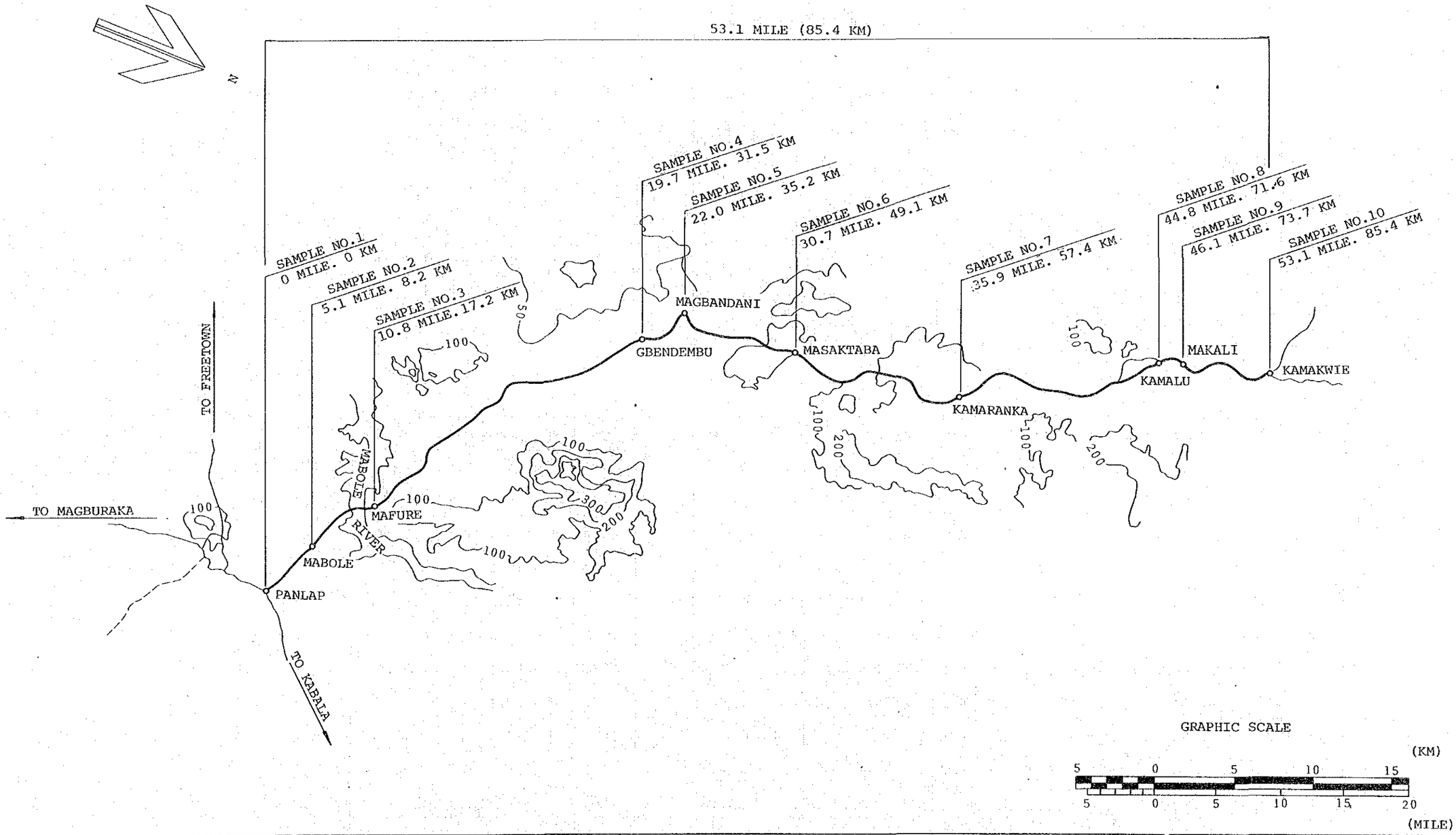
LOCATIONS OF SAMPLING FOR SOIL TESTS



RESULTS OF SOIL TEST

SAMPLE NO. 1
LOCATION PANLAP
DATE: 26 Oct. 79

(1) SPECIFIC GRAVITY TEST

DATE 29 October, 1979

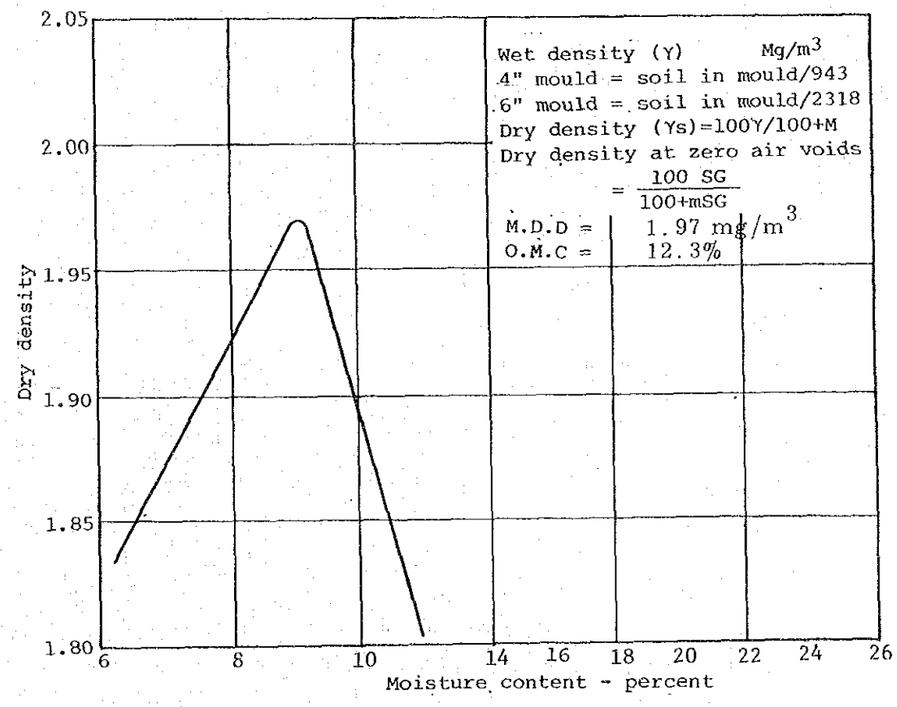
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		40.6	41.2		
Wt.(Pycnometer+water) W'a in g		90.4	90.9		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		106.7	107.5		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	66.1	67.2		
	Wt.Container in g				
	Wo in g	25.5	26.0		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.77	2.76		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.757	2.748		
Mean value		Specific gravity $\frac{(15°C)}{20°C}$ =			2.75

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

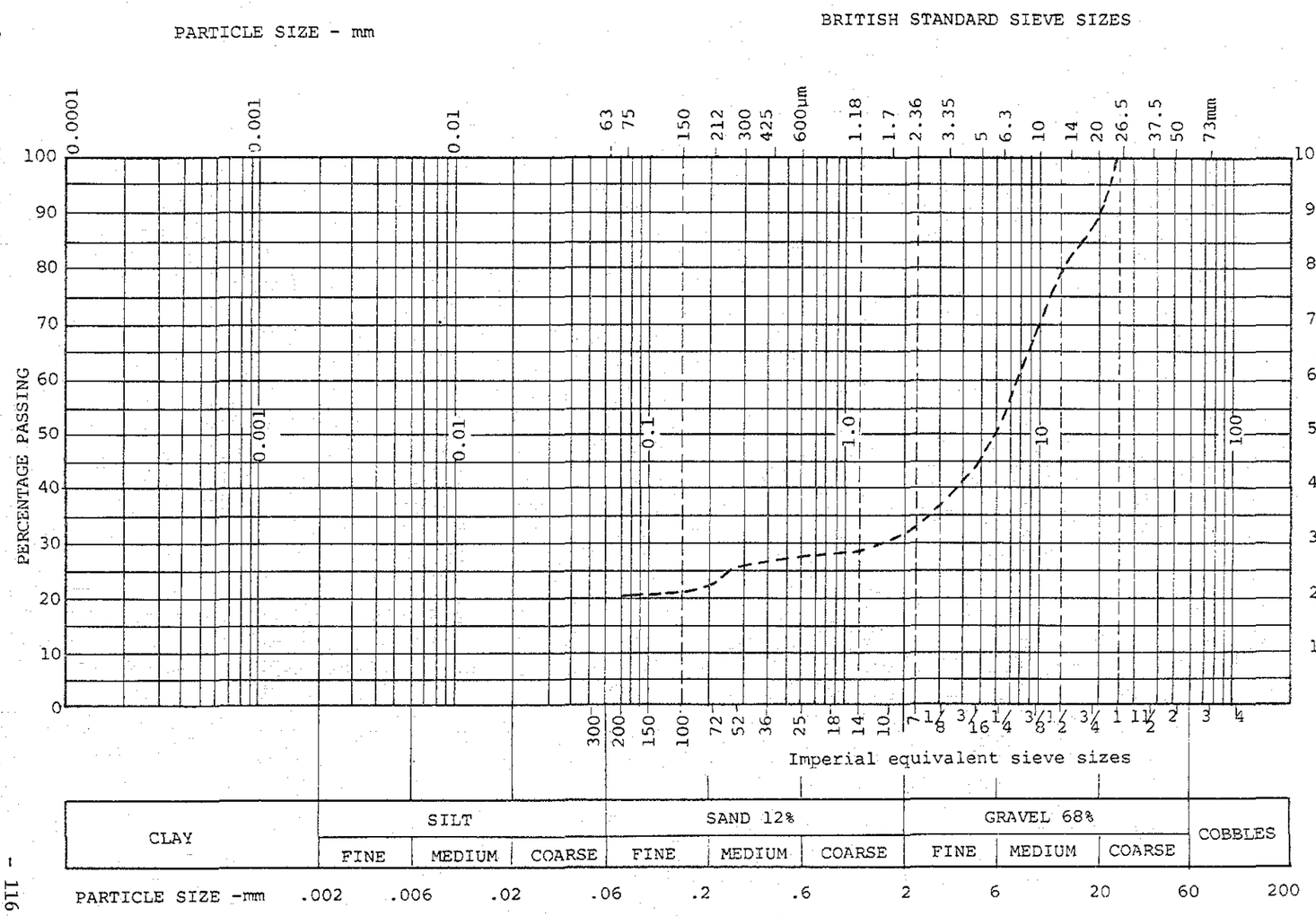
Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9643	10108	10008	9886				
WT. cylinder	grms.	4956	4989	5045	5027				
WT. wet soil	grms	4687	5119	4963	4859				
Wet density (γ)		2.02	2.21	2.14	2.09				
Container Number (Top)		12	42	42	45				
WT.wet soil + cont.	grms.	64.4	62.0	71.5	76.5				
WT.dried soil + cont.	grms.	60.1	56.3	63.6	67.3				
WT.container	grms.	8.0	8.0	7.9	7.9				
WT.moisture	grms.	4.3	5.7	7.9	9.2				
WT.dried soil	grms.	52.1	48.3	55.7	59.4				
Moisture content (m)	%	8.24	11.80	14.18	15.49				
Container Number (Base)		40	16	29	17				
WT. wet soil + cont.	grms.	66.3	67.5	75.5	71.7				
WT. dried soil + cont.	grms.	62.1	60.8	66.8	63.3				
WT.container	grms.	8.0	7.9	7.8	7.8				
WT.moisture	grms.	4.2	6.7	8.7	8.4				
WT.dried soil	grms.	54.1	52.9	58.9	55.4				
Moisture content(m)	%	7.76	12.66	14.77	15.16				
Dry density (γs)		1.87	1.97	1.87	1.82				



Source : JICA mission

RESULTS OF SOIL TEST

SAMPLE NO. 1
LOCATION PANLAP



DATE .....29.October.79.
DEPTH ..2.ft..-.5.ft....

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1					.	
20	3/4	407		10.4		89.6	
14	1/2	401		10.2		79.4	1500
10	3/8	417		10.7		68.7	1000
6.3	1/4	685		17.5		51.2	750
5	3/16	260		6.6		44.6	500
3.35	1/8		3.2				300
2.36	7	136			11.1	33.5	200
1.18	14	44			3.6	29.9	100
600 µm	25	20			1.6	28.3	75
425	36	21			1.7	26.6	60
300	52	13			1.1	25.5	50
212	72	19			1.6	23.9	45
150	100	20			1.6	22.3	40
75	200	18			1.5	20.8	28
63	/						25

WEIGHT OF DRY MATERIAL 3915 GMS

Source : JICA Mission

SAMPLE NO.1

LOCATION PANLAP

RESULTS OF SOIL TEST

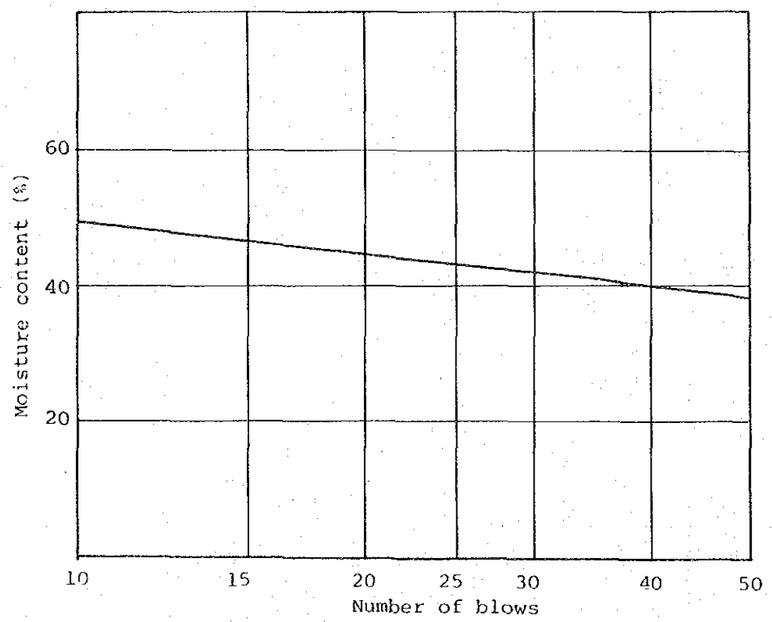
(4) CONSISTENCY

Date : 29 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..2...
Soil equilibrated with water for ..24... hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test) Container No.		43 27	36 7	24 26	16 11	11 30	- 8	- 12
Mass of wet soil + container	g	29.4	32.5	27.6	29.9	29.6	26.6	22.3
Mass of dry soil + container	g	23.9	25.1	21.6	23.0	22.5	23.5	19.5
Mass of container	g	7.8	7.8	7.7	8.0	7.7	13.4	10.2
Mass of moisture	g	5.5	7.4	6.0	6.9	7.1	3.1	2.8
Mass of dry soil	g	15.1	17.3	13.9	15.0	14.8	10.1	9.3
Moisture content	%	36.4	42.8	43.2	46.0	48.0	30.6	30.2

Type of test: Natural moisture content (N), Liquid limit (LL), Plastic limit(PL).

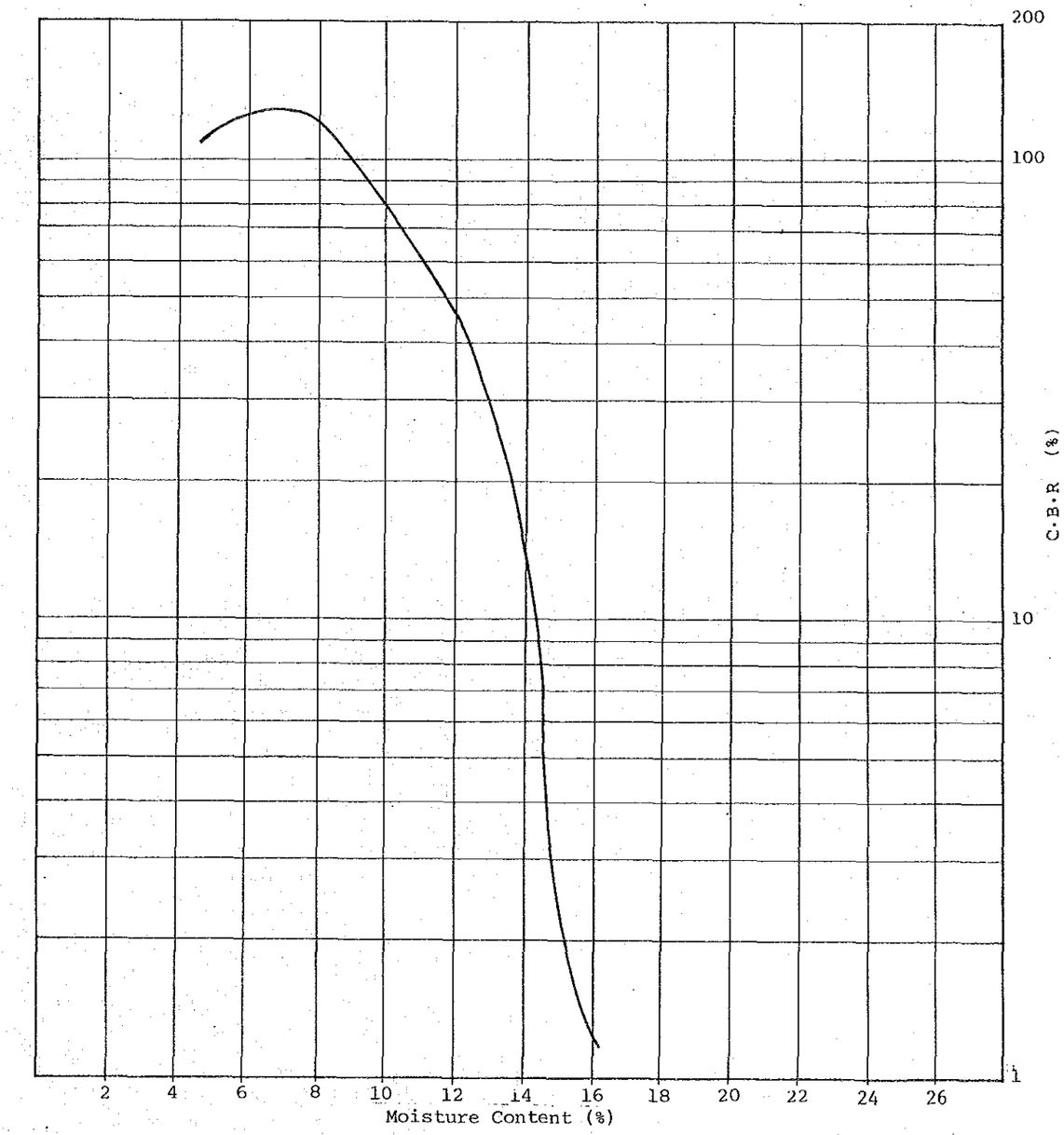


Results. Liquid limit (LL) : 43.0
Plastic limit (PL): 30.0
Plasticity index (PI) : 13%
Linear shrinkage : 7%

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C = 43%
Optimum Moisture Content = 12.3 %



RESULTS OF SOIL TEST

SAMPLE NO. 2
LOCATION MABOLE

(1) SPECIFIC GRAVITY TEST

DATE 29 October, 1979

Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		42.9	42.3		
Wt.(Pycnometer+water) W'a in g		92.7	92.4		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		110.6	110.1		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	70.9	69.9		
	Wt.Container in g				
	Wo in g	28.0	27.6		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.76	2.78		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.748	2.768		
Mean value		Specific gravity $(15°C)^{20°C}$ = 2.76			

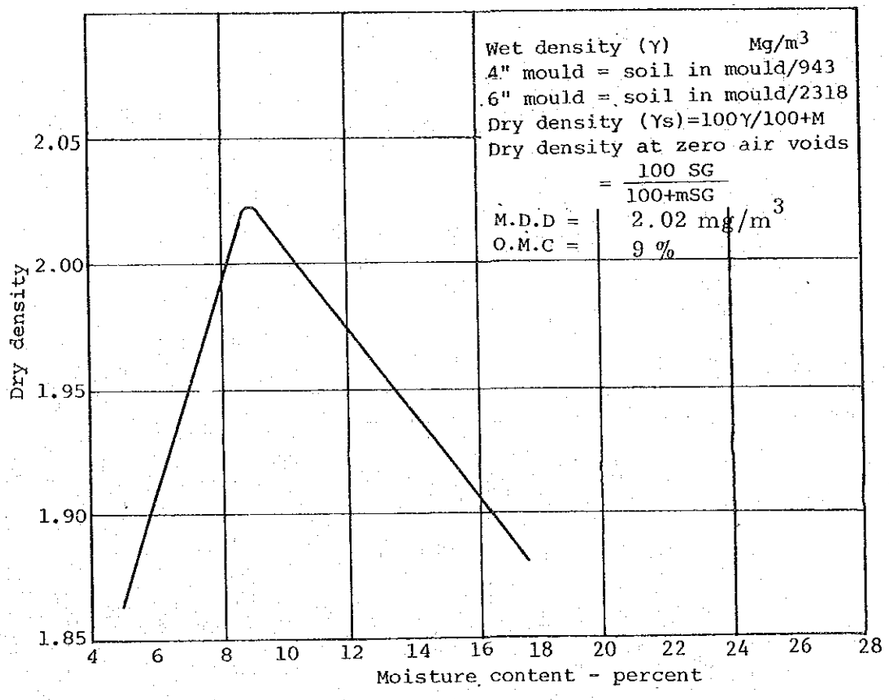
*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

DATE: 27 Oct. 79

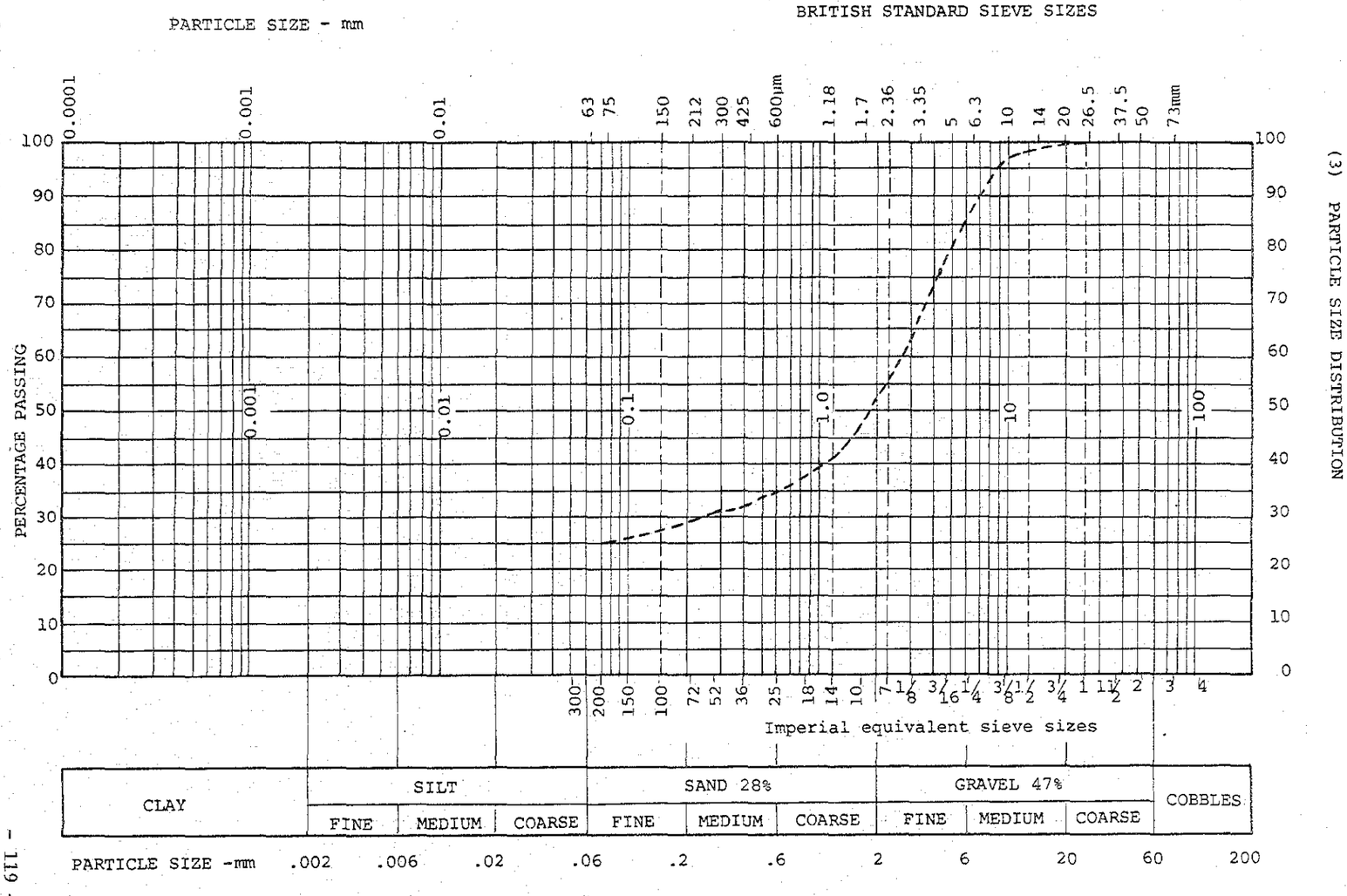
Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9251	10140	10063	10031				
WT. cylinder	grms.	4849	5042	4925	4909				
WT. wet soil	grms	4602	5098	5138	5122				
Wet density (γ)		1.99	2.20	2.22	2.21				
Container Number (Top)		12	11	29	36				
WT.wet soil + cont.	grms.	59.4	60.6	74.8	77.9				
WT.dried soil + cont.	grms.	56.6	56.0	67.0	68.4				
WT.container	grms.	8.0	7.9	8.0	7.9				
WT.moisture	grms.	2.8	4.6	7.8	9.5				
WT.dried soil	grms.	53.8	51.4	59.0	60.5				
Moisture content (m)	%	5.20	8.95	13.18	15.70				
Container Number (Base)		39	15	45	42				
WT. wet soil + cont.	grms.	61.4	67.6	77.6	86.4				
WT. dried soil + cont.	grms.	58.3	62.5	69.3	75.6				
WT.container	grms.	8.0	8.0	7.9	7.9				
WT.moisture	grms.	3.1	5.1	8.3	10.8				
WT.dried soil	grms.	55.2	57.4	61.0	67.7				
Moisture content(m)	%	5.61	8.89	13.61	15.9				
Dry density (γs)		1.88	2.02	1.95	1.91				



Source : JICA mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF



Source : JICA Mission

DATE 29 October '79

DEPTH 2 ft. - 5 ft.

