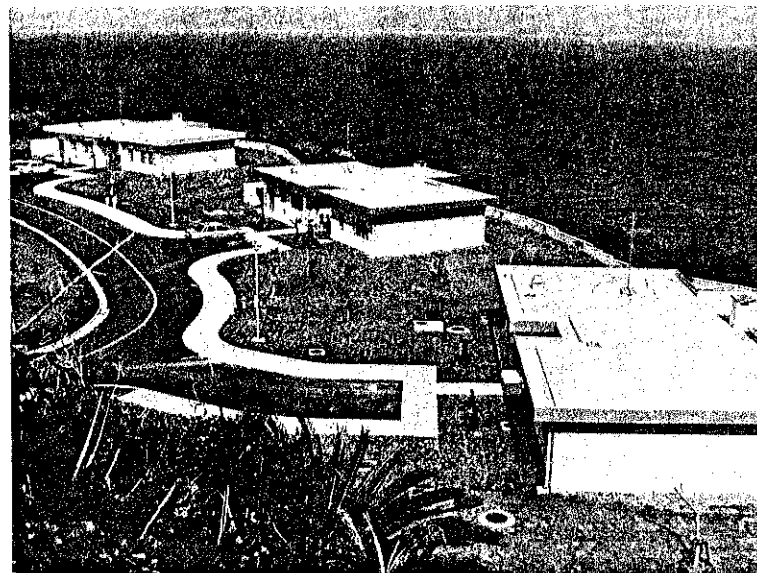
6. HOUSING AND PERSONNEL SUPPORT

Unaccompanied housing support for both officers and enlisted personnel are for the most part in single-story, permanent, concrete buildings. The BOQ units, located in the southeastern sector of the camp, have semi-private baths and air conditioning. The BEQ units, located in the northeastern sector of the camp, have open bays and gang showers. To conform with DoD criteria, all unaccompanied personnel housing units will require private baths, appropriate partitioning to comply with personnel space requirements and air conditioning.

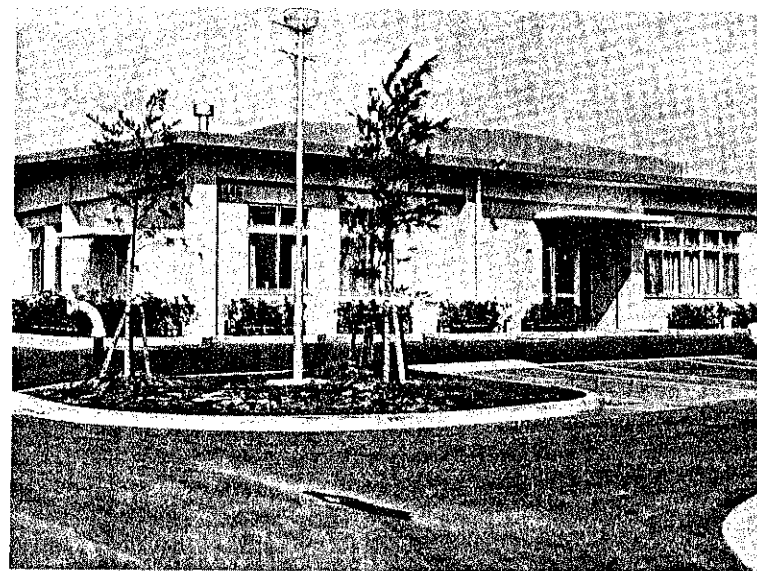
There is one 1,000-man messhall which is adequate to satisfy current requirements.

7. COMMUNITY SUPPORT FACILITIES

Most Community Support Facilities are of permanent construction. Few facilities are adequately housed. However, the requirement to support military family housing at South Camp Courtney and Camp McTureous has generated an intensive construction program for new Community Support Facilities.



SENIOR OFFICER QUARTERS



COMMUNITY SERVICE FACILITY

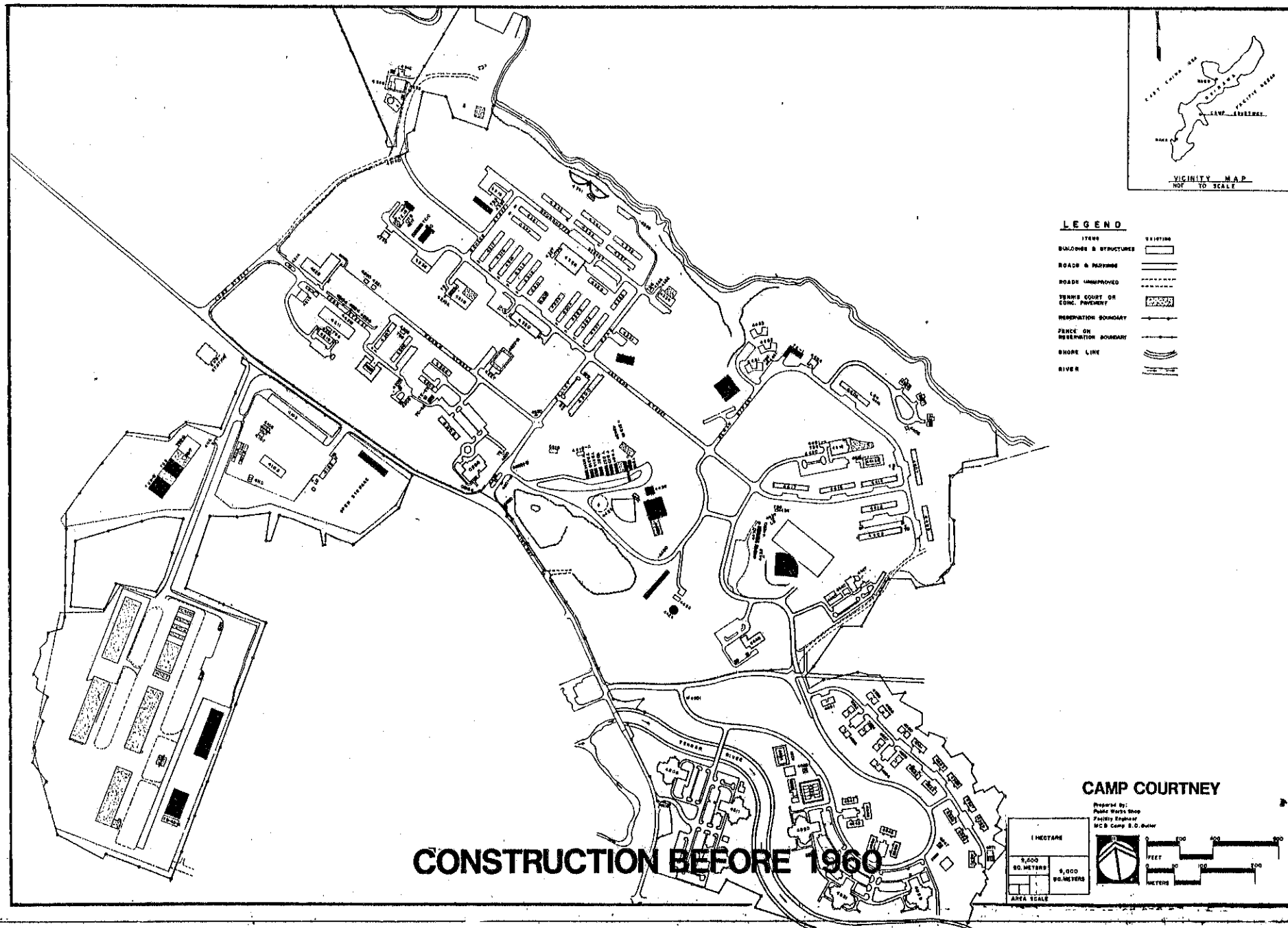


PLATE D-17

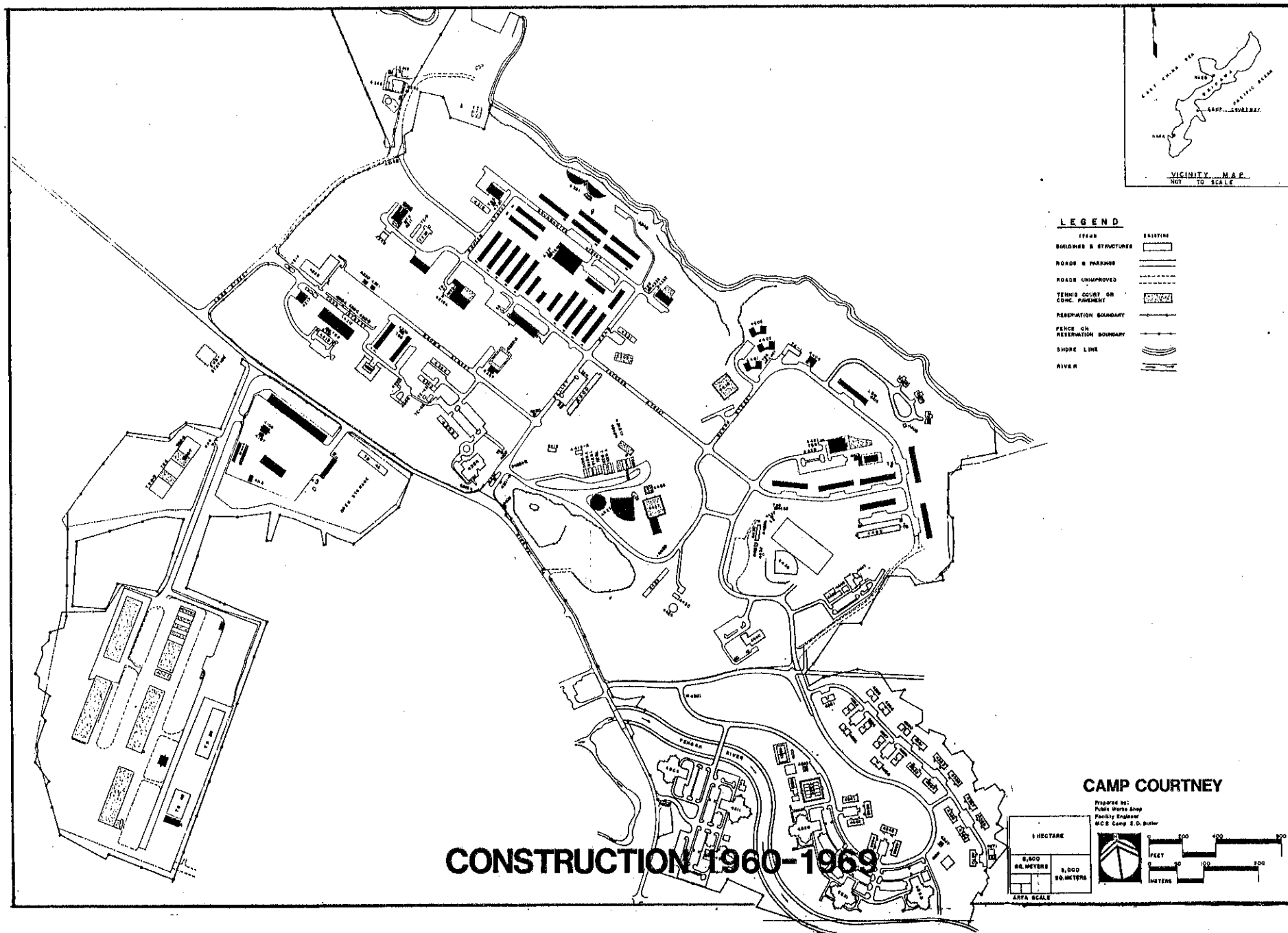


PLATE D-18

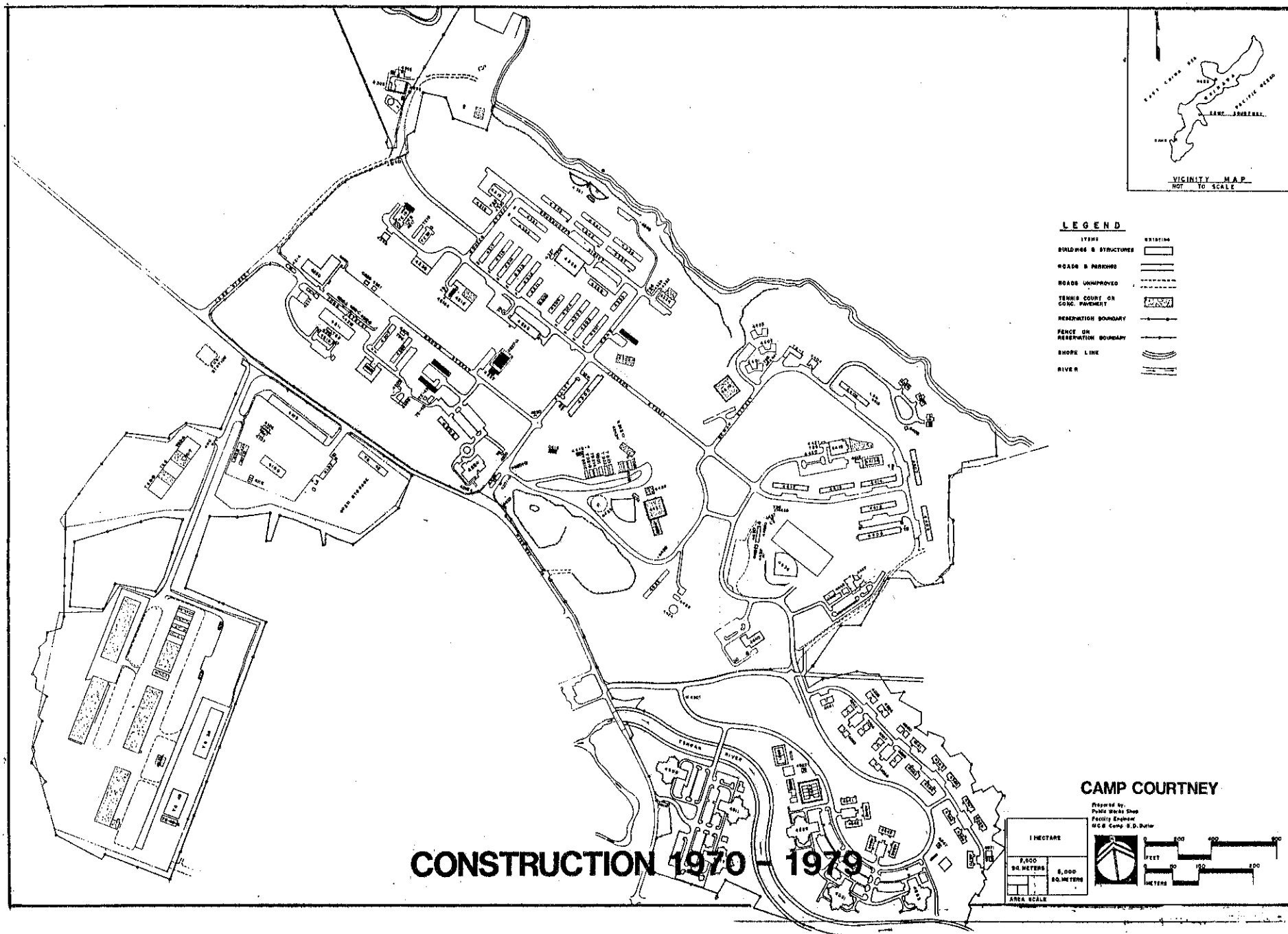


PLATE D-19

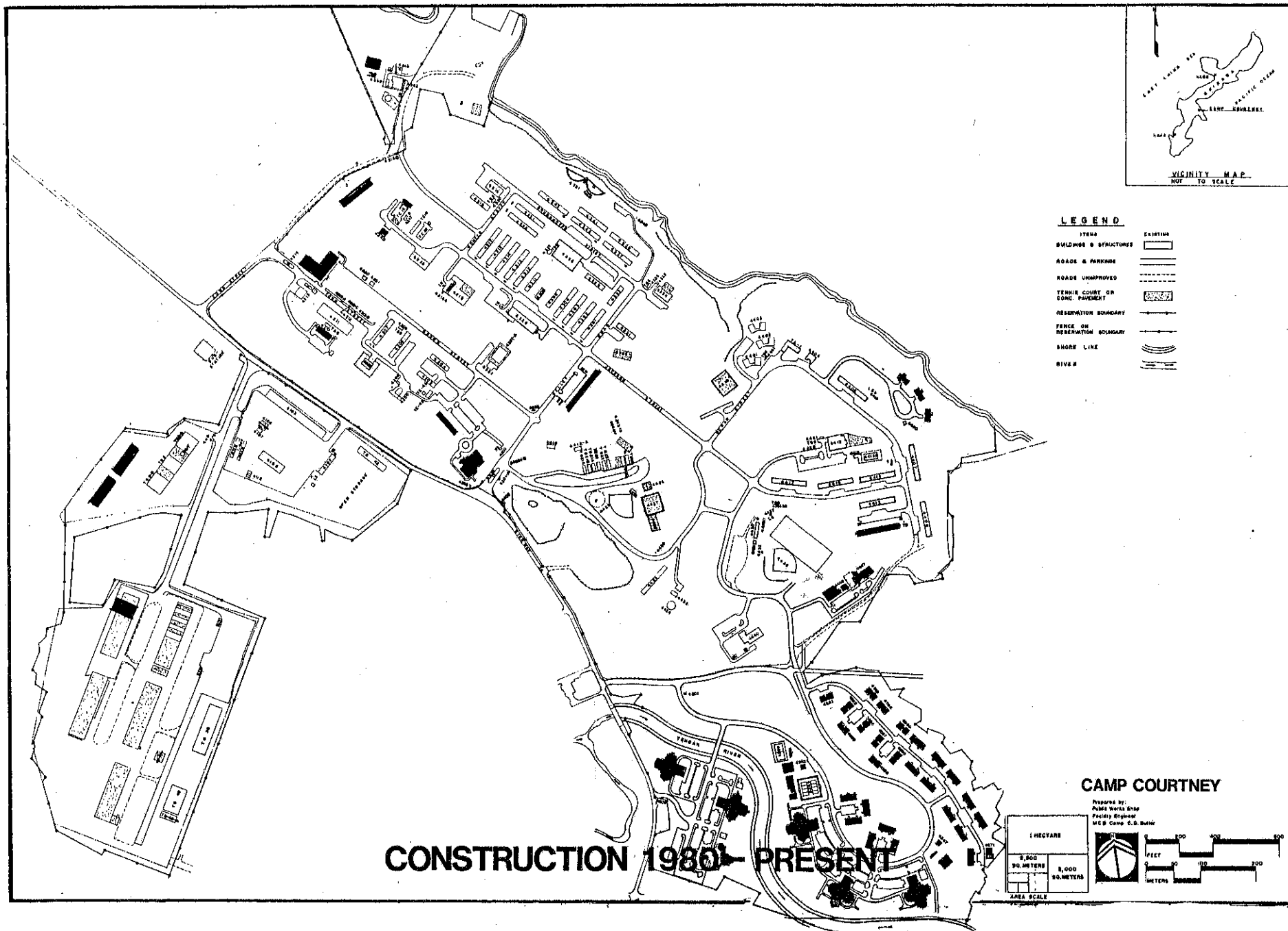
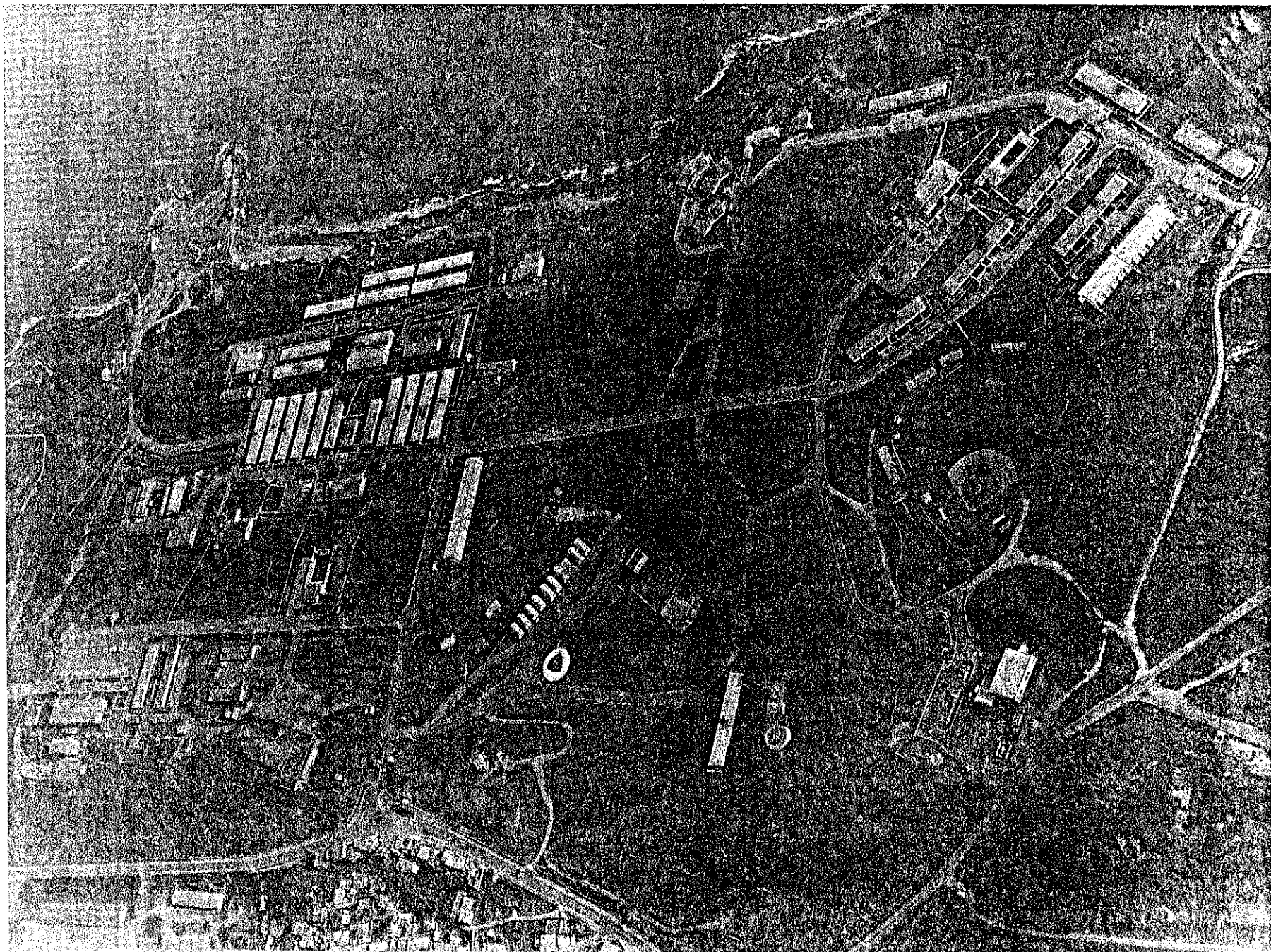
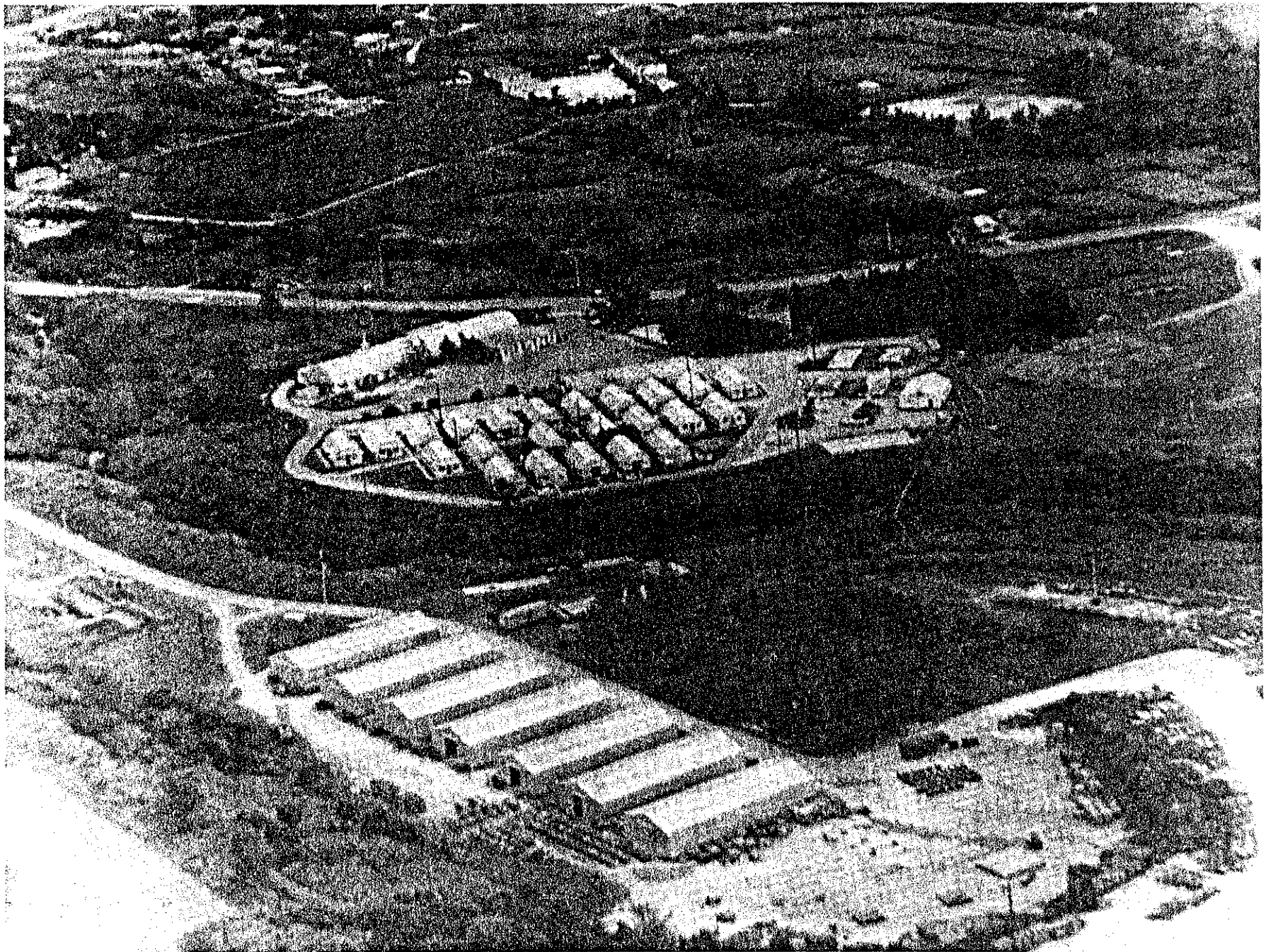


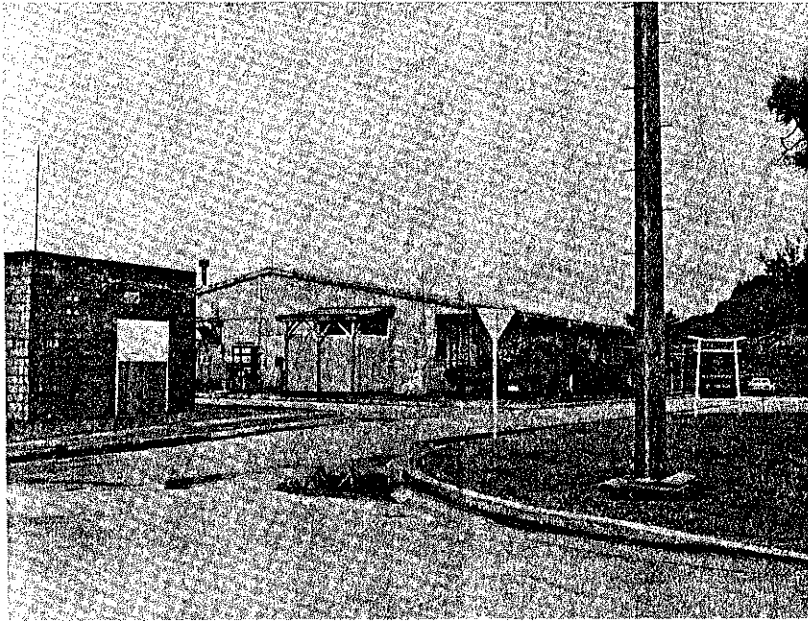
PLATE D-20



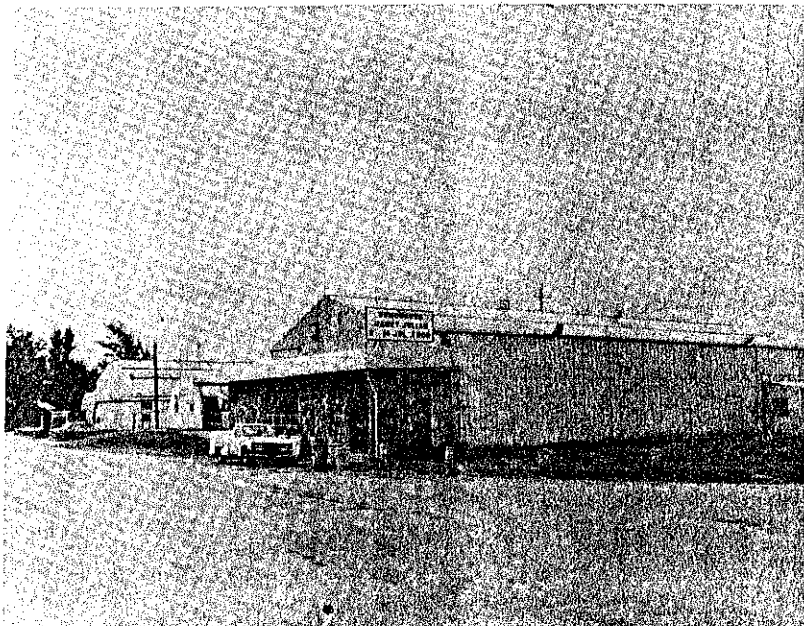
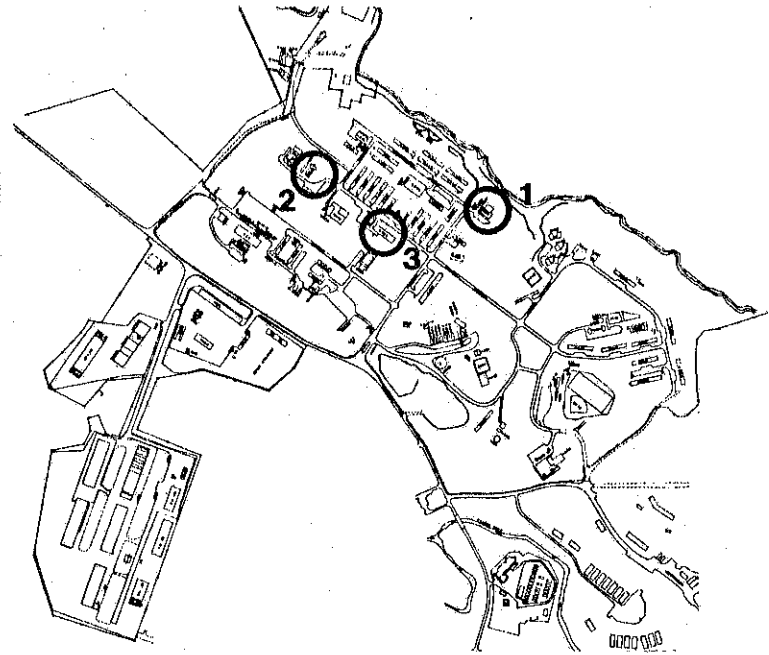
CAMP COURTNEY (C. 1980) LOOKING EAST



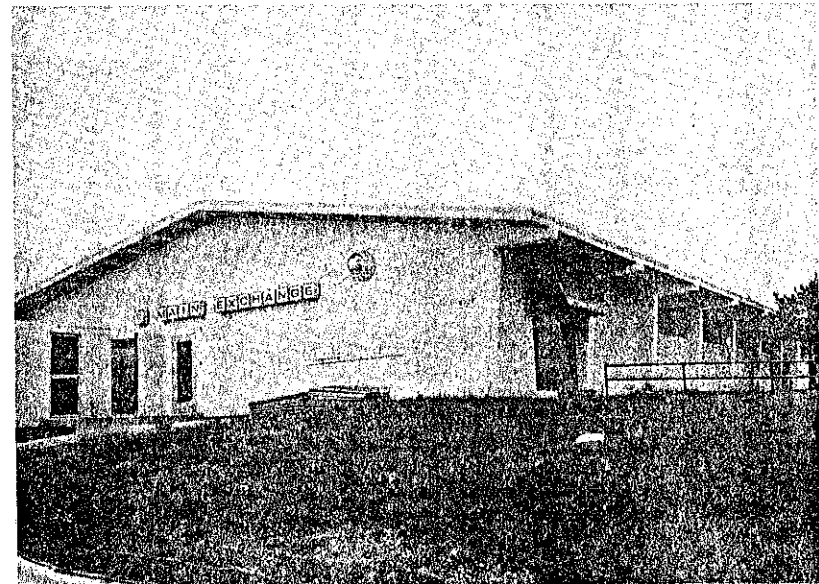
**CAMP TENGAN (SOUTH CAMP COURTNEY) (C. 1970) LOOKING WEST
(Old photograph, image is reversed)**



1. BUILDING 4434, STAFF NCO CLUB

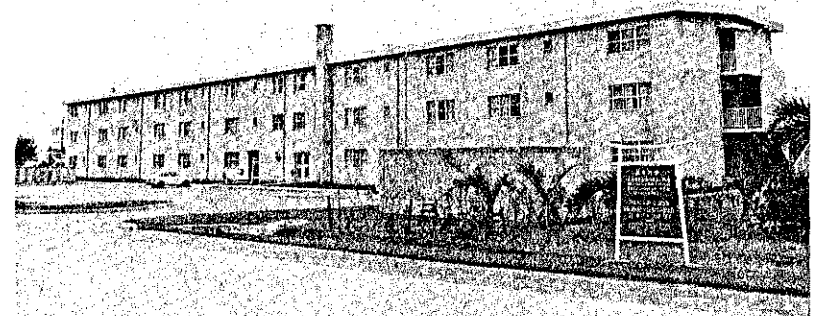
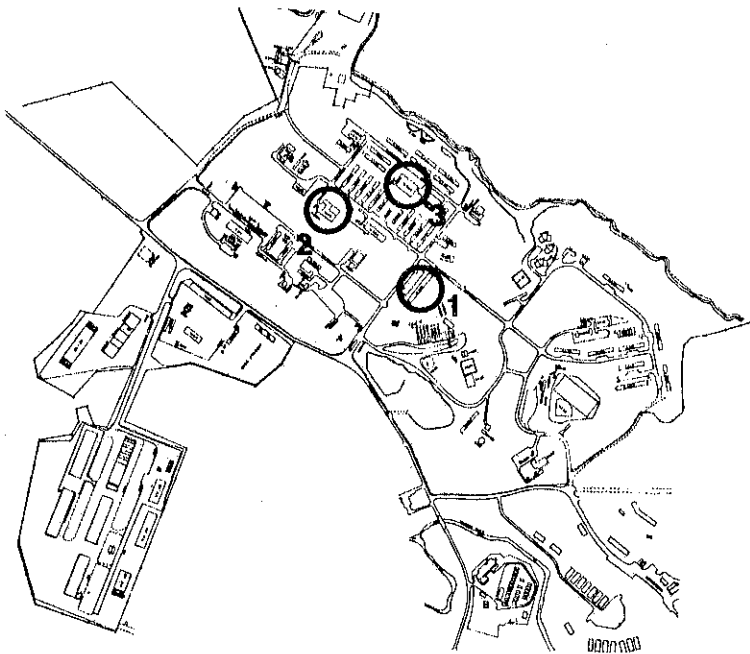


