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FOR REFERENCE
not to be taken from this room

SOILS INVESTIGATION

LAKEVIEW ROYAL APTS.

ALA NIOI PLACE - SALT LAKE

TMK: 1-1-61: LOTS 15 AND 40

for

MR. HAROLD NAKAKURA

W.O. 153-A

August 16, 1972

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ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
MUNICIPAL REFERENCE RECORDS CENTER
City & County of Honolulu
City Hall Annex, 558 S. King Street
Honolulu, Hawaii 96813



ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering

1157 South King Street • Honolulu, Hawaii 96814 • Phone 531-5733

August 16, 1972
W.O. 153-A

Mr. Harold Nakakura
c/o Nakakura Construction Co., Ltd.
2621 Waiwai Loop
Honolulu, Hawaii 96819

Attention: Mr. Harold Nakakura

Subject: Soils Investigation
Lakeview Royal Apt.
Ala Nioi Place - Salt Lake
TMK: 1-1-61: Lots 15 and 40

Reference: Foundation Investigation
Prepared by Ernest K. Hirata & Associates, Inc.
W.O. 153 dated June 20, 1972

Gentlemen:

This report presents the results of our soils investigation conducted on the subject property. This investigation was authorized to determine if any unusual or adverse conditions might exist which would affect the proposed grading of the site. A previous foundation investigation conducted by us has been reviewed and the results utilized. The exploratory boring locations are shown on the Proposed Grading Plan.

SITE DESCRIPTION

The property is located at the southeast portion of Ala Nioi Place cul-de-sac. The site gradually slopes up from Ala Nioi Place towards the rear of the property. The rear of the property is bounded by a 58 feet high cut slope which fronts Salt Lake

Boulevard while the cut slope on the east is approximately 34 feet high.

PROPOSED GRADING

Grading will be primarily limited to the existing cut slope found at the rear and eastern edge of the property. The existing cut slopes which vary from slope gradients of 3/4:1 to 1:1 will be recut to a slope gradient of 1/2:1 (horizontal to vertical). The final cut slope at the rear will be approximately 56 feet while the cut slope at the eastern edge will have a retaining wall with a maximum height of 10 feet.

FIELD EXPLORATION

The site was explored on June 13, 1972 by drilling three exploratory test borings with a truck mounted rotary drill rig. In addition, the existing cut slopes were carefully inspected on June 28, 1972. The boring locations are shown on the Proposed Grading Plan and the soils encountered are logged on Plates A1 through A3.

SOIL CONDITIONS

The site consists mainly of consolidated volcanic ash known as tuff. Tuff, commonly called mudrock, was found to be hard as indicated by the high blow counts. Underlying the surface tuff material was a brown silty clay. The silty clay was found to

be stiff. Boring 3 encountered strata of sandy silt and silty sand from depths of 19 feet below existing ground. All soils encountered were found to be in either a stiff or dense condition.

Water seepage was encountered in Borings 1 and 3 at depths of 19 feet below existing ground surface.

Visual inspection of the cut slope at the eastern edge of the property indicated a talus deposit of mudrock. Talus deposits consist of material deposited by the general erosional effects due to wind.

CONCLUSIONS AND RECOMMENDATIONS

I. Cut Slope

Based upon the blow count and past experiences of the mudrock material, cut slopes should be stable at slope gradients of $\frac{1}{2}$:1. The maximum cut slope without a bench of 21 feet should be stable.

The talus deposit of mudrock found on the cut slope on the eastern edge of the property should be removed to prevent any material from sliding down to the parking area.

II. Groundwater

Groundwater is not anticipated from any of the cut slopes, and the need for subdrains is not anticipated.

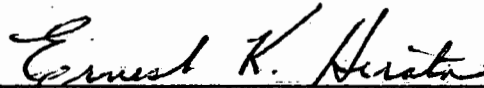
III. Grading

The site area should be stripped of all vegetation and deleterious materials and wasted from the site. The existing grade should then be scarified, moistened as required to obtain optimum moisture content and recompacted to a minimum of 90% of the maximum dry density as determined by the Modified AASHO Test T-180. On site materials may be utilized for fill material.

We appreciate this opportunity to be of service. Should you have any questions concerning this report, please call on us.

Respectfully submitted,

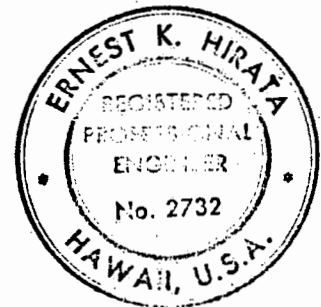
Ernest K. Hirata & Associates, Inc.



