GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project Small Hydro Study For Mukoh Date 20.6.1987

Sample TMK-1 Tested by K.H.F.

Specimen NO.			1	2	
NO. of Flask	①		1	4	
Weight of Flask (g)	②		201.15	156.05	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		1001.05	956.96	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	299.90	300.91	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.499	2.511	
Mean Value	⑦		2.505		
Weight of Dried Specimen (g)	⑧		493.83	494.4	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	1.23	1.12	
Mean Value (%)	⑩		1.19		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project: Small Hydro Study For Mukah Date: 20.6.1987

Sample: TMK-2 Tested by: K.H.F.

Specimen NO.			1	2	
NO. of Flask	①		5	8	
Weight of Flask (g)	②		156.48	199.75	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		958.40	1001.12	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	301.92	301.37	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.524	2.517	
Mean Value	⑦		2.521		
Weight of Dried Specimen (g)	⑧		494.30	494.95	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	1.14	1.01	
Mean Value (%)	⑩		1.09		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project Small Hydro Study For Mukoh Date 20.6.1987

Sample TMK-3 Tested by K.H.F.

Specimen NO.			1	2	
NO. of Flask	①		9	12	
Weight of Flask (g)	②		199.70	201.87	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		998.92	1002.44	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	299.22	300.57	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.490	2.507	
Mean Value	⑦		2.499		
Weight of Dried Specimen (g)	⑧		489.95	490.06	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	2.01	1.99	
Mean Value (%)	⑩		2.04		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project Small Hydro Study For Mukoh Date 20.6.1987

Sample TMK-4 Tested by K.H.F.

Specimen NO.			1	2	
NO. of Flask	①		AE	F	
Weight of Flask (g)	②		156.32	166.41	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		962.31	971.28	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	305.99	304.87	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.577	2.562	
Mean Value	⑦		2.570		
Weight of Dried Specimen (g)	⑧		495.02	495.10	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	1.01	0.99	
Mean Value (%)	⑩		1.00		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project Small Hydro Study For Mukoh Date 20.6.1987

Sample TMK-5 Tested by K.H.F.

Specimen NO.			1	2	
NO. of Flask	①		AJ	AI	
Weight of Flask (g)	②		201.09	200.71	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		1000.61	998.90	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	299.52	298.19	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.494	2.478	
Mean Value	⑦		2.486		
Weight of Dried Specimen (g)	⑧		493.0	492.80	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	1.42	1.46	
Mean Value (%)	⑩		1.44		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND	ASTM C 128

Name of Project Small Hydro Study For Mukoh Date 4-7-1987

Sample TMK-6 Tested by F.K.H.

Specimen NO.			1	2	
NO. of Flask	①		21	22	
Weight of Flask (g)	②		166.50	156.56	
Weight of Specimen (g)	③		500	500	
Weight of (Flask+Water +Specimen) (g)	④		973.8	964.9	
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	307.3	308.34	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.595	2.609	
Mean Value	⑦		2.602		
Weight of Dried Specimen (g)	⑧		480.3	481.1	
Absorption (%)	⑨	$\frac{③-⑧}{⑧}\times 100$	4.10	3.93	
Mean Value (%)	⑩		4.02		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project: Small Hydro Study For Mukoh Date: 22.6.1987

Sample: TMK-1 Tested by: K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5174	5276	
Weight of (Specimen + Basket) in Water	②		3347	3432	
Weight of Basket in Water	③		261	261	
Weight of Specimen in Water	④	②−③	3086	3171	
Dry Weight of Specimen	⑤		5065	5181	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.426	2.461	
Mean Value	⑦		2.444		
Weight of Pore Water	⑧	①−⑤	109	95	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	2.15	1.83	
Mean Value %			1.99		
SSD Specific Gravity		$\frac{①}{①-④}$	2.478	2.506	
Mean Value			2.492		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.559	2.578	
Mean Value			2.568		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project Small Hydro Study For Mukoh Date 22.6.1987

Sample TMK-2 Tested by K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5308	5154	
Weight of (Specimen + Basket) in Water	②		3455	3401	
Weight of Basket in Water	③		261	261	
Weight of Specimen in Water	④	②−③	3194	3140	
Dry Weight of Specimen	⑤		5225	5059	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.472	2.512	
Mean Value	⑦		2.492		
Weight of Pore Water	⑧	①−⑤	83	95	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	1.59	1.88	
Mean Value %			1.74		
SSD Specific Gravity		$\frac{①}{①-④}$	2.511	2.559	
Mean Value			2.535		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.573	2.636	
Mean Value			2.605		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project Small Hydro Study For Mukoh Date 22.6.1987

Sample TMK-3 Tested by K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5748	6351	
Weight of (Specimen + Basket) in Water	②		3735	4109	
Weight of Basket in Water	③		261	261	
Weight of Specimen in Water	④	②−③	3474	3848	
Dry Weight of Specimen	⑤		5693	6284	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.504	2.511	
Mean Value	⑦		2.508		
Weight of Pore Water	⑧	①−⑤	55	67	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	0.97	1.07	
Mean Value %			1.02		
SSD Specific Gravity		$\frac{①}{①-④}$	2.528	2.537	
Mean Value			2.533		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.566	2.579	
Mean Value			2.573		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project: Small Hydro Study For Mukoh Date: 22.6.1987

