RECEIVED

'91 APR 23 A11:41

OFC. OF ENVIRONMENTAL QUALITY CONTROL

DEPARTMENT OF LAND UTILIZATION
91/SV-002(DJK)
April 19, 1991

CHAPTER 343, HRS
Environmental Assessment/Determination
Negative Declaration

Recorded Owner	:	Honolulu Lodge 616 B.P.O.E.
Applicant	:	Outrigger Canoe Club
Agent	:	Sea Engineering, Inc.
Location	:	2909 Kalakaua Avenue, Honolulu, Oahu
Tax Map Key	:	3-1-32: 31
Request	:	Construct a Water Access Stairway on Rear West End of Property
Determination	:	Environmental Impact Statement (EIS) Not Required

Attached and incorporated by reference is the environmental assessment prepared by the applicant for the project.

On the basis of the environmental assessment, we have determined that an Environmental Impact Statement is not required.

APPROVED Donald Clegg
DONALD A. CLEGG
Director of Land Utilization

DAC:lg

58

1991-05-08-OA-FEA - Water access stairs at Outrigger Canoe Club

FILE COPY

Sea Engineering, Inc.

COASTAL CERTIFICATION REPORT FOR THE OUTRIGGER CANOE CLUB

2909 KALAKAUA AVE.
HONOLULU, HAWAII 96815
(808) 923-1585
TAX MAP KEY NO: 3-1-32:31

Recorded Fee Owner:
Elks BPOE, Honolulu
2933 Kalakaua Ave.
Honolulu, Hawaii 96815
(808) 922-5914

Prepared For:
City and County of Honolulu
Department of Land Utilization
650 S. King Street, 7th Floor
Honolulu, Hawaii 96813

Prepared By:
Sea Engineering, Inc.
Makai Research Pier
Waimanalo, HI 96795
(808) 259-7966

February 1991

LOCATION AND INTRODUCTION

The Outrigger Canoe Club (OCC) is located at Waikiki Beach on the southern shore of the island of Oahu. Waikiki is the primary tourist destination for visitors to Oahu, and Waikiki Beach provides water recreation opportunities for the tourists as well as residents of Honolulu and Oahu. OCC, a private water-oriented social club, is located at the southern end of Waikiki Beach, between the Natatorium and the Elks Club of Honolulu. A general location map is shown in Figure 1.

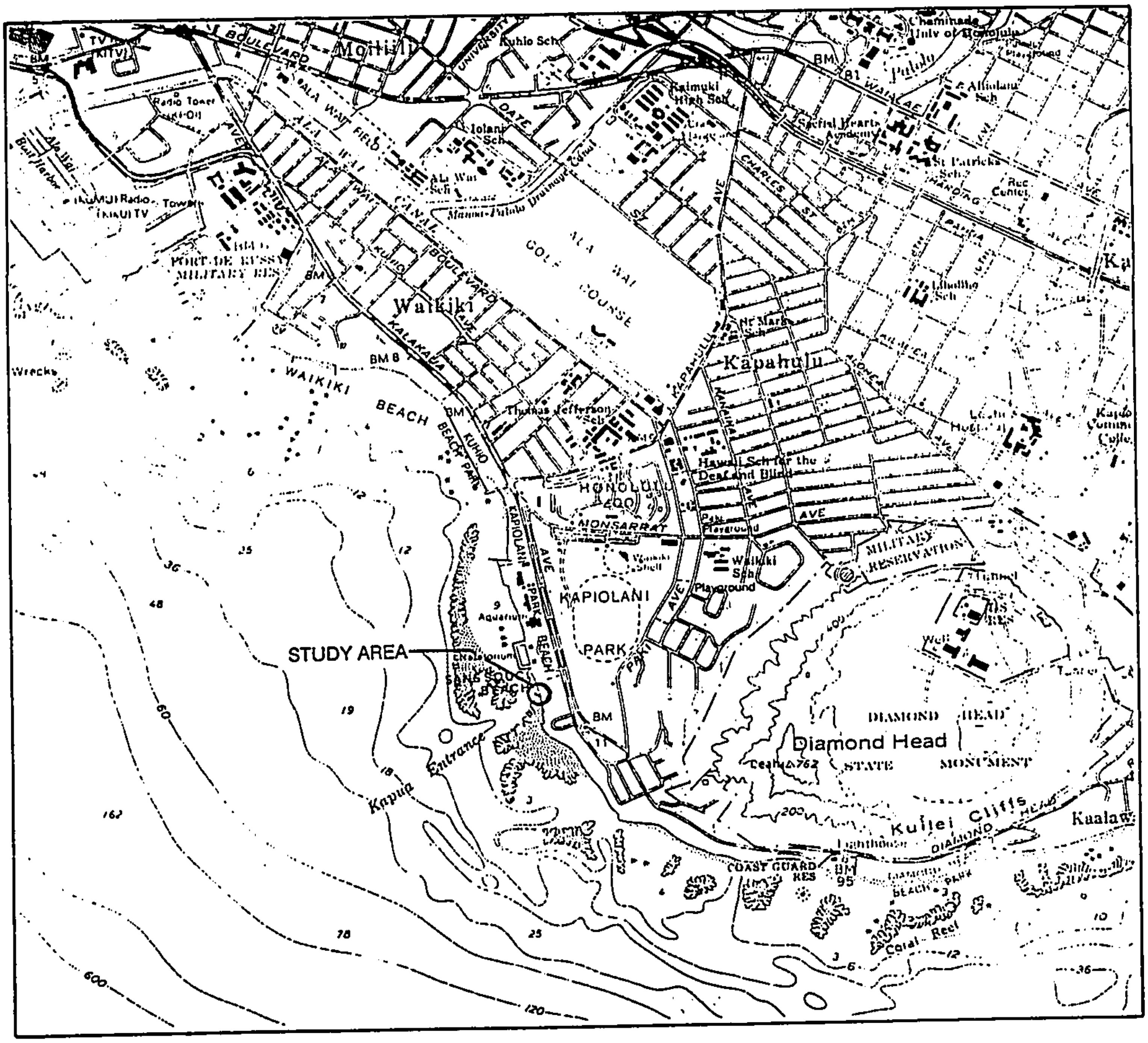
A vertical seawall protects the beach side of the club, and stabilizes the shore during periods of sand erosion. Water sports are a popular activity at OCC, and many outrigger canoes ranging in length from 26 to 42 feet are stored behind the seawall. During periods of erosion and sand loss in front of the seawall, there can be up to a five-foot drop from the top of the wall to the beach, making it difficult to move the 400 pound canoes in and out of the water.