2. BUILDING TE-39, BASE THEATER

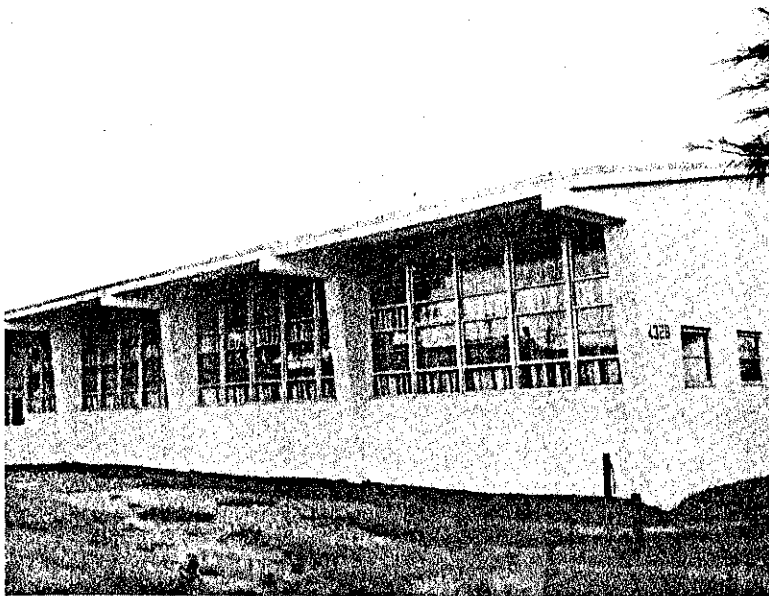


3. BUILDING 4228, MAIN EXCHANGE

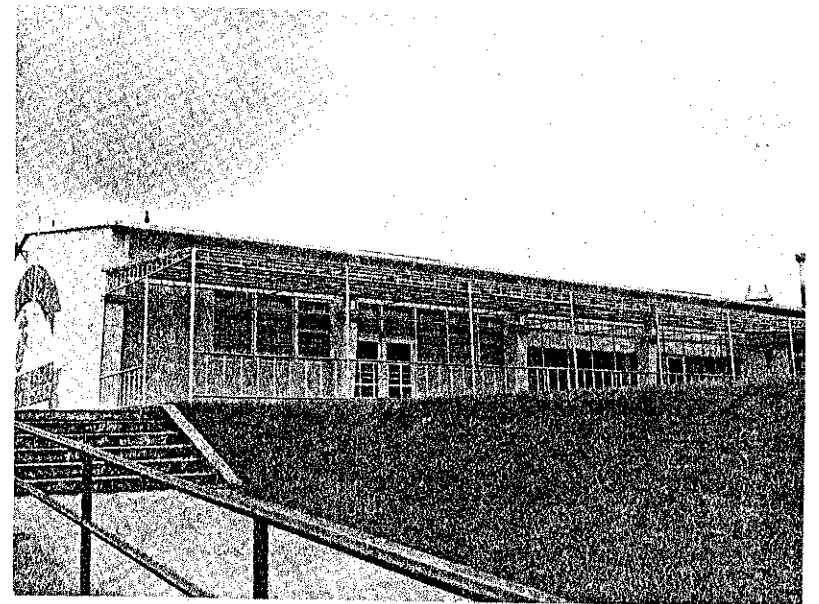
D-60



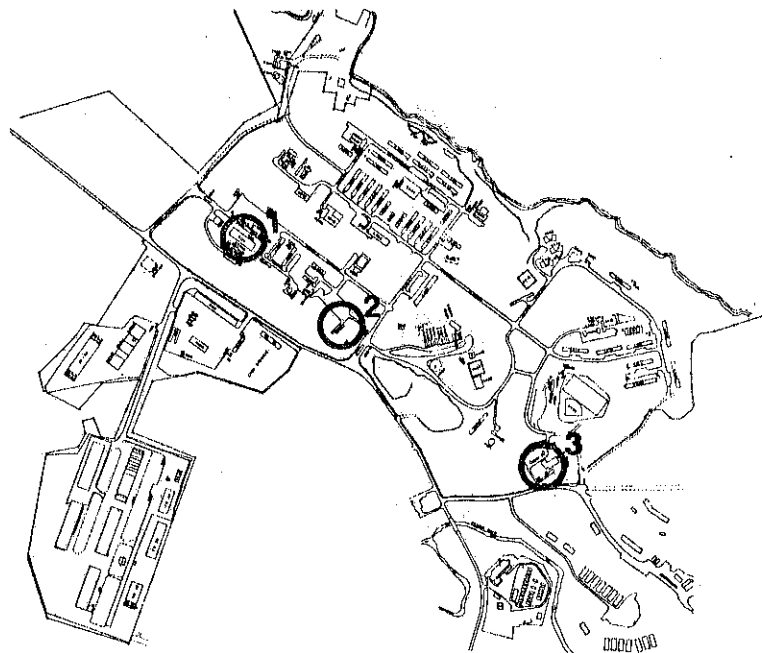
1. BUILDING 4300, STAFF NCO QUARTERS



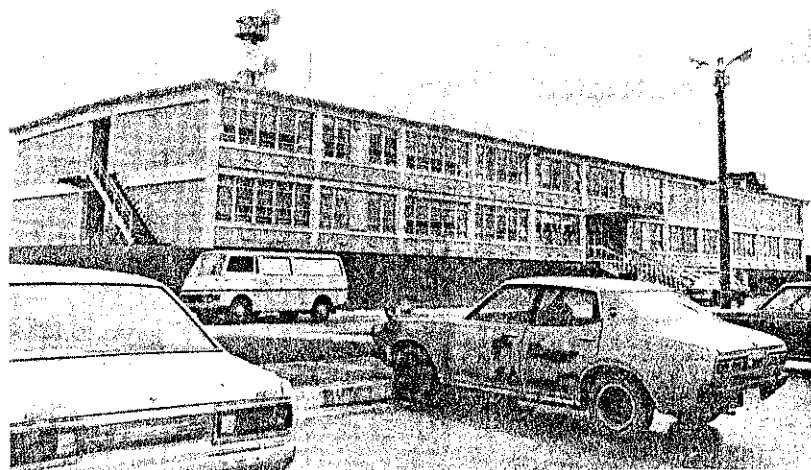
3. BUILDING 4328, MESSHALL



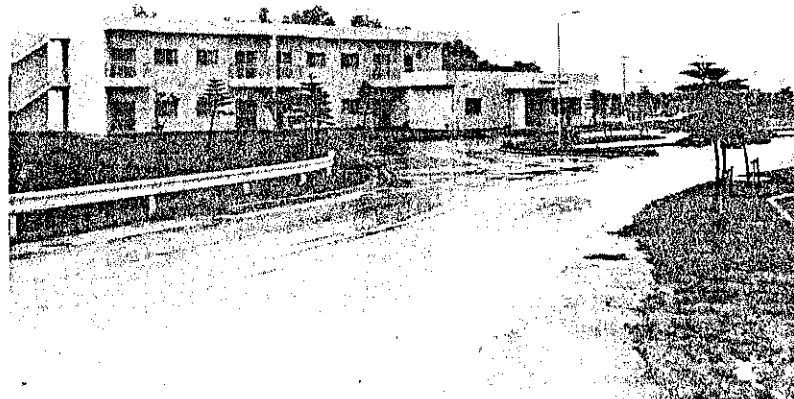
2. BUILDING 4218, ENLISTED CLUB



2. TEMPORARY QUONSETS (TO BE DEMOLISHED)



1. BUILDING 4211, III MAF HEADQUARTERS



3. BUILDING 4440, TRANSIENT QUARTERS

D-62

REQUIREMENTS ANALYSIS

An analysis of the basic programmatic needs of Camp Courtney, its organizational elements and tenants, and the interaction between those elements, is pre-requisite to a synthesis of planning solutions. This section provides information through a description of the Camp, its mission and organization, base loading, inter-relationships, and problem areas.

Detailed information on all facility requirements and existing assets is contained in various Marine Corps documents including the Facilities Support Requirements, Basic Facilities Requirements List, Engineer Evaluation Worksheet, Existing Facilities Worksheet and the Activity Facilities Plan (AFP). The BFRL, as well as the Engineering Evaluation of existing assets, were updated prior to the development of this Master Plan update. While the BFRL and Engineering Evaluation (EE) are not included in full in this Plan, they are liberally extracted or otherwise summarized to insure ready reference, and to emphasize the legitimacy of the Master Plan as a document derived from the Shore Facilities Planning System. A full summary is provided as Appendix L-1 (Shore Facilities Planning Document Summary), including definitions of each category code.

MCO P11000.12 outlines the steps of the Shore Facilities Planning System (SFPS) relative to the identification of facilities needed to

perform the assigned mission, tasks and workload of activities, referred to as Basic Facilities Requirements (BFRs). The Shore Facilities Planning System is illustrated by Figure E-1. The BFRL for Camp Courtney is approved by HQMC and is then entered into the Shore Facilities Planning System (SFPS) data base of the Navy Facilities System (NFS), an automated data processing system located at the Facility Systems Office (FACSO), Port Hueneme, California. A graphic comparison of existing assets (A) and basic facilities requirements (R) by category code is provided:

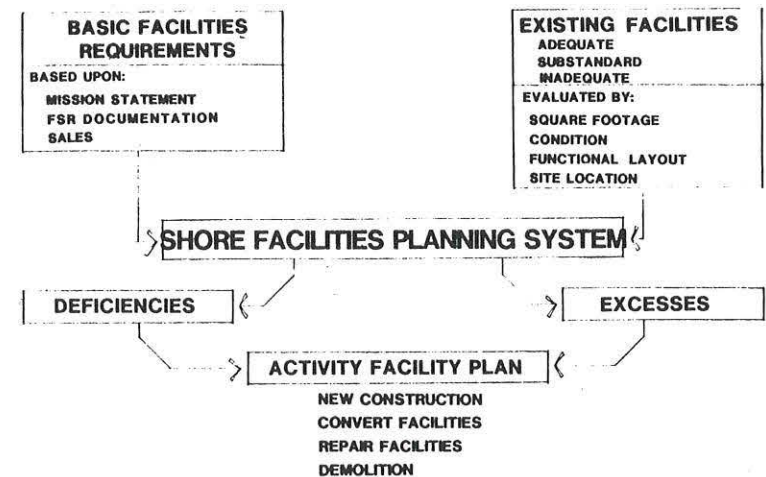


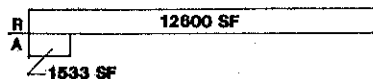
FIGURE E-1

CATEGORY CODE
DESCRIPTION

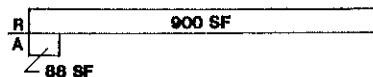
740-02
LOCATION EXCHANGE



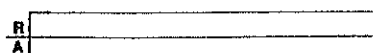
740-04
EXCHANGE CAFETERIA



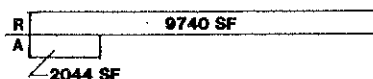
740-05
EXCHANGE SNACK STAND



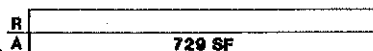
740-08
EXCHANGE FOOD STORE



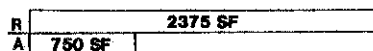
740-09
EXCHANGE SERVICE OUTLET



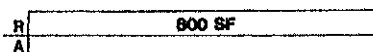
740-17
EXCHANGE CENTRAL SUP. FAC.



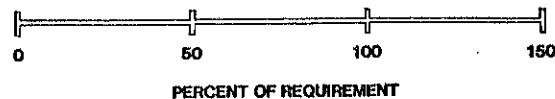
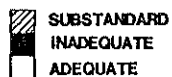
740-18
BANK



740-19
CREDIT UNION

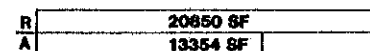


LEGEND

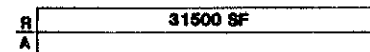


CATEGORY CODE
DESCRIPTION

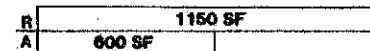
740-20
TEMPORARY LODGING



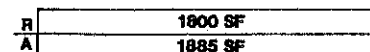
740-23
COMMISSARY



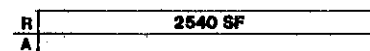
740-25
FAMILY SERVICE CENTER



740-28
AMUSEMENT CENTER



740-30
EXCHANGE AUTO SERVICE/
REPAIR



740-36
HOBBY SHOP/ARTS & CRAFTS



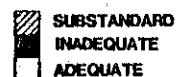
740-37
SPEC. SVC. ISSUE OFFICE



740-38
AUTO HOBBY SHOP



LEGEND



CATEGORY CODE
DESCRIPTION

750-30
OUTDOOR SWIMMING POOL

R	25 ME
A	25 ME

750-34
WADING POOL

R	1 EA
A	1 EA

750-62
SKEET RANGE

R	1 EA
A	1 EA

750-67
RECREATION GROUNDS

R	1 EA
A	1 EA

760-20
OUTDOOR MONUMENT

R	2 EA
A	2 EA




833-08
INCINERATOR & BLDG.

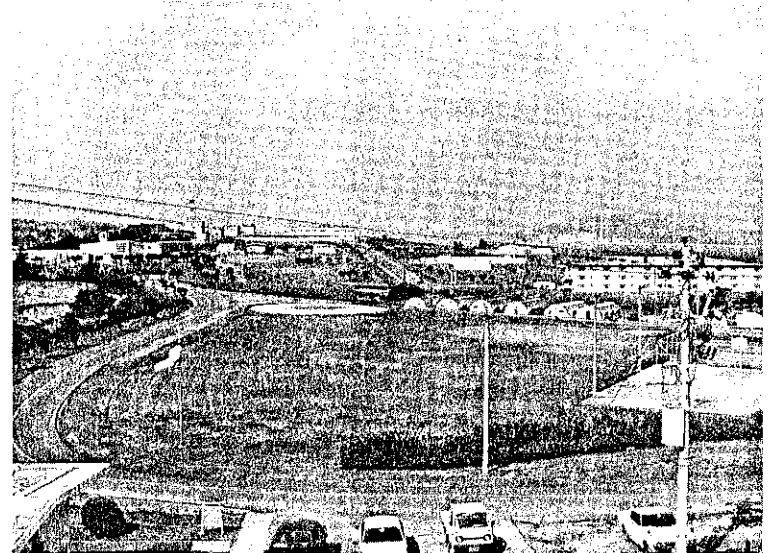
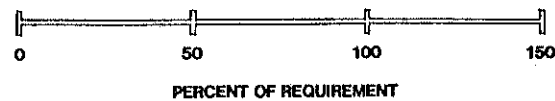
R	289 SF
A	289 SF

R	
A	

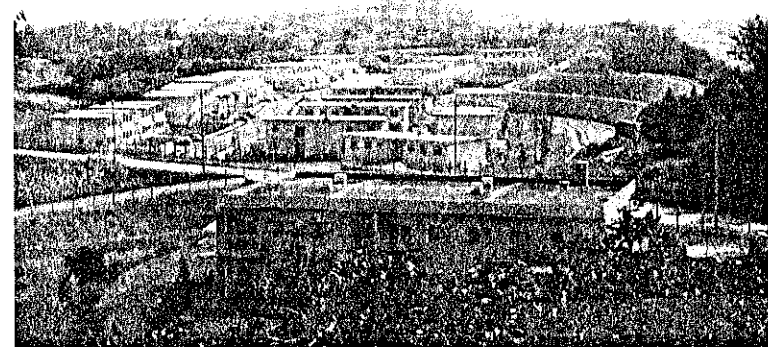
R	
A	

LEGEND

 SUBSTANDARD
 INADEQUATE
 ADEQUATE



Looking North towards Existing Helipad



Looking South towards Military Family Housing

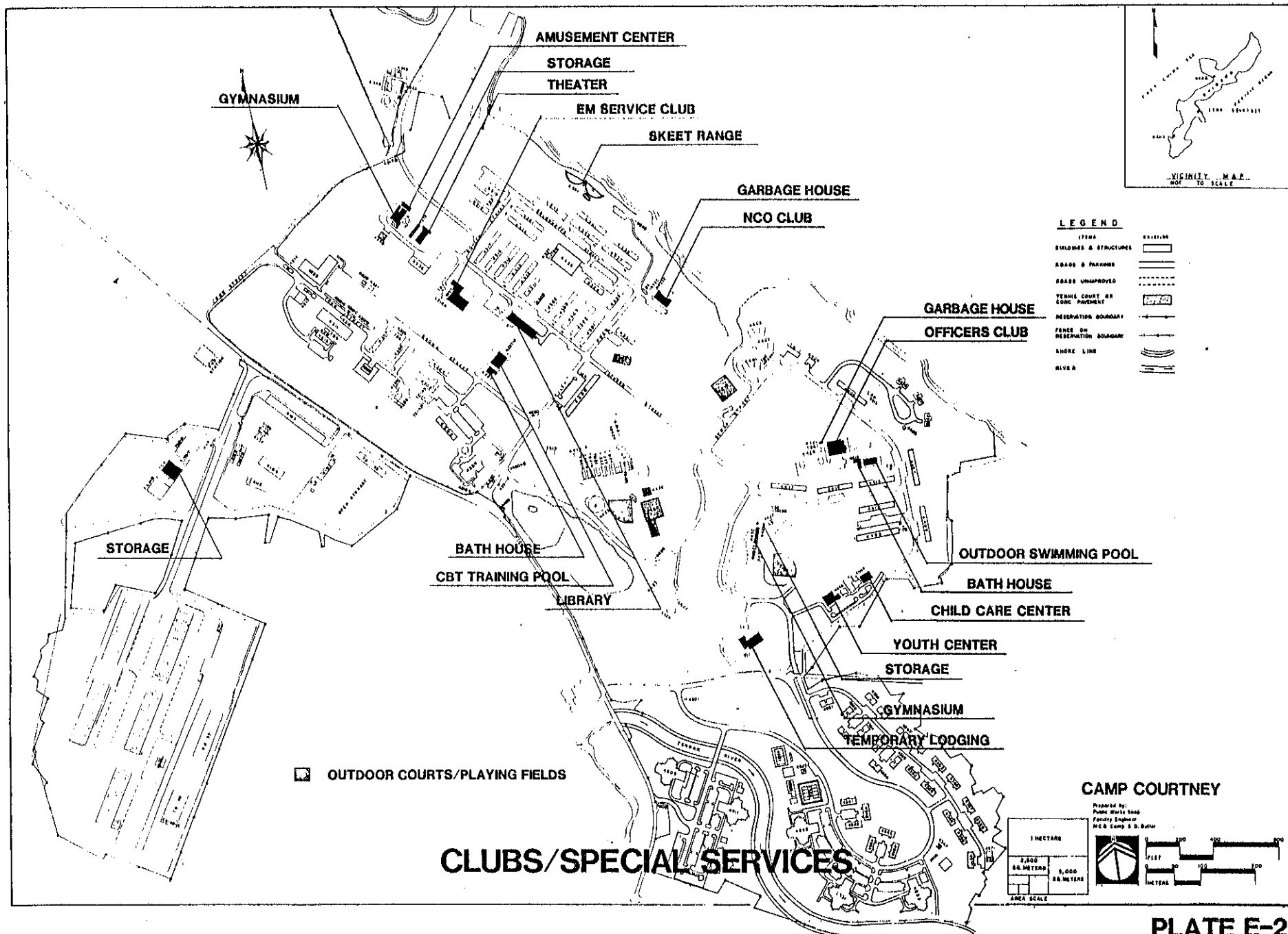


PLATE E-2

H. AMERICAN RED CROSS

The American Red Cross acts as a medium of communication between the American people and their Armed Forces. Emergency communication concerning illness, death, births, and family problems is available on a 24-hour basis through the Red Cross message centers throughout the military establishment. Facilities used at Camp Courtney are illustrated on Plate E-8.

I. AMERICAN EXPRESS

The American Express international Banking Corporation has been authorized by the DOD to operate military banking facilities at various bases on Okinawa for the exclusive use of Armed Forces personnel and their dependents. The military service operating the respective bases furnish all facilities support. Facilities used at Camp Courtney are illustrated on Plate E-8.

J. OKINAWA-WIDE AREA EXCHANGE

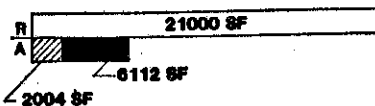
The Army/Air Force OWAX oversees all Exchange operations on Okinawa. Employment is about 650 American civilians, largely dependents of Armed Forces personnel and about 800 local nationals to provide service to approximately 55,000 authorized customers.

**CATEGORY CODE
DESCRIPTION**

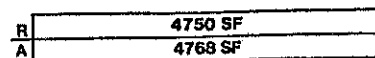
740-40
BOWLING ALLEY



740-43
GYMNASIUM



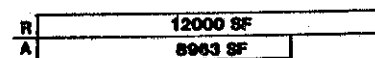
740-55
YOUTH CENTER



740-56
THEATER



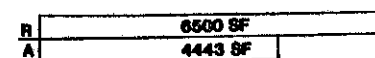
740-60
COM. OFFICERS OPEN MESS



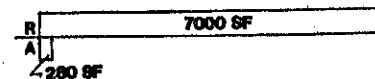
740-63
ENLISTED CLUB E1-E5



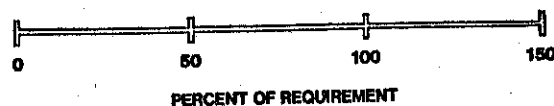
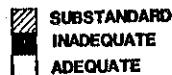
740-66
OPEN MESS E6-E9



740-71
PACKAGE STORE

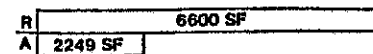


LEGEND

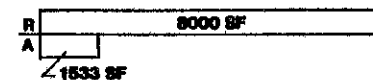


**CATEGORY CODE
DESCRIPTION**

740-74
CHILD CARE CENTER



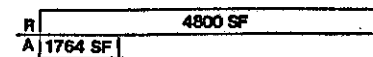
740-76
LIBRARY



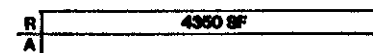
740-78
RECREATION PAVILION



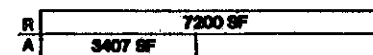
740-84
INDOOR PLAYING COURT



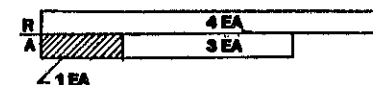
740-86
EDUCATIONAL SVC. OFFICE



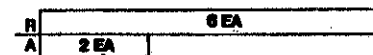
740-88
BATH HOUSE



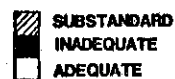
750-10
PLAYING COURTS



750-20
PLAYING FIELDS



LEGEND



1. ORGANIZATIONAL ANALYSIS

A. MCB CAMP SMEDLEY D. BUTLER

MCB Camp Smedley D. Butler consists of eight major camps spread over an area of 50 kilometers in length, encompassing more than 81,456 acres and 3,527 buildings and structures with a replacement value in excess of 1.3 billion dollars. It includes Camps Kinser, Foster, Lester, Courtney, McTureous, Hansen, and Schwab; Henoko Ammunition Depot; Onna Point; the Northern and Central Training Areas; Yomitan Auxiliary Airfield; and Camp Fuji on the island of Honshu in mainland Japan. The Headquarters for MCB Camp Butler is located at Camp Foster (Building 1). The organization of the Base is shown by Figure E-2.

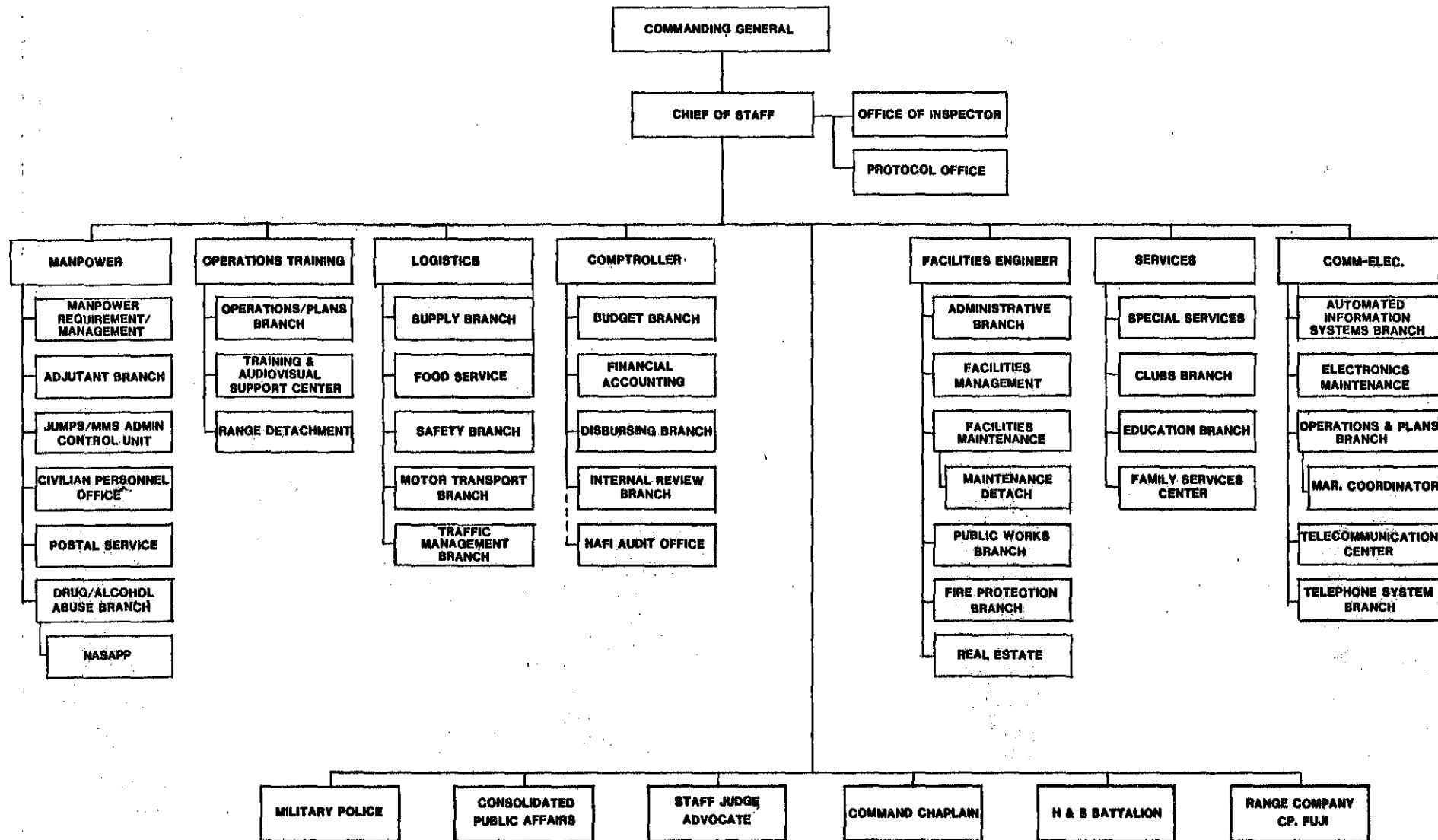
The mission of the Base is to provide training facilities, limited logistical support, and limited administrative support for Fleet Marine Force units located on Okinawa and at Camp Fuji.

The Commanding General directs and coordinates the functions of Marine Corps Base under the cognizance of the Commander, Marine Corps Bases, Pacific, and represents the Commander in the Western Pacific Area within his assigned additional duty as Deputy Commander, Marine Corps Bases Pacific, (Forward). The Commanding General also serves as Local Area Commander for all Naval Service personnel located ashore on Okinawa and is designated as the Okinawa Area

Coordinator under the authority of the Commander, U.S. Forces, Japan.

The majority of MCB functions at Camp Courtney are under the control of MCB DSSC, MCB Facilities Engineer, and MCB Provost Marshall.

MCB CAMP BUTLER



III MARINE AMPHIBIOUS FORCE

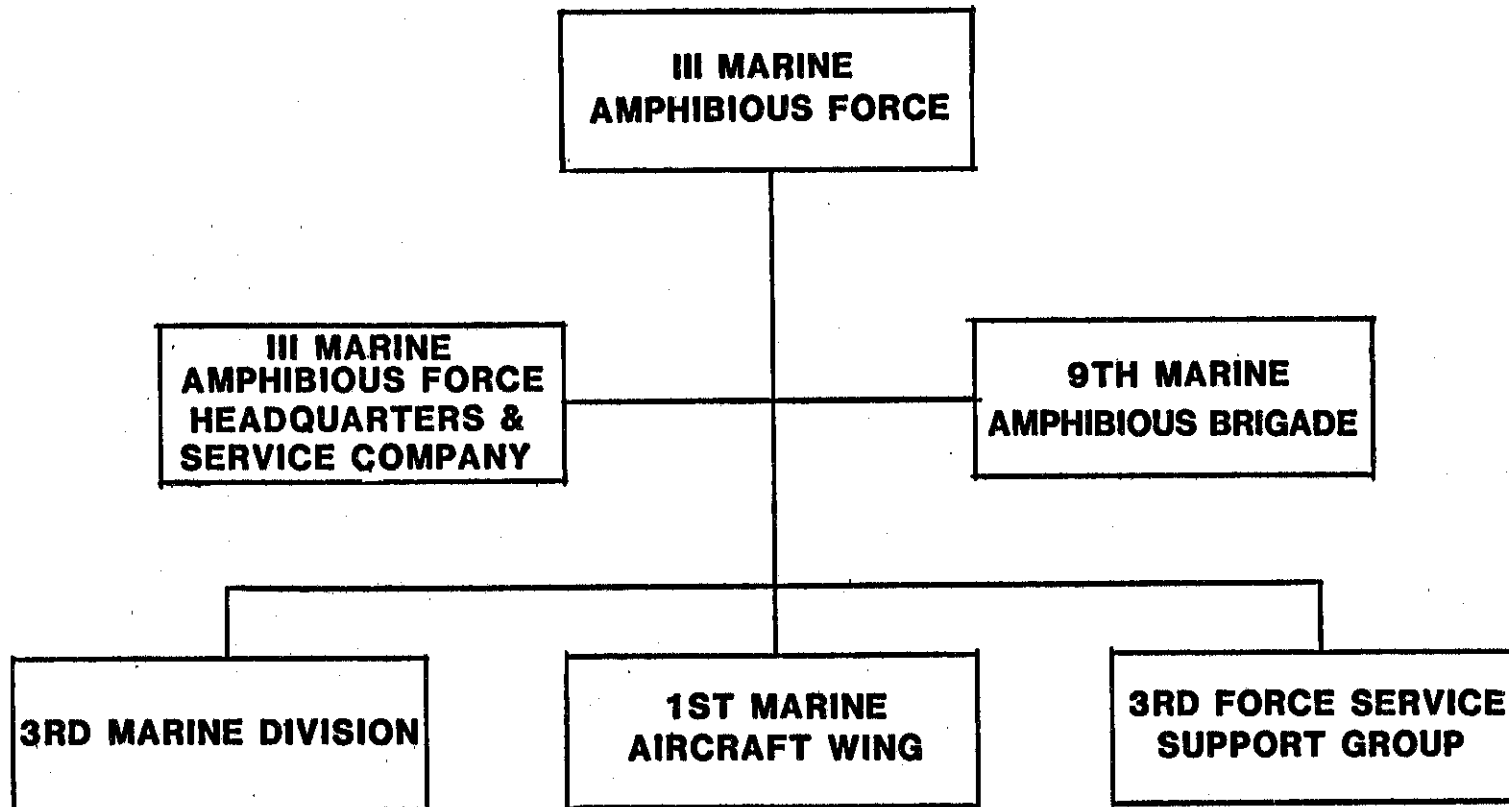
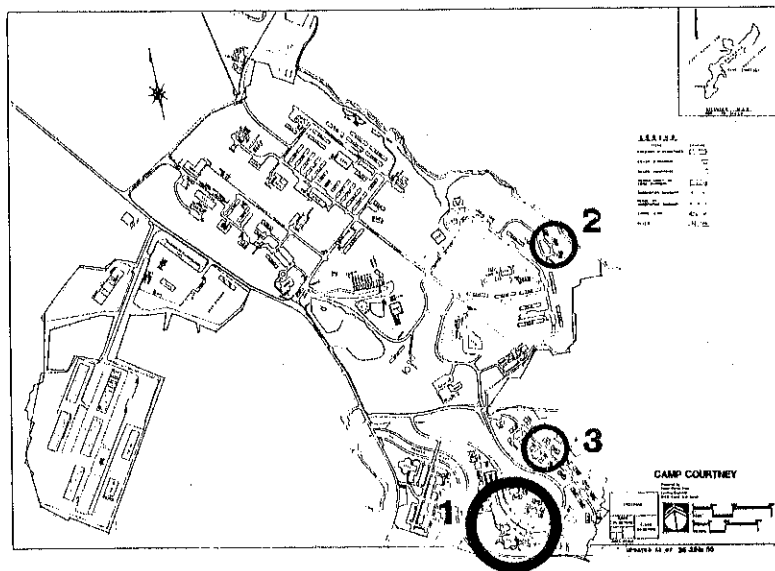


