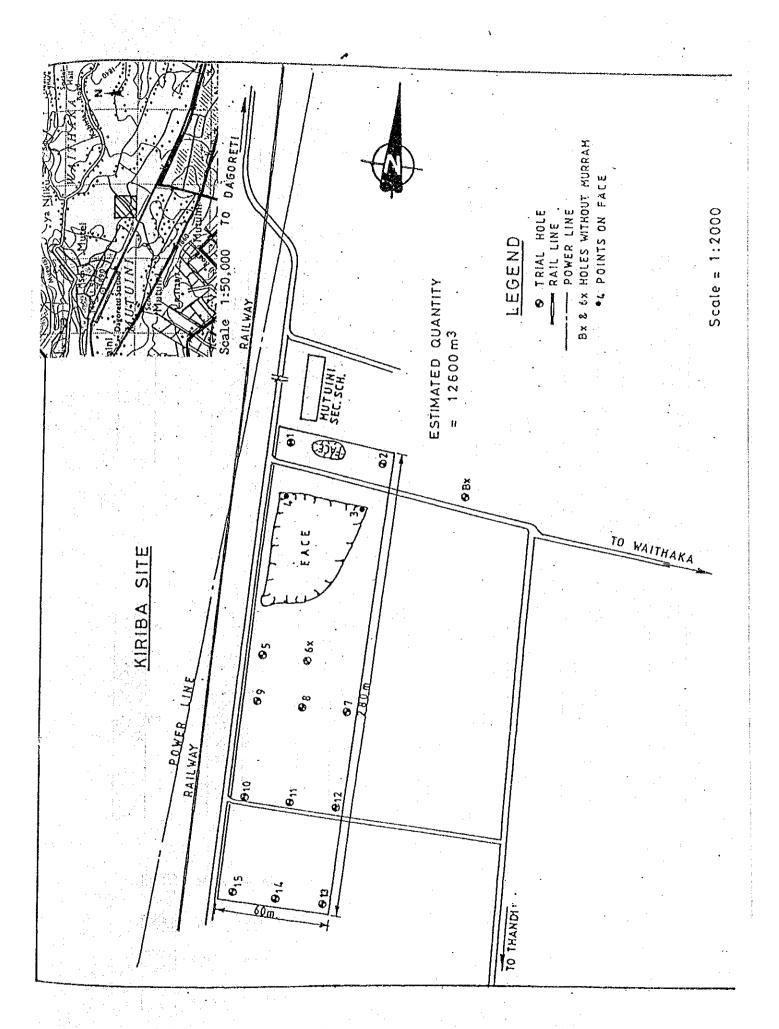
4. GRAVEL MATERIAL SITE INVESTIGATION RESULTS



GRAVEL MATERIAL SITE No. 10 - KIRIBA

TP 1 0.0 0.3 0.3	TP 2 - - -	TP3 -1-11	TP4 	TP5x.x. .x.x. .x.x. 09	TP6 00	TP7 - - - - - -
1.2	W.7 15	F. F.	·×·× ·×·× ·×·× ·×·×		15	·×·× ·×·× ·×·× ·×·× ·×·×

TP 8 00 11 11 03	TP 9 00	TP 10 00 1011 1011 03 1011 1011 1011 1011	TP 11 	TP 12 - - - - - - -8	TP 13 .	TP 15 - - -
		1.0	1.7			

DARK BROWN SOIL

GREY BLACK GRAVEL

STIFF GRAVEL

BLACK COTTON SOIL

BLACK BROWN GRAVEL

KIRIBA GRAVEL QUARRY

HOLE NO.	DEPTH (M)	DESCRIPTION		
1	0 0.3	Dark brown soil		
	0.3 - 1.2+	Black brown gravel		
2	0 - 0.7	Dark brown soil		
•	0.7 - 1.5	Grey black gravel		
	1.5 + -	Water table level		
.*		en e		
3	0 - 0.6	Dark brown soil		
	0.6 - 1.6	Grey black gravel		
	1.6+	Compact murram		
4	0 - 1.0	Dark brown soil		
	1.0 - 2.4	Black brown gravel		
5	0 - 0.4	Dark brown soil		
	0.4 - 0.9	Black brown gravel		
	0.9	Water table level		
6	0 - 1.5	Black cotton soil		
		• •		
7	0 - 0.7	Dark brown soil		
	$0.7 - 1.7^{+}$	Black brown gravel		
	·			
		m to torong cost		
8	0 - 0.3	Dark brown soil		
	0.3 - 0.9	Grey black gravel		
Q	0 - 0.7	Black cotton soil		
	0.7 - 1.2	Grey black gravel		
	0 - 0.3	Dark brown soil		
10	0.3 - 0.6	Stiff gravel		

HOLE NO.	DEPTH (M)	DES CRI PTION
e commendation of the comm	= · · · · · · · · · · · · · · · · · · ·	
11	0 - 1.0	Dark brown soil
•	$1.0 - 1.7^{+}$	Black brown gravel
12	0 - 0.8	Dark brown soil
	0 10	Dark brown soil
13	0 - 1.0	
	1.0 - 1.4+	Black brown gravel
15	0 - 1.2	Dark brown soil
	1.2 - 1.7	Grey black gravel

KIRJBA MATERJAL SITE

Partly an old site with New extension.

Quantity estimate

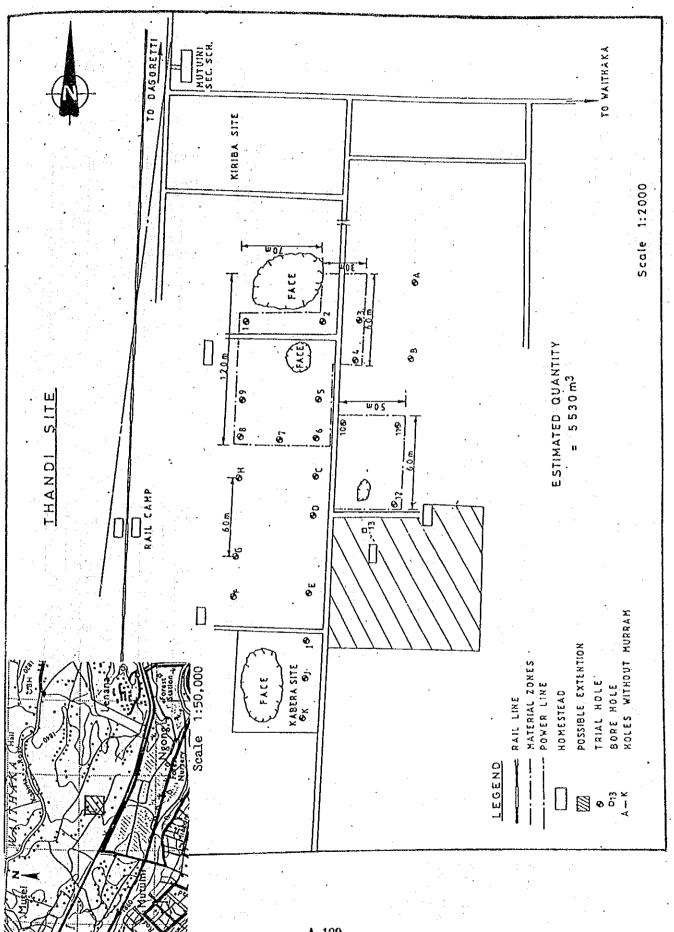
 $Area = 12600m^2$

Average thickness of gravel = 1m

 $Volume = 12600m^3$

The old quarry was exploited by individuals for house construction. It is out of use and water lodged.

Ownership - The old quarry is Government owned. While the extension is private.



GRAVEL MATERIAL SITE No.9 - THANDI

TP1 -1-1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1 -1-1	TP4 1 00 P 5 1 1 00 1 1 00 00 00 0	TP 6 -1-1	TP 7
---	--	--	------

TP 8 -1-1	TP 9 0.0 - - - - - - -	TP10 0.0 1 1 1 0.6 1 1 1 0.8	TP 11 0.0 - - - - - - - - -	TP12 00 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	TP13 00 03 03 14.

DARK BROWN SOIL

GREY BLACK GRAVEL

BLACK COTTON SOIL



BLACK BROWN GRAVEL

STIFF GRAVEL

THANDI MATERIAL SITE - LOGGING DETAILS

NOTE NO	DEPTH (M)	DESCRIPTION
HOLE NO.	DB1 111 (11)	DESCRITTEDA
_	2 1 1	Dark brown soil
1	0 - 1.4	·
	1.4 - 1.9	Black Brown gravel
2	0 - 0.3	Dark brown soil
	0.3 - 1.1	Grey black gravel
3	0 - 1.10	Dark brown soil
	1.1 - 1.40	Black Brown gravel
	•	
4.	o - 0.3	Dark brown soil
	0.8 - 1.6	Grey black gravel
5	0 - 0.4	Dark brown soil
J	0.4 - 1.0	Black Brown gravel
		·
	0 - 0.5	Dark brown soil
	0.5 - 0.3	Stiff gravel
	0.8 - 0.9	Gravel with clay
	0.8 - 0.9	
_	0 - 0.4	Black cotton soil
7	0.4	Water table level
	0.4	Water 223
	0 0 7	Dark brown soil
8	0 - 0.7	Grey black gravel
	0.7 - 1.3	Water table level
ili.	1.3	•
	i 0.6	Dark brown soil
9	0 - 0.6	Black Brown gravel
	0.6 - 1.3	

HOLE NO.	рертн(и)	DESCRIPTION	
n Ords_Mile			
10	0 - 0.6	Dark brown soil	
	0.6 - 0.8	Stiff gravel	
11	0 - 1.8	Dark Brown soil	
		• .	
	•	•	•
4	0 - 1.1	Dark brown soil	
	1.1 - 1.6	Black Brown gravel	
		n 1 1 ood 1.	
13	0 - 0.3	Dark brown soil	
	0.3 - 1.4	Stiff gravel	
			i a
A	0 - 2.0+	Dark brown soil	
В	0 - 2.0+	Dark brown soil	
		Black cotton soil	
C	0 - 1.0	Water table level	
	1.0	-	
D	0 - 0.9	Black cotton soil	
B (1984)	0 - 1.5	Black cotton soil	
.	0 - 1.5	Black cotton soil	
G. (1)	0 - 1.5	Black cotton soil	
H	0 - 1.5+	Black cotton soil	
	•		

THANDI MATERIAL SITE

It is largely a new site.

Quantity Estimate

Area = 9220

Average thickness of gravel = 0.6m

Volume = 5530

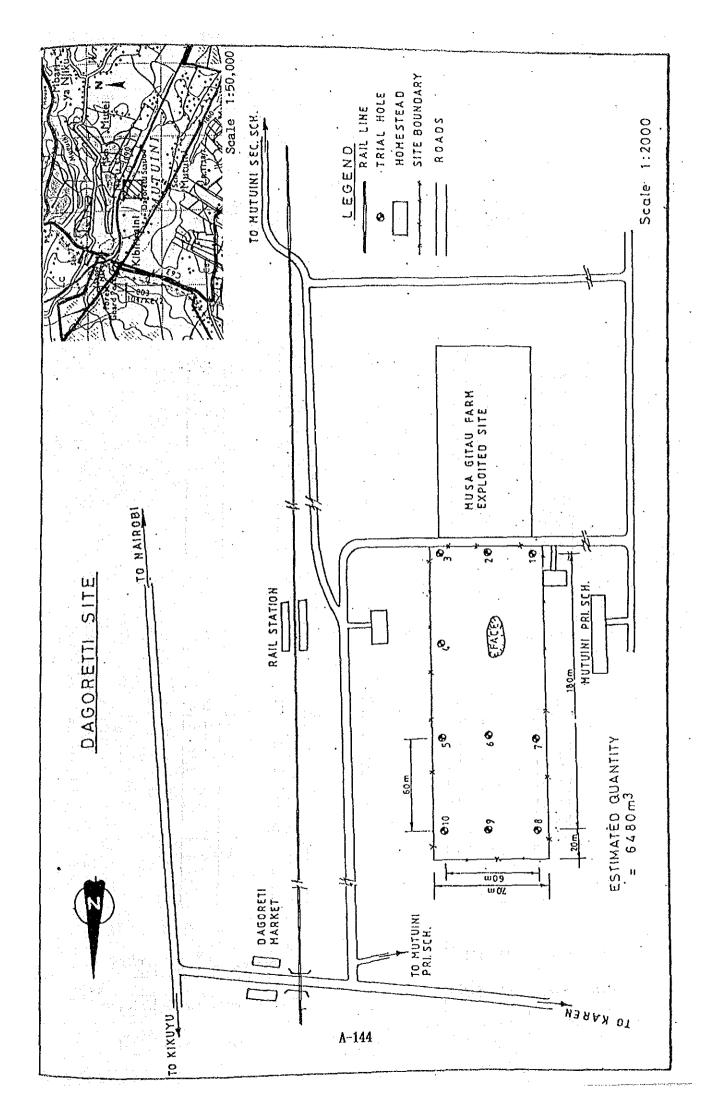
The quarry next to the proposed new site was exploited by Kiambu County Council for a road construction.

Lease / sell of plots

Plot owners are willing to lease their plots provided they will be backfilled preferably with borrow materials.

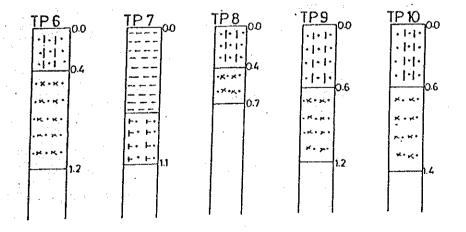
Future Development

No immediate development plans.



GRAVEL MATERIAL SITE No. 12 - DAGORETTI

P1 0.0 02	TP 2 -1 - 1 - 0.0 -1 - 1 - 0.3	TP 3 1: : 0.0 1: 1: 0.3	TP 4	TP 5
*·×·< *·×·× 06	0.9		· [·]· ·]·]· ·]·]·	111
		1.0	1.5	
				1.8



DARK BROWN SOIL

BLACK BROWN GRAVEL

BLACK COTTON SOIL

STIFF GRAVEL

GREY BLACK GRAVEL

A-145

DAGORETTI GRAVEL QUARRY

and the second of the second of		•
HOLE NO.	ртртн (м)	DESCRIPTIONS
1	0 - 0.2	Dark brown soil
•	0.2 - 0.6	Black brown gravel
2.	0 - 0.3	Dark brown soil
	0.3 - 0.9	Grey-black gravel
3	0 - 0,3	Dark brown soil
	0 - 0.3	Grey black gravel
		·
4	0 - 0.7	Dark brown soil
	0.7 - 1.5	Grey gravel
	and services and the services of the services	
- 5	0 - 0.7	Dark brown soil
	0.7 - 1.8	Grey gravel
6	0 - 0.4	Dark brown soil .
STANDARDS	0.4 - 1.2	Black brown gravel
7	0 - 0.8	Black cotton soil
	0.8 - 1.1	Stiff gravel
8	0 - 3.4	Dark Brown Soil
	0.4 - 0.7	Black brown gravel
9	0 - 0.6	Dark brown soil
it i t er più e Contra	0.6 - 1.2	Black brown gravel
	•	
10	0 - 0.6	Dark brown soil
garage (Section)	0.6 - 1.4	

DAGORETTI MATERIAL SITE

It is a new site.