SAMPLE NO. 2

LOCATION MABOLE

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	16		0.5		99.5	
14	1/2	20		0.6		98.9	1500
10	3/8	68		2.1		96.8	1000
6.3	1/4	321		9.8		87.0	750
5	3/16	294		9.0		78.0	500
3.35	1/8		6.01				300
2.36	7	185		22.9		55.1	200
1.18	14	78		14.3		40.8	100
600 µm	25	33		6.0		34.8	75
425	36	14		2.6		32.2	60
300	52	8		1.5		30.7	50
212	72	11		2.0		28.7	45
150	100	12		2.2		26.5	40
75	200	11		2.0		24.5	28
63	/						25

WEIGHT OF DRY MATERIAL 3281 GMS

SAMPLE NO. 2

LOCATION MABOLE

RESULTS OF SOIL TEST

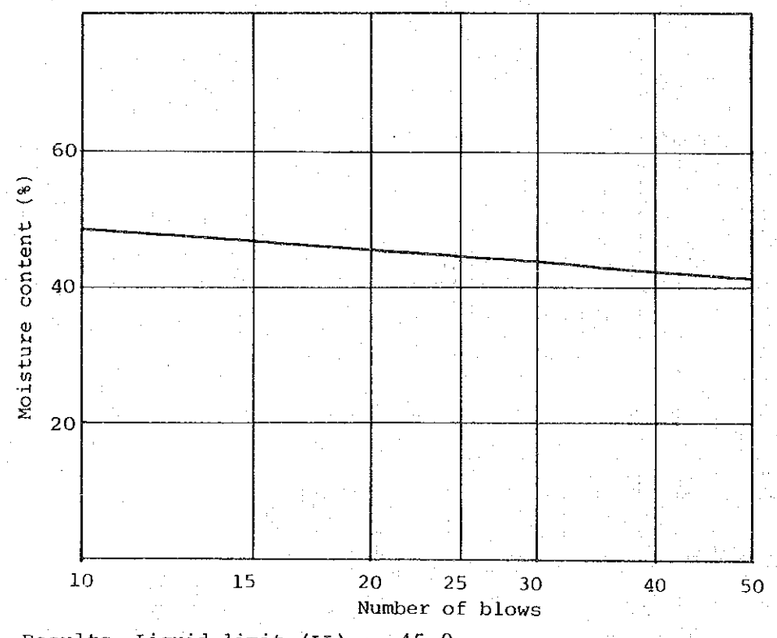
(4) CONSISTENCY

Date : 29 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. .2....
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		44	32	24	17	12	-	-
Container No.		18	20	13	26	31	35	18
Mass of wet soil + container	g	25.5	27.6	27.8	25.3	28.0	17.8	18.4
Mass of dry soil + container	g	20.3	21.7	21.6	19.7	21.6	15.6	16.1
Mass of container	g	8.0	8.0	7.9	7.8	8.2	7.9	8.1
Mass of moisture	g	5.2	5.9	6.2	5.6	6.4	2.2	2.3
Mass of dry soil	g	12.3	13.7	13.7	11.8	13.4	7.7	8.0
Moisture content	%	42.3	43.1	45.3	47	48	28.3	28.5

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

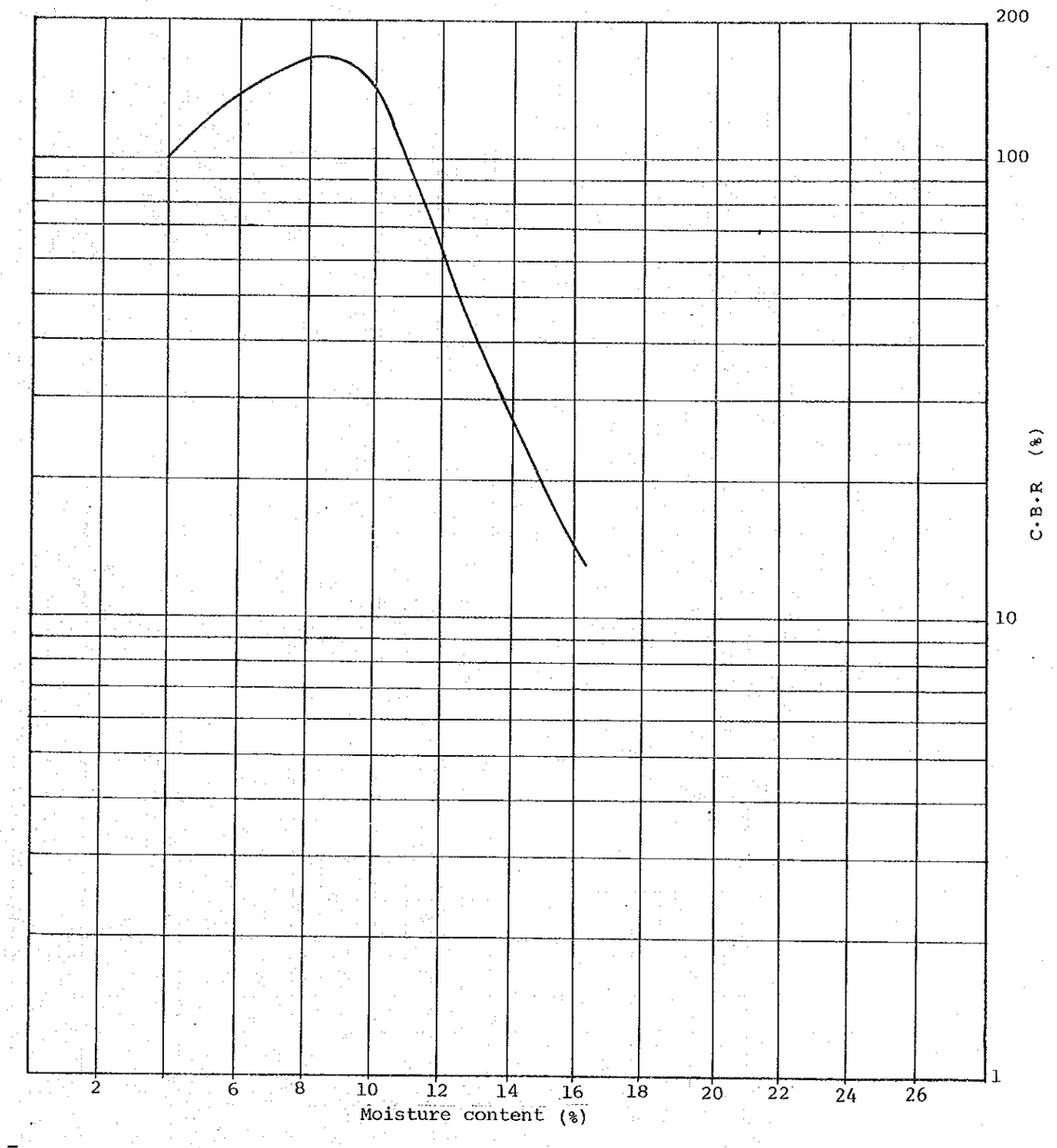


Results. Liquid limit (LL) : 45.0
Plastic limit (PL): 28.0
Plasticity index (PI) : 17 %
Linear shrinkage : 10 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 160%
Optimum Moisture Content = 9%



RESULTS OF SOIL TEST

SAMPLE NO. 3
LOCATION MAFURE
DATE: 17 Oct.79

(1) SPECIFIC GRAVITY TEST

DATE 29 October, 1979

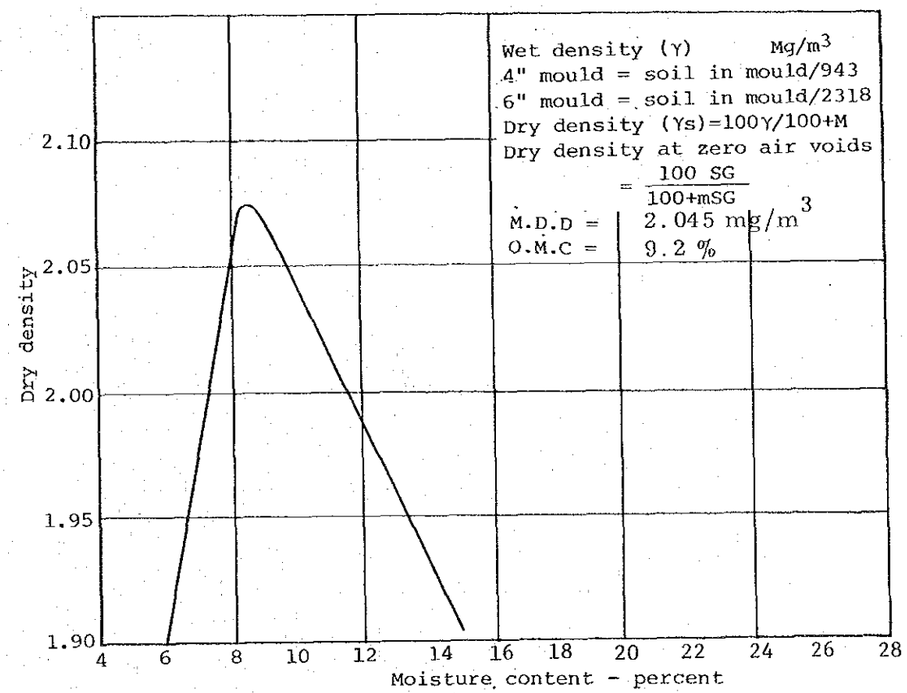
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		38.5	39.0		
Wt.(Pycnometer+water) W'a in g		89.3	90.0		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		105.0	106.0		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	63.5	64.5		
	Wt.Container in g				
	Wo in g	25.0	25.5		
Deflocculating agent and its amount		-	-	-	-
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.68	2.68		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	G(15°C)=K×G(T°C)	2.668	2.668		
Mean value		Specific gravity (15°C) / 20°C = 2.66			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	10026	10015	10220	9941				
WT. cylinder	grms.	5354	4908	5036	4861				
WT. wet soil	grms	4672	5107	5184	5080				
Wet density (γ)		2.02	2.20	2.24	2.19				
Container Number (Top)		39	16	45	41				
WT.wet soil + cont.	grms.	56.8	59.4	74.4	70.1				
WT.dried soil + cont.	grms.	54.1	55.8	67.8	61.6				
WT.container	grms.	8.0	7.9	7.9	7.9				
WT.moisture	grms.	2.7	3.6	6.6	8.5				
WT.dried soil	grms.	46.1	47.9	59.9	53.7				
Moisture content (m)	%	5.86	7.52	11.02	15.83				
Container Number (Base)		42	37	11	28				
WT. wet soil + cont.	grms.	72.9	65.5	81.1	93.1				
WT. dried soil + cont.	grms.	69.2	61.2	73.5	83.5				
WT.container	grms.	7.9	8.0	7.9	8.1				
WT.moisture	grms.	3.7	4.3	7.6	9.6				
WT.dried soil	grms.	61.3	53.2	65.6	75.4				
Moisture content(m)	%	6.04	8.08	11.59	12.73				
Dry density (γs)		1.90	2.04	2.01	1.92				

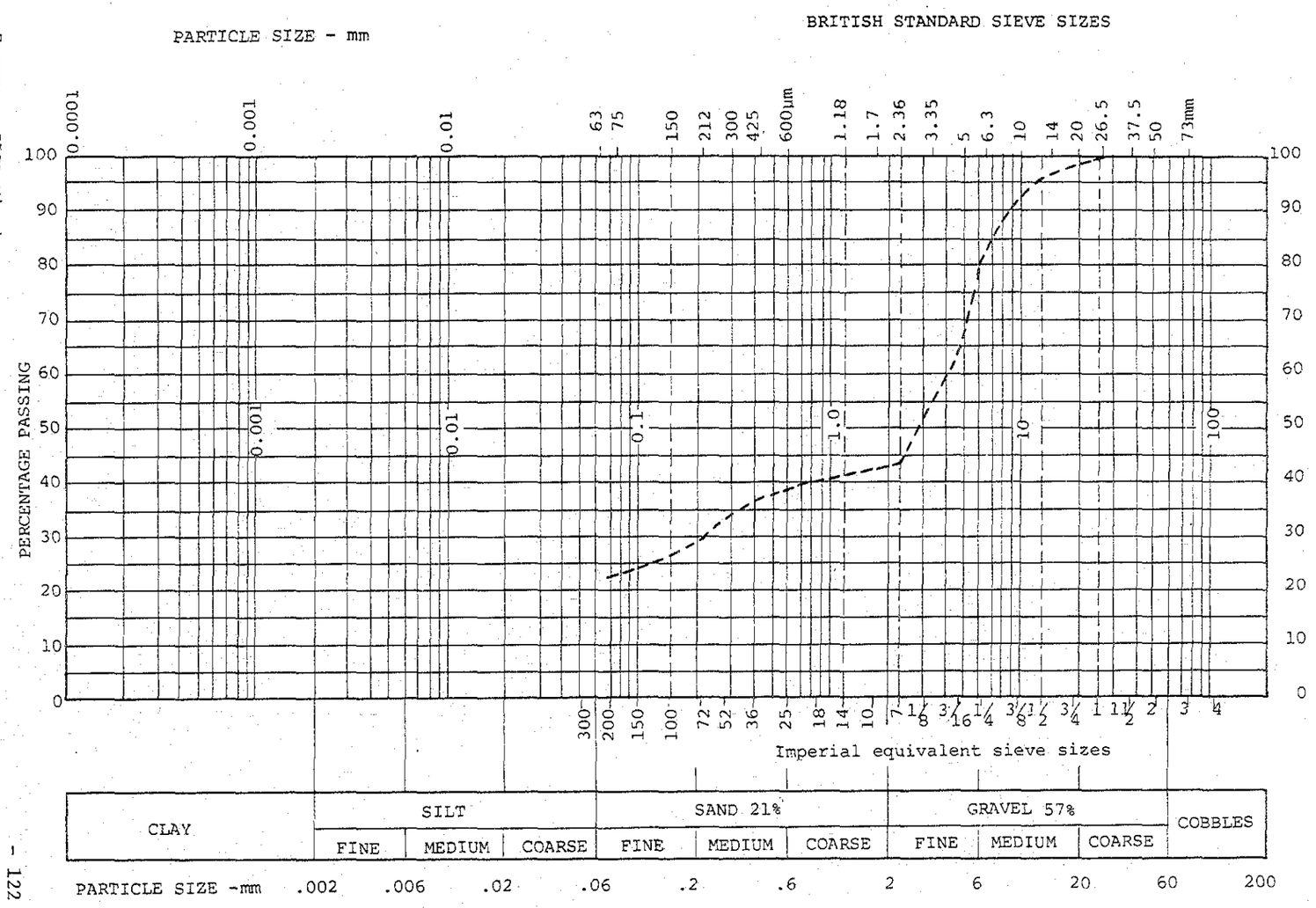


Source : JICA mission

Source : JICA Mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF SOIL TEST



DATE 29 October '79

DEPTH 2 ft. - 5 ft.

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	60		1.7		98.3	
14	1/2	80		2.2		96.1	1500
10	3/8	158		4.4		91.7	1000
6.3	1/4	545		15.2		76.5	750
5	3/16	450		12.5		64.0	500
3.35	1/8		5.05				300
2.36	7	140			19.6	44.4	200
1.18	14	27			3.8	40.6	100
600 µm	25	12			1.7	38.9	75
425	36	15			2.1	36.8	60
300	52	18			2.5	34.3	50
212	72	30			4.2	30.1	45
150	100	27			3.8	26.3	40
75	200	23			3.2	23.1	28
63	/						25

WEIGHT OF DRY MATERIAL 3593 GMS

SAMPLE NO. 3

LOCATION MAFURE

SAMPLE NO. 3

LOCATION MAFURE

RESULTS OF SOIL TEST

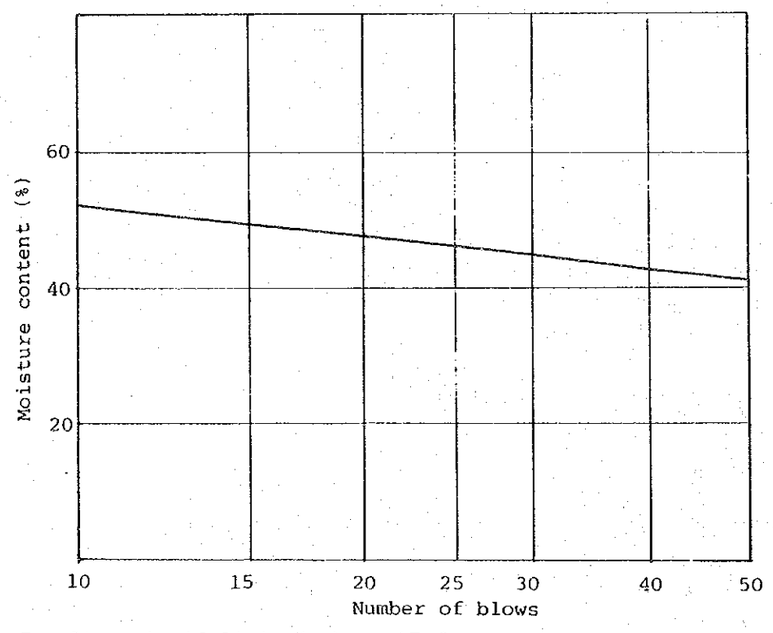
(4) CONSISTENCY

Date : 29 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ...1...
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		49	34	28	19	13		
Container No.		43	8	26	17	10	27	35
Mass of wet soil + container	g	33.1	26.3	27.8	23.2	29.8	19.0	23.0
Mass of dry soil + container	g	25.8	20.8	21.9	18.2	22.4	16.5	19.4
Mass of container	g	8.0	8.0	7.8	8.0	7.8	7.9	7.9
Mass of moisture	g	7.3	5.5	5.9	5.0	7.4	2.5	3.6
Mass of dry soil	g	17.8	12.8	13.1	10.2	14.6	8.6	11.5
Moisture content	%	41.0	43	45	49	51	29.1	31.3

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

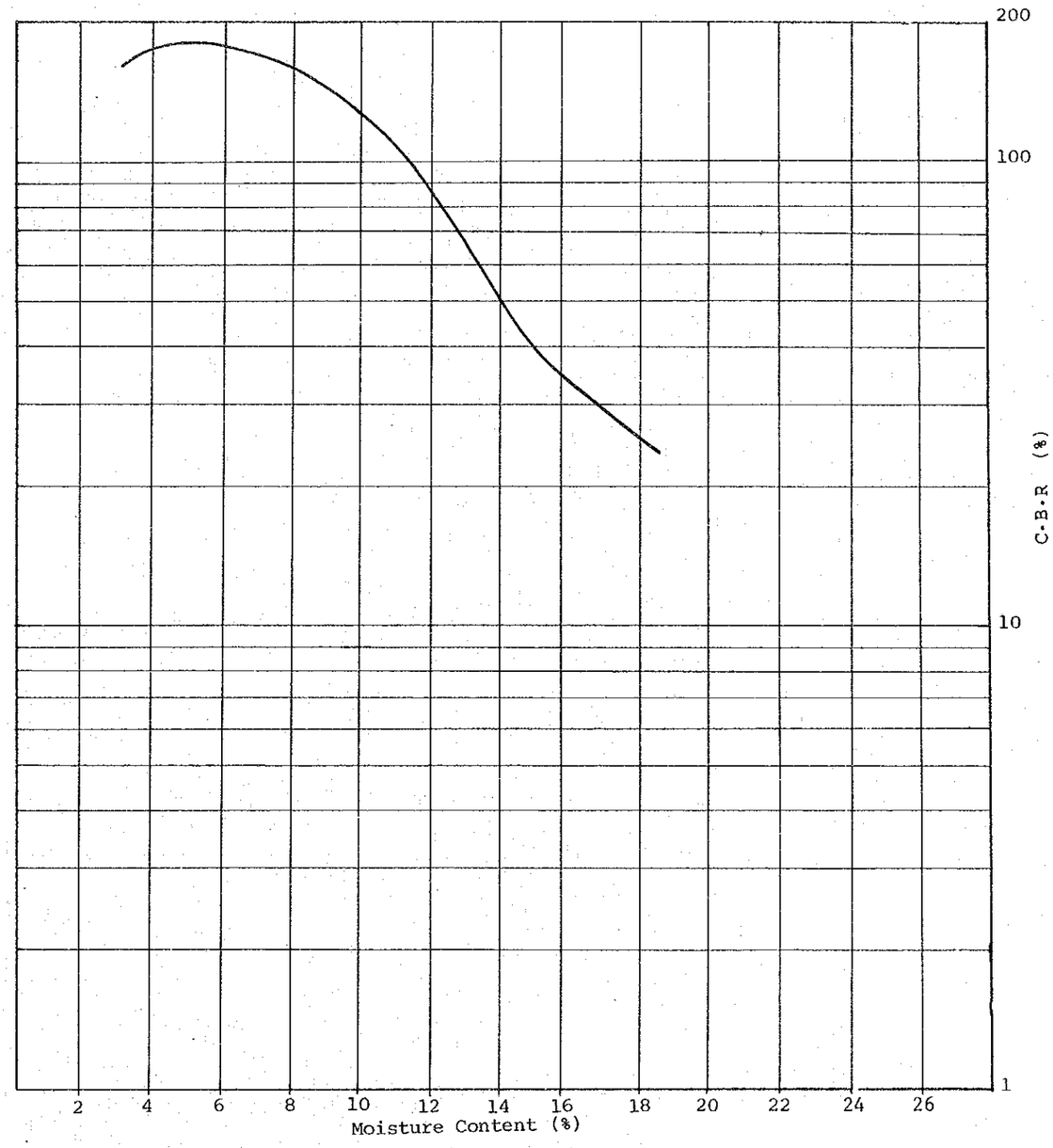


Results. Liquid limit (LL) : 47.0
Plastic limit (PL): 30.0
Plasticity index (PI) : 17 %
Linear shrinkage : 6 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 130%
Optimum Moisture Content = 9.2 %



RESULTS OF SOIL TEST

SAMPLE NO. 4
LOCATION GBENDEMBU

(1) SPECIFIC GRAVITY TEST

DATE 29 October, 1979

Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		42.9	31.1		
Wt.(Pycnometer+water) W'a in g		92.7	80.3		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		114.6	104.7		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	77.7	69.9		
	Wt.Container in g				
	Wo in g	34.8	38.8		
Deflocculating agent and its amount		-	-		
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.69	2.69		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.678	2.678		
Mean value		Specific gravity $(15°C)_{20°C}$ = 2.68			