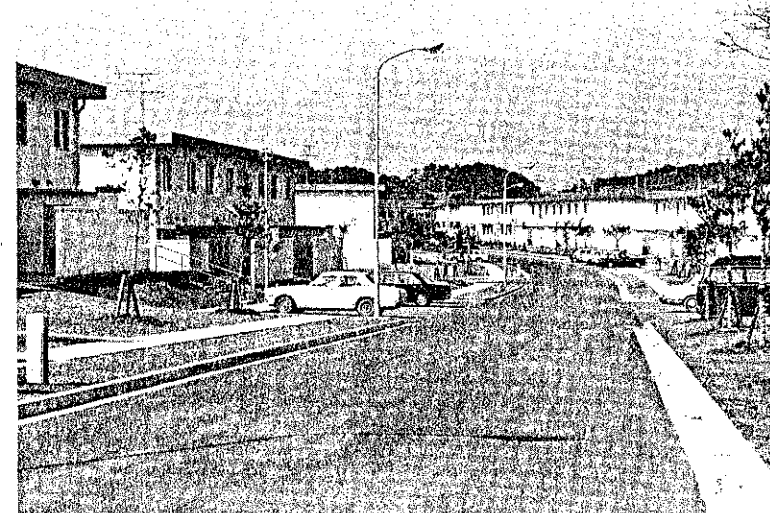
FIGURE E-3



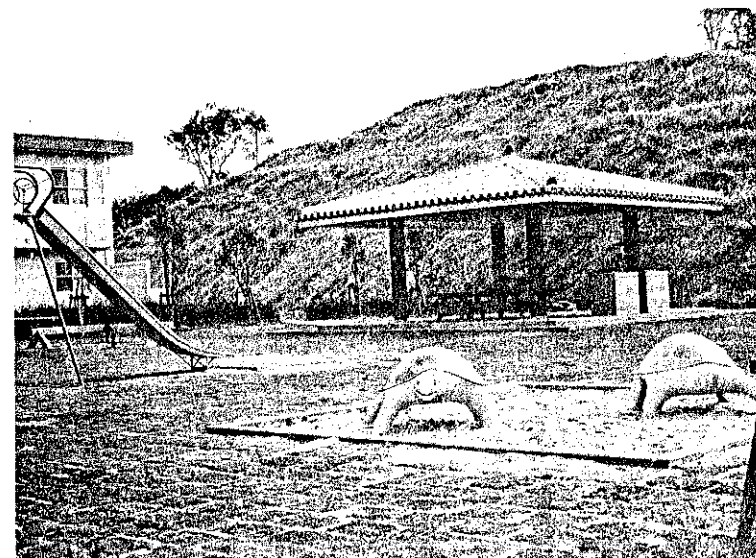
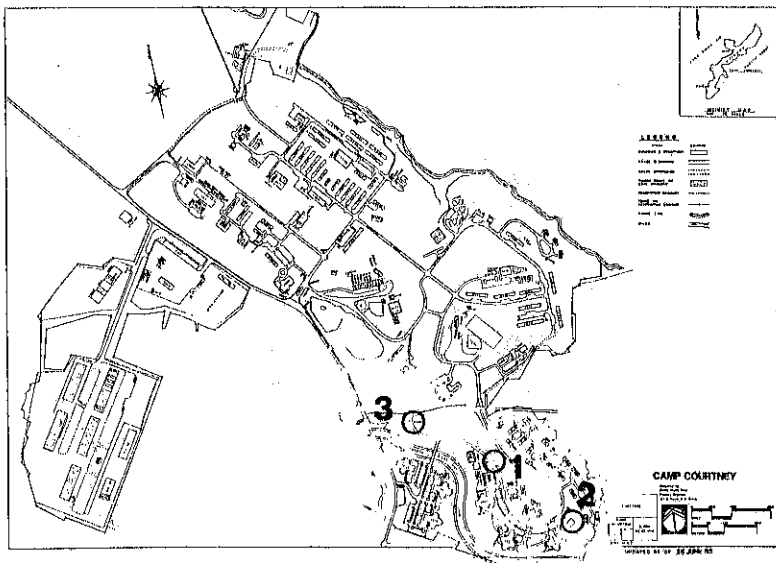
2: SENIOR OFFICER QUARTERS



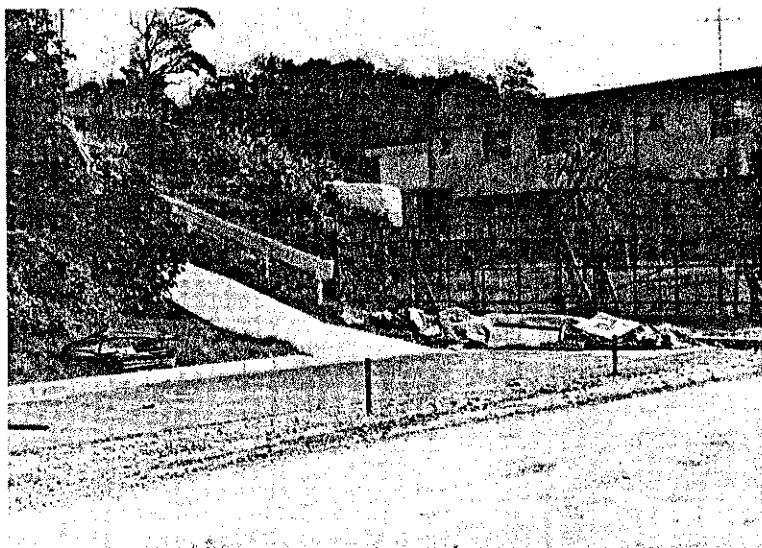
1: HIGH RISE CONSTRUCTION



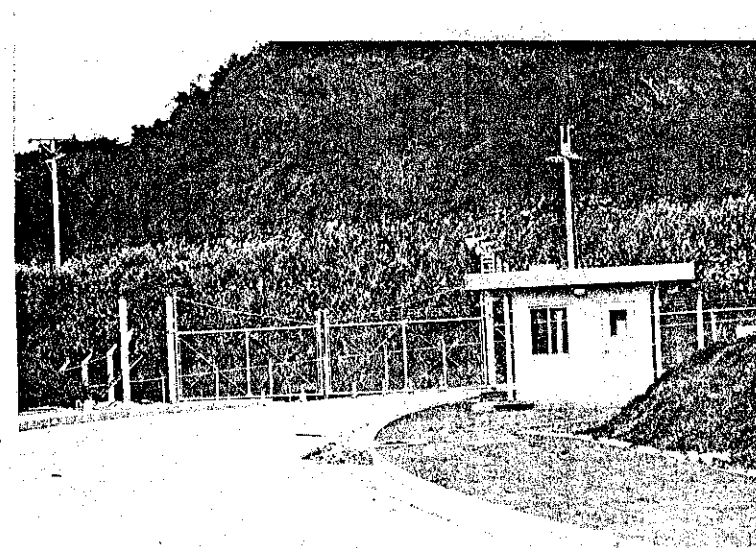
3: QUADRAPLEX UNITS AT SOUTH CAMP COURTNEY



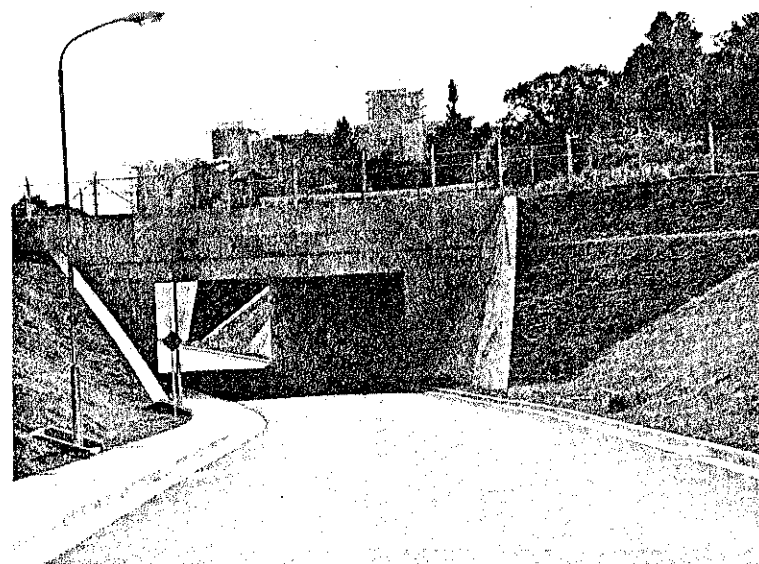
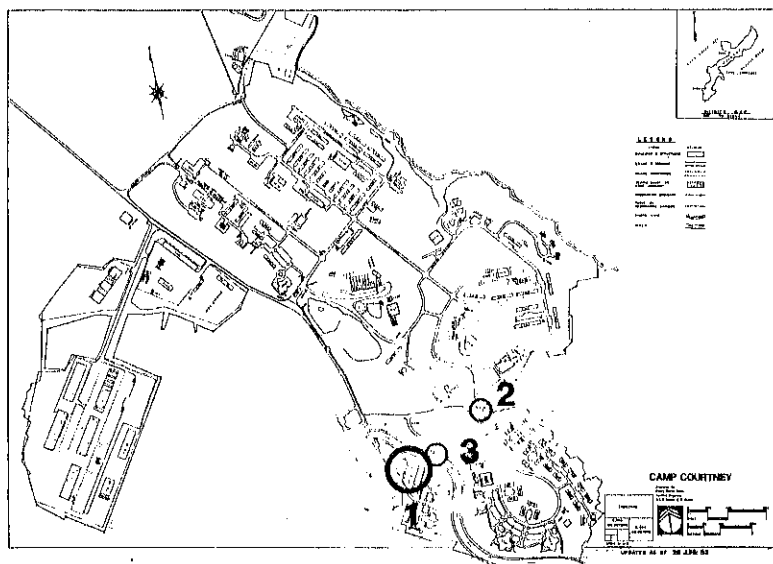
2: PLAYGROUND AREA



1: ACCESS TO TOMB AREAS FOR FOREIGN NATIONALS



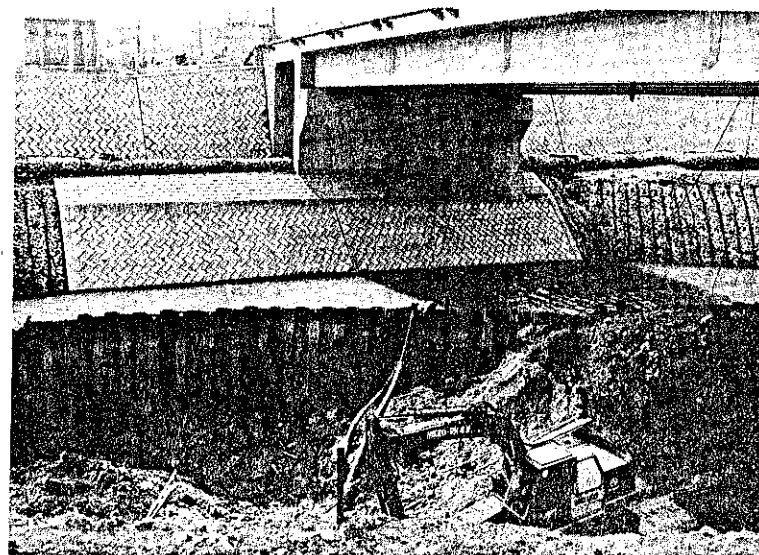
3: ENTRY GATE TO FAMILY HOUSING



2: UNDERPASS TO SOUTH CAMP COURTNEY



1: HIGH RISE HOUSING UNIT



3: TENGAN RIVER CHANNEL CONSTRUCTION

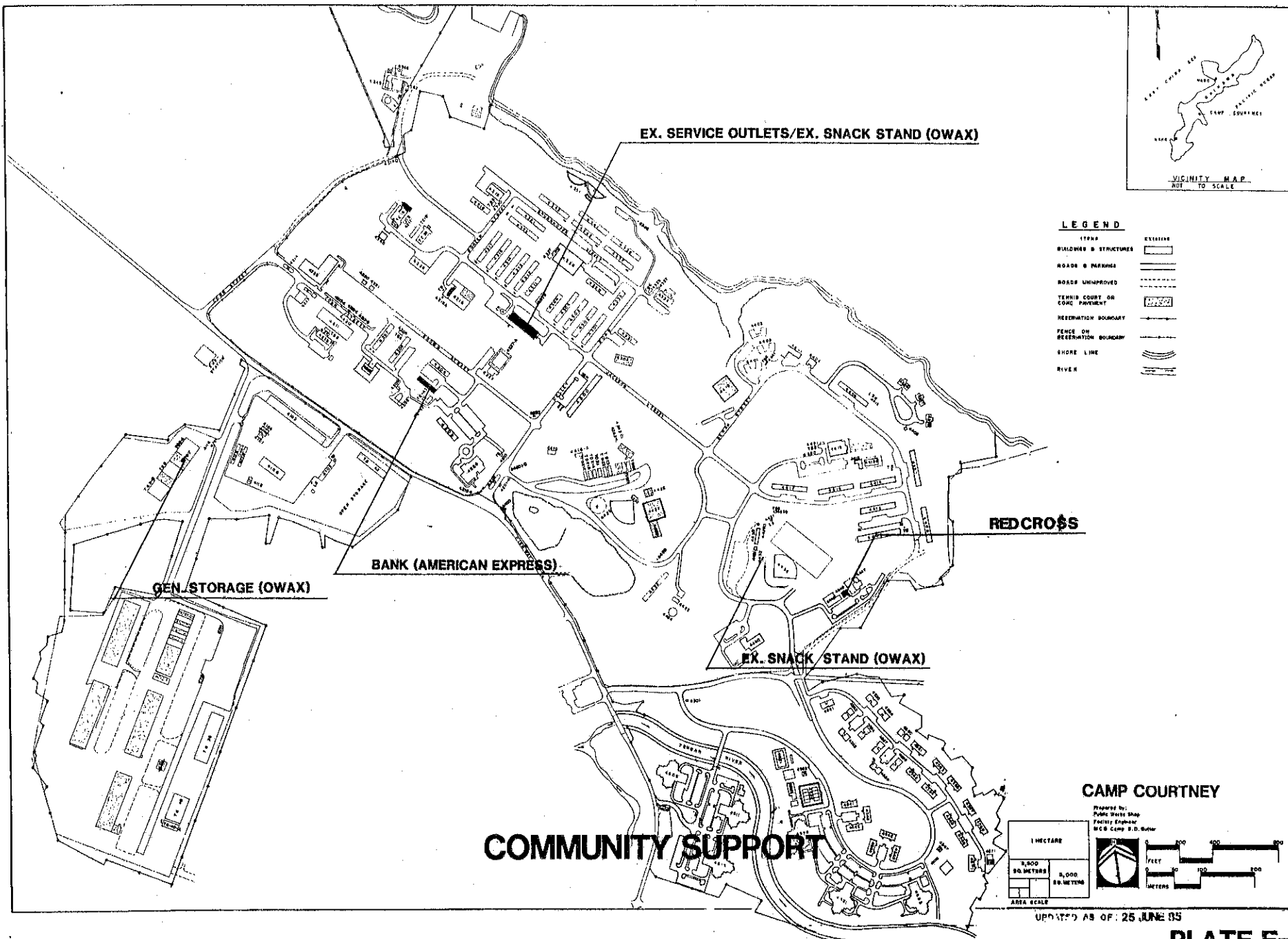


PLATE E-8

E-24

TYPICAL BARRACKS ENVIRONMENTAL CONDITIONS (SUMMERTIME)

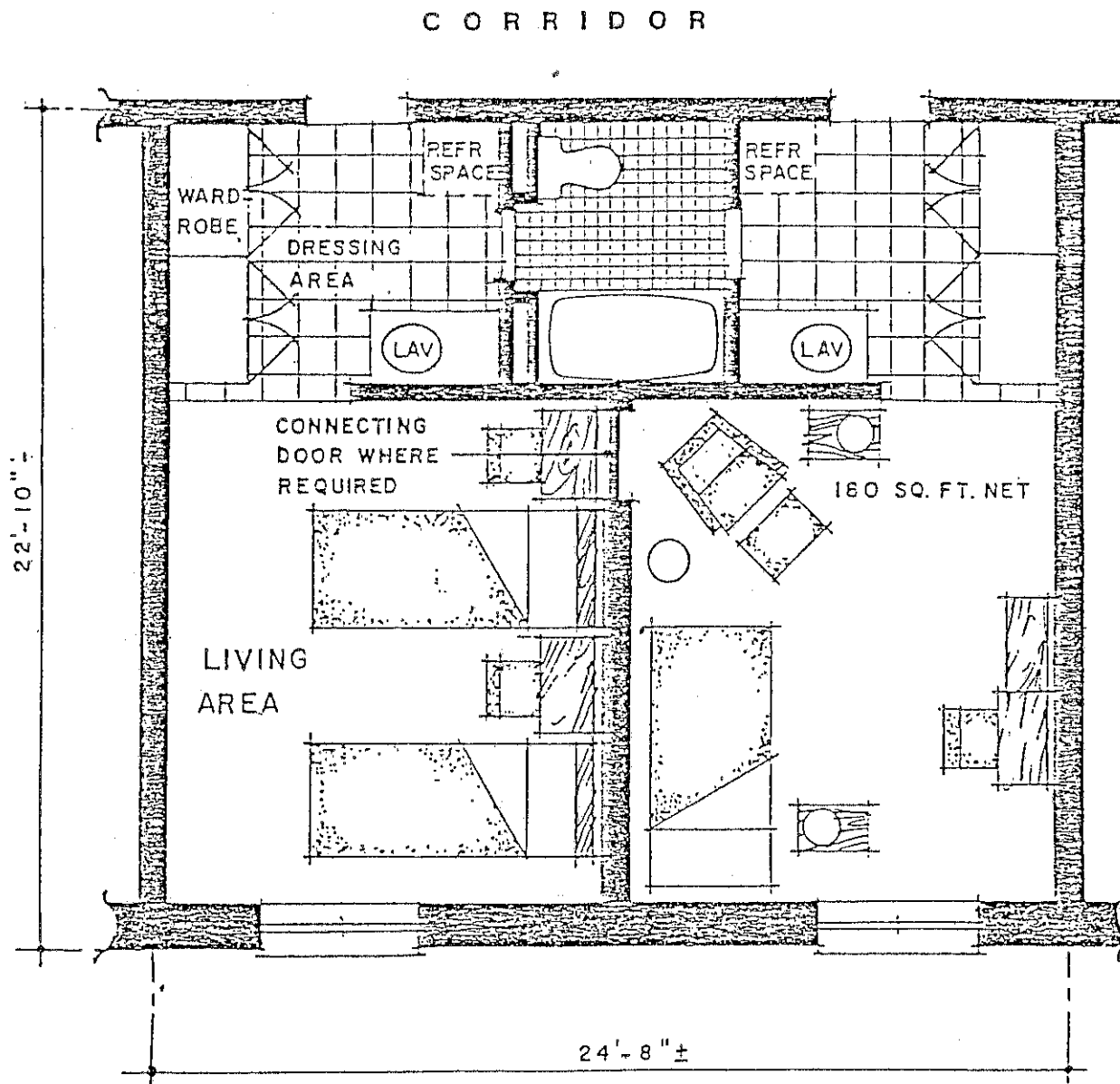
	<u>TIME</u>	<u>TEMPERATURE (°F)</u>	<u>HUMIDITY</u>	<u>WET BULB TEMPERATURE (°F)</u>
18 July 1983	1300	90°	82%	84.4
	1700	94°	75%	80.7
	2100	96°	75%	81.3
19 July 1983	0100	92°	75%	80.1
	0554	79°	70%	72.7
	1000	90°	70%	76.0
	1415	90°	77%	80.9
	1800	93°	88%	89.5
	2200	97°	74%	80.9
	0200	96°	82%	86.6
20 July 1983	0600	88°	80%	82.4
	1000	88°	82%	86.6
	1400	88°	84%	85.2
	1800	92°	84%	86.4
	1800	92°	76%	80.8
	2300	90°	78%	81.6
	0300	92°	78%	82.2
21 July 1983	1000	91°	75%	79.8
	1300	94°	70%	77.2
	1700	94°	70%	77.2
	2100	92°	75%	80.1
	2330	93°	74%	79.7
	0600	92°	77%	81.5
22 July 1983	1100	91°	75%	79.8
	1400	93°	76%	81.1
	1800	94°	76%	81.4
	2200	96°	78%	83.4
	0200	94°	77%	82.1
23 July 1983	0600	90°	74%	78.8
	0900	92°	76%	80.8
	1300	94°	78%	82.8
	1700	95°	78%	83.1
	2100	95°	76%	81.7
	0100	94°	74%	80.0
24 July 1983	0500	90°	74%	79.8
	0700	91°	78%	81.9

Average = 91.6

Average = 80.0

Note: Temperature/Humidity survey taken in Bldg. 5716, Camp Foster.

TABLE E-4



BEQ CONSTRUCTION CRITERIA

TWO-ROOM MODULE SUPPORTS ONE E6-E9,
TWO E5's OR FOUR E1-E4's

564 GROSS SQ. FEET

FIGURE E-6

Family Housing at South Camp Courtney, while other tombs were retained with agreement as to accessibility.

4. MAN-MADE CONSTRAINTS

Man-made constraints at Camp Courtney are

3. CULTURAL CONSTRAINTS

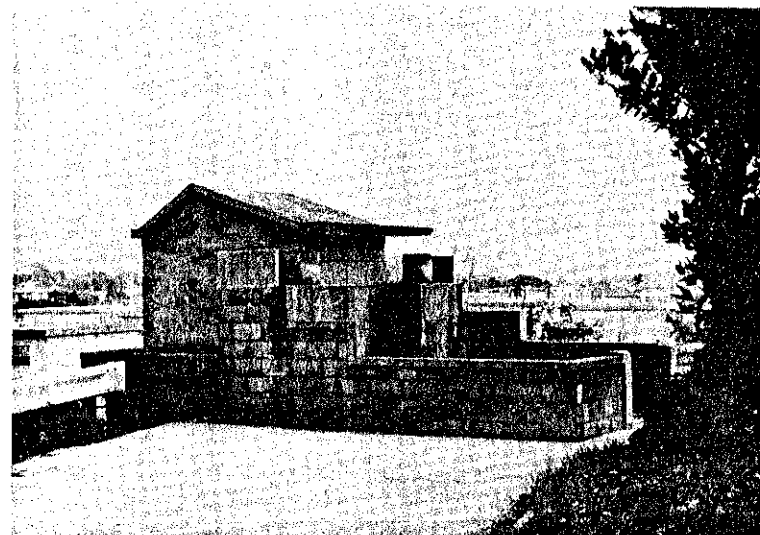
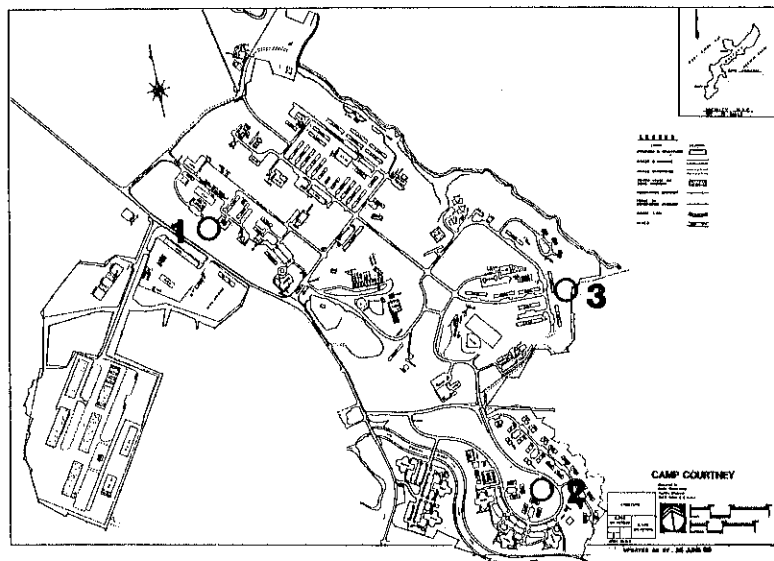
As shown by Plate F-4, several cultural considerations are evident at Camp Courtney. Deika Hill is an historic site, the location of the castle of Lord Tengan Taroti, the second son of Lord Okawa, who reigned in nearby Agena Castle. The Tengan Castle was built in the 15th century. Lord Tengan and many of his followers were killed in a power struggle, and were buried in tombs in the side of the hill. During World War II, the bodies of Japanese soldiers were added to the tombs. Descendants of Lord Tengan and his followers live in the surrounding communities, and the hill is considered hallowed ground. Descendant families formally visit the site in August and April.

A second prayer site is located at a shrine in the low land south of the Main Gate. Additional tombs of little historic value were built along the south-facing slopes of South Camp Courtney. Many of these were removed by agreements with the landowners for construction of Military

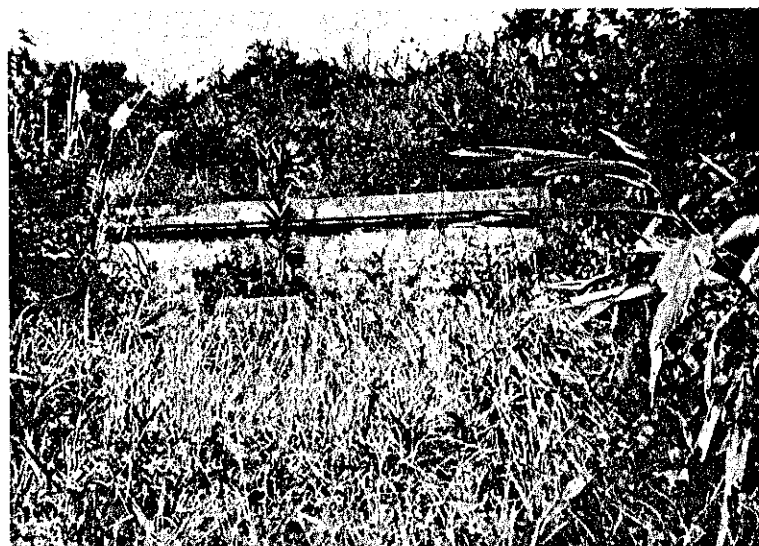
C. NAVIGATIONAL AID

A navigational tower, for use during mooring operations conducted by the Chimu-Wan Base Terminal facility, is located on Camp Courtney property north of the Sewage Treatment Plant, as shown on Plate F-5.

790700Z0000



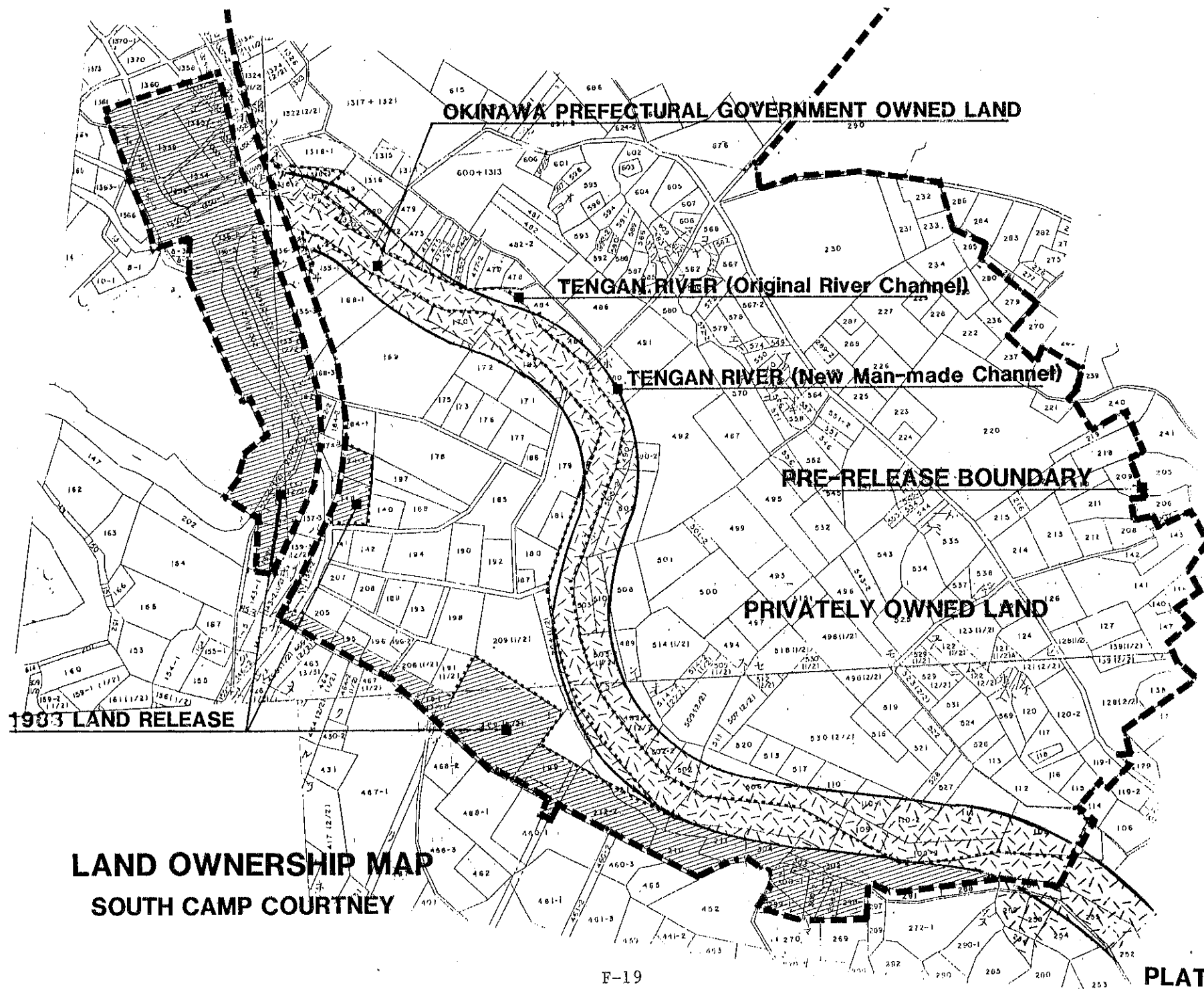
2: TOMB AT SOUTH CAMP COURTNEY



1: TOMB WEST OF BUILDING 4223



3: TOMB EAST OF BUILDING 4407

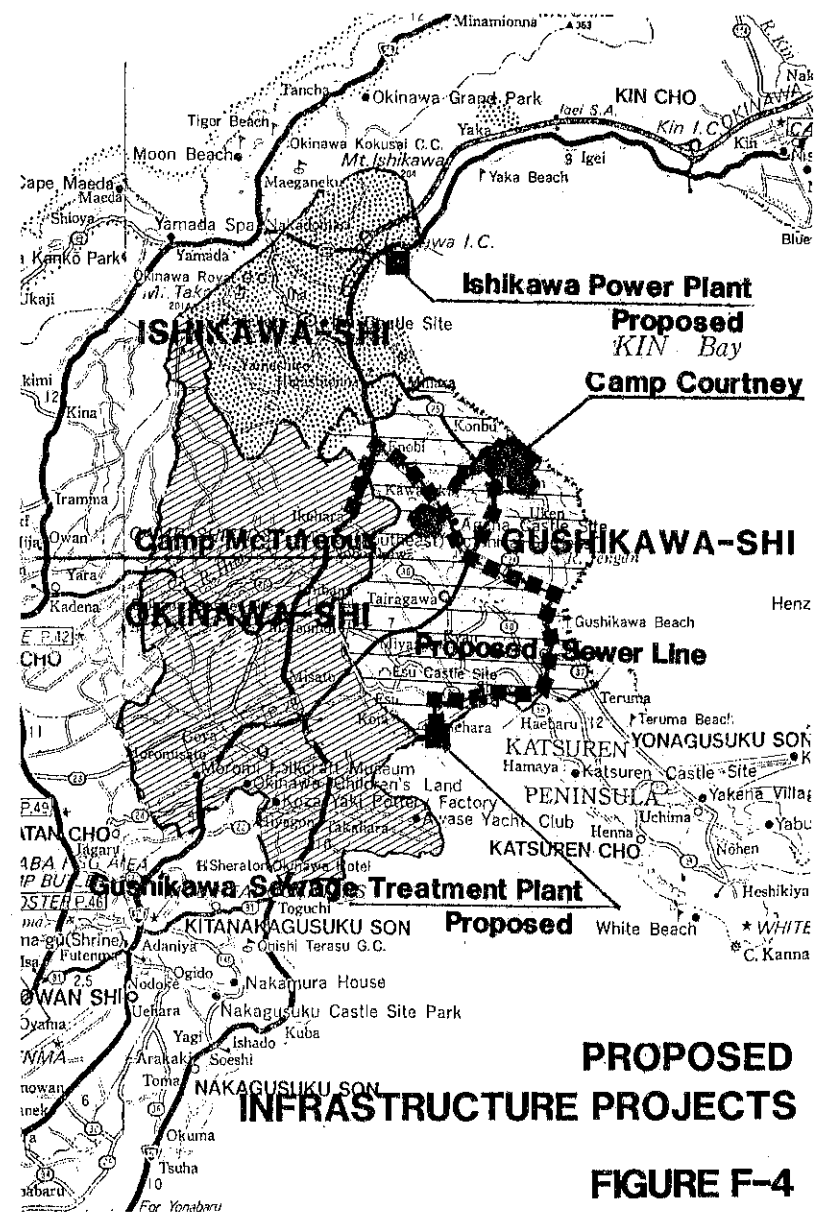


LAND OWNERSHIP MAP
SOUTH CAMP COURTNEY

part of Okinawa-shi (Okinawa City), as well as Gushikawa-shi, making the project a prefectural funding responsibility. The main line corridor is a Camp Courtney sewage treatment plant, or serviced by satellite treatment plants constructed as required. The proposed system is illustrated on Figure F-4.