Quantity estimate

Area = 10800 m^2

Average thickness of gravel = 0.6m

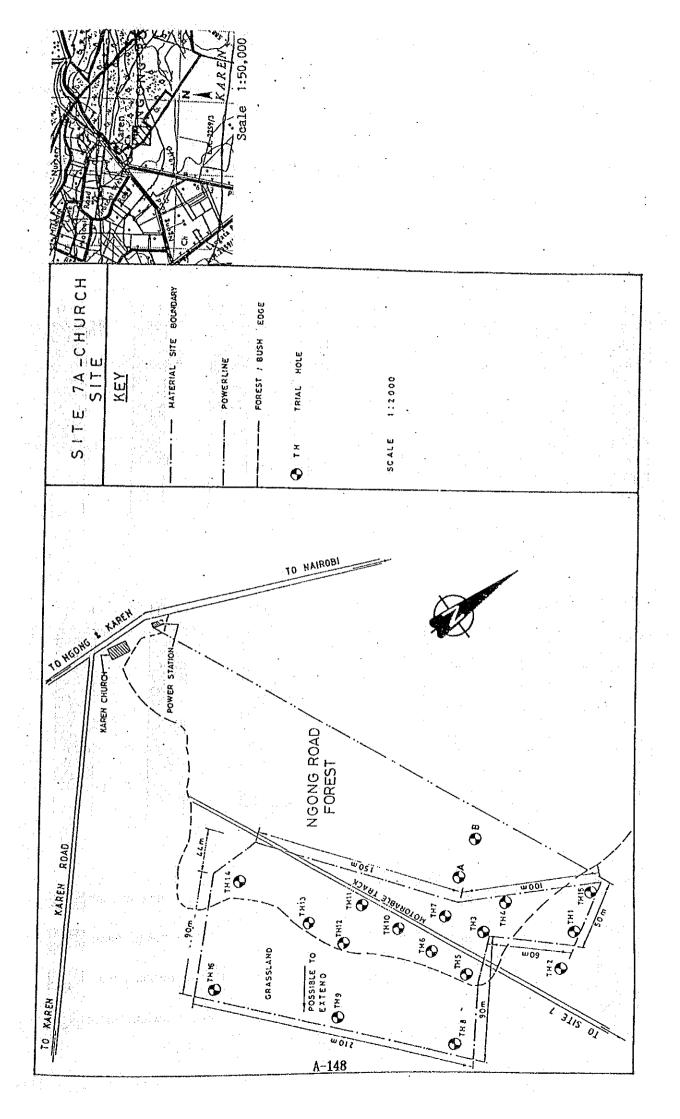
Volume = 6480m^3

Lease/Sell of plots

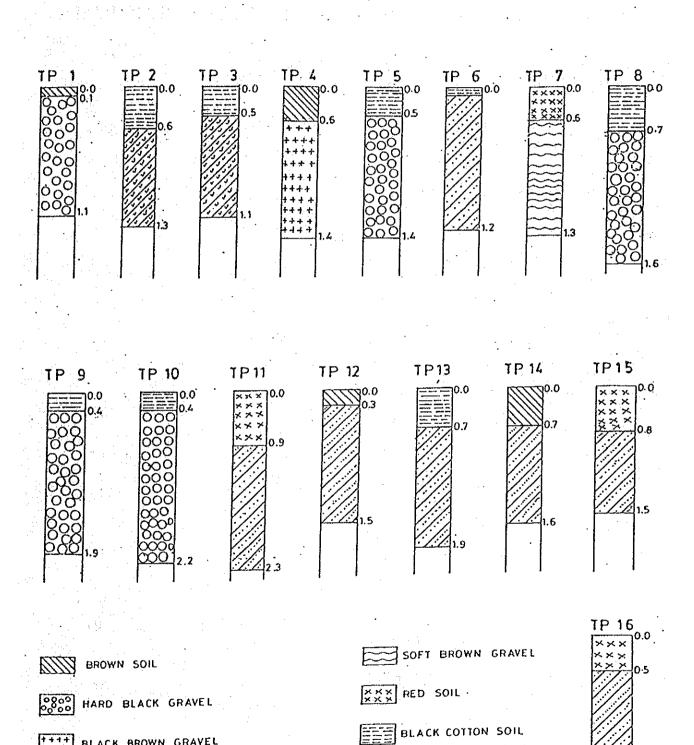
Plot owner is willing to lease the plot

Future Development

No immediate development plans.



GRAVEL MATERIAL SITE No. 7A - CHURCH



1+1+ BLACK BROWN GRAVEL

HARD BROWN GRAVEL

SITE NO. 7A

CHURCH QUARRY

TRIAL HOLE	DEPTH	DES CRI PTI ON
	•	
1	0.0 - 0.1m	Brown Soil
	0.10 - 1.1m	Hard Black Murram
2	0.0 - 0.5m	Black cotton soil
	0.6 - 1.3m	Yellow soft stone decomposed
3	0.0 - 0.5m	Black cotton soil
	0.5 - 1.1 m	Yellow soft stone decomposed
4	0.0 - 0.6m	Brown soil
	0.6 - 1.4 m	Black-Brown gravel
••		
5	0.0 - 0.5m	Black cotton soil
	0.5 - 1.4m	Black gravel material
6	0.0 - 0.1m	Black cotton soil
100 Edge	0.1 - 1.2m	Hard Brown gravel material
		•
7	0.0 - 0.6m	Red soil
	0.6m - 1.3m	Hard Brown gravel materials
	• 1.	•
8	0.0 - 0.7	Black cotton soil
	0.1 - 1.6	Black gravel
9 2 2 2 2 2	0.0 - 0.4	Brown soil
	0.4 - 1.9m	Hard Brown gravel
andra (1995) Barandra (1995)		na akadani sosil
10	0.0 - 0.4m	Black cotton soil
	0.40m - 2.2m	Black gravel
		usa socil
11	0.0 - 0.9m	Red soil Hard Brown gravel material
	0.9 - 2.3m	,,,,,

AL HOLE NO.	DEPTH	DESCRIPTION
12	0.0 - 0.3m	Brown soil
	0.3m - 1.5m	Hard Brown gravel material
13	0.0 - 0.7m	Black cotton soil
	0.7 - 1.9m	Hard Brown gravel material
14	0.0 - 0.7m	Brown soil
	0.7 - 1.6m	Hard Brown gravel material

15	0.0 - 0.8m	Red soil
	0.8 - 1.5m	Hard Brown gnavel

ESTIMATION OF QUANTITY

Área

= 22050m²

Average overburden = 0.6m

Average Depth of Material = 1.0

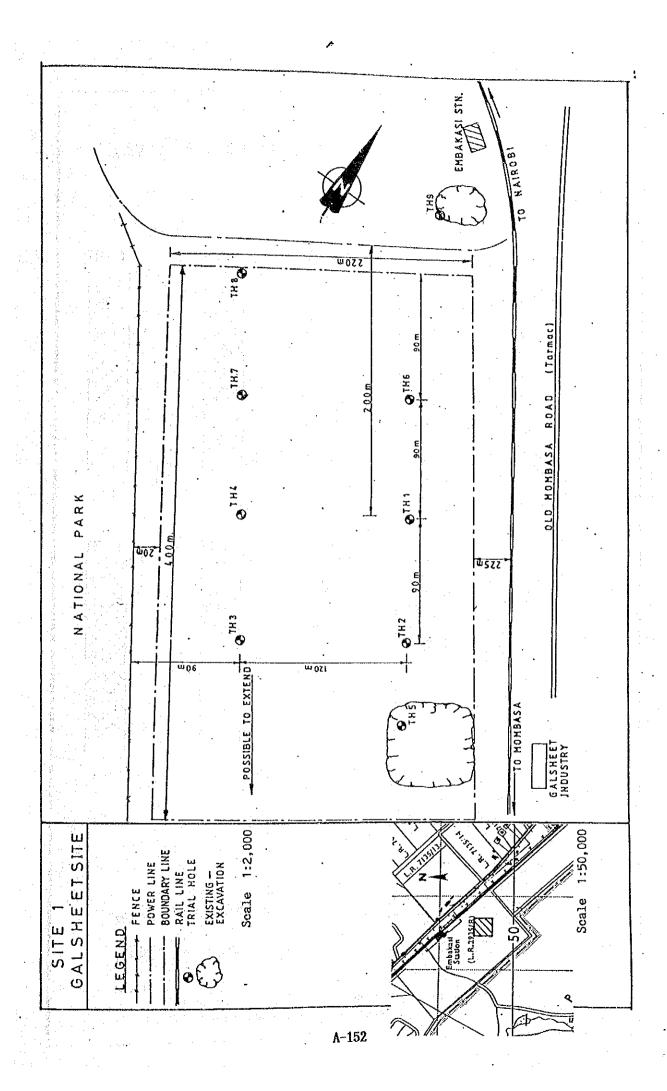
Estimated Quantity = 22050

OWNERSHIP

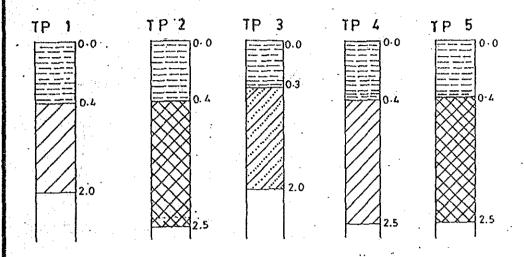
This site is situated on Government Land

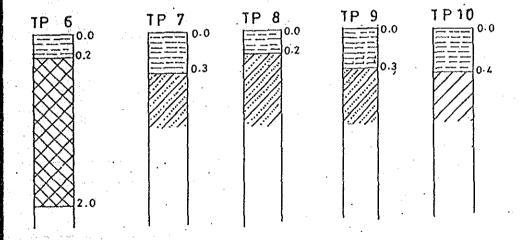
FUTURE DEVELOPMENT

No immediate future development plans.



GRAVEL MATERIAL SITE No. 1 GALSHEET





BLACK COTTON SOIL

BLACK DECOMPOSED GRAVEL

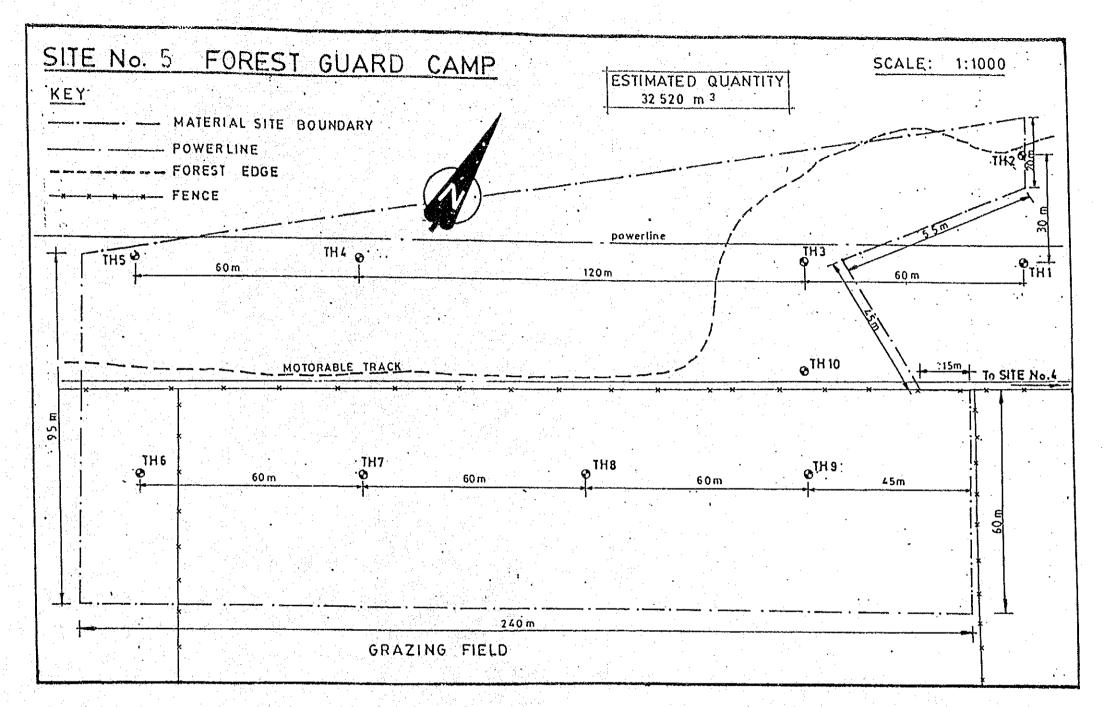
WHITE DECOMPOSED GRAVEL

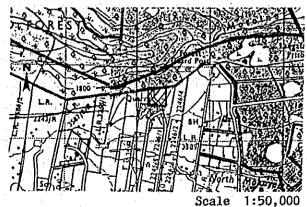
DECOMPOSED SOFT ROCK MATERIAL

NOTE:

1. ALL DIMENSIONS IN ALL LOGGING SHEETS ARE 'IN METRES

2 WT INDICATES WATER TABLE LEVEL





SITE NO. 7 KAREN

TRIAL HOLE NO.	DEPTH(M)	DESCRIPTIONS
1	0 - 0.30 0.30 - 1.30 [†]	Black soil on top Hard Black hard murram
2	0 - 0.80 0.80 - 1.50 [†]	Black cotton soil Hard Black gravel
3	0 - 0.10 0.10 - 1.40 ⁺	Dark soil on top Hard Black gravel
4	0 - 0.30 0.30 - 1.4 ⁺	Black cotton soil Hard Black gravel
5	0 - 0.7 0.70 - 1.70 ⁺	Black cotton soil Black - Brown gravel
6	0 - 0.7 0.70 - 1.70 ⁺	Black cotton soil Hard Brown gravel
7	0 - 1.10 1.10 - 1.3 ⁺	Black wet clay soil on top White stone Decomposed Material

ESTIMATION OF QUANTITY

AREA		=	36,იიბო ²
AVERAGE	OVERBURDEN .	==	0.4 m
AVERAGE	DEPTH OF MATERIAL	=	1.0m
ESTIMATE	עד נדאגעס סי	=	36000m ³

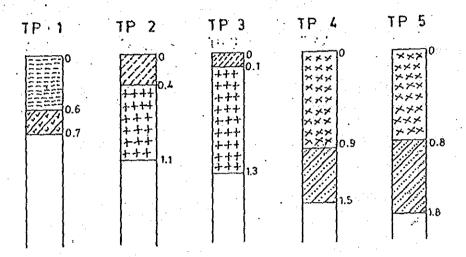
OWNERSHIP

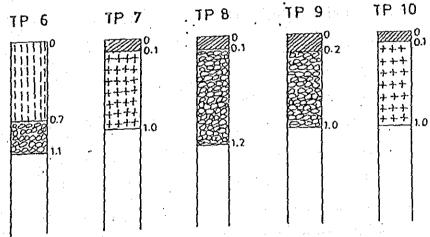
This site is situated on Government Land

