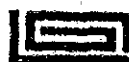


Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF SAND		ASTM C 128			
Name of Project		Small Hydro Study For Medemit		Date		4-7-1987	
Sample		TME-2		Tested by		F.K.H.	
Specimen NO.			1		2		
NO. of Flask		①	9		10		
Weight of Flask (g)		②	198.82		201.73		
Weight of Specimen (g)		③	500		500		
Weight of (Flask+Water +Specimen) (g)		④	994.8		995.5		
Weight of Poured Water into a Flask (g)		⑤	④ - (② + ③)		295.98		293.77
Specific Gravity		⑥	$\frac{③}{500 - ⑤}$		2.451		2.424
Mean Value		⑦			2.438		
Weight of Dried Specimen (g)		⑧	484.48		485.3		
Absorption (%)		⑨	$\frac{③ - ⑧}{⑧} \times 100$		3.20		3.03
Mean Value (%)		⑩			3.12		
Remarks :							



Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND		ASTM C 128	
Name of Project	Small Hydro Study For Madamit		Date 4-7-1987	
Sample	TME-3		Tested by F.K.H.	
Specimen NO.		1	2	
NO. of Flask	①	11	12	
Weight of Flask (g)	②	201.16	202.36	
Weight of Specimen (g)	③	500	500	
Weight of (Flask+Water+Specimen) (g)	④	986.8	991.2	
Weight of Poured Water into a Flask (g)	⑤	④ - (② + ③)	288.84	
Specific Gravity	⑥	$\frac{③}{500 - ⑤}$	2.332	2.368
Mean Value	⑦	2.350		
Weight of Dried Specimen (g)	⑧	480.86	481.8	
Absorption (%)	⑨	$\frac{③ - ⑧}{⑧} \times 100$	3.98	3.64
Mean Value (%)	⑩	3.88		
Remarks :				



Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND			ASTM C 128
Name of Project	Small Hydro Study For Mademit		Date	4-7-1987
Sample	TME-4		Tested by	F.K.H.
Specimen NO.			1	2
NO. of Flask	①		13	14
Weight of Flask (g)	②		205.62	201.17
Weight of Specimen (g)	③		500	500
Weight of (Flask+Water +Specimen) (g)	④		992.71	985.9
Weight of Poured Water into a Flask (g)	⑤	④ - (② + ③)	287.09	284.73
Specific Gravity	⑥	$\frac{③}{500 - ⑤}$	2.348	2.323
Mean Value	⑦		2.336	
Weight of Dried Specimen (g)	⑧		479.88	480.50
Absorption (%)	⑨	$\frac{③ - ⑧}{⑧} \times 100$	4.19	4.06
Mean Value (%)	⑩		4.13	
Remarks :				



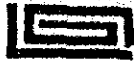
GEOTECHNIQUE EAST MALAYSIA SDN. BHD.

Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF SAND		ASTM C 128	
Name of Project		Small Hydro Study For Medamit		Date 4-7-1987	
Sample		TME-5		Tested by F.K.H.	
Specimen NO.			1	2	
NO. of Flask	①	15	16		
Weight of Flask (g)	②	200.34	198.57		
Weight of Specimen (g)	③	500	500		
Weight of (Flask+Water +Specimen) (g)	④	990.65	985.12		
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	290.31	286.55	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.384	2.342	
Mean Value	⑦	2.363			
Weight of Dried Specimen (g)	⑧	479.18	478.3		
Absorption (%)	⑨	$\frac{③-⑧}{⑧} \times 100$	4.34	4.54	
Mean Value (%)	⑩	4.44			

Remarks :

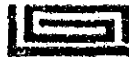


Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF SAND			ASTM C 128
Name of Project	Small Hydro Study For Medamit		Date	4-7-1987
Sample	TME-6		Tested by	F.K.H.
Specimen NO.			1	2
NO. of Flask	①		17	18
Weight of Flask (g)	②		200.02	201.36
Weight of Specimen (g)	③		500	500
Weight of (Flask+Water +Specimen) (g)	④		991.24	992.21
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	291.22	290.85
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.395	2.391
Mean Value	⑦		2.393	
Weight of Dried Specimen (g)	⑧		483.3	483.6
Absorption (%)	⑨	$\frac{③-⑧}{⑧} \times 100$	3.46	3.99
Mean Value (%)	⑩		3.42	
Remarks :				

