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F.G.E., LTD.

Fewell Geotechnical Engineering, Ltd.
2825 Koapaka St. • Honolulu, Hawaii 96819 • (808) 836-2171

FOR REFERENCE

not to be taken from this room

SR-43

TA 710.3
H3
H64
No 43

File No. 178-1
February 26, 1980

Gray, Rhee and Associates, Inc.
116 South King Street, Room 508
Honolulu, Hawaii 96813

Attention: Mr. Daniel Hong

Subject: GRADING REPORT
Future Park Site
Hawaii Loa Ridge
Wailupe, Oahu, Hawaii

Gentlemen:

At your request, we have observed the grading operations for the Future Park Site of the subject development. This work has been completed on an intermittent basis.

Work commenced with a general clearing and stripping of the area to be graded. Soft spots were removed and recompacted. Actual grading then commenced using 631C scrapers, D-8 and D-9 bulldozers, and an 824B caterpillar compactor to haul, place, and compact the fill materials.

The majority of the excavated materials utilized in the construction of the fill embankment consisted of crushed basalt cobbles and boulders which were utilized in the rock filling operations. Moderately plastic clays and silts (MH) were utilized in the upper portion of the fill. An 18 inch thick "choke" layer of crushed basalt gravel was used in transitions between rock and soil fills to prevent migration of the fines into the open-graded rock fill below. The majority of the materials was generated from the excavations of the Major Access Road.

Rock fill was spread in maximum lifts of 18 inches in thickness and compacted by tracking with D-8 and D-9 bulldozers. Soil material was spread in 8 inch lifts, moisture conditioned and compacted with a caterpillar 824B tamping compactor.

Field observation and density tests performed by our firm indicated that adequate compaction was being obtained. These tests showed values in excess of 90 percent relative compaction as determined by Laboratory Compaction Test ASTM D1557.

MUNICIPAL REFERENCE RECORDS CENTER

City of Honolulu
City Annex, 558 S. King Street
Honolulu, Hawaii 96813

WITHDRAWN

File No. 178-1
February 26, 1980

In summary, the earthwork for the rough grading of the Future Park Site has been completed in accordance with the Grading Ordinances of the City and County of Honolulu and the recommendations of the F.G.E., Ltd. Proposed Site Grading Report dated November 3, 1978 and the subsequent recommendations of the F.G.E., Ltd. Subsurface Investigation Report dated April 9, 1979. This area is ready for future improvements.

A Site Plan, Figure 1, is included to indicate the density test locations. The laboratory and field density test results are summarized in Tables I and II and graphically exhibited in Figures 2 through 4.

Should you have any questions regarding this matter, please contact us at your convenience.

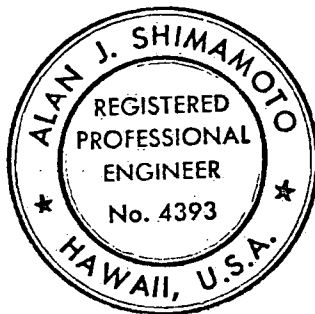
Respectfully submitted,

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Alan J. Shimamoto
-Alan J. Shimamoto, P.E.
Project Engineer

