Suga Shore Protection

DEPARTMENT OF LAND UTILIZATION

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

92/SV-8(JT)

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'92 DEC -3 P1:17
OFC. OF ENVIR... QUALITY CONT...

November 30, 1992

Mr. Brian J. J. Choy, Director
Office of Environmental Quality Control
(OEQC)
220 S. King Street, 4th Floor
Honolulu, Hawaii 96813

CHAPTER 343, HRS
Environmental Assessment/Determination
Negative Declaration

Recorded Owner	:	Silvestre & Rebecca Suga
Applicant	:	Silvestre & Rebecca Suga
Agent	:	Oceanit Coastal Corporation
Location	:	91-873 Pohakupuna Road - Ewa
Tax Map Key	:	9-1-25: 54
Request	:	To remove an existing seawall and to construct a shore protection berm and concrete flanking walls within the Shoreline Setback Area
Determination	:	A Negative Declaration Is Issued

Attached and incorporated by reference is the Environmental Assessment (EA) prepared by the applicant for the project.

On the basis of the EA, we have determined that this project meets none of the significance criteria identified in Title 11, Chapter 200 of the Department of Health's Administrative Rules and will not have a significant environmental effect. Therefore, we have issued a negative declaration.

Approved Loretta Chee
LORETTA K.C. CHEE
Acting Director of Land Utilization

LKCC:ct

207

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

1992-12-23-OA-FEA-Suga Shore Protection

FINAL
ENVIRONMENTAL ASSESSMENT FOR A SHORE PROTECTION BERM AT 91-873 POHAKUPUNA ROAD, EWA BEACH
TMK 9-1-25:54

submitted to:

THE DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

MAY 1992

Century Square 1188 Bishop Street, Suite 2512, Honolulu, Hawaii 96813
TELEX: 7431404 MCI: OCEANIT Ph: (808) 531-3017 FAX: (808) 526-1519

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I. GENERAL INFORMATION

A. APPLICANT: Silvestre and Rebecca Suga
91-814 Pohakupuna Road
Ewa Beach, HI 96706

B. RECORDED FEE OWNER: Same as applicant.

C. AGENT: Oceanit Coastal Corporation
1188 Bishop Street, Suite 2512
Honolulu, HI 96813
phone: 531-3017

D. TAX MAP KEY: 9-1-25:54

E. LOT AREA: 21,956 sq ft

F. AGENCIES CONSULTED IN MAKING ASSESSMENT:

Department of Land Utilization, City and County of Honolulu.

II. DESCRIPTION OF PROPOSED ACTION

A. GENERAL DESCRIPTION

The assessment described herein evaluates an existing vertical cement rubble masonry (CRM) seawall for suitability as a shore protection structure to determine whether the wall should (1) remain as is, (2) be removed, or (3) be removed and replaced. This evaluation together with an environmental assessment accompanies an application for a Shoreline Setback Variance (SSV). The project site is shown in Figure 1.

Oceanit Coastal Corporation (OCC) evaluated the engineering design and construction of the existing structure to determine whether it was designed according to accepted coastal engineering standards and whether it was suitable for expected environmental conditions.

The primary ocean environmental problems at the site prior to building the existing wall were wave runup that occasionally flooded the property and periods of beach erosion when soil and trees were lost. Although the existing wall has mitigated runup and has no apparent structural problems (no visible cracks and no apparent scouring at the toe), it was not designed according to accepted coastal engineering principles. The wall has functioned effectively in part because it is normally fronted by a sloping sand beach that attenuates incoming waves similar to a sloping revetment. Should this beach be eroded, the wall will no longer act as a revetment and scouring or wall damage could occur.

The wall was constructed in the Shoreline Setback Zone without the required permits (SSV and Building Permit). The property owner has been cited by the City and County of Honolulu Building Department. The wall also crosses the surveyed seaward property line onto State of Hawaii land (below the high water line) causing a problem of jurisdiction when permits are required.

Given the legal and design problems, we recommend removing the existing, unauthorized wall and building a sand berm that will dissipate wave energy and minimize runup onto the property.

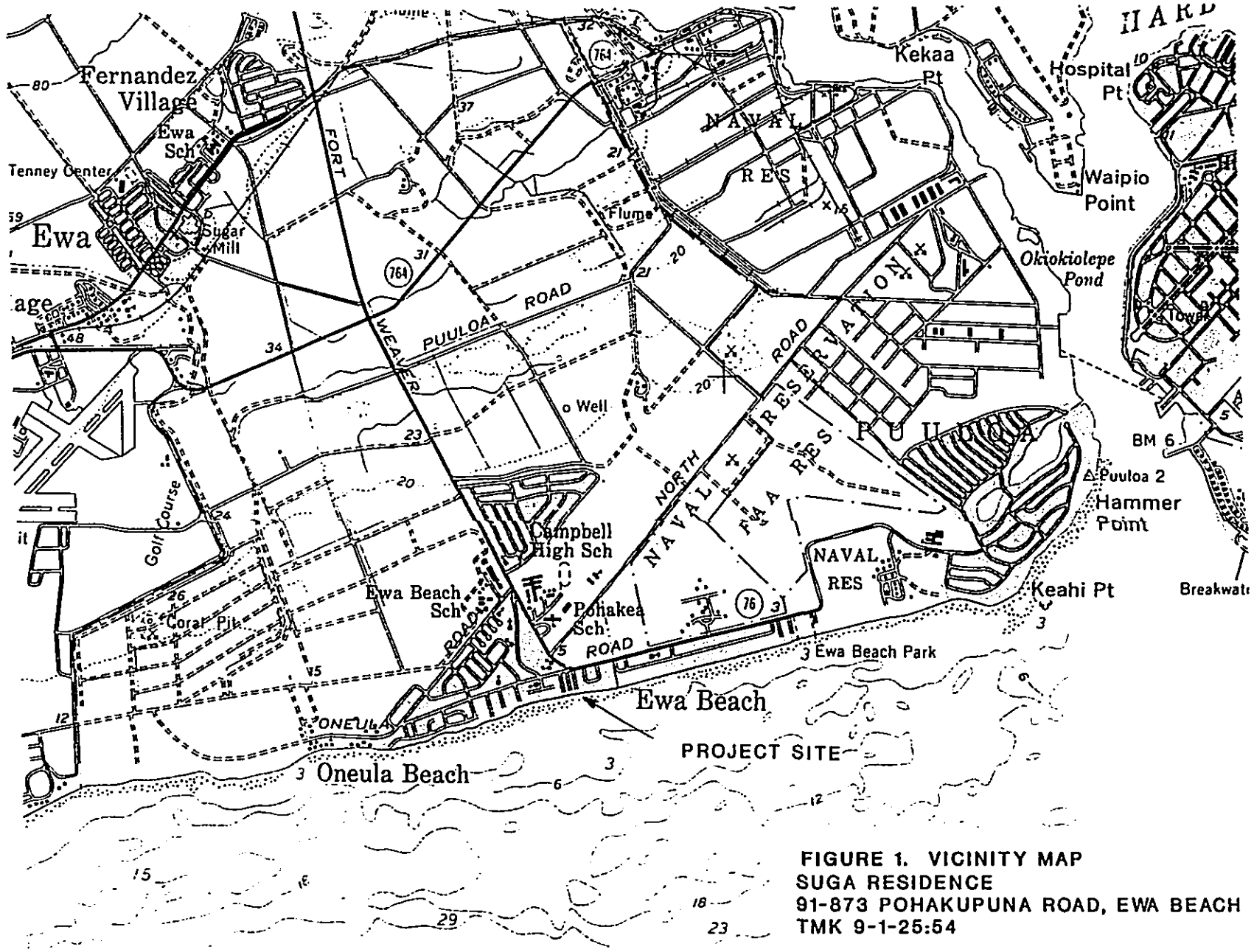

FIGURE 1. VICINITY MAP
SUGA RESIDENCE
91-873 POHAKUPUNA ROAD, EWA BEACH
TMK 9-1-25:54

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B. TECHNICAL CHARACTERISTICS

(1) Use Characteristics

A proposed berm will replace an existing vertical CRM wall. The berm will reduce wave runup and resulting flooding of the property.

(2) Physical Characteristics

Property Layout

A lot and shoreline survey is included as Appendix A. A portion of the survey is shown in Figure 2.

Shoreline Conditions

An aerial photograph of the property is shown as Figure 3. Photographs of the existing shoreline and CRM wall are shown in Figure 4. The property contains two homes located on level ground approximately six feet above sea level. The beach is approximately 20-30 feet wide between the wall and the water line. The offshore bottom is flat, consisting of combined sand and rubble. Water depth is less than five feet below Mean Lower Low Water (MLLW) over 150 feet offshore and reaches 12 feet more than 2000 feet offshore. Beach profiles are shown in Figure 5.

Hwang (1981) documented the change in vegetation line and water line between 1950 and 1979 on either side of the property. There have been large changes (-26 feet) during certain time periods; however, the net change in water line to the east of the property was -21 feet and the net change to the west was +5 feet. During this time period seawalls were built at several locations along this coast. The existing seawall on the Suga property was built in 1984. The beach appears stable at the present; however, the owners reported erosion including loss of trees prior to building the wall. Tree stumps can be seen near the water line on neighboring property. The Oahu Shoreline Study (1988) states that the relative location of the vegetation line receded 7 feet between 1974 and 1988, which is supported by the property owner's description and the location of neighboring tree stumps. In October 1990, sand depth to hard substrate was 3-4 feet on the seaward side of the wall. This depth varies with time and has been observed by the owners as much as 5-7 feet.