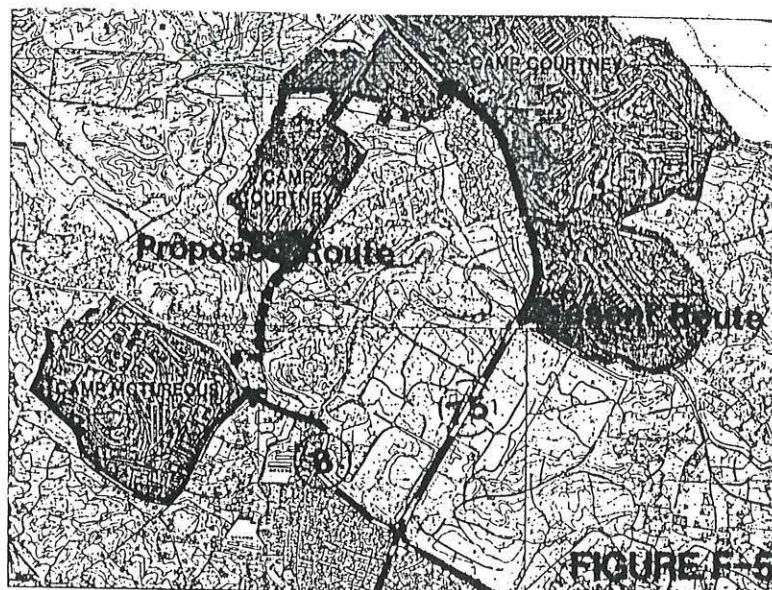
B. TENGAN RIVER REALIGNMENT

The Tengan River is being lined with a concrete sleeve by the Prefectural Government as a flood control measure, as illustrated by Plate F-8. The portion directly bordering the Military Family Housing at South Camp Courtney has been lined concurrent with the construction of the high-rises. The remainder of the Tengan River which crosses through South Camp Courtney will be lined at a future date. The danger of erosion at the cold joint and the impact of renewed construction activity are issues which must be constantly monitored by Marine Corps Base facilities planners until the completion of the Tengan River project.



C. COURTNEY-McTUREOUS ROAD

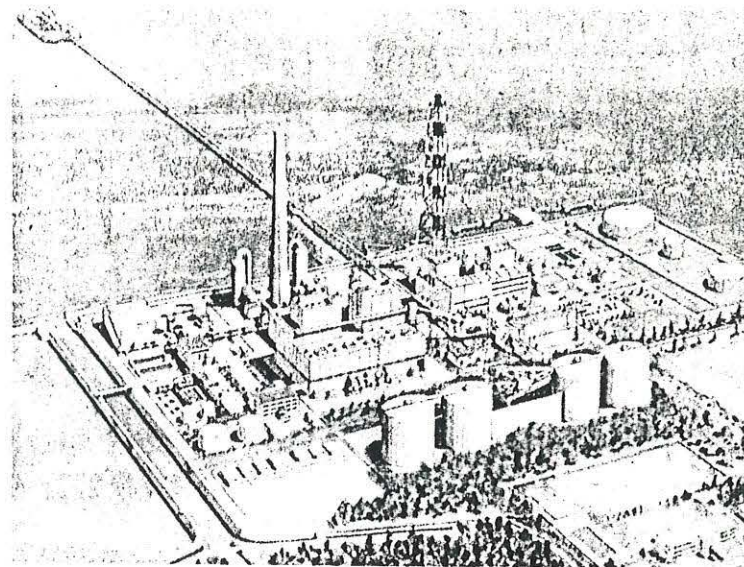
For several reasons, a by-pass road from Camp McTureous to the Camp Courtney REX Area is advantageous. It would provide convenient travel for Camp McTureous MFH occupants to reach the commissary and exchange facilities in the REX Area, as well as an expeditious route for School Buses delivering dependent students from Camp Courtney military family housing areas to the proposed Camp McTureous Elementary School. Most importantly, it would re-route tactical military vehicles between Camp Courtney and Camp McTureous away from the heavily-used intersection in Gushikawa City. A proposed route, shown in Figure F-5, is under study by the Facilities Engineer Division, MCB Camp Butler.



COURTNEY-McTUREOUS BY-PASS ROAD

D. ISHIKAWA STEAM POWER PLANT

The proposed coal-fired Ishikawa Steam Power Plant, owned by the Okinawa Electric Power Company, is currently under construction in Ishikawa City. Two 156,000 kilowatt generators will be constructed: the first by November 1986 and the second by March 1987. While the Power Plant does not presently pose as a planning issue, it is mentioned as a potential issue because of the widening and deepening of the shipping channel to Ishikawa Port to accommodate the off-loading of coal. The 1,000 meter off-loading pier will jut within the Tengan Pier ESQD Arc as shown by Figure F-6, and the increased availability of power will accelerate the urbanization of the region, with considerable long-range impact on Camp Courtney as well.



ISHIKAWA STEAM POWER PLANT

7. ENVIRONMENTAL ISSUES

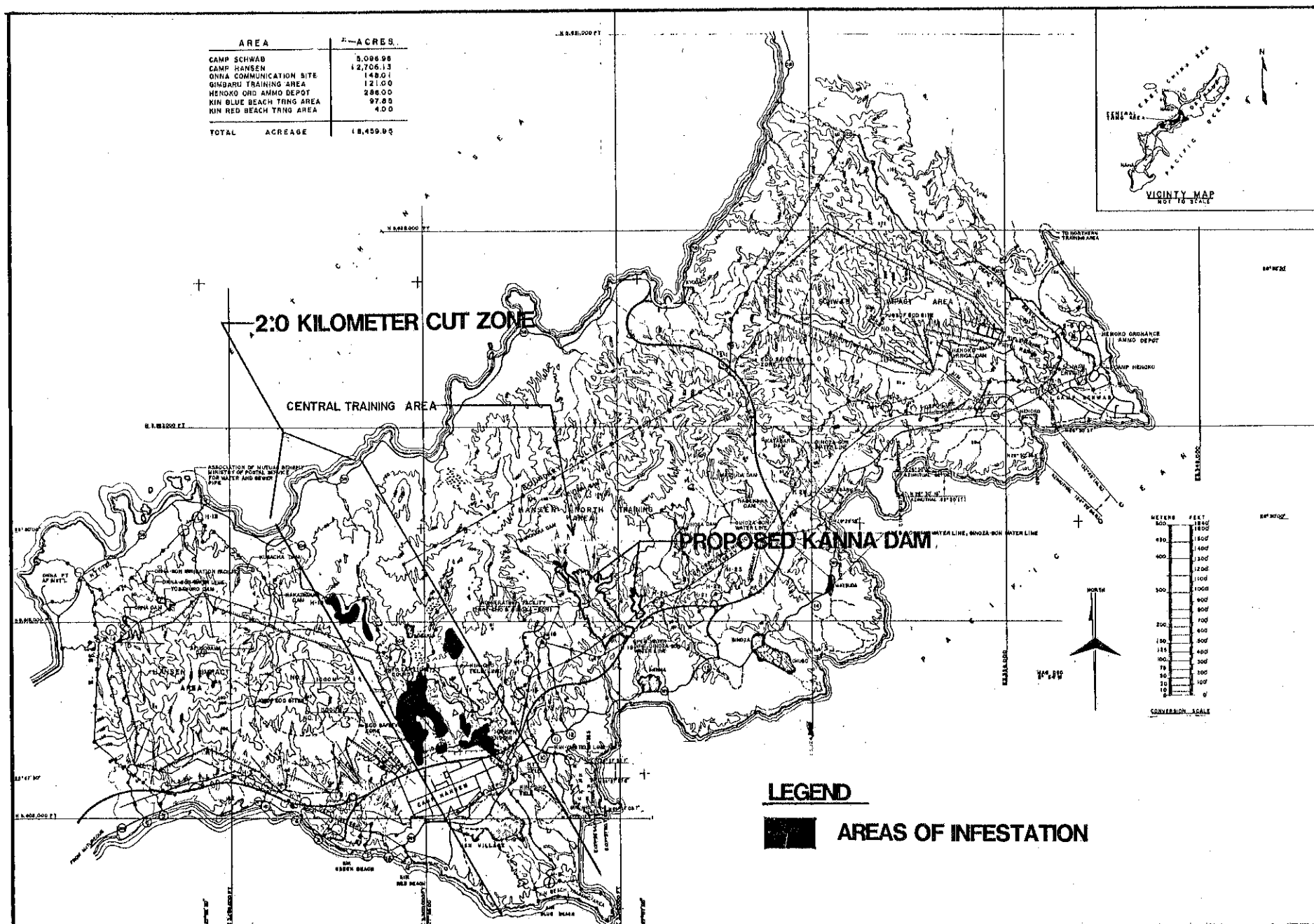
Several issues concerning the environment and environmental health have possible effects on the Master Plan:

A. BEETLE ERADICATION PROGRAM

The pine bark beetle (Monochamus alternatus Hope), carrier of the pine bark nematode (bursaphelenchus lignicolus) was accidentally introduced to Okinawa in a shipment of pine lumber from mainland Japan in 1972. The adult beetle emerges April-May and deposits the nematode upon contact with the pine tree. The nematode then feeds on the tree's tissue, and during the process of reproduction kills the Ryukyu Pine (Pinus luchensis Majr), turning the evergreen needles a rust color.

The Okinawa Prefectural Government (OPG) in 1975 developed a program for cutting and burning infested pine trees and for aerial spraying. At the same time, MCB Camp Butler initiated cutting and burning of 31 trees at Camp Hansen and 30 trees at ASP#2 during the summer of 1980. An OPG survey in October 1980 still listed 518 trees at Camp Hansen, 95 trees at Camp Schwab, and 73 trees at ASP#2 as infected. By 1981, 35 trees at Camp Courtney were found to be infected, at the same time that the number at Camp Hansen was elevated to 2,500.

A 1982 survey identified further infestation and the OPG initiated a plan to create a barrier two kilometers wide across the island to prevent the

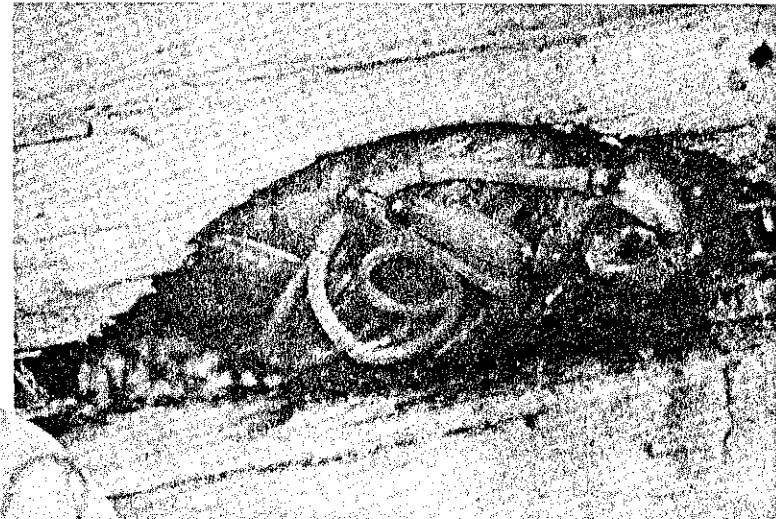


PINE BARK BEETLE INFESTATION

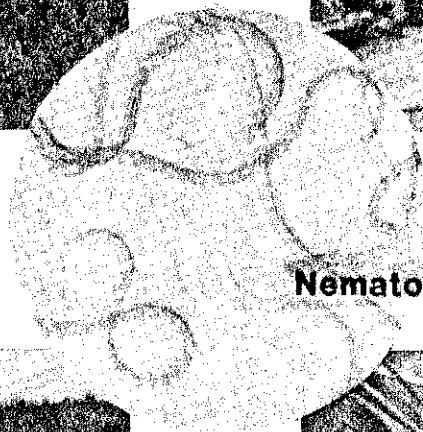
PLATE F-8



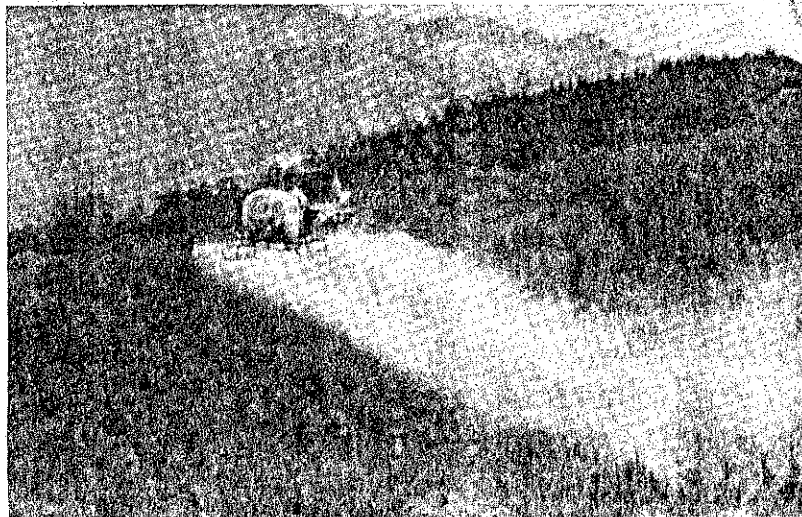
INFESTED PINE TREES



INFESTED PUPAE



Nematoda



AERIAL SPRAY OPERATIONS



ADULT PINE BARK BEETLE

northward migration of the beetle, as shown on Plate F-8. All infested trees are to be cut and burned, and aerial spray applied to all standing trees. As the Ryukyu Pine is the prefectural tree, it is culturally as well as ecologically important to Okinawa. The cost of the program to MCB Camp Butler is illustrated by Table F-1. The eventual impact on Camp Courtney would result in the destruction of areas of natural vegetation, which play an important part in the Base Beautification Plan, discussed in paragraph 8. Damages resulting from the infestation have been reduced in the civilian areas of Okinawa from a peak of 16,891 cubic meters in 1982 to only 8,854 cubic meters in 1984. The Prefectural goal is to reduce the damage to 3,000-4,000 cubic meters by the end of JFY 1986.

PINE BARK BEETLE ERADICATION PROGRAM

TABLE F-1

<u>YEAR</u>	<u>CUT</u>	<u>SPRAY</u>		<u>TOTAL (\$000)</u>
1980	0	0	(USMC)	0
1981	0	0	(USMC)	0
1982	\$93,000	\$1,12 MIL	ESTIMATED COST	\$1,213
1983	\$70,100	\$1,12 MIL	ESTIMATED COST	\$1,190
1984	\$55,970	\$1,12 MIL	ESTIMATED COST	\$1,176
1985	\$70,976	\$0,194 MIL	ESTIMATED COST	\$0,265
1986	(APPROVED BUDGET) _____			\$0,250
1987	(APPROVED BUDGET) _____			\$0,250

B. RECREATIONAL BEACH SUITABILITY

The draft Camp Courtney Master Plan proposed a Recreational Beach Facility consisting of a Boating Facility (N-316) and a Boathouse (P-301). However, the beachfront in the proposed area is not suitable for recreational use without extensive reshaping of the coral floor. The water depth is less than five feet for up to 100 feet distance from the shoreline, and then drops off rapidly during the next 200 feet from the shoreline. Currents are moderately strong. The beach bottom is sandy with areas of living and dead coral, submerged rocks, debris, and cuts and rifts in the coral floor. Low numbers of coliform organisms were found during a 1984 Environmental Health



NORTHERN CAMP COURTNEY BEACHFRONT

inspection of the proposed site, and short spined sea urchins and poisonous cone shells were observed in the area.

C. ASBESTOS SURVEY

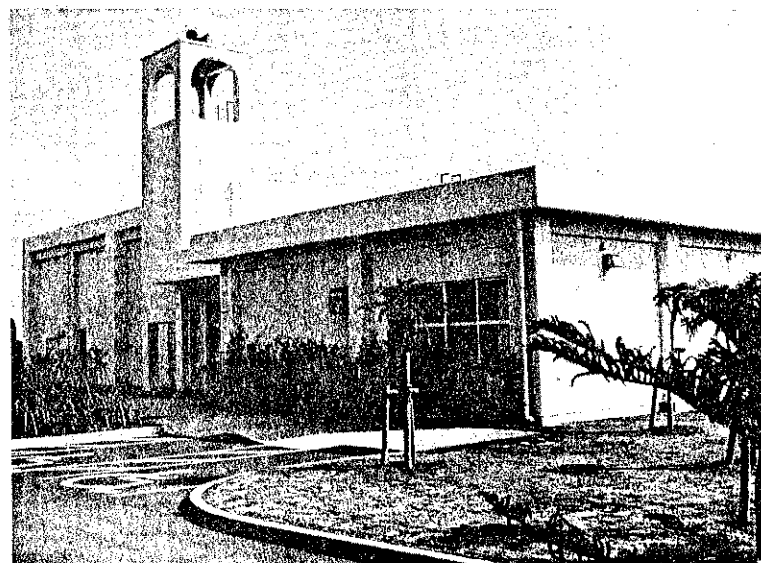
Sampling and analysis efforts at Camp Courtney have found positive asbestos (both friable and non-friable) at several facilities, indicated by Plate F-9. A more detailed study is currently underway to determine the Hazard Index of the Asbestos Material, as developed by the Navy Civil Engineer Laboratory Technical Report R-883. Based on the results of this study, cost estimates will be developed to remove, replace and dispose of asbestos materials in accordance with current OSHA and EPA criteria.

8. DEMOLITION PROGRAM

Overlapping requirements for demolition precipitated by new construction, MCB Camp Butler has a dedicated Demolition Program designed to insure that unneeded, unsafe, and unsightly buildings and structures are demolished in accordance with a managed facilities life-cycle program. Table F-2 represents a summary of all proposed demolitions, which is discussed in full in Section I and further delineated by Plates I-1 and I-2.



BUILDING TE-5: CAMP CHAPEL, 1984



BUILDING 4224: CAMP CHAPEL, 1986

9 BASE EXTERIOR ARCHITECTURE PLAN

A. INTRODUCTION

The visual resources of Marine Corps Base Camp Butler present an uncontrolled landscape incongruous with traditional Marine Corps values of pride and professionalism. To correct that image, a Camp Beautification Plan was developed with a design consultant, to provide guidelines which would enhance the exterior architecture of the various camps on Okinawa. Following a site inventory and analysis (see plate F-10), the following was recommended:

The visual resources of Marine Corps Base Camp Butler formerly presented an uncontrolled landscape incongruous with traditional Marine Corps values of pride and professionalism. To correct that image, a Camp Beautification Plan was developed with a design consultant, to provide guidelines which would enhance the exterior architecture of the various camps on Okinawa. Following a site inventory and analysis (see plate F-10), the following was recommended:

1. PLANT MATERIALS should be used as common, unifying elements to improve both the aesthetic and ecologic landscape.

2. BUILDING COLOR should be used to present a neat and pleasing edifice, and to assist in the identification of building type.

3. STANDARD SIGNS should be employed, using standard lettering, to encourage a crisp and orderly military appearance at Camp Butler.

The benefits of the Camp Beautification Plan are seen as a reinforcement of the Marine Corps' pride and professionalism, which will increase morale among service personnel and their families, and improve the Marine Corps image in the eyes of the local community.

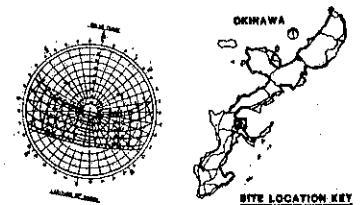
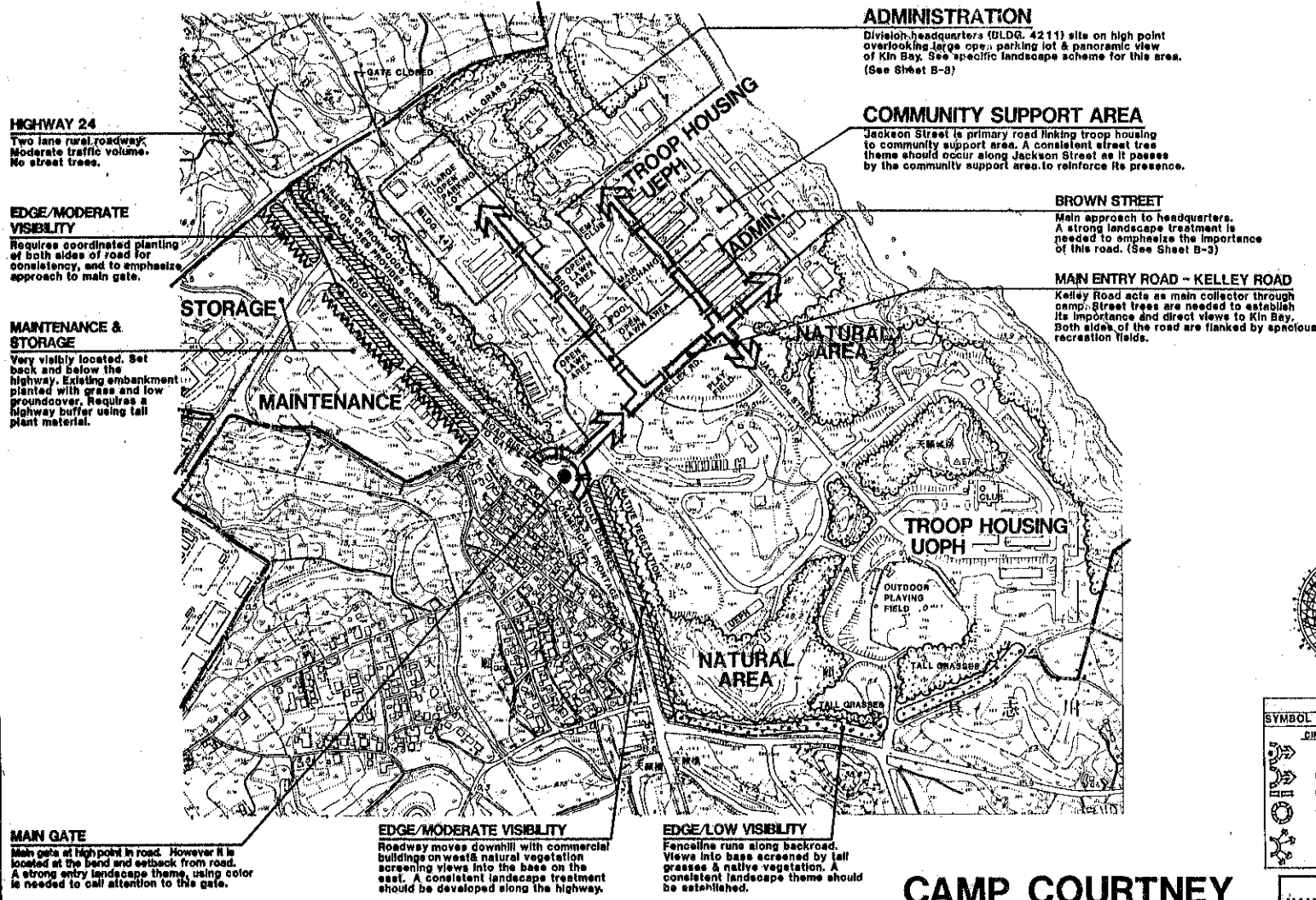
General landscape "treatments" were proposed. Some of which are illustrated by Figures F-7 and F-8.

Building colors have been chosen which and in the identification of building function. The predominant color will be beige, with dark blue trim for administrative use, yellow trim for headquarters, dark brown trim for troop housing, and brown trim for warehouses.

B. SITE ANALYSIS

The areas of the camp identified for landscape investigation at Camp Courtney were the fenceline along Highway 75, the fenceline along the south and east border of the camp, a maintenance area on the west side of Highway 75, the main entry gate, and the interior camp roads: Kelley Road, Brown Road, and Jackson Street. In addition, special attention was given to the Headquarters Buildings 4211 and 4225.

The Highway 75 fenceline was identified as a moderate visibility edge. The Highway is a two-lane moderate volume roadway. On the north side of the road the base is buffered from view by natural vegetation. The fence itself is the only identification that this edge of the camp

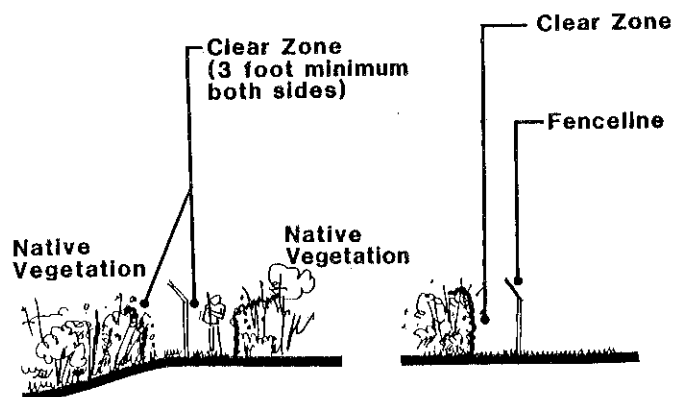


LEGEND	
SYMBOL	DESCRIPTION
CIRCULATION	
	MAIN ENTRY POINT
	ENTRY POINT
	PRIMARY ACCESS ROAD
	PROMINENT CORNER
	PEDESTRIAN OVERPASS & VIEWS
VEGETATION	
	ORNAMENTAL (PLANTED)
	NATURAL AREA (NATIVE)
EDGE CHARACTERISTICS	
	HIGH VISIBILITY
	MODERATE VISIBILITY
	LOW VISIBILITY
	SCREEN (RESIDENTIAL)
	BUFFER (NON-RES.)
	PROPERTY LINE
	LAND USE BOUNDARY

CAMP COURTNEY



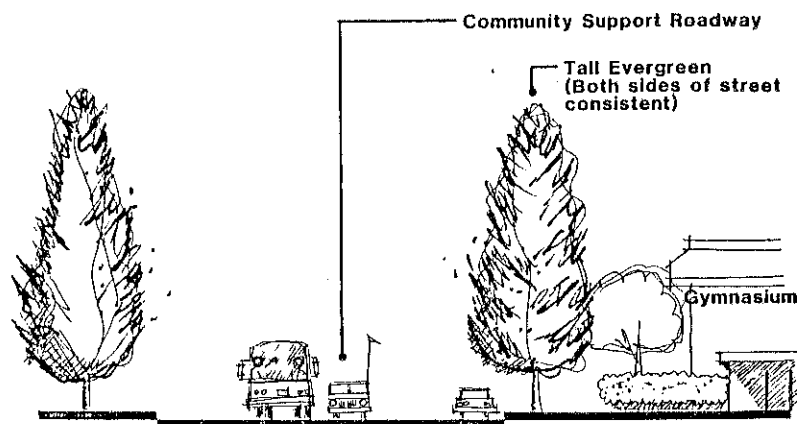
NAVAL FACILITIES ENGINEERING COMMAND
SITE ANALYSIS
CAMP BEAUTIFICATION PLAN
U.S. MARINE CORPS CAMP BUTLER
OKINAWA, JAPAN



A-1: HIGH VEGETATION ON ONE OR BOTH SIDES OF FENCE

When a fenceline is located with no facilities nearby & is not clearly visible, no additional planting is required. However, a 3 foot (minimum) clearing should be maintained on both sides of the fence for security purposes.

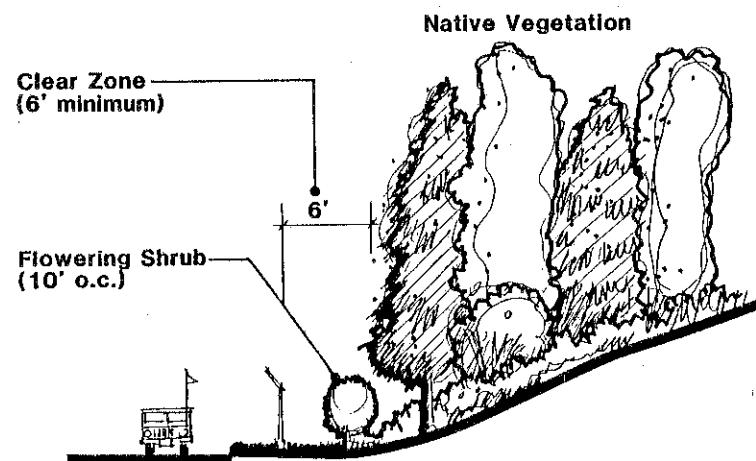
LOW VISIBILITY



E-1: COMMUNITY SUPPORT AREA

The major recommendation is to emphasize the community support area through its street trees. Street trees should be large and different from other interior camp plantings. Within the community support area street trees should be consistent. Use either tall Evergreens (40' o.c.) or large canopy trees (40' o.c.)

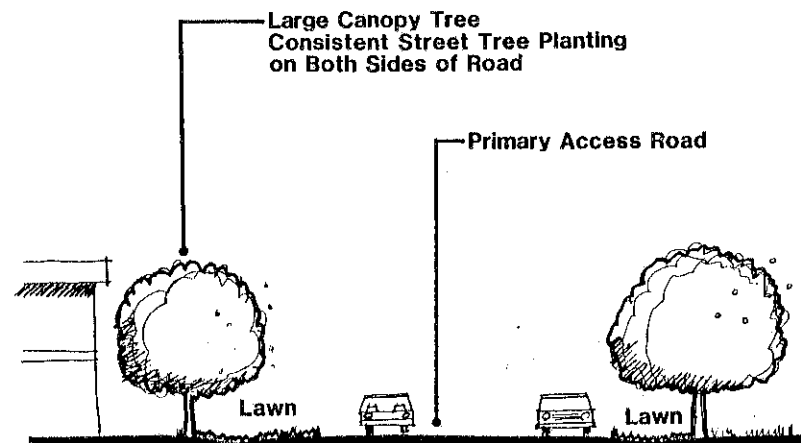
GENERAL LANDSCAPE TREATMENT



B-1: NATIVE VEGETATION WITHIN CAMP FRONTING HIGHWAY

Remove or prune existing vegetation to create a 6 foot deep (min.) clear zone. This will create a solid defined edge and provide room for a colorful shrub to informally line roadway for camp identity.

MODERATE VISIBILITY



E-2: PRIMARY ACCESS ROAD TREATMENT

On all camps the main circulation route is identified and called Primary Access Road. It acts as the spine from which minor side roads originate. It is important to develop a consistent street tree plan for this road to visually identify it. Use large canopy trees (50' o.c.) which should change as the road passes through the Community Support Area.

GENERAL LANDSCAPE TREATMENT

is given. On a portion of the south side of the road a maintenance and storage area are clearly visible and below the grade of the road. In these situations, the north fenceline requires a moderate landscape treatment for camp identification and beautification, and the maintenance area requires tall plantings to screen this area from Highway view.

The main entry gate to Camp Courtney is located at a high point on Highway 75. It is setback from the highway, and is guarded by a sentry station. This entry requires a strong entry treatment to call attention to the main gate. Large trees or palms and colorful shrubs are suggested.

The main entry road is Kelley Road. It is the main collector road for the camp and has a direct view to scenic Kin Bay.

Due to its importance, major street tree emphasis is suggested to establish a hierarchy of camp roads.

Brown Street is off to the left of Kelley Street and is the approach road to the camp's headquarters. Jackson Street is the next road to the community support facilities of the camp. Both these roads are major camp roads, neither have any street trees. Brown Street is considered more important because of its relationship to the headquarters building. Thus Brown Street should be given a more formal emphasis (more upright, well-shaped stately trees) compared to the more informal treatment recommended for Jackson Street.