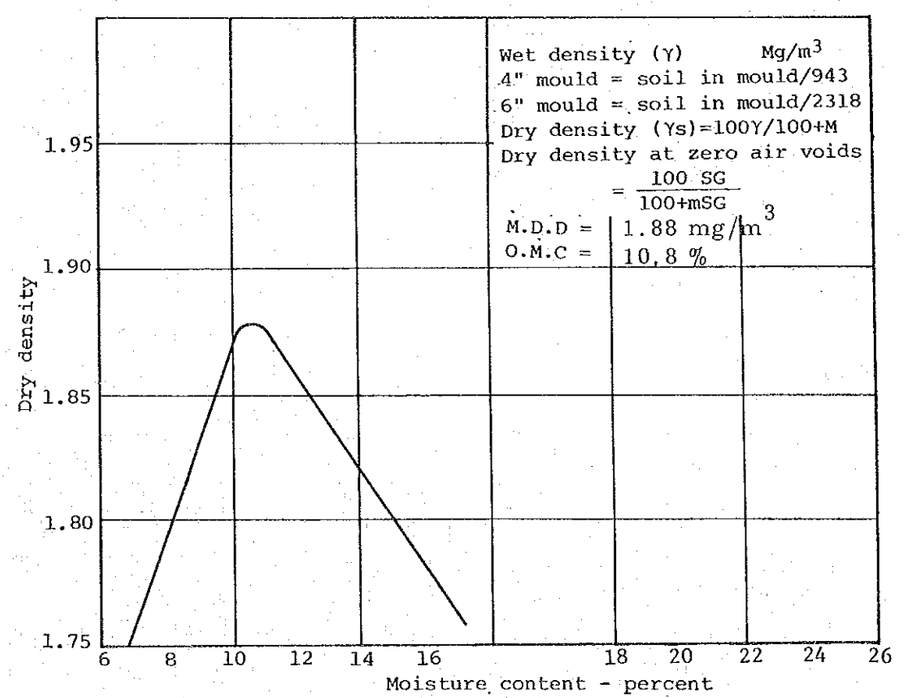
*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

DATE: 18 Oct. 79

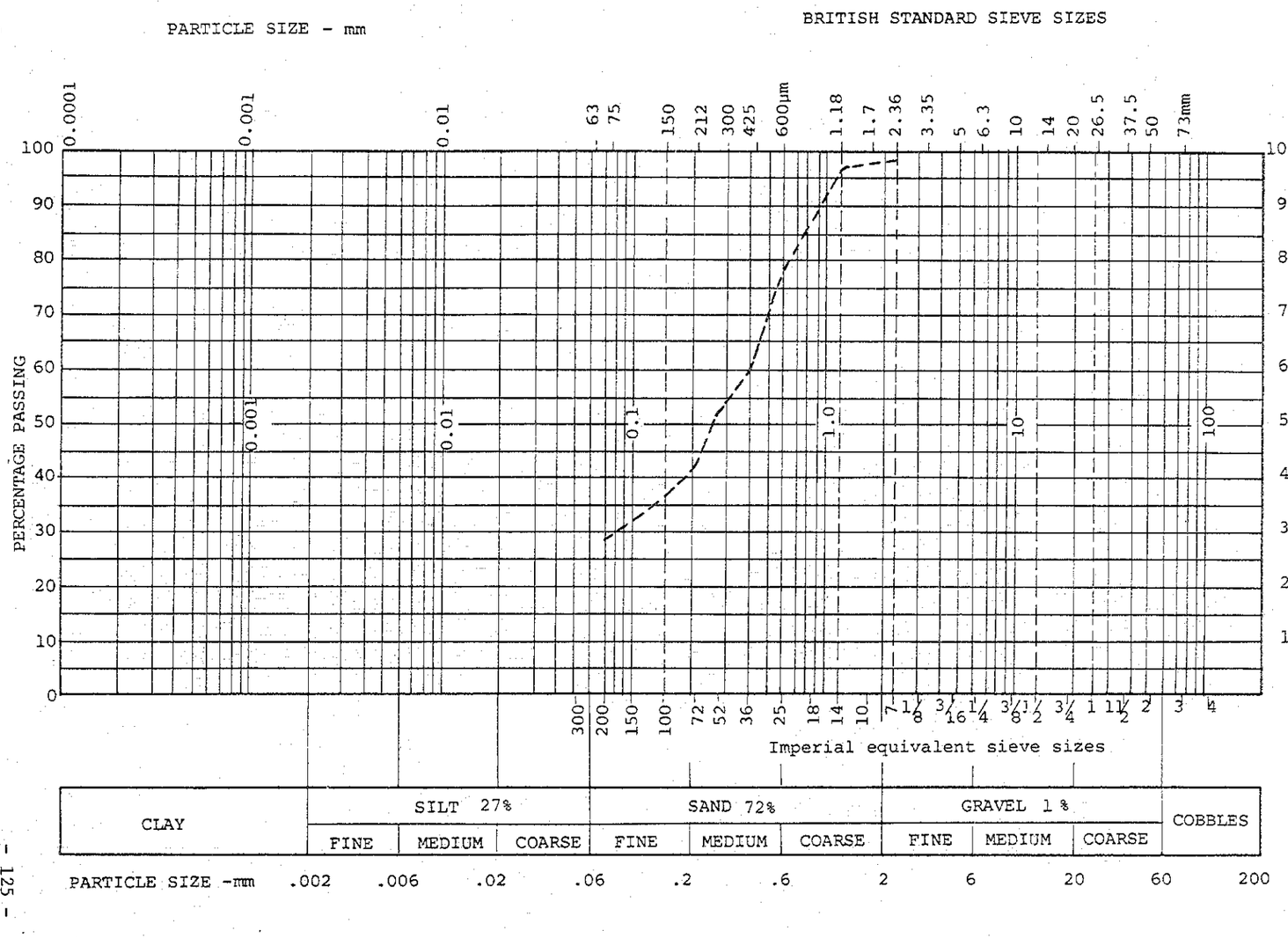
Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9562	9766	9867	9635				
WT. cylinder	grms.	5250	5010	5039	4851				
WT. wet soil	grms	4312	4756	4828	4784				
Wet density (γ)		1.86	2.05	2.08	2.06				
Container Number (Top)		29	28	17	12				
WT.wet soil + cont.	grms.	57.3	50.9	54.7	67.5				
WT.dried soil + cont.	grms.	54.2	46.7	50.0	59.2				
WT.container	grms.	7.9	8.1	7.8	8.0				
WT.moisture	grms.	3.1	4.2	4.7	8.3				
WT.dried soil	grms.	46.3	38.6	42.2	51.2				
Moisture content (m)	%	6.69	10.88	11.14	16.2				
Container Number (Base)		42	45	11	41				
WT. wet soil + cont.	grms.	65.6	55.8	59.8	66.7				
WT. dried soil + cont.	grms.	62.3	51.5	54.8	58.4				
WT.container	grms.	7.9	7.9	7.9	7.9				
WT.moisture	grms.	3.3	4.3	5.0	8.4				
WT.dried soil	grms.	54.4	43.6	47.5	50.5				
Moisture content(m)	%	6.06	9.86	10.52	16.63				
Dry density (γs)		1.75	1.86	1.88	1.77				



Source : JICA mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF SOIL TEST



Source : JICA Mission

SAMPLE NO. 4
LOCATION GIBENDEMBU

DATE 29 October '79
DEPTH 2 ft. - 5 ft.

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4						
14	1/2						1500
10	3/8						1000
6.3	1/4						750
5	3/16						500
3.35	1/8						300
2.36	7	2		0.6		99.4	200
1.18	14	10		2.8		96.6	100
600 µm	25	67		19.1		77.5	75
425	36	62		17.7		59.8	60
300	52	26		7.4		62.4	50
212	72	32		9.1		43.3	45
150	100	26		7.4		35.9	40
75	200	23		6.5		29.4	28
63	/						25

WEIGHT OF DRY MATERIAL 351 GMS

SAMPLE NO.4

LOCATION
GBENDEMBU

RESULTS OF SOIL TEST

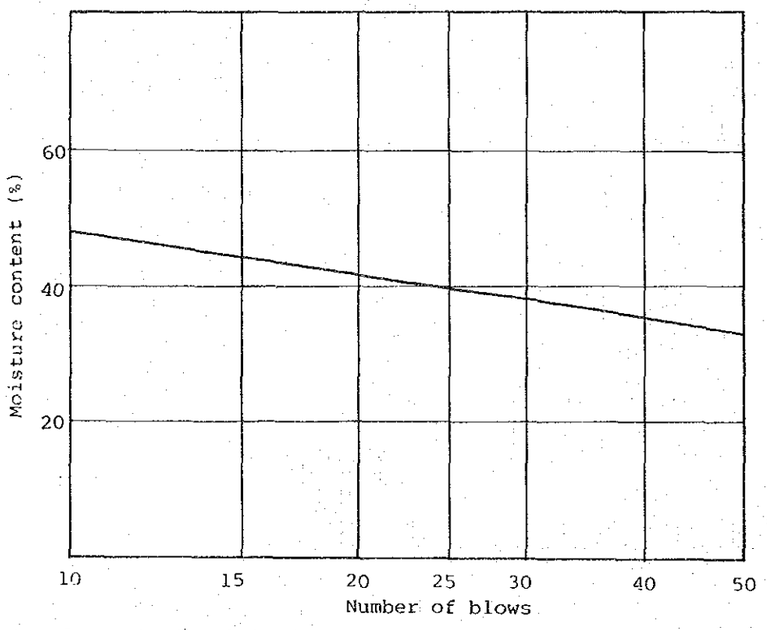
(4) CONSISTENCY

Date : 29 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..1....
Soil equilibrated with water for ..24... hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		44	31	22	16	11	-	-
Container No.		26	35	8	7	24	28	17
Mass of wet soil + container	g	26.7	33.5	28.6	29.7	30.8	22.9	22.5
Mass of dry soil + container	g	21.9	26.6	22.6	23.0	23.4	20.4	20.1
Mass of container	g	7.7	8.0	7.8	7.8	7.8	9.2	9.3
Mass of moisture	g	4.8	6.9	6.0	6.7	7.4	2.5	2.4
Mass of dry soil	g	14.2	18.6	14.8	15.2	15.6	11.2	10.8
Moisture content	%	33.7	37.0	40.5	44.1	47.4	22.4	22.2

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

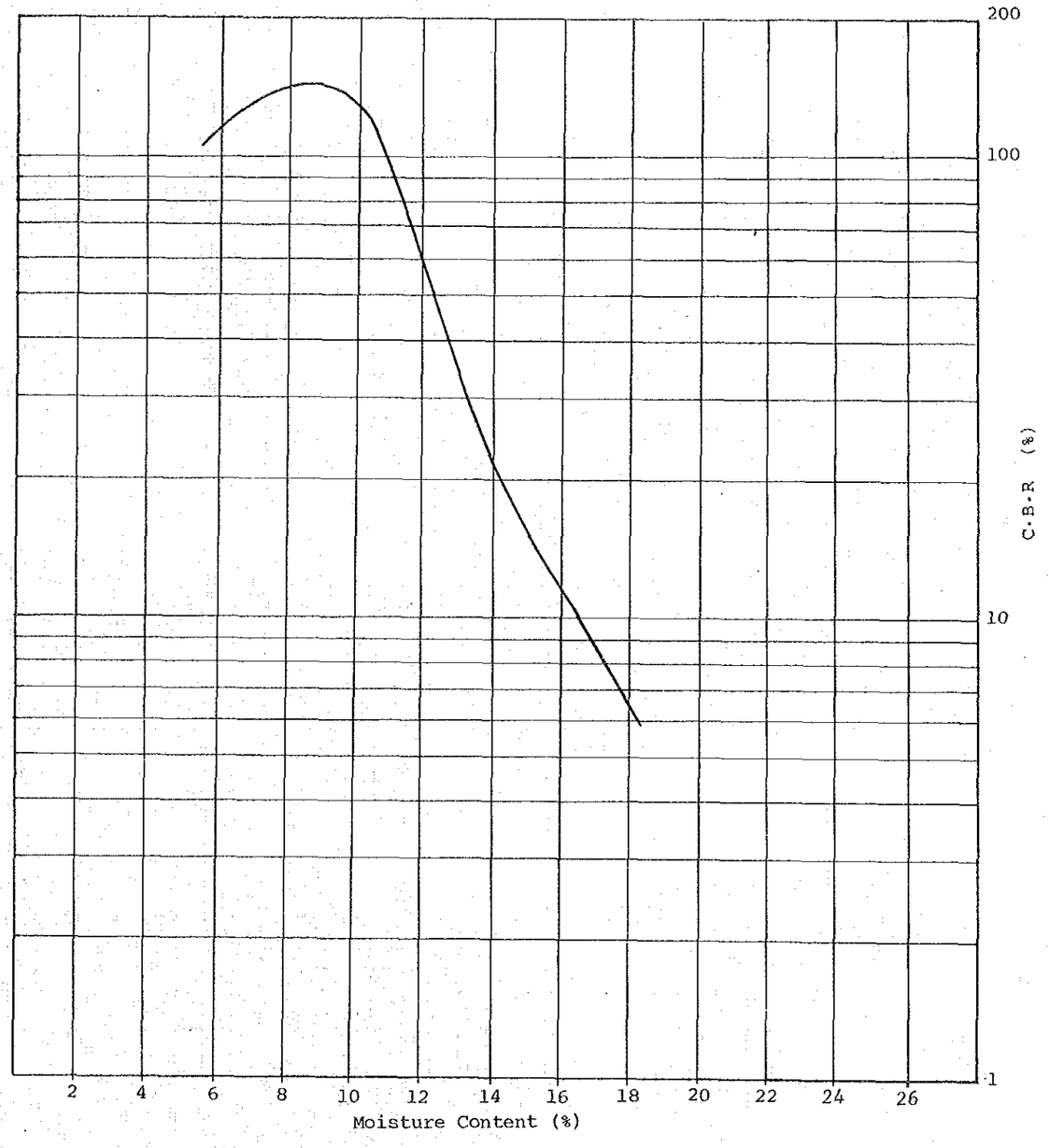


Results. Liquid limit (LL) : 40.0 %
Plastic limit (PL): 22.0
Plasticity index (PI) : 18 %
Linear shrinkage : 10 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 98 %
Optimum Moisture Content = 10.8 %



RESULTS OF SOIL TEST

SAMPLE NO. 5
LOCATION MAGBANDANI
DATE: 19 Oct. 79

(1) SPECIFIC GRAVITY TEST

DATE 29 October, 1979

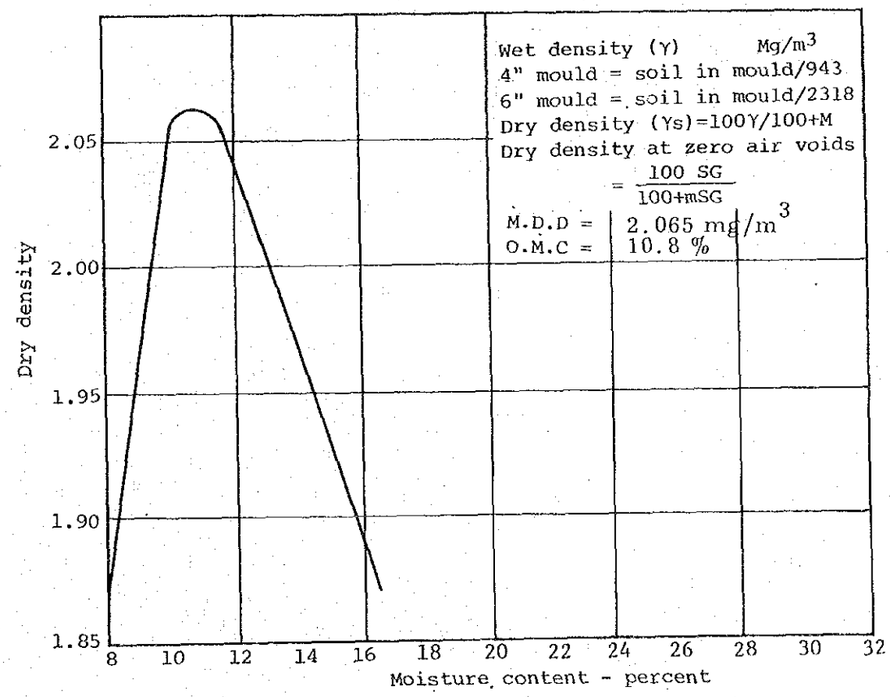
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		45.0	45.5		
Wt.(Pycnometer+water) W'a in g		95.0	95.5		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		111.0	111.7		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	70.0	70.8		
	Wt.Container in g				
	Wo in g	25.0	25.3		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.78	2.78		
Coefficient for temperature correction	K	0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.768	2.768		
Mean value		Specific gravity $(15°C)^{20°C}$ = 2.77			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9724	10390	10368	10318				
WT. cylinder	grms.	4985	5095	5082	5104				
WT. wet soil	grms	4739	5295	5286	5214				
Wet density (γ)		2.04	2.28	2.28	2.25				
Container Number (Top)		21	17	15	34				
WT.wet soil + cont.	grms.	75.8	73.0	84.0	94.8				
WT.dried soil + cont.	grms.	70.8	66.9	75.7	84.0				
WT.container	grms.	7.9	7.8	8.0	7.9				
WT.moisture	grms.	5.0	6.1	8.3	10.8				
WT.dried soil	grms.	62.9	59.1	67.7	76.1				
Moisture content (m)	%	7.95	10.32	12.26	14.19				
Container Number (Base)		22	12	36	29				
WT. wet soil + cont.	grms.	69.9	74.5	89.3	98.5				
WT. dried soil + cont.	grms.	65.0	68.3	80.2	88.2				
WT.container	grms.	8.0	8.0	7.9	7.8				
WT.moisture	grms.	4.9	6.2	9.1	10.3				
WT.dried soil	grms.	57.0	60.3	72.3	80.4				
Moisture content(m)	%	8.59	10.28	12.58	12.81				
Dry density (γs)		1.89	2.07	2.03	1.98				

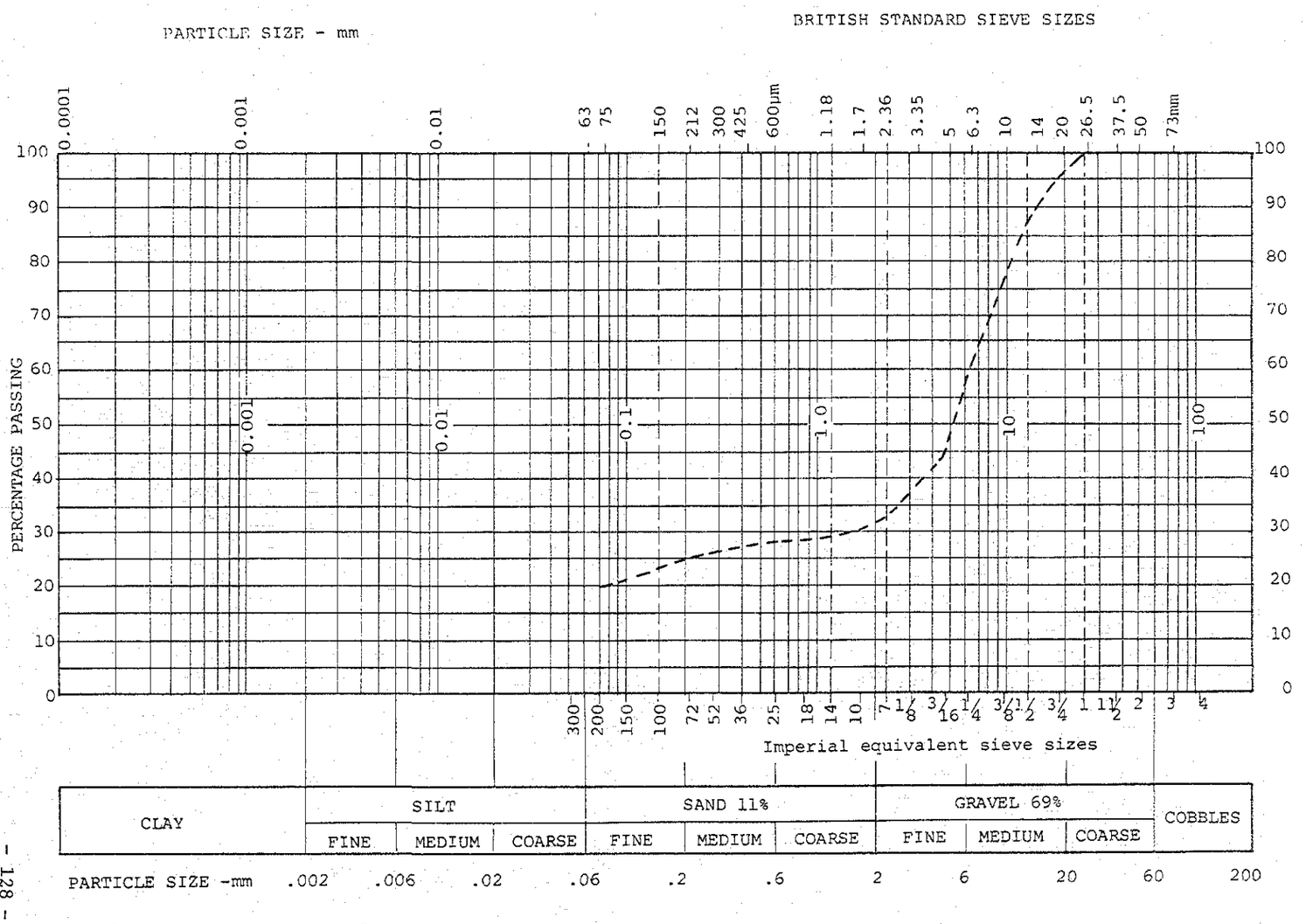


Source : JICA mission

Source : JICA Mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF SOIL TEST



DATE 29 October '79

DEPTH 2 ft. ~ 5 ft.