AJS/mjh

Enclosures



File No. 178-1
February 26, 1980

TABLE I

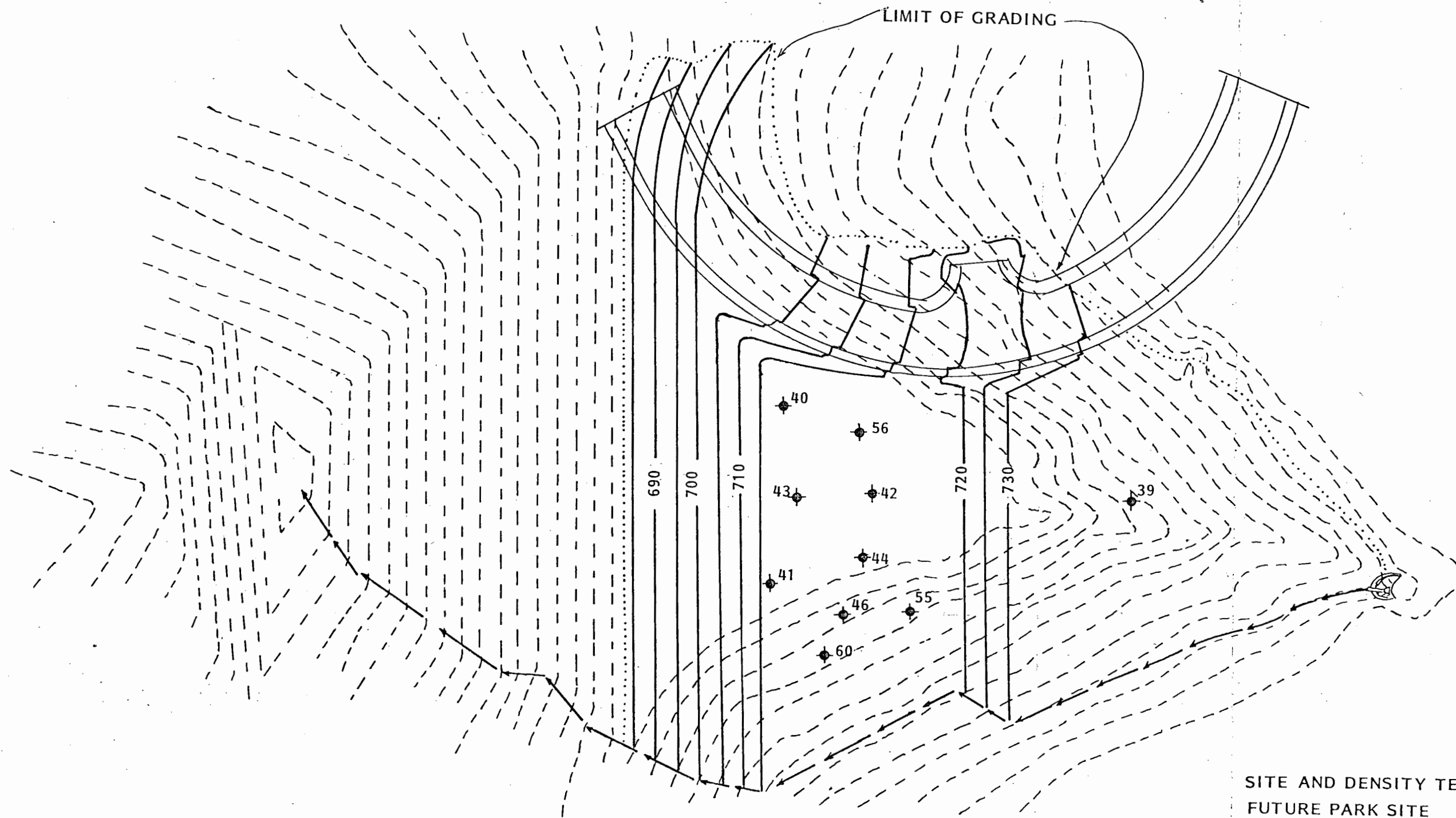
SUMMARY OF LABORATORY TEST RESULTS

<u>Sample No.</u>	<u>Description</u>	<u>Maximum Dry Density (p.c.f.)</u>	<u>Optimum Moisture Content (%)</u>
C	Red Clayey SILT (MH)	91.5	32.0
G	Reddish brown Silty CLAY	93.5	28.2
H	Red Clayey SILT (MH) with with decomposed rock	88.0	31.0