Ernest K. Hirata

P.E. 2732

Enc: Boring Logs Plates A1 through A3
Proposed Grading Plan



ERNEST K. HIRATA & ASSOC.

BORING LOG

BORING NO. B1

DRIVING WT. 140 lb.

DATE OF DRILLING 6-13-72

SURFACE ELEV. 107*

DROP 30 in.

W.O. 153

DEPTH FEET	CORE	BAG	PENE. RESIST. BLOWS/FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS		CLASSIFICATION (% Sand, % Silt, % Clay)
							φ	c	
									Gravelly SILT (GM) - Brown, loose.
	x		25/2"		30.3				Bedrock - Tuff, dark brown, hard.
-5-									
	x		20/0"		19.1				Grading to gray color from 11 feet.
-10-									
	x		12/0"		19.4				
-15-									Grading to brown color from 17 feet.
▽									
-20-	x		21 90.5 25/4"		33.8				Silty CLAY (MH) - Brown, moist, stiff.
-25-									
	x		20 80.5 20/3"		35.5				
-30-									End boring at 28.8 feet ▽ Water level at 19 feet * See Plot Plan for reference.

ERNEST K. HIRATA & ASSOC.

BORING LOG

BORING NO. B2

DRIVING WT. 140 lb.

DATE OF DRILLING 6-13-72

SURFACE ELEV. 103*

DROP 30 in.

W.O. 153

DEPTH FEET	CORE	BAG	PENE. RESIST. BLOWS/FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS		CLASSIFICATION (% Sand, % Silt, % Clay)
							φ	c	
									Bedrock - Tuff, light brown, hard.
-5-	x		25/1"		27.4				
									CINDERS - Brown, dense.
-10-	x		22/3"		22.3				
									Silty CLAY (MH) - Brown, stiff.
-15-	x		26 25/3"	87.3	32.4				
									End boring at 20 feet. * See Plot Plan for reference.
-20-	x		13 21	85.5	33.3				
-25-									
-30-									

ERNEST K. HIRATA & ASSOC.

BORING LOG

BORING NO. B3

DRIVING WT. 140 lb.

DATE OF DRILLING 6-13-72

SURFACE ELEV. 102.5*

DROP 30 in.

W.O. 153

DEPTH FEET	CORE	BAG	PENE. RESIST. BLOWS/FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS		CLASSIFICATION (% Sand, % Silt, % Clay)
							φ	c	
									Bedrock - Tuff, gray, hard. Grading to light brown in color from 1.2 feet.
5	x		20	1"					
10									
	x		22	2"	17.4				
15	x		11 32	86.9	34.2		43°	1.90 KSF	
									Silty CLAY (MH) - Brown, stiff.
20	x		12 23	81.1	39.9				Sandy SILT (CL) - Brown, moist, stiff, some gravel.
									Silty SAND (SM) - Brown, moist, dense.
25	x		18 20	83.0	36.0				End boring at 24.8 feet. ▽ Water level at 19 feet. * See Plot Plan for reference.
30									