PUTURE DEVELOPMENT

No immediate future development plans

GRAVEL MATERIAL SITE No. 5 - FOREST GUARD





BLACK COTTON SOIL

BLACK WET CLAY

DARK SOIL

HARD BROWN GRAVEL

TTT BLACK BROWN GRAVEL

XXX RED SOIL

HARD BLACK GRAVEL

SOFT WHITE STONE

WHITE DRY CLAY SOIL

A-156

SITE NO. 5

FOREST GUARD

	والمنافقة والمنا	•
TRIAL HOLE NO.	DEPTH(M)	DESCRIPTION
1	0 - 0.60 0.6 - 0.7 ⁺	Black Cotton Soil on top White Soft Stone Decomposed Mate
2	0 - 0,4	Dark Soil on top Black - Brown gravel
3	0 - 0.1	Dark soil on top Black - Brown gravel
4	0 - 0.90 0.90 - 1.5 [†]	Red soil on top Hard Brown gravel
5	0.80 - 1.80 $1.80 - 2.20^{+}$	Red soil on top Hard Brown gravel Yellow Soft Decomposed Material
6	0 - 0.70 0.70 - 1.10 1.10 - 1.4 ⁺	Black wet clay soil on top Hard Black gravel Soft Stone Decomposed Material
7	$0 - 0.10$ $0.10 - 1.00^{\dagger}$	White dry clay soil on top Black - Black gravel
8	0 - 0.10 0.10 - 1.20*	White dry clay soil on top Hard Black gravel Material
9	0 - 0.20 0.2 - 1.00	White dry clay soil on top Hard Black gravel
10	0 - 0.10 0.1 - 1.00	White dry clay soil on top Black - Brown gravel

ESTIMATION OF QUANTITY

AREA = $23,550m^2$ AVERAGE OVERBURDEN = 0.5m

AVERAGE DEPTH OF MATERIAL = 0. g

ESTIMATED QUANTITY = 21200

OWNERSHIP

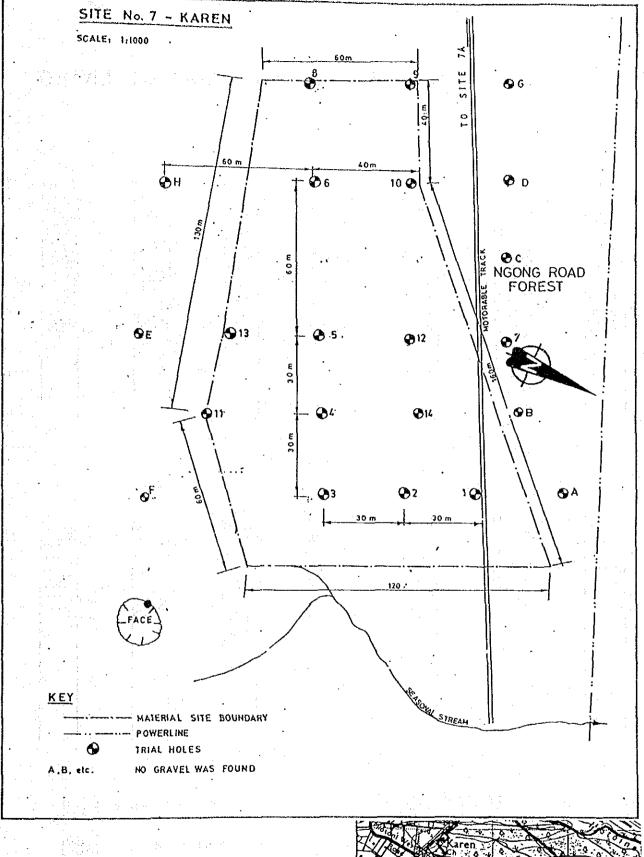
This site would be situated on land under three Ownerships

- The Kenya Government
- Two private persons

The two private persons could not be easily accessible for discussions on whether they would be willing to sell out or lease the land.

FUTURE DEVELOPMENT

- The portion belonging to the Government is under forest
- Currently the land belonging to private persons is used as a grazing field for Grade Cattle. Future plans could not be ascertained.

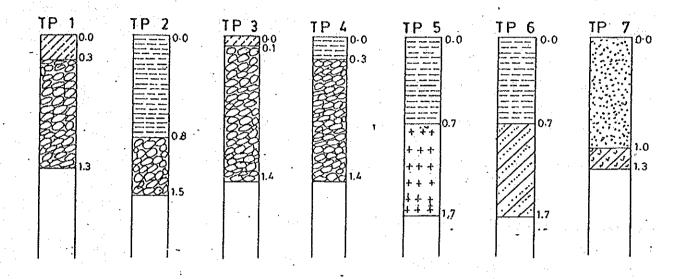


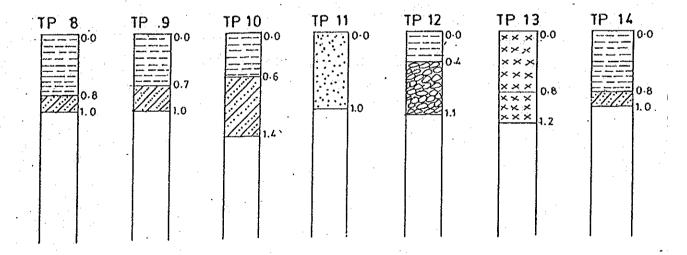


A-159

Scale 1:50,000

GRAVEL MATERIAL SITE No. 7_ KAREN





BLACK COTTON SOIL

OOO HARD BLACK GRAVEL

DARK SOIL

WHITE STONE DECOMPOSED MATERIAL

+ + + + + + BLACK BROWN GRAVEL

///

HARD BROWN GRAVEL

BLACK WET CLAY

GRAVEL SITE NO. 1 GALSHEET SITE

TRIAL HOLE NO.	DEPTH (M)	DESCRIPTION
1	0.0 - 0.4m	Black Cotton Soil
	0.40m - 2.0m	White decomposed gravel
2	0.0 - 0.4m	Overburden Black Cotton Soil
	$0.4 - 2.5m^+$	Black decomposed gravel
3	0.0 - 0.3m	Black Cotton Soil
	$0.30 - 2.0 \text{m}^+$	decomposed soft rock material
4	0.0 - 0.40m	Black Cotton Soil
	$0.40 - 2.5m^{+}$	White decomposed gravel
5 to 10	0.0 - 0.2 upto 0.4	Black Cotton soil
		White decomposed gravel
	ESTIMATION OF	QUANTITY
	AREA	, = 26000
· · · · · · · · · · · · · · · · · · ·	AVERAGE OVERBURDEN	= 0.40 m
	AVERAGE DEPTH OF MAT	ERIAL = Over 1.5m
	ESTIMATED QUANTITY	= 39000m ³

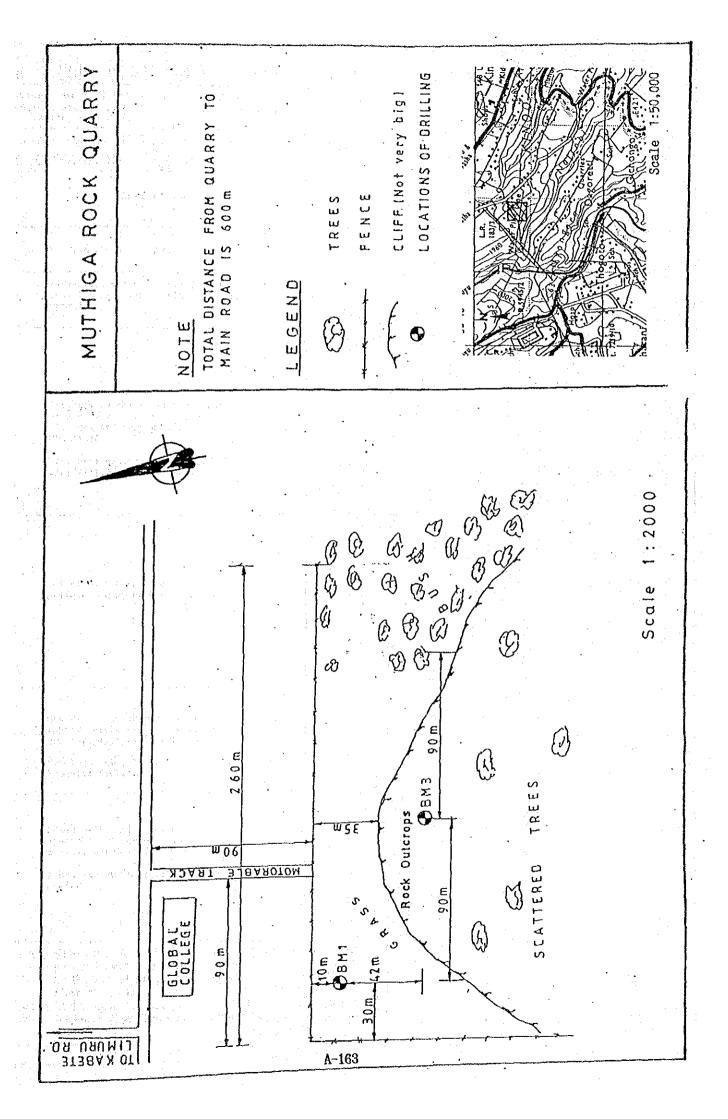
OWNERSHIP

This site is situated on Government land.

FUTURE DEVELOPMENT

No immediate future development plans

5. HARD STONE MATERIAL SITE INVESTIGATION RESULTS

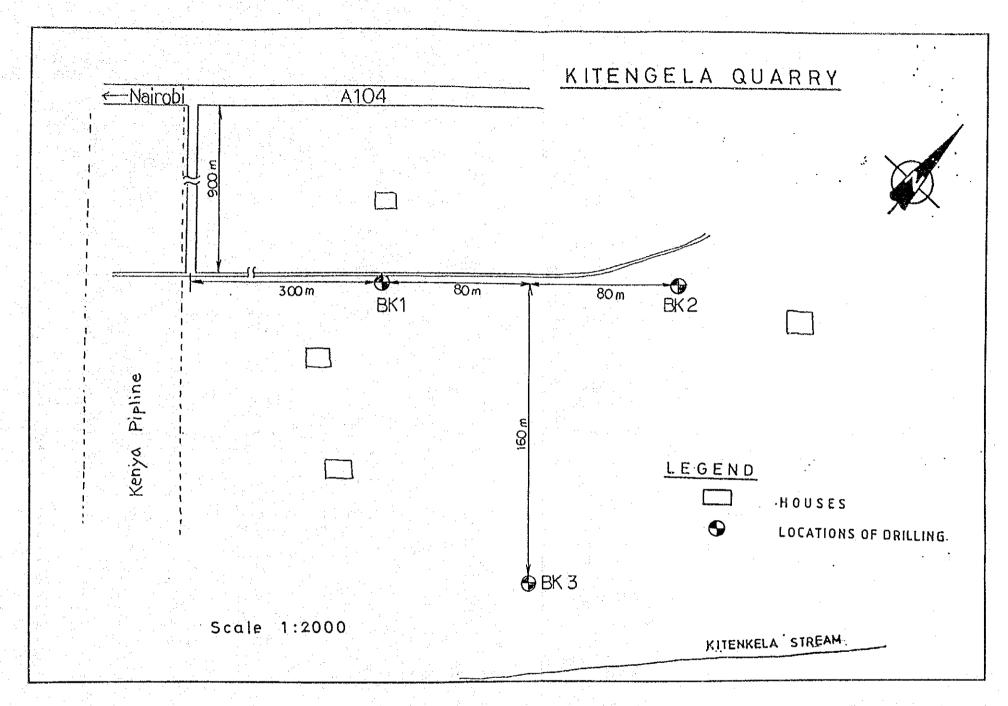


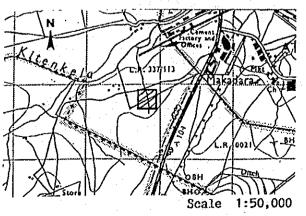
Mowlem Constr	.iic4!	^ <u>^</u>	<u> </u>	I kai E	Boreholo		ВМ	1	A STANSON OF THE PERSON OF
Equipment & Methods: Retary auger 150am dis. G.L-0.60m, Retary cering 86am dis. 0.60-1040m; 76am dis. 1.40 - 15.05m	Loca		NAIR	**************************************	PASS	01 2	-Alberto de Lega Senio, e	 	Transporter (Transporter (Trans
COOPERATION AGENCY	. Grou	na Lev	eì .	Coording	ites	Date 5 _7/8	-	a di angangan	the state of
Description	Reduced	regend	Depth £ Thickness	San Depth	Sample	J]	eld cords	Herearthy
Reddish brown SILTY CLAY.		× ×	(0.60)	G.L 0.60	1		YCR	വരാ	GD A
Moderately weathered non intact light brownloh grey fine grained porphyritic PHONOLITE.		VVVV VVVV VVVV VVVV	0.60	0,60_1,40			38		111
50°-		>>>> >>>> >>>> >>>> >>>>		1.40 _ 2.90		2	100	60	
Slightly weathered with medium spaced fractures light grey fine grained perphyritic 40° PHONOLITE.		VVVV VVVV VVVV	(2.60)						11
Fractures medium steep rough clay filled/limenite conted.		VVVV VVVV		2.90_ 4.15		1	100	100	1 :
		VVVV VVVV VVVV		4.15 _ 5.05		0	100	100	
Faintly weathered grey fine grained perphyritic PHONOLITE.		VVVV VVVV VVVV	(2,45						
		VVVV VVVV VVVV	6. 45	5.05 _ 6 _ 45		0	100	79]
Mederately weathered with medium spaced fractures light grey fine grained perphyritic PHONOLITE.		VVVV VVVV VVVV VVVV	E 🚊	6. 45 ₋ 7. 95		2	73	33	111
Fractures 40°,70° rough 70° limenite coated.		>>>> >>>> >>>> >>>> >>>> >>>> >>>> >>>> >>>>	F	•					
Fresh with medium and widely apaced fractures grey fine grained perphyritic PHONOLITE.	:	V V V V V V V V V V V V V V V V V V V	.05)	7.95 . 9.35		2	100	80	1
Fractures 30-60 rough limenite coated.		^^^ ^^^ ^^ ^^ ^^ ^^ ^	_ ~	9.35 _ 10.65		2	100	78	
been achieved the number of blows for the quoted penetration is given B Bulk W Water	/Test K rbed san sample r sample	<u>l∨∨∨∨</u> ey. ıpl∉	Remar	<u> </u>		1 1 -	, L	J. O	
EPTHS:All depths and reduced levels in metres Thickness given in brackets in depth Solome Y Vane	i(P) Tube(I ble length t lord Penetr Test recovery Suglity Des	o socie ation lest			Section 1 to the section of the sect		F	1:5 ig.	0