The Outrigger Canoe Club proposes to eliminate the vertical seawall along a portion of the property and build stairs down to the beach. The stairs would be constructed entirely on OCC property, behind the State Certified Shoreline. A shoreline survey for the Outrigger Canoe Club and certified by the State in April 1990 is shown in Figure 2. In addition to providing for better access to the water for club members, the stepped stair-face will reduce wave reflection somewhat, thus reducing the impact of the seawall on beach processes.

COASTAL SETTING

General Description

The beaches in the project area are narrow but relatively stable, although the extent of sand beach fronting OCC is variable both seasonally and annually, and the nearshore waters are a popular swimming area. The beach in front of the OCC has been artificially nourished, and a rock groin built on the north (Natatorium) side of the club to help stabilize the beach. A short, low-elevation groin constructed of concrete piles has also been constructed on



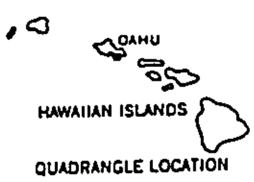
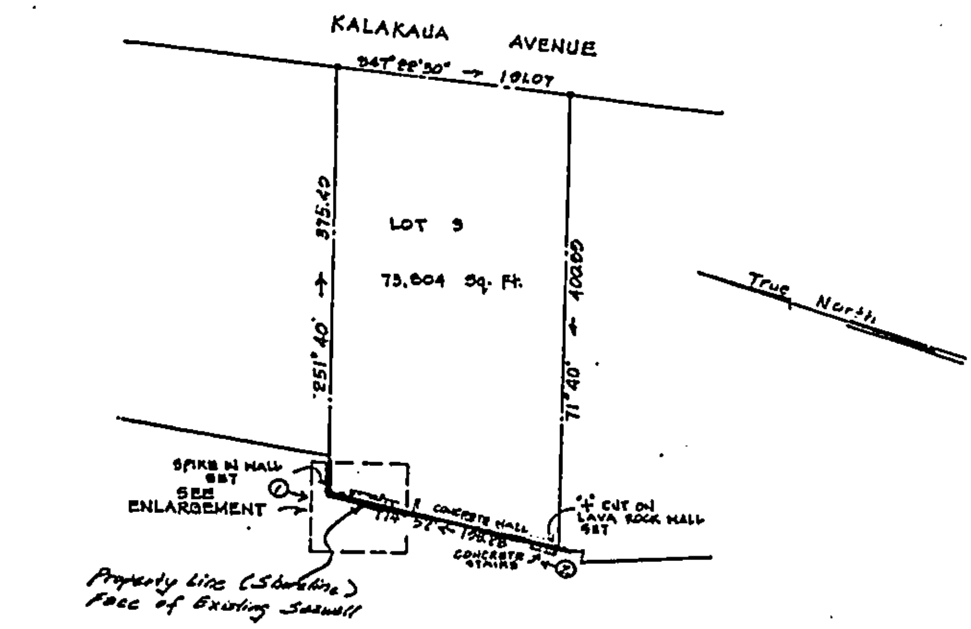
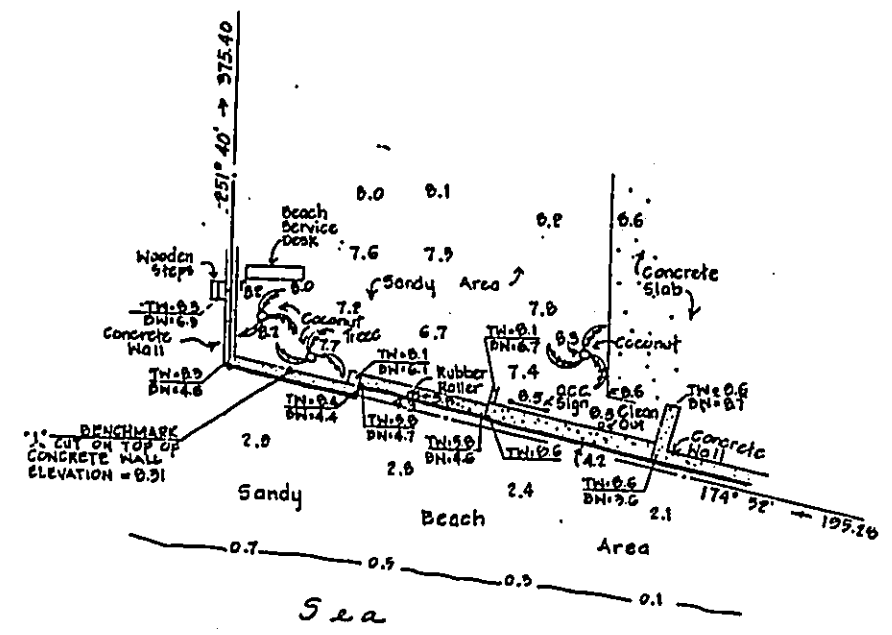