SAMPLE NO. 5

LOCATION MAGBANDANI

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	165		5.1		94.9	
14	1/2	296		9.2		85.7	1500
10	3/8	332		10.3		75.4	1000
6.3	1/4	879		21.2		54.2	750
5	3/16	316		9.8		44.4	500
3.35	1/8		2.7				300
2.36	7	150			12.5	31.9	200
1.18	14	32			2.7	29.2	100
600 µm	25	12			1.0	28.2	75
425	36	13			1.1	27.1	60
300	52	8			0.7	26.4	50
212	72	14			1.2	25.2	45
150	100	20			1.7	23.5	40
75	200	40			3.3	20.2	28
63	/						25

WEIGHT OF DRY MATERIAL 3,233 GMS

SAMPLE NO. 5

LOCATION :
MAGBANDANI

RESULTS OF SOIL TEST

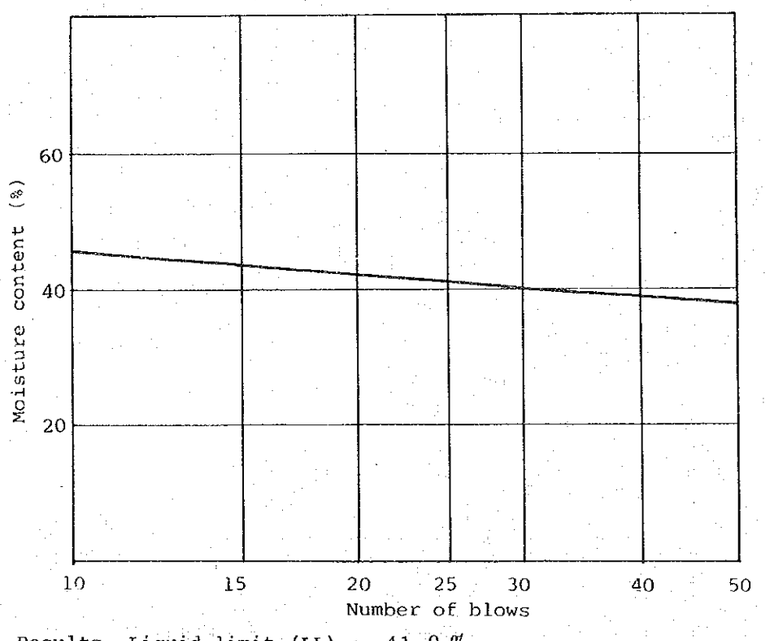
(4) CONSISTENCY

Date : 29 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..2..
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		41	32	27	16	11	-	-
Container No.		27	44	8	25	23	9	14
Mass of wet soil + container	g	27.1	27.3	25.1	29.8	30.1	15.1	16.0
Mass of dry soil + container	g	21.8	21.8	20.1	23.2	23.3	13.6	14.3
Mass of container	g	7.9	8.0	8.0	7.9	8.0	8.0	8.0
Mass of moisture	g	5.3	5.5	5.0	6.6	6.8	1.5	1.7
Mass of dry soil	g	13.9	13.8	12.1	15.3	15.3	5.6	6.3
Moisture content	%	38.1	39.8	41.3	43.1	44.5	27.0	26.8

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

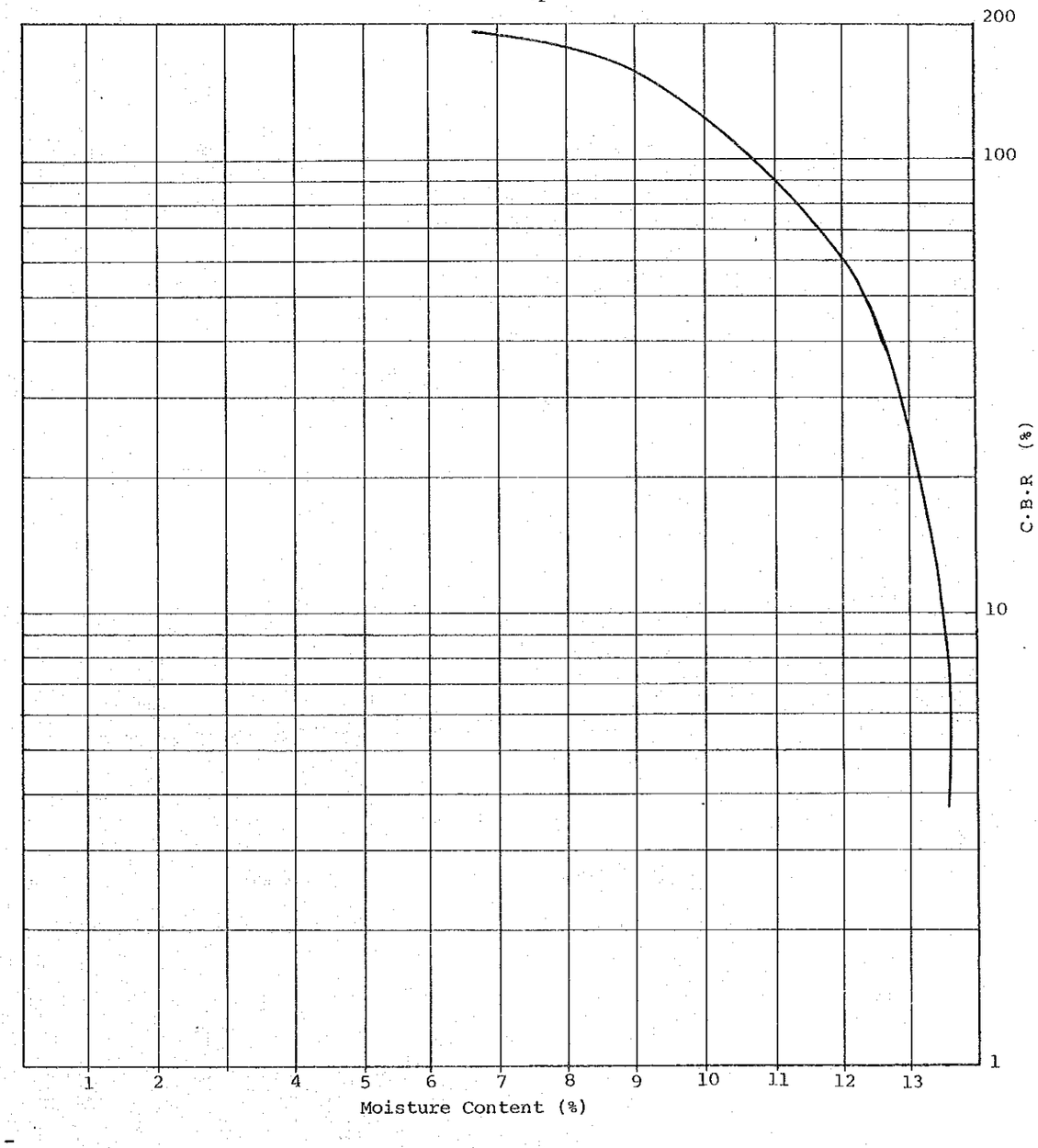


Results. Liquid limit (LL) : 41.0 %
Plastic limit (PL): 27.0
Plasticity index (PI) : 14.0 %
Linear shrinkage : 8 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 100%
Optimum Moisture Content 10.8%



RESULTS OF SOIL TEST

SAMPLE NO. 6
LOCATION MASAKTABA
DATE: 19 Oct. 1979

(1) SPECIFIC GRAVITY TEST

DATE 30 October, 1979

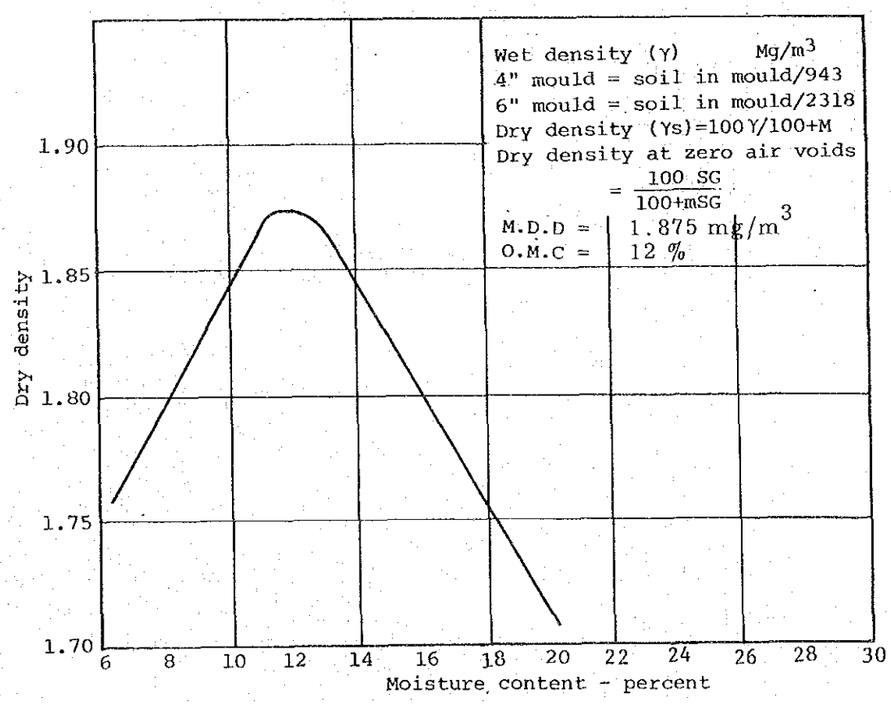
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		40.6	41.0		
Wt.(Pycnometer+water) W'a in g		90.4	89.9		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		109.1	109.8		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	70.1	72.6		
	Wt.Container in g				
	Wo in g	29.5	31.6		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.73	2.70		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.718	2.688		
Mean value		Specific gravity (15°C) / 20°C = 2.69			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

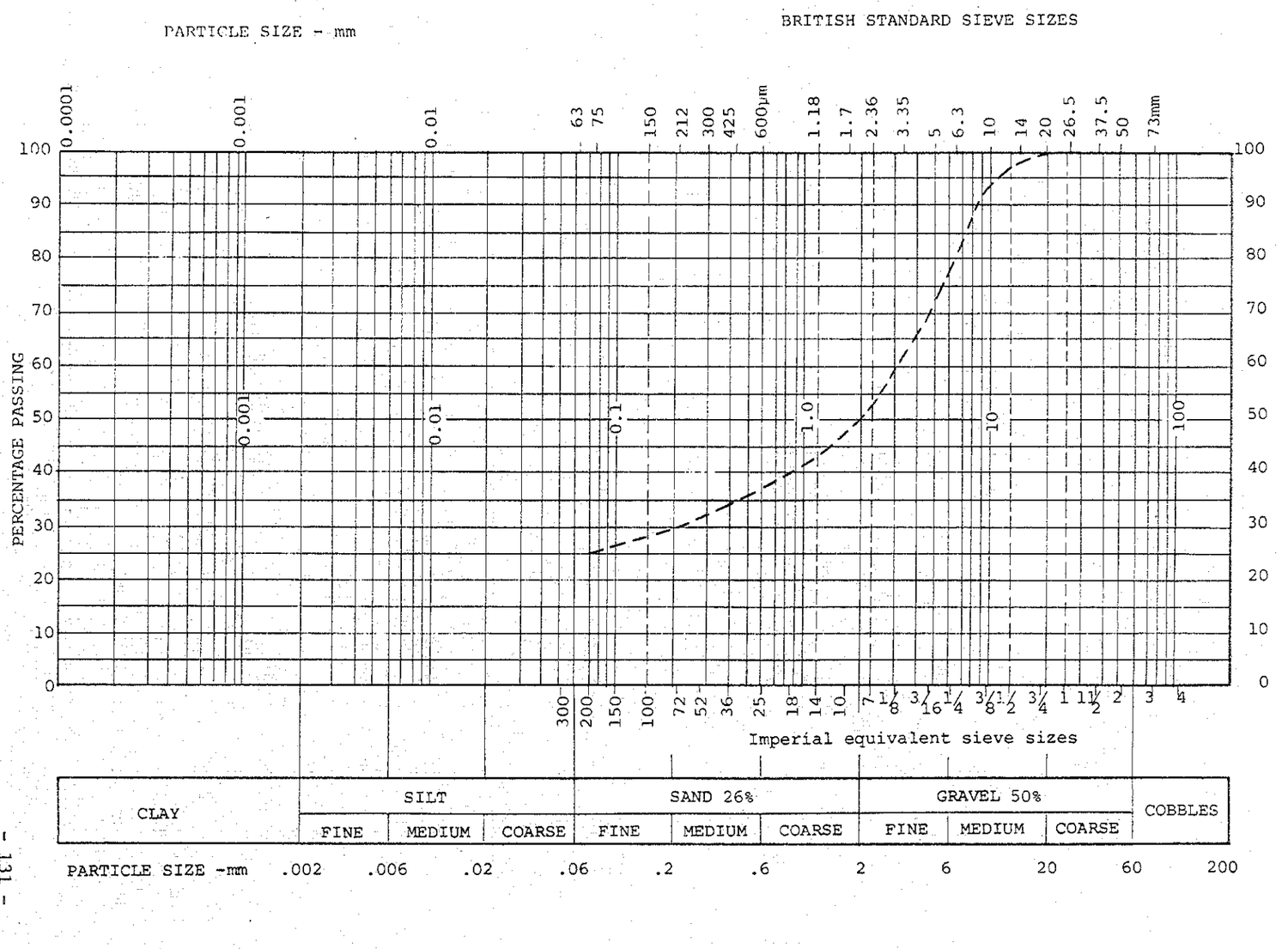
Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9284	9822	10215	9761	9618			
WT. cylinder	grms.	4858	5080	5392	4908	4852			
WT. wet soil	grms	4426	4742	4823	4853	4766			
Wet density (γ)		1.91	2.05	2.08	2.09	2.06			
Container Number (Top)		16	37	41	40	28			
WT.wet soil + cont.	grms.	57.9	68.0	57.3	75.9	79.5			
WT.dried soil + cont.	grms.	54.7	62.6	52.3	67.3	67.4			
WT.container	grms.	7.9	8.0	7.9	8.0	8.1			
WT.moisture	grms.	3.2	5.4	5.0	8.6	12.1			
WT.dried soil	grms.	46.8	54.6	44.4	59.3	59.3			
Moisture content (m)	%	6.83	9.89	11.26	14.50	20.41			
Container Number (Base)		22	17	34	21	38			
WT. wet soil + cont.	grms.	61.5	67.6	55.6	76.8	75.3			
WT. dried soil + cont.	grms.	57.8	61.8	50.8	67.4	64.1			
WT.container	grms.	8.0	7.8	7.9	7.9	7.9			
WT.moisture	grms.	3.7	5.8	4.8	9.4	11.2			
WT.dried soil	grms.	49.8	54.0	42.9	59.5	56.2			
Moisture content(m)	%	7.43	10.74	11.18	15.79	19.93			
Dry density (γs)		1.78	1.85	1.87	1.82	1.71			



Source : JICA mission



Source : JICA Mission

DATE 29 October '79

DEPTH 2 ft. - 5 ft.

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	14		0.4		99.6	
14	1/2	67		2.1		97.5	1500
10	3/8	144		4.4		93.1	1000
6.3	1/4	457		14.1		79.0	750
5	3/16	323		9.9		69.1	500
3.35	1/8		5.06				300
2.36	7	111		17.3		51.8	200
1.18	14	55		8.6		43.2	100
600 µm	25	39		6.1		37.1	75
425	36	23		3.6		33.5	60
300	52	11		1.7		31.8	50
212	72	14		2.2		29.6	45
150	100	15		2.3		27.3	40
75	200	16		2.5		24.8	28
63	/						25

WEIGHT OF DRY MATERIAL 3247 GMS

SAMPLE NO. 6

LOCATION MASAKTABA

SAMPLE NO. 6

LOCATION :
MASAKTABA

RESULTS OF SOIL TEST

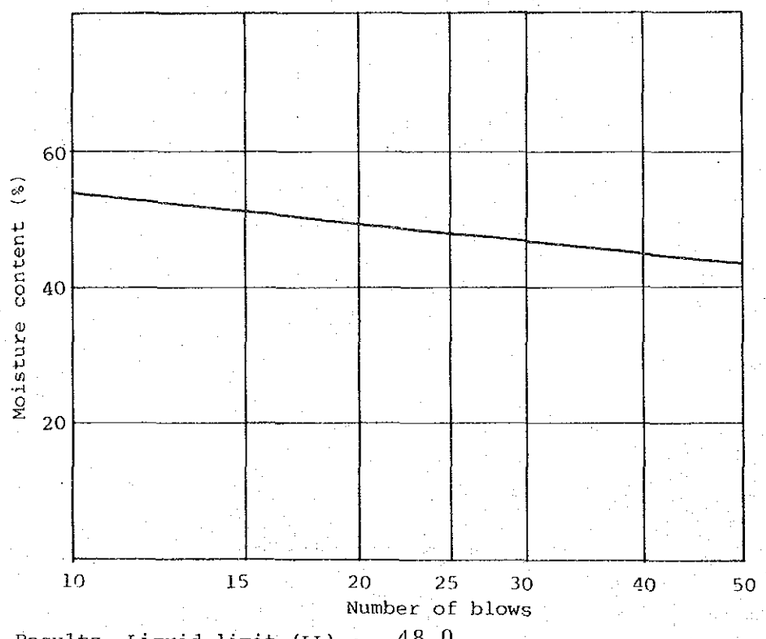
(4) CONSISTENCY

Date : 30 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..1....
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test) Container No.		47 18	33 32	22 27	18 44	13 23	- 24	- 30
Mass of wet soil + container	g	36.3	32.3	30.2	32.2	27.0	19.8	20.0
Mass of dry soil + container	g	27.6	24.5	22.8	24.2	20.4	17.7	17.8
Mass of container	g	8.0	8.0	7.9	8.0	8.0	8.0	7.9
Mass of moisture	g	8.7	7.8	7.4	8.0	6.6	2.1	2.2
Mass of dry soil	g	19.6	16.5	14.9	16.2	12.4	9.7	9.9
Moisture content	%	44.4	47.3	48.9	49.4	53.2	21.6	22.2

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

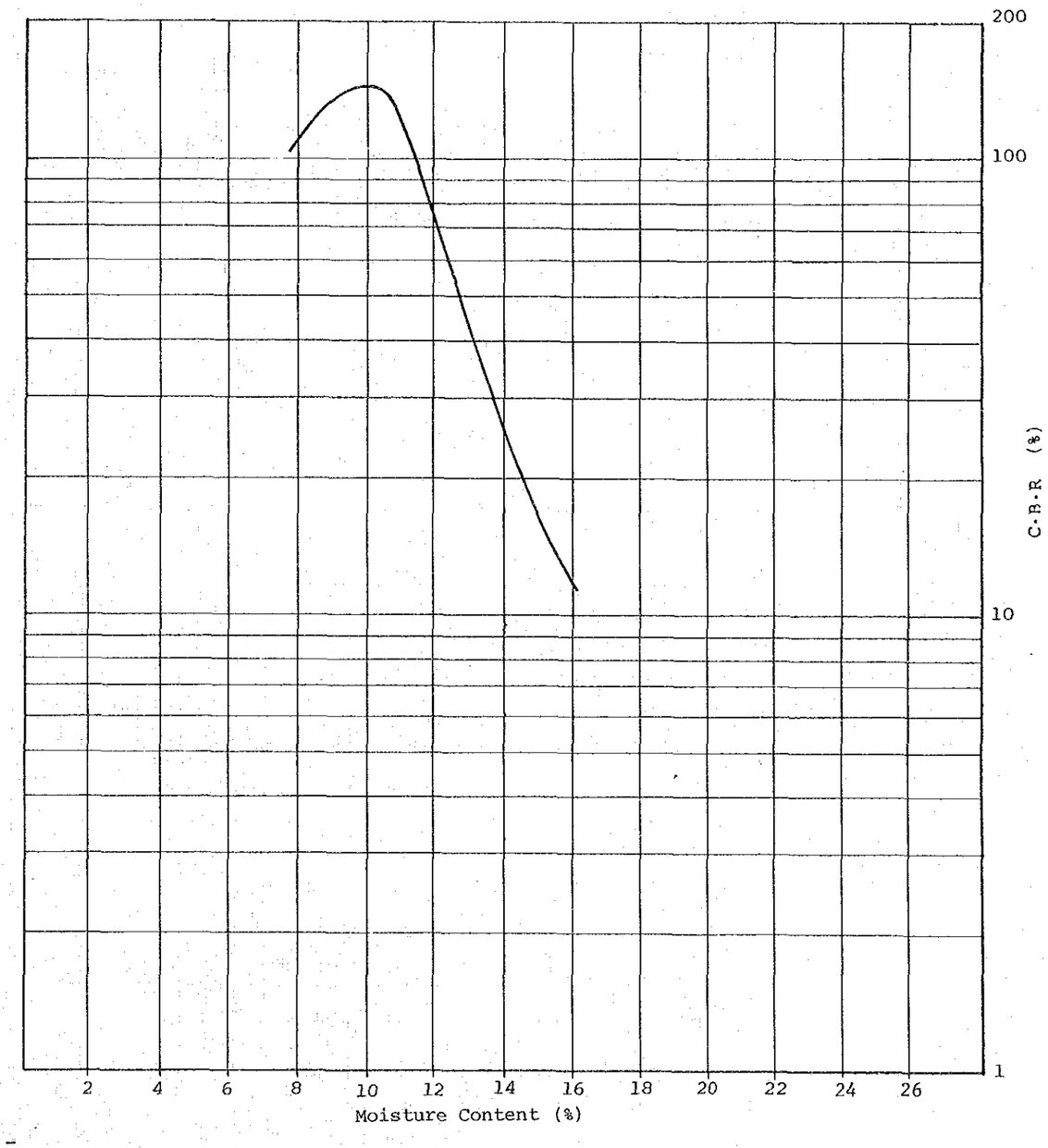


Results. Liquid limit (LL) : 48.0
Plastic limit (PL): 22.0
Plasticity index (PI) : 26.0 %
Linear shrinkage : 12 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 74 %
Optimum Moisture Content 12%



RESULTS OF SOIL TEST

SAMPLE NO. 7
LOCATION KAMARANKA
DATE: 20 Oct. 79

(1) SPECIFIC GRAVITY TEST

DATE 30 October, 1979

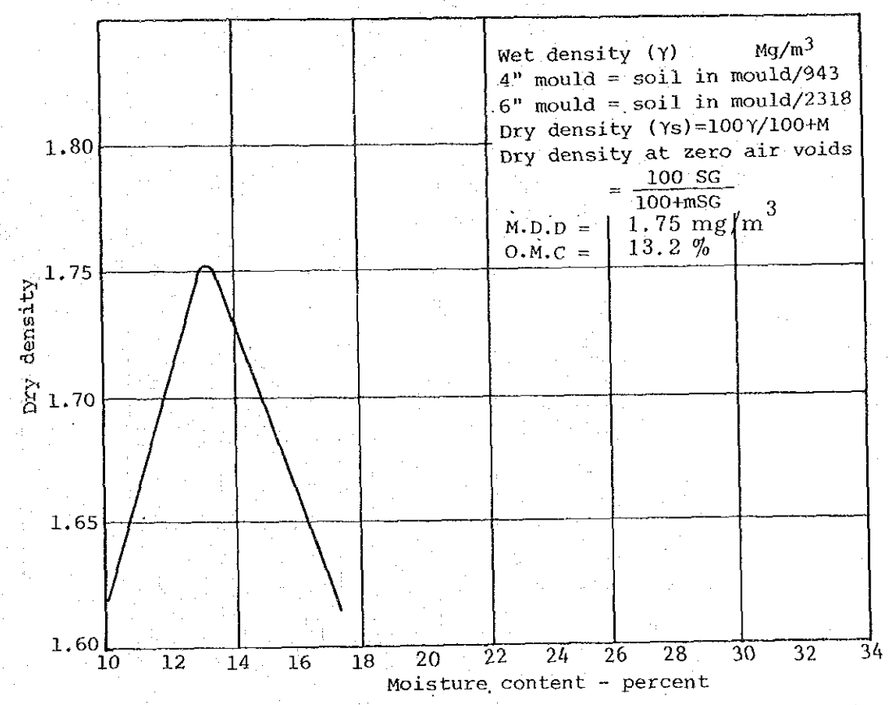
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		42.9	42.3		
Wt.(Pycnometer+water) W'a in g		92.7	92.4		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		107.0	106.9		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	65.8	65.6		
	Wt.Container in g				
	Wo in g	22.9	23.3		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.66	2.65		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.648	2.638		
Mean value		Specific gravity $\frac{(15°C)}{20°C}$ = 2.64			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

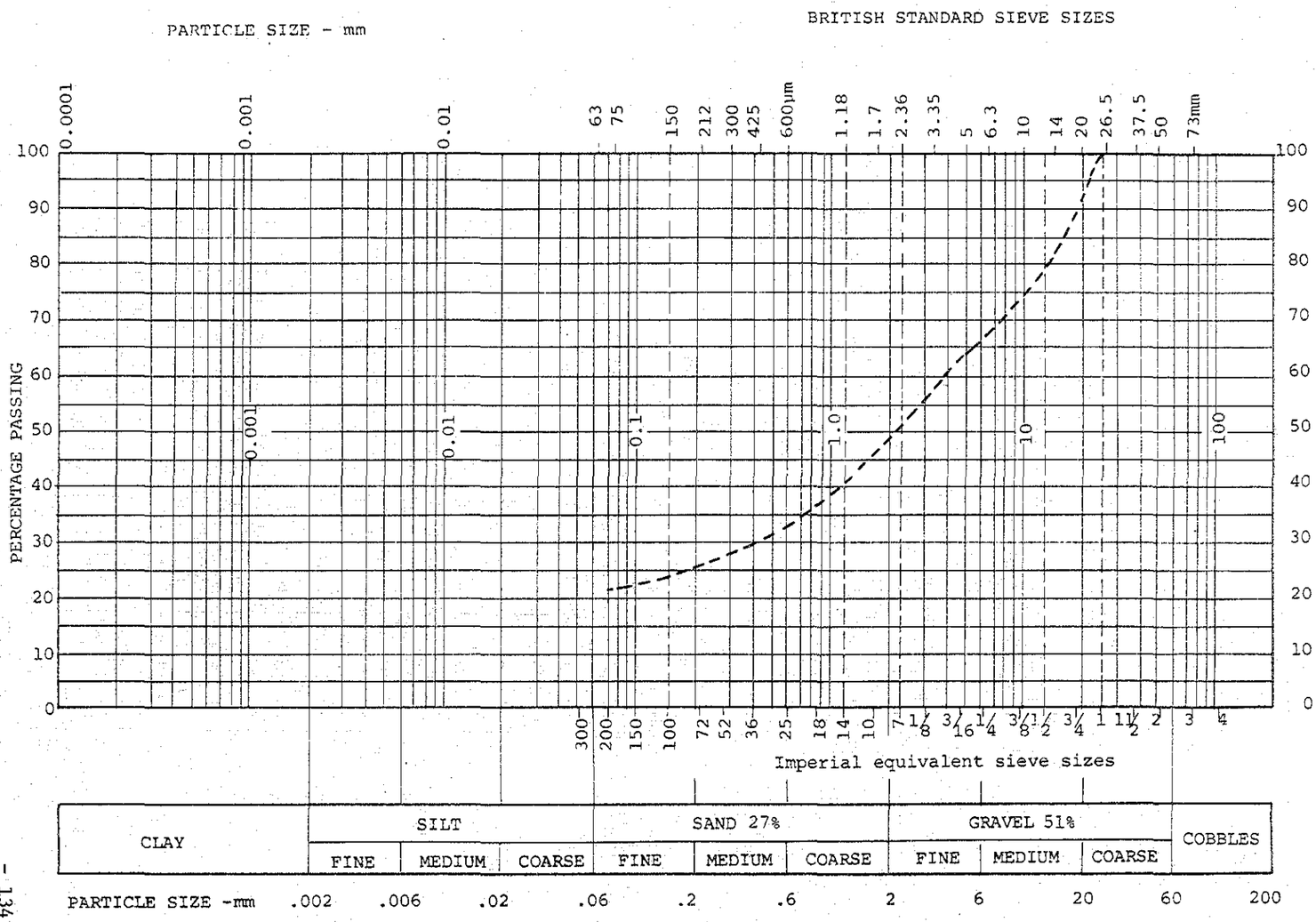
Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9175	9697	9518	9470				
WT. cylinder	grms.	5054	5112	4965	5017				
WT. wet soil	grms	4121	4585	4553	4453				
Wet density (γ)		1.78	1.98	1.96	1.92				
Container Number (Top)		19	38	28	11				
WT.wet soil + cont.	grms.	56.7	49.8	63.9	50.8				
WT.dried soil + cont.	grms.	52.2	45.2	56.8	44.7				
WT.container	grms.	7.8	7.9	8.1	7.9				
WT.moisture	grms.	4.5	4.6	7.1	6.1				
WT.dried soil	grms.	44.4	37.3	48.7	36.8				
Moisture content (m)	%	10.14	12.33	14.58	16.58				
Container Number (Base)		36	39	41	34				
WT. wet soil + cont.	grms.	46.8	51.7	70.4	55.1				
WT. dried soil + cont.	grms.	43.3	46.4	62.4	48.5				
WT.container	grms.	7.9	8.0	7.9	7.9				
WT.moisture	grms.	3.5	5.3	8.0	6.6				
WT.dried soil	grms.	35.4	38.4	54.5	40.6				
Moisture content(m)	%	9.88	13.80	14.68	16.26				
Dry density (γs)		1.62	1.75	1.71	1.65				



Source : JICA mission



Source : JICA Mission

DATE 30 October '79
DEPTH 2 ft. - 5 ft.