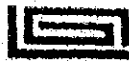


Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF SAND		ASTM C 128	
Name of Project		Small Hydro Study For Madamit		Date 4-7-1987	
Sample		TME-7		Tested by F.K.H.	
Specimen NO.			1	2	
NO. of Flask	①	19	20		
Weight of Flask (g)	②	199.86	199.06		
Weight of Specimen (g)	③	500	500		
Weight of (Flask+Water +Specimen) (g)	④	986.1	989.5		
Weight of Poured Water into a Flask (g)	⑤	④-(②+ ③)	286.24	290.44	
Specific Gravity	⑥	$\frac{③}{500-⑤}$	2.339	2.386	
Mean Value	⑦	2.363			
Weight of Dried Specimen (g)	⑧	486.2	487.0		
Absorption (%)	⑨	$\frac{③-⑧}{⑧} \times 100$	2.84	2.67	
Mean Value (%)	⑩	2.75			

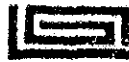
Remarks :



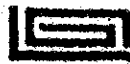
Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Medamit		Date 4.7.1987	
Sample		TME-1		Tested by K.H.F.	
Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		5305	5972	
Weight of (Specimen + Basket) in Water	②		3462	3877	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②-③	3227	3642	
Dry Weight of Specimen	⑤		5235	5888	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.519	2.527	
Mean Value	⑦		2.523		
Weight of Pore Water	⑧	①-⑤	70	84	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.34	1.43	
Mean Value %			1.39		
SSD Specific Gravity		$\frac{①}{①-④}$	2.553	2.563	
Mean Value			2.558		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.607	2.622	
Mean Value			2.614		
Remarks :					



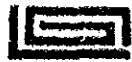
Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Medamit		Date 4.7.1987	
Sample		TME-2		Tested by K.H.F.	
Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		4646	5422	
Weight of (Specimen + Basket) in Water	②		3058	3528	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②-③	2823	3293	
Dry Weight of Specimen	⑤		4564	5339	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.504	2.508	
Mean Value	⑦		2.506		
Weight of Pore Water	⑧	①-⑤	82	83	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.80	1.56	
Mean Value %			1.68		
SSD Specific Gravity		$\frac{①}{①-④}$	2.549	2.547	
Mean Value			2.548		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.621	2.609	
Mean Value			2.615		
Remarks :					



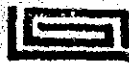
Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Medamit		Date 4.7.1987	
Sample		TME-3		Tested by K.H.F.	
Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		6977	6772	
Weight of (Specimen + Basket) in Water	②		4525	4405	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②-③	4290	4170	
Dry Weight of Specimen	⑤		6908	6696	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.571	2.573	
Mean Value	⑦		2.572		
Weight of Pore Water	⑧	①-⑤	69	76	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.00	1.14	
Mean Value %			1.07		
SSD Specific Gravity		$\frac{①}{①-④}$	2.597	2.603	
Mean Value			2.600		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.639	2.651	
Mean Value			2.645		
Remarks :					



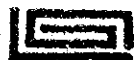
Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Medamit		Date 4.7.1987	
Sample		TME-4		Tested by K.H.F.	
Specimen NO.		1		2	
Saturated-Surface-Dry Weight of Specimen	①	6288	6090		
Weight of (Specimen + Basket) in Water	②	4076	3949		
Weight of Basket in Water	③	235	235		
Weight of Specimen in Water	④	②-③	3841	3714	
Dry Weight of Specimen	⑤	6180	5992		
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.526	2.522	
Mean Value	⑦		2.524		
Weight of Pore Water	⑧	①-⑤	108	98	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.75	1.64	
Mean Value %			1.70		
SSD Specific Gravity		$\frac{①}{①-④}$	2.570	2.563	
Mean Value			2.566		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.642	2.630	
Mean Value			2.636		
Remarks :					