Sample: TMK-4 Tested by: K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5678	5792	
Weight of (Specimen + Basket) in Water	②		3697	3769	
Weight of Basket in Water	③		261	261	
Weight of Specimen in Water	④	②−③	3436	3508	
Dry Weight of Specimen	⑤		5625	5732	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.509	2.510	
Mean Value	⑦		2.510		
Weight of Pore Water	⑧	①−⑤	53	60	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	0.94	1.05	
Mean Value %			0.99		
SSD Specific Gravity		$\frac{①}{①-④}$	2.533	2.536	
Mean Value			2.535		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.570	2.577	
Mean Value			2.574		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project: Small Hydro Study For Mukoh Date: 22.6.1987

Sample: TMK-5 Tested by: K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		6348	6186	
Weight of (Specimen + Basket) in Water	②		4133	4008	
Weight of Basket in Water	③		261	261	
Weight of Specimen in Water	④	②−③	3872	3747	
Dry Weight of Specimen	⑤		6289	6126	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.540	2.512	
Mean Value	⑦		2.526		
Weight of Pore Water	⑧	①−⑤	59	60	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	0.94	0.98	
Mean Value %			0.96		
SSD Specific Gravity		$\frac{①}{①-④}$	2.564	2.536	
Mean Value			2.550		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.602	2.575	
Mean Value			2.589		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project: Small Hydro Study For Mukoh Date: 4.7.1987

Sample: TMK-6 Tested by: K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5205	4205	
Weight of (Specimen + Basket) in Water	②		3356	2738	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②−③	3121	2503	
Dry Weight of Specimen	⑤		5037	4054	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.417	2.382	
Mean Value	⑦		2.400		
Weight of Pore Water	⑧	①−⑤	168	151	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	3.34	3.72	
Mean Value %			3.53		
SSD Specific Gravity		$\frac{①}{①-④}$	2.498	2.471	
Mean Value			2.484		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.629	2.614	
Mean Value			2.621		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project Small Hydro Study For Mukoh Date 15.7.1987

Sample TMK-7/Crushed Rock Tested by K.H.F.

Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		3216	2991	
Weight of (Specimen + Basket) in Water	②		2192	2058	
Weight of Basket in Water	③		268	268	
Weight of Specimen in Water	④	②−③	1924	1790	
Dry Weight of Specimen	⑤		3131	2917	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.423	2.429	
Mean Value	⑦		2.426		
Weight of Pore Water	⑧	①−⑤	85	74	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	2.72	2.54	
Mean Value %			2.63		
SSD Specific Gravity		$\frac{①}{①-④}$	2.489	2.490	
Mean Value			2.490		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.594	2.588	
Mean Value			2.591		

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL	ASTM C 127

Name of Project: Small Hydro Study For Mukoh Date: 25.8.1987

Sample: TMK-7/Crushed Rock Tested by: K.H.F.

Specimen NO.			3	4	
Saturated-Surface-Dry Weight of Specimen	①		2108	2060	
Weight of (Specimen + Basket) in Water	②		1708	1683	
Weight of Basket in Water	③		445	445	
Weight of Specimen in Water	④	②−③	1263	1238	
Dry Weight of Specimen	⑤		2062	2011	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.440	2.446	
Mean Value	⑦		2.443		
Weight of Pore Water	⑧	①−⑤	46	49	
Absorption %	⑨	$\frac{⑧}{⑤}\times 100$	2.23	2.44	
Mean Value %			2.34		
SSD Specific Gravity		$\frac{①}{①-④}$	2.495	2.506	
Mean Value			2.501		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.581	2.602	
Mean Value			2.592		

Remarks : °

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-1/Test 1 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-1/Test 2 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-2/Test 1 Tested by L.S.M.

Test Results :

Not Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-2/Test 2 Tested by L.S.M.

Test Results :

Not Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-3/Test 1 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-3/Test 2 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukah Date 17.6.1987

Sample TMK-4/Test 1 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project: Small Hydro Study For Mukoh Date: 17.6.1987

Sample: TMK-4/Test 2 Tested by: L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-5/Test 1 Tested by L.S.M.

Test Results :

Not Passed

Remarks :

GEOTECHINIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 17.6.1987

Sample TMK-5/Test 2 Tested by L.S.M.

Test Results :

Not Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project Small Hydro Study For Mukoh Date 4.7.1987

Sample TMK-6/Test 1 Tested by L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40

Name of Project: Small Hydro Study For Mukoh Date: 4.7.1987

Sample: TMK-6/Test 2 Tested by: L.S.M.

Test Results :

Passed

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukoh Date 26.6.1987

Sample Tmk-1/Test 1 Tested by B.C.L.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1180	1561	1537	2895	4980		12153
Weight Parcentage (%)	②	9.71	12.84	12.65	23.82	40.98		
Weight of Before Testing (g)	③	1180	1561	1537	2895	4980		
Number of Particles	④	511	230	68	25	20		
Weight of Soft Particles (g)	⑤	108	131	165	57	281		
Number of Soft Particles	⑥	58	25	10	1	1		
Weight Parcentage of Soft Particles (⑤ /③) ×100 (%)	⑦	9.15	8.39	10.74	1.97	5.64		
Number Parcentage of Soft Particles (⑥ /④) ×100 (%)	⑧	11.35	10.87	14.70	4.00	5.00		
Weight Parcentage of Soft Particles in Aggregates (②×⑦) / 100 (%)	⑨	0.89	1.08	1.36	0.47	2.31		6.1