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	380		11.6		88.4	
14	1/2	302		9.2		79.2	1500
10	3/8	162		6.0		74.2	1000
6.3	1/4	222		6.8		67.4	750
5	3/16	125		3.8		63.6	500
3.35	1/8		4.75				300
2.36	7	85		12.4		51.2	200
1.18	14	72		10.5		40.7	100
600 µm	25	52		7.6		33.1	75
425	36	23		3.4		29.7	60
300	52	12		1.8		27.9	50
212	72	13		1.9		26.0	45
150	100	12		1.8		24.2	40
75	200	16		2.3		21.9	28
63	/						25

WEIGHT OF DRY MATERIAL 3265 GMS

SAMPLE NO. 7
LOCATION KAMARANKA

SAMPLE NO. 7

LOCATION :
KAMARANKA

RESULTS OF SOIL TEST

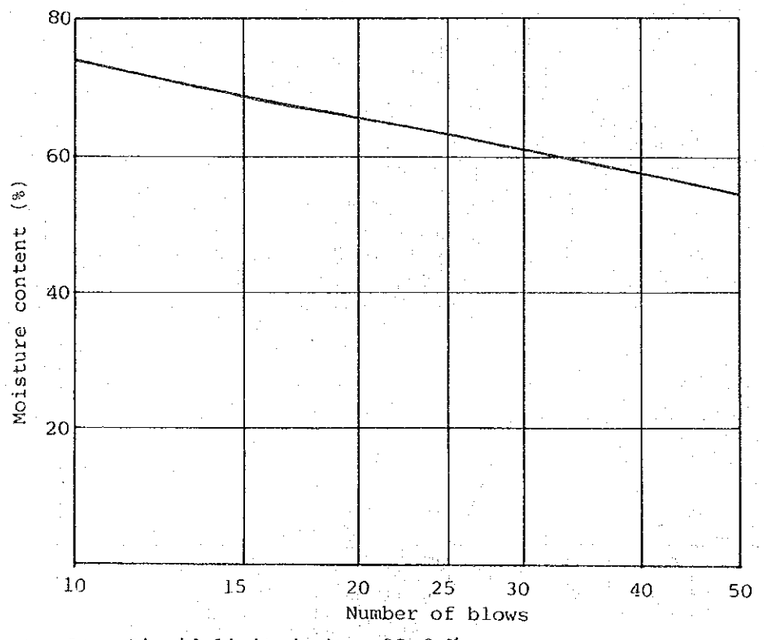
(4) CONSISTENCY

Date : 30 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..2...
Soil equilibrated with water for ..24... hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		47	37	21	18	11	-	-
Container No.		14	13	20	23	32	19	31
Mass of wet soil + container	g	28.4	23.7	25.5	29.5	25.8	20.4	22.4
Mass of dry soil + container	g	21.1	17.7	18.7	20.7	18.2	17.7	18.9
Mass of container	g	7.8	7.9	7.8	7.8	7.9	8.0	8.2
Mass of moisture	g	7.3	6.0	6.8	8.8	7.6	3.2	3.5
Mass of dry soil	g	13.3	9.8	10.9	12.4	10.3	9.7	10.7
Moisture content	%	54.9	61.2	62.3	68.2	73.8	33.0	32.6

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

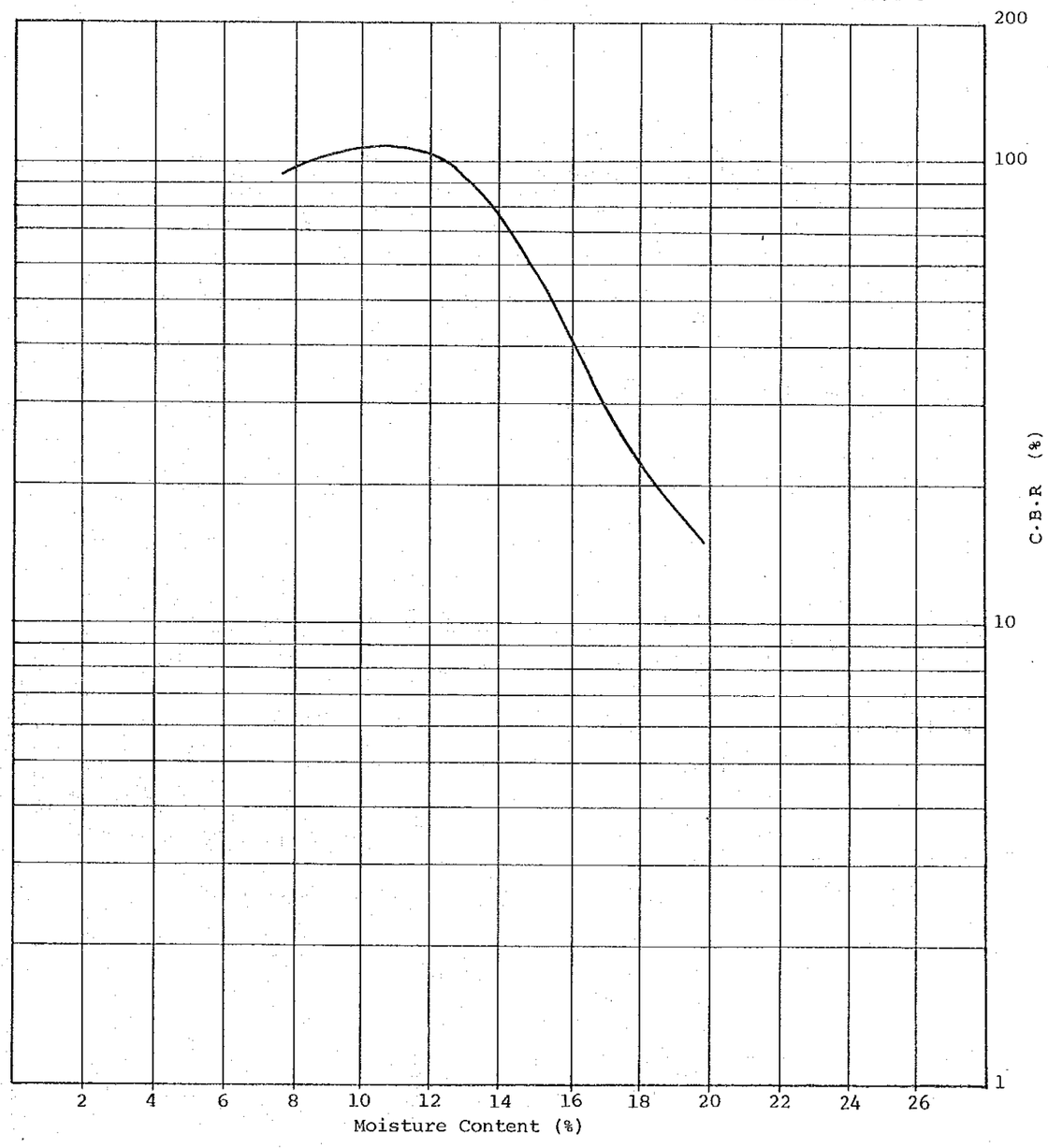


Results. Liquid limit (LL) : 63.0 %
Plastic limit (PL): 33.0 %
Plasticity index (PI) : 30.0 %
Linear shrinkage : 12 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 87 %
Optimum Moisture Content = 13.2 %



RESULTS OF SOIL TEST

SAMPLE NO. 8
LOCATION KAMALU
DATE: 16 Oct. 79

(1) SPECIFIC GRAVITY TEST

DATE 30 October, 1979

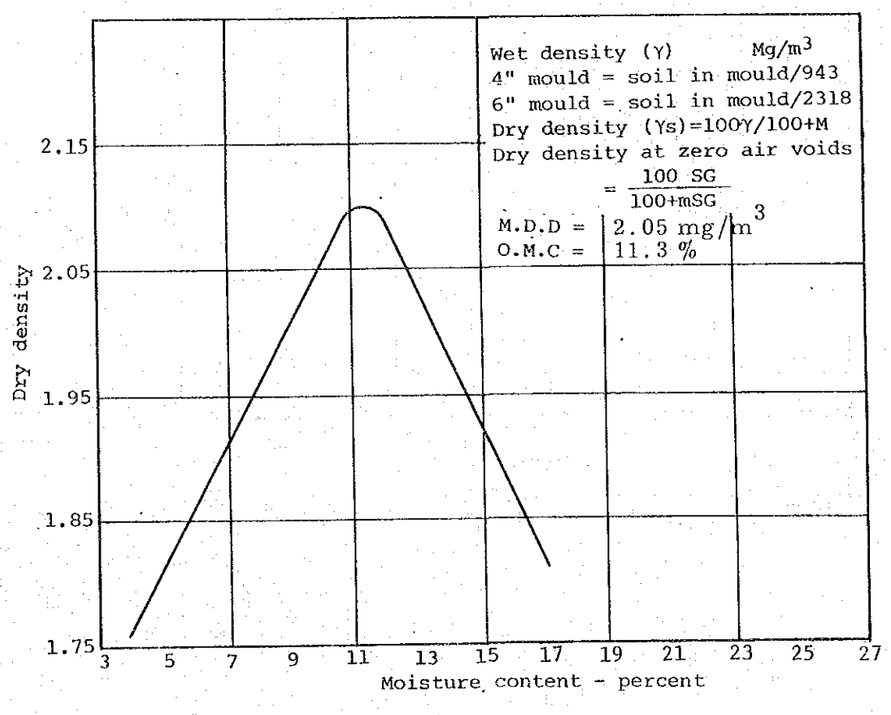
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		40.6	41.2		
Wt.(Pycnometer+water) W'a in g		90.4	90.5		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		105.0	105.0		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	64.8	65.3		
	Wt.Container in g				
	Wo in g	24.2	24.1		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.52	2.51		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.508	2.499		
Mean value		Specific gravity $\frac{(15°C)}{20°C}$ = 2.50			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

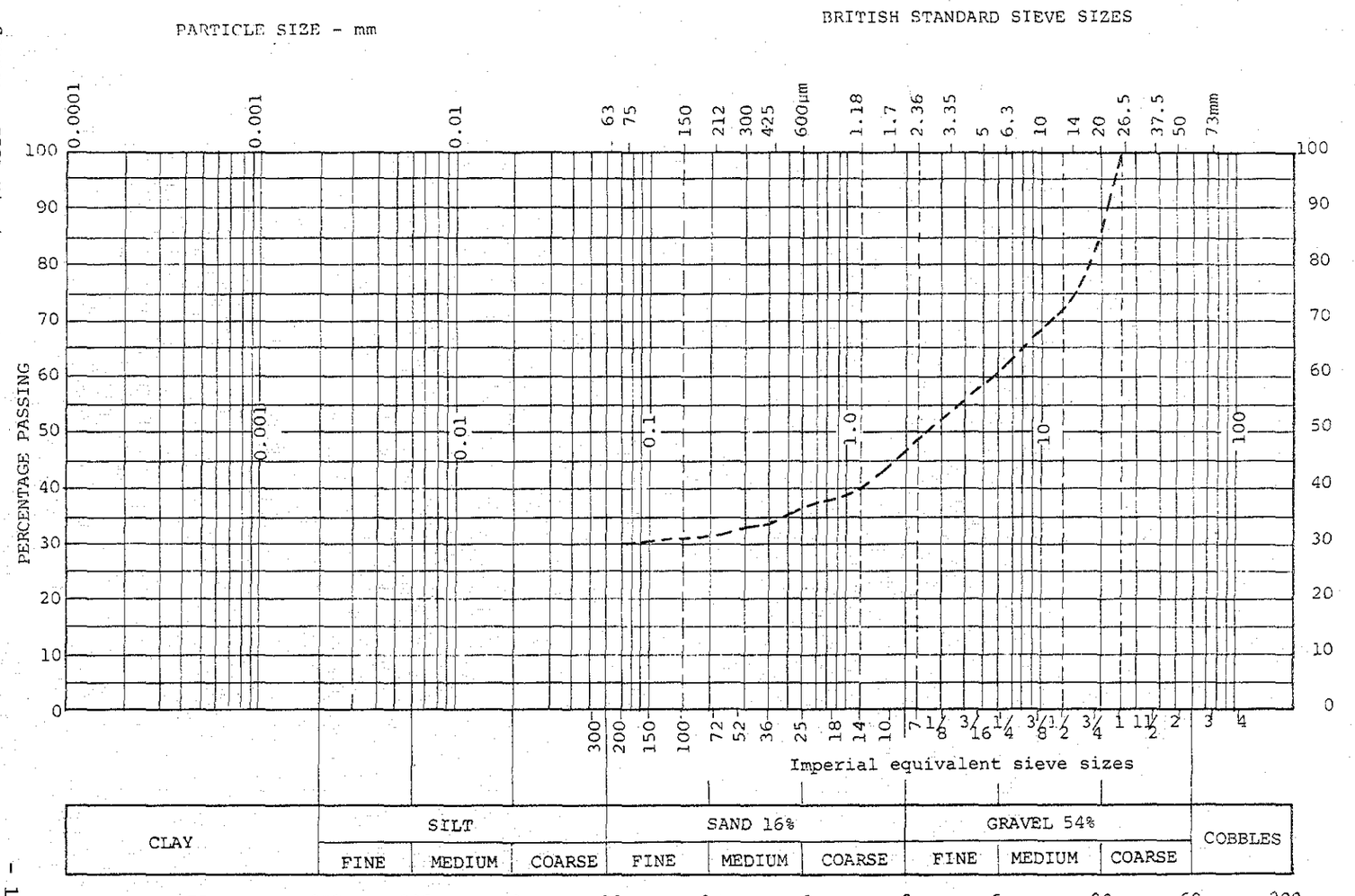
Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	9175	10241	10189	10317	10206			
WT. cylinder	grms.	4918	5054	4856	5051	5047			
WT. wet soil	grms	4257	5187	5333	5266	5159			
Wet density (γ)		1.84	2.24	2.30	2.27	2.23			
Container Number (Top)		12	40	36	39	41			
WT.wet soil + cont.	grms.	72.3	55.0	89.3	51.7	70.4			
WT.dried soil + cont.	grms.	70.1	50.8	80.2	46.4	62.4			
WT.container	grms.	8.0	8.1	7.9	8.0	7.9			
WT.moisture	grms.	2.3	4.2	9.1	5.3	8.0			
WT.dried soil	grms.	62.1	42.7	72.3	38.4	54.5			
Moisture content (m)	%	3.7	9.8	12.6	13.8	14.68			
Container Number (Base)		42	44	31	14	43			
WT. wet soil + cont.	grms.	86.4	54.7	98.5	50.7	71.5			
WT. dried soil + cont.	grms.	83.5	50.6	88.2	45.8	63.6			
WT.container	grms.	7.9	7.9	7.8	8.1	7.9			
WT.moisture	grms.	3.1	4.1	10.3	4.9	7.9			
WT.dried soil	grms.	75.6	42.7	80.4	37.7	55.7			
Moisture content(m)	%	4.1	9.6	12.8	13.0	14.18			
Dry density (γs)		1.77	2.04	2.04	2.00	1.95			



Source : JICA mission



DATE .30 October '79....
DEPTH .2 ft. - 5 ft.....

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	638		19.2		80.8	
14	1/2	307		9.3		71.5	1500
10	3/8	152		4.6		66.9	1000
6.3	1/4	198		5.9		61.0	750
5	3/16	106		3.2		57.8	500
3.35	1/8		3.3				300
2.36	7	102		10.2	10.2	47.6	200
1.18	14	77		7.7	7.7	39.9	100
600 µm	25	44		4.4	4.4	35.5	75
425	36	19		1.9	1.9	33.6	60
300	52	9		0.9	0.9	32.7	50
212	72	11		1.1	1.1	31.6	45
150	100	9		0.9	0.9	30.7	40
75	200	11		1.1	1.1	29.6	28
63	/						25

WEIGHT OF DRY MATERIAL 3315 GMS

SAMPLE NO. 8
LOCATION: KAMALU

Source : JICA Mission

SAMPLE NO. 8

LOCATION :
KAMALU

RESULTS OF SOIL TEST

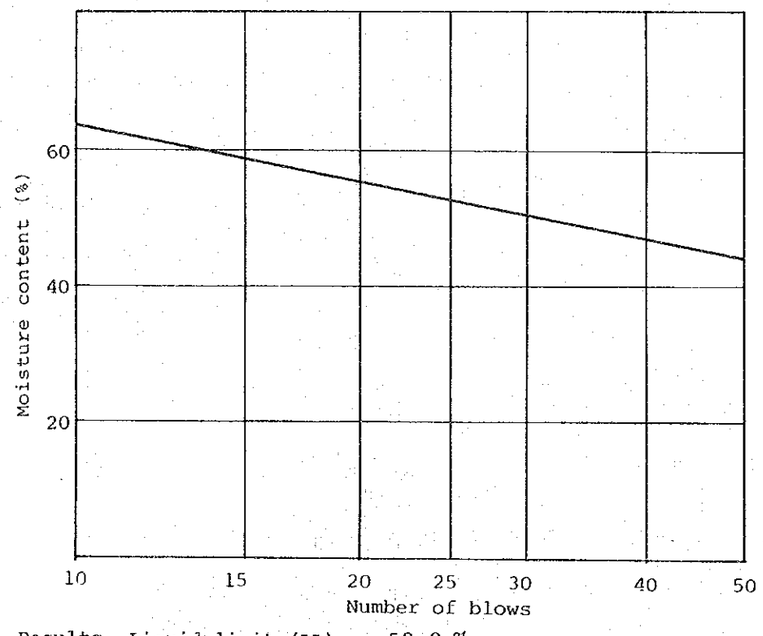
(4) CONSISTENCY

Date : 30 October, 1979
Depth of sample : 2' - 3'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. .....
Soil equilibrated with water for ..... 24 hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		41	35	24	18	14		
Container No.		24	10	33	18	32	8	31
Mass of wet soil + container	g	22.4	24.5	25.7	27.2	26.8	23.5	21.9
Mass of dry soil + container	g	17.8	19.0	19.4	20.2	19.9	19.8	18.7
Mass of container	g	7.9	7.9	7.8	7.8	8.0	7.8	8.0
Mass of moisture	g	4.6	5.5	6.3	7.0	6.9	3.7	3.2
Mass of dry soil	g	9.9	11.1	11.6	12.4	11.9	12.0	10.7
Moisture content	%	46.5	49.5	54.3	56.5	58.2	30.8	29.9

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

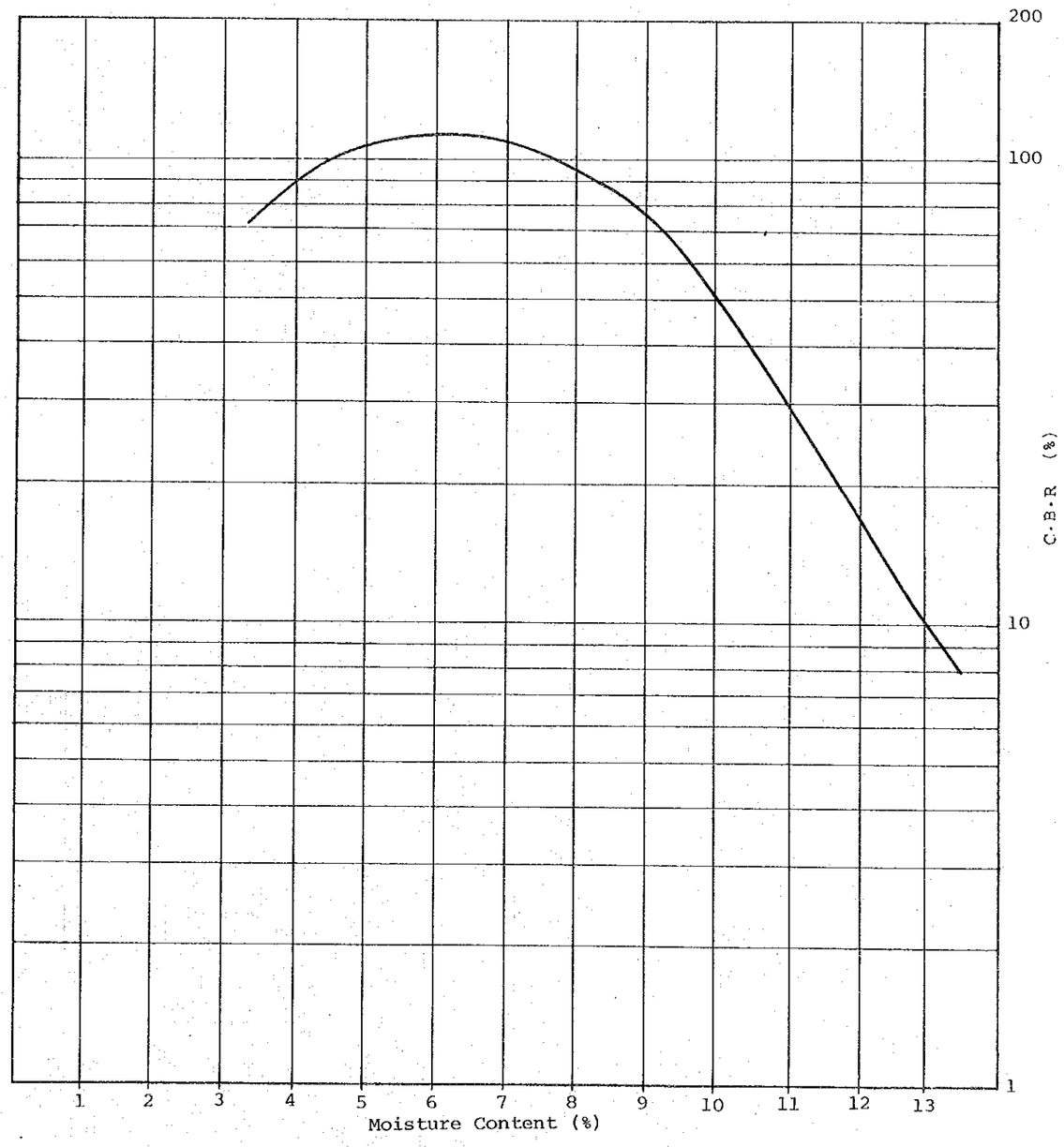


Results. Liquid limit (LL) : 53.0 %
Plastic limit (PL): 30.0 %
Plasticity index (PI) : 23.0 %
Linear shrinkage : 10.0 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 26 %
Optimum Moisture Content : 11.3 %