FIGURE 1

GENERAL LOCATION MAP





ENLARGEMENT

FIGURE 2

SHORELINE SURVEY FOR OUTRIGGER CANOE CLUB

DATE : 6 FEB. 90 TMK 3-1-32 : 31

FIELD BOOK 462 : 35

NOTE : Origin of Elevation From C&GS Bench Mark Disk "A-12", Elevation = 10.95

CONTROLPOINT
SURVEYING AND ENGINEERING, INC.
1043 WONG HO LANE
HONOLULU, HAWAII 96814
JOB NO. 90076

ALDEN S. KAJIOKA
LICENSED LAND SURVEYOR
CERTIFICATE NUMBER 6603-LS

ALDEN S. KAJIOKA LICENSED LAND SURVEYOR HAWAII, U.S.A.

The shoreline as located and certified and delineated ... hereby confirmed as being the natural shoreline ...
Chairman, Board of Land and Natural Resources

the south (Elks Club) side of the OCC in an attempt to further compartmentalize the shore and reduce sand transport.

As a point of interest, virtually the entire Waikiki shoreline is man-made, from Honolulu Harbor to Diamond Head, with revetments, seawalls, groins and imported sand constructed and placed along the shore beginning in the early 1900's.

The beach at Waikiki lies on a coral reef that extends offshore about one mile. The coral reef is considered the main natural source of sand nourishment for the beach. The shoreline and offshore areas are comprised of a complex reef bottom consisting of a mixture of limestone boulders and outcrops as well as sand. A very shallow reef exists seaward of the OCC shoreline, limiting wave action at the club site and helping to stabilize the shore. Further details of the bottom composition off Waikiki Beach and the OCC can be found in the Oahu Coastal Zone Atlas (AECOS, 1981).

The project site is located in Zone AE, special flood hazard area inundated by the 100 year flood, with a base flood elevation of 10 feet.

Coastal Processes

The beach in front of the OCC is affected by three type of waves; tradewind waves, Kona storm waves and southern swell. The island of Oahu shelters the beach in front of the OCC from North Pacific swell.

The tradewind waves approaching from the east-northeast pass through the Moloka'i channel and refract and diffract around the southeast end of Oahu and Diamond Head, with a considerable reduction in wave height by the time they reach Waikiki. In a report prepared by Gerritsen for the University of Hawaii Sea Grant College Program titled Beach and Surf Parameters in Hawaii (1978), a reduction of almost 70% from the deep water wave height was calculated for the refracted tradewind wave height at Waikiki. Thus, the typical tradewind deepwater wave height of about 5 feet would be reduced by refraction and diffraction to a height of 1.5 feet. These tradewind waves occur an estimated 75% of the time.

Because the tradewind wave energy reaching Waikiki beach is so reduced by refraction and diffraction, the majority of shoreline change occurs during winter Kona storms and during the spring and summer months when the south swell is most frequent. Kona storm waves are generated by local storm fronts or low pressure systems, and typically have periods ranging from 6 to 10 seconds and heights up to 5 to 10 feet.

Kona storms are most common during the winter and early spring, with waves typically approaching from the southwest. South swell is generated by storms in the southern hemisphere, and is most prevalent in Hawaii during the months of April through September. These long, low waves approach from the southeast through southwest with typical periods of 12 to 22 seconds and deepwater heights of 1 to 4 feet. The long wave period south swell can result in breaker heights of 10+ feet nearshore.