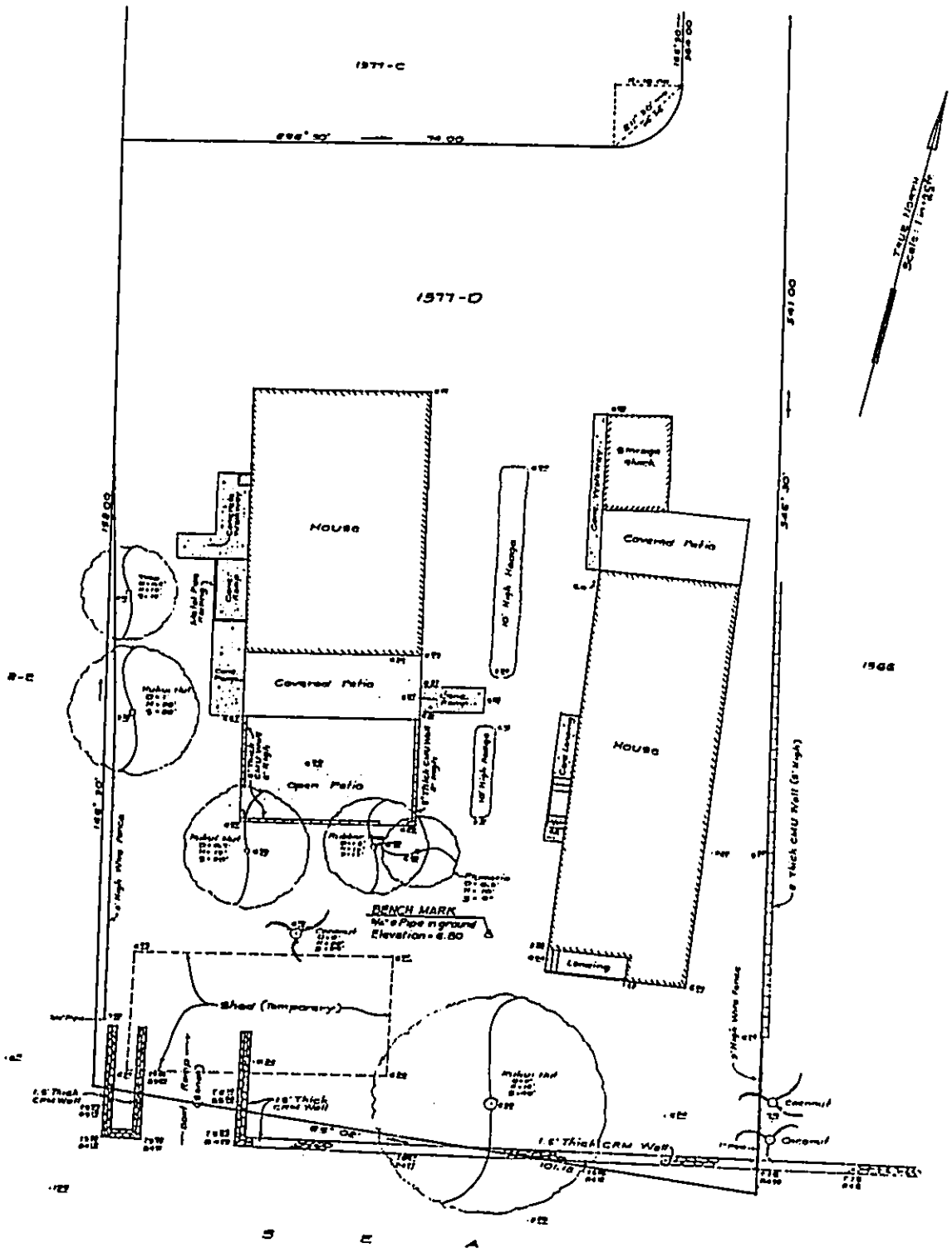

FIGURE 2. LOT AND SHORELINE SURVEY
SUGA RESIDENCE
91-873 POHAKUPUNA ROAD, EWA BEACH
TMK 9-1-25:54

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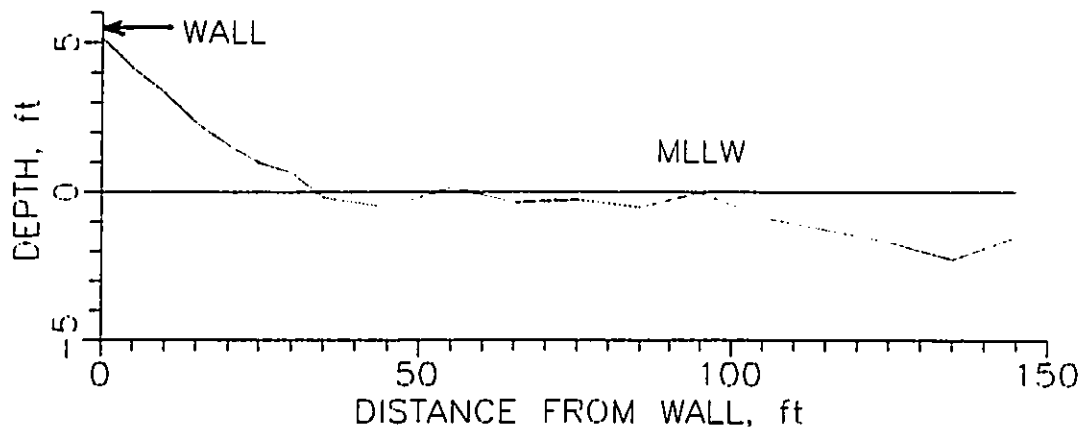
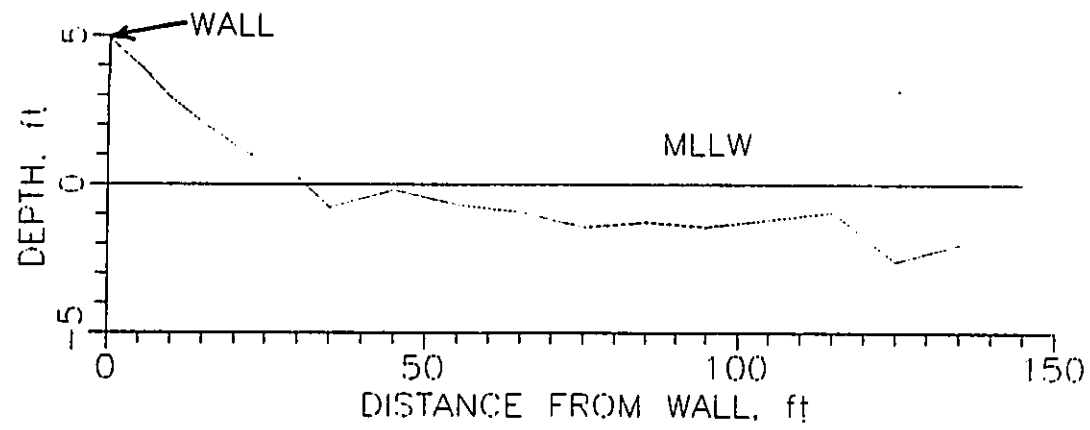
FIGURE 3. AERIAL PHOTOGRAPH
SUGA RESIDENCE, FEB 1988

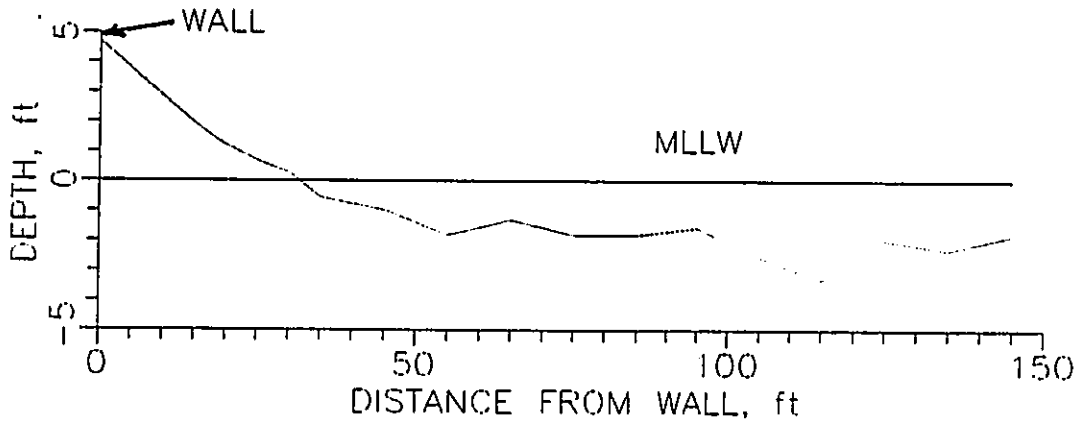
FIGURE 4. SHORELINE PHOTOGRAPHS OF EXISTING SEAWALL, OCT 1990



BEACH PROFILE EAST EDGE OF PROPERTY



BEACH PROFILE CENTER OF PROPERTY



BEACH PROFILE WEST EDGE OF PROPERTY

FIGURE 5. BEACH PROFILES, OCT 1990

Field investigations during 1 - 1.5 foot waves showed the longshore current and resulting sediment transport to be small. The sediment transport appears to be mostly onshore-offshore; however, this depends on wave conditions. Analysis of aerial photographs also indicates onshore-offshore transport. Most large waves break relatively far offshore due to the flat shallow region fronting the beach.

Calculation shows that wave runup onto the property can occur when the tide is at Mean Higher High Water (2.0 feet above MLLW) and the wave heights are greater than approximately 7 feet offshore and 2-3 feet over the nearshore shelf. These conditions occur statistically several times per year, making shore protection necessary. Under storm conditions runup and flooding can be more severe.

Shore Protection Description

The proposed shore protection structure is a sand berm with crest elevation approximately 9 feet above MLLW. The crest will be about 2 feet above the present ground level of the property. The elevation zone from seven to nine feet above MLLW is critical. Water elevations above 9 feet are rare; water elevations below 7 feet are common. Raising the berm to nine feet can decrease the return period of wave overtopping from 2-3 months to 8-10 years. Although not exact, this calculation of the decrease in flooding incidence is the best that can be made for the Suga property with the limited available data.

The seaward side of the berm will follow the natural profile of the beach. A conceptual cross section design of the berm is shown in Figure 6. A plan view of the berm and its position on the property is shown in Figure 7. Design drawings and specifications are attached as Appendix B.

The berm will contain a layer of fine gravel with mean size larger than the existing sand to minimize material movement during periods of high waves. This layer is sized according to Corps of Engineers' guidelines to minimize intermixing of layers (Shore Protection Manual, 1984). Figure 8 shows the size distribution of the existing beach sand and the desired size distribution of the gravel layer. The gravel will be crushed coral, screened to the proper size. Coral gravel is available from Grace Pacific Corporation and is stockpiled at Campbell Industrial Park. The gravel layer will contain approximately 125 cubic yards of material.

The berm will be planted with salt tolerant species to stabilize the soil and to resist runup. Applicable plant species include Naupaka, Beach Morning Glory, Coconut Palm, Ironwood, or any of several other plants. Plant species should be determined in consultation with a qualified nursery or landscape expert.

The berm will be supported at the neighboring property lines by CRM or concrete masonry unit flanking walls. These walls will minimize migration of sand or gravel onto neighboring property and flanking erosion by waves. The walls will be constructed so that they do not intrude onto the beach below the high water line. A concept drawing of the flanking walls is shown in Figure 9. Design drawings are attached as Appendix B.

(3) Construction Characteristics

Approximately 1 to 2 feet of material must be excavated from the position of the berm. The excavated area will be filled with approximately 125 cubic yards of coral gravel then covered with approximately 1 foot of sand. The excavation and fill will require earthmoving equipment such as a backhoe or front loader. The coral gravel will be purchased and brought to the site; existing sand will be used for the cover layer. Fill material will be transported to the site by truck. Excavation will not be done below the high water line and beach material below the high water line will not be used to build the berm. The movement of heavy equipment on the beach will be limited; however, some temporary positioning of equipment on the beach may be necessary to remove the existing CRM wall.

Construction of the flanking walls will require trenching 1 to 2 feet below grade with a backhoe for the wall footing. No trenches or wall construction will extend past the property line.

Trees growing on site will be preserved when possible. Vegetation will be planted to stabilize the finished berm.

The existing CRM wall must be demolished and removed. Materials from this wall may be used to construct the flanking walls.

Design drawings and construction specifications are attached as Appendix B.