RESULTS OF SOIL TEST

SAMPLE NO. 9
LOCATION MAKALI
DATE: 17 Oct. 1979

(1) SPECIFIC GRAVITY TEST

DATE 30 October, 1979

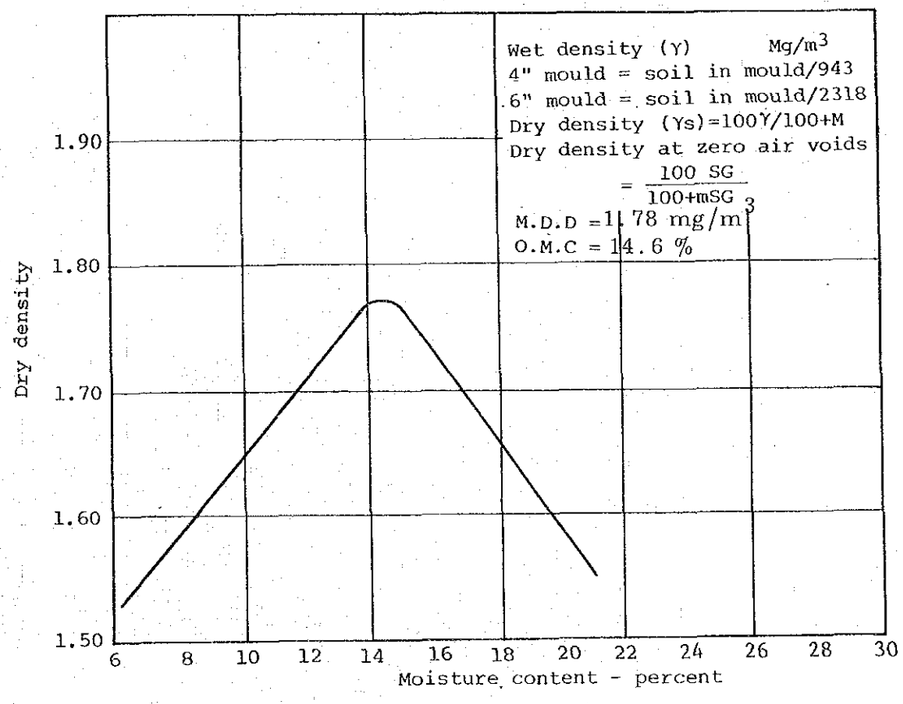
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		38.5	39.0		
Wt.(Pycnometer+water) W'a in g		89.3	90.0		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		105.5	105.9		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	64.5	64.5		
	Wt.Container in g				
	Wo in g	26.0	25.5		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.65	2.66		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.638	2.648		
Mean value		Specific gravity $\frac{(15°C)}{20°C}$ = 2.64			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

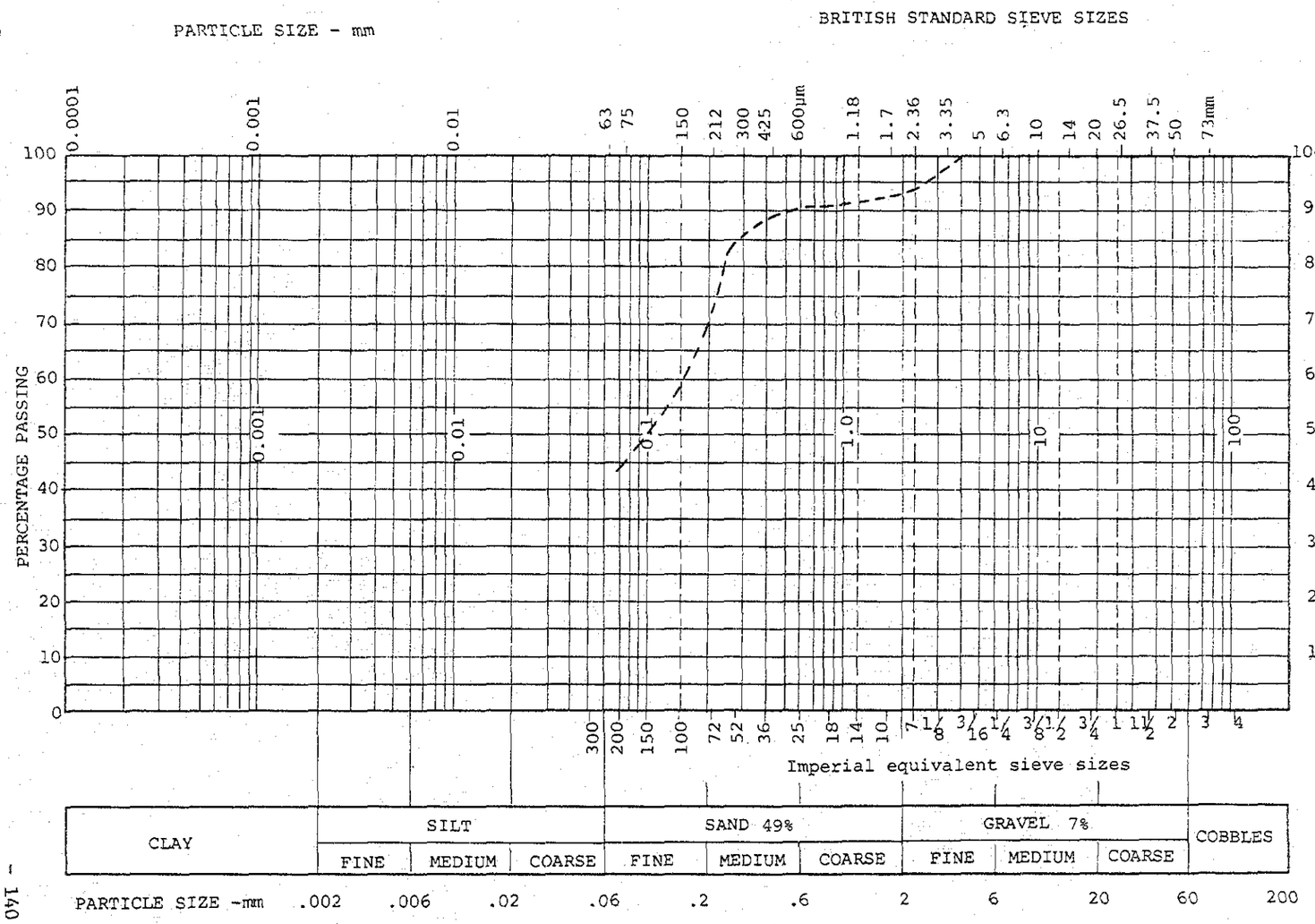
Test Number		1	2	3	4	5	6	7	8
WT.cylinder + wet soil	grms.	8818	9226	9680	9690	9342			
WT. cylinder	grms.	5008	5035	4971	5115	4940			
WT. wet soil	grms	3810	4191	4709	4575	4402			
Wet density (γ)		1.64	1.81	2.03	1.97	1.90			
Container Number (Top)		21	40	38	41	22			
WT.wet soil + cont.	grms.	56.2	55.0	42.2	45.1	43.8			
WT.dried soil + cont.	grms.	53.0	50.8	37.7	39.5	37.7			
WT.container	grms.	8.2	8.1	8.2	8.2	8.0			
WT.moisture	grms.	3.2	4.2	4.5	5.6	6.1			
WT.dried soil	grms.	44.8	42.7	29.5	31.3	29.7			
Moisture content (m)	%	7.1	9.8	15.3	17.9	20.5			
Container Number (Base)		19	42	29	39	34			
WT. wet soil + cont.	grms.	50.1	57.6	43.8	42.4	44.7			
WT. dried soil + cont.	grms.	47.7	53.0	39.6	37.5	38.4			
WT.container	grms.	8.2	8.1	8.2	8.2	8.1			
WT.moisture	grms.	2.4	4.6	4.2	4.9	6.3			
WT.dried soil	grms.	39.5	44.9	31.4	29.3	36.3			
Moisture content(m)	%	6.1	10.2	13.4	16.7	20.8			
Dry density (γs)		1.54	1.64	1.78	1.68	1.57			



Source : JICA mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF SOIL TEST



DATE 30 October '79
DEPTH 2 ft. - 5 ft.

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load(g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4						
14	1/2						1500
10	3/8						1000
6.3	1/4						750
5	3/16						500
3.35	1/8						300
2.36	7	20		5.94		94.06	200
1.18	14	5		1.48		92.58	100
600 µm	25	6		1.78		90.80	75
425	36	10		2.97		87.83	60
300	52	12		3.56		84.27	50
212	72	35		10.39		73.88	45
150	100	56		16.62		57.26	40
75	200	46		13.65		43.61	28
63	/						25

WEIGHT OF DRY MATERIAL 337 GMS

SAMPLE NO. 9
LOCATION: MAKALI

Source : JICA Mission

SAMPLE NO. 9

LOCATION : MAKALI

RESULTS OF SOIL TEST

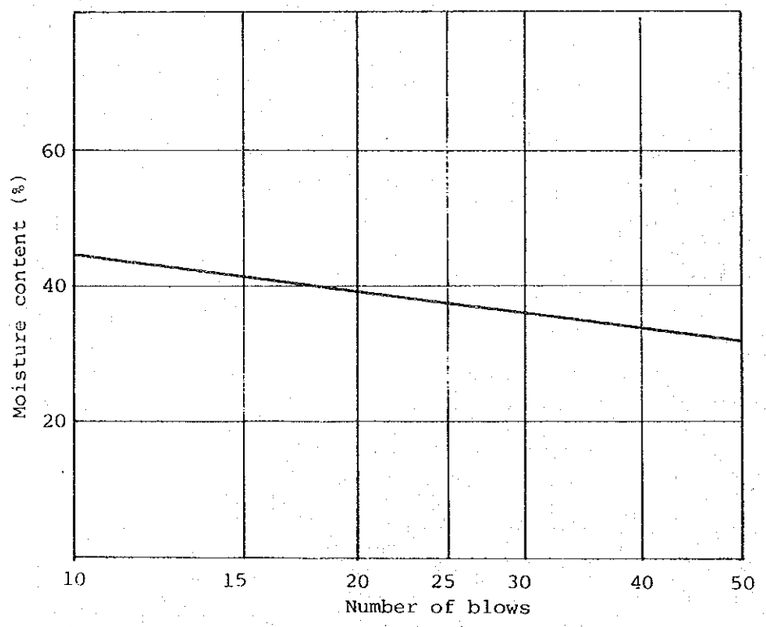
(4) CONSISTENCY

Date : 30 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ..1....
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test) Container No.		42 30	31 27	21 12	16 36	11 28	- 23	- 7
Mass of wet soil + container	g	29.9	29.6	28.2	29.3	27.2	31.3	31.5
Mass of dry soil + container	g	24.3	24.0	22.4	22.9	21.3	29.3	29.5
Mass of container	g	7.7	7.8	7.8	7.5	8.0	18.9	19.0
Mass of moisture	g	5.6	5.6	5.8	6.4	5.9	2.0	2.0
Mass of dry soil	g	16.6	16.2	14.6	15.4	13.3	10.4	10.5
Moisture content	%	33.7	34.6	39.7	41.6	44.4	19.2	19.0

Type of test: Natural moisture content (N), Liquid limit (LL), Plastic limit(PL).

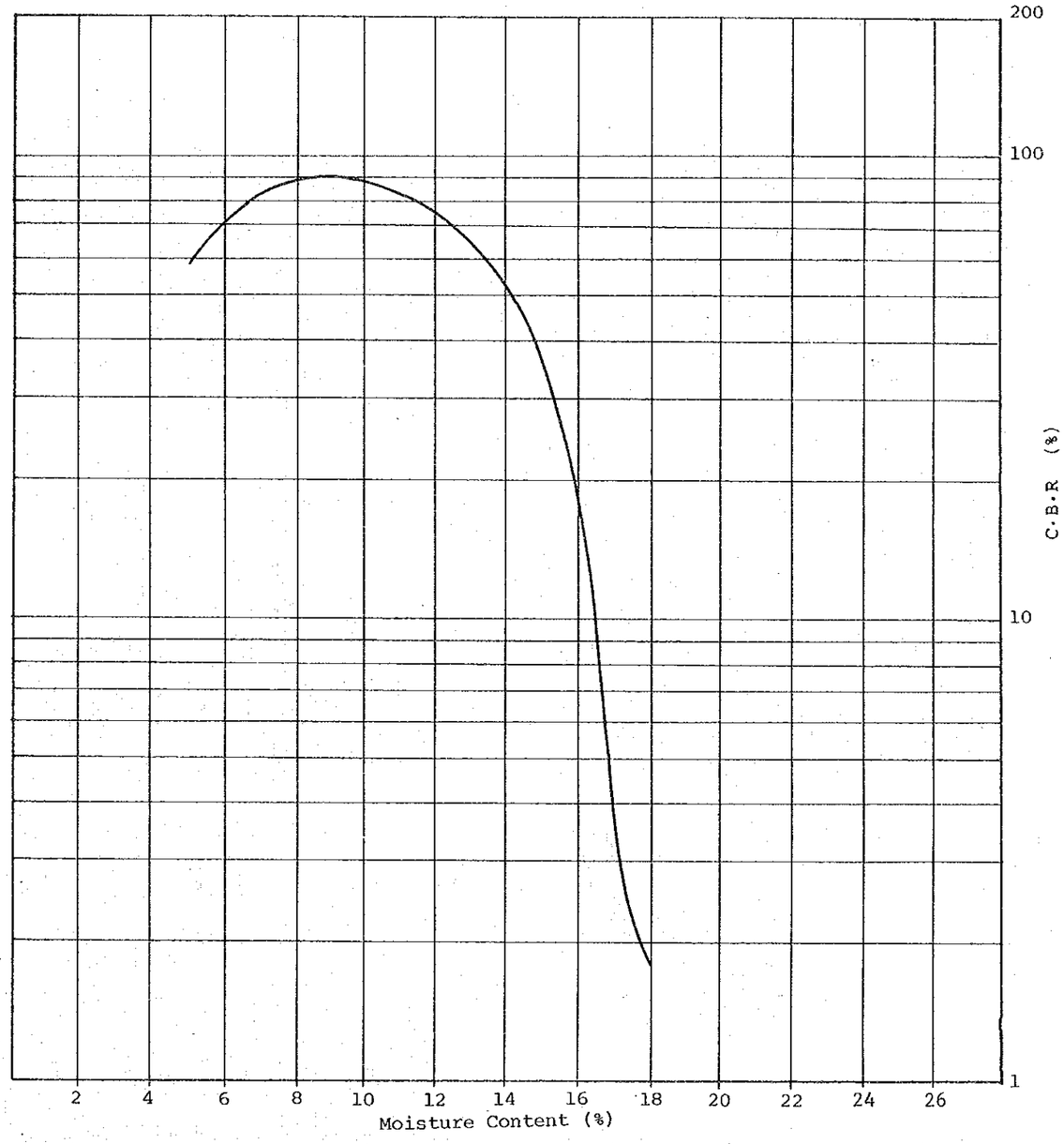


Results. Liquid limit (LL) : 37.0 %
Plastic limit (PL): 19.0 %
Plasticity index (PI) : 18.0 %
Linear shrinkage : 10.0 %

Source : JICA mission

(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

C.B.R. at
O.M.C. = 46 %
Optimum Moisture Content : 14.6 %



RESULTS OF SOIL TEST

SAMPLE NO. 10
LOCATION KAMAKWIE
DATE: 28 Oct. 79

(1) SPECIFIC GRAVITY TEST

DATE 30 October, 1979

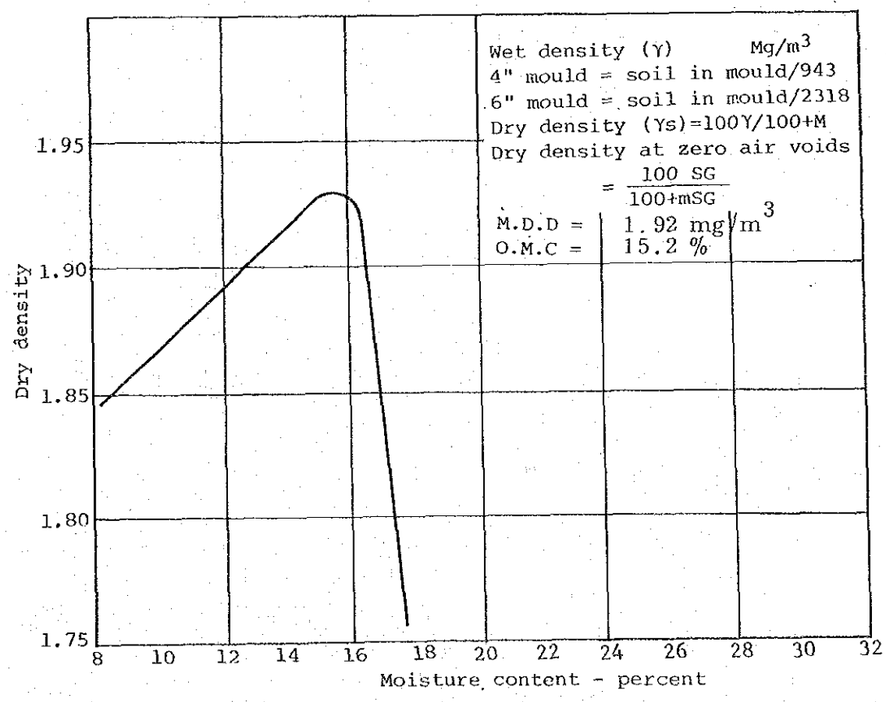
Determination No.		1	2	3	4
No. of Density Bottle					
Wt. of Density Bottle Wf in g		45.0	45.5		
Wt.(Pycnometer+water) W'a in g		95.0	95.5		
Temperature of calibration (corresponding with W'a) T' °C		25°	25°		
Wt. (Pycnometer+soil+water) Wb in g		110.4	110.8		
Temperature of Calibration (corresponding to Wb) T °C		25°	25°		
Weight of dry soil Wo	No. of Container				
	Wt.(Container + dry soil) in g	69.8	70.2		
	Wt.Container in g				
	Wo in g	24.8	24.7		
Deflocculating agent and its amount					
*Wt.(Pycnometer + water) calculated for T°C Wa in g					
Wo + (Wa - Wb) in g					
Deflocculant correction					
Wo + (Wa - Wb) corrected					
Specific Gravity at T°C	$G(T°C)=\frac{Wo}{Wo+(Wa-Wb)}$	2.64	2.63		
Coefficient for temperature correction K		0.9956	0.9956		
Specific Gravity at 15°C	$G(15°C)=K\times G(T°C)$	2.628	2.618		
Mean value		Specific gravity $(\frac{15°C}{20°C})$ = 2.62			

*"Wa" is determined from ghe diagram peculiar to each pycnometer.

Remarks :

(2) OPTIMUM MOISTURE CONTENT

Test Number	1	2	3	4	5	6	7	8
WT.cylinder + wet soil grms.	9696	9952	10150	10070	9959			
WT. cylinder grms.	5052	5043	5114	4901	5120			
WT. wet soil grms	4644	4909	5036	5169	4839			
Wet density (γ)	2.00	2.12	2.17	2.23	2.09			
Container Number (Top)	36	19	16	40	36			
WT.wet soil + cont. grms.	139.0	145.8	147.7	137.5	136.3			
WT.dried soil + cont. grms.	131.3	133.4	134.1	123.0	120.9			
WT.container grms.	29.4	28.5	28.8	28.7	28.1			
WT.moisture grms.	7.7	12.4	13.6	14.5	15.5			
WT.dried soil grms.	101.9	104.9	105.3	94.3	91.7			
Moisture content (m) %	7.6	11.8	12.9	15.3	16.9			
Container Number (Base)	22	39	19	38	34			
WT. wet soil + cont. grms.	127.4	140.7	158.3	160.6	136.5			
WT. dried soil + cont. grms.	119.1	128.5	142.1	141.3	120.4			
WT.container grms.	29.0	28.9	28.2	28.3	28.2			
WT.moisture grms.	8.3	12.2	16.2	19.3	16.1			
WT.dried soil grms.	90.1	99.6	113.9	112.0	91.2			
Moisture content(m) %	9.2	12.2	14.2	17.2	17.7			
Dry density (γs)	1.85	1.89	1.91	1.92	1.78			



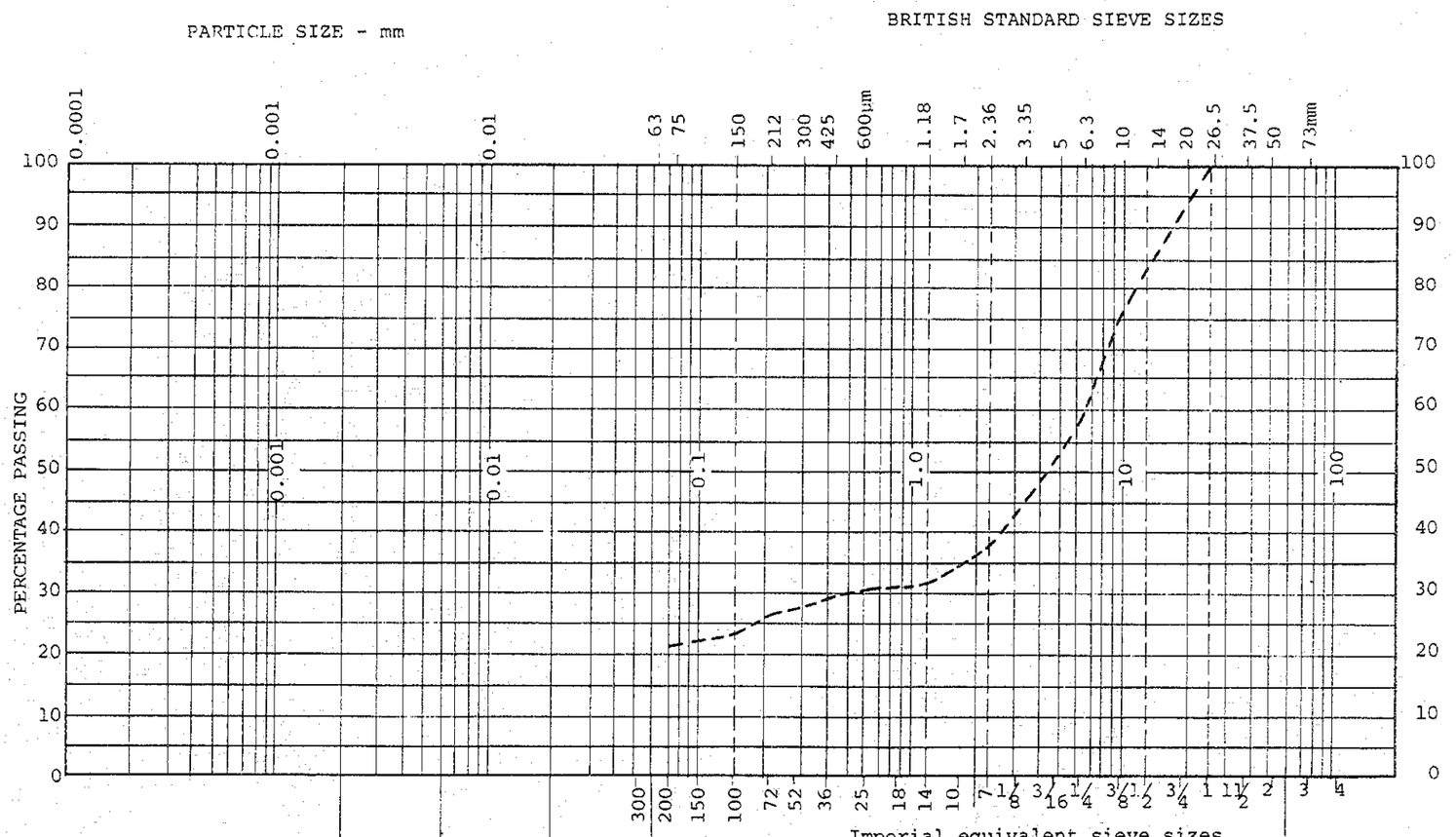
Source : JICA mission

(3) PARTICLE SIZE DISTRIBUTION

RESULTS OF SOIL TEST

SAMPLE NO. 10
LOCATION KAMAKWIE

DATE 30 October '79
DEPTH 2 ft. - 5 ft.