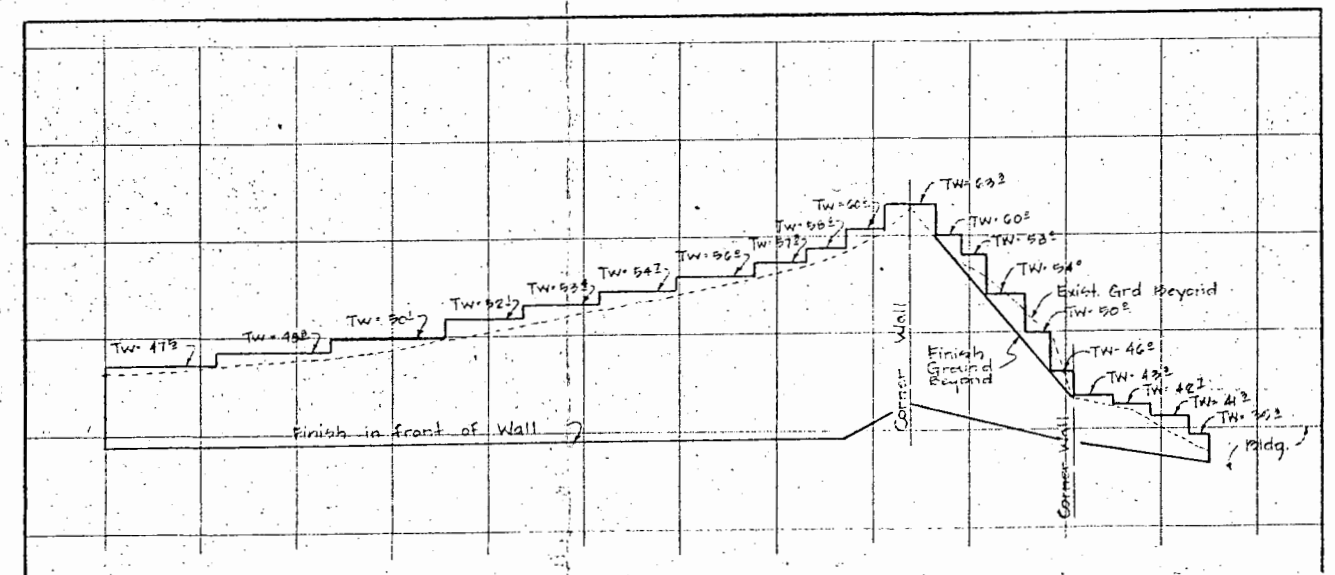
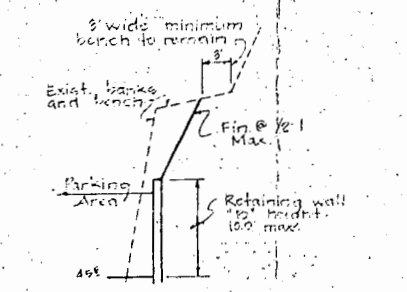
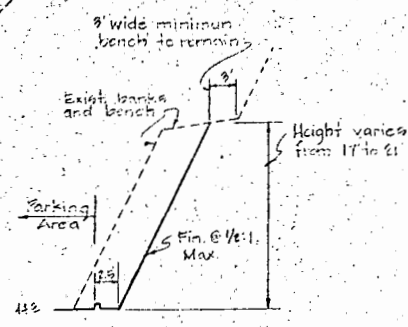
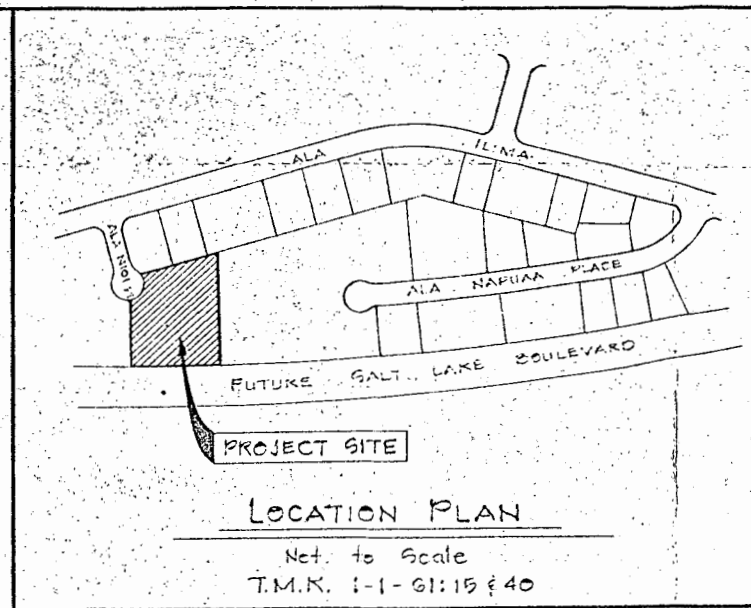
GRADING PLAN
LAKEVIEW ROYAL APARTMENTS