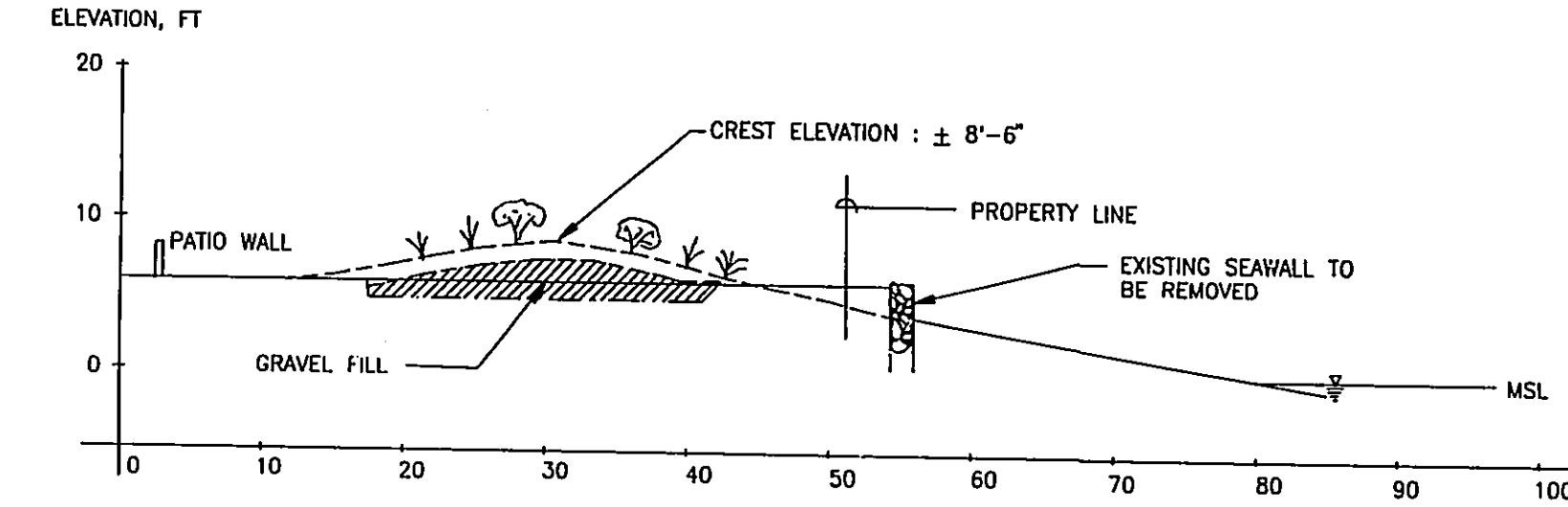


FIGURE 6. TYPICAL BERM CROSS SECTION

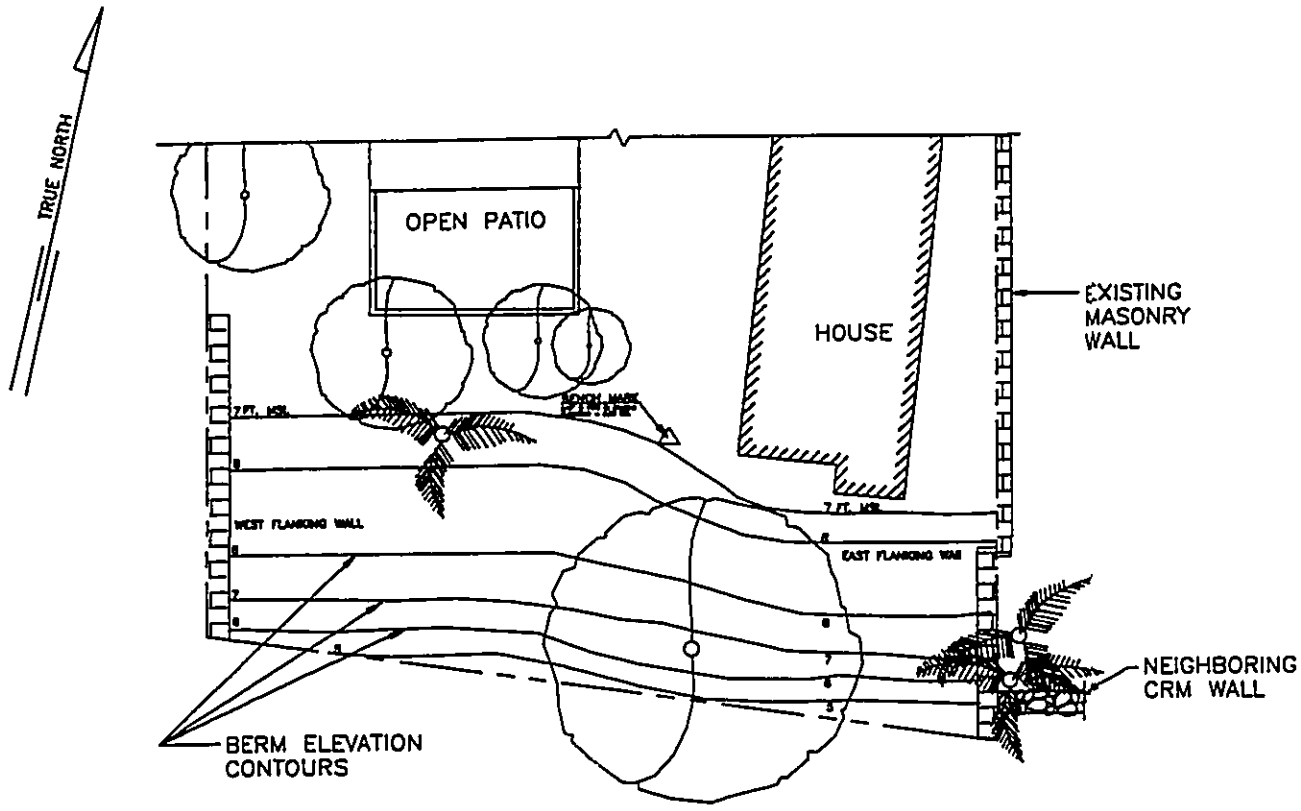


FIGURE 7. BERM PLAN VIEW AND ELEVATION CONTOURS

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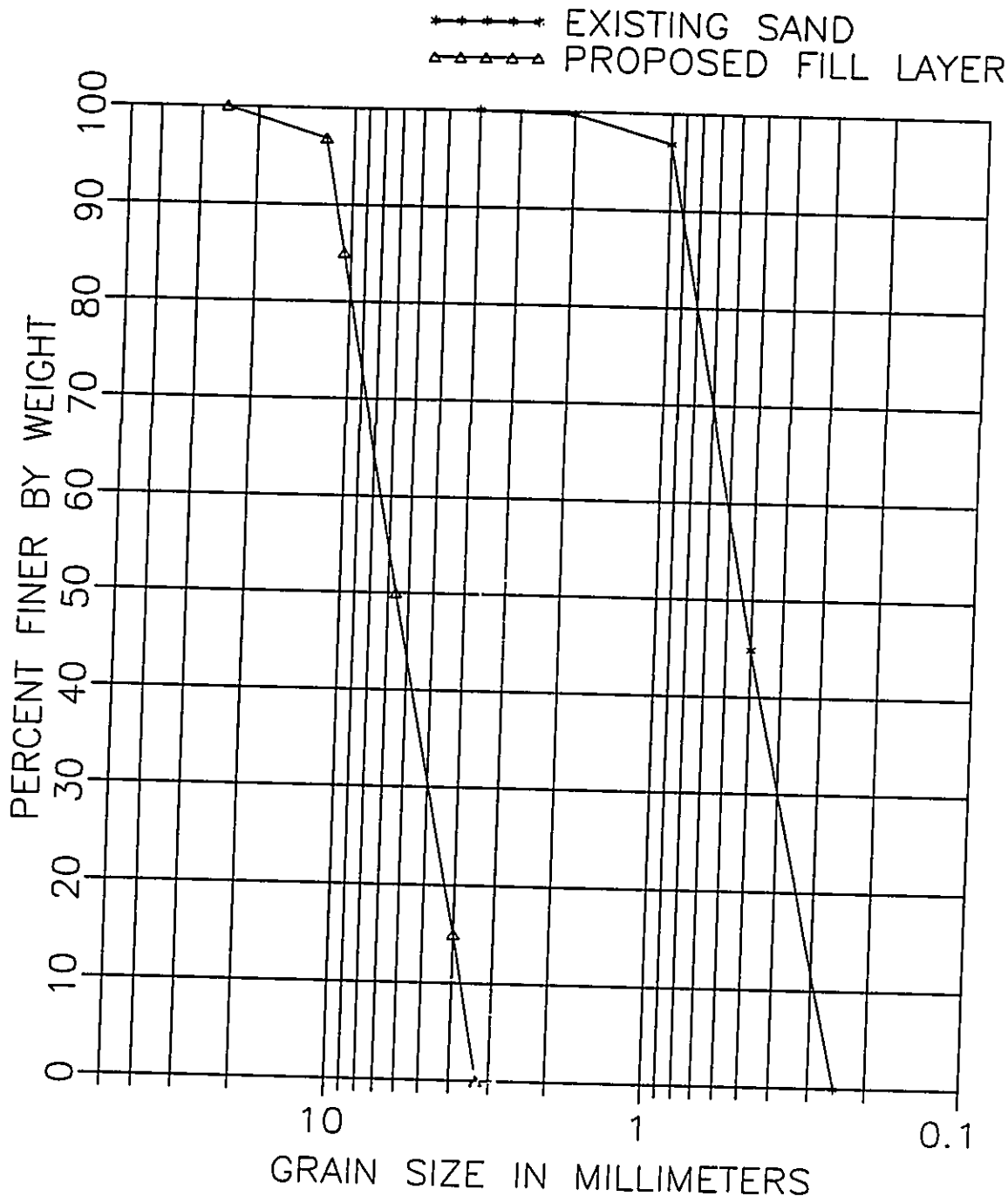

FIGURE 8. BERM MATERIALS SIZE DISTRIBUTION

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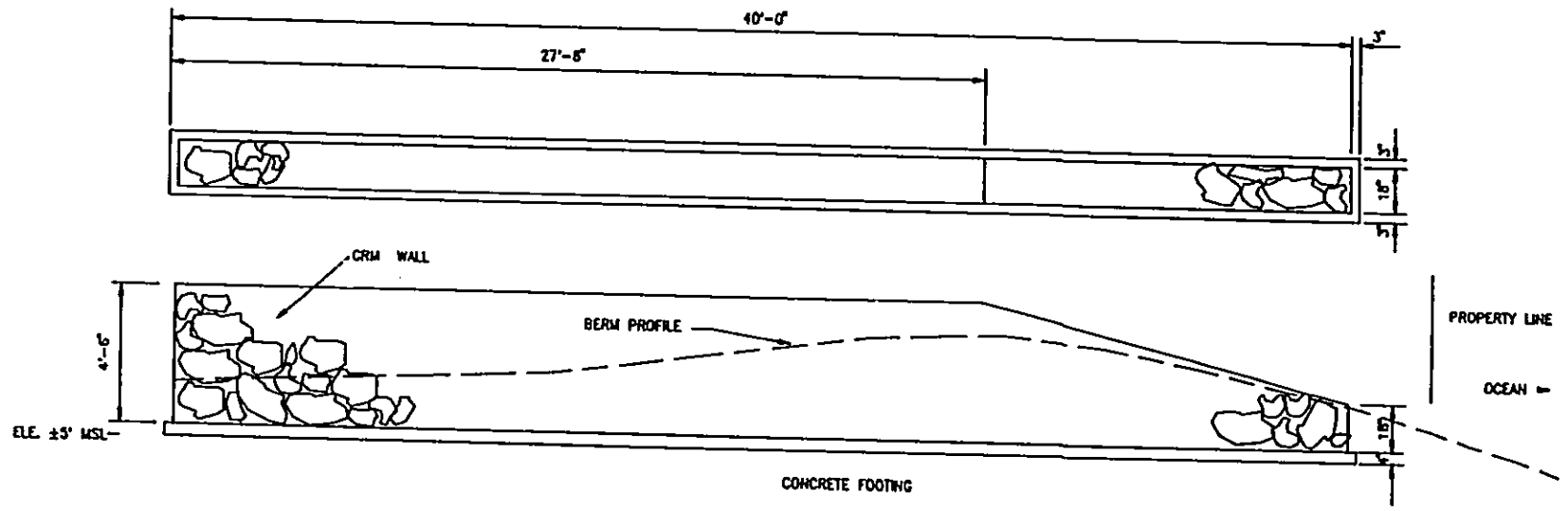


FIGURE 9. FLANKING WALL CONCEPT

III. AFFECTED ENVIRONMENT

A. AREA DESCRIPTION

The project site is located on Ewa Beach, Oahu. This area is zoned R-5 by the City and County of Honolulu and is included in a Shoreline Management Area. Private residences exist along the coastline in both directions.