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 16.6.1987

Sample: TMK-1/Test 2 Tested by: B.C.L.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1803	2026	2655	4398	5268		16150
Weight Parcentage (%)	②	11.16	12.54	16.44	27.23	32.62		
Weight of Before Testing (g)	③	1803	2026	2655	4398	5268		
Number of Particles	④	747	290	145	88	34		
Weight of Soft Particles (g)	⑤	245	369	386	375	232		
Number of Soft Particles	⑥	127	66	25	12	2		
Weight Parcentage of Soft Particles (%) (⑤ /③) ×100	⑦	13.59	18.21	14.54	8.53	4.40		
Number Parcentage of Soft Particles (%) (⑥ /④) ×100	⑧	17.00	22.76	17.24	13.64	5.88		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	1.52	2.28	2.39	2.32	1.44		10.0

Remarks :

Average percentage of soft particles in Aggregate by weight is 8.1% (Average of two test)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukah Date 24.6.1987

Sample TMK-2/Test 1 Tested by K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1512	2265	2748	4768	9595		20888
Weight Parcentage (%)	②	7.24	10.84	13.16	22.83	45.94		
Weight of Before Testing (g)	③	-	2265	2748	4768	9595		
Number of Particles	④	-	336	152	109	60		
Weight of Soft Particles (g)	⑤	-	406	453	625	606		
Number of Soft Particles	⑥	-	74	35	16	8		
Weight Parcentage of Soft Particles (⑤/③) ×100 (%)	⑦	17.92	17.92	16.48	13.11	6.32		
Number Parcentage of Soft Particles (⑥/④) ×100 (%)	⑧	-	22.02	23.03	14.68	13.33		
Weight Parcentage of Soft Particles in Aggregates (②×⑦)/100 (%)	⑨	1.30	1.94	2.17	2.99	2.90		11.3

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukoh Date 24.6.1987

Sample TMK-2/Test 2 Tested by K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1041	1452	2813	4971	8637		18914
Weight Parcentage (%)	②	5.50	7.68	14.87	26.28	45.66		
Weight of Before Testing (g)	③	-	-	2813	4971	8637		
Number of Particles	④	-	-	127	88	51		
Weight of Soft Particles (g)	⑤	-	-	488	502	375		
Number of Soft Particles	⑥	-	-	31	12	4		
Weight Parcentage of Soft Particles (%) (⑤/③) ×100	⑦	17.35	17.35	17.35	10.10	4.34		
Number Parcentage of Soft Particles (%) (⑥/④) ×100	⑧	-	-	24.41	13.64	7.84		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	0.95	1.33	2.58	2.65	1.98		9.5

Remarks :

Average percentage of soft particles in Aggregate by weight is 10.4% (Average of two test)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukoh Date 25.6.1987

Sample TMK-3/Test 1 Tested by K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	2397	3414	1626	3673	7960		19,070
Weight Parcentage (%)	②	12.57	17.90	8.53	19.26	41.74		
Weight of Before Testing (g)	③	2397	3414	-	3673	7960		
Number of Particles	④	952	500	-	80	49		
Weight of Soft Particles (g)	⑤	399.3	545.2	-	163.7	141.7		
Number of Soft Particles	⑥	191	98	-	7	1		
Weight Parcentage of Soft Particles (%) (⑤ /③) ×100	⑦	16.65	15.96	10.22	4.47	1.78		
Number Parcentage of Soft Particles (%) (⑥ /④) ×100	⑧	20.06	19.60	-	8.75	2.04		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	2.09	2.86	0.87	0.86	0.74		7.4

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukoh Date 25.6.1987

Sample TMK-3/Test 2 Tested by K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	2711	3683	2192	4237	8611		21434
Weight Parcentage (%)	②	12.65	17.18	10.23	19.77	40.17		
Weight of Before Testing (g)	③	2711	3683	2192	4237	8611		
Number of Particles	④	1107	544	118	84	42		
Weight of Soft Particles (g)	⑤	512	831	352	550	127		
Number of Soft Particles	⑥	265	119	25	13	1		
Weight Parcentage of Soft Particles (⑤ /③) ×100 (%)	⑦	18.87	22.57	16.05	12.98	1.47		
Number Parcentage of Soft Particles (⑥ /④) ×100 (%)	⑧	23.94	21.87	21.19	15.48	2.38		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	2.39	3.88	1.64	2.57	0.59		11.1

Remarks :

Average percentage of soft particles in Aggregate by weight is 9.3% (Average of two test)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project Small Hydro Study For Mukoh Date 27.6.1987

Sample TMK-4/Test 1 Tested by K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	947	1016	2788	4382	6204		15337
Weight Parcentage (%)	②	6.17	6.62	18.18	28.57	40.45		
Weight of Before Testing (g)	③	-	-	2788	4382	6204		
Number of Particles	④	-	-	150	81	38		
Weight of Soft Particles (g)	⑤	-	-	231	302	337		
Number of Soft Particles	⑥	-	-	16	9	2		
Weight Parcentage of Soft Particles (⑤ /③) ×100 (%)	⑦	8.29	8.29	8.29	6.89	5.43		
Number Parcentage of Soft Particles (⑥ /④) ×100 (%)	⑧	-	-	10.67	11.11	5.26		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	0.51	0.55	1.51	1.97	2.20		6.7