TABLE II

SUMMARY OF FIELD DENSITY TEST RESULTS

Test No.	Date	Location	Elevation	Dry Density PCF	Moisture Content Percent	Material Type	Percent Compaction
39	11-28	Park Site	FSG-2.5'	85.4	29.5	G	91
		Upper Terrace					
40	11-28	Park Site	FSG-9.0'	88.3	30.0	G	94
		Lower Terrace					
41	12-11	Park Site	FSG-8.0'	89.6	30.6	G	96
		Lower Terrace					
42	12-17	Park Site	FSG-6.0'	90.6	28.8	G	97
		Lower Terrace					
43	12-17	Park Site	FSG-5.0'	94.2	29.1	G	100
		Lower Terrace					
44	12-18	Park Site	FSG-4.0'	85.8	23.3	H	97
		Lower Terrace					
46	12-19	Park Site	FSG-3.0'	88.9	29.6	G	95
		Lower Terrace					
55	01-21	Park Site	FSG-3.0'	88.6	28.7	G	95
		Lower Terrace					
56	01-22	Park Site	FSG-4.5'	89.8	26.0	C	98
		Lower Terrace					
60	01-30	Park Site	FSG-4.0'	89.7	28.9	C	98
		Lower Terrace					

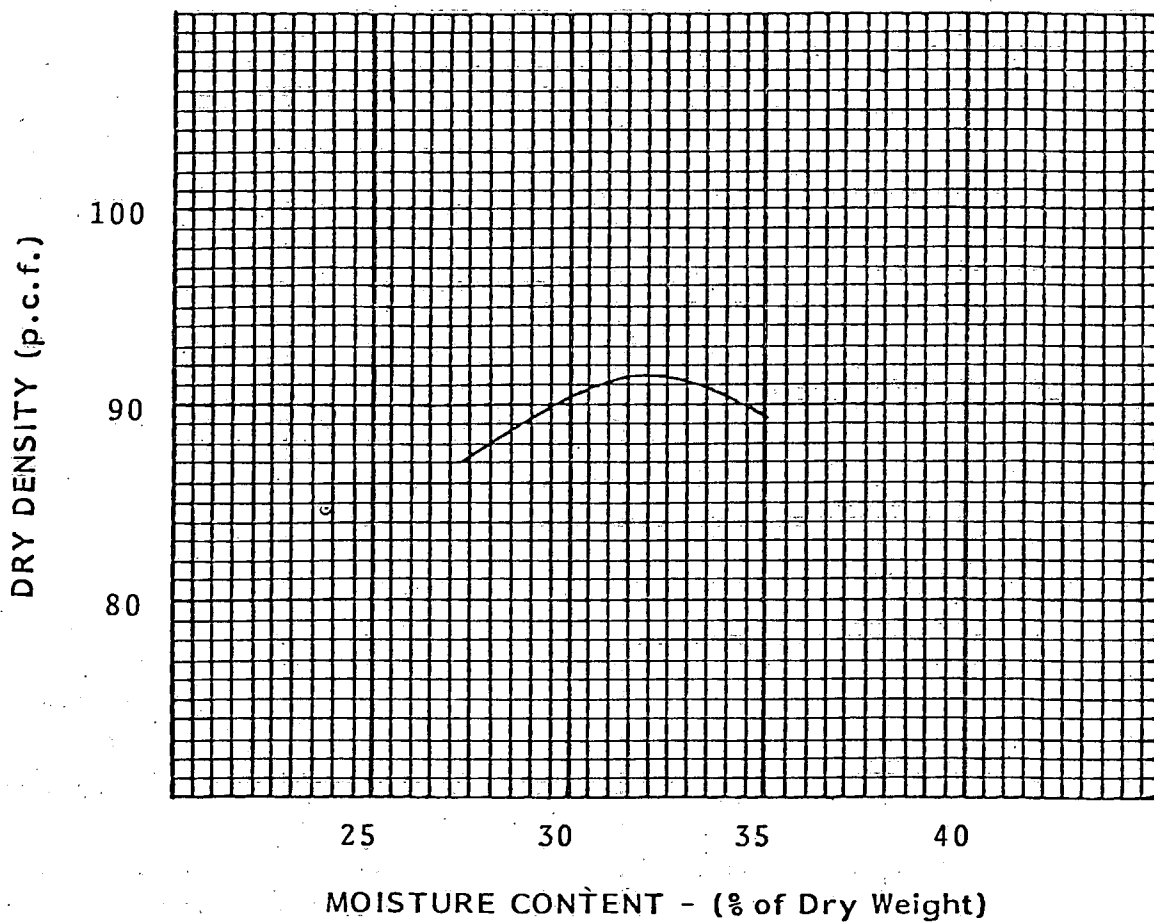


SITE AND DENSITY TEST LOCATION PLAN
 FUTURE PARK SITE
 HAWAII LOA RIDGE DEVELOPMENT
 WAILUPE, OAHU, HAWAII
 ◆ FGE, Ltd. Density Test Location
 Scale: 1" = 80'

Ref: Grading Plan by Gray, Rhee and Associates, Inc.