Source : JICA Mission

British Standard sieve sizes	approx. Imperial equiv.	Weight retained (g)	Weight adjustment factor	Percentage retained	Adjusted percentage retained	Percentage passing	Maximum sieve load (g)
75mm	3in						
63	2 1/2						
50	2						
37.5	1 1/2						
26.5	1						
20	3/4	236		7.8		92.2	
14	1/2	265		8.7		83.5	1500
10	3/8	271		8.9		74.6	1000
6.3	1/4	485		16.0		58.6	750
5	3/16	215		7.1		51.5	500
3.35	1/8		2.98				300
2.36	7	148			14.5	37.0	200
1.18	14	50			4.9	32.1	100
600 µm	25	16			1.6	30.5	75
425	36	12			1.2	29.3	60
300	52	10			1.0	28.3	50
212	72	21			2.1	26.2	45
150	100	23			2.3	23.9	40
75	200	20			2.0	21.9	28
63	/						25

WEIGHT OF DRY MATERIAL 3035 GMS

SAMPLE NO. 10

LOCATION : KAMAKWIE

RESULTS OF SOIL TEST

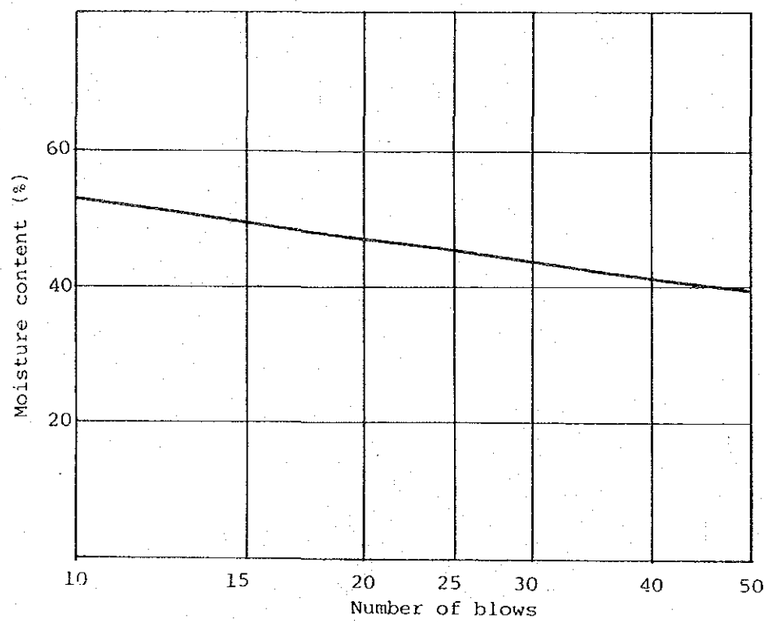
(4) CONSISTENCY

Date : 30 October, 1979
Depth of sample : 2' - 5'

Test details: Proportion of sample retained on 425 μm BS test sieve ....%
Soil condition: natural moisture content, air dried, unknown*
*Delete as appropriate.
Liquid limit machine No. ...4...
Soil equilibrated with water for ..24.. hr

Test No.		1	2	3	4	5	6	7
Type of test		LL	LL	LL	LL	LL	PL	PL
No.of blows (liquid limit test)		41	38	24	15	11	-	-
Container No.		23	18	24	31	25	11	15
Mass of wet soil + container	g	26.9	22.3	29.8	32.3	25.6	25.5	26.9
Mass of dry soil + container	g	21.4	18.0	22.8	24.2	19.5	23.0	24.2
Mass of container	g	7.8	7.8	7.8	7.8	7.8	13.5	13.9
Mass of moisture	g	5.5	4.3	7.0	8.1	6.1	2.5	2.7
Mass of dry soil	g	13.6	10.2	15.0	16.4	11.7	9.5	10.3
Moisture content	%	40.4	42.2	46.7	49.4	52.1	26.3	26.2

Type of test: Natural moisture content (N),Liquid limit (LL),Plastic limit(PL).

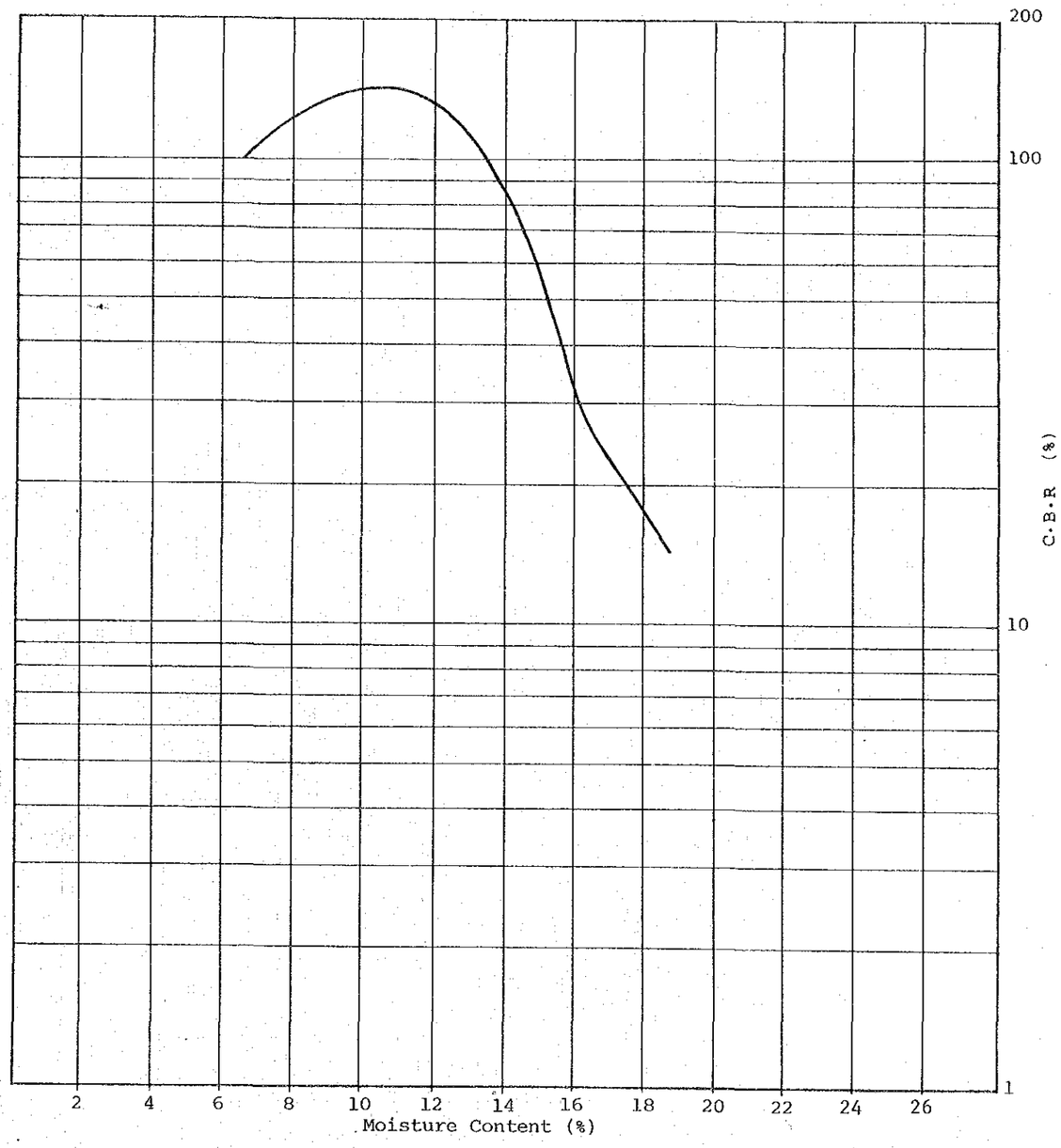


Results. Liquid limit (LL) : 45.0 %
Plastic limit (PL): 26.0 %
Plasticity index (PI) : 19.0 %
Linear shrinkage : 10 %

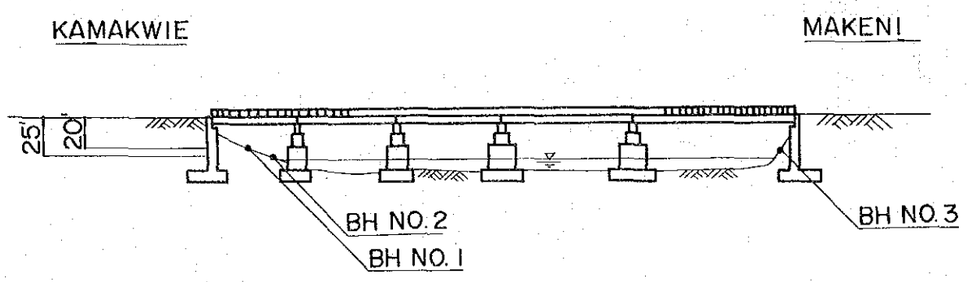
Source : JICA mission

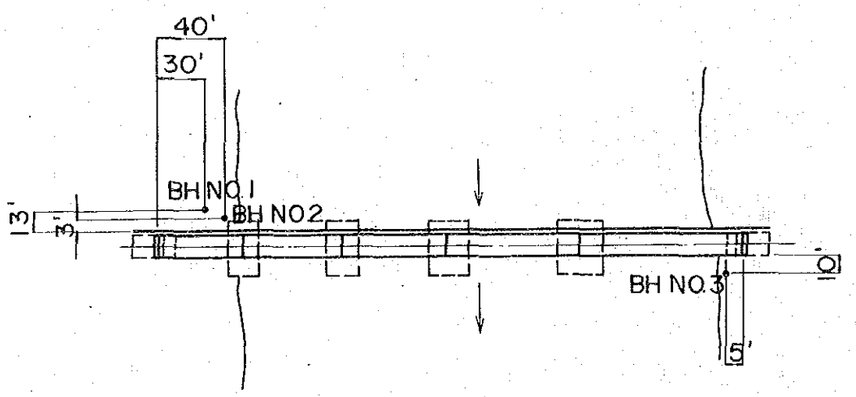
(5) COMPACTION
(RELATION BETWEEN O.M CAND C.B.R.)

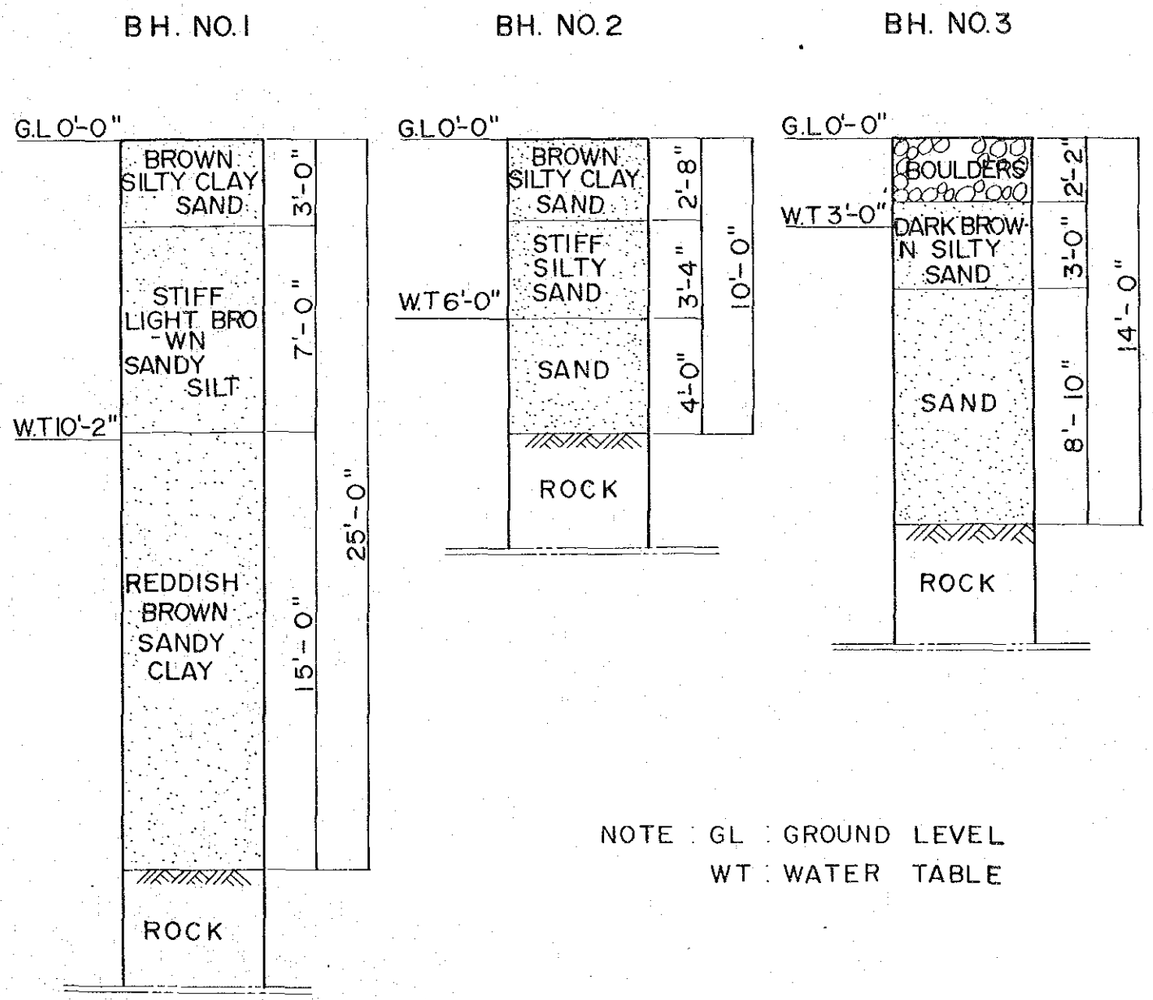
C.B.R. at
O.M.C. = 50 %
Optimum Moisture Content : 15.2 %



APPENDIX P−2　　現存マボレ橋におけるオーガーボーリングの結果







NOTE : GL : GROUND LEVEL
WT : WATER TABLE

APPENDIX Q 水 文 解 析

1. 日確率降雨量の計算

Order	Daily rainfall X_1	Date	E=2i - 1/2N	X = log X_1	X_2=(log X_1)^2
1	283.0	Aug. 9 1975	7.14	2.45179	6.01126
2	163.3	Oct. 3 1974	21.43	2.21299	4.89732
3	132.6	Jul.18 1970	35.71	2.12254	4.50518
4	120.0	Jul.31 1977	50.00	2.07918	4.32299
5	119.1	Aug.13 1971	64.29	2.07591	4.30940
6	110.3	Aug. 6 1978	78.57	2.04258	4.17213
7	100.3	Aug. 5 1973	92.86	2.00130	4.00520
Total				14.98629	32.22348

$$\bar{X} = \frac{\Sigma X}{N} = \frac{14.98629}{7} = 2.14090$$

$$\bar{X}^2 = \frac{\Sigma X^2}{N} = \frac{32.22348}{7} = 4.60335$$

$$= \sqrt{\bar{X}^2 - (\bar{X})^2} = 0.14106$$

X = 2.14090 X = 138.3

X + σ = 2.28196 X = 191.4

X - σ = 1.99984 X = 99.9

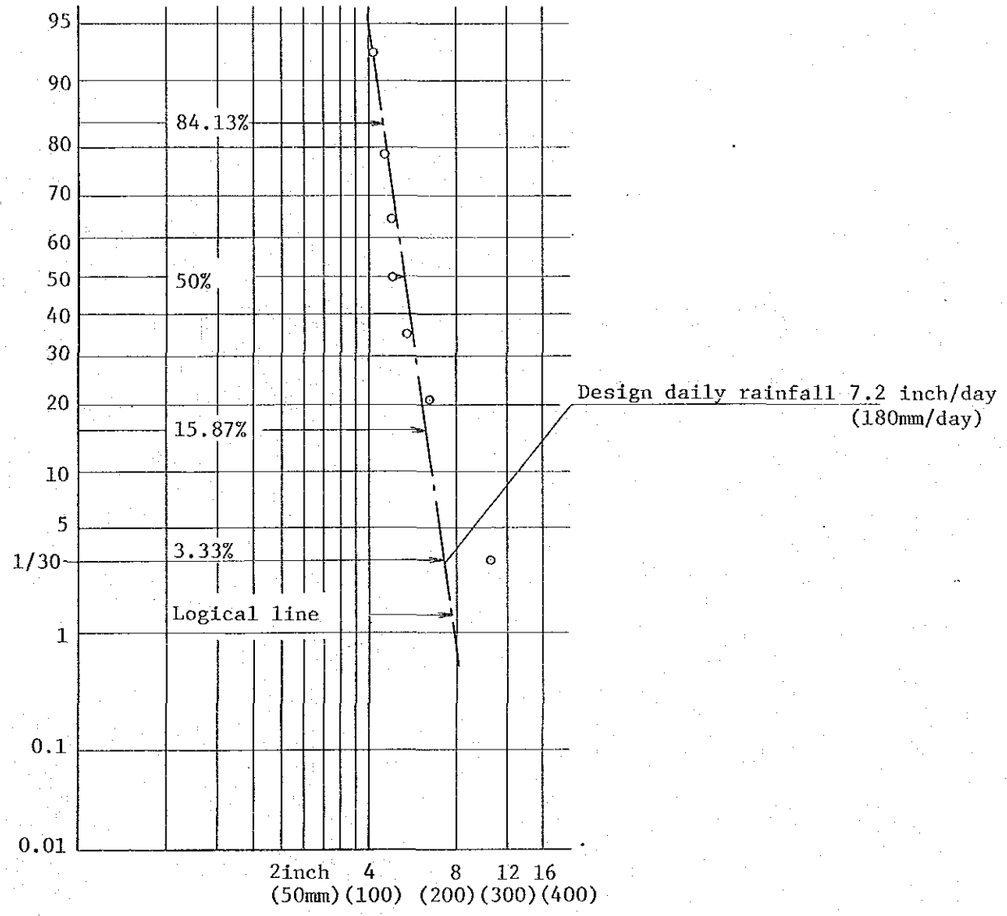


Fig. 1 Calculation of Probability Distribution for Daily Rainfall by Probability Paper at Makeni

2. 到達時間の計算

$$T = \frac{L}{W} \qquad W = 72 \left(\frac{H}{L}\right) 0.6$$

ここで

T：到達時間 (hr.)

L：最上流地点から流量計算地点までの水平距離 (Km)

H：Lの区間の落差 (Km)

W：平均流速 (Km/hr.)

3. 洪水流出量の計算

$$Q = 0.2778\ f\ Rt\ A \qquad Rt = \frac{R}{24}\left(\frac{24}{T}\right)^{\frac{2}{3}}$$

ここで

Q：推定ピーク流出量 (m^3/Sec.)

f：流出係数 (0.2)

Rt：時間雨量 (mm/h)

R：日雨量 (mm/h)

A：集水面積 (Sq.km)

T：到達時間 (hr.)

4. 既存構造物の開口断面に基づいての推定流出量の計算

$$Qc = Ac \cdot V \qquad V = \frac{1}{n} \cdot R^{\frac{2}{3}} I^{\frac{1}{2}}$$

Qc：推定流出量 (m^3/sec.)

V：既存構造物内の平均流速 (m/sec.)

Ac：既存構造物の開口断面積 (m^2)