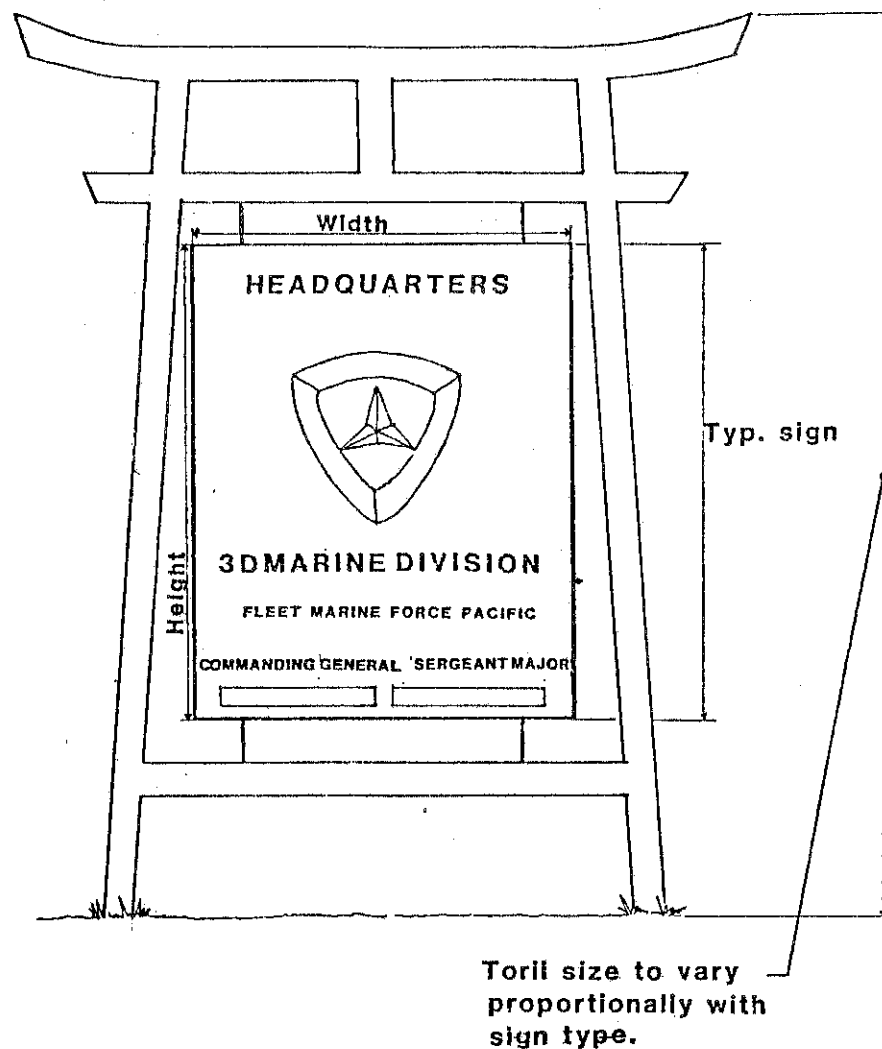
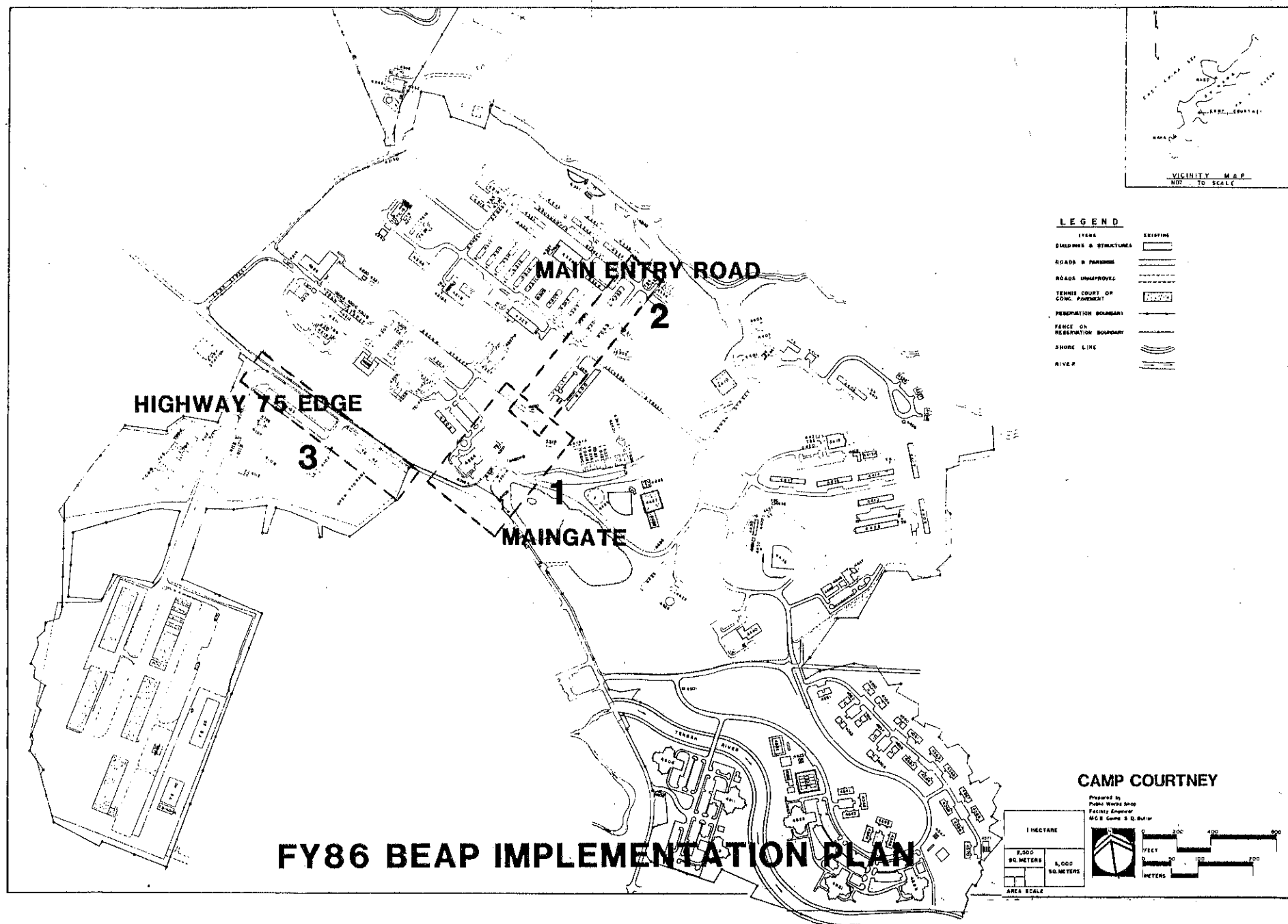
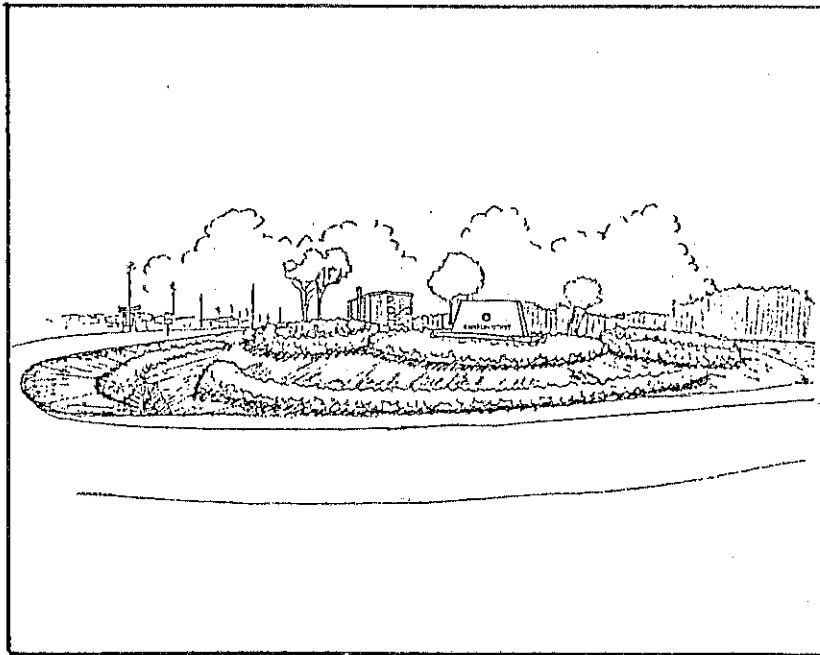
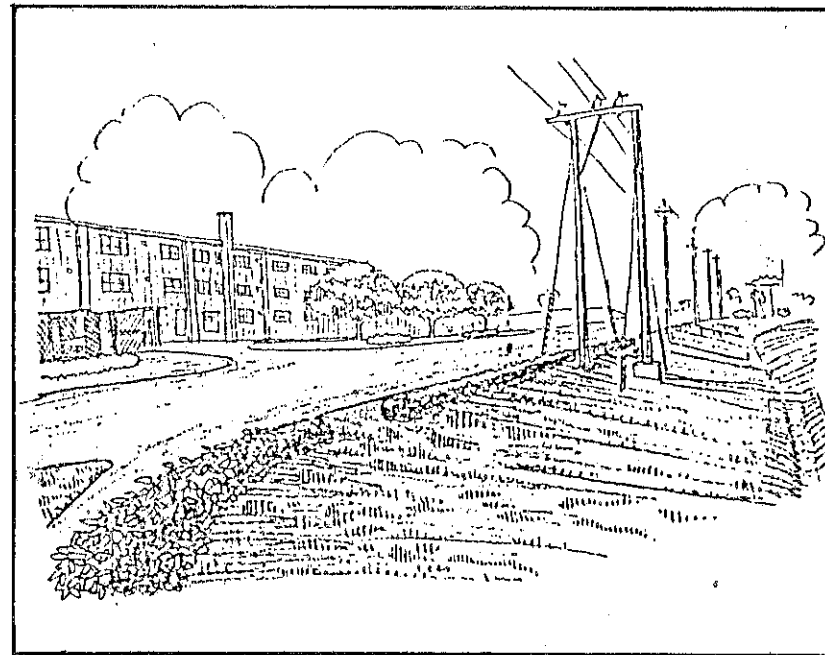


FIGURE F-8



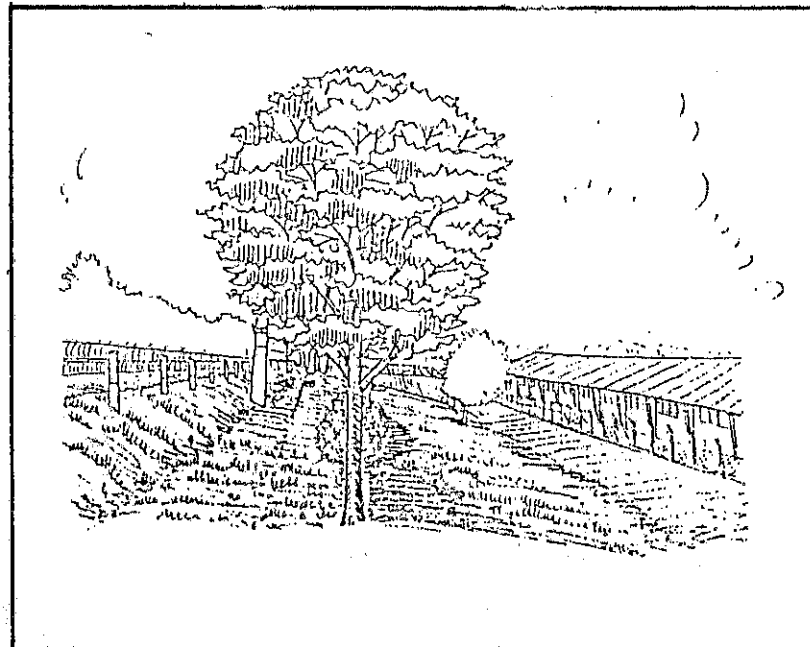


1 - MAINGATE



2 - MAIN ENTRY ROAD

3 - HIGHWAY 75 EDGE



FY86 BEAP IMPLEMENTATION PLAN

FIGURE F-9

Headquarters Buildings 4211 and 4225 are located at the top of Brown Street. They are relatively new two-story office buildings with a large open parking lot that Commands a magnificent unobstructed view of Kin Bay. It is important that improvements accent the dynamics of this setting. In this regard, low foundation plantings were recommended to add color and texture to the building and monument without obstructing the view to the bay. The building and parking lot can be flanked by large evergreen trees to frame and highlight this view.

The last area of concern at the camp is the south fenceline. This fence borders undeveloped areas of the camp and small, little traveled roads. Therefore, it is identified as a low visibility edge and is of low priority for future improvements.

C. IMPLEMENTATION OF THE PLAN

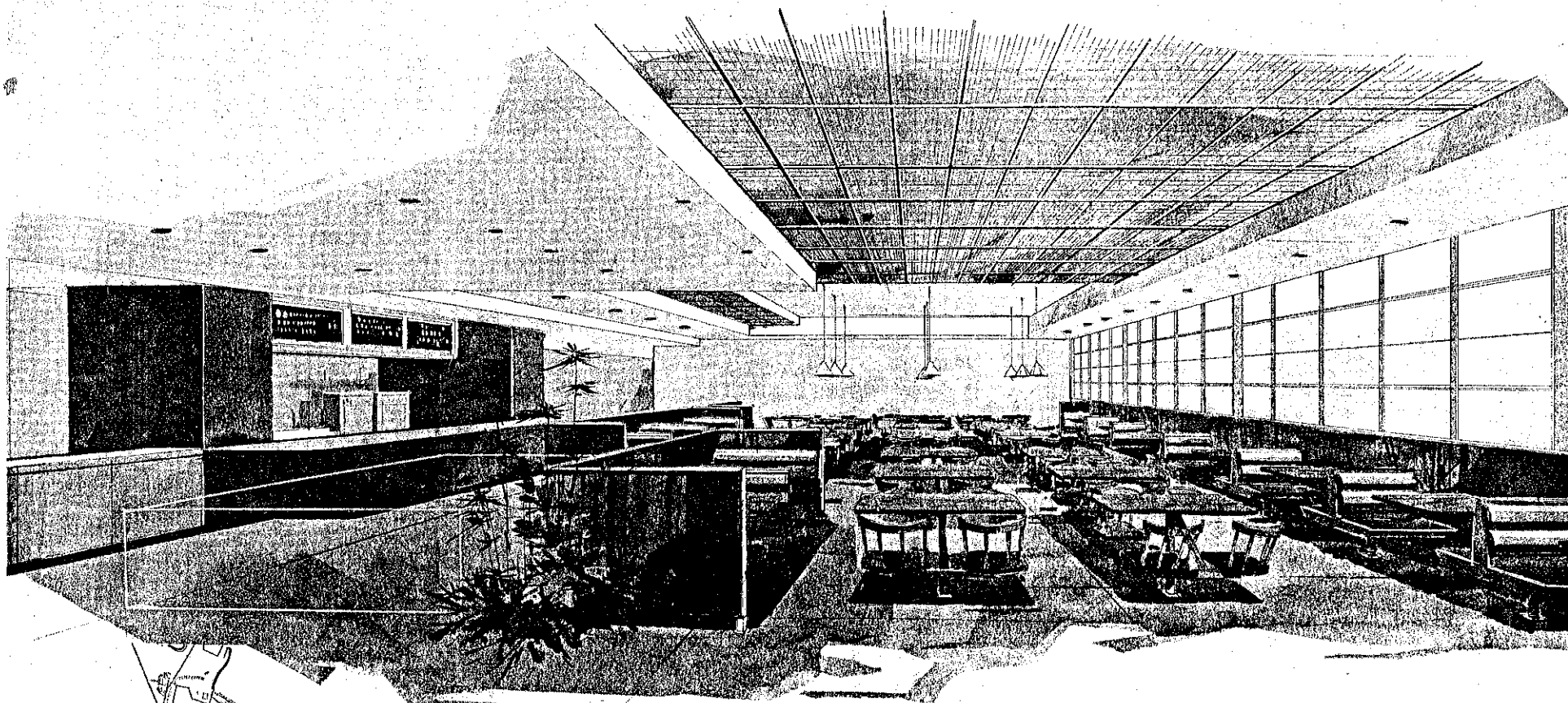
All building signs have been replaced and virtually all of the buildings at Camp Courtney have been painted in accordance with the Base Exterior Architecture Plan. The landscaping of the III MAF Headquarters Building has been completed, and the landscaping of all high visibility areas, as shown by Figure F-9 and Plate F-11, will be completed by contract during FY1986.

10. BORROW AND FILL SITES

In response to a request by the Government of Japan for borrow and fill at all Marine Corps installations on Okinawa, the Public Works Branch of MCB Camp Butler has initiated a study to determine optimal site locations for such construction activity. This study uses an ecological approach to determine site suitability, and a cost-benefit decision matrix for site selection. Information from this study will be used to update the cost estimates for all construction projects and will be used to review the availability of unencumbered sites for unprogrammed construction.

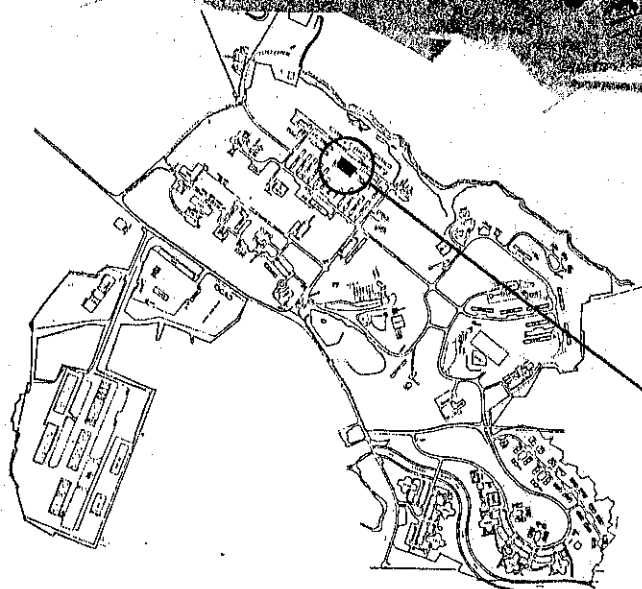


Fill Site for DFAB Construction near Main Gate



CONCEPTUAL DRAWING FOR MESSHALL IMPROVEMENT PROGRAM

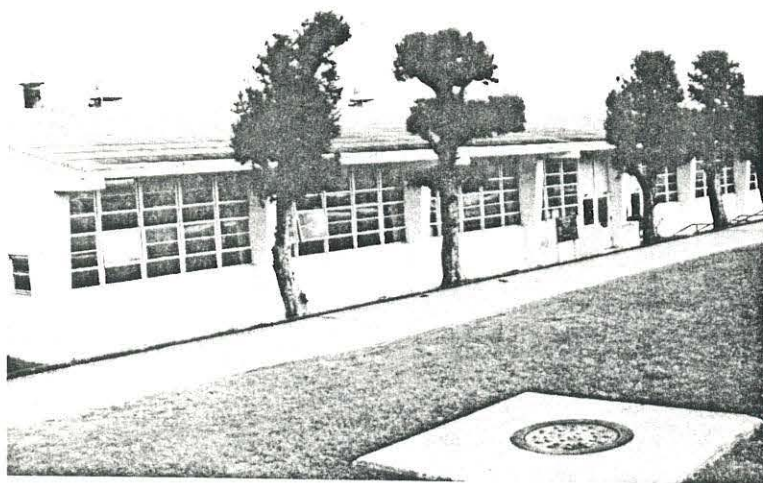
BLDG 4328



11. MESSHALL IMPROVEMENT PROGRAM

The Enlisted Messhall Improvement Program is a Headquarters Marine Corps directed program to upgrade all Marine Corps galleys. The primary objective is to provide messhall facilities comparable to first class cafetereias in the United States. Additionally it considers the consolidation of underutilized facilities and the closure of unneeded facilities. Eleven Enlisted Messhalls on Okinawa are programmed for major repairs and upgrade during the FY1986 HQMC Program: approximately \$6.5 million in HQMC M2 monies and \$1.5 million in HQMC R2 monies.

The Camp Courtney Messhall (Building 4328) is included in the Program and illustrated by Figure F-10. Improvements to the galley include repairs to floor and ceiling tiles, wall



BUILDING 4328: CAMP GALLEY

finishes, doors and hardware, garbage handling areas, refrigerators, drainage systems, ventilation, lighting, electrical circuits, and mechanical systems. In addition, new fast food service will be installed.

12. FOLLOW-ON STUDIES

A. ON-GOING STUDIES

The following studies are underway and will be used to update the final Master Plan:

1. A study to identify all borrow and fill sites for MCB Camp Butler.
2. A cultural asset inventory, undertaken in cooperation with the University of the Ryukyus.
3. A Utilities Improvements Program study, to insure that the out-year infrastructure program will fully support the Capital Improvements generated by this Master Plan. Sixty percent comments from this study have been incorporated with this Plan and final recommendations will be used to update and revise Section H of the Master Plan upon receipt.

B. RECOMMENDED STUDIES

The following studies are recommended:

1. A Land Management Plan. (A Turf Management Plan, a portion of a comprehensive Land Management Plan, is currently underway).

2. A Navy Assessment and Control of Installation Pollutants Study.

3. Identification of Watersheds, and Flood Hazard Maps for MCB Camp Butler, to include the Tengan River.

FOUO/NOFORN

CAPITAL IMPROVEMENTS PLAN

The Capital Improvement Plan represents a description of projects with anticipated funding source, that are programmed to resolve the deficiencies made evident by the Requirements Section of this Master Plan. Construction sequencing and related problems is discussed in Section I, Site Development Plan.

1. FACILITIES IMPROVEMENT PROGRAM

The Facilities Improvement Program (FIP) is a Government of Japan funded program ongoing since Japanese FY79. This program was developed by the Government of Japan in response to U.S. initiated discussions in 1978. Since October 1981, over \$200 million in Marine Corps facilities have been constructed through the FIP. Another \$135 million is under construction or in the design phase as shown on Plate G-1.

A. FIRE/POLICE STATION MC-6029-20

Category Code: 730-10/20
Scope: 6,450 SF
Cost: \$1,518K
Funding Year: JFY85

1. PROBLEM:

The fire station currently located on Camp McTureous is inadequate and being replaced since the camp is being converted to a family housing area. There is no existing police station in the area, support is provided from Camp Hansen. The construction of 1,100 family housing units in the area (as a result of the "Increased Accompanied Tours Initiative") will increase the requirement for both fire and police protection.

2. RECOMMENDATION:

Construct 6,450 SF facility for storage of fire protection equipment and for administrative berthing requirements of the fire protection personnel. The facility is also planned to meet the administrative needs of the Japanese gate guards and military police supporting the area.

3. SITING CONSIDERATIONS:

The proposed facility is centrally located to serve Camp Courtney and Camp McTureous, respectively.

4. PHASING:

None

5. DEMOLITION:

None

FOUO/NOFORN

7404020004

E. COMMUNITY SUPPORT FACILITY MC-6029-43

Category Code: 740-01/04/09/18/23
Scope: 65,240 SF
Cost: \$6,609K
Funding Year: JFY85

1. PROBLEM:

This camp only has a small location exchange (5,460 SF), exchange service outlet (1,711 SF), bank (750 SF), and Post Office (1,735 SF) and no cafeteria or commissary. The other two community support facility complexes are at Kadena Air Base and Camp Foster (Butler) which are located 12 and 16 km away, respectively. Both are now experiencing high levels of utilization, which produces long queues and crowded aisles, making shopping an unpleasant task.

2. RECOMMENDATION:

Construct a 68,865 SF Community Support Facility (Exchange/Cafeteria/Exchange Services/ Outlets/ Commissary Complex at Camp Courtney, with reinforced concrete foundation and frame members.

3. SITING CONSIDERATIONS:

Located in the Rex area which is centrally located to Camp Courtney and Camp McTureous, respectively.

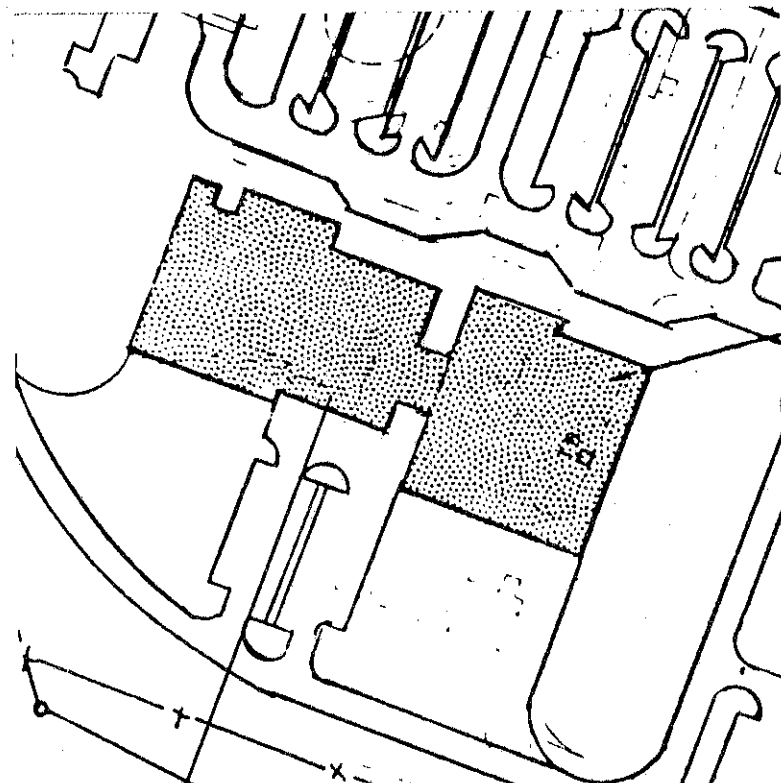
FOUO/NOFORN

4. PHASING:

None

5. DEMOLITION:

None



COMMUNITY SUPPORT COMPLEX
JFY85 FIP MC-6029-43

FOUO/NOFORN

FOUO/NOFORN

**I. COMMUNITY FITNESS CENTER
MC-6029-32**

Category Code: 740-43, 37, 84
Scope: 2,567 SM
Cost: \$2,620K
Funding Year: JFY86

1. PROBLEM:

Indoor recreation and sports are supported in two temporary and one permanent facility. Their current supposed activities are aimed at the unaccompanied troops. The changing demographics due to the construction of family housing will require the addition of many other programs, such as exercise and jazzercise classes for wives, gymnastic classes for children, and youth basketball. The existing 25 year old and 38 year old temporary metal buildings suffer from dozens of facility deficiencies. Severe rusting can be seen throughout the facility, there are major roof leaks and rotted partitions in the locker rooms. These facilities have less than 40% of required space. They will be unable to provide any type of long term support in the few activities that they can support. Support from other near-by camps or bases is not a practical solution for several reasons. Camp Hansen's facilities are also temporary, undersized for its population, and the programs are geared to the single soldier. Kadena facilities can barely support its own population. Both require long drives.

2. RECOMMENDATION:

Construct one-story Community Fitness Center with reinforced concrete structure. A Community Fitness Center that supports the housing residents high level of interest in recreational and fitness building activities.

3. SITING CONSIDERATIONS:

The proposed facility is sited adjacent to BEQs, SOQ for maximum convenience.

4. PHASING:

None

5. DEMOLITION:

None



FOUO/NOFORN

**Q. CHILD CARE CENTER EXPANSION
MC-6029-47**

Category Code:

Scope: 404 SM

Cost: \$500K

Funding Year JFY88

1. PROBLEM:

The existing Child Care Center (building 4447) will be unable to support the increased service demands created by the family housing units in the area. To serve the children safely and comfortably, an addition to the Care Center is needed.

2. RECOMMENDATION:

Construct a one-story concrete addition to the Courtney Child Care Center, consisting of classrooms, and bathroom facilities. Supporting facilities include landscaping and the expansion of the fenced playground.

3. SITING CONSIDERATIONS:

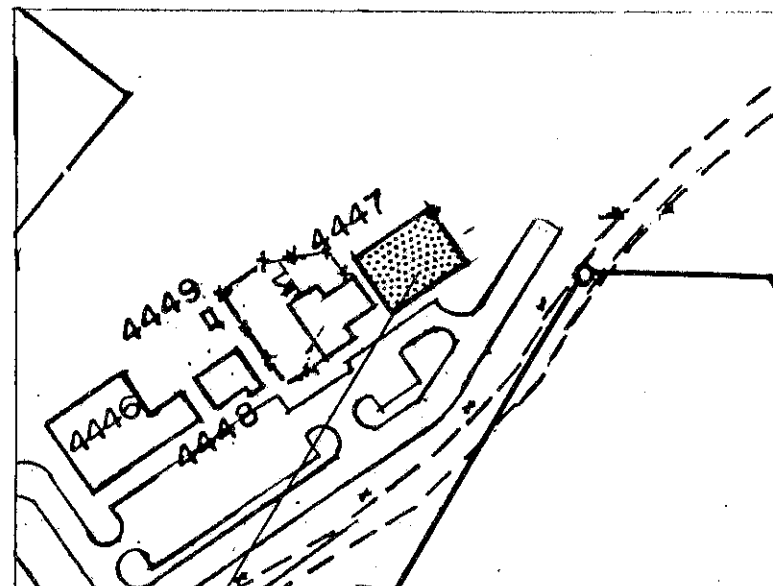
The proposed addition is sited on the east side of building 4447.

4. PHASING:

None

5. DEMOLITION:

None



**CHILD CARE CENTER EXPANSION
JFY88 FIP MC-6029-47**

FOUO/NOFORN

1854
1854
**R. BACHELOR ENLISTED QUARTERS
MC-6xxx-17**

Category Code: 721-11/12/13
Scope: 196 Rooms
Cost: \$4,780K
Funding Year: JFY89

1. PROBLEM:

Camp Courtney has a projected billeting requirement for 780 E1-E4; 93 E5; and 97 E6-E9. Based on DOD space per man criteria, this requirement is equivalent to 269,785 SF. The existing inventory consists of 139,332 SF of assigned enlisted billet spaces. This leaves a deficit of 130,463 SF. Enlisted personnel are currently housed in open bay, one or two story barracks, which lack air conditioning and are below DOD space per man criteria. Due to space deficiencies, the barracks are also overcrowded.

2. RECOMMENDATION:

Construct a four story, 196 rooms, BEQ with reinforced concrete foundation and frames. Provide an 80 car parking lot.

3. SITING CONSIDERATIONS:

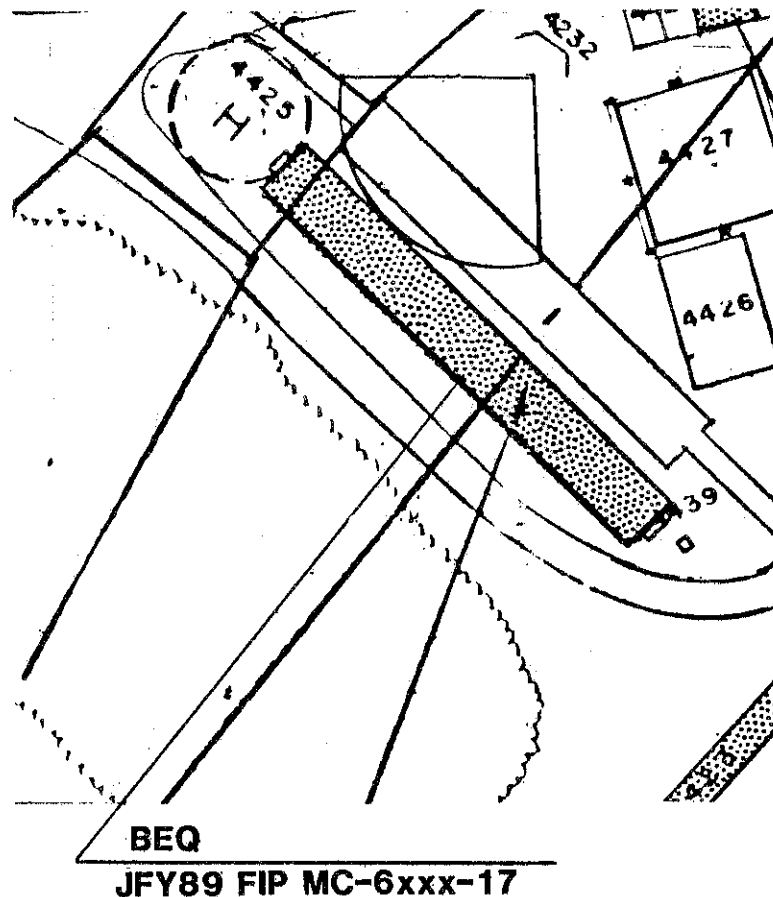
The proposed BEQ is centrally located at the camp for maximum convenience.

4. PHASING:

None

5. DEMOLITION:

Helipad



FOUO/NOFORN

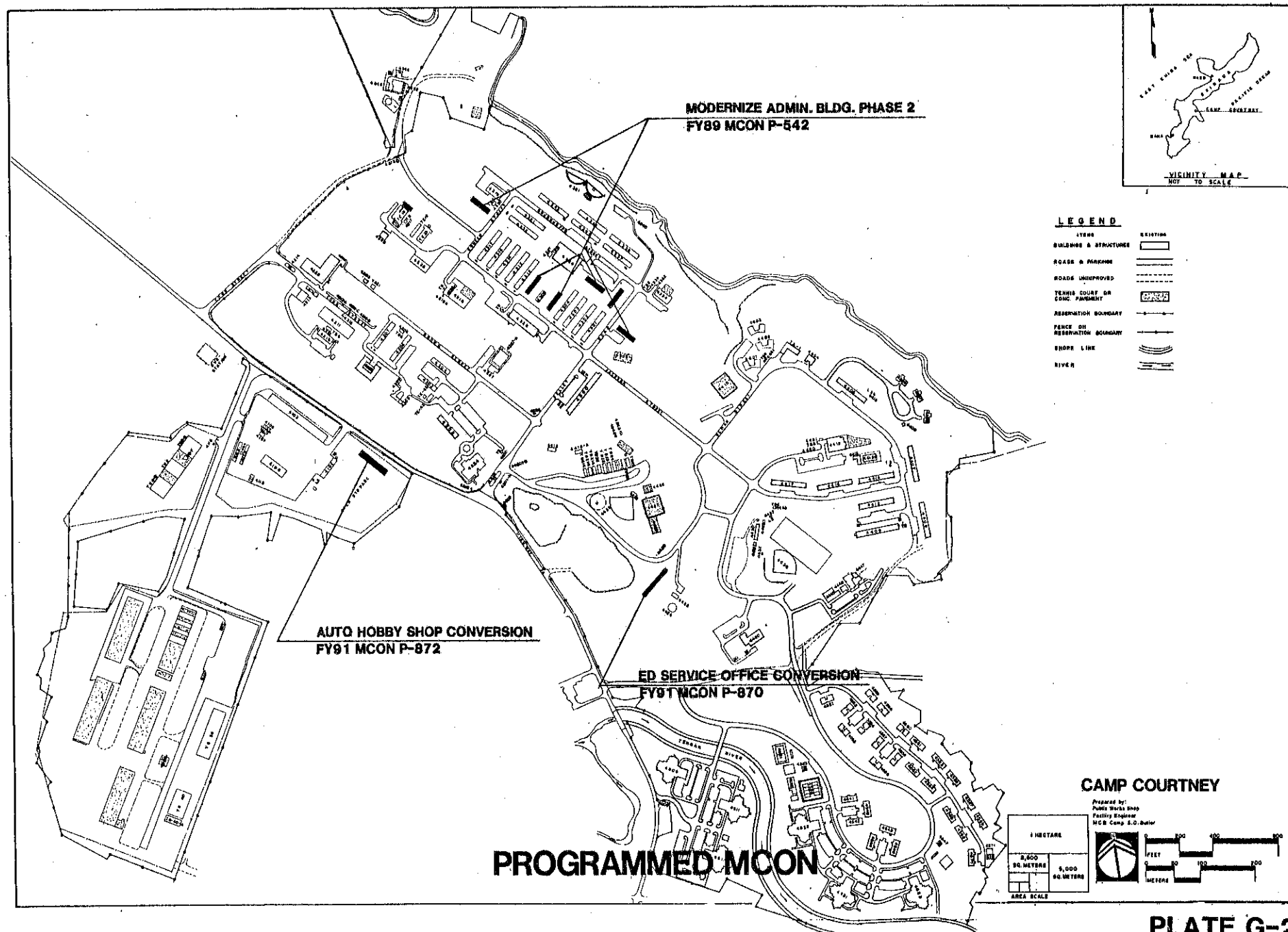


PLATE G-2

2. MILCON CONSTRUCTION

The authority for Navy procurement, vested by statute in the Secretary of the Navy, is delegated for facility construction to the Commander, NAVFACENGCOM. Military construction projects for the Marine Corps also include three centrally managed MILCON programs which are programmed by the NAVFACENGCOM: Navy Occupational Safety and Health Deficiency Abatement, Pollution Abatement, and Energy Conservation Investment Programs.

The Government of Japan will not fund construction involving addition, renovation, or modernizations of existing buildings that were originally constructed by the U.S. Government. Therefore, the only means of accomplishing such a project is by the MILCON program.

The following projects in the Capital Improvement Plan have been programmed for MILCON funding and are planned for Camp Courtney shown on Plate G-2.

A. MODERNIZE ADMIN BLDG., PHASE 2 P-542

Category Code: 610-73
Scope: HVAC Upgrade
Cost: \$3,900K
Funding Year: FY89 MCON

1. PROBLEM:

Due to the summer weather conditions on Okinawa (85 - 90 degrees F, and 70 - 90 percent relative humidity), the lack of air conditioning will continue to hinder productivity and morale of personnel working in the Administrative Building.

2. RECOMMENDATION:

Provide and install central heating, ventilation, and air conditioning (HVAC) systems in administrative facilities at Camp Courtney. The systems will vary from approximately 5 to 85 tons and will be provided with Energy Monitoring and Control Systems (EMCS). Electrical service will be upgraded where necessary to support the HVAC units. Upgrade will include increasing the capacity of various secondary distribution lines and substations.

3. SITING CONSIDERATIONS:

Buildings 4318, 4329, 4311, 4331, 4333, and 4306 are the existing administration buildings.

4. PHASING:

None

5. DEMOLITION:

None

B. EDUCATION SERVICES OFFICE CONVERSION P-870

Category Code: 740.88
Scope: 4,350 SF
Cost: \$215K
Funding Year: FY 91 MCON

1. PROBLEM:

Camp Courtney does not presently have any type of education service office. With the construction of almost 1,200 family housing units in the area, the need for this service will increase.