		(18-19-19-19-19-19-19-19-19-19-19-19-1	- Carrier State St	Michiga de Constante de		احطمت	a N.	73 A.A. 1
MUM Mowlem Con	stru	ucti	on	Co.	1 4	Borehol Sheet 2		RW I
Equipment & Methods. See Sheet 1		Loca	tion.	NAIF	ROBI B	Y_ PAS	S	
COOPERATION AGENCY	DNAL	Grou!	nd Lev	e l	Co ordina	nies .	0,ate	8/90
Description		Reduced	Reduced Level Legend	Depth & Thickmess	Samples /Te		15	Field Records
(as abeve)		æ		<u> </u>	Depth	Type No		
	60°-		VVVV VVVV VVVV	_	9.35_10.65			
Fresh with widely spaced fractures grey fine grained perphyritic PHONOLITE.	40°		^^^ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2.65)				
Fractures 40-60° rough limonite coated.	40 ~		V V V V V V V V V V V V	Just	10.65_12.15	5	2	100 80 1
			>>>> >>>> >>>>					
			VVVV VVVV VVVV	1.	12.15 _ 13.5		0	100 100
Slightly weathered with widely spaced fractures			>>>> >>>> >>>> >>>>	(07				
light grey fine grained perphyritic PHONOLITE.			~~~ ~~~~) Inter	13-55_15.0	5	1	87 80
	400 -		>>>> >>>> >>>> >>>>	15.05				
END OF BOREHOLE				a e e la co				
		·		alum.				
DATE TIME DEPTH (M) REMARKS RE	ARKS			lerel				
18. 00 0.60 NIL DRY 6/8/90 7. 00 0.60 NIL DRY 18. 00 7, 95 NIL 2.20				l L L L L L				
7/8/90 7. 00 7.95 NIL 3.00 18.00 15.05 NIL 2.75		•		11111				
					· · · · ·			
				<u> </u>				
been achieved the number of blows D	Disturb Bulk s		nple .	Remai	rks			Logged by J. O.
(Not N value) DEPTHS:All depths and reduced levels in metres	Piston (sample Stando	sample P)Tube(I t length t rd Penetr	J) or core o socie					1:50
column W.R.L. Water level observations during boring ore given on the lest sheet of log.	/ Union T	est covery opity Des				Openskings	·	Fig.

Mowlem Constru	And in column 2 is not as a second		Co.	Ltd. s	orehole heet 1		3M	3	garpay's militing
quipment & Methods. Retary auger 1500mm dia. LO G.L.O.40m. Retary cering 86mm dia. 0.40-2.60m; 76mm dia. 2.60 - 10.25m	Loca	tion.	NAIR	OBI B	Y _ PASS	3			
OOPERATION AGENCY	Grou	nd Lev	el	Co ordina		Date 8_10/		Λ	na/Caretyage
Description	Reduced		Depth L Thickness	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE OWNER				Field	
	Red	X Legend	-	Depth	Sample Type No	Test	Re	cord	3
Reddish brown SILTY CLAY.		 X	07) 4	G.L 0, 40		. Ει	TCR	RQD	GR.
High weathered brown TRACHYTE. (as sandy clay with gravel).		**** **** ****	nuti	0.40_1.40		. NI	40	0	
		>							
	1,	VVVV VVVV VVVV	(2.2)	1.40_2.60	:	NI	25	0	
Moderately weathered with clearly		VV VV	2.60	2.60.2.90		1	100	50	
spaced fractures xenally non intact pinkish grey fine grained perphyritic TRACHYTE.		>>>> >>>> >>>> >>>>		2.90_3.75		: Ni	100	0	
Zenally vesicular with 50° flew structure.		VVVV VVVV VVVV				Ni			
Fractures subherizental and steep rough reddish brown clay filled limonite coated.	:	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	(8.00	3.75 _ 5.25		3	67	12	11
		>>>> >>>> >>>> >>>> >>>> >>>>		5-25_6.75		5	80	8	
		>>>> >>>>> >>>>> >>>>>							
	•	>>> >>>> >>>> >>>> >>>>		6.75 <u>8.25</u>		4	36	10	
Cempletely weathered light grey clayey TRACHYTE,	·	X	8.40 8.75						2
Completely weathered Brown TRACHYTE. (as Brown sandy CLAY).		V V V V V V V V	(1.25)	8, 25_10,25		N	26	0	_
P.T. Where full 0-3 m penetration has not Sample / Destruction been achieved the number of blows 0 Disturb		у.	Remar	ks		1	L	09966	
for the quoted penetration is given B Bulk at (Not N value)	ampie sample						S	J.C	
Thickness given in Brackets in depth S& Standar	P) Tube(L length to nd Penetro st covery gjity Des	ation liest	•				F	1:5 ig.	N.

Equipment & Methods. Boo Sheet 1	Local		NAIRO	BI BY	PASS		
Carried out for : JAPAN INTERNATIONAL COOPERATION AGENCY	Groun	d Leve	مارين بدوور دريان	Coordina	ONLY (CONTRACTOR OF COMM	Date Q 1	0/8/90
COOL EMILION ACCINCT	E T I NI		Sam	ples /Ter		Field	
Description	Reduced Leyel	regend	Depth E Thickness	Depth	Sample Type No		Records
(as above)		V, V, V	10.25				
END OF BOREHOLE DEPTH (M)	٠						
DATE TIME HOLE CASING W.R.L. REMARKS 8/8/ 90 7. 00 NIL NIL DRY 18.00 2.90 1.50 0.20 9/8/90 7.00 2.90 1.50 0.40 16.00 8.25 1.50 4.10 10/8/90 7. 00 8.25 1.50 5.00 18.00 10.25 NIL 4.45							
	•						
S.P.T; Where full 0:3 m penetration has not been achieved the number of blows for the quoted penetration is given (Not N value) DEPTHS:All depths and reduced levels in metres Thickness given in brackets in depth column W.R.L; Water level observations during boring are given on the less sheet of log.	eed sam ample sample P)Tube(i length i rd Penetr	iple J)or core io scole ation Test		(\$].			Logged by J.O. Scale 1:50 Fig.





Mowlem Co	nstr	ucti	on	Co.	Ltd. s		ole No.	
Equipment & Methods. Notary coring 101a Quinto 50a; 86aa dis. 6.50-15.00a	a dia.	Loca	tion.	NAIRC	BI BY.	. PAS	S	er andere en
COOPERATION AGENCY	ONAL	Grou	id Lev	el	Co ordina	tes	Date 11,13	8/90
Description		Reduced Level	Legend	Depth & Thickness	Sam Depth	ples/T	ests	Field Records
Dark grey CLAY (Black cotton soil)	20-01-14-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		\times, \times			Тур∉ г	10	TCR RODGRAD
Completely weathered Brown PHONOLI (as Sandy silty clay with phonolit boulders)	TE.		.*>>>>>> .*>>>>>>> .*>>>>>>>>	(54 ⁻ 0) 7	G.L 1.50		5.	_
			>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	dund	1.50 _ 3.00		1	100 82
Slightly weathered with closely	40°		\$					
and medium spaced fractures grey fine grained porphyritic PHONOLITE			>>>> >>>> >>>> >>>>		3.00 . 4.5 0		3	100 83
With rare cavities upto 2cm, calcite lined; and white anygdales of zeolites upto 1cm. Fractures subhorizental medium	40° 90° to°		>>> >>>> >>>> >>>> >>>>		4.50, 5, 45		2	100 41 11
steep, rarely steep rough with clay waneer/limonite coating.	40° → 90° →		>>>> >>>> >>>> >>>>	(9.30)				
			V V V V V V V V V V V V V V V V		5.45_6.65		7	100 51
	20° 40°	•	VVVV VVVV VVVV VVVV					20.0 50
	40° - 10° -	•.	~~~ ~~~ ~~~ ~~~		6.65 7. 95		4	100 51
	40°		>>>> >>>> >>>>> >>>>> >>>>>					
	50 ° – 50 ° –		>>>> >>>> >>>>	huuh	7.95_10.95		8	100 57
5.P.T. Where full 0:3m penetration has not	Sample /	Test Ka	V V V V V V V	Remari	15			Logged by
been achieved the number of blows for the quoted penetration is given (Not N value) EPTHS:All depths and reduced levels in metres Thickness given in brackets in depth column	D Disturb B Bulk s W Water Piston(i sample S Standay V Vane Te	ed sam ample sample P) Tube(U length to d Penetro	or core scale ition Test				,	J.O. Scale 1:50 Fig.
W.R.L. Water level observations during boring are given on the last sheet of log.	c Courte	olity Desi	gnation	A-169	- The Control of the	en de la company de la comp	ento terminació en transfer	

加加 Mowlem Constru	ucti	on	Co.	Ltd. B	orehole		3K 1
quipment & Methods. See Sheet 1	Loca	tion.		<u></u>	_ PASS)	pagga Tid Pagaga in pag _{an} a Marani
OOPERATION AGENCY	Grou	nd Leve		Coordina	i e s	Date 13_14	18190
Description	Reduced Level	Legend	Depth 4 Thickness	Sam Depth	ples /Test Sample Type No	s Test	Field Records
(ez abovs) 20°		7777 7777 7777 7777 7777 7777 7777		7.95_10.95	Type No		
\$lightly weathered with closely and medium spaced 50°-fractures grey fine grained perphyritic PHONOLITE.		>>>> >>>> >>>>> >>>>> >>>>> >>>>> >>>>> >>>>		10.95_13.95		8	100 68
Fractures subhorizontal to sedium steep rough black iron exide coated/with clay wenear. 40 -	1	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	ري. المراسية				
40° -	1	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	E	13.95_ 15.00		6	100 61
END OF BOREHOLE					· ·		
been achieved the number of blows for the quoted penetration is given (Not N value) PTHS:All depths and reduced levels in metres Thickness given in brackets in depth Vance	r sample (P) Tube! de length loot Penet	mple U)or core to scale ration less					Logged J.O Scale 1:50

Mowlem Coi	nstru	ucti	on	Co.	Ltd.	Borehole Sheet 1	_	BK 2
equipment & Methods. Retary coring 101s: 9.6-5.00m; 86am dis. 3.00 - 15.25m	dia.	Loca		NAIR	OBI E	BY _ PAS	SS	and the second s
COPERATION AGENCY	ONAL	Groui	nd Lev	El	Coordin	ates	Date 8 9	78790
STREETING WITH THE THE THE THE THE THE THE THE THE T		12 200	g	٦ چ	Sa	mples /Tes		Field
Description The second of the		Reduced Level	Legand	Depth L Thickness	Depth	Sample Type No	Y 1	Records
Grey slightly sandy SILTY CLAY (Black cotton soil).		<u> </u>	**: * . × : *	07) 40			EL	TCR RODG
					G.L1.50			
Grey silty SAND.				55)			INA	100 NA
				Es				
e de la companya de l				E 1.95			Ni	100 NA
	· [2000	E	1.50_3.0	0 8		
Highly weathered with clasely spaced fractures mainly men intact gray			10000 10000	- (S			NA	10000
with green tings fine grained perphyritic PHONOLITE,			2000	E =				
Fractures subherizental clay filled.	90°-	<u> </u>	2222	Ē				
			***	3.70				
	80		2333	Ę	3.00_4.5		5	8 0 15
	604		VVVV	E				
	20°-		VVVV	Ė				
	80		2000	E	4.50_5.6		2	100 0
	60•−		222					
Faintly weathered with closely and	90*-		4777	ŧ ∶	5.60_6.1	5	1	1000
medium spaced fractures grey fine grained perphyritic PHONOLITE.	30 ° -		VVVV	Ē		11		
	70 ° -]	^^^	E %	6.15 _ 7. 0 \$	5	7	10017
Zene 6.00 = 15.25m with eval cavities gradually becoming	900-		V V V V	E				<u> </u>
larger upto ion with depth, calcite/bluish earthy material			VVVV	·F	7.05_ 7.7	5	4	100 29
limed.			VVVV	L_				
	70°-		222	F				
			V V V V	£	7.75 _ 9. 2	5	2	100 36
	: 4		0000	Æ				
			V V V V	'E				1
	·		777	}	9.25_10.3	75	. 3	100 49
		<u> </u>	* ***		1		$\perp \perp$	1,,1,,1
.P.T: Where full 0:3m penetration has not been achieved the number of blows	D DIRROR	bed so		Rema	rks			Logged J. C
for the quoted penetration is given (Not N value)	B Bulk	sample	E 1111aa 6aa					Scale
OTHS:All depths and reduced levels in metres Thickness given in brackets in depth	Se Stand	(P) Tube le length and Penet	PO ROCALE	1				1:5
column R.L.: Water level observations during boring are given on the lest sheet of log.	V Vant	lest ecovery euglity De		1				Fig.