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 27.6.1987

Sample: TMK-4/Test 2 Tested by: K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1610	2438	2805	4477	6072		17,402
Weight Parcentage (%)	②	9.25	14.01	16.12	25.73	34.89		
Weight of Before Testing (g)	③	1610	2438	2805	4477	6072		
Number of Particles	④	-	348	145	94	32		
Weight of Soft Particles (g)	⑤	-	284	368	65	275		
Number of Soft Particles	⑥	-	48	25	2	1		
Weight Parcentage of Soft Particles (⑤/③) ×100 (%)	⑦	11.65	11.65	13.12	1.45	4.53		
Number Parcentage of Soft Particles (⑥/④) ×100 (%)	⑧	-	13.79	17.24	2.13	3.13		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	1.08	1.63	2.11	0.37	1.58		6.8

Remarks :

Average percentage of soft particles in Aggregate by weight is 6.8% (Average of two test)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 3.7.1987

Sample: TMK-6/Test 1 Tested by: K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	543	988	1105	1887	5157		9680
Weight Parcentage (%)	②	5.61	10.21	11.42	19.49	53.27		
Weight of Before Testing (g)	③	-	988	1105	1887	5157		
Number of Particles	④	-	210	84	53	40		
Weight of Soft Particles (g)	⑤	-	543	502	747	2143		
Number of Soft Particles	⑥	-	134	51	29	20		
Weight Parcentage of Soft Particles (%) (⑤ /③) ×100	⑦	54.96	54.96	45.43	39.59	41.56		
Number Parcentage of Soft Particles (%) (⑥ /④) ×100	⑧	-	63.81	60.71	54.72	50.00		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	3.08	5.61	5.19	7.72	22.14		43.7

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 3.7.1987

Sample: TMK-6/Test 2 Tested by: K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	616	905	1051	1973	5097		9642
Weight Parcentage (%)	②	6.39	9.39	10.90	20.46	52.86		
Weight of Before Testing (g)	③	-	-	1051	1973	5097		
Number of Particles	④	-	-	75	45	24		
Weight of Soft Particles (g)	⑤	-	-	448	1043	986		
Number of Soft Particles	⑥	-	-	44	29	10		
Weight Parcentage of Soft Particles (⑤ /③) ×100 (%)	⑦	42.63	42.63	42.63	52.86	19.34		
Number Parcentage of Soft Particles (⑥ /④) ×100 (%)	⑧	-	-	58.67	64.44	41.67		
Weight Parcentage of Soft Particles in Aggregates (②×⑦) / 100 (%)	⑨	2.72	4.00	4.65	10.82	10.23		32.4

Remarks :

Average percentage of soft particles in Aggregate by weight is 38.1% (Average of two test)

GEOTECHNIQUE-EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 25.8.1987

Sample: TMK-7/Test 1 (Crushed Rock) Tested by: K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1055.6	844.0	103	21.5	-		2024.1
Weight Parcentage (%)	②	52.15	41.70	5.09	1.06	-		100
Weight of Before Testing (g)	③	1055.6	844.0	-	-	-		
Number of Particles	④	501	193	-	-	-		
Weight of Soft Particles (g)	⑤	34.90	34.8	-	-	-		
Number of Soft Particles	⑥	16	7	-	-	-		
Weight Parcentage of Soft Particles (⑤/③) ×100 (%)	⑦	3.31	4.12	4.12	4.12	-		
Number Parcentage of Soft Particles (⑥/④) ×100 (%)	⑧	3.19	3.63	-	-	-		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	1.73	1.72	0.21	0.04	-		3.70

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235

Name of Project: Small Hydro Study For Mukoh Date: 25.8.1987

Sample: TMK-7/Test 2 (Crushed Rock) Tested by: K.H.F.

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60		Total
Weight of Each Size (g)	①	1072.2	887.2	88.6	31.4	-		2079.4
Weight Parcentage (%)	②	51.56	42.67	4.26	1.51	-		100
Weight of Before Testing (g)	③	1072.2	887.2	-	-	-		
Number of Particles	④	475	184	-	-	-		
Weight of Soft Particles (g)	⑤	10.4	9.5	-	-	-		
Number of Soft Particles	⑥	5	2	-	-	-		
Weight Parcentage of Soft Particles (%) (⑤ /③) ×100	⑦	0.97	1.07	1.07	1.07	-		
Number Parcentage of Soft Particles (%) (⑥ /④) ×100	⑧	1.05	1.09	-	-	-		
Weight Parcentage of Soft Particles in Aggregates (%) (②×⑦) / 100	⑨	0.50	0.46	0.05	0.02	-		1.03

Remarks :

Average Percentage of soft particles in aggregate by weight = 2.4 (Average of two test)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88

Name of Project: Small Hydro Study For Mukoh Date: 1.7.1987

Sample: TMK-2 Tested by: L.S.M.