2. RECOMMENDATION:

Convert Bldg. 4324, Camp Courtney, from open squad bay BEQ to Education Service Offices by removing gang latrines and showers, replacing windows to reduce glass area, installing air conditioning and fire protection constructing partitions for offices and classrooms, new heads, new floors, wall covering, lights, and ceiling. Upgrade all utilities as required. Include Energy Monitor and Control System (EMCS) and radio transmitted fire alarms. Air conditioning: 17 ton.

3. SITING CONSIDERATIONS:

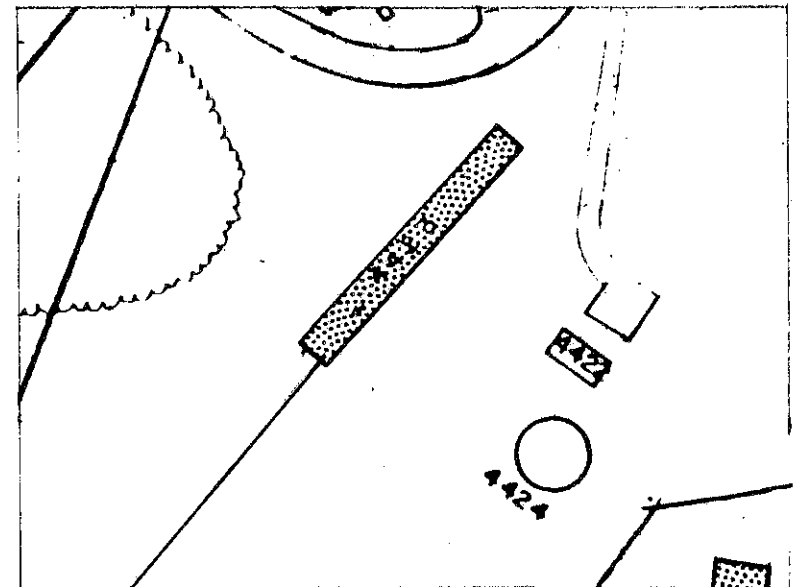
The proposed facility is adjacent to Bldg. 4324.

4. PHASING:

None

5. DEMOLITION:

None



**ED SERVICE OFFICE CONVERSION
FY91 MCON P-870**

C. AUTO HOBBY SHOP CONVERSION P-872

Category Code: 740-38
Scope: 10,470 SF
Cost: \$560K
Funding Year: FY 91 MCON

1. PROBLEM:

Presently, there are no auto hobby shops at Camps Courtney or McTureous. The nearest hobby shops are at Kadena Air Base, which is 12 km away, and requires, depending on traffic conditions, a driving time of 30 minutes. The Kadena facilities are not designed to handle additional loads from other camps, and already have high utilization rates. Due to the time, distance, and potential overcrowding at Kadena facilities, they are not reasonably accessible. The result will be a lower level of morale.

2. RECOMMENDATION:

Conversion of existing Bldg. TG-42 for Auto Hobby Shop.

3. SITING CONSIDERATIONS:

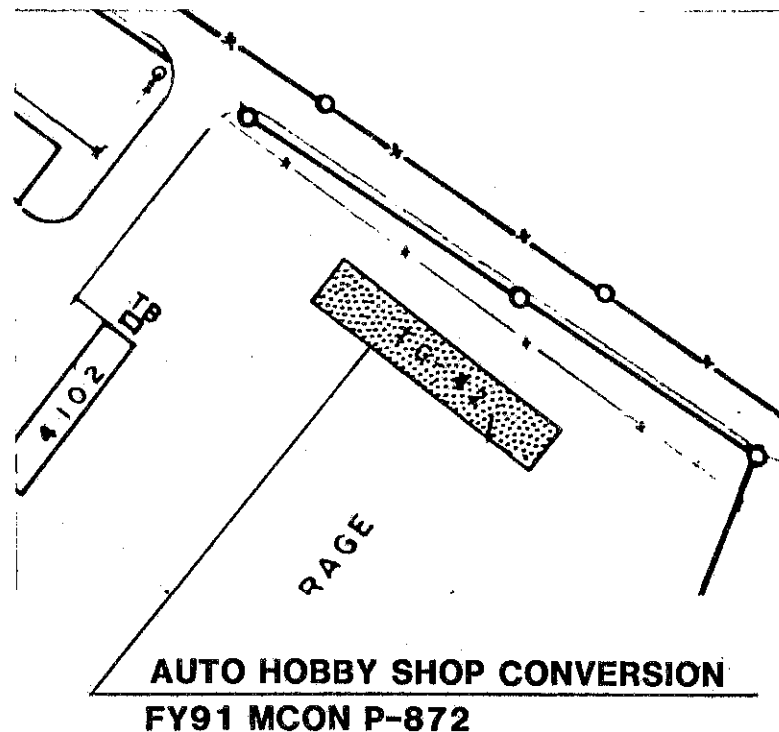
Existing Bldg. TG-42

4. PHASING:

None

5. DEMOLITION:

As Required



3. NAF CONSTRUCTION

Community and MWR facilities are all those included in military real property category codes 740 and 750. These facilities are classified in the NAVCOMPT Manual for the purposes of determining the extent of Government financial responsibility in their support, and to provide specific policies and guidance for funding.

It is the policy of the CMC to provide, maintain, and operate adequate facilities to accommodate a well-rounded MWR program to ensure the mental and physical well being of Marine Corps military and civilian personnel. The funds to convert this policy into adequate facilities come from either appropriated or non-appropriated sources. The type of facility or work to be performed determines the funding source. Appropriated funds are used solely for construction of the larger facilities that do not generate revenues. Non-appropriated funds (NAF) are used for:

a. The refurbishment and internal upkeep of facilities and equipment.

b. The general support of Command and centralized club welfare and recreational facilities.

Projects under \$200,000 are approved by CG, MCB Camp Butler, and projects over \$200,000 are approved by CMC.

The following projects in the Capital Improvement Plan programmed for NAF funding and planned for Camp Courtney are shown on Plate G-3.

A. INSTALL SOFTBALL FIELD LIGHTS N-226

Category Code: 750-20
Scope: Lump Sum
Cost: \$140K
Funding Year: NAF FY87

1. PROBLEM:

Facility does not have any kind of night lighting, forcing the playing of day games. The 90 degree F and 85% RH environment produces a great deal of discomfort.

2. RECOMMENDATION:

Install lights on combination football and softball field.

3. SITING CONSIDERATIONS:

Locate light poles around football/softball field.

4. PHASING:

None

5. DEMOLITION:

None

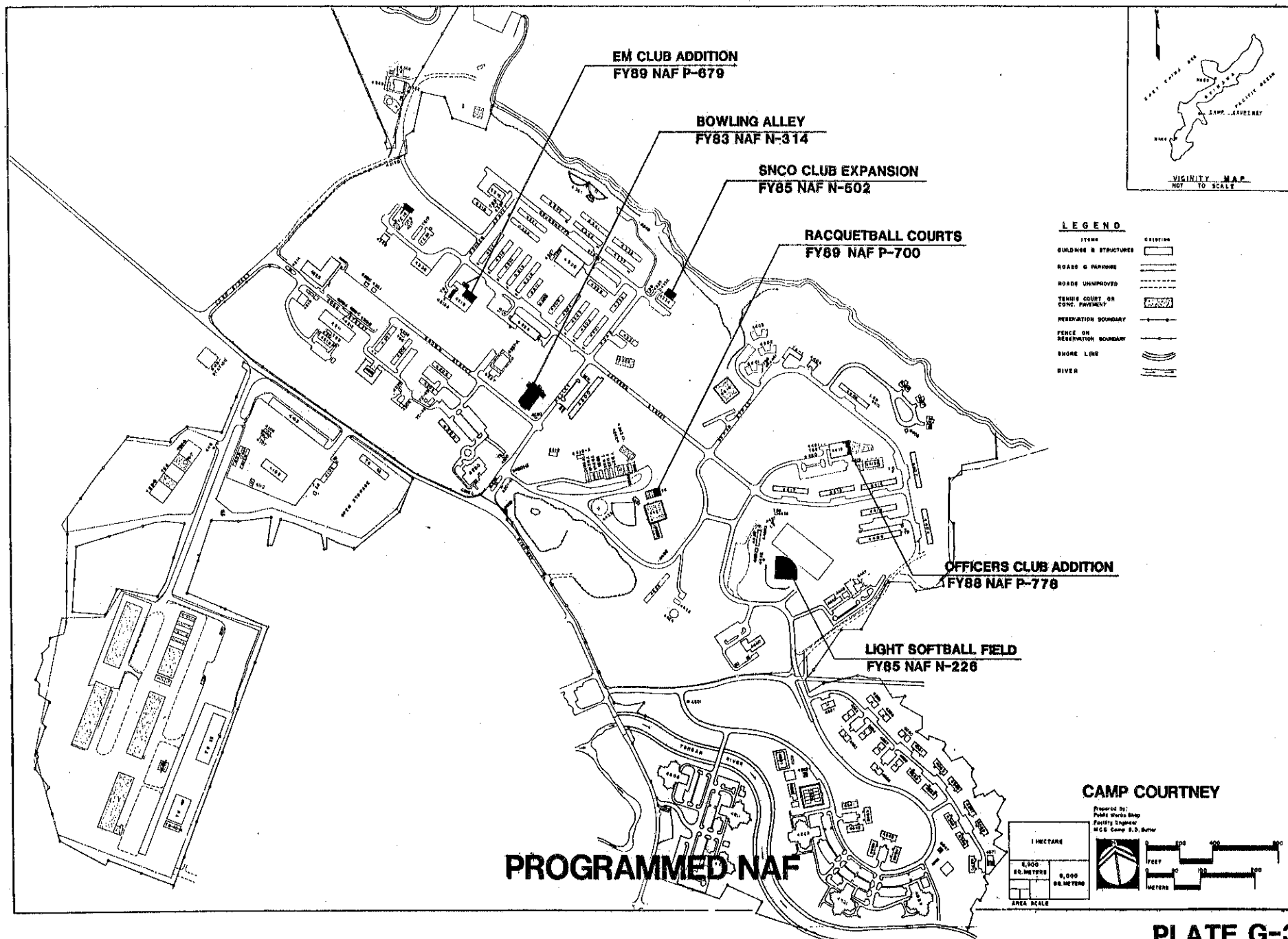


PLATE G-3

B. BOWLING ALLEY N-314

Category Code: 740-40
Scope: 12,600 SF
Cost: \$2,300K
Funding Year: NAF FY 83

1. PROBLEM:

No type bowling alley facility exists at the camp. The nearest is over 11 km away, requiring a 40 - 45 minute drive. Off-base facilities are not only the same distance as the Government facilities, but very crowded during prime time. All surrounding Marine Corps bowling lanes are at 100% capacity.

2. RECOMMENDATION:

Construct a 12,600 SF reinforced concrete Bowling Center with 12 lanes.

3. SITING CONSIDERATIONS:

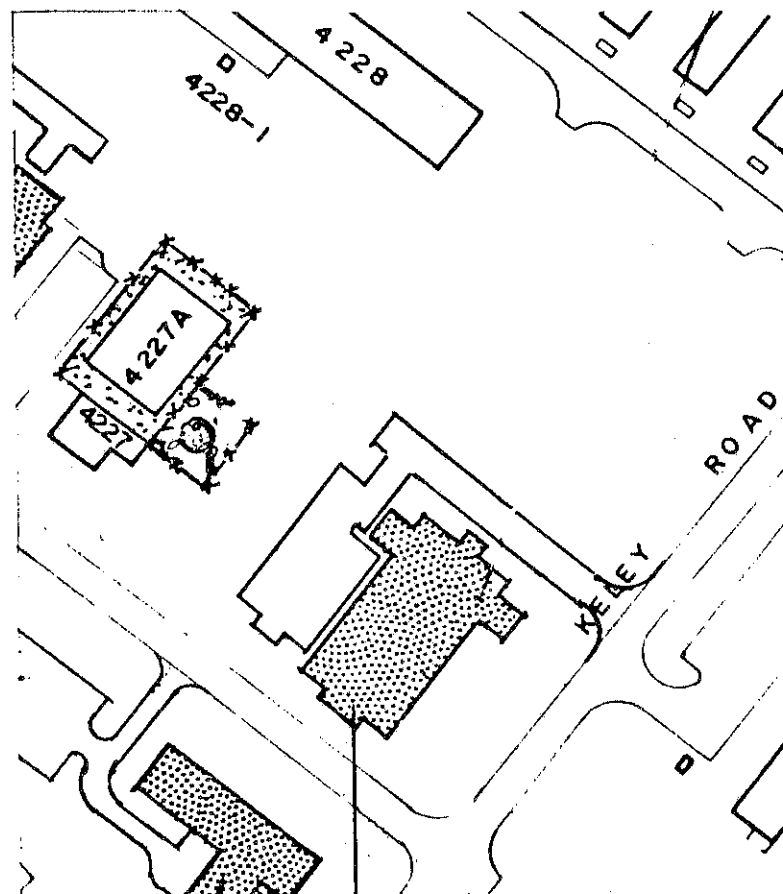
The proposed facility is centrally located near wading pool (OERP) and JFY 85 FIP MC-6029-20 (Fire/Police Station).

4. PHASING:

None

5. DEMOLITION:

None



**BOWLING ALLEY
FY83 NAF N-314**

C. SNCO CLUB EXPANSION N-502

Category Code: 740-66
Scope: 3,277 SF
Cost: \$700K
Funding Year: NAF FY 85

1. PROBLEM:

Existing facility is designed to support a mostly male, single clientele. The dining area has very limited seating, and is not equipped for use as a ball room. Kitchen is equipped with 20 year old equipment which is in very poor condition.

2. RECOMMENDATION:

Construct 3,277 SF reinforced concrete SNCO expansion to match existing facility.

3. SITING CONSIDERATIONS:

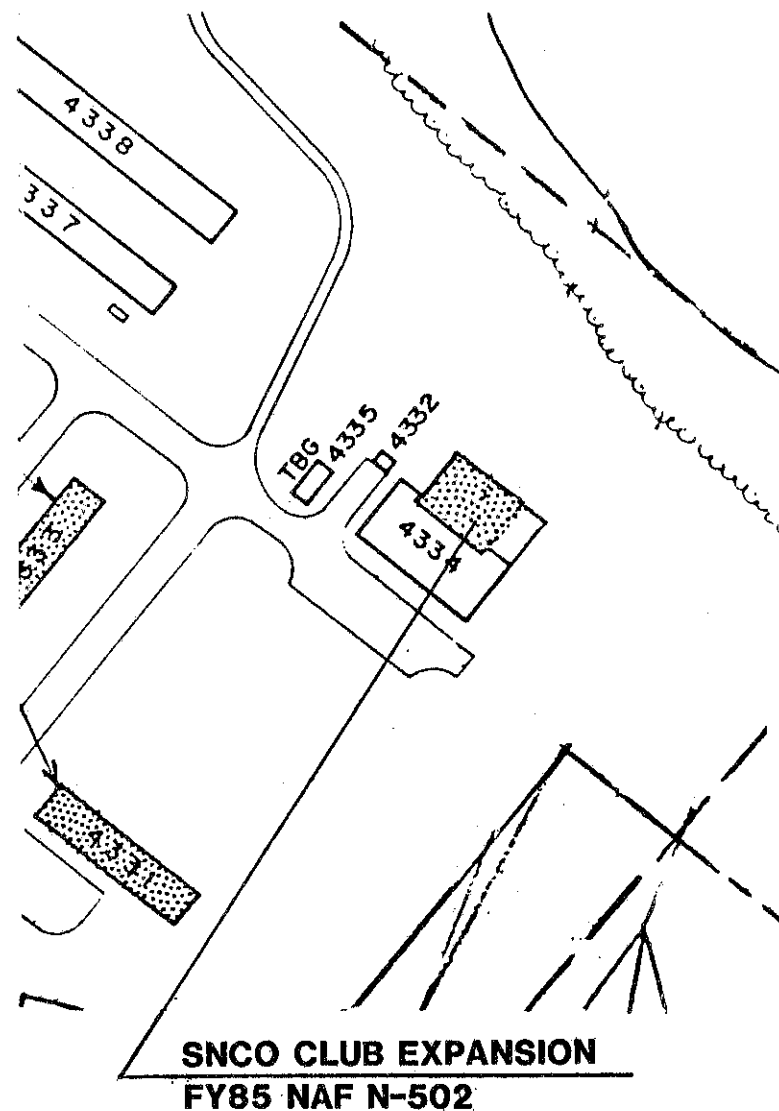
Locate addition to the northeast side of existing facility.

4. PHASING:

None

5. DEMOLITION:

Demolish northeast wall of existing Building 4334.



D. OFFICER'S CLUB ADDITION P-778

Category Code: 740-60
Scope: 4,011 SF
Cost: \$406.6K
Funding Year: NAF FY 88

1. PROBLEM:

Building 4419 is 3,037 SF below the authorization based on just the officer population of the camp. The housing area on the camp will also support the 200 plus accompanied officer tours at Camps Hansen and Schwab. The existing facility's kitchen lacks adequate space for food preparation, reach in freezer/reefers, scullery and dry storage. The existing exterior walk-in freezer/refrigerators and GI house are in very poor condition. Their location make them very inconvenient to use, especially during frequent rain storms. The kitchen area also lacks an employee women's head/break room. The dining room can only seat 36 comfortably, without including the bar. The thin folding room divider between the bar and both the dining and game room provide only a visual barrier. Noise from all three areas cross pollute, ruining any type of function. The existing free form bar takes up too much space. The facility also lacks a cashier cage and chair/table storage.

2. RECOMMENDATION:

Construct an 1,880 SF addition onto Bldg. 4419, Camp Courtney, with reinforced concrete frame foundation, floor and roof deck matching the existing architectural style. Construct a reinforced concrete drive-thru and canopy to the main entrance, and miscellaneous MILCON construction.

3. SITING CONSIDERATIONS:

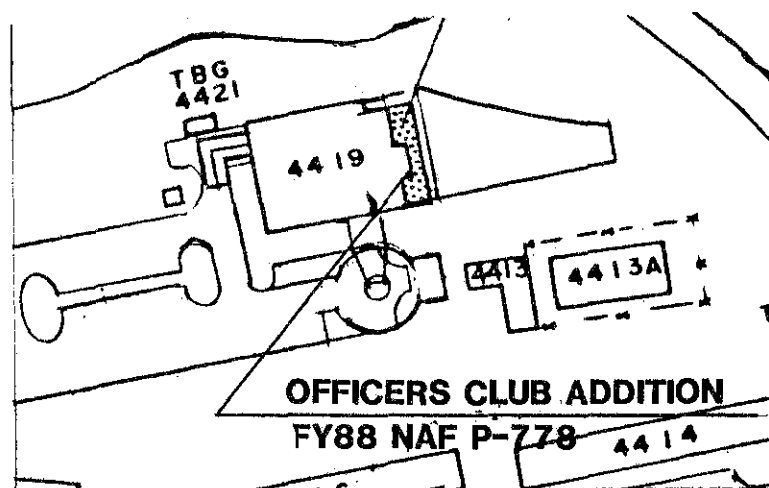
Locate addition on the east side of Building 4419.

4. PHASING:

None

5. DEMOLITION:

East exterior wall, building 4419.



BURGER KING

Category Code:

Scope:

Cost:

Funding Year:

UNDER STUDY

E. RACQUETBALL COURTS P-700

Category Code: 740-84
Scope: 2,400 SF
Cost: \$245K
Funding Year: NAF FY 89

1. PROBLEM:

Camp Courtney has an insufficient number of indoor racquetball courts. People who play this popular sport must either utilize Air Force indoor courts at Kadena AFB, or the outdoor courts at Camp Foster and Camp Courtney. The outdoor courts, because of the summer heat and frequent rain, cannot be utilized year round.

2. RECOMMENDATION:

Construct two 1,200 SF racquetball courts with reinforced concrete foundation and frame.

3. SITING CONSIDERATIONS:

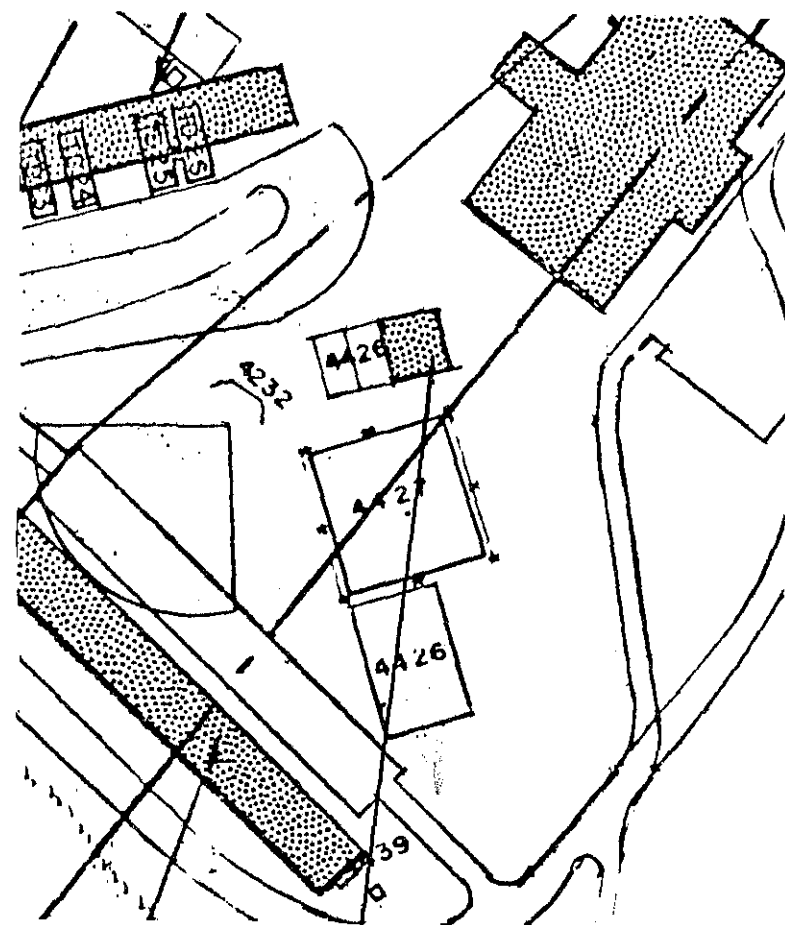
Locate proposed facility adjacent to Community Fitness Center (JFY86 FIP MC-6029-32).

4. PHASING:

None

5. DEMOLITION:

None



RACQUETBALL COURTS
FY89 NAF P-700

4. HQMC PROGRAMS

To meet minor facility or equipment requirements, the Marine Corps, under the authority of Title 10, 2674, can fund construction projects of less than \$500,000. Projects under \$100,000 (R1 Projects) are approved by the Commanding General, MCB Camp Butler. Projects costing from \$100,000 to \$200,000 are approved by the Commandant of the Marine Corps. Funding of projects from \$200,000 to \$500,000 is approved by ASN or ASD. The following projects in the Capital Improvement Plan have been programmed for R2 funding and are shown on Plate G-4. Projects with "M" numbers are maintenance/repair, vice construction projects with "R" numbers.

A. DINING FACILITY UPGRADE (R2) OK656R

Category Code: 722-10
Scope: 1 building
Cost: \$118.2K
Funding Year: FY86

1. PROBLEM:

This project is required in conjunction with M-2 project number OK610M, to provide a dining facility with a good appearance and improved working conditions for the troops that work in this facility. This project is part of the HQMC directed initiative for Upgrades to Enlisted

Galleys. Existing facility lacks an outside shelter for troops waiting in line, exposing them to hot summer sun and frequent rains. There are no provisions for cooking or serving a "fast food" meal. Numerous other minor items must also be corrected. Without this upgrade project, troops will continue to utilize a substandard facility and workers will continue to be exposed to unhealthy working conditions.

2. RECOMMENDATION:

Perform minor construction work on Bldg. 4328, Camp Courtney, and provide a commercial type fast food facility, access from exterior of building and exterior seating under a new canopy. Provide pre-finished decorative wall panels on all interior walls of eating areas including rear wall of serving lines. Panel system should conceal exposed piping and conduit as much as possible. Curtain tracks and curtains should be provided in eating areas.

3. SITING CONSIDERATIONS:

Existing facility at Bldg. 4328.

4. PHASING:

None

5. DEMOLITION:

None

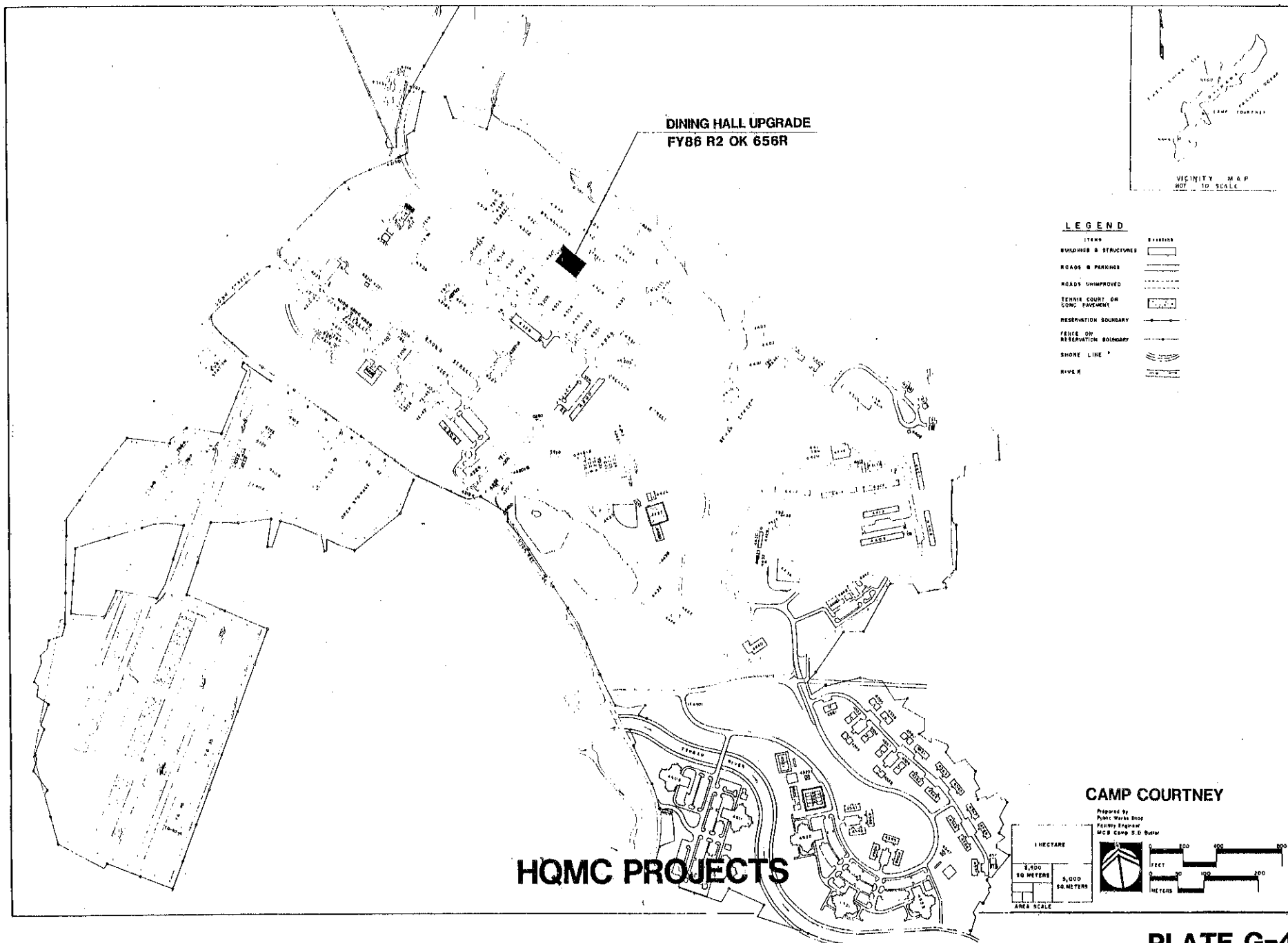


PLATE G-4

B. DINING FACILITY REPAIR (M2) OK610M

Category Code: 722-10
Scope: 1 building
Cost: \$391.7K
Funding Year: FY86

1. PROBLEM:

This project is required to reduce excessive maintenance required by these facilities, to incorporate state of the art materials to modernize operations, and in doing so, to insure quality food service to the serviceman. This project is part of the HQMC directed initiative for Upgrades to Enlisted Galleys, and is in conjunction with project OK656R. Floor tile, ceiling tile, wall finishes, doors, hardware, garbage handling areas, reefers, drainage systems, ventilation, lighting, electrical circuits, and mechanical systems require extensive repairs to reduce excessive maintenance requirements and frequent breakdowns. The facilities will continue to deteriorate at a rate with which shops personnel cannot keep pace. Partial or complete shutdowns of these essential personnel support facilities could occur. Troop morale will be adversely affected.

2. RECOMMENDATION:

Provide complete maintenance and repairs to deteriorated and obsolete dining facilities, Bldg. 4328.

3. SITING CONSIDERATIONS:

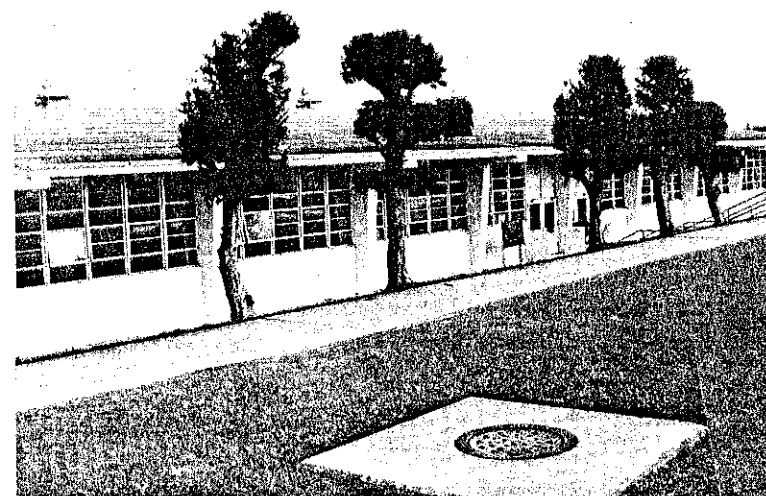
Existing Bldg. 4328.

4. PHASING:

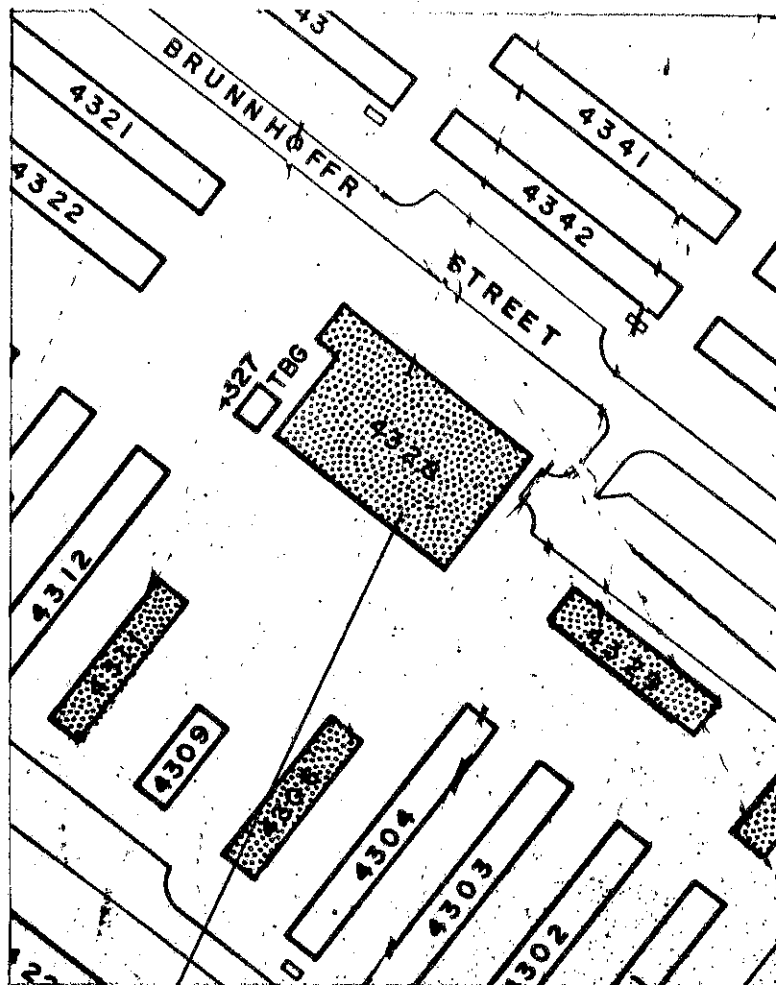
None

5. DEMOLITION:

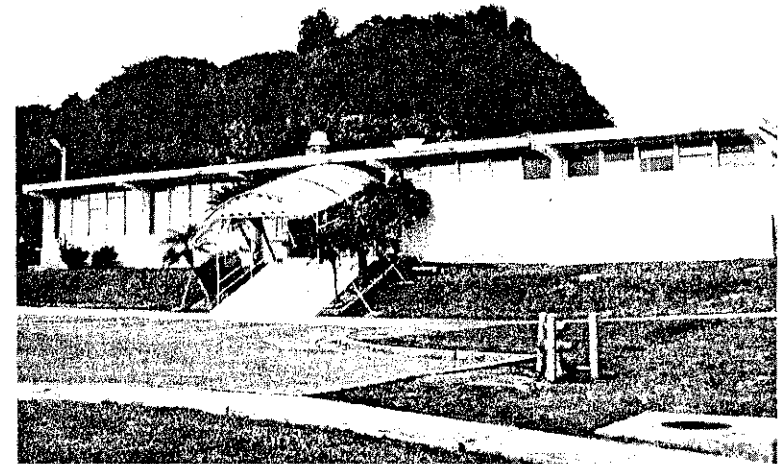
As required



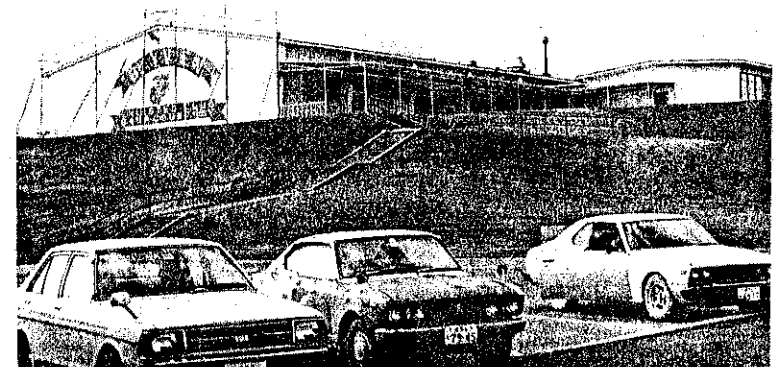
CAMP MESS HALL BUILDING 4328



**DINING HALL UPGRADE
FY86 R2 OK 656R**



OFFICERS' CLUB BUILDING 4419 (P-778)



EM CLUB BUILDING 4218 (P-679)

H. ENERGY CONSERVATION PLAN

1. BACKGROUND

Presidential Executive Order (PEO) 12003 of July 1977 requires that all new U. S. Government buildings be 45 percent more energy efficient than similar buildings existing in 1975.