Mowlem Mowlem	Constr	ucti	on	Co.	Ltd. s	oreho	le No.	BK 2
Equipment & Methods. See Sheet 1	Section of the latest of the l	Loca	tion.	NAIR		PASS	- CONTRACTOR OF THE PROPERTY OF THE	richte für gelein bei der sie eine eine General der General der General der General der General der General der
Carried out for : JAPAN INTE		Grou	nd Lev		Coordina		Date	はない。
COOPERATION AGENCY		y	1	R	T		9/8	
Description		Reduced	regend	Depth g. Thickness	Sam Depth	ples /Te	le T	Field Records
(as above)		<u>«</u>	VVVV			Type N	0	
sa Aprago sa sela o elegió do elegió. Calo o como asilidas particlas			2222	E				
			>>>> >>>>	Ē				
			VVVV VVVV	-	10,75 - 12,25			100 00
Faintly weathered with medium spaced fractures			V.V.V.V	E	IO. 79212.25		4	100 68
grey fine greined perphyritic PHONOLITE.			VVVV	=				
with eval cavities upto	·		~~~~ ~~~~	25)				
Fractures subherizental	te		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	F	12.25 _13.75		3	100 52
steep rough clay lined/ limenite coated.	30°-		7777	<u> </u>	{			
 Marillon, Friedrich im Granden Marillon, Edward im Bernard Marillon, Granden Marillon, Granden	20		V V V V	t				
the following the second	20 -		V V V V	E .				
, saled in the second of the s			VVVV	E	13.75_15.25		4	100 80
	0		V V V V V V V V V V V V V V V V V V V	┝				
			עעעע	15.25				
				Ē				
END OF BOREHOLE				Ë.				
factories to be delicated to the com- tion of groups to be provided to the com-				Ē				
	ŧ			<u> </u>				
				Ē				
ing a design of the first section of the section of	. *			E				
				E				
				E				-
			12.0	Ē				
				E				
				Ē				
S.P.T; Where full 0-3 m penetration has been achieved the number of bi	lows D Distur	bed sam		Remar	ks		•	Logged by
for the quoted penetration is g (Not N value)	I W Water	. •	i)or core			,	•	Scale
DEPTHS:All depths and reduced levels in Thickness given in brackets in column	Se Stendo V Vons 1	and Plemetro Test	ation Test	, ,				1:50 Fig.
W.R.L.: Water level observations during are given on the last sheet of ic	bertng C Core in	covery	ignation	A-172	ē			

MUM Mowlem Cons	stru		-	Co.	Ltd. s	oret heet		No. at 1	RK	3	استخصه
Equipment & Methods. Retary coring 66ms dia 9.1-10.00m	•	Loca	tion.	NAIRO	DBI BY_	PAS	s				
Carried out for JAPAN INTERNATION	AL.	Groui	nd Lev	el	Coordina	ites	Philliphia , a	Date 5_7.		άΛ	***************************************
		2	7	. 6	Sam	ples /	Test		T	ield	
Description		Reduced	egend	Depth 8. Thickness	Depth	Sai	nple	Test]	cords	
		Mary Mary Street of Street	× ×			Type	No		icr	RODO	SRA
Greyish brewn SILTY CLAY with phonelite beulders.			× × × × × ×	(01.10)	G.L 1.50			NI	80	0	-
			VVVV VVVV VVVV	E			٠				
Moderately weathered non Intact grey fine grained perphyritic PHONOLITE. Some feldspar phonocrysts altered to zeolites.	50 *-		V V V V V V V V V V V V	11111 (2.25	1.50_ 2.45		ŧ	NI	52	0	111
fregular clay filled/limonite coated fractures.	90*-		V V V V V V V V V V V V		2.45_3.00			7	100	0	
Slightly weathered with clesely spaced fractures grey fine			**** **** ****	3.35	3.00 _ 4.5 0			7	73	47	•
grained porphyritic PHONOLITE. Fractures subherizental to steep rough limenite coated.	10°-		V V V V V V V V V V V V V V V V V V V	- 5 - 4.50							
	40°-		V V V V V V V V V V V V V V V V V V V		4.505.20			4	100	48	
	70°-		V V V V V V V V V V V V	ו ו	5.20_6.00			3	100	-	
Faintly weathered with class and medium spaced fractures grey fine grained perphyritic PHONOLITE.	90°-		^^^ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		6.00 _~ 7.10			4	100		11
	0-	-	VVVV VVVV VVVV	.50)						60	
Fractures subherizental to steep rough with white kaelinitic/ marly class filled.	90°	•	^^^^ ^^^^ ^^^^	أبيار	7.10_8.00			4	100		
		, , , , , , , , , , , , , , , , , , ,	V V V V V V V V V V V V V V V V V V V		8.00_ 9. 05			2	100	97	÷
	30° –		VVVV VVVV VVVV	E '	9.05 10.00		·	3	100	74	
END OF BOREHOLE	40° -		VVVV VVVV VVVV	Ē							
been achieved the number of blows for the quoted penetration is given (Not N value)	nple / Ti Visturbe Bulk sai Vater s Viston (P	id sam mple iample iTubell	ipie	Remar	K \$.i.		J, O cate 1:5() <u>. </u>
Thickness given in brackets in depth So v	sample Standard (ant Tes Core read tock Oug	l Penetro It	ation Test						F	ig.	

6. LABORATORY TEST RESULTS OF EMBANKMENT MATERIAL AND SUBGRADE

Laboratory test results of Subgrade and Fill materials

	.:]	T		T		1	T	1	Ţ
Compaction (T99)	O.M.C.	88	11	88	۱m	жЮ	1	8)	1	18
Compact	M.D.D. (kg/m³)	1,330 86,1	11	5. E	۱ <u></u> هز	1,370		1,390	1	1,590
Swell at	Hdays soak (%)	7. T.		5.0	1.3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5.5		1.3
CBR at		8.2		~ €	2	<i>←</i> o		. 2		S
<u>ئ</u> ا ئ	Index	41.8	1.7	1.8.1	1.7	89.4 ∞ ω		7.5	ı	2.2
*2	Modulus	3,287 525	731	4,116 962	1,122	2,850 360	-	171,4		2007
Shrinkage Timit	N S							8		
Plasticity	id.	8.2	138	3 %	유유	8 18	211	Ēπ	33	14∼16
Liquid	18	ይኤ	73 147	80	ជជ	78 75 75	79	tt.L	73	39∼41
Grading	75µB (%)	82	1 %	88	l 유	89 18	1	26	1	∄
* 1	Material	15	15			15	-	-		თთ
Svil Tyme		B.C.S W.Rock	B.C.S W.Rock	B.C.S B.C.S	B.C.S B.C.S	B.C.S W.Rock	B.C.S	B.C.S	B.C.S	Sandy Clay Sandy Clay
	(国)	0.1~0.5	0.1~1.7	0.1∼1.1 1.2∼1.4	0.1~0.5	0.1~0.5 0.5~1.0	0.1~0.6	0.1~0.6	0.1~0.6	0.1~0.3
Station	KW	пссе+ 0	1+435m	1+900m	2 + 400m	2 + 900m	3 + 400m	3 +9∞	4 + 400m	Tb- 9 4 +895m
χ Σ	3 3 1	Tb- 1	Tb- 2	Tb- 3	†1 —q <u>t</u>	Tb- 5	Tb- 6	T5-7	To- 8	Tb- 9

* 3 GI=(F-35)[0.2+0.005(LL-40)]+0.01(F-15)(PI-10) F:Grading Passing $75\,\mu\,\mathrm{m}(\%)$ * 1 See Table 3.6.2 * 2 PM=No.36×PI No.36:Grading Passing 0.475mm(%)

					-		- Automotion of the last of th	***************************************			,			
P.t.	S. Tari	Depth	Soil Tyme	Tyre of	Grading	Liquid	্ব	Shrinkage Limit	*2 Dlosticity	ដ	OBR at	Swell at	Compaction (199)	cn(T99)
		(m)		Material	75 µ m (%)	(%)	I.	7 % 8 %	Modulus	Index		idays soak (%)	M.D.D. (kg/m³)	O.M.C. (%)
Tb10	5 + 400m	0.7~1.1	Grey Clay B.C.S		1 8%	83 70	8 %		2,976	1.%	-	5.2	1 8,	18
To-	5 +920m	0.7~0.9	JG	17	83	917	15		360	-3.2	70	0.2	1,720	8
T -12	6 +500m	0.2	D.G	17	85	6 11	16		1,408	15.5			l	
Tc- 2	7 + 400m	0.5~0.8	L.G	17	22	R	54		720	0.5	ľV	6.0	1,780	8
က -ပူ -176	7 + 800m	0.2~0.6	W.Rock	5	14	МР	dN			ı	£8	0.3	1,340	83
H- E	₩05+8	† -	L.G	17	33	Æ	19		893	3.2	33	0.1	1,476	83
10-1	8 + 600 _{II}	0.2~1.1	R.S W.Rock	⇒ ሺ	68 18	ୟର	17 18		1,224 33%	11.9 -4.4	1 9	0.1	1,490	88
Tc- 5	9 + 110m	0.5~0.55 0.55~1.10	R.S W.Rock	⊅ ℃	77.	23.21	19 18		1,406 612	14.9 -1.1	83 F2	0.4 0.2	1,400	83 8
Tc- 6	1005+6	0.3~1.6	R.S	#	ક્ષ	52	15		1,386	18.8	18	7.0	1,360	æ
T — 15	■0 †6+6	1.2~1.4	R.S	#	ま	જ	19		1,881	24.8	18	0.3	1,380	В
T - 13	10+350m	1.3	R.S	#	33	617	16		1,568	21.7	*th (21)		-	1

* 1 See Table 3.6.2 * 2 PM=No.36×PI

GI=(F-35)[0.2+0.005(11-40)]+0.01(F-15)(PI-10) F:Grading Passing $75\,\mu\,\mathrm{m}(\%)$ inference CBR from PI

					Appropriate the second									
7 1 2	a itation	Pointh	Soil Time	ي ايمين *		Liquid	Plasticity	Shrinkage	*2	£3	CSR at	Swell at	Compaction (T99)	on(T99)
	KM			Material	75 µ m (%)	[4] (%)	L L	75°S		Index	4days soak 4days soak (%)	Idays soak (%)	M.D.D. (kg/m³)	O.M.C. (%)
Tc-31	10+1t00m	1.0~1.3 2.5~2.7	R.S W.Rock	15	88	F 23	21	<u>е</u> 5	1,728	0.0	5 S	0.8	1,390	% 8
Tc- 7	10+840m	0.3~5.0	R.S	17	96	57	18		1,782	23.8	11	0.2	1,320	37
T -10	T -10 11+300m	1.5	R.S	ħ	25	28	₹		2,352	27.3	*tt (10)		1	
Tc-32	11+380m	1.8~2.2 3.0~3.4	R.S R.S	11	₹ 8	33	18	9 10	1,764	21.1	1 2	0.3	1,460 1,310	ន្តន
Tc-33	11+880m	0.4~0.7 0.8~1.0	B.C.S W.Rock	. टि	76 6	37 NP	16 NP	2.	1,376	11.2	8h h	3.6	1,580 1,420	80 80
Tc- 8	12+100m	0.1~0.5	B.C.S	-	77	80	88	-	3,040	34.1	1	9°ħ	1,390	88
Tc- 9	Tc- 9 12+500m	0.1~1.0	R.S	⇒	25	忒	13		1,287	19.2	83	9.0	1,360	æ
To-37	12+575m	0.2~0.4	B.C.S	-	8	110	18	6	1,602	14.2	3	4.2	1,480	83
To-10	Tc-10 13+180m	0.1~0.5	B.C.S	-	83	₹.	%		2,340	26.2	2	17.11	1,360	88
Tc−3#	13+660m	0.3~0.8	8.0.8	1	8	59	33	11	2,880	31.2	2	5.2	1,350	Ю

* 1 See Table 3.6.2 * 2 PM=No.36×PI No.36:Grading Passing 0.475mm(%)

^{* 3} GI=(F-35)[0.2+0.005(LL-40)]+0.01(F-15)(PI-10) F:Grading Passing 75 μ m(\$) * 4 inference CBR from PI

f														
	2000	, the		#1 #1	Grading	Liquid	Plasticity	र्छ	*2		COR at	Swell at	Compaction (199)	on(T99)
	Scattlon	(国)	अर्थित गळ	lype of Material	75 um	3 3 5	I.G.	3 B	Redulus Modulus	Trock Trock	Idays soak		M.D.D.	O.M.C.
	Ę				(9)	(4)	:	(4)			(8)		/ #/Q/	(e/)
	13+900m	1.5	R.S	#	25	28	18		1,782	24.5	*44 (17)		. 1	
Tc—35	14+15万	1.0~1.3	R.S	⇒	8	ري آ	21	11	2,058	23.0	6	1.5	1,420	ନ
Tc-11	14+380m	0.5~2.0	R.S	#	ક્ષ	81	18	:	1,782	20.8	9	7.0	1,370	Я
Tc-35	14+650m	2.9~3.2 4.0~4.2	R.S W.Rock	± 51	89 76	<i>57</i> 53	2.2	11 10	2,116 1,743	25.0 17.6	16 82	0.7	1,510	ଷ କ୍ଷ
Tc-12	15+185 <u>m</u>	0.5~4.0	R.S	Ħ	25	武	19		1,862	24.1	15	1.2	1,390	83
. M	BF-3 15+550m	0.0~1.0 1.0~2.0 2.0~3.0	Silty Silty Silty	თთთ	888	883	889		2,500 3,200 2,13#	34.1 34.1				
		3.0~4.0		4.	88	先皇	19 24		1,786	5.5 25.3			1 1	
L·α	8 15+840m	3.0	R.S	#	88	61	19		1,577	20.3	16	1.2	1,388	R
Ω	16+ 90m	0.4~4.0	R.S	#	76	R	91		1,539	16.7	1	0.7	1,436	31
Tc-14	16+700m	0.1~0.4	Grey Silt	6	7.1	ያ	77		1,680	15.1	ľ	0.5	1,40	Ю
	Tc-15 17+150m	0.5~4.0	R.S	≓	88	8	8		1,782	8.5	Zl	0.6	1,390	en en
								ייי סד–לה ט		E / O'1 11/	(0) 10/(2) 0/50 0/1/1/1/20 0/0/20/20/-20/	,0,1		

GI=(F-35)[0.2+0.005(LL-40)]+0.01(F-15)(PI-10) F: Grading Passing 75 μ m(%) inference GR from PI ჯ * *1 See Table 3.6.2 *2 PM=No.36×PI

No.36:Grading Passing 0.475mm(%)

Laboratory test results of Subgrade and Fill materials

ſ	A		<u> </u>		T	7	·	·	7	•		·			
	Compaction (199)	O.M.C.		20	88	3,	88	83	क़	1		8	କ୍ଷ	88	
	Compact	M.D.D. (kg/用 ³)		1,390	88,1	1,388	1,160	1,390	1,330	J.		1,340	1,400	1,370	
	Swell at	Udays soak (4)		0.1	0.2	1.3	0.2	9.0	0.3			0.1	9.0	0.9	
	CBR at		*t (19)	88	£ %	12	æ	18	83	Å (11)	(6) h*	83	80	83	
	ئ ئ	Index	21.1	21.9	3.5	8.5	18.2	23.1	27.5	27.1	31.9	23.6	18.3	£.6 1.6	-
	*2 Plasticity	Modulus	1,666	₹.	2,112	2,058	1,513	1,764	2,178	2,24	2,475	1,666	1,425	1,568	
	Shrinkage	न्ने छे						i							
	Plasticity index	Id	17	16	8 =	23	17	18	8	83	8	17	7	51 85	
	Liquid Limit	马多	23	l _R	K &	63	Ж	क्ष	99	8	65	60	52	61 49	
	Grading Passing	75 # III (%)	ま	8	38.83	25	83	93	35	8	8	B	16	8 Fc	
	Type of	Material	#	77	⇒ €		য়	₽	#	#	寸	æt	#	± €E	
	Soil Type of		Red Soil	R.S	R.S W.Rock	R.S	R.S	R.S	R.S	R.S	R.S	R.S	R.S	R.S W.Rock	
	Depth		1.8	0.4~2.0	0.7~3.5 3.6~3.7	1.5	1.5	0.4~2.0	0.3~2.0	1.5	1.4	0.3~5.0	0.5~5.0	0.3~3.1 3.3~3.7	
	Station	Æ	17+8com	18+820m	19+305m	19+9tOn	21+200m	21+480m	21+955m	22+230m	23+180m	24+178m	24+705m	25+289m	
	Pit Na		T - 7	Tc-16	To-17	7 - 6	T - 5	Tc-18	Tc-19	7 - T	m - +	Tc-20	Tc-21	Te-22	

* 1 See Table 3.6.2 * 2 PM=No.36×PI No.36:Grading Passing 0.475mm(%)

GI=(F-35)[0.2+0.005(LL-40)]+0.01(F-15)(PI-10) F:Grading Passing $75\,\mathrm{m}\,\mathrm{m}(\%)$ inference GBR from PI