Although hurricanes are infrequent in Hawaiian waters, they would produce the largest waves estimated to possibly occur in the study area, and their effect on Waikiki beach could be dramatic. An indication of the height of these waves can be found in the report Hurricane Vulnerability Study for Honolulu, Hawaii and Vicinity (Bretschneider, 1985). Using the worst case hurricane a maximum breaking wave height of 40 feet would occur in 50 feet of water. The worst case hurricane assumes a southwesterly approach with very little wave height reduction due to refraction. The actual wave energy reaching the shoreline would be greatly reduced by breaking and bottom friction, but would still likely be sufficient to significantly alter the sandy shoreline. Direct hurricane attack, although unlikely, would also generate considerable flooding and cause severe coastal damage.

The currents in the vicinity of Waikiki Beach are strongly affected by the tide, except in the nearshore area where wave-induced currents prevail. Details of ebb and flood current patterns in the vicinity of OCC are shown in Figure 3. During ebb and flood tides the offshore currents flow in a southeasterly direction with a magnitude usually below 0.5 ft/sec. These currents are not strong enough to initiate sediment motion, however, sediment put into suspension by wave action is transported by the tide induced currents.

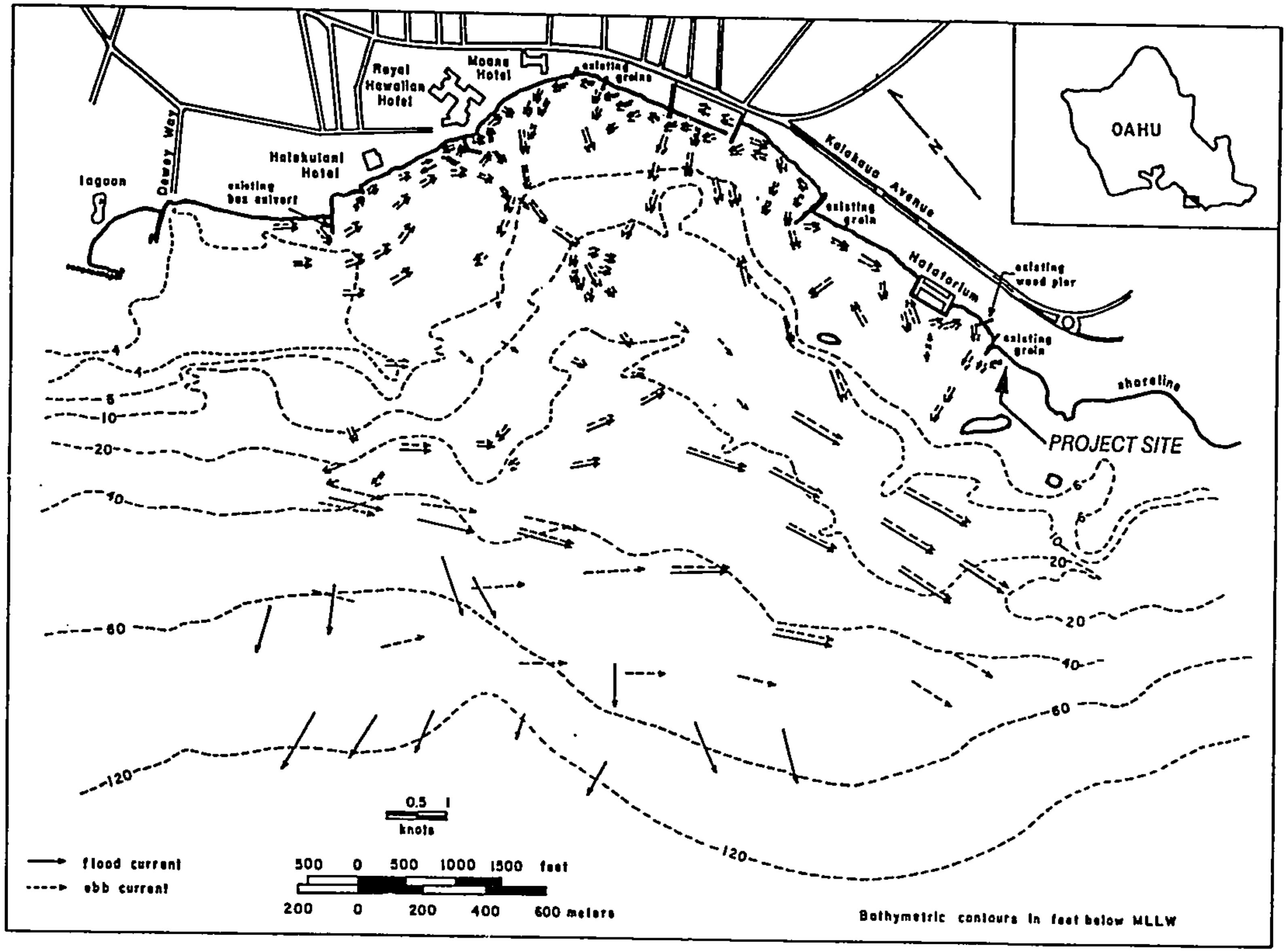


FIGURE 3.
NEARSHORE CURRENT PATTERNS
AT WAIKIKI BEACH, OAHU
From Beach & Surf Parameters,
FrancisCus Gerritsen - June 1978

In the nearshore zone the average littoral drift is to the north and west, driven by the prevailing trade wind waves. Wave height and the direction of wave approach determine the quantity of longshore sediment motion. Although the trade wind waves are small they are persistent, and because of their approach direction and shorter wave period tend to approach shore more obliquely than Kona waves or south swell. Sand accumulation adjacent to the groin on the north side of the OCC beach is evidence of this motion.