B. TSUNAMI AND FLOOD HAZARD

This area of the coastline is subject to tsunami inundation. The predicted tsunami water levels at a point 200 feet inland are given in Table 1. The 100-year tsunami inundation zone is shown in Figure 10. Tsunami water levels of 9 feet were observed in this area in 1960 and 1964.

TABLE 1
PREDICTED WATER LEVEL FROM A TSUNAMI
AT A POINT 200 FEET INLAND

RECURRENCE TIME, YEARS	HEIGHT, FT
10	1.5
50	5.8
100	7.5

Ref: Manual for Determining Tsunami Runup Profiles on Coastal Areas of Hawaii, U.S. Army Corps of Engineers, 1978.

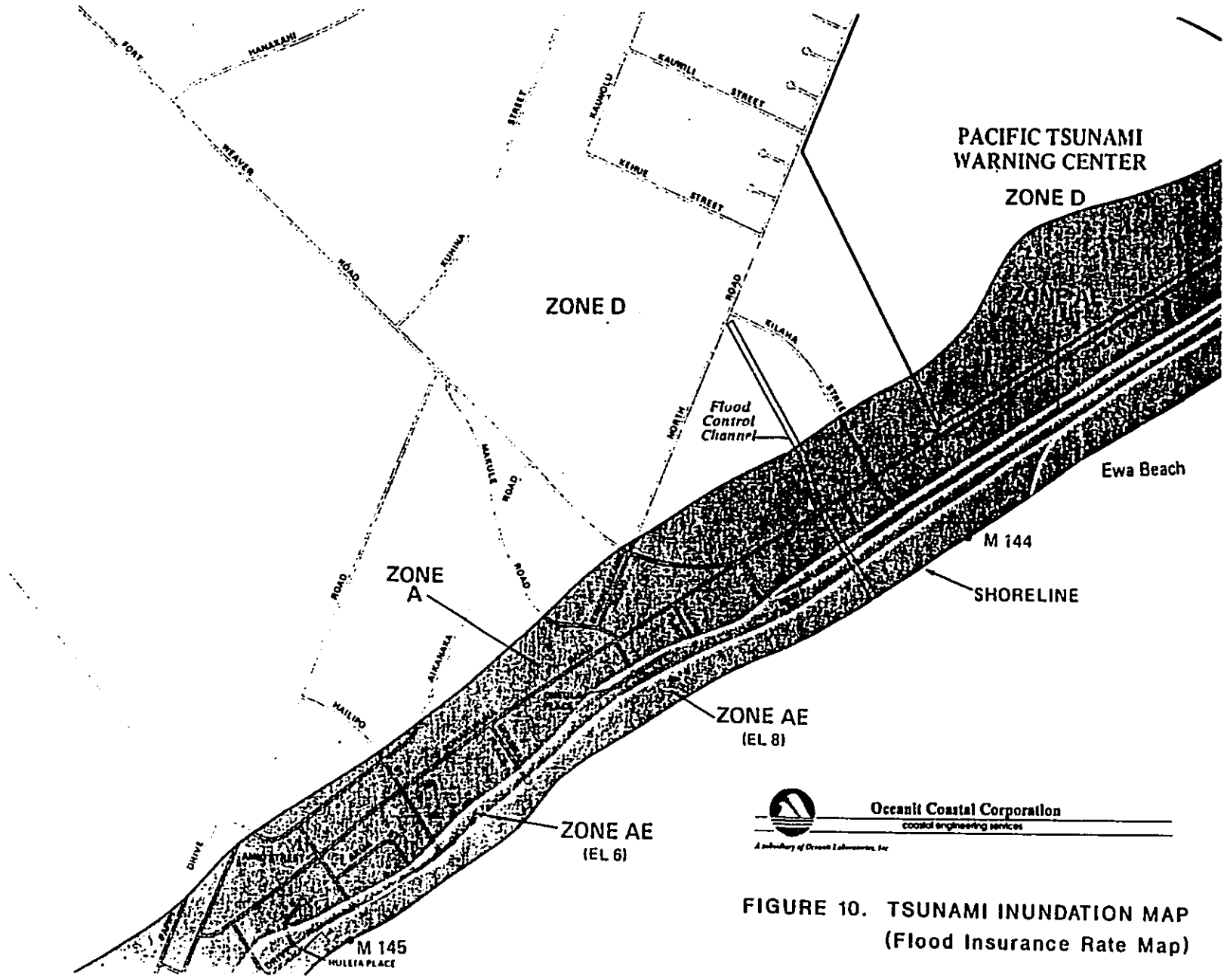


FIGURE 10. TSUNAMI INUNDATION MAP
(Flood Insurance Rate Map)

C. OTHER ENVIRONMENTAL CONCERNS

The project site is not located next to a public beach access, park, or recreation area. No endangered or protected marine species will be affected by the larger berm. Seabirds may transit or forage near the site; however, no species is known to nest at or remain near the site. The nearshore area is not used as a commercial fishing area, and there will be no impact on recreational or subsistence fisheries. The entire Ewa Beach shoreline is used for recreational and subsistence limu (edible seaweed) gathering in the low and sub-tidal zones. The proposed berm will have no impact on the ecology of these areas. The proposed berm will extend only 2 feet above the existing property level and will not affect coastal views from surrounding areas.

No adverse impact is anticipated on the offshore reef, its inhabitants, or its water quality.

IV. IMPACTS AND ALTERNATIVES

Although we foresee no negative impacts from removing the existing seawall and constructing an elevated beach berm, three other alternatives were considered: (1) keep the existing wall, (2) remove the existing wall, and (3) remove the wall and replace it with a rubble revetment.

(1) Keep the Existing Wall

If the existing wall is left in place, an after-the-fact Shoreline Setback Variance is required. Because the wall crosses the property line onto State land, the SSV may not be granted. In addition, the wall was not constructed according to accepted coastal engineering practices. Because of these problems, it does not appear to be feasible to leave the existing wall in place.

(2) Remove the Existing Wall

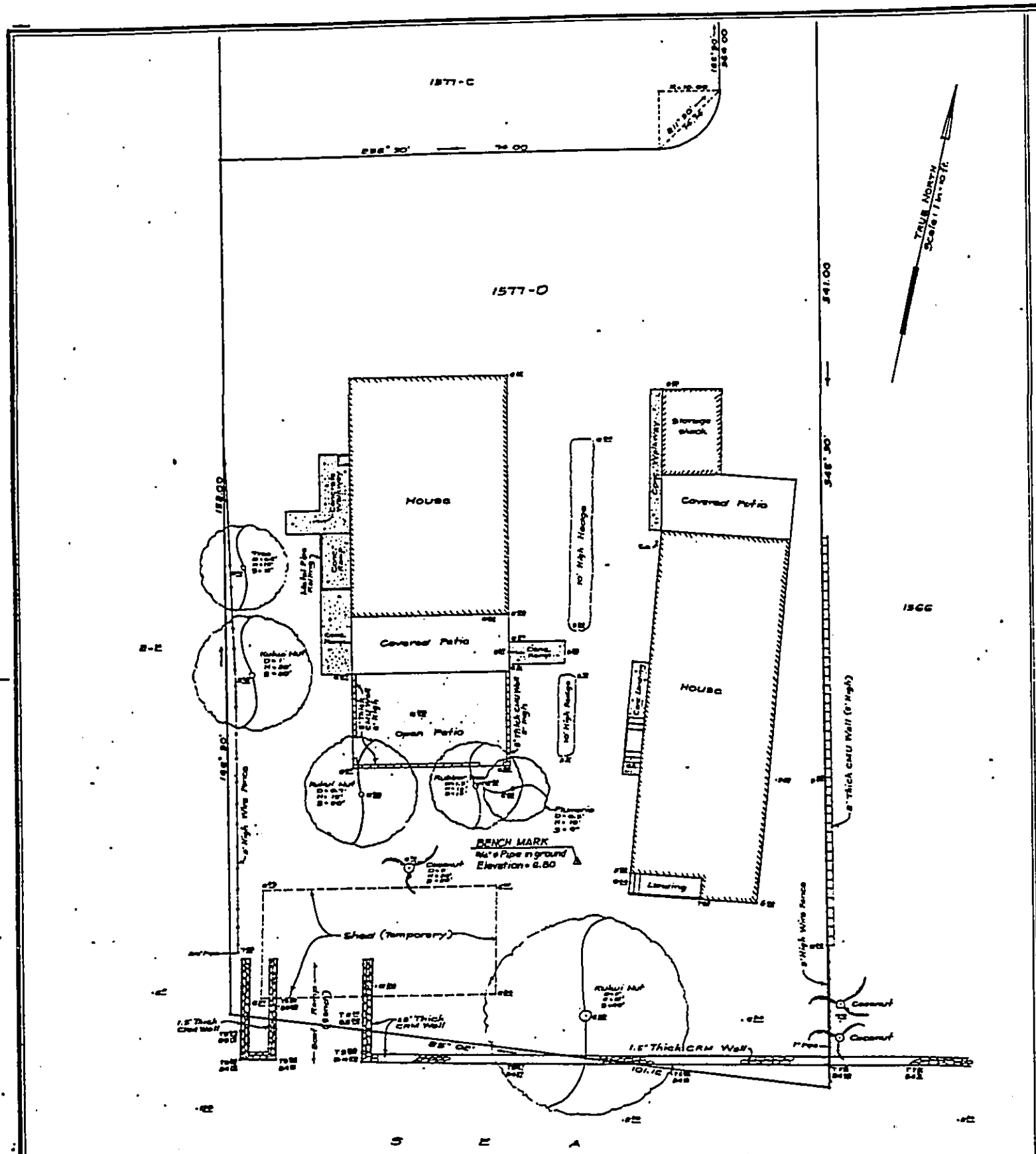
If the existing wall is removed without replacement, the property will be subject to flooding and erosion as it was in the past. Flooding threatens the houses on the property. Since the neighbor on the east also has a seawall, flanking erosion may occur that would affect both properties. Even if all of the seawalls along this portion of the beach were removed, the property would still be subject to flooding from wave runup. Removing the wall without an alternative solution faces the property owner with an unacceptable threat.