Laboratory test results of Subgrade and Fill materials

Γ	إحسن	-	-								
	Compaction (199)	O.M.C.	8,9	88	ı	K	R	æ	R	8	<u>ب</u>
	Compact	M.D.D. (kg/m³)		1,300	1	1,370	1,350	1,370	1,380	පුළැ	1,410
	Swell at	Udays soak	0.2	4.0		0.2	1.7	0.2	0.3	4.0	0.7
	1000 at		1421	17	*4 (12)	83	11	11.	12	01	6
			26.3	24.6	29.7	8.1	39.3	30.6	33.2	30.7	20.4
	*2 Plasticity	Modulus	1,960 770	1,800	2,112	1,980	2,970	2,300	2,673	2,646	1,914
	Shrinkage	뭐%						Ì			
	Plasticity index	닯	87	18	83	8	8	8	22	12	83
	Limit	38	61 39	8	<i>L</i> 9	63	ħZ.	යි	159	62	88
	Lacting Passing	75 mm (%)	8=	8	ક્ર	88	16	88	88	84	62.
*		Material	⊐ छ	17	17	17	17	ᆲ	a	17	at .
	Soil Type		R.S W.Rock	R.S	R.S	R.S	R.S	F111(R.S)	Fill(R.S)	R.S	R.S
	Depth	(H	0.7~2.6 2.6~2.8	2.6~2.8	1.5	0.2~1.2	0.1~1.0	0.6~1.0	28+103m 0.55~1.0 Fill(R.S)	0.4~4.0	0.5~1.0
	Station	Æ	25+775m	26+158m	26+500m	26+778m	27+178m	Tc-27 27+678m			
	Pit W		Tc-23	Tc-24	Ľ 	Tc−25	Tc-26	Tc-27	Tc-28	Tc-29	Tc-30

* 3 GI=(F-35)[0.2+0.005(LL-40)]+0.01(F-15)(PI-10) F:Grading Passing 75 mm(%) * 4 inference CBR from PI

A-180

CENTRAL TESTING LABORATORIES LIG

P. 4. Ber 14587 Jet. 558422/23

Client MONLEN CONSTRUCTION CO (EA) LID Lacation MAIRORI BY PASS

3. K.

Sheet Na. 1 of 3.
Date , 27/8/1999.

SOIL TEST RESULTS SUMMARY SHEET

CENTRAL TESTING LABORATORIES LIG.

P. 8. Sex 18547 Tel. 559422/23

Client MONLEM CONSTRUCTION CO. (EA.) LTD Location MAIROBL BY PASS

Bilresi

SOIL TEST RESULTS SUMMARY SHEET

Sheet Na. 2 af. 3 Date ... 2778/1990

10 10 10 10 10 10 10 10	F =	UTENERS :	THE	SAT	. :			SRADING	엹	*	PAS	PASSING				1		티	COMPACTION	L	T180	1351.11			~	STRENGTH	1 1	TESTS	-	SAMPLE	
13 13 13 13 13 13 13 13	: 1 💝 :		ISAM	× 4	2 4					~ #	#	- E	3.		625 Frm		5.0	F	- F	보				. L	_ ₽₹	نا به		2	~~ ·	DEPTH (m)	·
1.00 1.00	เ่ไ	<u> </u>						$\left \cdot \right $	\sqcup			8		99	99	66	16 80						-	1		8	9.0	_			4.00
13 10 10 10 10 10 10 10	. 1	2			\Box	1		\sqcup				প্র	66 0	66	66		17.		, ,					 	28	3	17.	-	-	0.40	-2,00
136 136	7.74	22	-	\dashv			1		_	ğ	99		2 96	96	96		93 9.					1			13		0.2			0.70	-3.50
12 100		-		1			8			8	8	ন		×		5		8 17	90 32		Ш				38	64	7.7		82		4.00
100 100	- 1	8	_		\dashv		\dashv		_			ဋ		66	98		959		90 33						18	8	9.0		81		2.00
1.1 1.00 9 9 9 9 9 9 9 9 9	1	77	_	-	\dashv		-	-	_			9	660	99	99				50 34	: 					28		0.3	_	2	0.30	2.00
13 10 10 10 10 10 10 10		5	_		-		\dashv		_		8	96			98		6 95		10 35	_	_	_	_		23	66	3.1		 -		2
100 99 99 99 99 99 99 99		2			_				_		8	8 97	97	96	95 \$		92 9.	_	30			ļ			æ	8	9.0	_	3	0.50	2.00
130 100 99 98 98 98 98 98 99 <	-	و	-	-							-	8		98			6 95		70 33			Щ			17		60		 =	0.30	3.10
20 100 99 98 99 99 13 11 100 0.2 11 100 0.5 1.0		18	_									2 88	84	82	81		76 7		40 26			1	-		22	99 0	7		32	3.10-	3.50
1460 33 17 90 5.5 1. 146 100 97 93 88 84,80 78 72 100 97 95 95 98 11 100 97 97 98 98 130 130 97 97 98 98 130 130 97 98 98 130 130 97 98 98 130 130 98 98 98 130 130 98 98 98 130 130 99 99 98 130 130 99 99 98 130 130 99 99 99 99 130 130 140 90 99 99 99 130 140 10 10 90 99 99 99 130 130 10 10 90 99 99 130 10 10 10 10 90 90 10 10 10 10 10 10 10 10 10 10 10 10 10		밁			_		\dashv		_		퀴	8	8	98	98			_			_				14	82	32	_	181	0.70	2.60
100 97 93 88 64 80 78 76 72 67 60 57 55 51 45 41 1620 16 67 67 67 67 67 67 67	4 1		_		_						_	-								1460						8	.5			"	
100 97 93 88 64 80 78 76 72 67 60 57 55 51 45 41 1620 16 17 100 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	-	_	-		_						_				\dashv										95 10	9*		=		
14 100 97 93 88 84 80 78 76 72 67 60 57 55 51 45 41 1620 16 16 160 99 99 99 99 1300 38 160 99 99 99 1300 38 17 100 0.4 17 100 0.4 18 1 20 100 99 99 99 98 1370 35 11 100 1.7		\neg	-		-	_	-	-					\Box								انا	:		_			1,7	_	 =	=	#
20 100 99 99 99 1300 38 17 100 0.4 17 30 100 99 99 98 97 1350 35 27 100 0.2 11 100 1.7 11 21 100 99 99 98 97 1350 35 11 100 1.7 11 100 1.7 11 22 100 99 99 98 97 1350 32 12 10 0.0 12 10 0.0 12 10 0.0 12 10 0.0 27 100 99 99 98 97 94 1370 36 12 10 0.0 12 10 0.0 12 10 0.0 12 10 0.0 12 10 0.0 12 10 0.0 27 100 99 99 98 97 94 92 1340 36 12 10 0.0 17 20 0.0 17 20 0.0 12 10 0.0 <td>- "1</td> <td>7.</td> <td></td> <td></td> <td>_</td> <td>5</td> <td></td> <td></td> <td>80</td> <td></td> <td></td> <td>2 67</td> <td>60</td> <td>57</td> <td>55 5</td> <td>4</td> <td>_</td> <td></td> <td>20 16</td> <td></td> <td></td> <td></td> <td>-</td> <td>\cdot</td> <td></td> <td>100</td> <td>7.1</td> <td></td> <td>32</td> <td>2.60-</td> <td>2.80</td>	- "1	7.			_	5			80			2 67	60	57	55 5	4	_		20 16				-	\cdot		100	7.1		32	2.60-	2.80
20		89			_	_		-	[-		\neg		g		<u>\$</u>					_			17	102	7.4		=		*
23 24 25 25 26 27 27 27 27 28 29 29 29 29 29 29 29 29 29 29 29 29 29	. 4	2	_						\bot	二	-		3	ş	- S	8	-8								22		1.2		 BI	0.20	1.20
23 24 25 27 27 28 29 29 29 29 29 29 29 29 29 29 29 29 29	• 1	ဋ	_	-			\dashv	\dashv	_		퀴		6	6	8		5					_		\Box			.7		 2	0-40-	1.00
100 99 98 97 96 1380 32 17 101 0.3 1 1 100 0.4 1 1 100 0.4 1 1 1 100 0.4 1 1 1 100 0.4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		23	_		-				_		-		\Box		8		36									99 0	.2		=	0.60-	1.00
12 12 12 13 13 13 13 13	• •	72			_		-					-	8		99 5	98	7 96	3							12	101	3		=	0.55-	8
1460 31 17 50 031 " " " " " " " " " " " " " " " " " " "	- 1	77			_				\Box			8	99	6						4					10) 	7,4		=	0.40-	90.
22 95 D. 5 " " " " " " " " " " " " " " " " " "					_										-					1460		100			17		터		 =	:	
23 100 0.7		\dashv	\dashv		-	7	-1				-		口		1							_			\Box		2		=	;	٤
					_	_	-	-	\Box		-		\Box		[-	_	_	_			_				0	7.		=	=	ŧ
	L			_			_								_							_				_	_		 _		

CIL C CENTRAL TESTING LABORATORIES LEG.

SOIL TEST RESULTS SUMMARY SHEET P. B. Ben 19567 lei. 558472773 Hairebi Client NOWLEN CONSTRUCTION CO (EA) LTD Location NATROBL BY PASS

The compact of the	
COMPACTION T199 T199 T11, T.	
COMPACTION TILES. T99 14.10 31 23.0 2.42 18.1 2.55 18.1 2.55 18.2 2.51 22.4 2.50 22.4 2.50 22.4 2.50 22.4 2.50 22.4 2.50 22.5 2.50 22.5 2.50 22.6 2.50 22.6 2.50 22.7 2.50 22.7 2.50 22.8 2.50 22.9 2.50	
COMPACTION TILES. T99 14.10 31 23.0 2.42 18.1 2.55 18.1 2.55 18.2 2.51 22.4 2.50 22.4 2.50 22.4 2.50 22.4 2.50 22.4 2.50 22.5 2.50 22.5 2.50 22.6 2.50 22.6 2.50 22.7 2.50 22.7 2.50 22.8 2.50 22.9 2.50	
COMPACTION TILEGY. T99 NATION 31 14.10 31 23.0 2.42 23.1 2.53 18.1 2.55 18.1 2.55 22.4 2.50 22.4 2.50 23.6 2.40 23.6 2.40 23.6 2.40 23.6 2.51 23.6 2.51	
COMPACTION TILEGY. T99 NATION 31 14.10 31 23.0 2.42 23.1 2.53 18.1 2.55 18.1 2.55 22.4 2.50 22.4 2.50 23.6 2.40 23.6 2.40 23.6 2.40 23.6 2.51 23.6 2.51	
COMPACTION TILEST. T99 1410 31	┨═┼
T99 1410 1	- - -
T99 1410 1	╂╼╂╼
T99 1410 1	1-1-1-
TOWACTION TIEK; 1 T99 1410 31 Kapp ord 1410 3	
TOWACTION TIEK; 1 T99 1410 31 Kapp ord 1410 3	
1410 T1ECT. 199 1410 31 Kapa ord 1410 0rd 1410 0r	
1410 T18 1410 31 1410 31	
COMPACTION T. 199 10 2 86 10 98 10	+ + - + -
COMPACTION T 199 T	
COMPAC 8 9 15 T 79 8 9 6 8 9 8 8 9 8 8 9 8 8 9 8 8 9 8 8 9 8 8 9 8 8 9 9 8 8 9 9 8 8 9	
20 20 30 30 30 30 30 30 30 30 30 30 30 30 30	
32 88 86 86 86 86 86 86 86 86 86 86 86 86	╂┼┼
그 마하네 하지 않는데 하는데 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그	++-
PASSING Log 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+ + + + + + + + + + + + + + + + + + + +
PASSING 1 1 1 1 1 1 1 1 1 1	111
	+++-
	- -
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
1	
	+++
MYZHCILL	
	$\bot \bot \bot$
	-1
H H H R R R R R R R R R R R R R R R R R	
BIGIVE S S	
4685 4705 4705 4709 4709 4709	1 1 1

CENTRAL TESTING LABORATORIES Ltd.

F. 8. Ber 18547 Tel. 559422423

Client THE MOWLEM CONSTRUCTION CO. (E.A.) LTD

Location NAIROBI BY PASS

Job Mo.....

7724 7731 7725 " #

SAMAR

Sheet 2a, 1 of 1. Bats 14/10/1991

TESTS

STRENETH

SOIL TEST RESULTS SUMMARY SHEET

2.50-2.70 1,00-1,39 1.80-2.20 3.00-3.40 0.80-1.00 0 40-0 70 BLOCK 0.40-0.70 0.30-0.80 EDCX 0.20-0.50 2.90-3.20 4.00-4.20 0.20-0.40 1.00-1.30 D. 20-0.40 DEPTH (由) WARDCO. 32 X DOX 32 B2 82 B2 31 33 B2 C. B. R. "/s B. C. S. L. 30 10d 0.2 ho1 3.6 16 100 0.8 100 1.5 0 100 0 3 100 70) (0.7 8 ৪ 8 8 15 87 52 16 20 ~ ~ 6 47 v z n 50 56 (H) COMPACTIONSWELLING FREE PRESSURE FREE SPELL 80 98 89 72.4 101.9 32.2 K. 1.1 1. K. C. Kg/m² 100 99 98 98 98 98 97 96 95 1390 35 77 71 64 61 59 51 44 40 38 36 34 29 25 1360 30 S 86 83 81 1310 32 100 99 98 95 90 87 87 88 84 79 76 1580 23 100 99 99 99 99 99 98 98 97 97 97 194 192 11420 30 100 99 98 93 92 92 92 92 91 90 89 1510 29 99 97 96 94 89 86 84 84 83 82 79 76 1480 30 22 100 99 99 98 98 96 1460 25 23 19 15 12 11 10 9 7 6 1420 92 90 1350 80 1480 63 50 37-5 28 26 16 10 5-3 5 4 2 1 600 500 425 300 150 75 85 30 30 10 75 89 88 83 95 96 87 90 89 88 87 96 90 97 100 97 93 8 RADING "" PASSING 8 98 97 93 66 001 70 59 51 40 35 32 27 8 85 100 99 93 83 SANABON ALIDIISYM W 35YMM W 35YMM W 31YMM 31IS 8 7736 TC37 40 18 9 10 55 18 9 10 60 ~ 53 21 7728 TC33 37 16 7733 TC35 51 21 7734 TC36 | 57 | 23 53 21 è ရွ 7726 1132 50 18 21 52 59 17735 " "

7731 170 34

7732[" "

7737 " "

. =

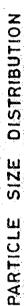
7730

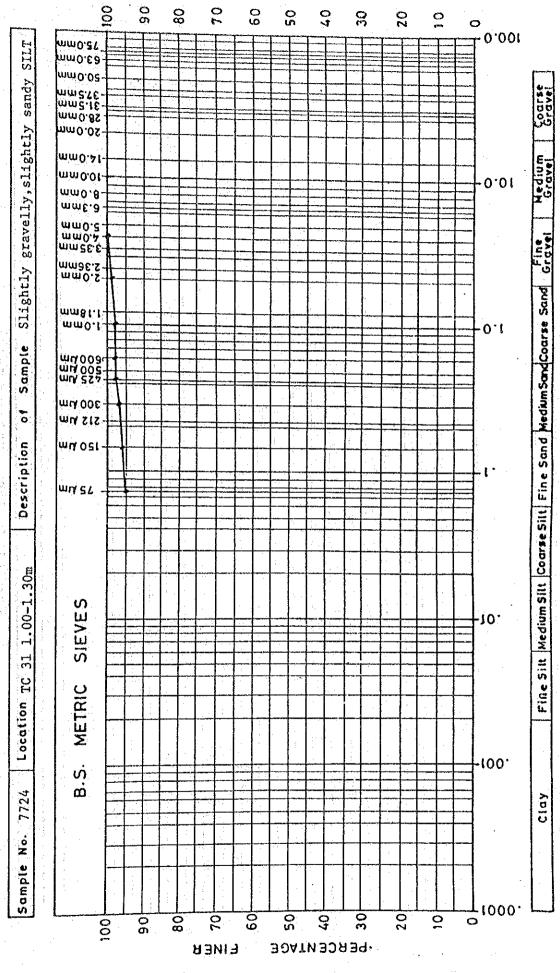
" " 6277

7727 " "

CENTRAL TESTING LABORATORIES LTD.