3. EXISTING SHORELINE

The existing shoreline is shown on Figure 2, which is a shoreline survey dated February 6, 1990. Both the State certified shoreline and the location of the existing seawall are shown. Figure 4 shows a cross-section profile measured on September 20, 1989. The location of the profile approximately bisects the existing backshore and sand area at the club and the location of the proposed stairs.

A sandy beach is present in front of the Outrigger Canoe Club in front of the seawall. The width of the beach decreases to the south where the sand is mixed with large rocks. The beach is widest on the north side as can be seen in Figure 5, Photo 1. The proposed stairs would be located at the lower elevation portion of the seawall, shown in Photo 2. Although the step down to the beach at the opening is only 1 - 2 feet as shown in the photo, the vertical distance down to the beach can be as much as 4 to 5 feet during periods of little or no sand fronting the seawall.

4. JUSTIFICATION FOR PROPOSED DESIGN

The nearshore zone in the study area is a dynamic environment with sand in constant motion. At times, the sand in front of the Outrigger Canoe Club moves offshore and alongshore leaving a 4 to 5-foot drop from the low elevation access way in the existing seawall to the beach/water below. The access way is used to transport the outrigger canoes from the protected beach behind the wall to the ocean. The canoes weigh approximately 400 pounds making the transition from the protected beach to the natural beach difficult. Construction of the proposed stairs through the seawall would greatly

