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MOFFETT FIELD
SSIC NO. 5090.3.A

COOPER & CLARK CONSULTING ENGINEERS
SOIL MECHANICS FOUNDATION ENGINEERING ENGINEERING GEOLOGY

October 1, 1962

Hiller Aircraft Corporation
c/o Associated Construction & Engineering Co.
127 Beacon Street
South San Francisco, California

Attention: Mr. George Jennings

Gentlemen:

Report
Soil Investigation
Proposed Tie-Down Facility
U.S. Naval Air Station, Moffett Field
Mountain View, California
For Hiller Aircraft Corporation

INTRODUCTION:

Presented in this letter are the results of our soil investigation for a proposed tie-down facility at the U. S. Naval Air Station, Moffett Field, Mountain View, California. The location of the proposed facility is shown on the Plot Plan, Plate 1.

The proposed development will include placement of 1 to 2 feet of a compacted fill blanket to raise the area to the adjacent street level, construction of an earth revetment surrounding the tie-down area, and construction of the tie-down facility proper. We understand that the revetment will be 10 feet high with a 5-foot-wide top and, if feasible, will have side slopes of 1 vertical to 1½ horizontal.

The tie-down facility will consist of six tie-downs, each of which could be subjected to a 105-kip uplift force, a 70-kip downward force, and a 50-kip shear force. In addition, the tie-down structure will possibly be subjected to vibratory forces of unknown magnitudes.

The purpose of our investigation was to recommend adequate types of foundations for the tie-down facility. After the start of the investigation, the scope of our services was expanded to include recommendations on safe slopes for the earth revetment.

FIELD INVESTIGATION AND LABORATORY TESTING:

Subsurface conditions were explored with one, 50-foot-deep boring, drilled with truck-mounted, rotary wash equipment. The soils

encountered were logged by one of our engineering geologists, who obtained undisturbed samples of the soils for visual examination and laboratory testing. A description of the soils encountered in the boring is presented on Plate 2, Boring Log. The system used to classify the soils is described on Plate 3, Method of Soil Classification.

The soil to a depth of 4 feet consists of a moderately firm black to gray sandy clay, the upper 18 inches of which are adobe-like. The sandy clay is underlain by a stratum of weak clayey silt to a depth of 7½ feet. This stratum is in turn underlain by firm to stiff predominantly clayey and sandy soils to the depths explored. The static ground water level was located at a depth of 2 feet below the existing ground surface.

Selected undisturbed samples were tested in direct shear to evaluate the strength characteristics of the soils. As an aid in correlating the engineering properties of the various soils, the moisture content and dry density of all samples were determined. The results of all these tests are presented to the left of the boring log.

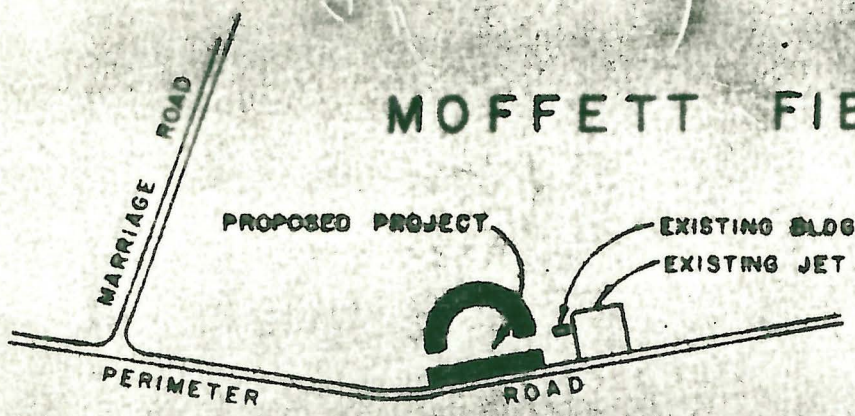
DISCUSSION AND RECOMMENDATIONS:

It is our opinion that the proposed development is feasible. However, because of the rather unfavorable strength characteristics of the surface soils and the high ground water table, special types of foundation support for the tie-downs will be required. In addition, strict supervision of site preparation and construction should be exercised to assure that the following recommendations are complied with.

The site should be stripped of all vegetation, and the top 6 inches of exposed subgrade and all fill, including the revetments should be compacted to a minimum dry density of 90 percent as determined by the Modified AASHO Method of Compaction (AASHO Designation T 180-57). The proposed revetments, if constructed on slopes no steeper than 1 vertical on 1½ horizontal, should have an adequate factor of safety against instability.