(3) Remove the Wall and Replace with a Rubble Revetment

If the wall is replaced with a rubble revetment, runup and flooding will be reduced but not eliminated. A rubble revetment will prevent some erosion. However, a rubble revetment is large, intrusive, and expensive to build.

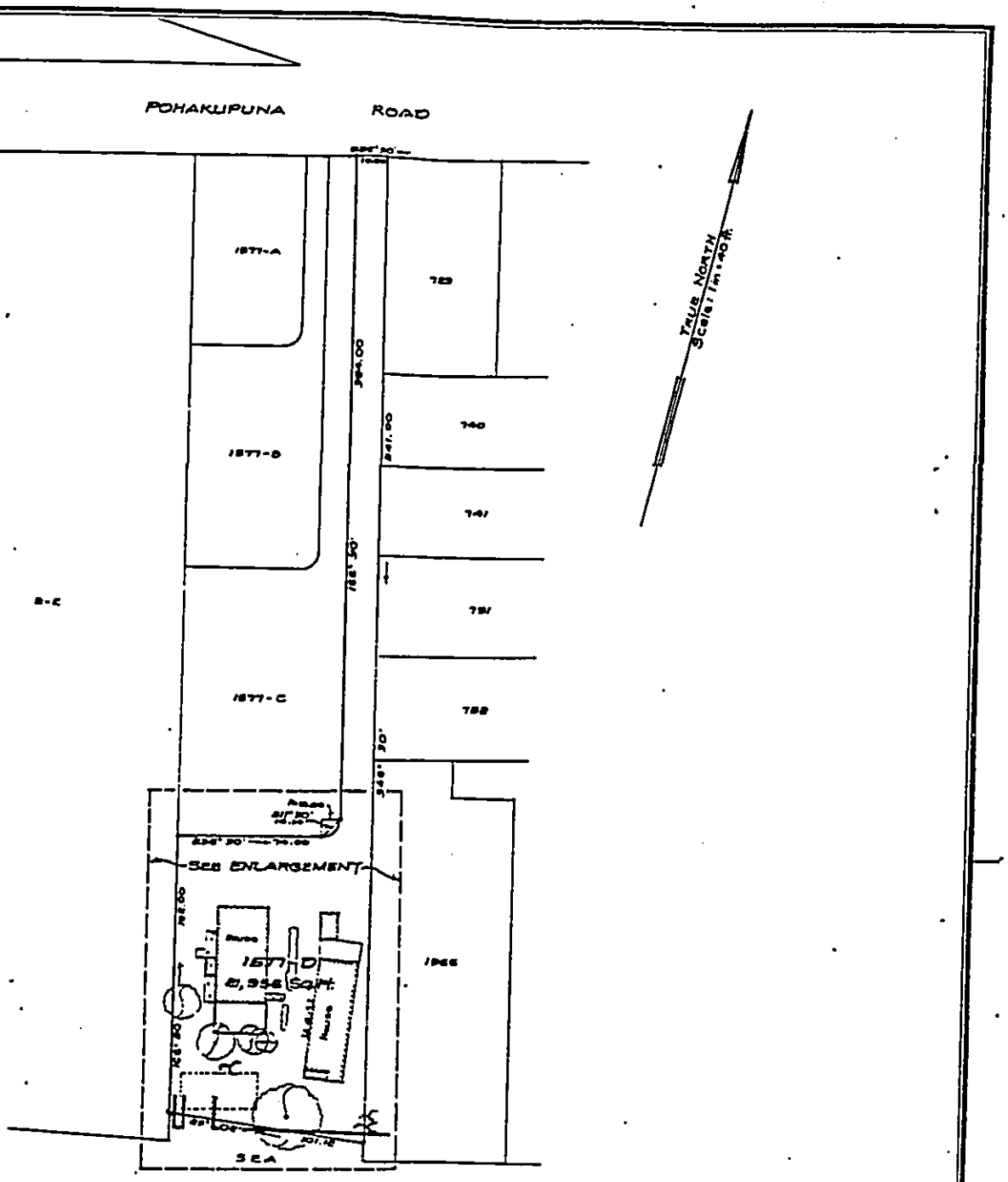
APPENDIX A

LOT AND SHORELINE SURVEY



ENLARGEMENT
Scale: 1 in. = 10 ft.

REDUCED SIZE COPY - NOT TO SCALE



LOCATION SURVEY

LOT 1577-D OF
LAND COURT APPLICATION 642
AT PUULOA, EWA, OAHU, HAWAII

OWNERS: Silvestre G. Suga, et al
Tax Map Key: 9-1-65: 54

revision	date	brief	by	approved

wm dean alcon & associates, inc

LOCATION SURVEY

designed by:	checked by: PP	project no. 910460
drawn by: TA		date MAY 1991
scale: AS SHOWN		sheet 1 of 1

APPENDIX B

DESIGN DRAWINGS AND SPECIFICATIONS

CONSTRUCTION SPECIFICATION
SHORE PROTECTION BERM
SUGA PROPERTY
91-873 POHAKUPUNA ROAD, EWA BEACH
TMK 9-1-25:54

I. BERM

Excavation - The position of the berm shall be excavated to +5 feet relative to Mean Sea Level (MSL) as shown by the design drawings. Damage to existing trees shall be avoided. Excavated sand shall be used to build the berm after placing gravel fill. Excavation shall be done in a manner to minimize disturbance of the beach below the high water line.

Gravel Fill - Coral gravel fill shall be used to construct the core of the berm as shown in the design drawings. The gravel shall have a mean size and size distribution similar to the attached size curves. The gravel shall also meet the following size criteria:

$$\frac{d_{15}\ \text{coarse}}{d_{85}\ \text{fine}} < 4\text{-}5$$

$$\frac{d_{15}\ \text{coarse}}{d_{15}\ \text{fine}} > 4$$

Sand Cover Layer - Existing beach sand excavated for the berm shall be used to cover the gravel fill as shown in the design drawings.

Vegetation - The berm shall be planted with salt tolerant vegetation to minimize erosion from wave runup and overtopping. Applicable plant species include Naupaka, Beach Morning Glory, Coconut Palm, Ironwood, or other plants recommended by a qualified nursery or landscape expert.

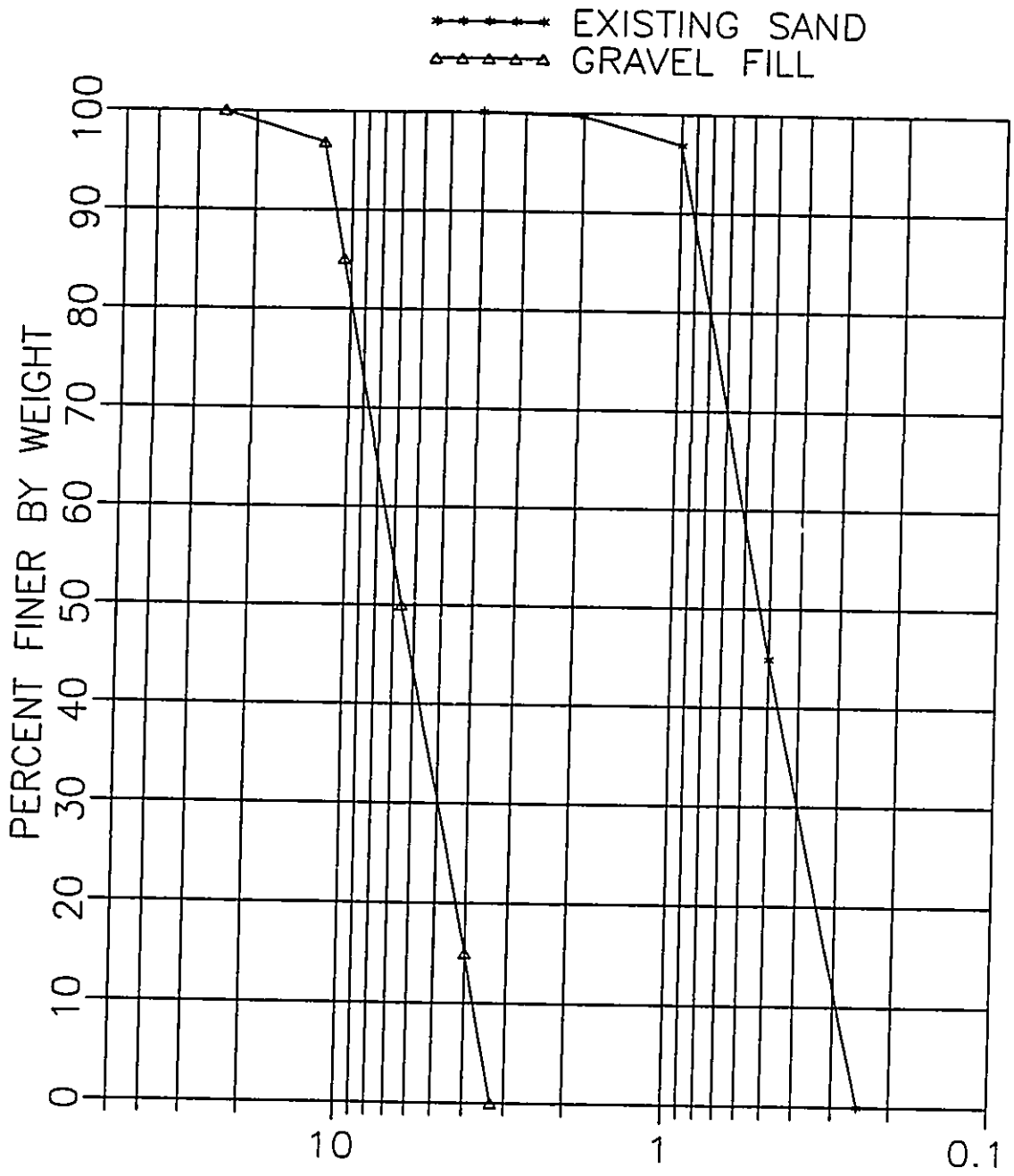
Construction - After construction of the berm, the beach shall be returned to its pre-construction slope and condition. Construction methods shall not damage the nearshore environment or degrade nearshore water quality (e.g., silt plumes).

II. EXISTING CRM SEA WALL

Demolition - This wall shall be demolished and the rock used to construct flanking walls as shown in the design drawings.

III. CRM FLANKING WALLS

Construction - CRM flanking walls shall be constructed as shown in the design drawings. The walls shall be constructed to prevent movement of sand and gravel onto neighboring property. Stone shall be clean, durable, and free from other imperfection. Mortar for bedding shall consist of one part cement and not more than three parts fine aggregate. Large flat stones shall be used for the base of the wall and shall be laid in a full mortar bed on a concrete footing. All stones shall be fully bedded in mortar. The top of the wall shall be flat with stones set in a full mortar bed. Standard Specifications for Public Works Construction, Sept 1986, Department of Public Works, City and County of Honolulu, shall be used as a guide for CRM construction.