FIGURE 4 – SHORELINE PROFILE

OUTRIGGER CANOE CLUB

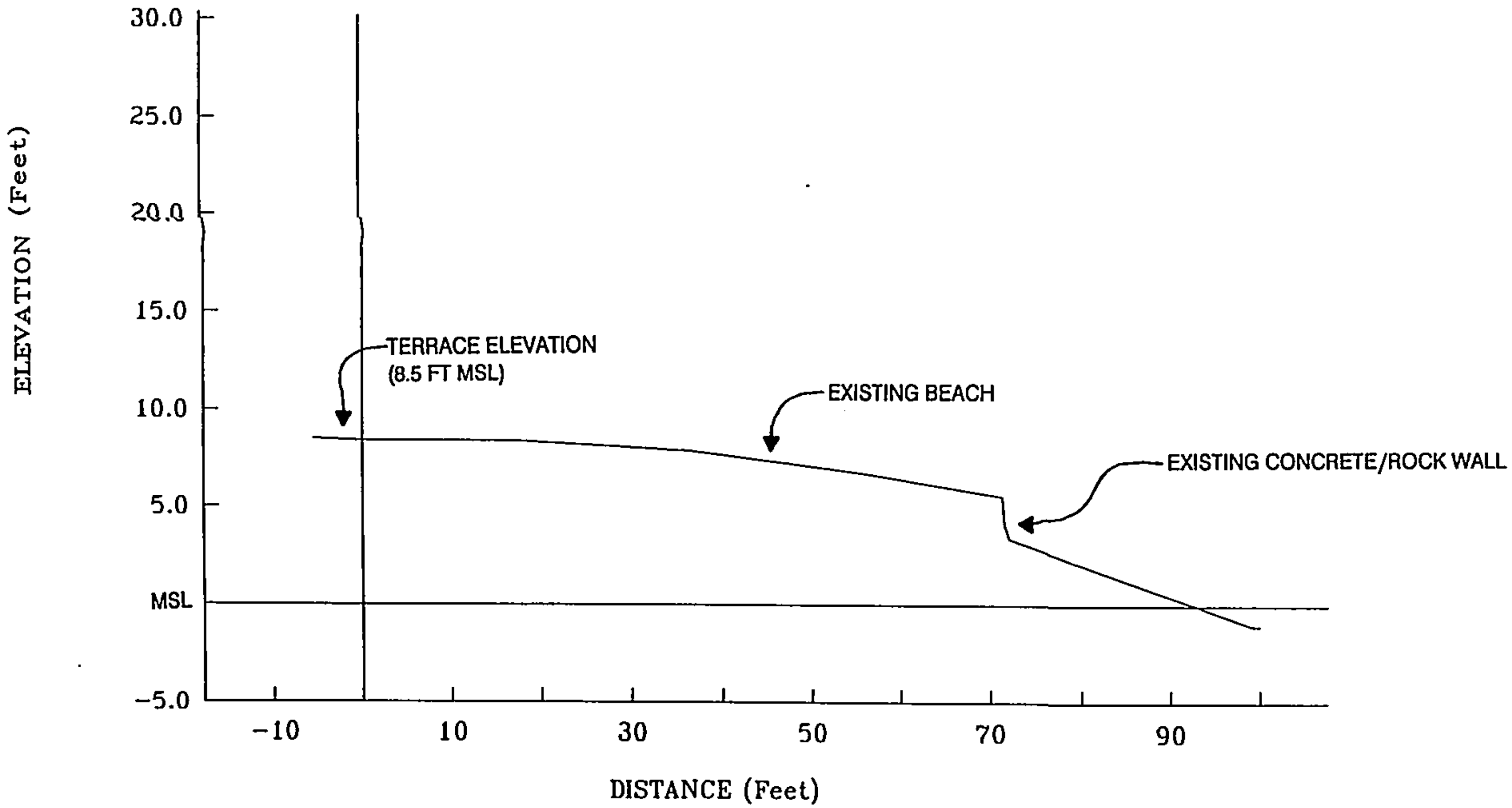


PHOTO NO. 1

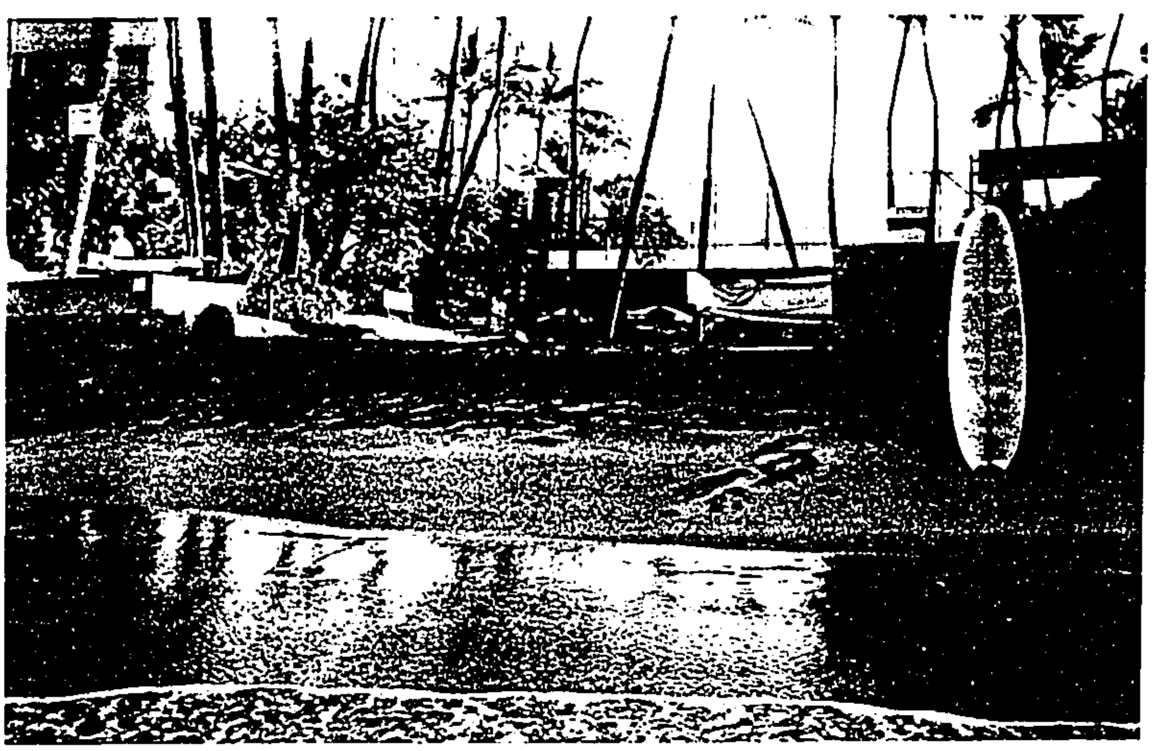


PHOTO NO. 2

FIGURE 5.
SHORELINE PHOTOGRAPHS

facilitate access to the water during periods of little sand fronting the seawall, and the stepped design would result in less wave reflection which would in turn aid in the accretion of sand in front of the stairs.

5. CONSIDERATION OF ALTERNATIVES

A) No Action

Although during times of low wave energy an abundance of sand is present in front of the wall, and the transition to the natural beach is easy, at times a 4 to 5-foot drop exists. As the name of the Outrigger Canoe Club implies, water sports are of primary importance to the club members, and easy and safe access to the beach is needed. Thus, no action is not a viable alternative for the club members.

B) Stairway

Building the stairway is the only viable option available to the club. Any deviation from a vertical face would decrease wave reflection and decrease scour of the sand in front of the structure. A sloping structure such as a revetment or in this case stairways initiates wave breaking which is natures way to quickly decrease the wave energy. The proposed stairway would have a 1(V) on 3(H) slope which would be considered steep for a natural beach but is considerably better then a vertical face. The stairs would be constructed entirely on OCC land behind the existing seawall face, and the foot of the stairway would be landward of the State certified shoreline.