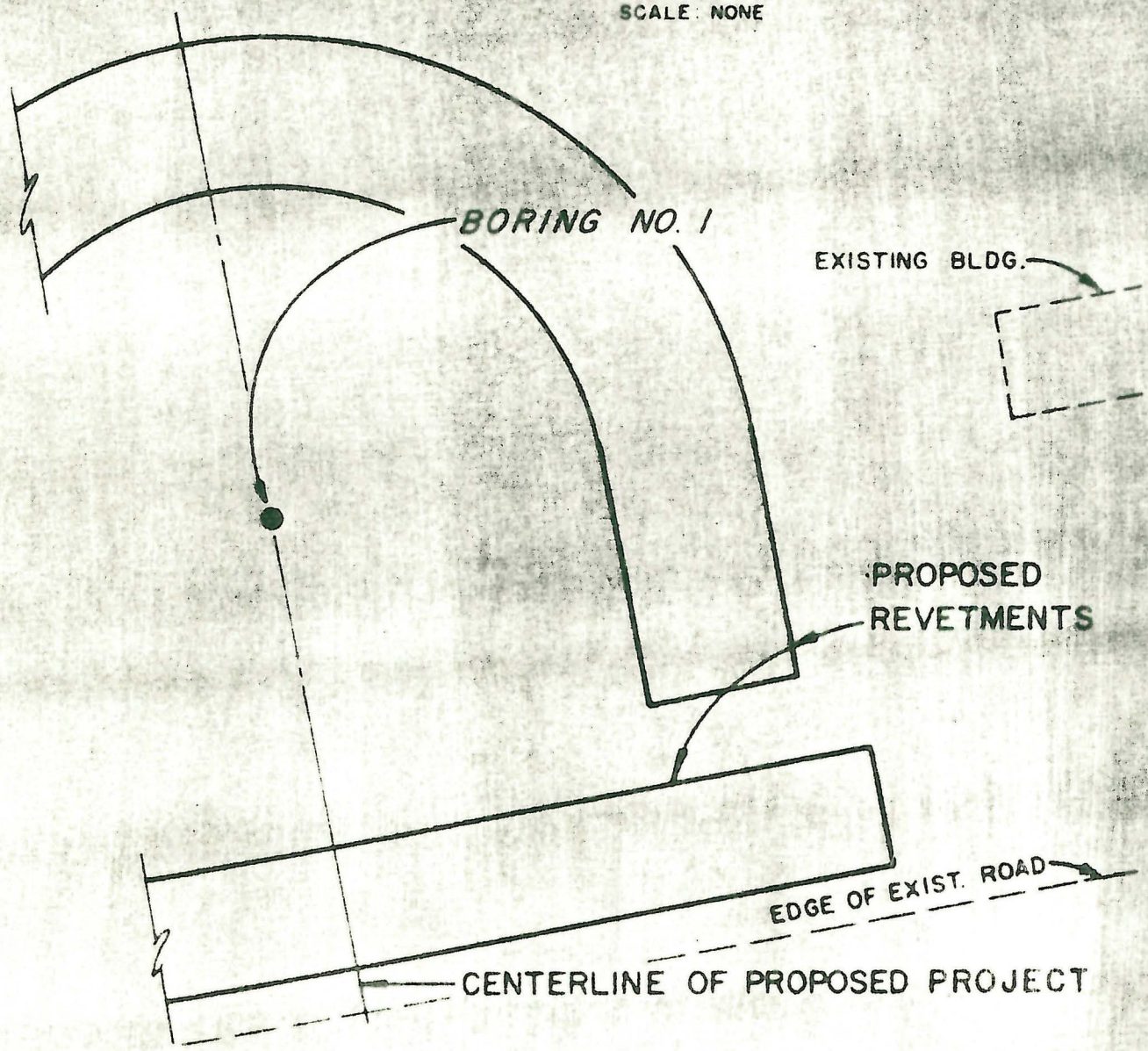
We understand that it is planned to support the tie-down facility on a continuous slab about 2 feet thick. A portion of the uplift forces will be resisted by the dead weight of this slab. It is recommended that drilled, cast-in-place concrete piling be used to resist the remainder of the uplift forces. The computed uplift and downward supporting capacities for 24-inch-diameter drilled piles are presented on Plate 4, Computed Pile Capacities. As the foundation will be subjected to vibratory forces, it is recommended that the factor of safety of the piling against pull-out be increased by providing 3-foot-diameter bells at the bottom of the piles. The piling should be properly reinforced for full uplift and to resist lateral deflections of the foundation under shear loads. To assure good bond between the soil and the piles, a non-shrink or slightly expansive concrete should be used. The drilled holes should be properly cleaned and all water pumped out prior to pouring the concrete.