BERM MATERIALS SIZE DISTRIBUTION

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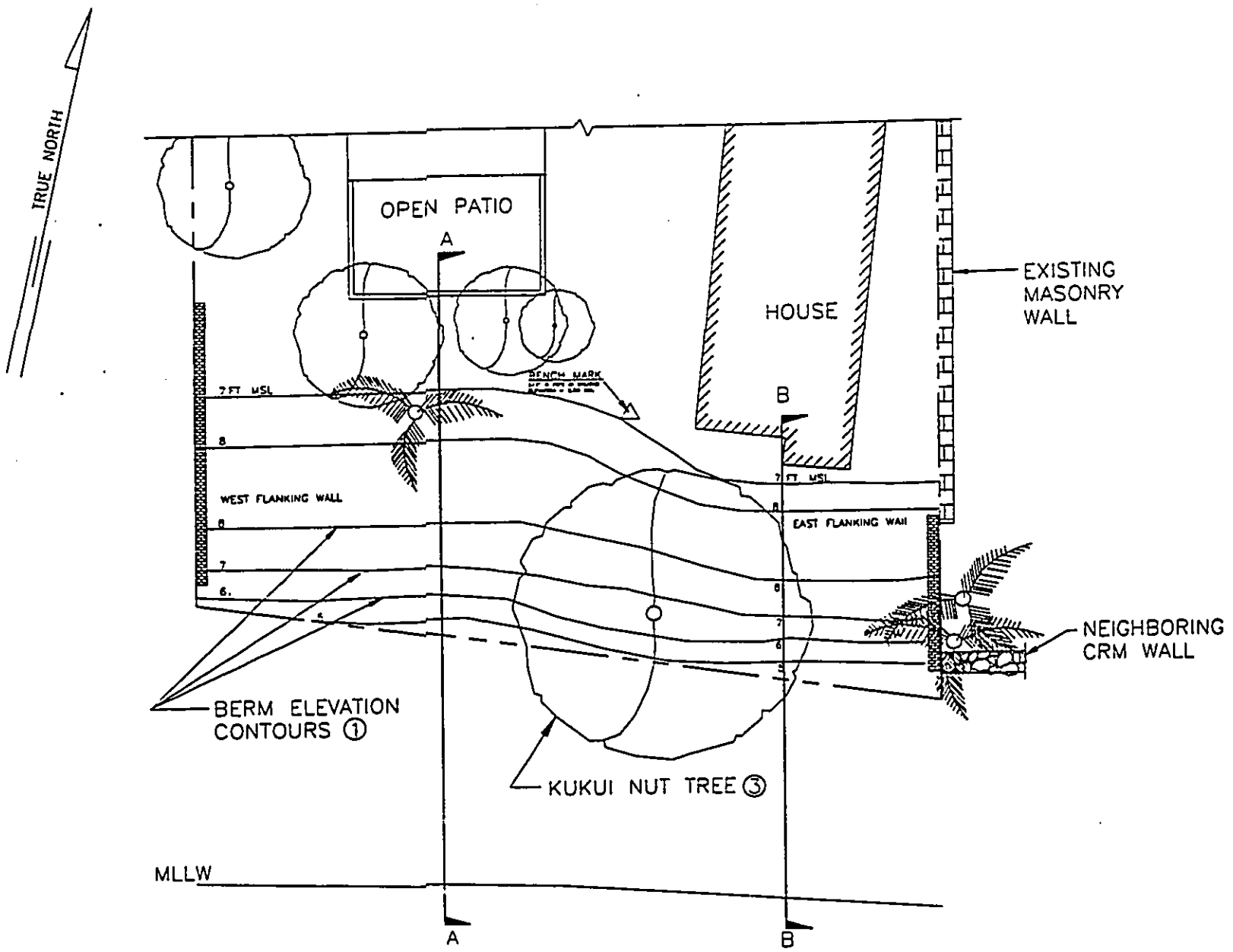
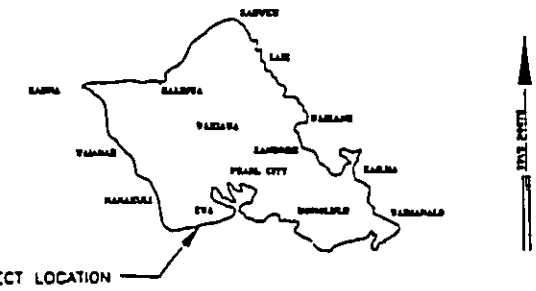