In addition to the 45 percent reduction in consumption mandated by PEO 12003 for new buildings, it also mandates a 20 percent reduction of energy usage in existing buildings, between FY75 and FY85. DOD augmented this requirement by an additional one percent per year, between FY85 and FY2000, to a total of a 35 percent reduction.

Commencing with the July 1975 relocation of Headquarters, MCB Camp Butler from Camp McTurkous to Camp Zukeran, Camp Butler started experiencing a radical change of its facilities physical structure. After the acquisition of Camps Zukeran (renamed Foster), Kuwae (Lester) and Makiminato Service Area (Kinser) from departing Army Commands, Camp Butler disposed of obsolete facilities at Camp Hague, Yaka Beach and Iha Castle and started an orderly program for disposal and/or replacement of other obsolete, energy inefficient facilities within the Base. A radical decline in the consumption of heating fuel per SF of facility was experienced. The present consumption per SF of building is 56 percent below FY75 consumption. This reduction in consumption can be attributed to the use of facilities with considerably less space heating load requirements than facilities used during

FY75. Records indicate that consumption of fuel for production of domestic hot water had increased, on an annual basis, until FY84. The most probable significant causes of these increases are the use of an increased number of washing machines and decreased efficiency of boilers due to aging and oversizing. There are less people per SF of building than during FY 75. When the required heating load is considerably less than the design capacity of the boiler or the boiler is oversized for existing requirements, boiler efficiency decreases. Existing boilers were designed for larger loads than presently required. When the number of personnel assigned to a building is reduced, it results in the existing boilers for production of domestic hot water being oversized for the required load. The acquisition of additional UEPH and UOPH buildings allowed for a reduction in occupancy of these buildings with a corresponding reduction of requirements for hot water. Boilers originally designed to supply hot water for more than twice the present building occupancy are operating at a significantly lower efficiency than their potential maximum and consequently use more fuel per capita. It is not cost effective to replace existing boilers with smaller boilers, just to improve their efficiency, because of the large number of UEPHs which will be replaced in the near future, under the JFIP. Also, it had been observed that maids, employed by UEPH and UOPH occupants, secured the cold water supply to washing machines and used only hot water to operate them. In addition to this wasteful practice, full volumes of water were being used for light loads. To remedy this situation the hot water

supply to washing machines was disconnected and water temperatures reduced to 110°F maximum where sufficient hot water storage capacity necessary to supply peak demand was available.

In spite of apparent wasteful practices, consumption of heating fuels per SF of existing buildings has been reduced by 56 percent. However, consumption of electricity has been reduced by only 14.5 percent as of the end of FY84. The base energy conservation record had dropped from 32.6 percent below the FY75 baseline during FY82 to 28.3 below the baseline during FY83. There was a temporary improvement during FY84 however, the increase in consumption trend is anticipated to continue over the next several years as existing non-air conditioned buildings are air conditioned or replaced with air conditioned buildings, unless more stringent conservation measures are implemented.

To pursue this trend recommendations by three energy conservation surveys accomplished during FY83 and FY84 are being implemented together with the more stringent design requirements of the latest edition of DOD 4270.1-M, Construction Criteria Manual. For example Chapter 8 of DOD 4270.1-M requires building insulation to comply with minimum established requirements, whether cost effective or not, when new air conditioning systems are installed or existing systems are replaced. It also requires that all cost effective energy conservation improvements to the building be identified and either accomplished or scheduled for implementation prior to/or concurrent with the mechanical equipment change before proceeding to

design and sizing of mechanical equipment for heating and/or air conditioning.

It is possible for Camp Butler to continue complying with PEO 12003 but it will require the complete eradication of misuse and waste. Every echelon of leadership within the Base is responsible for prevention of waste or misuse which used to be commonplace within many areas of the base.

Only the state of the art on energy conservation technology, with rigid, tamper proof controls, will preclude Camp Butler falling into noncompliance with the conservation goals established by higher headquarters. These goals are attainable only if efficient design and rigid controls to limit consumption to the absolute minimum requirements are provided as prescribed by current DOD and Marine Corps regulations.

2. CONSERVATION PLAN

A. GENERAL

(1) Provide an Energy Management System (EMS) to control all phases of production and consumption in large buildings, such as the base exchange. Although these buildings are not under direct control of Camp Butler, they are large users of non-reimbursable energy. Camp Butler is required to support these facilities but cannot control their operations.

(2) Provide an EMS for small groups of buildings, such as bachelor quarters,

warehouses, and other community support facilities. The monitoring and control equipment should be located in spaces manned 24 hours per day.

(3) Install utility meters for each new facility which is not connected to a central production and distribution plant. At central plants, provide utility meters to measure both consumption and production. This is required by MCO P11000.9B.

(4) Where possible, consider architectural alternatives such as building orientation width/length ratio, number of stories, exterior wall construction, reduced window areas, and tinted glazing or solar film.

(5) All new buildings must comply with "U" factor requirements in Table 8-1 of DOD 4270.1-M, Construction Criteria Manual.

(6) Provide setback controls for all heating and air conditioning systems.

(7) Implement requirements of paragraphs 8-3.2.C and 8-4.1 of DOD 4270.1-M.

B. ELECTRICITY

(1) Include the installation of watt-hour meters in the designs of new lighting systems for outdoor facilities which have not been previously lighted. Energy consumed by these facilities can be deleted from DEIS-II reports, if adequately metered. Under DEIS-II, all energy consumed as a utility is chargeable

to the SF in existing buildings unless it can be determined, by actual metering, that a portion of the energy was not consumed by existing buildings in the base line.

(2) Design all lighting systems for the minimum authorized DOD lighting standards as prescribed by NAVFACINST 11012.146. Task lights to supplement standard lighting is authorized where adequately justified.

(3) Provide only the most efficient lighting systems consistent with requirements. Sectionalize areas and provide electronic motion detector switches to automatically turn off unneeded lights.

(4) Provide programmable electronic time control for lighting and equipment not otherwise controlled by an EMS. All lighting systems, appliances, and heating/air conditioning systems which provide for personnel comfort must be secured during periods of non-occupancy.

(5) Comply with requirements of paragraph 8-4.12 of DOD 4270.1-M.

C. HEAT AND FUEL

(1) Design heating systems to provide only for minimum requirements in the building. DOD established temperature standards must be incorporated in the designs and heating equipment sized accordingly. Do not oversize heating and appurtenant equipment to provide for unneeded or unknown safety factors.

(2) Where possible, provide supplemental heating for small sections of BEQ, BOQ and administrative buildings which are used during periods when the building is not normally occupied to allow securing the central heating system. Supplemental systems, however, should be connected to the same EMS or programmable electronic time control as the central system as necessary to preclude simultaneous operation of both systems.

(3) Adjustable thermostats or automatic setback controls shall have a maximum setting of 72°F (22°C) as manufactured. The use of heating thermostats with settings higher than 72° is prohibited by DOD and Marine Corps regulations. The actual setting, except for medical facilities, shall be the setting required to raise the room temperature to a maximum 65°F - 68°F. Provide outside temperature reset control.

(4) Provide interlocking devices on windows to turn off heating and air conditioning systems when windows are opened. Operation of heating and air conditioning systems with opened windows is probably the most common energy misuse in Camp Butler.

(5) Provide heat recovery for blow-down systems. Provide air preheaters, economizers and other heat recovery equipment. Whenever possible, avoid dumping condensate.

(6) Provide the absolute minimum outside air make-up consistent with actual requirements.

(7) Provide radiant heating only where ever possible. Do not provide convection heating if it can be avoided.

(8) Design domestic hot water systems to provide for minimum requirements. Authorized maximum hot water temperatures, as delivered to the user, are 100°F in facilities without showers or bath tubs and 110°F in bachelor living quarters.

(9) Provide two cold water lines to washing machines in bachelor quarters buildings in lieu of one hot and one cold water lines. This Command has disconnected the existing hot water lines to the approximately 1,200 washing machines presently installed in Camp Butler. Water at the maximum authorized temperature of 110°F does not provide for cleaner or germ-free wash. When the hot water is mixed with cold water, the washing water temperature is approximately 90°F which is not a great improvement over the approximately 70°F temperature of the cold water.

D. AIR CONDITIONING

(1) Design of air conditioning systems shall be in accordance with criteria provided by Chapter 8 of DOD 4270.1-M.

(2) Where possible, provide window or through the wall air conditioners for duty officers and shift workers in large buildings to allow securing central systems during periods of non-occupancy. Window or through the wall units should be controlled by the same EMS or

programmable electronic timer as the central system to preclude simultaneous operation of both systems.

(3) Provide programmable thermostats or as setback controls for each zone. All controls shall be located in spaces accessible only to authorized maintenance personnel.

(4) Provide the absolute minimum outside air make-up consistent with actual requirements.

(5) Provide waste heat recovery systems to capture some of the heat rejected by compressors and use for domestic hot water heating in buildings with hot water requirements, for air preheating in systems requiring dehumidification, and for winter space heating of adjacent spaces where air conditioning systems are used year-round.

(6) For facilities, such as data processing and communications, which require year-round air conditioning, consider reducing the cooling loads by recovering or exhausting some of the heat generated by the equipment for use in adjacent heated areas.

(7) Provide air curtains at doors with heavy traffic to minimize cooling and heating loads. Provide interlocking switches with time relay to turn off air curtain during extended periods of no traffic through the door.

(8) As an alternative to air curtains, provide vestibules at entrances with heavy traffic.

(9) Install tinted glazing or solar film on windows to reduce solar heat gain through glass.

4. IMPACTS ON THE ENVIRONMENT

A. NATIONAL AND INTERNATIONAL ENVIRONMENT

The plan will have impact on the international environment as the installation is located in Okinawa, Japan.

B. PRIMARY IMPACTS

1. ECONOMIC

The economy will improve slightly when US dollars are provided for some facilities. Employment for the local population will assist the economy.

2. WATER

The overall water consumption is expected to increase moderately. The increased consumption would not affect water quality nor facilitate any water shortage.

3. SEWAGE

There will be an increase in sewage flows which has been taken into account with the recent expansion of the Sewage Treatment Plant at Camp Courtney. The quality of the effluent is expected to remain above the minimum quality requirement set by the GOJ Ministry of Health and Welfare Ordinance No. 35.

4. SOLID WASTE

An overall increase in solid waste generation is expected. Solid waste disposal throughout Okinawa is by sanitary landfill. Maintenance contracts for solid waste disposal are handled by the Facilities Engineer, MCB Camp Butler.

5. ENERGY

With further improvements and expansion of existing facilities, there will be an increase in the consumption of electrical power. However, MCB Camp Butler has implemented energy conservation practices to minimize the total consumption. Energy consumption features will be incorporated in the design and construction of new facilities to conserve energy.

7. AESTHETICS

Camp Courtney has been enhanced aesthetically by the MCB Camp Butler Beautification Plan, which developed guidelines for exterior architecture at all Marine Corps installations on Okinawa.

Exterior painting of all buildings has been color-coordination, and landscaping projects have been developed and will be implemented during fiscal year 1986. Dump and Borrow sites used for JFIP construction projects are required to be reclaimed using natural plant associations typical of the area, and are reviewed by the Public Works Branch, Facilities Engineer Division, Marine Corps Base Camp Butler.

8. FLORA AND FAUNA

Some removal of natural vegetative cover is unavoidable due to the intense urbanization of the Camp. However, no rare nor endangered species are known to inhabit Camp Courtney.

9. CONSTRUCTION

Temporary noise, dust, erosion, and transportation problems are expected. These impacts will occur only during the construction of the projects.

10. HISTORIC SITES

Historic or cultural sites on the Camp have been identified and where possible all planned construction has respected these sites. The urbanization of South Camp Courtney necessitated the removal of several tombs with the concurrence of tomb owners, who were reimbursed by the Government of Japan prior to construction of Military Family Housing. Dieka Hill, an historic site centrally sited on Camp Courtney,

remains an aesthetic resource as well as a cultural site, and has been considered a major constraint during the planning process.

5. ALTERNATIVES TO THE PLAN

A. PROPOSED DEVELOPMENT

Implementation of the Master Plan offers the advantage of minimizing adverse environmental impacts associated with construction and urbanization. Projects with high adverse environmental impact, such as the proposed Boating and Beach Facility in the draft Master Plan, were further reviewed and removed from consideration in the final Master Plan.

B. NO ACTION

If no changes are made to the Camp, the installation would be severely limited to its present state of development, requiring the continued use of many substandard facilities. This would severely hinder the Camp activities in performing assigned missions and would cause a deterioration of personnel morale due to substandard living conditions.

C. ALTERNATIVE LOCATIONS

Alternative sites on other military controlled lands were evaluated during the planning pro-

cess. Over a period of two years, the Public Works Branch at MCB Camp Butler published a family of draft Master Plans which interlocked all facilities requirements for MCB Camp Butler. Where reassignment of proposed projects to a different installation enhanced mission requirements, reduced adverse environmental impact, or improved the overall holism of the planning process, such reassignments were made during the two year evolution.

The final Camp Courtney Master Plan represents an important milestone in the planning of MCB Camp Butler. However, it will be continuously updated to insure that alternative solutions are evaluated and incorporated, where they represent improved optimization of the holistic Master Plan for Marine Corps Base.

D. STAGED IMPLEMENTATION

This alternative is similar to the "Proposed Development" alternative, as the planned projects recommended by this Master Plan will be implemented on an individual basis. In fact, the Master Plan considered construction sequencing and the probability of construction as two important factors in developing a realistic Master Plan.

6. UNAVOIDABLE EFFECTS

No major adverse environmental effects are foreseen which are unavoidable should the Master Plan be implemented.

7. RELATIONSHIP TO LAND USE PLANS

The following are relationships of the proposed action to land use plans, policies, and controls for the affected area:

A. FEDERAL

There is no specific approved Federal Land Use Plan for MCB Camp Butler, other than the land use categories identified for use in this Master Plan. These will become an approved Federal Land Use Plan when the Master Plan is approved by the Commandant of the United States Marine Corps.

B. GOVERNMENT OF JAPAN AND LOCAL

In general, the GOJ and local government land use policies do not designate specific land uses for military controlled real estate. One exception is the GOJ's plan to retain the mountainous region on northern Okinawa in its natural state, for potable and industrial water development. The Marine Corps Base Family of

Master Plans recognizes this requirement and recommends that only compatible uses be permitted in the restricted areas. Camp Courtney proper is not affected by this requirement. All development proposed by this Plan is compatible with adjacent non-military land uses. The Master Plan does not propose any major change in land use that would conflict with existing civilian land uses.

8. COMMITMENTS OF RESOURCES

The proposed Master Plan does involve some irreversible and irretrievable commitments of resources should the Plan be implemented. Labor, materials, and funds used for the construction of the projects concerned would be irretrievably lost. Proposed structures are relatively simple and the land areas could be recovered and restored at any time by the removal of the structures and reclaiming of the project site through planting of vegetation similar to that found on-site, or through natural succession.

9. CONSIDERATIONS

Several considerations offset the stated adverse environmental effects on the proposed Master Plan. The adoption and implementation of the Master Plan would result in more effective operations, conservation of resources, and preservation of the environment: all of which

insure the readiness of military forces in Okinawa. These benefits more than offset the minor adverse environmental impacts generated by the proposed Plan.

10. SUMMARY OF IMPACTS

A. ECONOMIC

The local economy would temporarily improve as US or GOJ monies are expended to construct new facilities. Long-range, the eventual return of Camp Courtney real estate and facilities to the GOJ and the local governments will provide useable and developable lands to the local population.

B. WATER

Overall water consumption is expected to increase moderately.

C. SEWAGE

Proposed construction projects will result in increased sewage discharge which can be satisfactorily treated at the Camp Courtney Sewage Treatment Plant.

D. SOLID WASTE

There will be an increase in solid waste generation. This will present no significant problem for local landfill disposal.

E. ENERGY

Increased consumption of electricity is expected due to improvements to and expansion of existing facilities and the construction of new facilities.

F. TRANSPORTATION

Minimal change.

G. AESTHETIC

Minimal change.

H. FLORA AND FAUNA

Minimal impact.

I. CONSTRUCTION

Temporary noise, dust, drainage, and transportation impacts would occur during construction.

J. HISTORIC SITES

Known historic and cultural sites on Camp Courtney have been identified and will be protected, except for those tombs which by agreement with the owners have been removed for Military Family Housing at South Camp Courtney.

APPENDIX L-1

FACILITIES PLANNING DOCUMENTS

This appendix summarizes basic facilities requirements (BFR) for Camp Courtney, by category code, and includes a list of assets, by tenancy, and proposed projects to resolve known deficiencies.

The importance of this appendix, however bulky, is that it creates Facilities Planning Documents similar to those found in the Shore Facilities Planning System. The FPDs are not currently used by the USMC. FPDs have been incorporated into USMC facilities planning as this Master Plan goes to press, and will replace this Appendix as available. This appendix enables the facilities manager and facilities planner formatted access to each category code required at Camp Courtney, and has proved highly successful since its introduction as a planning tool.

Figure L-1 illustrates the use of this appendix.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
17,700 SF BFR
17,700 SF DEFICIENT

NOTE: Construct 17,700 SF GOJ MC-6029-43, JFY 85.

CATEGORY CODE: 740-05 900 SF
EXCHANGE SNACK STAND IC 16

DESCRIPTION:

ASSETS:

4432 P AAFES 88 SF (A)

SUMMARY:

Adequate: 88 SF
Substandard: 0 SF
88 SF TOTAL
900 SF BFR
822 SF DEFICIENT

NOTE: Construct 800 SF, GOJ Okinawa Expressway Relocation Program.

CATEGORY CODE: 740-08
EXCHANGE FOOD STORE

1,400 SF
IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
1,400 SF BFR
1,400 SF DEFICIENT

NOTE: Construct 1,533 of CC 740-02 and 138 SF of CC _____.

CATEGORY CODE: 740-09
EXCHANGE SERVICE OUTLET

9,740 SF
IC

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: SF
Substandard: SF
SF TOTAL
SF BFR
SF DEFICIENT

NOTE: Construct 9,740 SF. Convert 1,866 SF.

CATEGORY CODE: 740-18 3,250 SF
BANK IC 16

DESCRIPTION:

ASSETS:

4228 P AMER EXPRESS 2,338 SF (A)

SUMMARY:

Adequate: 2,338 SF
Substandard: 0 SF
2,338 SF TOTAL
3,250 SF BFR
928 SF DEFICIENT

NOTE: Construct 2,375 SF.

CATEGORY CODE: 740-19 800 SF
CREDIT UNION IC 16

DESCRIPTION: Credit Unions are private cooperative savings and loan organizations. Facilities for a properly chartered credit union may be provided to serve military personnel permitted in the by-loans of the Credit Union.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
800 SF BFR
800 SF DEFICIENT

NOTE: No branch addition proposed by NFCU. Delete requirement.

CATEGORY CODE: 740-20 20,850 SF
TEMP LODGING (SPECIAL SERVICES) IC 16

DESCRIPTION:

ASSETS:

4440 P SPC SVCS 13,354 SF (A)

SUMMARY:

Adequate: 13,354 SF
Substandard: 0 SF
13,354 SF TOTAL
20,850 SF BFR
7,504 SF DEFICIENT

NOTE: BFR to be revised to 13,354 SF.

CATEGORY CODE: 740-23 31,500 SF
COMMISSARY IC 16

DESCRIPTION: A commissary store may be planned only when authorized by the HQMC.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
31,500 SF BFR
31,500 SF DEFICIENT

NOTE: Construct 31,500 SF, GOJ MC-6029-43,
JFY85.

CATEGORY CODE: 740-25 1,150 SF
FAMILY SERVICE CENTER IC 16

DESCRIPTION:

ASSETS:

4309 P CMP CPR 600 SF (A)

SUMMARY:

Adequate: 600 SF
Substandard: 0 SF
600 SF TOTAL
1,150 SF BFR
450 SF DEFICIENT

NOTES: Construct 1,150 SF Family Service
Center, GOJ Okinawa Expressway Relocation
Program; convert 600 SF of Bldg. 4309 to CC
610-10.

CATEGORY CODE: 740-28 1,800 SF
AMUSEMENT CENTER IC 16

DESCRIPTION:

ASSETS:

4339 P SPC SVCS 1,885 SF (A)

SUMMARY:

Adequate: 1,885 SF
Substandard: 0 SF
1,885 SF TOTAL
1,800 SF BFR
85 SF DEFICIENT

NOTE:

CATEGORY CODE: 740-30 2,540 SF
EXCHANGE AUTO SERVICE/REPAIR IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
2,540 SF BFR
2,540 SF DEFICIENT

NOTE: Construct 2,540 SF, GOJ MC-6029-44,
JFY85.

CATEGORY CODE: 740-36 5,000 SF
HOBBY SHOP/ARTS AND CRAFT SHOP IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
5,000 SF BFR
5,000 SF DEFICIENT

NOTES: Construct 7,500 SF, GOJ MC-6029-31
JFY86. BFR to be revised to 7,500 SF.

CATEGORY CODE: 740-37 4,125 SF
SPECIAL SERVICES ISSUE OFFICE IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
4,125 SF BFR
4,125 SF DEFICIENT

NOTE: Construct 4,166 SF, GOJ MC-6029-32,
JFY86.

CATEGORY CODE: 740-38 6,000 SF
AUTO HOBBY SHOP IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
6,000 SF BFR
6,000 SF DEFICIENT

NOTES: Convert approximately 4,050 SF of CC
441-12 to CC 740-37, unprogrammed. Once the
exact SF is determined, the BFR will be reduced.

CATEGORY CODE: 740-40
BOWLING ALLEY

13,700 SF
IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
13,700 SF BFR
13,700 SF DEFICIENT

NOTE: Construct 12,454 SF Bowling Alley, NAF
P-664, FY83.

CATEGORY CODE: 740-43
GYMNASIUM

21,000 SF
IC 16

DESCRIPTION:

ASSETS:

TE-18	S	SPC SVCS	6,112 SF	(I)
4430	P	SPC SVCS	2,004 SF	(SS)

SUMMARY:

Adequate: 0 SF
Substandard: 2,004 SF
2,004 SF TOTAL
21,500 SF BFR
19,996 SF DEFICIENT

NOTES: Construct 20,782 SF Gymnasium, GOJ
MC-6029-32, JFY86; demolish TE-18.

CATEGORY CODE: 740-55
YOUTH CENTER

4,750 SF
IC 16

DESCRIPTION: The facility accommodates indoor
social, cultural and physical activities of
youths 6 to 19 years of age such as: dancing,
shows, parties, games, music, meetings and other
related activities.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
4,750 SF BFR
4,750 SF DEFICIENT

NOTES: Construct 3,625 SF Youth Center, GOJ
Okinawa Expressway Relocation Program.
Remaining deficiency to be supported at Camp
McTureous.

CATEGORY CODE: 740-56
THEATER

6,500 SF
IC 16

DESCRIPTION:

ASSETS:
TE-39 S SPC SVCS 4,953 SF (SS)

SUMMARY:
Adequate: 0 SF
Substandard: 4,953 SF
 4,953 SF TOTAL
 6,500 SF BFR
 1,547 SF DEFICIENT

NOTES: Construct 6,500 SF Theater, GOJ
MC-6029-30, JFY85; demolish Bldg. TE-39.

CATEGORY CODE: 740-60 12,000 SF
COMMISSIONED OFFICER OPEN-MESS IC 16

DESCRIPTION:

ASSETS:
4403 P MCB Clubs 1,060 SF (A)
4419 P MCB Clubs 8,963 SF (A)

SUMMARY:
Adequate: 10,023 SF
Substandard: SF
 10,023 SF TOTAL
 12,000 SF BFR
 1,977 SF DEFICIENT

NOTE:

CATEGORY CODE: 740-63 25,175 SF
ENLISTED CLUB, E1-E5 IC 16

DESCRIPTION:

ASSETS:
4218 P MCB Clubs 9,286 SF (A)

SUMMARY:
Adequate: 9,286 SF
Substandard: 0 SF
 9,286 SF TOTAL
 25,175 SF BFR
 16,089 SF DEFICIENT

NOTE: Construct 15,889 SF, unprogrammed NAF.

CATEGORY CODE: 740-66 6,500 SF
MESS OPEN, E6-E9 IC 16

DESCRIPTION:

ASSETS:
4334 P MCB Clubs 4,443 SF (A)

SUMMARY:
Adequate: 4,443 SF
Substandard: 0 SF
 4,443 SF TOTAL
 6,500 SF BFR
 2,057 SF DEFICIENT

NOTES: Construct 2,477 SF, NAF N-502, FY85.
Convert 280 SF of Bldg. 4334 from CC 740-71 to
CC 740-66. BFR to be redeveloped.

CATEGORY CODE: 740-71 7,000 SF
PACKAGE STORE (CLASS IV) IC 16

DESCRIPTION:

ASSETS:
4334 P MCB CLUBS 280 SF (A)

SUMMARY:
Adequate: 280 SF
Substandard: 0 SF
280 SF TOTAL
7,000 SF BFR
6,720 SF DEFICIENT

NOTES: Convert 5,134 SF of CC 740-02 and 1,866
SF of CC 740-09 to CC 740-71; revert 280 SF of
Bldg. 4334 back to CC 740-66.

CATEGORY CODE: 740-74 6,600 SF
CHILD CARE CENTER IC 16

DESCRIPTION: Child care centers may be
established as required to provide day care for
preschool age children (up through 5 years old)
in situations where the mother is employed, or
at times when the family is temporarily unable
to oversee and come for the child.

ASSETS:

SUMMARY:
Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
6,600 SF BFR
6,600 SF DEFICIENT

NOTES: Construct 3,425 SF Child Care Center,
GOJ Okinawa Expressway Relocation Program.
Remaining deficiency to be supported at Camp
McTureous.

CATEGORY CODE: 740-76 8,000 SF
LIBRARY IC 16

DESCRIPTION:

ASSETS:
4228 P SPC SVCS 1,533 SF (A)

SUMMARY:
Adequate: 1,533 SF
Substandard: 0 SF
1,533 SF TOTAL
8,000 SF BFR
6,467 SF DEFICIENT

NOTES: Construct 8,000 SF, GOJ MC-6029-31,
JFY86. Convert 1,533 SF Bldg. 4228 to CC
740-08.

CATEGORY CODE: 740-78 2,600 SF
RECREATION PAVILION IC 16

DESCRIPTION: The purpose of this facility is to support recreation areas such as parks, playgrounds, picnic areas, blocks, etc.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
2,600 SF BFR
2,600 SF DEFICIENT

NOTE: Requirement fulfilled by CC 730-66.

CATEGORY CODE: 740-84 4 EA
INDOOR PLAYING COURT IC 16

DESCRIPTION:

ASSETS:

SUMMARY:

Adequate: 0 EA
Substandard: 0 EA
0 EA TOTAL
4 EA BFR
4 EA DEFICIENT

NOTES: Construct 1,760 (2 EA) Indoor Playing Court, NAF N-227, FY83. Construct 2,480 SF (1 EA) Indoor Playing Court, GOJ MC-6029-32, JFY86.

CATEGORY CODE: 740-88 4,350 SF
EDUCATION SERVICES BUILDING IC 16

DESCRIPTION: This facility provides facilities for the advancement of the academic, technical, and vocational education of military personnel of all grades and ranks in order to enhance their potential to the service.

ASSETS:

SUMMARY:

Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
4,350 SF BFR
4,350 SF DEFICIENT

NOTES: A substandard BEQ (to be determined) will be converted to support the CC 740-88 requirement. See CC 721-11.

CATEGORY CODE: 740-89 9,700 SF
BATH HOUSE IC 16

DESCRIPTION:

ASSETS:
 4227 P SPC SVCS 2,000 SF (A)
 4413 P SPC SVCS 1,407 SF (A)

SUMMARY:
 Adequate: 3,407 SF
 Substandard: 0 SF
 3,407 SF TOTAL
 9,700 SF BFR
 6,303 SF DEFICIENT

NOTE: BFR to be reduced.

CATEGORY CODE: 750-10 6 EA
PLAYING COURTS IC 16

DESCRIPTION:

ASSETS:
 4305 P SPC SVCS 1 EA (SS)
 4410 P SPC SVCS 2 EA (A)
 4426 P SPC SVCS 2 EA (I)
 4427 P SPC SVCS 2 EA (A)
 4428 P SPC SVCS 1 EA (A)

SUMMARY:
 Adequate: 5 EA
 Substandard: 1 EA
 6 EA TOTAL
 6 EA BFR
 0 EA DEFICIENT

NOTE: Demolish for 4,426, unprogrammed.

CATEGORY CODE: 750-20 6 EA
PLAYING FIELDS IC 16

DESCRIPTION:

ASSETS:
 4232 P SPC SVCS 1 EA (A)
 4436 P SPC SVCS 1 EA (A)

SUMMARY:
 Adequate: 2 SF
 Substandard: 0 SF
 2 SF TOTAL
 6 SF BFR
 4 SF DEFICIENT

NOTE: Construct four playing fields, unprogrammed NAF.

CATEGORY CODE: 750-30 1 EA
OUTDOOR SWIMMING POOL IC 16

DESCRIPTION: 25-meter pool for outdoor recreational use.

ASSETS:
 4413A P SPC SVCS 1 EA (A)

SUMMARY:
 Adequate: 1 EA
 Substandard: 0 EA
 1 EA TOTAL
 1 EA BFR
 0 EA DEFICIENT

NOTES: The BFR for Courtney/McTureous is 75 ME; since Courtney has a 25 ME pool, the remaining 50 ME requirement should be McTureous.

CATEGORY CODE: 750-34 1 EA
WADING POOL IC 16

DESCRIPTION:

ASSETS:

SUMMARY:
Adequate: 0 SF
Substandard: 0 SF
0 SF TOTAL
1 SF BFR
1 SF DEFICIENT

NOTE: Construct Wading Pool, OERP.

CATEGORY CODE: 750-52 1 EA
SKEET RANGE IC 16

DESCRIPTION:

ASSETS:
4351 S SPC SVCS 1 EA (A)

SUMMARY:
Adequate: 1 EA
Substandard: 0 EA
1 TOTAL
1 EA BFR
0 EA DEFICIENT

NOTE:

CATEGORY CODE: 750-20 2 EA
OUTDOOR MONUMENT IC 16

DESCRIPTION: Two monuments/memorials are located on station to commemorate events occurring during WW II.

ASSETS:
4212C P CMP CDR 1 EA (A)
4221 P CMP CDR 1 EA (A)

SUMMARY:
Adequate: 2 EA
Substandard: 0 EA
2 EA TOTAL
2 EA BFR
0 EA DEFICIENT

NOTE:

CATEGORY CODE: 750-59 289 EA
INCINERATOR AND BUILDING IC 16

DESCRIPTION:

ASSETS:

4208 P 289 SF (A)

SUMMARY:

Adequate: 289 SF

Substandard: 0 SF

289 SF TOTAL

289 SF BFR

0 DEFICIENT

NOTE: BFR submittal not required per NAVFAC
P-72.

APPENDIX L-3

PLANT INVENTORY

This appendix provides an inventory of natural and cultivated plants at Camp Courtney. The inventory was conducted in 1985 by the Southeast Botanical Gardens, Okinawa, Japan, under contract to MCB, Camp Smedley D. Butler.

1. SMALL SAGO PALM

Local Name: Sotestu

Scientific Name: Cycas revoluta Thunb

Place of Origin: Southern Japan

Morphology: Mature Height = 8 feet
Crown spread (30 years) = 10 feet

Blossoming season: March - April

Soil: a. Can be grown in direct sunlight or
shady areas.
b. Wind resistance, poor.

Remarks: 1. Generally too fragile for use in
housing areas on parks.
2. Do not plant closer than five feet
from buildings, sidewalks, roads,
sewer, or water lines.

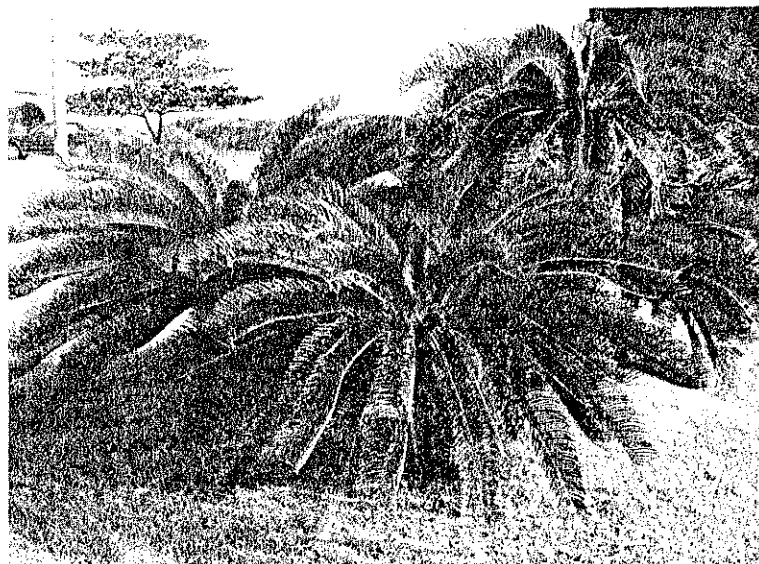
Maintenance: Remove dead leaves.

When to apply fertilizer: Apply * Tsubohi
Mar-May and use organic fertilizer.

Harmful Insects (Season): Scale Insect,
Sept-Oct.

Treatment (Pesticide): Jimateate....dilute
w/water one part to 1,000. Apply
three times, once every ten days.

* See Plant Maintenance



2. LUCHU PINE

Local Name: Ryukyumastu

Scientific Name: Pinus Luchuensis Mayr.