Soundness of Sand

Particle Size (mm)		0.3-0.6	0.6-1.2	1.2-2.5	2.5-5.0	5.0-10.0		Total
Weight of Each Size (g)		812.6	366.3	581.5	1215.3	1921.0		4896.7
Grading of Original Sample (%)	①	16.6	7.5	11.9	24.8	39.2		100
Weight of Before Testing (g)	②	100.0	100.0	100.0	100.0	100.0		
Weight of After Testing (g)	③	91.8	91.0	96.5	93.2	90.3		
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	8.2	9.0	3.5	6.8	9.7		
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	1.36	0.67	0.42	1.69	3.81		8.0

Soundness of Gravel

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)		1241	2038	1667	3526	4239	0	12711
Grading of Orginal Sample (%)	①	9.8	16.0	13.1	27.7	33.4	-	100
Weight of Before Testing (g)	②	500.6	749.4	814.6	1523.0	2149.5	-	
Weight of After Testing (g)	③	461.9	653.0	700.0	1487.8	2029.8	-	
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	7.7	12.9	14.1	2.3	5.6	-	
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	0.75	2.06	1.85	0.64	1.87	-	7.2

Remarks : Sieves of 1.18mm, 2.36mm, 14.0mm, 19.0mm, 25.4mm, 38.1mm, 63.5mm and 76.2mm were used instead of 1.2mm, 2.5mm, 15.0mm, 20.0mm, 25.0mm, 40.0mm, 60.0mm and 80.0mm.

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88

Name of Project: Small Hydro Study For Mukoh Date: 1.7.1987

Sample: TMK-3 Tested by: L.S.M.

Soundness of Sand

Particle Size (mm)		0.3-0.6	0.6-1.2	1.2-2.5	2.5-5.0	5.0-10.0		Total
Weight of Each Size (g)		1019.4	840.1	1066.1	1355.0	2023.8		6304.4
Grading of Original Sample (%)	①	16.2	13.3	16.9	21.5	32.1		100
Weight of Before Testing (g)	②	100.0	100.0	100.0	100.0	100.0		
Weight of After Testing (g)	③	92.0	93.9	94.8	89.4	90.8		
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	8.0	6.1	5.2	10.6	9.2		
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	1.30	0.81	0.88	2.28	2.95		8.2

Soundness of Gravel

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)		1275	2031	2431	4106	8402	3521	21766
Grading of Orginal Sample (%)	①	5.9	9.3	11.2	18.9	38.6	16.2	100
Weight of Before Testing (g)	②	499.3	754.0	1006.7	1514.2	4024.0	3508.0	
Weight of After Testing (g)	③	477.6	726.9	904.6	1437.7	3768.7	3396.1	
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	4.4	3.6	10.1	5.1	6.3	3.2	
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	0.26	0.33	1.13	0.96	2.43	0.52	5.6

Remarks : Sieves of 1.18mm, 2.36mm, 14.0mm, 19.0mm, 25.4mm, 38.1mm, 63.5mm and 76.2mm were used instead of 1.2mm, 2.5mm, 15.0mm, 20.0mm, 25.0mm, 40.0mm, 60.0mm and 80.0mm.

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88

Name of Project: Small Hydro Study For Mukoh Date: 3.7.1987

Sample: TMK-6 Tested by: L.S.M.

Soundness of Sand

Particle Size (mm)		0.3-0.6	0.6-1.18	1.18-2.36	2.36-5.0	5.0-10.0		Total
Weight of Each Size (g)		480.4	543.7	661.1	936.0	2297.2		4918.4
Grading of Original Sample (%)	①	9.8	11.1	13.4	19.0	46.7		100
Weight of Before Testing (g)	②	100.0	100.0	100.0	100.0	100.0		
Weight of After Testing (g)	③	88.7	80.7	90.6	86.6	79.5		
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	11.3	19.3	9.4	13.4	20.5		
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	1.11	2.14	1.26	2.55	9.57		16.6

Soundness of Gravel

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)		1606.7	1552.3	1901.7	2598.3	6938.2	822.2	15419.4
Grading of Orginal Sample (%)	①	10.4	10.1	12.3	16.9	45.0	5.3	100
Weight of Before Testing (g)	②	500.3	751.0	1011.5	1511.0	3063.4	822.2	
Weight of After Testing (g)	③	488.9	620.0	884.5	1225.5	2482.3	821.6	
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	2.3	17.4	12.6	18.9	19.0	0.1	
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	0.24	1.76	1.55	3.19	8.55	0.01	15.3

Remarks : Sieves of 1.18mm, 2.36mm, 14.0mm, 19.0mm, 25.4mm, 38.1mm, 63.5mm and 76.2mm were used instead of 1.2mm, 2.5mm, 15.0mm, 20.0mm, 25.0mm, 40.0mm, 60.0mm and 80.0mm.

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88

Name of Project: Small Hydro Study For Mukoh Date: 14.7.1987

Sample: TMK-7 (Crushed Rock) Tested by: L.S.M.