6. PROPOSED PLAN OF IMPROVEMENT

Plan and section drawings of the proposed stairway are shown on Figure 6. The stairs would be constructed of concrete with the toe of the stairway located approximately 2 feet landward of the State Certified Shoreline at an elevation of +3 feet mean sea level (MSL). At present, the top of the wall where the stairs would be located is at an elevation of 6 feet MSL. This wall would be removed before the stairs are built. In addition, the top of the stairs would be even with the Ewa side wall at an elevation of 8.4 feet. These elevations and locations are shown in section A1 of Figure 6.

The proposed stairway will be located entirely within the shoreline setback which is 40 feet landward from the certified shoreline. The stairs will begin approximately 2 feet landward of the State Certified shoreline and extend landward approximately 16.4 feet.

The stairs will be built at a cost of $45,000 and construction will be complete within 10 working days.

7. POTENTIAL IMPACTS

A seawall is already present in front of the Outrigger Canoe Club. Changing a portion of the seawall to a stairway will decrease the wave reflection and reduce beach scour in front of the stairways. One would expect the beach to grow in front of the stairs, however the stairway width would only be 12 feet and thus its beneficial effects will be minimal. Other positive impacts include a safe and easy access to the beach and an improvement in the general aesthetics. No adverse impacts to the natural beach are expected.

8. REFERENCES

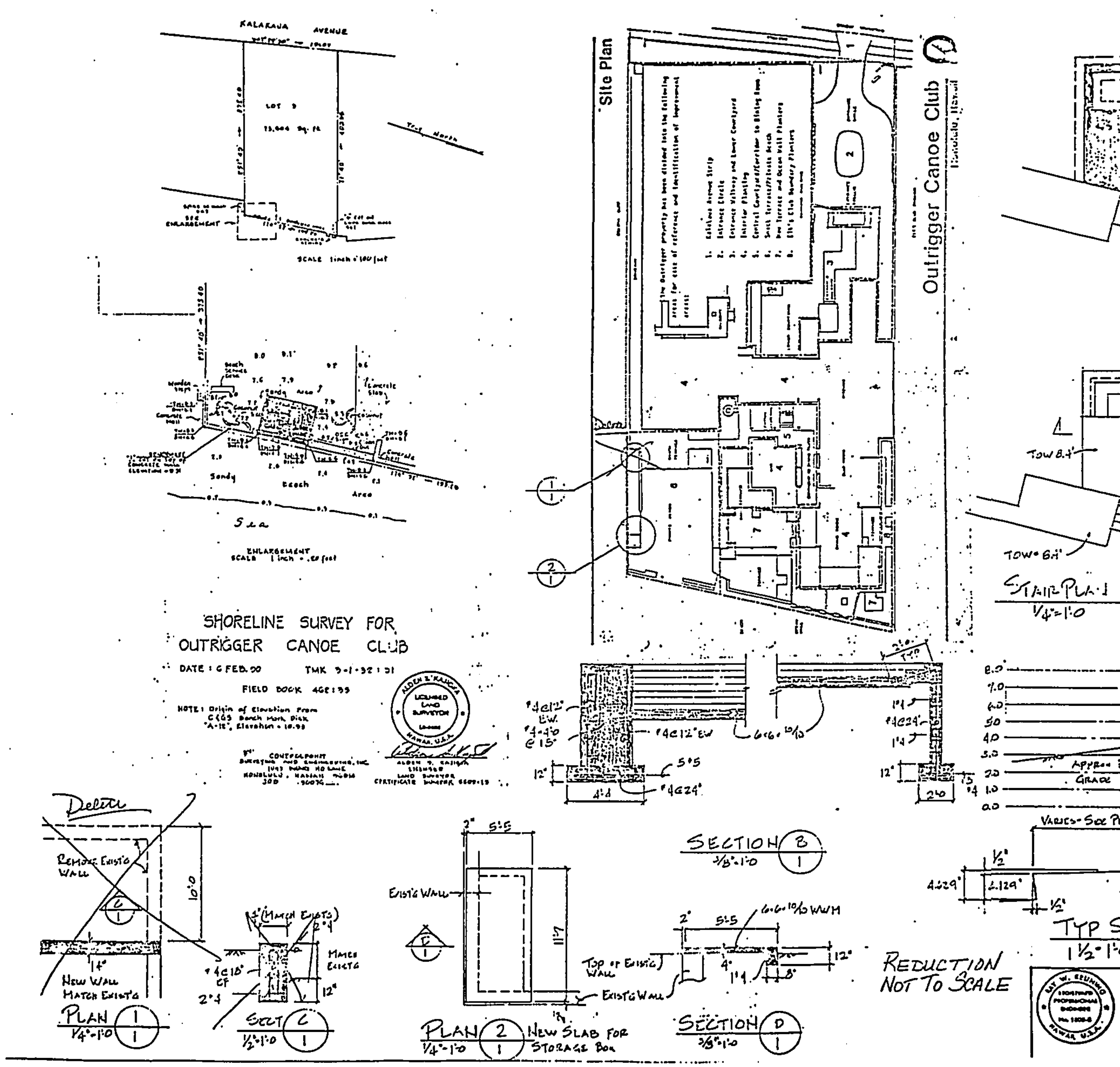
AECOS, Inc. 1981. "Oahu Coastal Zone Atlas". Prepared for the State of Hawaii, Department of Transportation, Harbors Division.