GRADING NOTES

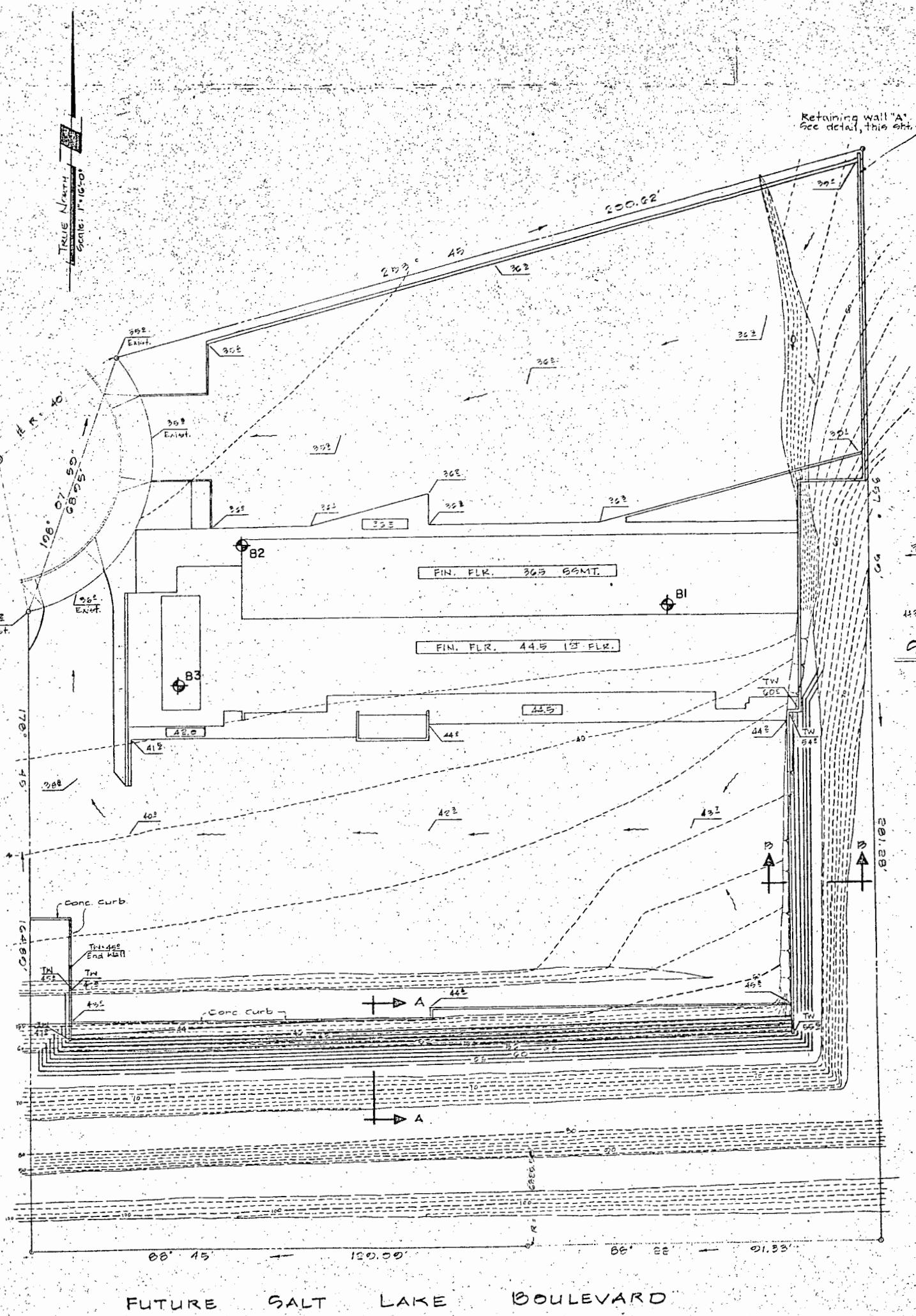
- All grading work shall conform to Chapter 23, revised Ordinance of Honolulu, 1961 as amended.
- The Contractor shall be responsible for the clearing and removal of all silt and debris generated, deposited and accumulated within downstream waterways, ditches, drain pipes, and on public roadways. The Contractor agrees to reimburse the City and County of Honolulu for all costs expended in the performance of the above work if required for public health and safety or made necessary by non-performance by the Contractor.
- The Contractor, at his expense, shall keep the project and surrounding area free from dust nuisance. The City shall require supplementary measures as necessary.
- All existing utilities, whether or not shown on the plans, shall be protected at all times unless noted otherwise.
- All slopes and exposed areas shall be planted with a suitable ground cover. Planting shall commence immediately following the grading work.
- Excess material from this project will be disposed of at a site provided by the Contractor, and the City shall be informed of the location of the disposal site when the application for a grading permit is made. The disposal site must also fulfill the requirements of the grading ordinance.

ESTIMATED IN-PLACE EARTHWORK QUANTITIES

EXCAVATION
EMBANKMENT
AREA TO BE GRADED 41,000 SF



BENCHMARK
Exist. City and County
street monument.
(Top of Brass Pin
Elevation: 36.01')



⊕ Approx. location of borings

I CERTIFY THAT THIS
WORK WAS DONE BY
ME OR UNDER MY
SUPERVISION.
STANLEY YIM, Assoc. Inc.

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
1157 South King Street Honolulu, Hawaii

Date AUG. 16, 1972 W.O. 153-A

APPROVED FOR GRADING ONLY:

PLANNING DIRECTOR, PLANNING DEPARTMENT	DATE
DIRECTOR & CHIEF ENGINEER, DEPARTMENT OF PUBLIC WORKS	DATE
CHIEF DIVISION OF ENGINEERING, DEPARTMENT OF PUBLIC WORKS	DATE