Soundness of Sand

Particle Size (mm)								Total
Weight of Each Size (g)								
Grading of Original Sample (%)	①							
Weight of Before Testing (g)	②							
Weight of After Testing (g)	③							
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④							
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤							

Soundness of Gravel

Particle Size (mm)		10-15	15-20	20-25				Total
Weight of Each Size (g)		500.8	753.2	1002.8				2256.8
Grading of Orginal Sample (%)	①	22.2	33.4	44.4				100
Weight of Before Testing (g)	②	500.8	753.2	1002.8				
Weight of After Testing (g)	③	496.9	740.4	976.8				
Weight Parcentage of Each Size Loss Particle (1 −③/②)×100 (%)	④	0.8	1.7	2.6				
Weight Percentage of Loss Aggregates (① × ④/100) (%)	⑤	0.18	0.57	1.15				1.9

Remarks : Sieves of 14.0mm & 19.0mm were used instead of 15mm & 20mm

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 26.6.1987

Sample: TMK-2/Test 1 (Grading A) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1250
25	20			A	12	1252
40	25			A	12	1255
50	40					
60	50					
80	60					
Total:						5007

② Weight of Retained on 1.7mm Sieve After Testing (g)			3392
③ Weight of Abrasion loss	①−②	(g)	1615
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	32.3

Remarks:

ASTM C131 grading by A

Mean of Abrasion loss percent of TMK-2 = 23.6%

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 29.6.1987

Sample: TMK-2/Test 2 (Grading A) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1250
25	20			A	12	1250
40	25			A	12	1250
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing (g)		3275
③ Weight of Abrasion loss	①−② (g)	1725
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$ (%)	34.5

Remarks:

ASTM C131 grading by A

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 26.6.1987

Sample: TMK-2/Test 1 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing (g)			3692
③ Weight of Abrasion loss	①−②	(g)	1308
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	26.2

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 29.6.1987

Sample: TMK-2/Test 2 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing (g)			3537
③ Weight of Abrasion loss	①−②	(g)	1463
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	29.3

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 26.6.1987

Sample: TMK-2/Test 1 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2500
60	50			E	12	2500
80	60			E	12	5000
Total:						10000

② Weight of Retained on 1.7mm Sieve After Testing (g)		8312
③ Weight of Abrasion loss	①−② (g)	1688
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$ (%)	16.9

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 29.6.1987

Sample: TMK-2/Test 2 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2500
60	50			E	12	2500
80	60			E	12	5000
Total:						10000

② Weight of Retained on 1.7mm Sieve After Testing (g)		8366
③ Weight of Abrasion loss	①−② (g)	1634
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$ (%)	16.3

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 25.6.1987

Sample: ~~TMK-3~~/Test 1 (Grading A) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1255
25	20			A	12	1253
40	25			A	12	1252
50	40					
60	50					
80	60					
Total:						5010

② Weight of Retained on 1.7mm Sieve After Testing (g)		3232
③ Weight of Abrasion loss	①−② (g)	1778
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$ (%)	35.5

Remarks:

ASTM C131 grading by A
Mean of Abrasion loss percent of TMK-3 = 24.5%

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 29.6.1987

Sample: TMK-3/Test 2 (Grading A) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1250
25	20			A	12	1250
40	25			A	12	1254
50	40					
60	50					
80	60					
Total:						5004

② Weight of Retained on 1.7mm Sieve After Testing (g)			3303
③ Weight of Abrasion loss	①−②	(g)	1701
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	34.0

Remarks:

ASTM C131 grading by A

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 25.6.1987

Sample: TMK-3/Test 1 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2506
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5006

② Weight of Retained on 1.7mm Sieve After Testing (g)			3536
③ Weight of Abrasion loss	①−②	(g)	1470
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	29.4

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukah Date: 29.6.1987

Sample: TMK-3/Test 2 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2506
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5006

② Weight of Retained on 1.7mm Sieve After Testing (g)			3518
③ Weight of Abrasion loss	①−②	(g)	1488
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	29.7

Remarks:
ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 25.6.1987

Sample: TMK-3/Test 1 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2500
60	50			E	12	2500
80	60			E	12	5000
Total:						10000

② Weight of Retained on 1.7mm Sieve After Testing (g)			8328
③ Weight of Abrasion loss	①−②	(g)	1672
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	16.7

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 29.6.1987

Sample: TMK-3/Test 2 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2500
60	50			E	12	2500
80	60			E	12	5012
Total:						10012

② Weight of Retained on 1.7mm Sieve After Testing (g)		8338
③ Weight of Abrasion loss	①−② (g)	1674
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$ (%)	16.7

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 11.7.1987

Sample: TMK-6/Test 1 (Grading A) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1250
25	20			A	12	1250
40	25			A	12	1250
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing		(g)	2995
③ Weight of Abrasion loss	①−②	(g)	2005
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	40.1

Remarks:

ASTM C131 grading by A
Mean of Abrasion loss percent of Tmk-6 = 35.4%

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project Small Hydro Study For Mukoh Date 11.7.1987

Sample TMK-6/Test 2 (Grading A) Tested by K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	1250
20	15			A	12	1250
25	20			A	12	1250
40	25			A	12	1255
50	40					
60	50					
80	60					
Total:						5005

② Weight of Retained on 1.7mm Sieve After Testing (g)	3062
③ Weight of Abrasion loss ①−② (g)	1943
④ Percent of Abrasion loss $\frac{③}{①} \times 100$ (%)	38.8

Remarks:

ASTM C131 grading by A

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 11.7.1987

Sample: TMK-6/Test 1 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2505
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5005

② Weight of Retained on 1.7mm Sieve After Testing (g)			3408
③ Weight of Abrasion loss	①−②	(g)	1597
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	31.9

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 11.7.1987

Sample: TMK-6/Test 2 (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing		(g)	3265
③ Weight of Abrasion loss	①−②	(g)	1735
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	34.7

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 13.7.1987

Sample: TMK-6/Test 1 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2511
60	50			E	12	2540
80	60			E	12	5000
Total:						10,051