P.O. BOX 18507 TEL. 559422/23 NAIROBL





CIL CENTRAL TESTING LABORATORIES LTD.

P.O. BOX 18507 TEL 559422123 NAIROBL PARTICLE SIZE DISTRIBUTION

90

8

70

9

00

40

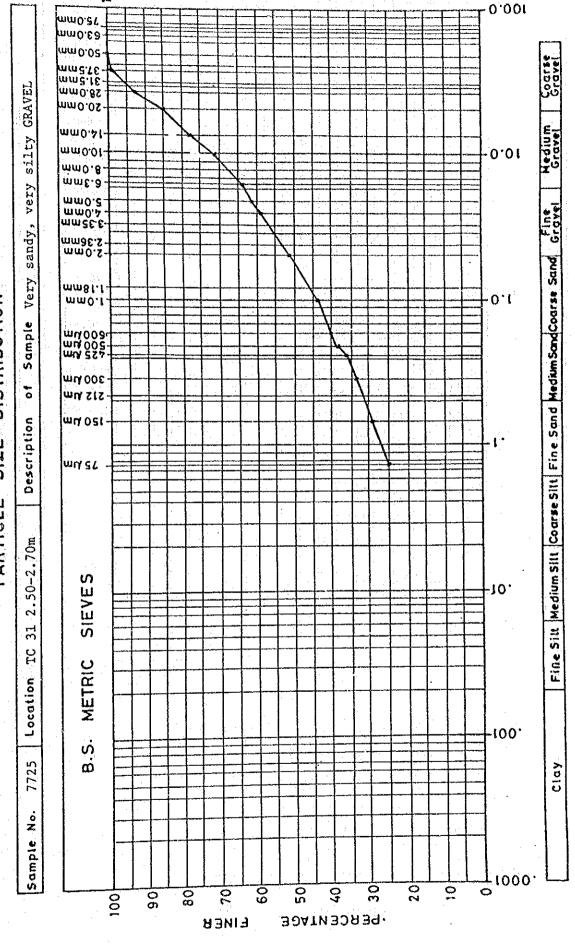
30

20

õ

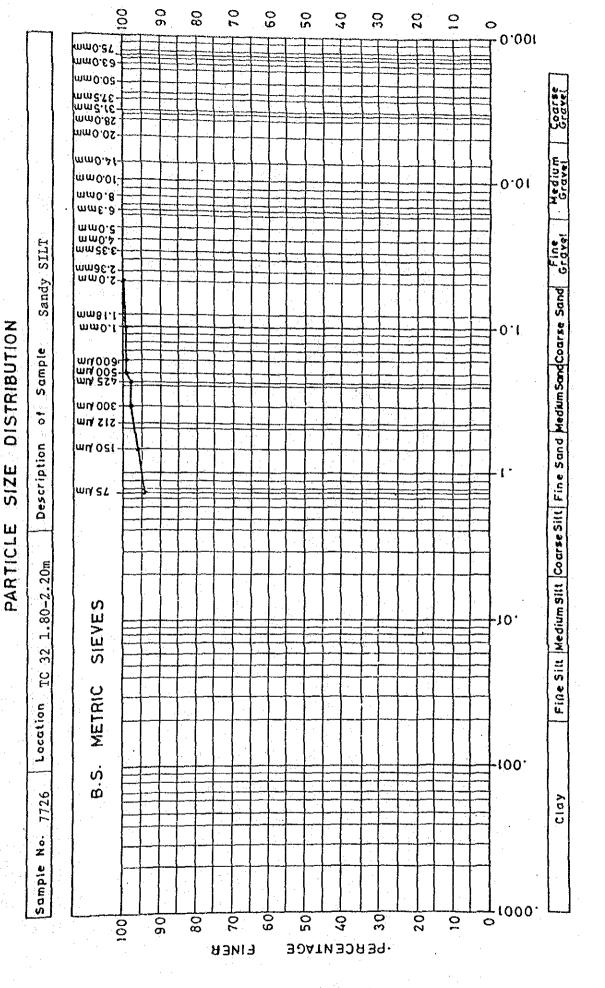
O

00



CENTRAL TESTING LABORATORIES

NAIROBI.



CENTRAL TESTING LABORATORIES LTD.

P. O. BOX 18507 TEL. 559422/23 NAIROBI.

SIZE DISTRIBUTION PARTICLE

00

06

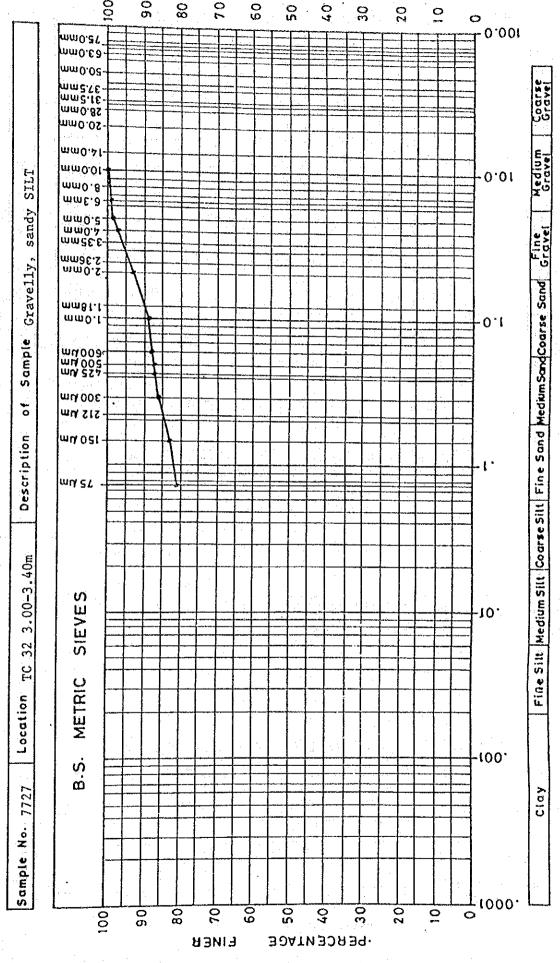
80

70

9

20

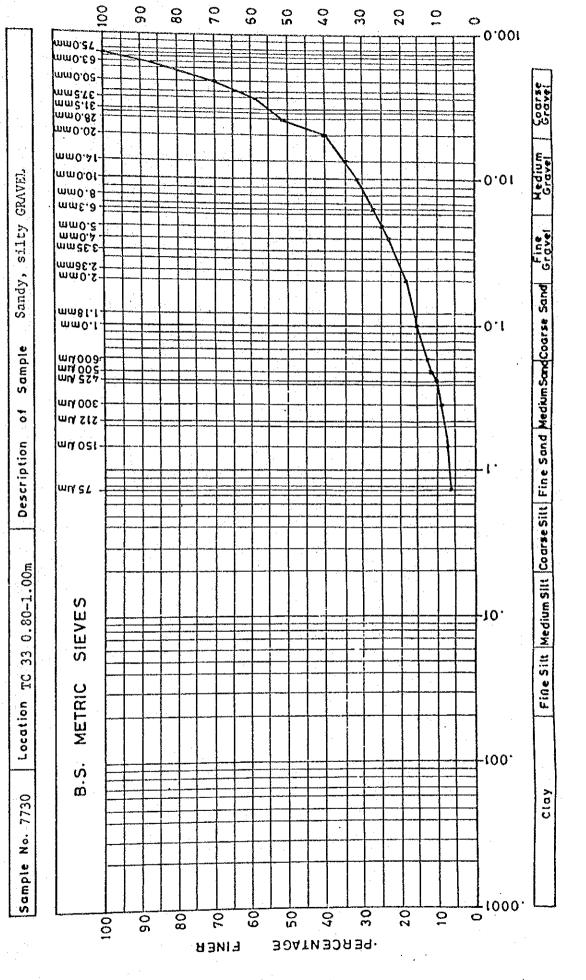
9



CIL CENTRAL TESTING LABORATORIES LTD.

NAIROBI.

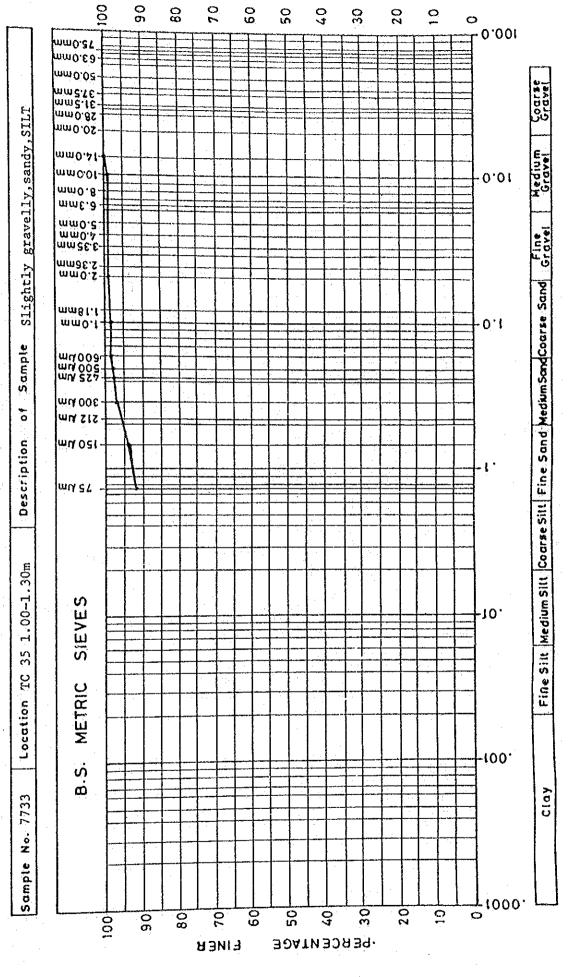
PARTICLE SIZE DISTRIBUTION



CIL CENTRAL TESTING LABORATORIES LTD.

NAIROBI.

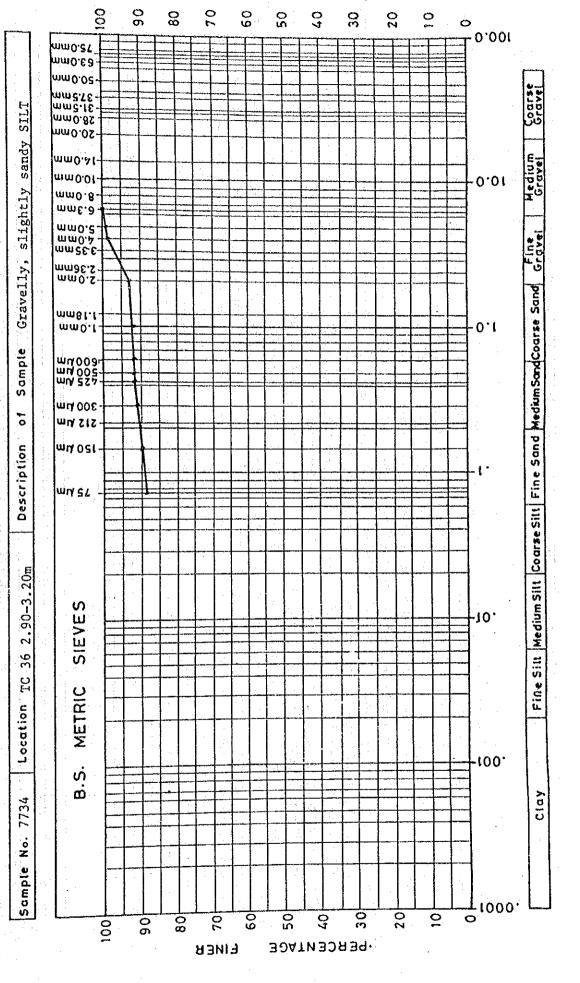




CIL CENTRAL TESTING LABORATORIES LTD.

NAIROBI.

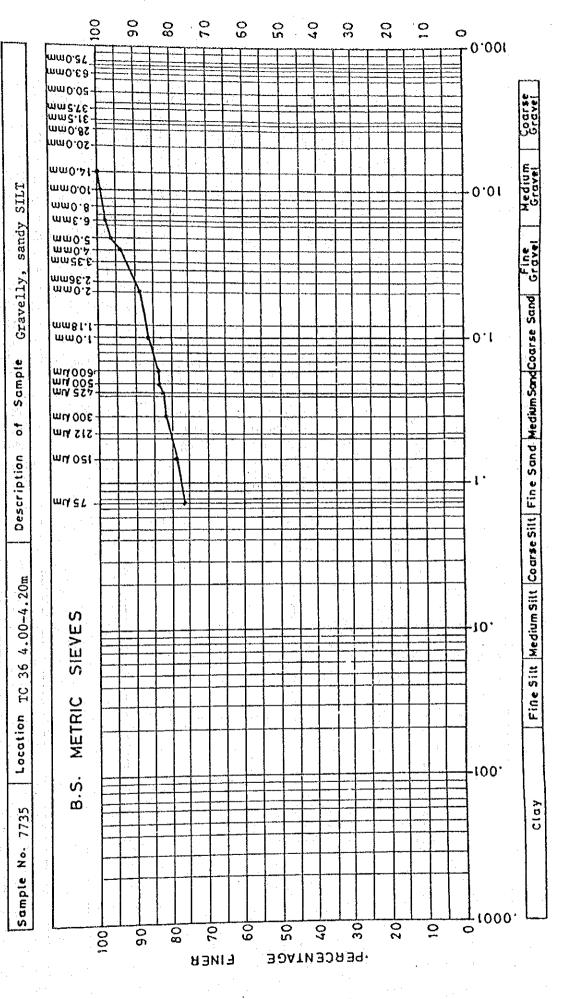
PARTICLE SIZE DISTRIBUTION



IL CENTRAL TESTING LABORATORIES LTD.