Bretschneider C. L. 1985. "Hurricane Vulnerability Study for Honolulu, Hawaii, and Vicinity." Vol. 2. Prepared for U. S. Army Engineering Division, Pacific Ocean Planning Branch, Fort Shafter, Hawaii.

Gerritsen, F. 1978. "Beach and Surf Parameters in Hawaii." Prepared for The University of Hawaii Sea Grant College Program.

Flood Insurance Rate Map, City and County of Honolulu, Hawaii prepared by the Federal Emergency Managment Agency.

DOCUMENT CAPTURED AS RECEIVED



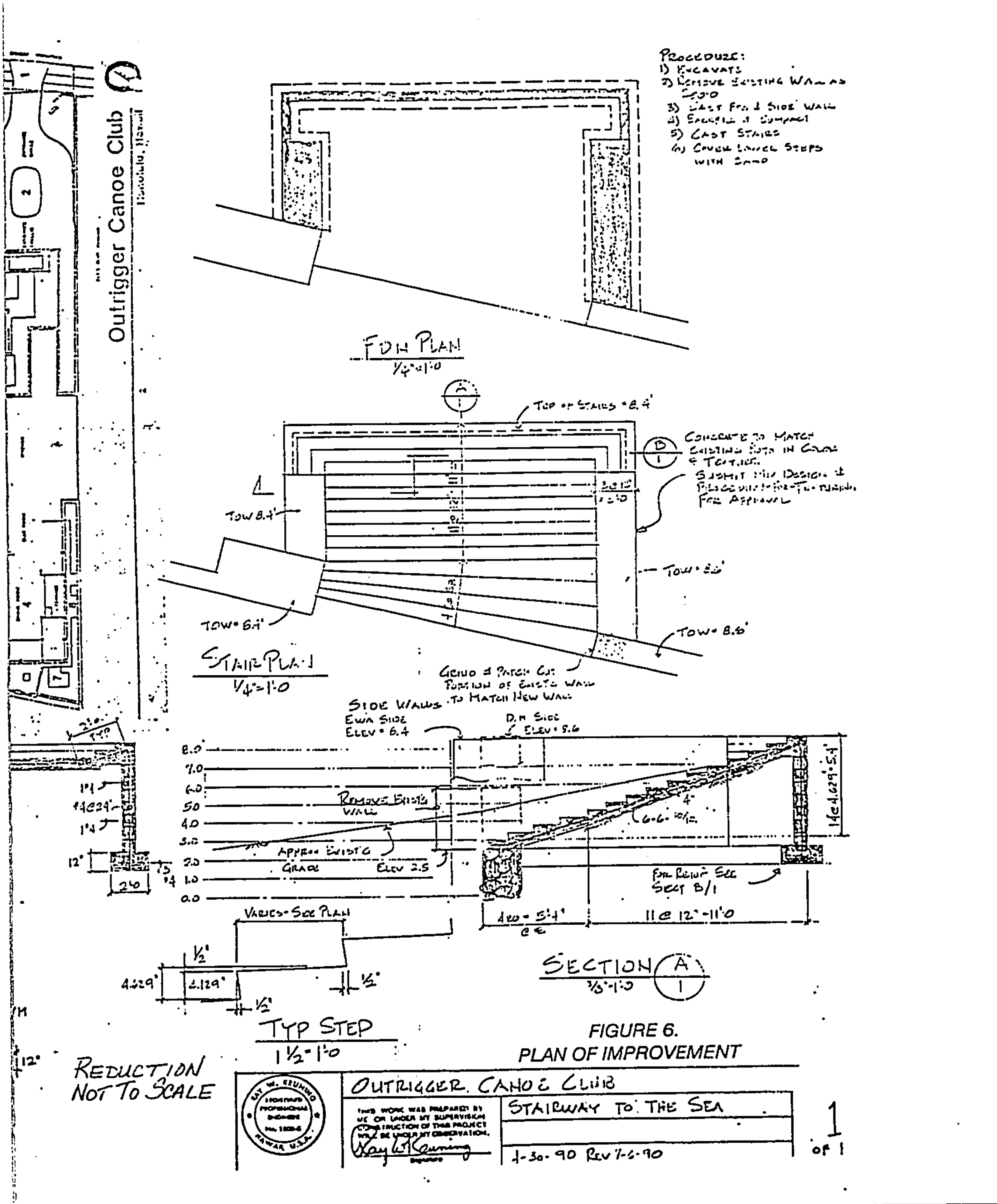


FIGURE 6.
PLAN OF IMPROVEMENT

END

CERTIFICATION

I HEREBY CERTIFY THAT THE MICROPHOTOGRAPH APPEARING IN THIS REEL OF FILM ARE TRUE COPIES OF THE ORIGINAL DOCUMENTS.

2004
DATE

Joelle Kaai
SIGNATURE OF OPERATOR

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

DENSITY TARGET