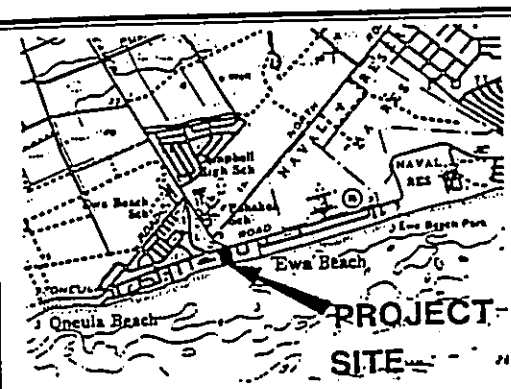
BERM PLAN VIEW

0 5 10 20 30 feet



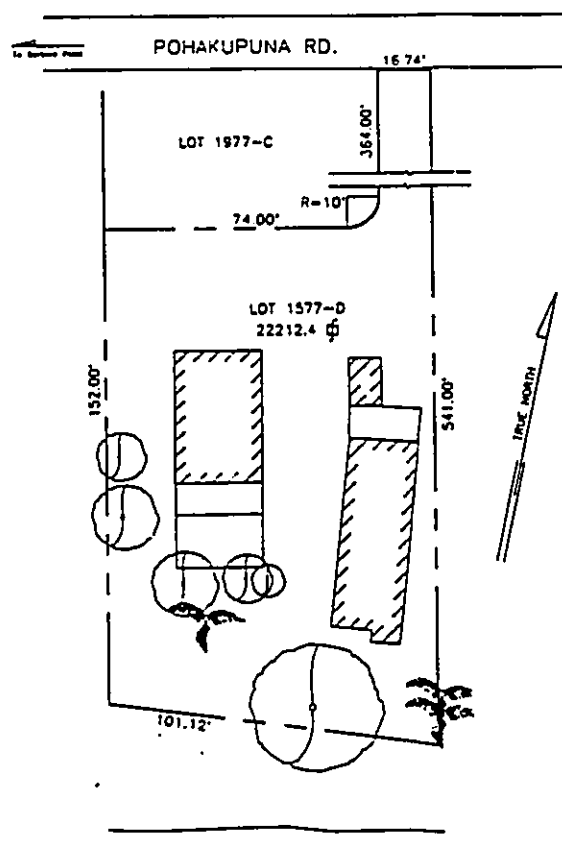
SITE LOCATION MAP

NOT TO SCALE



VICINITY MAP

NG
IRY



EIGHBORING
RM WALL

PLOT PLAN

0 30 60 90 feet

Oceanit Coastal Corporation

coastal engineering services

Century Square
1188 Bishop Street, Suite 2512
Honolulu, Hawai'i 96813

Tel: (808) 531-3017
FAX: (808) 526-1519
MCI: OCEANIT

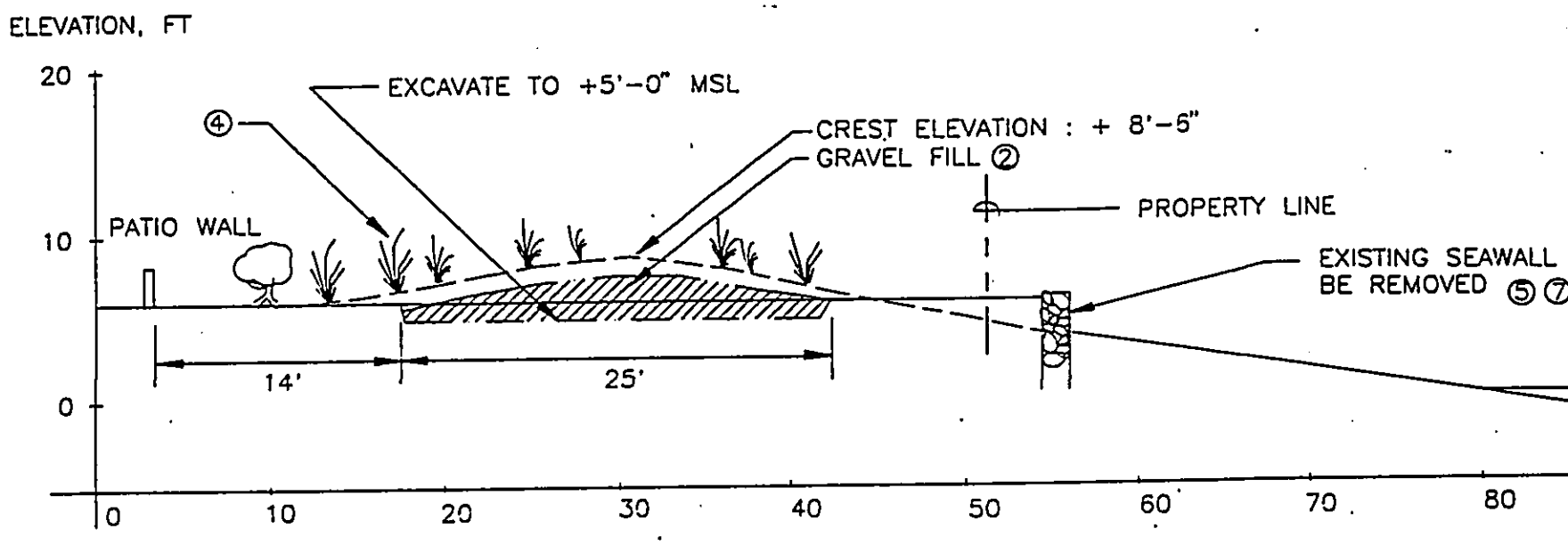
SUGA BEACH BERM

SCALE AS SHOWN	APPROVED BY	DRAWN BY VEB
DATE 5-28-92		REVISED

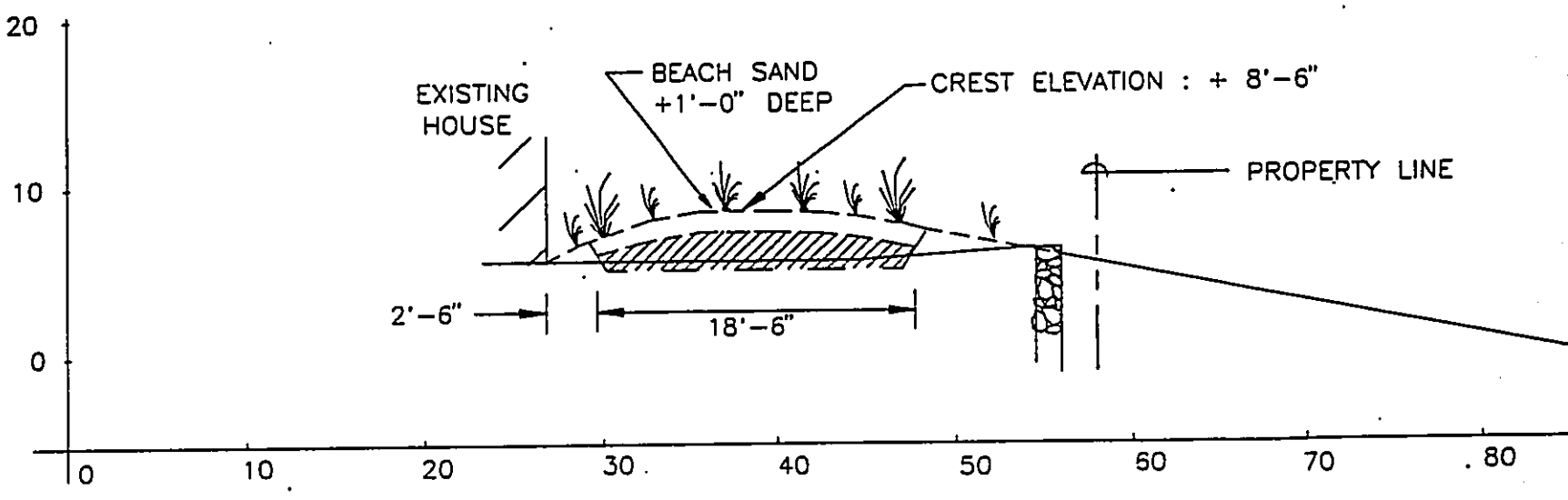
LOCATION MAPS, PLOT PLAN, BERM PLAN

O'AHU , HAWA'I

DRAWING NUMBER 1 OF 3



SECTION A-A

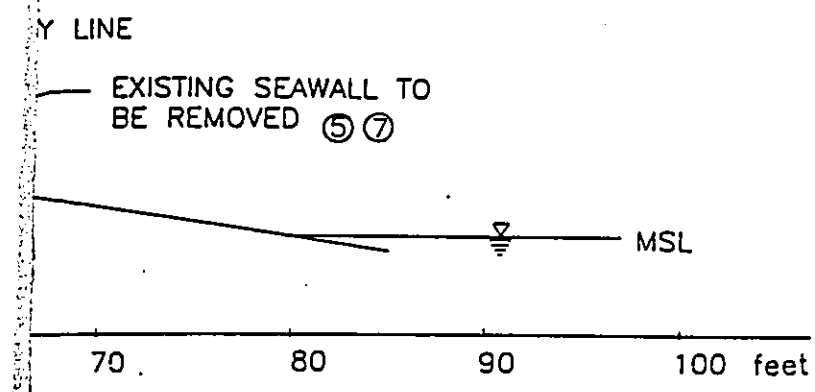


SECTION B-B

BERM CROSS-SECTIONS

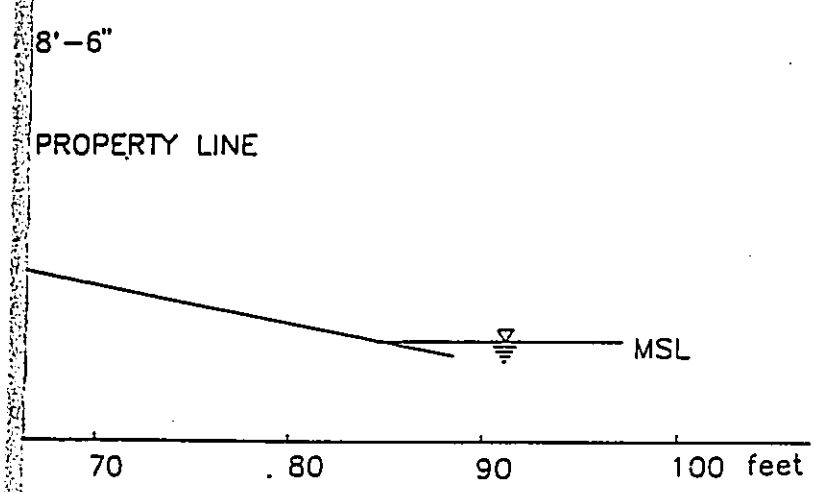
0 5 10 20 feet

EXISTING
EXCAVATE
FINAL FIL
CORAL/GR



NOTES :

1. ELEVATIONS REFERENCED TO MEAN SEA LEVEL.
2. SEE GRAVEL FILL SPECIFICATIONS.
3. ALL TREES TO REMAIN.
4. BERM SHALL BE PLANTED WITH VEGETATION AS PER SPECIFICATIONS.
5. USE EXISTING MATERIAL FOR FLANKING WALL WHERE POSSIBLE.
6. SEAWARD SECTION OF FLANKING WALL TO BE REMOVED WHEN NEIGHBORING WALL IS REMOVED.
7. RETURN BEACH TO NATURAL SLOPE.



EXISTING LAND LEVEL
EXCAVATED LEVEL
FINAL FILLED BERM LEVEL
CORAL/GRAVEL FILL ②

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Century Square
1188 Bishop Street, Suite 2512
Honolulu, Hawaii 96813
Phone (808) 531-3017
FAX: (808) 526-1518
MCI: OCEANIT