Figure 1

LABORATORY COMPACTION CURVE



Sample: Bag "C"

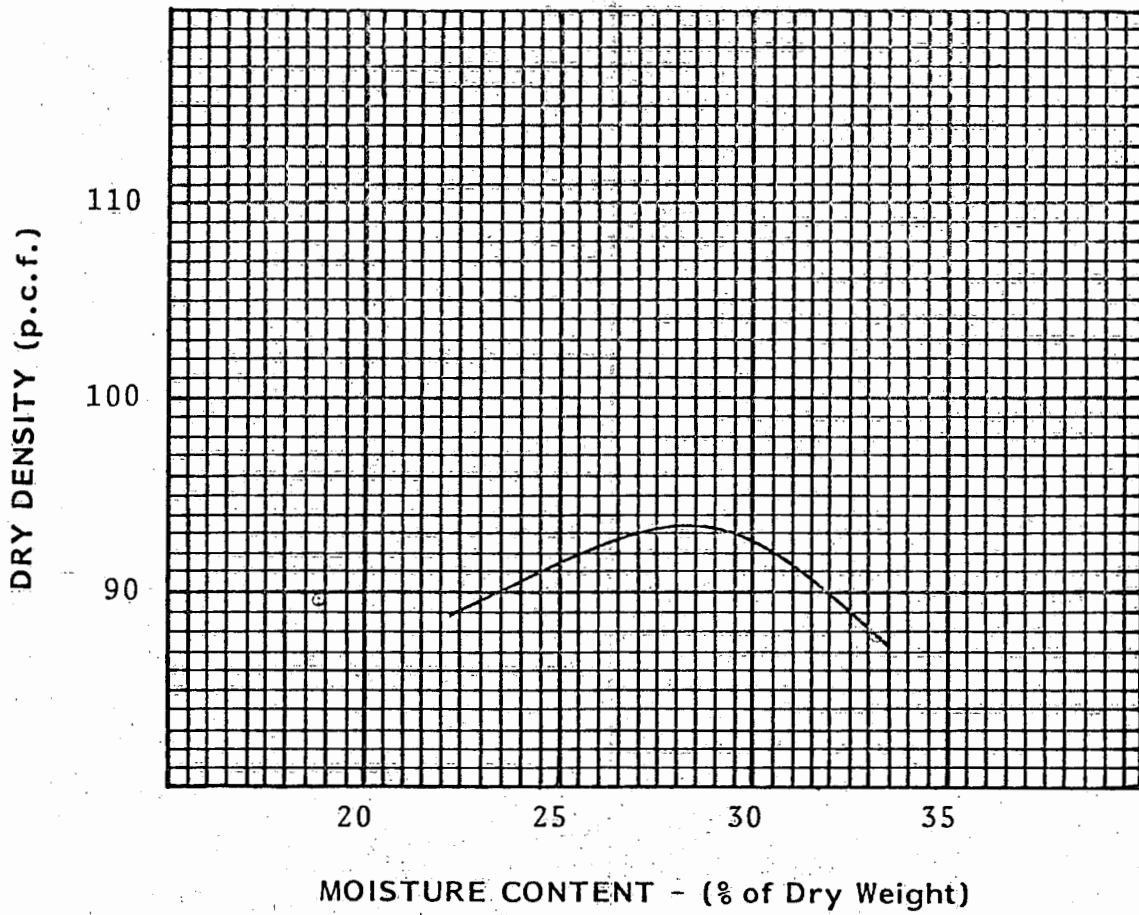
Description: Red Clayey SILT (MH)

Laboratory Test Procedure: ASTM D 1557

Maximum Dry Density: 91.5 p.c.f..