Place of Origin: Okinawa

Morphology: Evergreen tree

Blossoming season: N.A.

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment.
c. Rapid growth.

Remarks: 1. Okinawa prefectural tree.
2. Grows well in sunny areas, acidic and pedocal soil.

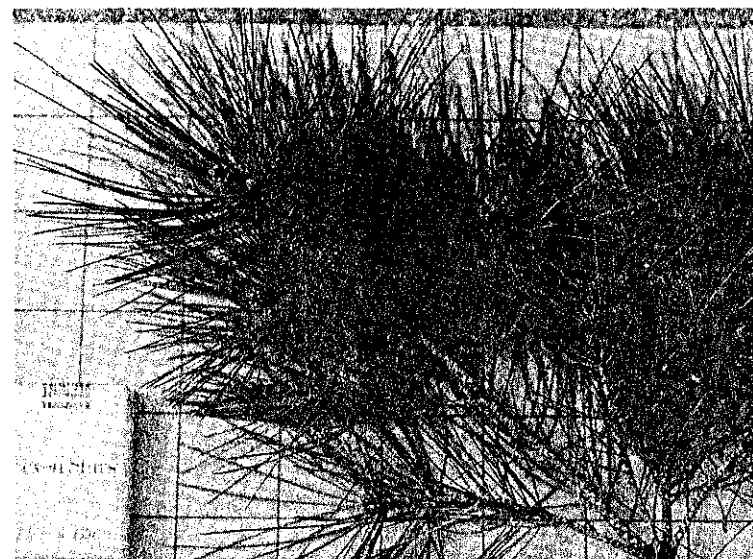
Maintenance: Cut dead or broken branches.

When to apply fertilizer: Apply *Tsubohi
Mar-May, Sep-Oct and use organic
fertilizer.

Harmful Insects (Season): Pine engraver.

Treatment (Pesticide): Pinetex...dilute w/water
one part to 50. Sept-Dec, as
protection, diseased tree should
be cut down and burned.

* See Plant Maintenance



3. NORFOLK CEDAR

Local Name: Kobanonanyosugi

Scientific Name: Araucaria heterophylla

Place of Origin: Norflork Island

Morphology: Evergreen tree

Blossoming season: N/A

Soil: a. Affinity to sunlight.
b. Able to withstand saline.
c. Rapid growth.

Remarks: 1. This tree is naturally symmetric.
Care should be taken when pruning
so as not to cut off the upper
trunk of the tree.
2. Excellent wind resistance.

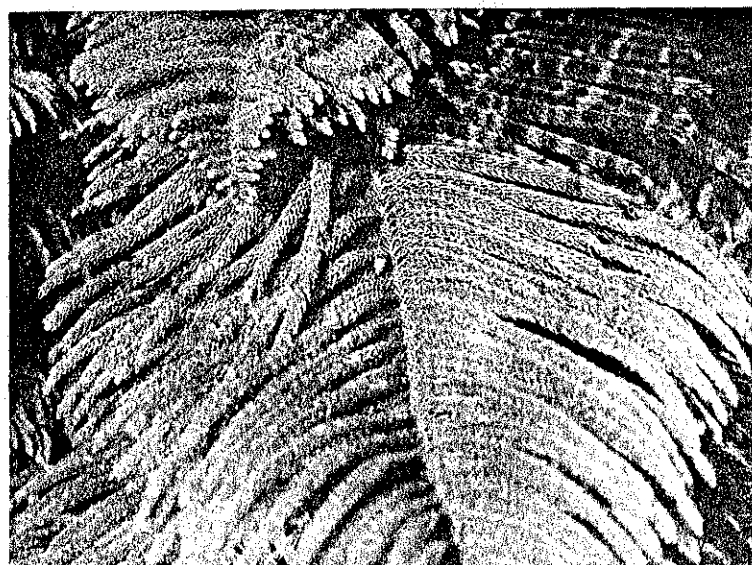
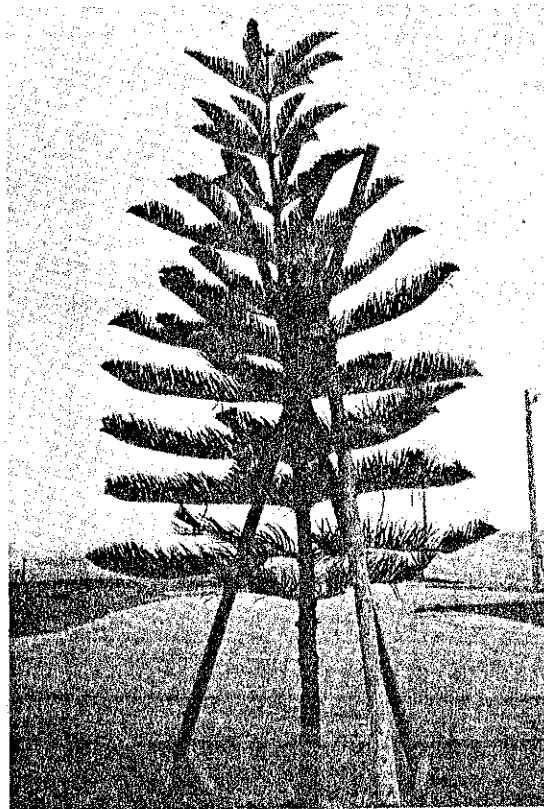
Maintenance: Remove dead branches.

When to apply fertilizer: Apply * Tsubohi
Mar-April, Sept-Oct and use
organic fertilizer.

Harmful Insects (Season): N/A

Treatment (Pesticide): N/A

* See Plant Maintenance



4. INDIAN LAUREL

Local Name: Gajimaru

Scientific Name: Ficus retusa L.

Place of Origin: Southern Japan, China, Taiwan,
India, Malaysia, Australia.

Morphology: Evergreen tree

Blossoming season: February - March.

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment.
c. Rapid growth.

Remarks: 1. After maturing, this plant will
have a large root and limb system
that is good for shade purposes.
2. Pruning may be necessary.

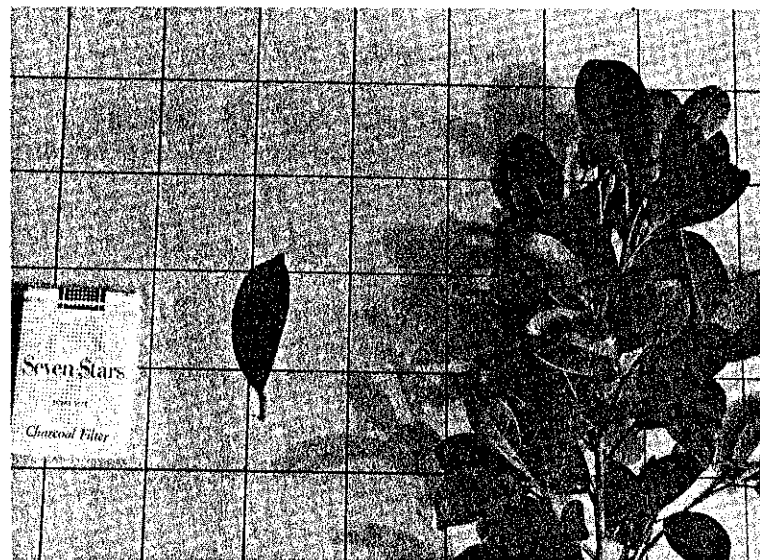
Maintenance: Prune Feb-Mar

When to apply fertilizer: Apply * Rinpi
Mar-May, Sept-Oct and use organic
fertilizer.

Harmful Insects (Season): Many varieties of
caterpillars; June-July.

Treatment (Pesticide): Diputerex....dilute
w/water one part to 1000. Apply
anytime.

* See Plant Maintenance



5. AKOU

Local Name: (Above same)

Scientific Name: Ficus wightina wall

Place of Origin: Southern Japan, Taiwan,
Southern China (PRC) Indochina,
Thailand, Western Malaysian Island.

Morphology: Evergreen tree.

Blossoming season: February - March

Soil: a. Affinity to sunlight.
b. Able to withstand saline
environment.
c. Rapid growth.

Remarks: 1. Primarily used for shadetree.

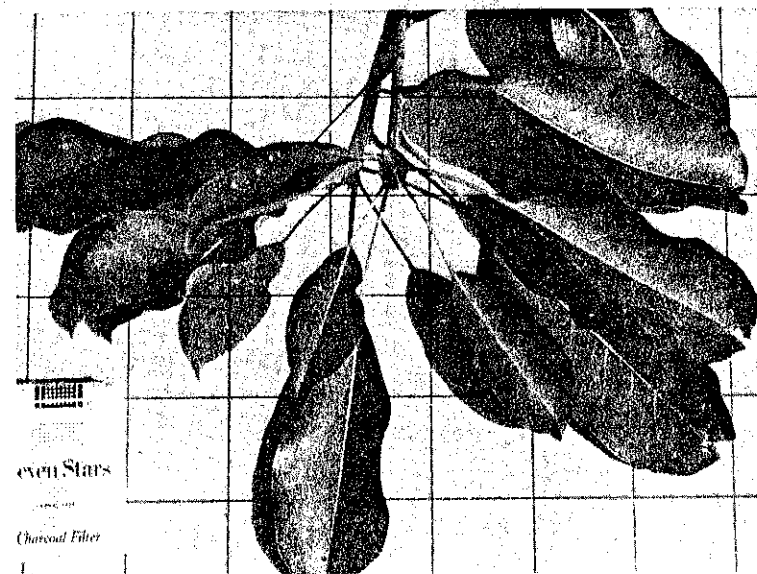
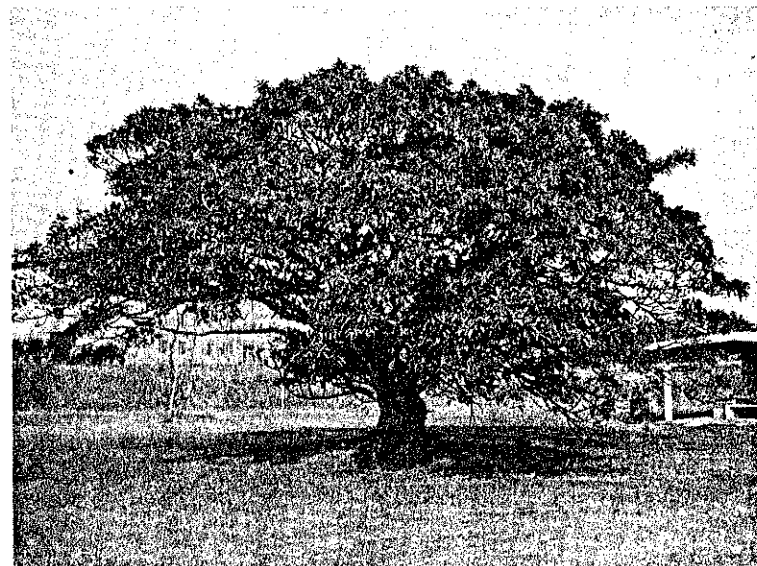
Maintenance: Remove dead branches.

When to apply fertilizer: Apply * Tsubohi
Mar-April, Sep-Oct and use organic
fertilizer.

Harmful Insects (Season): Scale Insect.

Treatment (Pesticide): Jimateate...dilute
w/water one part to 1000. Apply
three times, once every 10 days.

* See Plant Maintenance



6. TROPICAL ALMOND

Local Name: Momotamana

Scientific Name: *Terminaria catappa*

Place of Origin: Southern Japan (Okinawa),
Taiwan, Southern China, India,
Malaysia, Polynesia.

Morphology: Decidious tree

Blossoming season: June

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment.
c. Normal growth.

Remarks: 1. Good shade.
2. Good wind resistance.
3. Leaves change color in autumn.

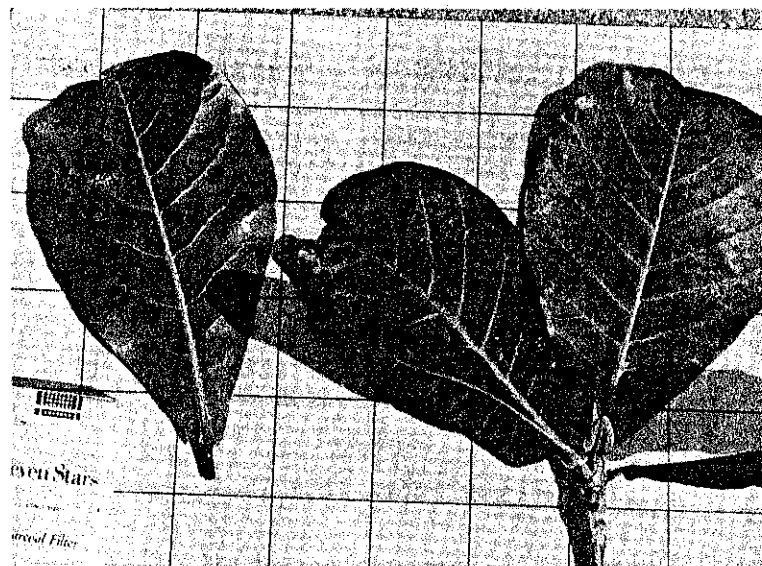
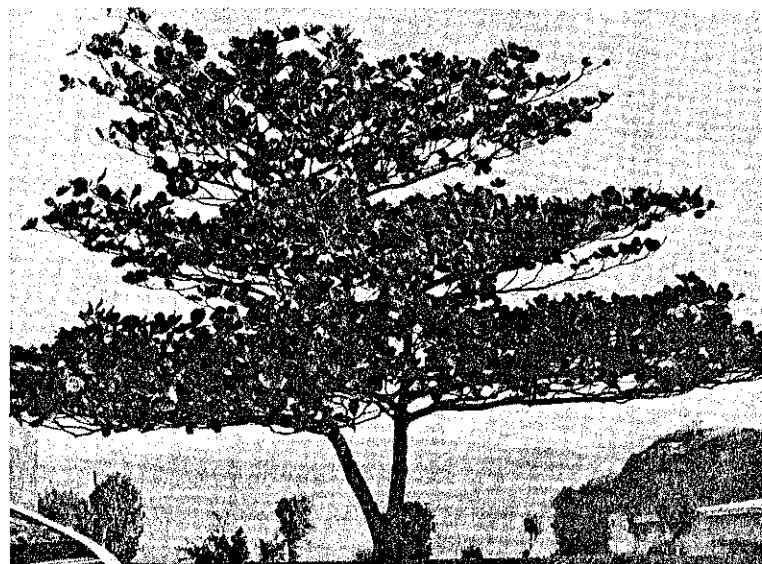
Maintenance: Remove dead or broken branches.

When to apply fertilizer: Apply * Tsubohi
Mar-April, Sept-Oct and use
organic fertilizer.

Harmful Insects (Season): Oriental tussock
moth, May-July.

Treatment (Pesticide): Diputerex....dilute
w/water one part to 1000. Apply
three times, once every 10 days.

* See Plant Maintenance



7. CORAL TREE

Local Name: Deigo

Scientific Name: *Erythrina variegata* var.
orientalis merril

Place of Origin: India

Morphology: Deciduous tree

Blossoming season: April - May.

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment.
c. Rapid growth.

Remarks: 1. Okinawa prefectural flower.
2. Good shadetree.

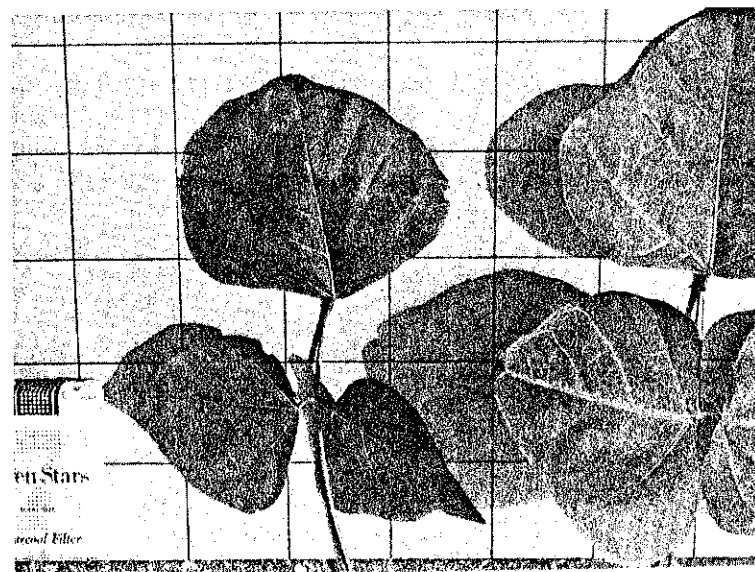
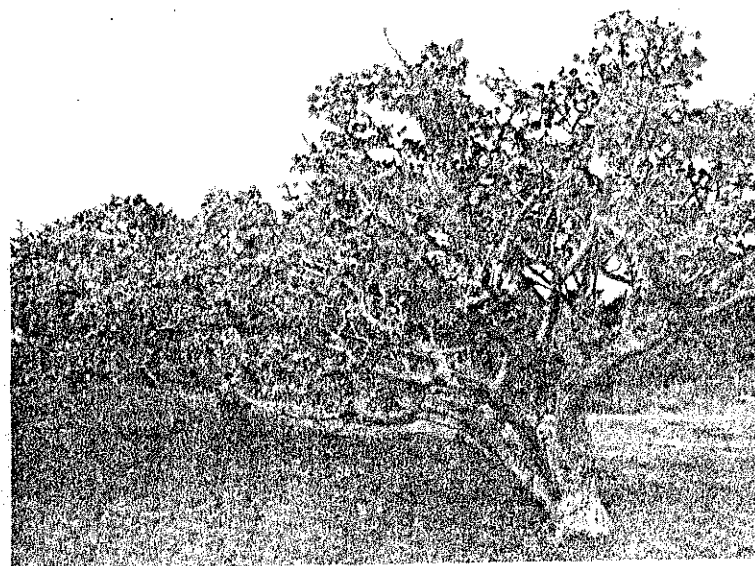
Maintenance: Cut dead or broken branches.

When to apply fertilizer: Apply * Tsubohi
May-June and use organic fertilizer.

Harmful Insects (Season): Scale Insect; Mar-Oct

Treatment (Pesticide): Jimateate....dilute
w/water one part to 1000. Apply
three times, once every 10 days.

* See Plant Maintenance



8. SOSHIJU

Local Name: Soshiju

Scientific Name: *Acacia confusa* Nerr.

Place of Origin: Southern Taiwan, Philippines

Morphology: Tree, deciduous

Blossoming season: April - May

Soil: a. Affinity to sunlight.
b. Low saline environment.
c. Rapid growth.

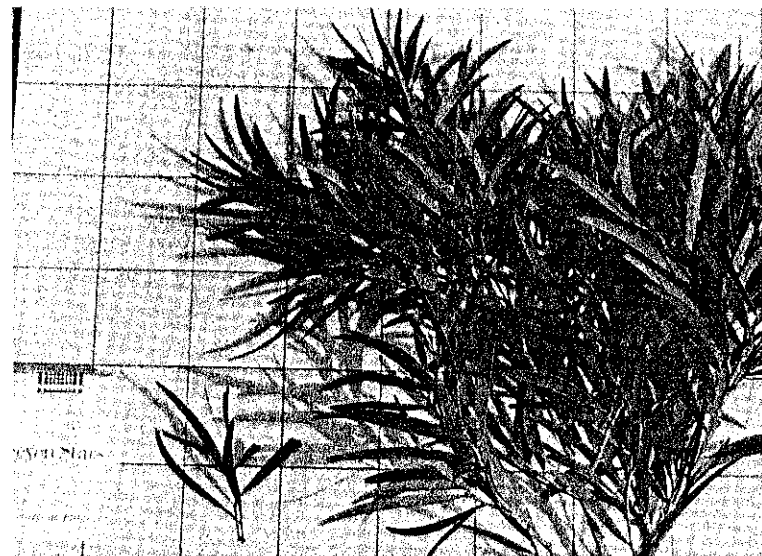
Maintenance: 1. Remove dead branches.

When to apply fertilizer: Apply * Tsubohi
Feb-April and use organic
fertilizer.

Harmful Insects (Season): Scale Insect

Treatment (Pesticide): Jimateate....dilute
w/water one part to 1000. Apply
twice, once every 10 days.

* See Plant Maintenance



9. COAST CASUARINA

Local Name: Mokumao

Scientific Name: Casuarina stricta Ait

Place of Origin: Australia

Morphology: Evergreen tree

Blossoming season: April

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment
c. Rapid growth.

Remarks: 1. Germinates rapidly pruning is necessary.

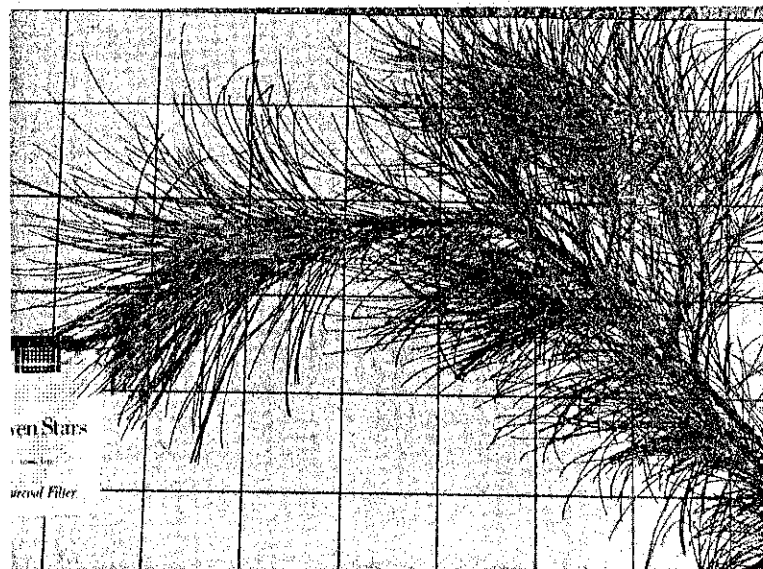
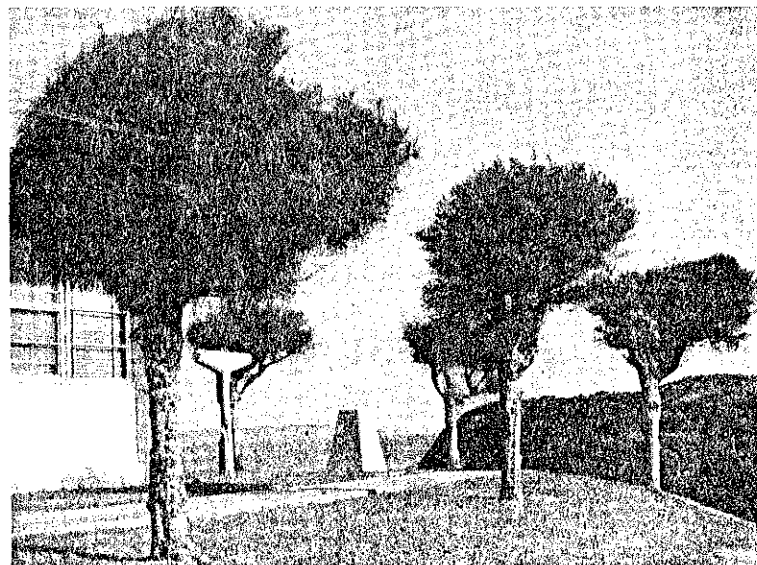
Maintenance: Prune Feb-Mar and before typhoons.

When to apply fertilizer: Apply * Rinpi Mar-May and use organic fertilizer.

Harmful Insects (Season): Scale Insect

Treatment (Pesticide): Jimateate....dilute w/water one part to 1000. Apply three times, once every 10 days.

* See Plant Maintenance



10. OLEANDER

Local Name: Kyochikuto

Scientific Name: Nerium Oleander and N. indicum

Place of Origin: Native to areas from Iran to Japan.

Morphology: Evergreen shrub
Mature Height: 30 feet
Crown spread: (30 years): 10 feet
Flowers: white, pink violet, orange
Depending on the plant year round.

Blossoming season: Depending on the plant, year round.

Soil: a.
b.
c.

Remarks: 1. The tree sap is poisonous, so caution should be taken.
2. Can withstand saline soil and smokey environment.

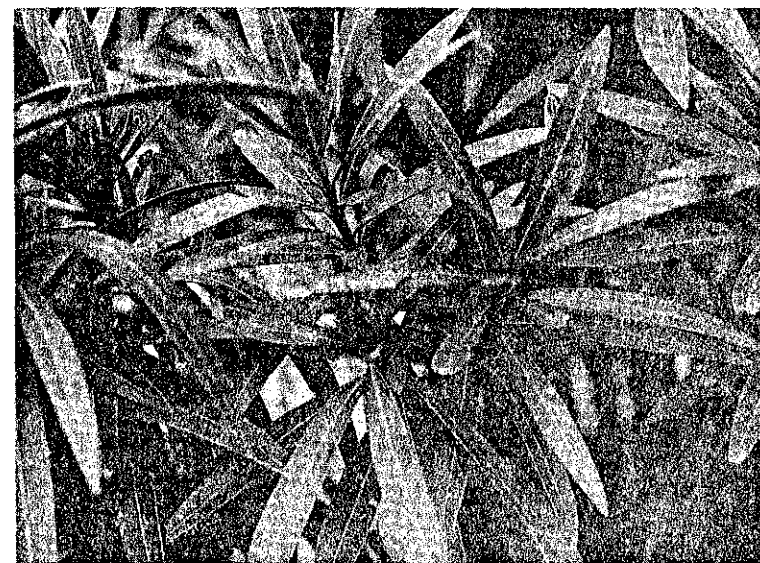
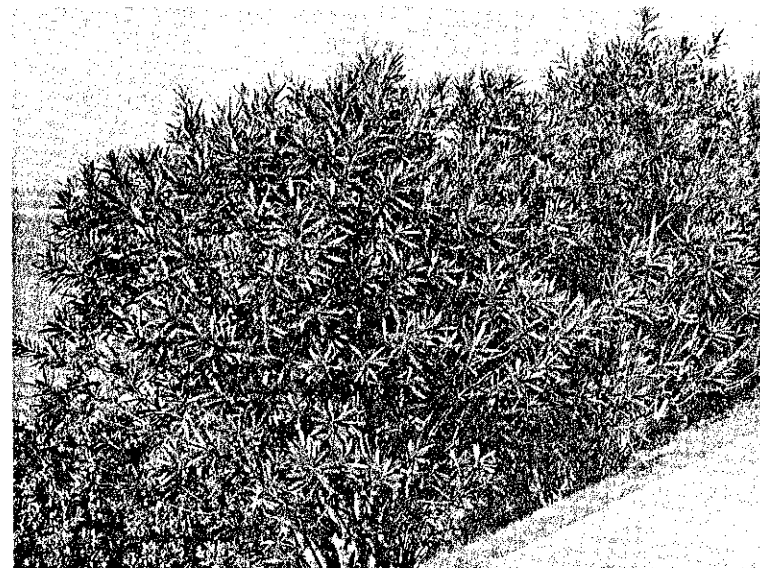
Maintenance: Prune Mar-April

When to apply fertilizer: Apply * Tsubohi
Feb-April, Oct-Nov and use organic fertilizer.

Harmful Insects (Season): Kyochikuto-suzumega
July-Oct

Treatment (Pesticide): Jimateate or
Diputerex...dilute w/water one
part to 1000. Apply three times,
once every 10 days.

* See Plant Maintenance



11. CROTON

Local Name: Croton

Scientific Name: Codiaeum Variegtum L.

Place of Origin: Malaysia, Indonesia, Australia

Morphology: Shrublike evergreen.

Blossoming season: Year round.

Soil: a. Affinity to sunlight.
b. Able to withstand saline environment.
c. Rapid growth.

Remarks: 1. Sunshine gives good color to leaves.

Maintenance: Trim occasionally, need much irrigation in summer.

When to apply fertilizer: Apply * Tsubohi Mar-April, Sept-Dec and use organic fertilizer.

Harmful Insects (Season): Scale Insect.

Treatment (Pesticide): Jimateate....dilute w/water one part to 1000. Apply three times, once every 10 days.

* See Plant Maintenance



12. CHINESE HIBISCUS

Local Name: Hibiscus

Scientific Name: Hibiscus rosa-sinensis L.

Place of Origin: East India

Morphology: Evergreen shrub

Blossoming season: March-December

Soil: a. Affinity to sunlight.
b. Normal saline environment.
c. Rapid growth.

Remarks: 1. Since this plant blossoms throughout the year it can be used to beautify certain areas.
2. Grows in any type of soil.
3. Pruning is necessary.

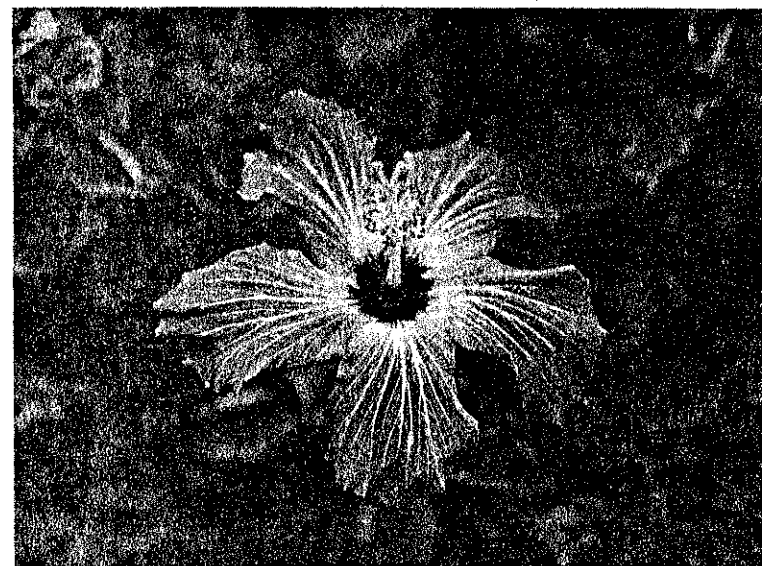
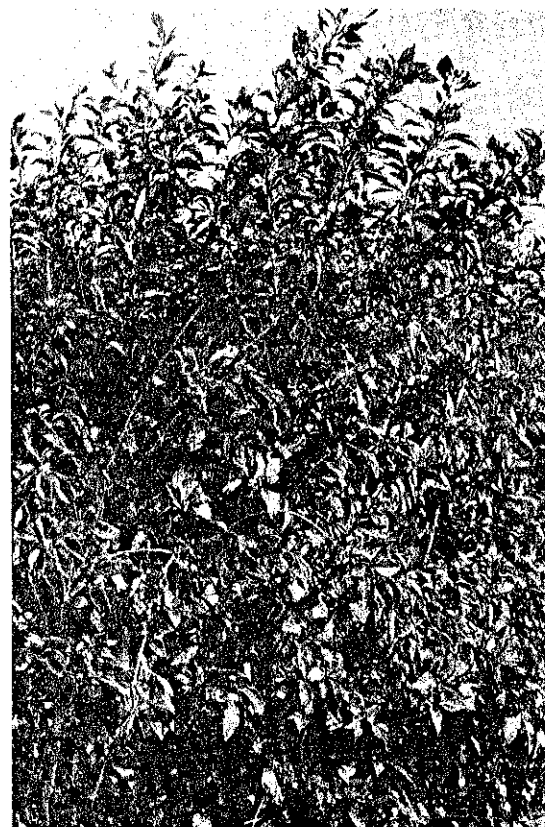
Maintenance: Certain branches when thick cover.
Prune Feb-Mar.

When to apply fertilizer: Apply * Tsubohi
Mar-April and use
organic fertilizer.

Harmful Insects (Season): Aphid, Mar-May.

Treatment (Pesticide): DDVP....dilute w/water
one part to 2000. Apply twice,
once every five days.

* See Plant Maintenance



13. CENTURY PLANT

Local Name: Ryuzetsuran

Scientific Name: Marginata

Place of Origin: Central America

Morphology: Shrub

Blossoming season: May

Soil: a. Affinity to sunlight.
b. Poor to saline environment.
c. Rapid growth.

Remarks: 1. Must be well drained. Grow in sandy, poor soil.
2. Does not blossom every year. Once it blossoms, the plant shall perish.

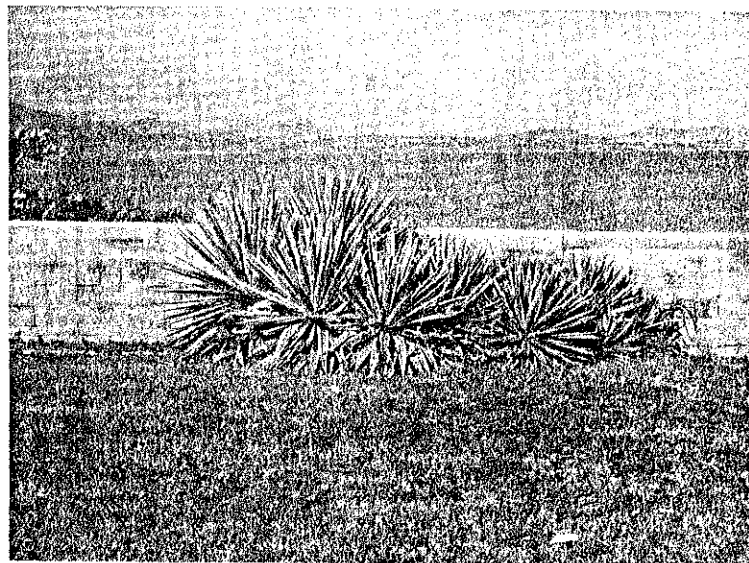
Maintenance: Remove dead or broken branches.

When to apply fertilizer: Apply * Tsubohi May-June and use organic fertilizer.

Harmful Insects (Season): N.A.

Treatment (Pesticide): N.A.

* See Plant Maintenance



14. KORAISHIBA

Local Name: (above same)

Scientific Name: Zoysia Tenuifolia

Place of Origin: Southern Japan, Taiwan,
Southern China to tropical Asia.

Morphology: Ground cover.

Blossoming season: N.A.

Soil: a. Affinity to unlight.
b. Able to withstand saline environment
c. Able to withstand to several cuttings
and been walked over.

Remarks: 1. Able to withstand to dry
environment.

Maintenance: Cutting spring Mar-April twice,
summer four times, autumn once.

When to apply fertilizer: Apply * Hyomensehi
Mar-May, June-Dec after cutting
and use chemical fertilizer.

Harmful Insects (Season): Cut worm.

Treatment (Pesticide): Diputerex....dilute
w/water one part to 1000. Apply
during night.

* See Plant Maintenance