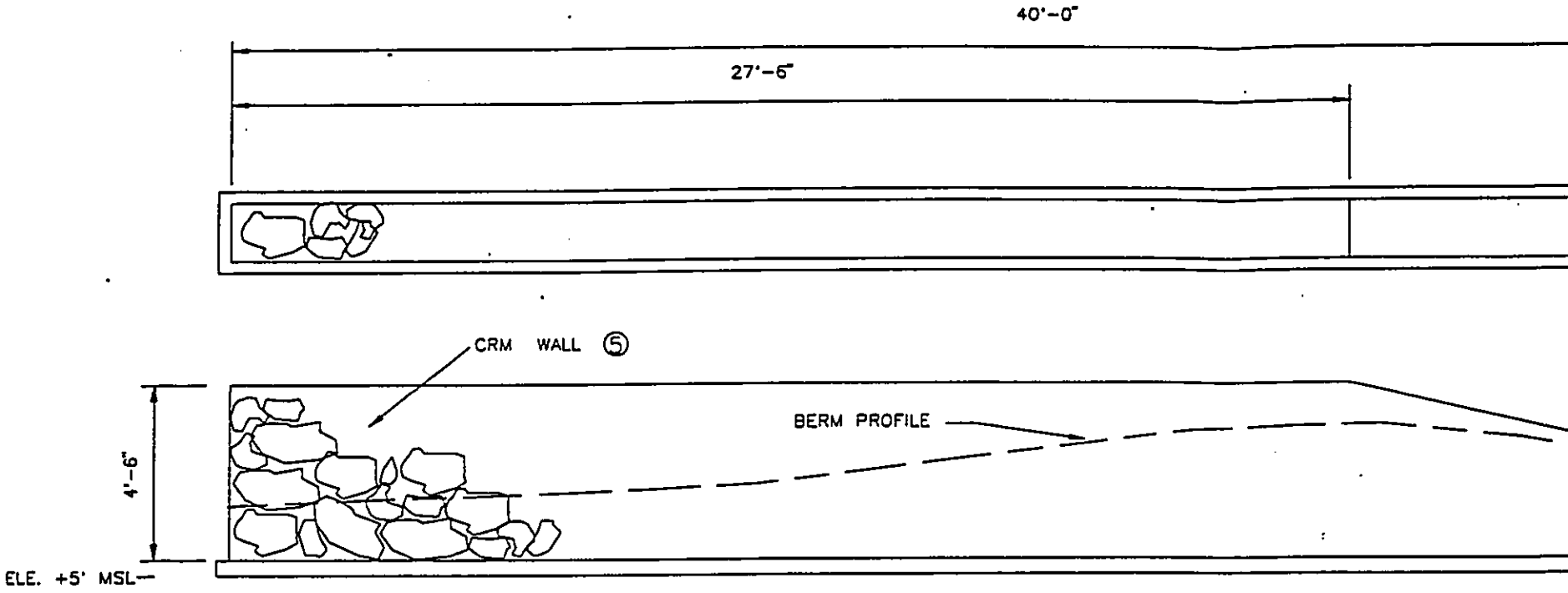
SUGA BEACH BERM

SCALE AS SHOWN	APPROVED BY	DRAWN BY VEB
DATE 4-11-92		REVISED

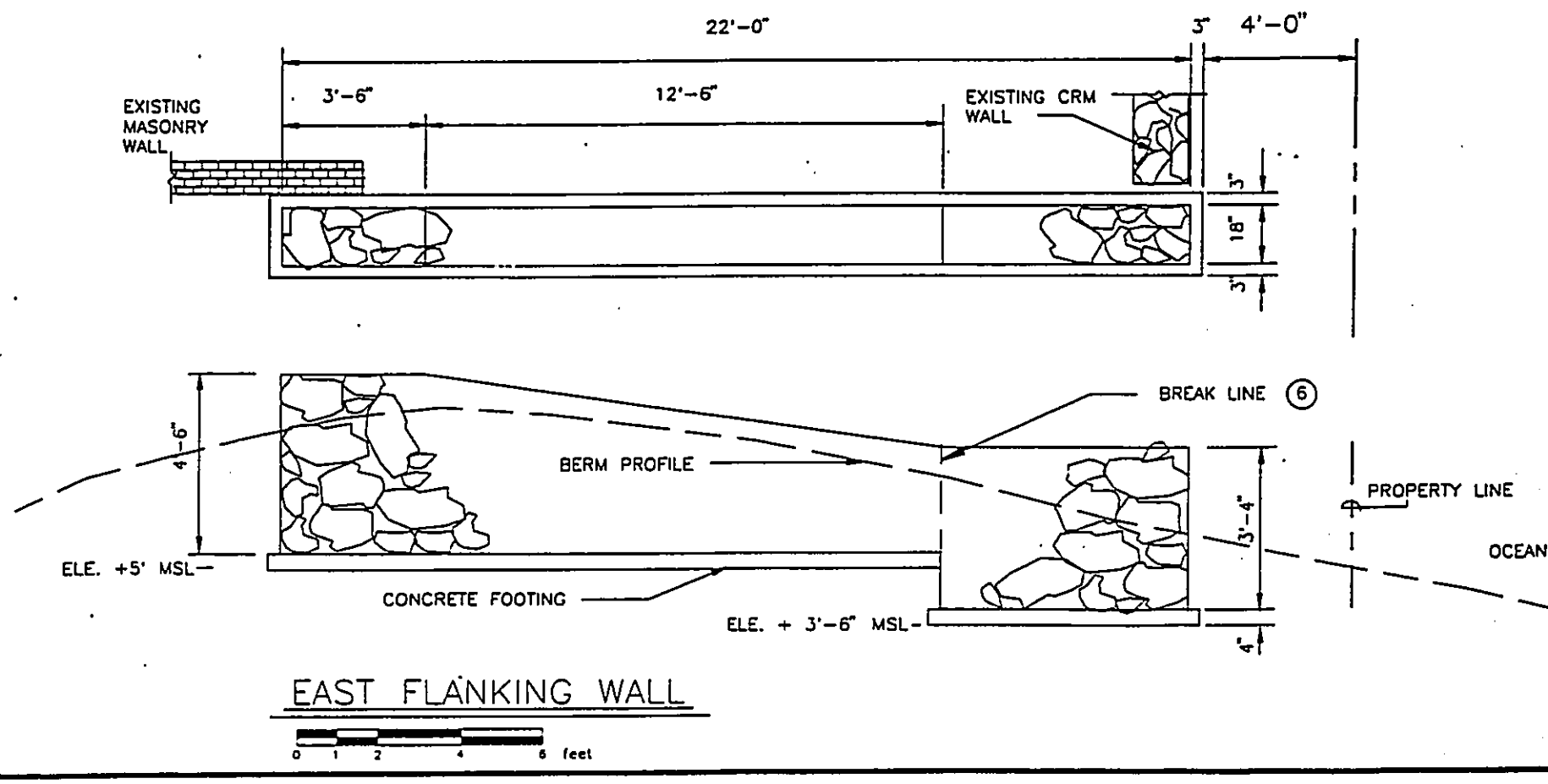
BERM CROSS-SECTION DETAILS

O'AHU , HAWAI'I

DRAWING NUMBER 2 OF 3

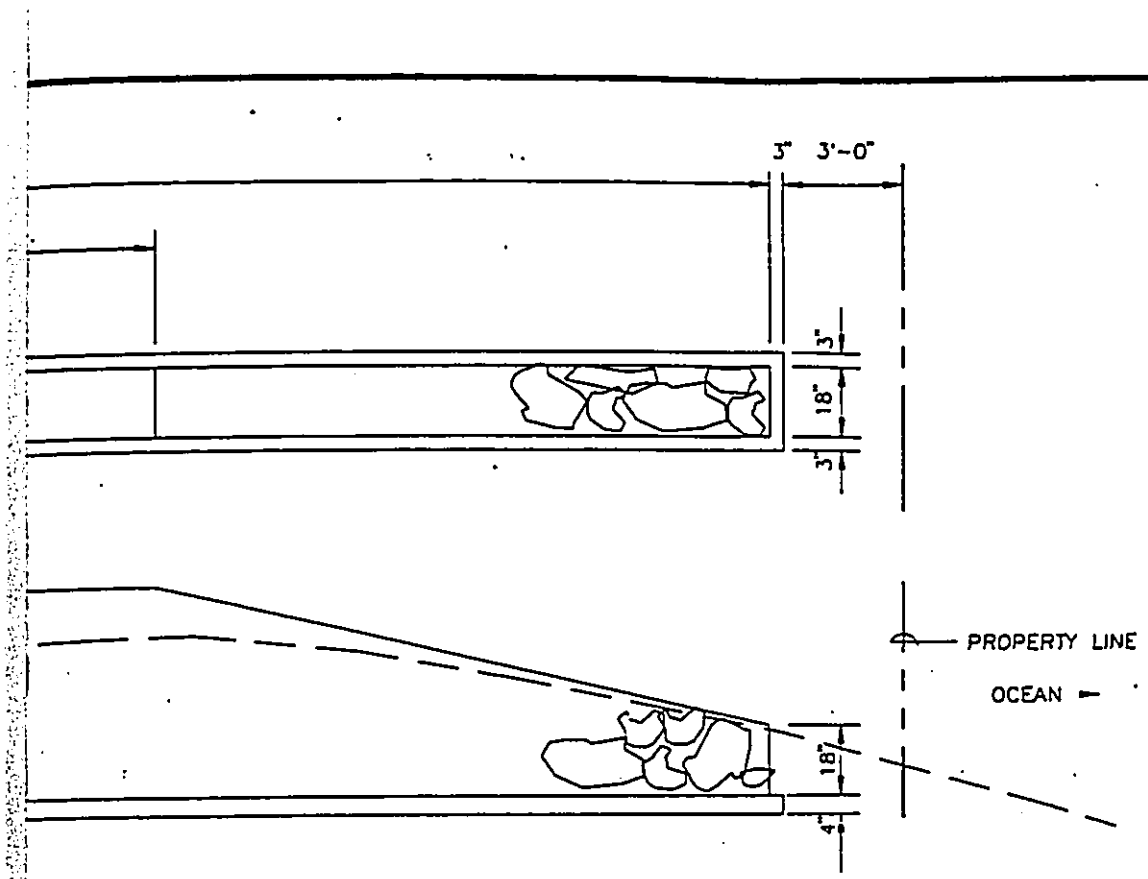


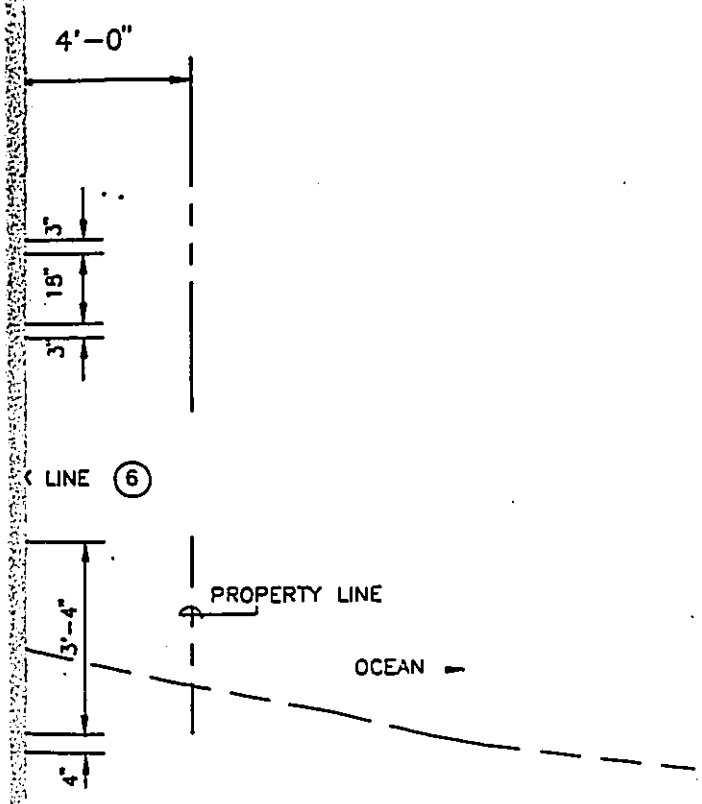
WEST FLANKING WALL



EAST FLANKING WALL

0 1 2 4 6 feet





Oceanit Coastal Corporation
coastal engineering services
Century Square
1188 Bishop Street, Suite 2512
Honolulu, Hawai'i 96813
PH: (808) 531-3017
FAX: (808) 526-1519
MCI: OCEANIT

SUGA BEACH BERM

SCALE 1/2"=1'	APPROVED BY	DRAWN BY VEB
DATE 5-28-92		REVISED

FLANKING WALL PLAN & DETAILS

O'AHU , HAWAI'I

DRAWING NUMBER 3 OF 3

APPENDIX C

COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT AND RESPONSES

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

92/SV-8(JT)

September 24, 1992

Mr. Warren E. Bucher
Oceanit Coastal Corporation
1188 Bishop Street, Suite 2512
Honolulu, Hawaii 96813

Dear Mr. Bucher:

Project Name : Suga Shore Protection Structure
File No. : 92/SV-8(JT)
Tax Map Key : 9-1-25: 54

We are forwarding copies of all comments we have received relating to the draft environmental assessment (DEA) of the above referenced project.

You must respond in writing to these and any other comments received resulting from the draft environmental assessment notice published in the OEQC Bulletin on August 8, 1992. The final EA must include these comments and responses as well as revised text, if appropriate.

If you have any questions, please contact Joan Takano of our staff at 527-5038.

Very truly yours,

for DONALD A. CLEGG
Director of Land Utilization

DAC:ct
Enclosures

a:bucher.jht

92-422

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF LAND MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER RESOURCES MANAGEMENT

JUL -9 1992

'92 JUL 13 AM 11 23

Mr. Donald A. Clegg
Director of Land Utilization
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Environmental Assessment, Suga Shore Protection Structure, Ewa Beach, Oahu, TMK: 9-1-25:54

Thank you for the opportunity to comment on the subject Environmental Assessment.

We have no objections with the findings of this Environmental Assessment provided that:

1. The new coral gravel berm and proposed flanking walls are to be constructed entirely on the applicant's property and not encroach on the State's Conservation land.

2. The applicant take the necessary steps to remove any coral that might spill over from the berm onto State land should such occur.

Should you have any questions, please contact John Dooling at 587-0433.

Very truly yours,

W. Mason Young

W. MASON YOUNG
Land Management Administrator

cc: Ms. S. Himeno
Mr. T. C. Yim

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

October 22, 1992

Mr. W. Mason Young
Land Management Administrator
Department of Land and Natural Resources
Division of Land Management
P.O. Box 621
Honolulu, HI 96809

Subject: *Response to Comments on Environmental Assessment, Suga Shore Protection Structure, Ewa Beach, Oahu, TMK: 9-1-25:54*

Dear Mr. Young,

We reviewed your comments on the subject Environmental Assessment (copy attached). Construction will be done according to the provisions stated in your letter. The following guidelines will be followed:

1. The new coral gravel berm and flanking walls will be constructed entirely on the applicants property and will not encroach on the State's Conservation Land.

2. Any coral spilling onto State land will be removed.

If you require further information, please call.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Senior Ocean Engineer

cc: Department of Land Utilization
City and County of Honolulu

atch: DLNR letter, July 9, 1992

WEB/l10222wy.dln

Century Square 1188 Bishop Street, Suite 2512, Honolulu, Hawaii 96813
TELEX: 7431404 MCI: OCEANIT Ph: (808) 531-3017 FAX: (808) 526-1519

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

July 17, 1992

REPLY TO ATTENTION OF

Operations Division

SUBJECT: Environmental Assessment, Suga Shore Protection Structure, 91-873 Pohakupuna Road, Ewa Beach, TMK: 9-1-25: 54

'92 JUL 21 PM 1 44

Mr. Donald A. Clegg
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

This is in response to your June 29, 1992 request for comments on subject project. The existing seawall, which was constructed in 1984, was authorized under Corps Nationwide permit authority for bank stabilization at 33 CFR 330.5(a)(13), which was in effect at that time.

Removal or replacement of the wall or construction of other shore protection measures that involve work in the waters of the United States will require a Department of the Army permit. The applicant should consult with the Operations Division at 438-9258 if construction work will occur below the mean high water line.

Sincerely,

Warren Kamo

for Michael T. Lee
Chief, Operations Division

Oceanit Coastal Corporation
coastal engineering services

A subsidiary of Oceanit Laboratories, Inc.

October 22, 1992

Mr. Michael T. Lee
Chief, Operations Division
Department of The Army
U.S. Army Engineer District, Honolulu
Fort Shafter, HI 96858-5440

Subject: Response to Comments on Environmental Assessment, Suga Shore Protection Structure, 91-873 Pohakupuna Road, Ewa Beach, TMK: 9-1-25:54

Dear Mr. Lee,

We reviewed your comments (copy attached) on the subject Environmental Assessment (EA), and I discussed them by phone with Mr. Warren Kanai. In the EA we considered four alternative solutions to the wave runup problem at 91-873 Pohakupuna Road. We chose the elevated beach berm as the solution that best mitigates the problem while having minimal impact on the coastal environment. The berm will be constructed entirely above the high water line. The existing seawall must be removed because it was cited for construction without the required City and County of Honolulu permits, and because it intrudes below the high water line onto State of Hawaii conservation lands.

If we can provide further information, please call.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Senior Ocean Engineer

atch: copy, Operations Division Letter
July 17, 1992

cc: Dept of Land Utilization
City and County of Honolulu

WEB/l10222ml.coe

Century Square 1188 Bishop Street, Suite 2512, Honolulu, Hawaii 96813
TELEX: 7431404 MCI: OCEANIT Ph: (808) 531-3017 FAX: (808) 526-1519