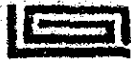
Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Medemit		Date 4.7.1987	
Sample		TME-5		Tested by K.H.F.	
Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		9295	7952	
Weight of (Specimen + Basket) in Water	②		5949	5113	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②-③	5714	4878	
Dry Weight of Specimen	⑤		9201	7866	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.569	2.559	
Mean Value	⑦		2.564		
Weight of Pore Water	⑧	①-⑤	94	86	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.02	1.09	
Mean Value %			1.06		
SSD Specific Gravity		$\frac{①}{①-④}$	2.596	2.587	
Mean Value			2.591		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.639	2.633	
Mean Value			2.636		
Remarks :					



Name of Test	SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project	Small Hydro Study For Medemit		Date 4.7.1987	
Sample	TME-6		Tested by K.H.F.	
Specimen NO.		1	2	
Saturated-Surface-Dry Weight of Specimen	①	6718	5651	
Weight of (Specimen + Basket) in Water	②	4362	3701	
Weight of Basket in Water	③	235	235	
Weight of Specimen in Water	④	②-③	4127	3466
Dry Weight of Specimen	⑤	6641	5589	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.563	2.558
Mean Value	⑦		2.560	
Weight of Pore Water	⑧	①-⑤	77	62
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.16	1.11
Mean Value %			1.14	
SSD Specific Gravity		$\frac{①}{①-④}$	2.593	2.586
Mean Value			2.590	
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.642	2.633
Mean Value			2.637	
Remarks :				



Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Small Hydro Study For Madamit		Date 4.7.1987	
Sample		TME-7		Tested by K.H.F.	
Specimen NO.			1	2	
Saturated-Surface-Dry Weight of Specimen	①		9975	7118	
Weight of (Specimen + Basket) in Water	②		6362	4608	
Weight of Basket in Water	③		235	235	
Weight of Specimen in Water	④	②-③	6127	4373	
Dry Weight of Specimen	⑤		9875	7047	
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.566	2.567	
Mean Value	⑦		2.567		
Weight of Pore Water	⑧	①-⑤	100	71	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	1.01	1.01	
Mean Value %			1.01		
SSD Specific Gravity		$\frac{①}{①-④}$	2.592	2.593	
Mean Value			2.593		
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.635	2.635	
Mean Value			2.635		
Remarks :					



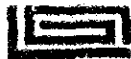
Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
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Name of Project	Small Hydro Study For Medemit	Date	4.7.1987
Sample	TME-2/Test 1	Tested by	L.S.M.

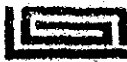
Test Results :

Passed

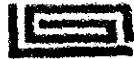
Remarks :



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medemit	Date 4.7.1987
Sample	TME-2/Test 2.	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Passed</u></p>		
<p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-3/Test 1	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medemit	Date 4.7.1987
Sample	TME-3/Test 2	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



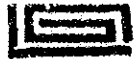
Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
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Name of Project	Small Hydro Study For Medamit	Date	4.7.1987
Sample	TME-4/Test 1	Tested by	L.S.M.

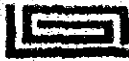
Test Results :

Not Passed

Remarks :



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-4/Test 2	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-5/Test. 1	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-5/Test 2.	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



Name of Test :	ORGANIC IMPURITIES OF SAND	ASTM C 40
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Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-6/Test 1	Tested by L.S.M.

Test Results :

Not Passed

Remarks :



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Madamit	Date 4.7.1987
Sample	TME-6/Test 2	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p>		
<p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
Name of Project	Small Hydro Study For Medamit	Date 4.7.1987
Sample	TME-7/Test 1	Tested by L.S.M.
<p>Test Results :</p> <p style="text-align: center;"><u>Not Passed</u></p> <p>Remarks :</p>		



Name of Test	ORGANIC IMPURITIES OF SAND	ASTM C 40
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Name of Project	Date
Sample	Tested by

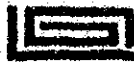
Small Hydro Study For Medamit 4.7.1987

TNE-7/Test 2 L.S.M.