② Weight of Retained on 1.7mm Sieve After Testing (g)			6375
③ Weight of Abrasion loss	①−②	(g)	3676
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	36.6

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 13.7.1987

Sample: TMK-6/Test 2 (Grading E) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2514
60	50			E	12	2500
80	60			E	12	5036
Total:						10,050

② Weight of Retained on 1.7mm Sieve After Testing		(g)	6854
③ Weight of Abrasion loss	①−②	(g)	3196
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	31.8

Remarks:

JIS A1121 grading by E
(The same as ASTM C535 grading 1)

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukoh Date: 11.7.1987

Sample: TMK-7/Test 1 (Crushed Rock) (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing (g)			3743
③ Weight of Abrasion loss	①−②	(g)	1257
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	25.1

Remarks:

ASTM C131 grading by C

Mean of Abrasion loss percent of TMK-7 (Crushed Rock) = 25.1%

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535

Name of Project: Small Hydro Study For Mukah Date: 11.7.1987

Sample: TMK-7/Test 2 (Crushed Rock) (Grading C) Tested by: K.H.F.

Sieve (mm)		Weight of Each Size	Weight Percentage	Grading	Number of Spheres	① Weight of Before Testing
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5			C	8	2500
15	10			C	8	2500
20	15					
25	20					
40	25					
50	40					
60	50					
80	60					
Total:						5000

② Weight of Retained on 1.7mm Sieve After Testing (g)			3748
③ Weight of Abrasion loss	①−②	(g)	1252
④ Percent of Abrasion loss	$\frac{③}{①} \times 100$	(%)	25.0

Remarks:

ASTM C131 grading by C

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 12.6.1987

Sample: TMK-1 — Tested by: B.C.L.

Inside Diameter of Mold: 15 cm — Volume ①: 2305 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 13.32 %

Specific Gravity(SSD) ②: 2.51 — Absorption ③: 1.18 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			12.6.1987	12.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		13,000	13,000	
Weight of Mold (g)	⑤		9,000	9,000	
Weight of Specimen (g)	⑥	④−⑤	4,000	4,000	
Unit Weight (t/m^3)	⑦	⑥／①	1.735	1.735	1.735
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	69.9	69.9	69.9
Void Ratio (%)	⑨	100−⑧	30.1	30.1	30.1

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 12.6.1987

Sample: TMK-2 — Tested by: B.C.L.

Inside Diameter of Mold: 15 cm — Volume ①: 2305 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 15.35 %

Specific Gravity(SSD) ②: 2.52 — Absorption ③: 1.08 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			12.6.1987	12.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		12,500	12,500	
Weight of Mold (g)	⑤		9,000	9,000	
Weight of Specimen (g)	⑥	④−⑤	3,500	3,500	
Unit Weight (t/m^3)	⑦	⑥/①	1.518	1.518	1.518
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	60.9	60.9	60.9
Void Ratio (%)	⑨	100−⑧	39.1	39.1	39.1

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 13.6.1987

Sample: TMK-3 — Tested by: B.C.L.

Inside Diameter of Mold: 15 cm — Volume ①: 2305 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 8.12 %

Specific Gravity(SSD) ②: 2.50 — Absorption ③: 2.00 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			13.6.1987	13.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		12,500	12,500	
Weight of Mold (g)	⑤		9,000	9,000	
Weight of Specimen (g)	⑥	④−⑤	3,500	3,500	
Unit Weight (t/m^3)	⑦	⑥/①	1.518	1.518	1.518
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	61.9	61.9	61.9
Void Ratio (%)	⑨	100−⑧	38.1	38.1	38.1

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29

Name of Project: Small Hydro Study For Mukah — Date: 1-7-1987

Sample: TMK-6 — Tested by: B.C.L.

Inside Diameter of Mold: 15 cm — Volume ①: 2305 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 1.301

Specific Gravity (SSD) ②: 2.602 — Absorption ⑧: 4.02

Specimen NO.			1	2	Mean Value
Date of Specimen Made			1-7-1987	1-7-1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		11350	11380	
Weight of Mold (g)	⑤		7305	7305	
Weight of Specimen (g)	⑥	④−⑤	4045	4075	
Unit Weight (t/m^3)	⑦	⑥/①	1.755	1.768	1.761
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+⑧)}{②}$	70.2	70.7	70.5
Void Ratio (%)	⑨	100−⑧	29.8	29.3	29.6

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (GRAVEL)	ASTM C 29

Name of Project: Small Hydro Study For Mukah — Date: 12.6.1987

Sample: TMK-1 — Tested by: B.C.L.

Inside Diameter of Mold: 30 cm — Volume ①: 21500 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 6.20 %

Specific Gravity (SSD) ②: 2.498 — Absorption ③: 1.99 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			12.6.1987	12.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		47,000	48,000	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④−⑤	37,000	38,000	
Unit Weight (t/m^3)	⑦	⑥/①	1.721	1.767	1.744
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	70.3	72.1	71.2
Void Ratio (%)	⑨	100−⑧	29.7	27.9	28.8

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (GRAVEL)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 12.6.1987

Sample: TMK-2 — Tested by: B.C.L.