MOFFETT FIELD



AREA MAP

SCALE: NONE



PLOT PLAN

SCALE: 1" = 40'

REFERENCE:

Drawing titled, "HILLER TEST STAND", by Associated Construction & Engineering Co., dated 9-12-62.

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Location MOFFETT FIELD

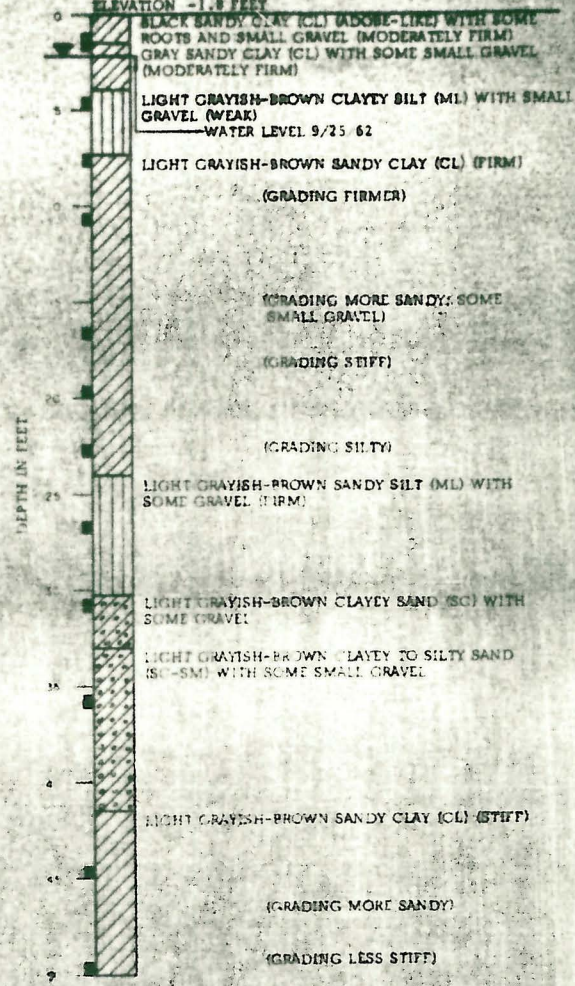
Job Number 248 A Name

PLATE 1

CLASSIFICATION DATA			STRENGTH DATA				MOISTURE-DENSITY DATA	
% PASS (-NO 200)	LIQUID LIMIT	PLASTICITY INDEX	TYPE OF STRENGTH TEST	TEST SURCHARGE PRESSURE, LBS/SQ FT	TEST MOISTURE CONTENT, %	SHEAR STRENGTH, LBS/SQ FT	NATURAL MOISTURE CONTENT, %	DRY DENSITY, LBS/CU FT
			DS	300	NATURAL	540	24.8	101
			DS	550	NATURAL	260	29.1	94
			DS	1000	NATURAL	300	28.8	95
			DS	900	NATURAL	700	24.4	102
			DS	1700	NATURAL	1350	23.7	101
							22.9	107
			DS	1700	NATURAL	2500	24.2	104
			DS	2000	NATURAL	1500	22.0	103
			DS	2200	NATURAL	1250	23.5	103
							13.8	120
			DS	500	NATURAL	750	27.7	106
			DS	1000	NATURAL	1300	21.4	106
							26.4	101
							21.4	107

BORING 1

ELEVATION -1.8 FEET



LABORATORY NOTES AND ABBREVIATIONS:

THE TABULATED SHEAR STRENGTHS ARE YIELD POINT VALUES.

DS = STRAIN CONTROLLED DIRECT SHEAR TEST AT NATURAL MOISTURE CONTENT.

FIELD NOTES:

1. THE BORING WAS DRILLED ON SEPTEMBER 17, 1962 WITH TRUCK-MOUNTED, ROTARY WASH EQUIPMENT.

2. UNDISTURBED SAMPLES, THE LOCATIONS OF WHICH ARE SHOWN BY THE FOLLOWING SYMBOL ■, WERE TAKEN IN A 2½-INCH-DIAMETER, SPLIT-TUBE BARREL WHICH WAS DRIVEN INTO THE SOIL BY SLIP-JARS.

3. THE ELEVATION OF THE BORING REFERS TO AN ASSUMED DATUM. THE TOP OF THE CONCRETE BOX ADJACENT TO PERIMETER ROAD AND OPPOSITE THE BORING LOCATION WAS ASSUMED TO BE AT ELEVATION 0.0 FEET.

BORING LOG

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