Optimum Moisture Content: 32.0 %

LABORATORY COMPACTION CURVE



Sample: Bag "G"

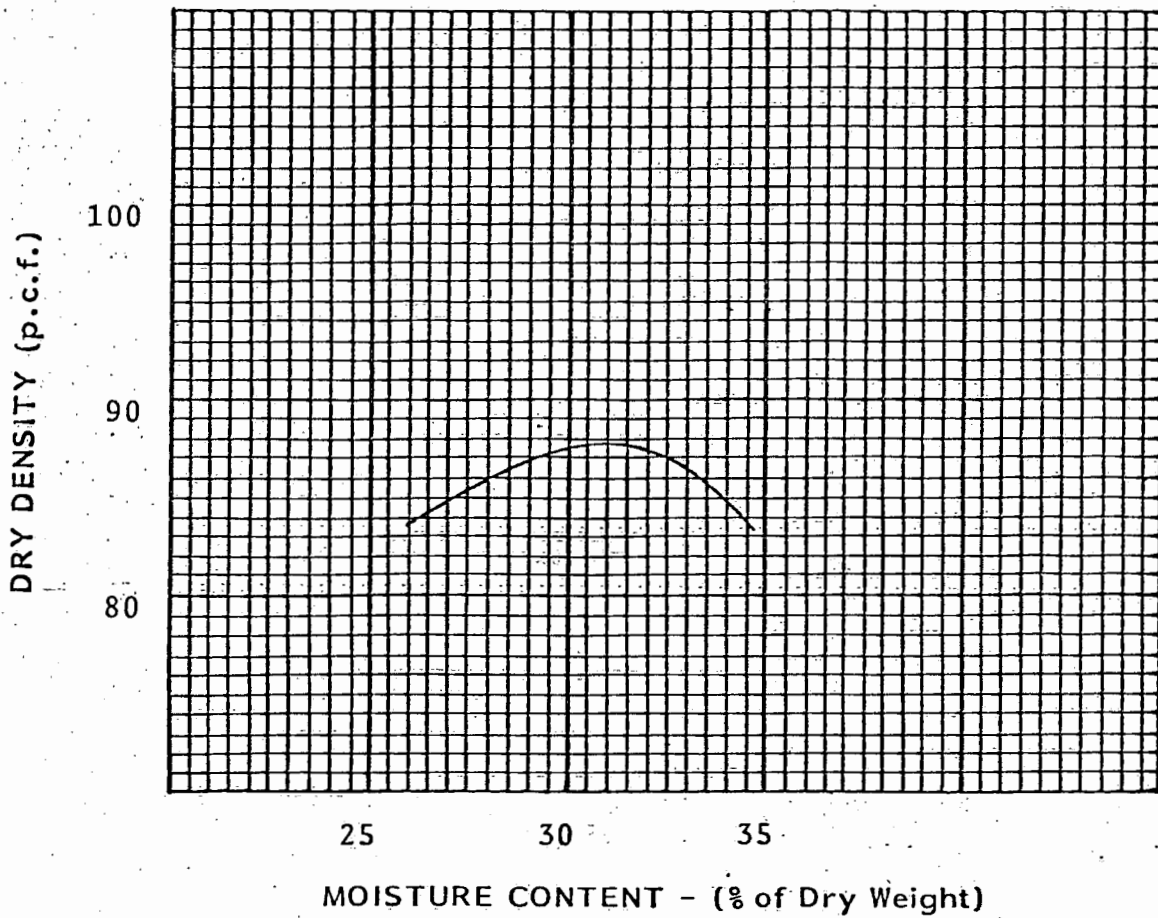
Description: Reddish brown Silty CLAY

Laboratory Test Procedure: ASTM D 1557

Maximum Dry Density: 93.5 p.c.f.

Optimum Moisture Content: 28.2 %

LABORATORY COMPACTION CURVE



Sample: Bag "H"

Description: Red Clayey SILT (MH) with decomposed rock

Laboratory Test Procedure: ASTM D1557

Maximum Dry Density: 88.0 p.c.f.

Optimum Moisture Content: 31.0 %