Inside Diameter of Mold: 30 cm — Volume ①: 21500 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 9.15 %

Specific Gravity (SSD) ②: 2.555 — Absorption ③: 1.24 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			12.6.1987	12.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		48,000	49,000	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④−⑤	38,000	39,000	
Unit Weight (t/m^3)	⑦	⑥/①	1.767	1.814	1.791
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	70.4	72.2	71.3
Void Ratio (%)	⑨	100−⑧	29.6	27.8	28.7

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (GRAVEL)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 13.6.1987

Sample: TMK-3 — Tested by: B.C.L.

Inside Diameter of Mold: 30 cm — Volume ①: 21500 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 5.35 %

Specific Gravity(SSD) ②: 2.533 — Absorption ③: 1.02 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			13.6.1987	13.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		48,000	49,000	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④−⑤	38,000	39,000	
Unit Weight (t/m^3)	⑦	⑥/①	1.767	1.814	1.791
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	70.5	72.3	71.4
Void Ratio (%)	⑨	100−⑧	29.5	27.7	28.6

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	UNIT WEIGHT TEST OF AGGREGATES (GRAVEL)	ASTM C 29

Name of Project: Small Hydro Study For Mukoh — Date: 1-7-1987

Sample: TMK-6 — Tested by: B.C.L.

Inside Diameter of Mold: 30 cm — Volume ①: 21285 cm^3

Number of Blows: 25 — Layers: 3

Moisture Condition of Sample: 6.64

Specific Gravity(SSD) ②: 2.621 — Absorption ③: 3.53

Specimen NO.			1	2	Mean Value
Date of Specimen Made			1-7-1987	1-7-1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		45967	45670	
Weight of Mold (g)	⑤		8385	8385	
Weight of Specimen (g)	⑥	④−⑤	37582	37285	
Unit Weight (t/m^3)	⑦	⑥/①	1.766	1.752	1.759
Solid Volume Percentage (%)	⑧	$\frac{⑦*(100+③)}{②}$	69.7	69.2	69.5
Void Ratio (%)	⑨	100−⑧	30.2	30.8	30.5

Remarks :

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938

Name of Project: Small Hydro Study for Mukoh — Date: 20.7.1987

Sample: BMK1/Sample A — Tested by: C. H. Wang

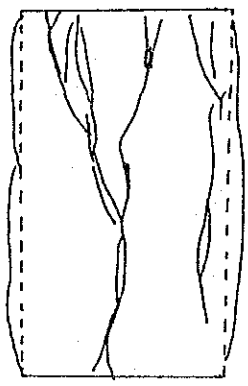
Moisture Condition of Sample: (Saturated)

Specific Gravity: - Unit Weight 2.59 Mg/m^3 — Absorption: 0.74 %

Rate of loading: 90 KN Per Minute — Rock Type: SILTSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm^2)
BMK1/Sample A	5.55 - 5.75m	5.40	10.2	345.48
Mean Value				

Remarks :



Failure along weak subvertical plane

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938

Name of Project: Small Hydro Study for Mukoh — Date: 20.7.1987

Sample: BMK1/Sample B — Tested by: C. H. Wang

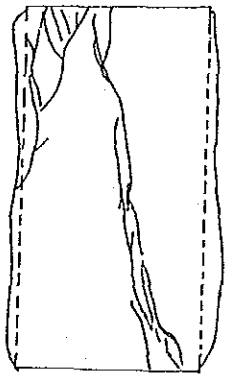
Moisture Condition of Sample: (Saturated)

Specific Gravity: - Unit Weight: 2.62 Mg/m^3 — Absorption: 0.40 %

Rate of loading: 90 KN Per Minute — Rock Type: SILTSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm^2)
BMK1/Sample B	12.70 - 12.95m	5.40	10.40	323.86
Mean Value				

Remarks :



Failure along weak subvertical plane

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938

Name of Project: Small Hydro Study for Mukoh — Date: 20.7.1987

Sample: BMK2/Sample A — Tested by: C. H. Wang

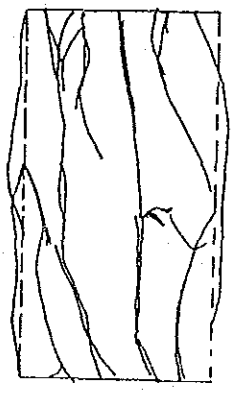
Moisture Condition of Sample: 0.83 % (In-Situ)

Specific Gravity: - Unit Weight 2.76 Mg/m^3 — Absorption:

Rate of loading: 90 KN Per Minute — Rock Type: SILTSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm^2)
BMK2/Sample A	10.70 - 10.95m	5.40	9.80	214.34
Mean Value				

Remarks :



Failure along weak subvertical plane

GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938

Name of Project: Small Hydro Study for Mukoh — Date: 20.7.1987

Sample: BMK2/Sample B — Tested by: C.H. Wang

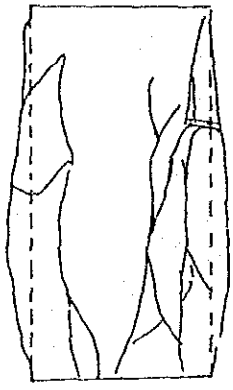
Moisture Condition of Sample: 2.87 % (In-Situ)

Specific Gravity: - Unit Weight 2.71 Mg/m^3 — Absorption:

Rate of loading: 90 KN Per Minute — Rock Type: SILTSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm^2)
BMK2/Sample B	11.60 - 11.85m	5.40	9.90	214.34
Mean Value				

Remarks :



Failure along weak subvertical plane