P.O. BOX 18507 TEL. 559422123 NAIROBI.

PARTICLE SIZE DISTRIBUTION



MOWLEM CONSTRUCTION CO.(E.A.)LTD.

CONSOLIDATION TEST

4680 :sample number

TC25 B1 0.2m-1.2m

Sample Descrit. Red, slightly sandy SILT

2.61 :relative density of soil 1,30 :dry density of sample 21,50 :initial height of sample

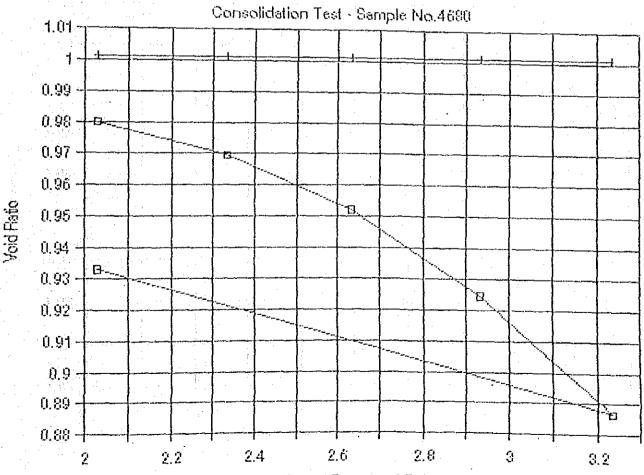
oites blowleithni: 00.f

0.09 wold ratio reduction factor

0.00 :dial gauge constant (positive if increases with settlement

	il not then	⊓egative)		A SOUND SOIL (SIGH	ieniei il		. 1
biesanie	dialread		voidchge	voidratio	sqrt90	m2/vr	rnv ra2/MN
Tana a	147	0.000	0.000		Safiras	ttiery)	HELLININ
107.3		11,000			2.8	6.4	0.10
214.5		4.4.10	* * * * * * * * * * * * * * * * * * * *	0.970	0.8	77.3	0.10
429.0			0.049	0.952	1.2	33.9	0.04
858.0	• • •	****	0.077	0.925	2.6	7.1	0.03
1716.0			0.115	· ·	1.2	32.0	0.02
107.3	436	0.734	0.068			V.E.V.	U. U.S

CENTRAL TESTING LABORATORIES LTD



Log (Aplied Pressure kPa)

MOWLEM CONSTRUCTION CO.(E.A.)LTD.

ODNODLIDATION TEST

4679 : sample number

TC24 B2 2.6m-2.8m

Sample Descrip-

Fled SILT

2.60 :relative density of soil

1.24 dry density of sample

20.03 :initial height of sample

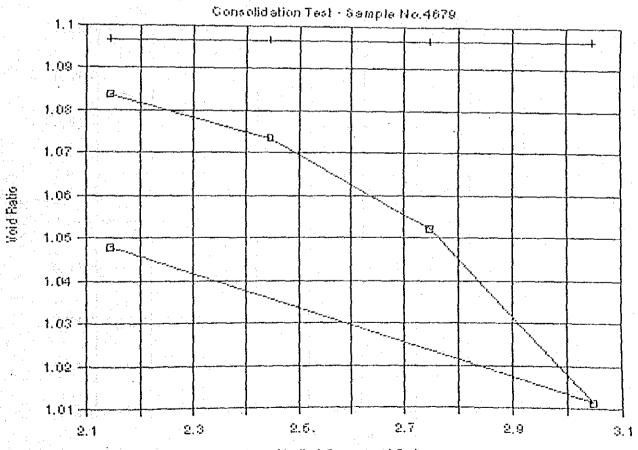
1.10 :initial void ratio

0.10 :void ratio reduction factor

-0.00 dial gauge constant (positive if increases with settlement)

if not then negative) 60 file pressure dialread htchange voidchge voidratio sqri90 m2/yr m2MN. 2739 0.000 0.000 1.097 139.5 2690 0,124 0.013 1.084 1.7 15.2 0.14 279.0 2652 9.2210.0231.074 1.2 30.4 0.03558.0 2571 0.4270.045 1.052 1.2 29.7 0.04 1116.0 2418 0.845 0.0851.011 1.1 34.2 0.14 139.5 2655 0.467 0.0491.048 0.00.00.02

CENTRAL TESTING LABORATORIES LTD



MOWLEM CONSTRUCTION CO.(E.A.)LTD.

CONSOLIDATION TEST

4677 :sample number

TC23 B1 0.7m-2.6m

Sample Descr.:-

Red, sendy, SILT

2.58 relative density of soil

1.31 dry density of sample 21.50 initial height of sample

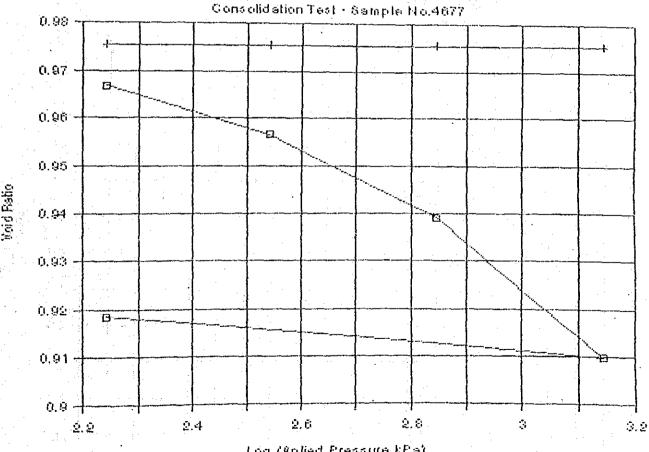
oites biowleitini: 89.0

0.09 :void ratio reduction factor

0.00 dial gauge constant (positive if increases with settlement

445	if not then	negative)	•			CV	es e
pressure	dialread	htchange	voidchge	voidratio	sart90	rn2/yr	mw m2/IAN
<u></u> :::	144	0.000	0.000		oduso	meski	HIZHME
174.3	181	0.094	0.009		0.8	79.1	0.03
348,6	225	0.206	0.049	0.957	0.6	139.3	4 0,03
697.2	300	0.396	0.036	0.939	0.5	197.7	0.05
1394.4	425	0.714	. មិ.មិតិច	0.940	0.8	75,4	0.02
174.3	388	0.620	0.057	0.919	0.0	Ũ,Ũ	0.00

CENTRAL TESTING LABORATORIES LTD

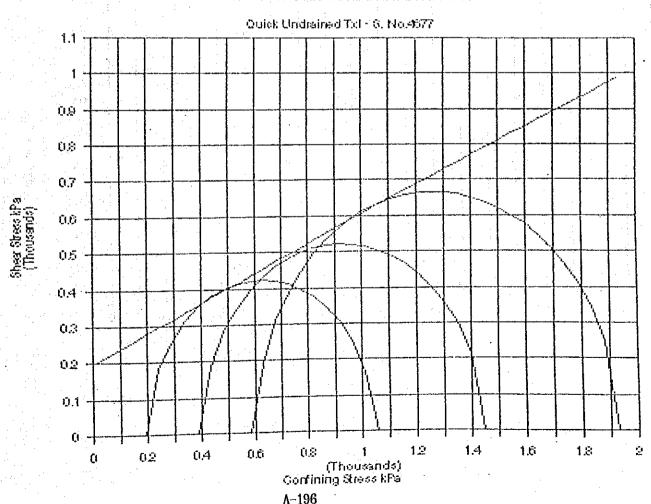


Log (Aplied Pressure kPa)

NAIROBI BY PASS TC23 B1 0.7m-2.6m QUICK UNDFAINED TRIAXIAL 4677 Sample No.

Description:		Red, sandy,	SILT		•
		Remoulded	at 95% MDI	OMO & C	
Specimen	Bulk	Moisture	Confining	1/2 Deviator	
No.	Density	Content	Pressure	Stress	
	kg/m3	%	kN/m2	kN/m2	
1	1742	32,6	200		424
2		32.7	400		523
3. ·	1744	33.0	600		666
Slope	22,2	degrees	Intercept	•	198 kN/m2

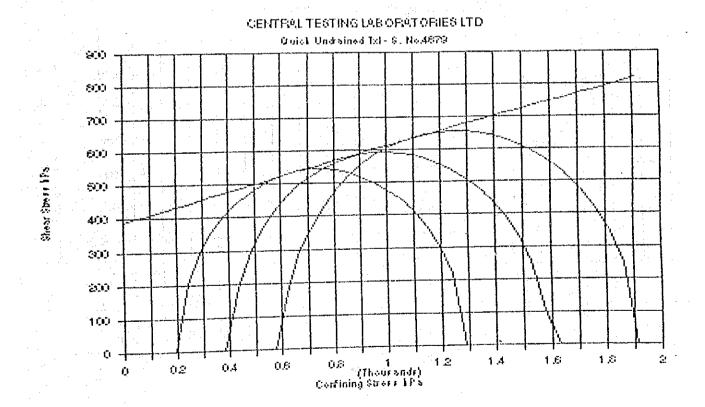
GENTRAL TESTING LABORATORIES LTD



NAIROBI BY PASS TC24 B2 2.6m-2.8m QUICK UNDRAINED TRIAXIAL 4679 Sample No.

Description:		Red SILT			
		Remoulded	at 95% MDE) & OMC	
Specimen	Bulk	Moisture	Confining	1/2 Deviator	
No.	Density	Content	Pressure	Stress	
	- kg/m3	%	kN/m2	kWm2,	
1	1701	37.0	200		646
2	1705	37.8	400	. !	594
3	1703	37.9	600		657

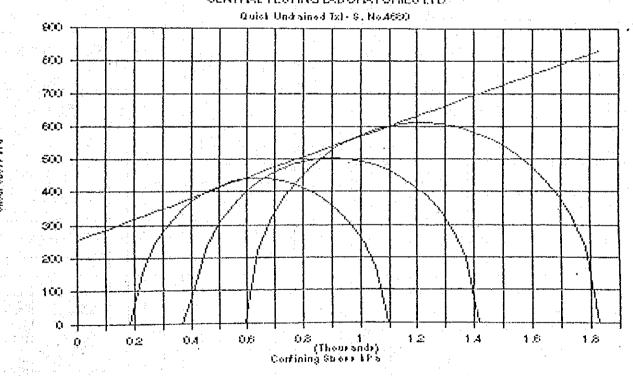
Slope 12.6 degrees Intercept 389 kN/m2



NAIROBI BY PASS TC25 B1 0.2m-1,2m QUICK UNDRAINED TRIAXIAL 4680 Sample No.

Specimen	Bulk		et 95% MDD Confining 1	a OMO /2 Deviator
No.	Density	Content	Pressure	Stress
	kg/m3	%	kN/m2	kN/m2
1	1753	34.3	200	443
2	1750	34.3	400	506
3	1752	34.3	600	614

CENTRAL TESTING LABORATORIES LTD.



CENTRAL TESTING 😘 🛴 CALCULATIONS LABORATORIES LTD. FOR 3 POINT C 3 R AND SWELL MEASUREMENT P.O. Box 18507. NAIROBI. 3/ No. .4652 27/8/90 TC 3B1 0.20-0.60m Client MOWLEM CONSTRUCTION CO (EA)LTD NAIROBI BY PASS Location -202 T QRL C.B.R.AT 95% MDD:-160 Ī HET ALGEMM! П ``. /9 120 SOAKED:-_120 100 . (%) : 20 į 60 40 T _ 0 T₈₀ 90 .100 110____ % MDD SWELL AT 95% MDD:-1 0.36 (SÖA KED0:32 C.B.R. ONLY) 1 0.58 Ī 0.24 İ 0.20 1 0/16 li 0.12 008 l 0.04 ţ <u>⇔.≬Q</u> 100 1110 9.0 80 % MDD

CENTRAL TESTING 13 CALCULATIONS LABORATORIES LTD. FOR 3 POINT C B B AND SWELL MEASUREMENT P.O. Box 18507, NAIROBI. 3/10. 4657 27/8/90 TC6 B1 0.30-1.60m Client MOWLEM CONSTRUCTION CO (EA) LTD NAIROBI BY PASS Location -40 36 C.B.R. AT 95% MDD:-32 IMMEDIATE:-28 N/A 24 SOAKED:-23 20 - 16 . . T90 80_ 100 110____ % MDD SWELLAT 95% MDD:-0.2 % 1 0.36 ŢĠĊA KED 0.32 C.B.R. ONLY) 0.28 0.16 0.08 Hi 0.640.00 100 9.0_ 180 % MDD

CENTRAL TESTING : CALCULATIONS LABORATORIES LTD. FOR 3 POINT C B R AND SWELL MEASUREMENT P.O. Box 18507, NAIROBI. 51.50. rc12B1 0.50-4.00m 4663 27/8/90 Client - MOWLEM CONSTRUCTION CO(EA)LTD NAIROBI BY PASS Location --C.B.R. AT 18 95% MDD:-IMMEDIATE: N/A 12 SOAKED :-10 T90. T.80_ 100 1.10____ % MDD SWELL AT_ 95% MDD:-1 3.6 (SÖAKED C.B.R. ONLY) 1.6 <u>0.8.</u> 100 190 180 170 % MDD

CENTRAL TESTING : CALCULATIONS LABORATORIES LTD. FOR 3 POINT C 3 R AND SWELL MEASUREMENT P.O. Box 18507. NAIROBI. 31.00. 4677 27/8/90 TC23B1 0.70-2.60m Client MOWLEM CONSTRUCTION CO (EA)LTD Location - NAIROBI BY PASS 40 36 C.B.R. AT 95% MDD:-32 Ì IMMEDIATE !-H 70 N/A 24 SOAKED:-20 % 20 • JG • 12 T₈₀ T₉₀ 100 110____ % MDD SWELL AT 95% MDD:-Ιī 0.6 % 09 [(SÖA KED C.B.R. ONLY) 1 П П 0.6 1 ELL 04 0.2 0.2 П 0.0 100 Ī_{1,1,0} 190 180 % MDD

CENTRAL TESTING 154. CALCULATIONS LABORATORIES LTD. FOR 3 POINT C B R AND SWELL MEASUREMENT P.O. Box 18507. NAIROBI. 3/ No. · 4684 27/8/90 TC29B1 0.40-4.00m Client MOVIEM CONSTRUCTION CO (EA)LTD Location -- NAIROBI BY PASS 10 96 C.B.R. AT 95% MDD:-37 IMMEDIATE: N/A % 24 SOAKED:-22 % 20 . TE ī 190 10080. 110____ % MDD SWELL AT ------95% MDD:ī 6.9 Ţ(ŚĊA KED 2:0:8 C.B.R. ONLY) 0.7 0.6 0.5 0.4 . 0:3 0.2 0.1 0ء0 T₁₀₀ 1110 190 180 % MDD