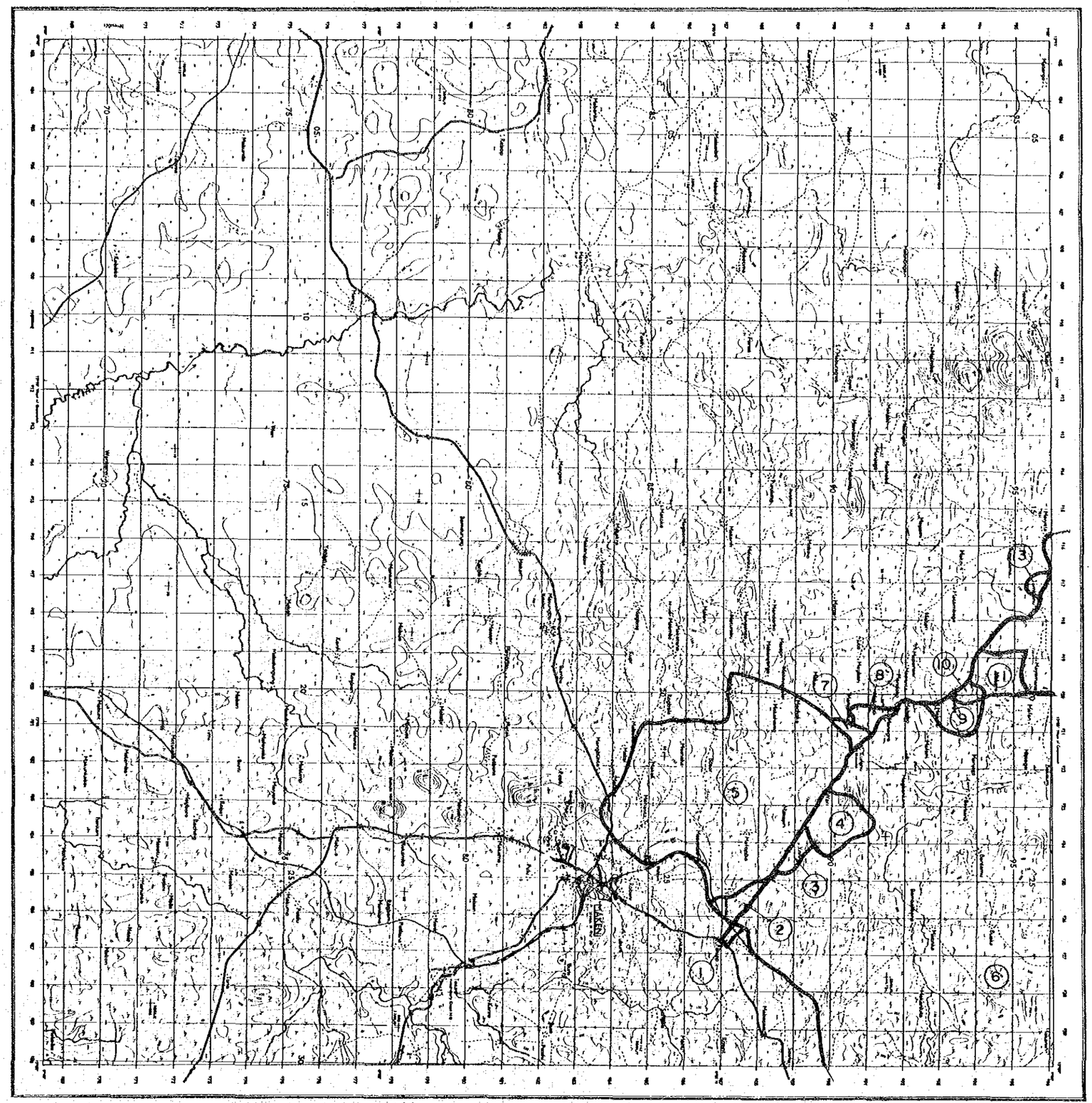
n：粗度係数

R：径深 〃 r

I：河床平均勾配

5. 計画流出量の計算

Location Catchment Area				H	L	W	T	$(\frac{24}{T})^{2/3}$	R	$\frac{R}{24}$	Rt	A	f	Q	1/n	$R^{2/3}$	I	$I^{1/2}$	V	Ac	Qc	Proposed discharge volume
Km	Mile	No.	Km^2	Km	Km	Km/hr	hr		mm		mm/hr	Km^2		m^3/sec		m	%		m/sec	M^2	m^3/sec	m^3/sec
5+30	3.3	④	18.32	0.010	1.0	4.54	0.22	22.8	180	7.5	171.0	8.00	0.2	76.0	50.	1.02	0.5	0.07	3.57	8.6	30.7	76.0
6+0	3.7	③④⑤	45.17	0.020	4.0	3.00	1.33	6.9	180	7.5	51.8	45.17	0.2	130.0	50.	1.34	0.5	0.07	4.69	28.0	131.3	131.3
8+00	5.0	⑥③④⑤	695.02	0.015	15.0	4.54	3.30	3.8	180	7.5	28.5	750.0	0.2	1801.8	50.	2.00	0.5	0.07	7.00	300.0	2100.0	2100.0
9+40	5.9	⑨	0.96	0.003	0.5	3.34	0.15	29.5	180	7.5	221.3	0.96	0.2	11.8	66.6	0.70	0.5	0.07	3.26	2.80	7.3	11.8
10+90	6.8	⑪	1.90	0.004	0.7	3.25	0.22	22.8	180	7.5	171.0	1.90	0.2	18.1	66.6	1.02	0.5	0.07	4.76	8.84	33.7	33.7
13+20	8.3	⑭	32.60	0.015	3.0	3.00	1.00	8.3	180	7.5	62.3	32.60	0.2	112.8	50.	1.30	0.5	0.07	4.55	19.8	90.1	112.8
16+20	10.1	⑮	3.10	0.005	1.0	3.00	0.33	17.4	180	7.5	130.7	3.10	0.2	22.5	50.	0.96	0.5	0.07	3.36	7.2	24.2	24.2
17+00	10.6	⑯	5.72	0.006	1.2	3.00	0.40	15.3	180	7.5	114.8	5.72	0.2	36.5	50.	1.03	0.5	0.07	3.60	9.0	32.4	36.5
22+20	13.9	⑰⑱⑲	13.48	0.013	2.7	2.93	0.92	8.8	180	7.5	66.0	13.48	0.2	49.4	50.	1.08	0.5	0.07	3.78	13.5	51.0	51.0
23+40	14.5	⑳	1.68	0.005	0.8	3.43	0.23	22.2	180	7.5	166.5	1.68	0.2	15.5	76.9	0.28	1.0	0.1	2.15	0.28	2.4	15.5
26+30	16.4	㉑	21.46	0.006	1.5	2.62	0.57	12.1	180	7.5	90.8	21.46	0.2	108.3	50.	1.34	0.5	0.07	4.69	28.0	131.3	131.3
27+20	17.0	㉒	96.96	0.024	4.0	3.34	1.20	7.4	180	7.5	55.5	96.96	0.2	299.0	50.	1.45	0.5	0.07	5.08	56.0	284.5	299.0
27+70	17.3	㉓	1.82	0.003	0.8	2.52	0.32	17.8	180	7.5	133.5	1.82	0.2	13.5	50.	1.02	0.5	0.07	3.57	8.6	30.7	30.7
30+20	18.9	㉔	2.24	0.005	1.0	3.00	0.33	17.4	180	7.5	130.5	2.24	0.2	16.2	50.	1.04	0.5	0.07	3.64	9.0	32.8	32.8
32+00	20.0	㉕	1.84	0.004	0.8	3.00	0.27	19.9	180	7.5	149.3	1.84	0.2	15.3	50.	0.84	0.5	0.07	2.94	5.5	16.2	16.2
32+60	20.4	㉖㉕	2.50	0.005	1.0	3.00	0.33	17.4	180	7.5	130.5	2.50	0.2	18.1	66.6	0.93	0.5	0.07	4.34	6.6	22.9	22.9
34+00	21.3	㉗㉖㉕	11.70	0.010	2.0	3.00	0.67	10.9	180	7.5	81.8	9.20	0.2	59.9	50.	1.30	0.5	0.07	4.55	18.0	81.9	81.9
35+10	21.9	㉘㉙㉚	23.16	0.013	2.5	3.07	0.82	9.5	180	7.5	71.3	20.95	0.2	100.1	50.	1.28	0.5	0.07	4.48	17.28	77.4	100.1
35+90	22.4	㉙㉚	2.21	0.006	1.2	3.00	0.40	15.3	180	7.5	114.8	1.70	0.2	17.1	66.6	0.90	0.5	0.07	4.20	6.8	22.8	22.8
37+40	23.3	㉚	0.51	0.003	0.5	3.34	0.15	29.5	180	7.5	221.3	0.51	0.2	6.3	66.6	0.75	0.5	0.07	3.50	3.4	9.5	9.5
43+10	26.6	㉛	62.52	0.021	3.5	3.34	1.05	8.1	180	7.5	60.8	62.52	0.2	211.2	50.	1.55	0.5	0.07	5.43	42.5	230.8	230.8
43+90	27.4	㉛'	0.30	0.0015	0.3	3.00	0.10	38.6	180	7.5	289.5	0.30	0.2	4.8	66.6	0.86	0.3	0.05	2.86	6.0	17.2	4.8
44+60	27.9	㉜	1.00	0.002	0.4	3.00	0.13	32.4	180	7.5	243.0	1.00	0.2	13.5	66.6	0.92	0.5	0.07	4.29	7.5	25.7	13.5
45+40	28.4	㉝㉞	11.32	0.007	1.5	2.88	0.52	12.9	180	7.5	96.8	10.86	0.2	65.8	50.	1.41	0.5	0.07	4.93	22.5	110.9	65.8
47+10	29.4	㉞	0.46	0.0015	0.3	3.00	0.10	38.6	180	7.5	289.5	0.46	0.2	7.4	66.6	0.61	0.5	0.07	2.84	1.8	4.1	7.4
49+00	30.6	㉟	0.54	0.001	0.2	3.00	0.10	38.6	180	7.5	289.5	0.54	0.2	8.7	66.6	0.72	0.5	0.07	3.36	3.2	8.6	8.7
49+60	31.0	㊱㉟	3.26	0.016	0.8	6.89	0.12	34.2	180	7.5	256.5	2.72	0.2	47.5	50.	1.00	0.5	0.07	3.50	8.1	28.4	47.5
51+20	32.0	㊲	24.70	0.009	1.6	3.22	0.50	13.2	180	7.5	99.0	24.70	0.2	135.9	50.	1.46	0.5	0.07	5.11	25.8	131.8	135.9
57+00	35.7	㊳	3.72	0.010	1.00	4.54	0.22	22.8	180	7.5	171.0	3.72	0.2	35.3	50.	0.89	0.5	0.07	3.12	6.6	20.6	35.3
58+10	36.1	㊴	3.10	0.005	0.80	3.43	0.23	22.2	180	7.5	166.5	3.10	0.2	28.7	50.	0.95	0.5	0.07	3.33	7.2	24.0	28.7
60+30	37.7	㊵	161.34	0.034	8.50	2.62	3.24	3.8	180	7.5	28.5	161.34	0.2	255.5	50.	1.36	0.5	0.07	4.76	49.5	235.6	255.5
61+50	38.4	㊶	2.08	0.005	1.00	3.00	0.33	17.4	180	7.5	130.5	2.08	0.2	15.1	50.	1.19	0.5	0.07	4.17	5.0	16.7	16.7
64+10	40.0	㊷	2.70	0.006	1.00	3.34	0.30	18.6	180	7.5	139.5	2.70	0.2	20.9	50.	0.81	0.5	0.07	2.84	5.4	15.3	20.9
64+80	40.5	㊸	7.08	0.008	1.60	3.00	0.53	12.7	180	7.5	95.3	7.08	0.2	37.5	50.	1.11	0.5	0.07	3.89	12.06	46.9	46.9
67+00	41.9	㊹	34.32	0.017	3.40	3.00	1.13	7.7	180	7.5	57.8	34.32	0.2	110.2	50.	1.36	0.5	0.07	4.76	30.0	142.8	142.8
67+40	42.1	㊺	5.60	0.006	1.20	3.00	0.40	15.3	180	7.5	114.8	5.60	0.2	35.7	50.	0.87	0.5	0.07	3.05	5.25	16.0	35.7
74+20	46.4	㊻	319.64	0.035	8.80	2.61	3.37	3.7	180	7.5	27.8	319.64	0.2	493.7	50.	1.67	0.5	0.07	5.85	80.0	468.0	493.7
76+30	47.4	㊼	3.22	0.005	1.00	3.00	0.33	17.4	180	7.5	130.5	3.22	0.2	23.3	66.6	0.61	0.5	0.07	2.84	1.92	4.4	23.3
53+30	33.3	㊲	1.00	0.001	0.20	3.00	0.10	38.6	180	7.5	289.5	1.00	0.2	16.1	66.6	0.84	0.5	0.07	3.92	5.28	16.6	16.6
3+40	2.1	③	0.44	0.0015	0.30	3.00	0.10	38.6	180	7.5	289.5	0.44	0.2	7.1	76.9	0.28	1.0	0.1	2.15	0.28	1.4	7.1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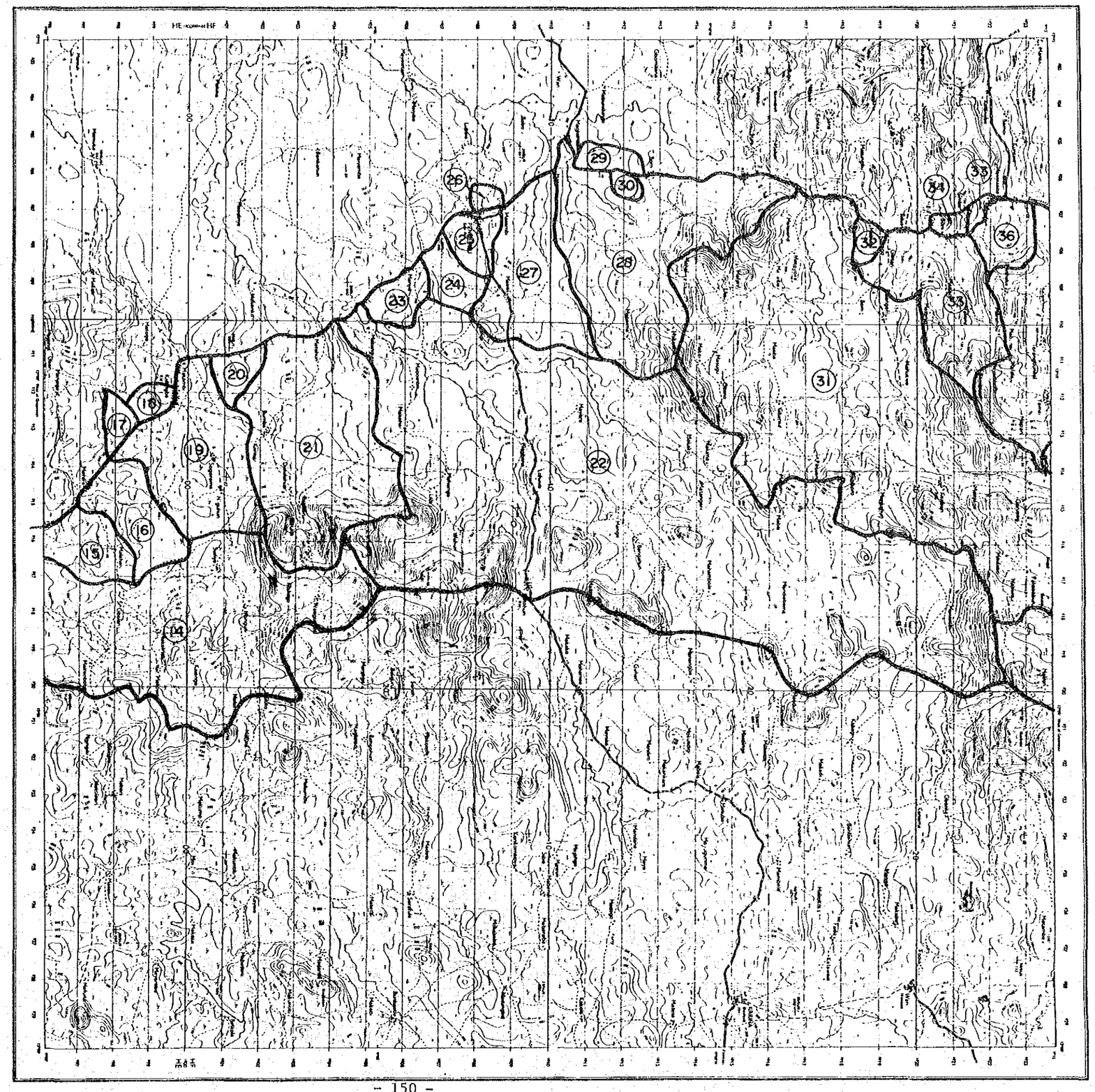
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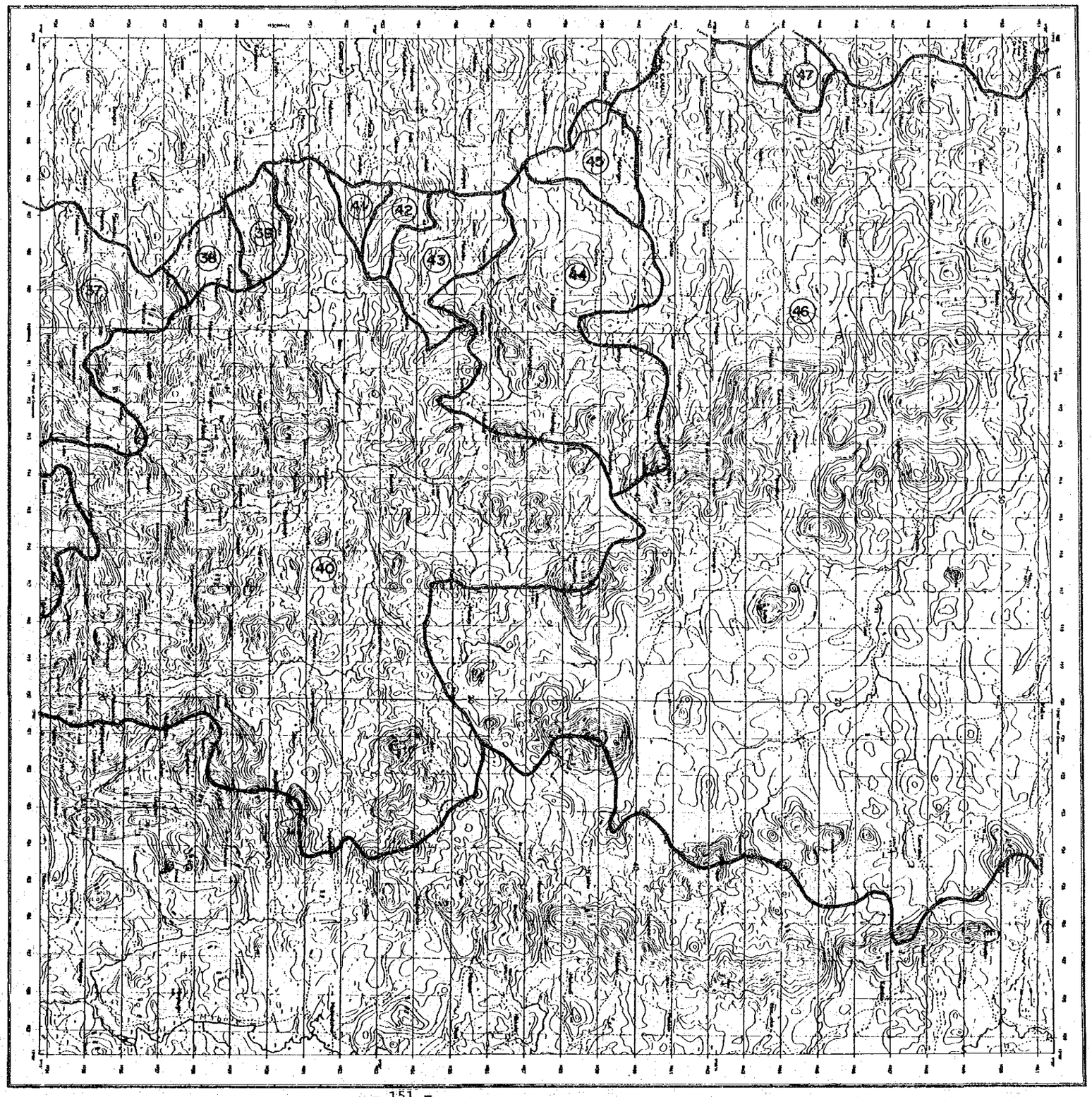
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APPENDIX R　舗装厚の計算

1. バンラップ，マボレ間の将来交通量

Unit: ADT

	1985		1995		2010	
	Number	rate	Number	rate	Number	rate
Cars	50	1.00	116	2.32	394	7.88
Pick-ups & Vans	99	1.00	164	1.66	326	3.29
Trucks & Buses	68	1.00	113	1.66	223	3.28
Extra heavy vehicles	23	1.00	39	1.70	52	2.26
Total	240	1.00	432	1.80	995	4.15

Source : JICA Mission.

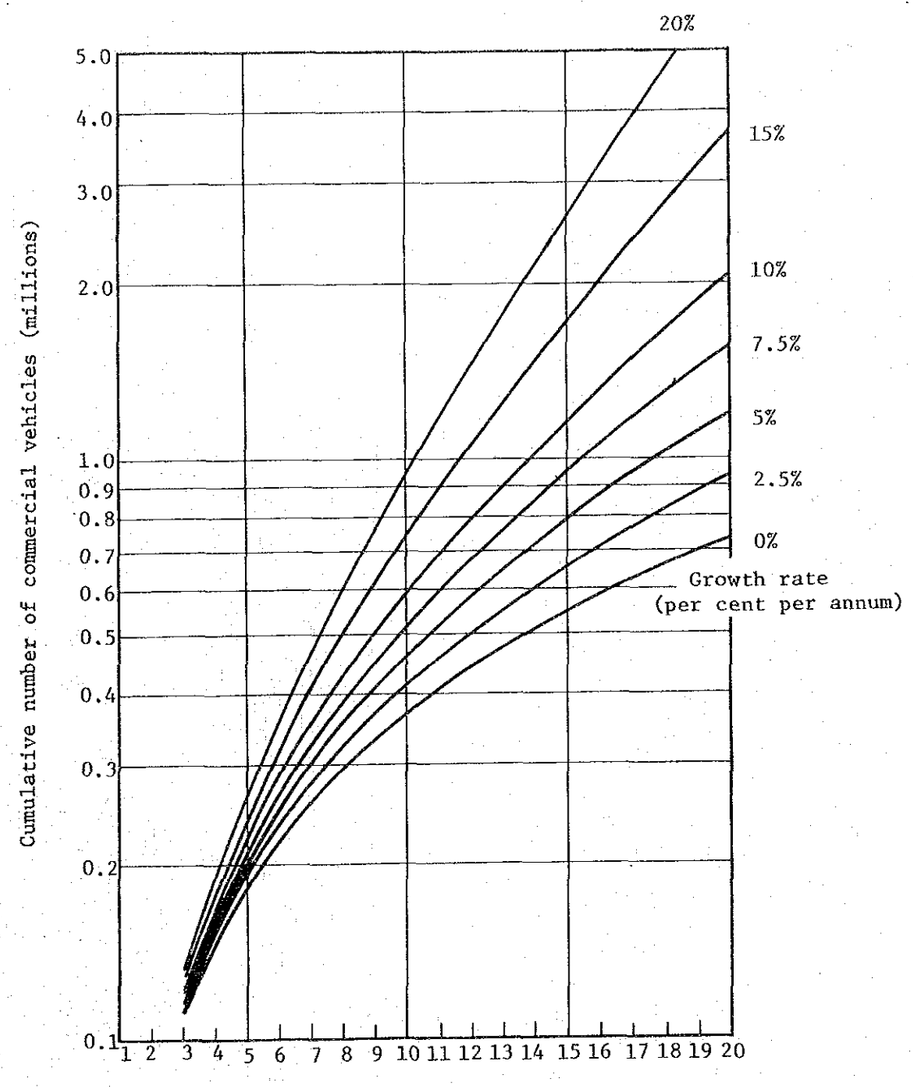
2. １０年間累積軸荷重

	Traffic Volume		One direction/100	Cumulative Vehicles No./100 L1	Actual Cumulative Vehicles Number	Equivalent Factor L2	Design Cumulative Number
	Both of Direction	One Direction					
	①	②=①x 2/3	③=②/100	④	⑤=③x④	⑥	⑦=⑤x⑥
Cars	50	33	0.33	0.65	0.2145	0.0002	0.00004
Pick-ups & Vans	99	66	0.66	0.49	0.3234	0.0025	0.00081
Trucks & Buses	68	45	0.45	0.48	0.2160	0.08	0.01728
Extra heavy Vehicles	23	15	0.15	0.50	0.0750	1.00	0.0750
Total	240	159	-				0.09313

Note : L1 is calculated by Fig. 1.
L2 is depended on "British Note 31 page 7".

Source : JICA Mission.

Fig. 1



RELATION BETWEEN TOTAL NUMBER OF VEHICLES USING A ROAD DURING THE DESIGN LIFE AND GROWTH RATE FOR AN AVERAGE DAILY TRAFFIC OF 100 COMMERCIAL VEHICLES PER DAY IN THE INITIAL YEAR

Source : British note 31

3. 設計ＣＢＲ値の計算

Sample No.	1	2	3	4	5	6	7	8	9	10	Average
ＣＢＲ Value	43	160	130	98	100	74	87	26	46	50	65.5

Source : JICA Mission

$$\text{設計} = \text{平均 CBR} - \frac{\text{最大 CBR} - \text{最少 CBR}}{d}$$

$$= 65.5 - \frac{100 - 26}{2.96}$$

$$= 40.5 > 25$$

Note : "d" はＣＢＲ試験値によって決まる係数である。

5. 舗装構造

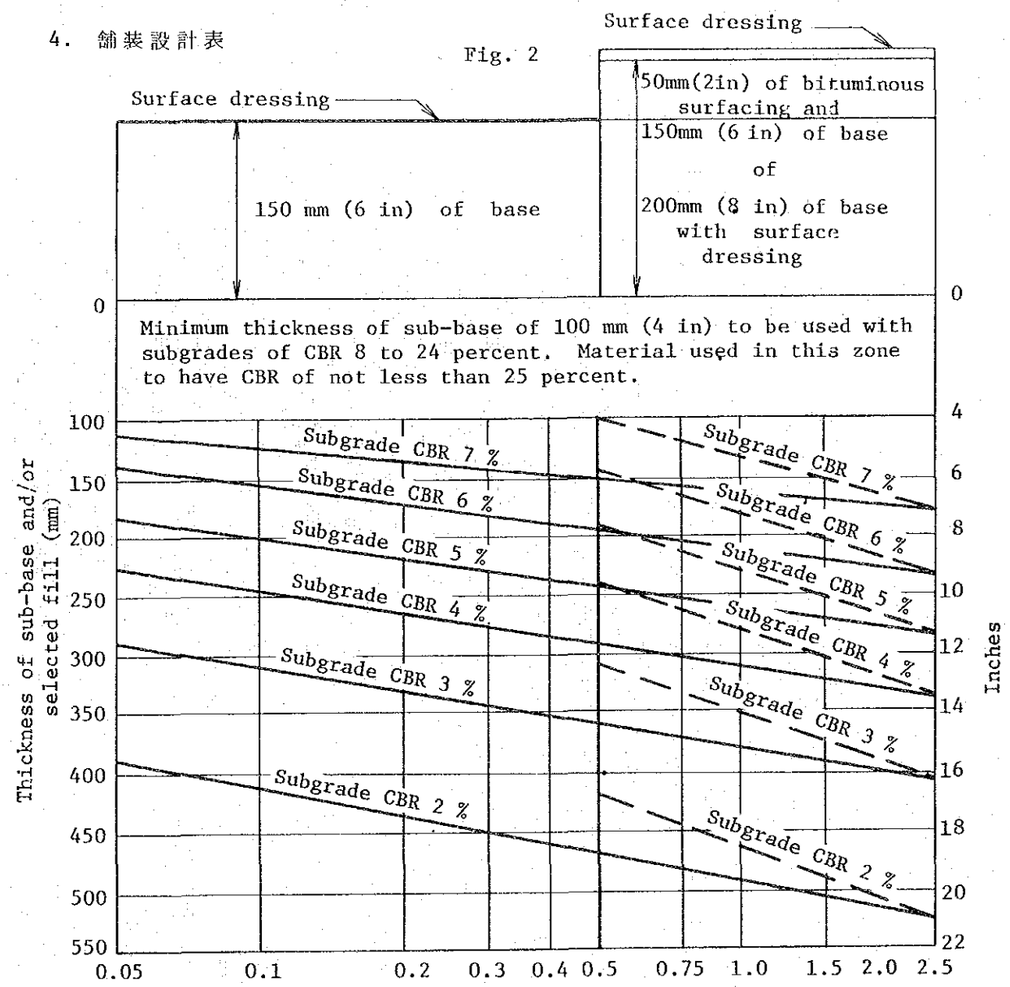
各層の厚さは，設計ＣＢＲと累積軸荷重回数より，Fig.2 のたわみ舗装のための舗装設計表より計算される。

各層の厚さは以下のとおりである。

下層路盤	4 インチ
上層路盤	8 インチ
表層	2-コート 3/4インチ+ 1/2 インチ チッピング

4. 舗装設計表

Fig. 2



もし，５０万回以上の標準軸荷重を通過させることができる様な舗装を設計しようとするときは，設計者は，１５０㎜（６インチ）の上層路盤と５０㎜（２インチ）の瀝青表層の組合せか，２００㎜（８インチ）の上層路盤と，二層の表層仕上げの組合せのどちらかを選ぶことができる。この両案のための望ましい下層路盤の厚さは破線によって示されている。

一方，１５０㎜（６インチ）の上層路盤と二層の表層処理が初期に敷設される場合５０万回の標準軸荷重が通過後に厚さはふえる。余分な厚さは５０㎜（２インチ）の瀝青表層処理か最小７５㎜（３インチ）の砕石と二層表層仕上げのどちらかとなる。砕石の最大粒径は１９㎜（３／４インチ）以下で旧表層は深さ５０㎜（２インチ）までかき起こされて準備されなければならない。このような段階施工の場合，望ましい下層路盤の厚さは実線で示される。