Test Results :

Not Passed

Remarks :



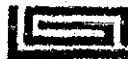
Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 3-7-1987

Sample TME-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	2636	702	2888	4060	5335	15621
Weight Percentage (%)	②	16.87	4.49	18.49	25.99	34.15	100
Weight of Before Testing (g)	③	2636	-	2888	4060	5335	
Number of Particles	④	842	-	150	69	31	
Weight of Soft Particles (g)	⑤	398	-	128	158	152	
Number of Soft Particles	⑥	167	-	9	3	1	
Weight Percentage of Soft Particles (%) $(\textcircled{5} / \textcircled{3}) \times 100$	⑦	15.10	9.77	4.43	3.89	2.85	
Number Percentage of Soft Particles (%) $(\textcircled{6} / \textcircled{4}) \times 100$	⑧	19.83	-	6.00	4.35	3.23	
Weight Percentage of Soft Particles in Aggregates (%) $(\textcircled{2} \times \textcircled{7}) / 100$	⑨	2.55	0.44	0.82	1.01	0.97	5.8

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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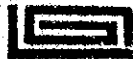
Name of Project Small Hydro Study For Medamit Date 3-7-1987

Sample TME-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	1954	1360	2308	4269	5747		15638
Weight Percentage (%)	②	12.50	8.70	14.76	27.30	36.75		100
Weight of Before Testing (g)	③	1954	-	2308	4269	5747		
Number of Particles	④	610	-	98	92	29		
Weight of Soft Particles (g)	⑤	379	-	128	169	0		
Number of Soft Particles	⑥	156	-	6	3	0		
Weight Percentage of Soft Particles (%) $(\frac{⑤}{③}) \times 100$	⑦	19.40	12.48	5.55	3.96	3.96		
Number Percentage of Soft Particles (%) $(\frac{⑥}{④}) \times 100$	⑧	25.57	-	6.12	3.26	0		
Weight Percentage of Soft Particles in Aggregates (%) $(\frac{② \times ⑦}{100})$	⑨	2.42	1.08	0.82	1.08	1.46		6.9

Remarks :

Average percentage of soft particles in Aggregate by weight is 6.4% (Average of two test)



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 4-7-1987

Sample TME-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	1123	1410	1457	2413	4698		11101
Weight Percentage (%)	②	10.1	12.7	13.1	21.8	42.3		100
Weight of Before Testing (g)	③	1123	1410	1457	2413	4698		11101
Number of Particles	④	464	229	113	53	25		
Weight of Soft Particles (g)	⑤	177	159	36	80	134		
Number of Soft Particles	⑥	92	31	6	2	1		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	15.76	11.28	2.47	3.32	2.85		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	19.83	19.49	5.31	3.77	4.00		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	1.59	1.43	0.32	0.72	1.21		5.3

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 4-7-1987

Sample TME-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	1017	1298	1375	2612	4625		10927
Weight Percentage (%)	②	9.3	11.9	12.6	23.9	42.3		100
Weight of Before Testing (g)	③	-	1298	1375	2612	4625		
Number of Particles	④	-	187	93	51	33		
Weight of Soft Particles (g)	⑤	-	100	130	55	78		
Number of Soft Particles	⑥	-	17	11	1	1		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	7.70	7.70	9.45	2.11	1.69		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	-	9.09	11.83	1.96	3.03		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	0.72	0.92	1.19	0.50	0.71		4.0

Remarks :

Average percentage of soft particles in Aggregate by weight is 4.7% (Average of two test)



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 6-7-1987

Sample TME-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	246	719	1144	4036	8581		14726
Weight Percentage (%)	②	1.6	4.9	7.8	27.4	58.3		100
Weight of Before Testing (g)	③	-	-	-	4036	8581		
Number of Particles	④	-	-	-	78	39		
Weight of Soft Particles (g)	⑤	-	-	-	279	-		
Number of Soft Particles	⑥	-	-	-	6	-		
Weight Percentage of Soft Particles (%) (⑤ / ③) × 100	⑦	6.91	6.91	6.91	6.91	6.91		
Number Percentage of Soft Particles (%) (⑥ / ④) × 100	⑧	-	-	-	7.69	-		
Weight Percentage of Soft Particles in Aggregates (%) (② × ⑦) / 100	⑨	0.12	0.34	0.54	1.89	4.03		6.9

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Madamit Date 6-7-1987

Sample TME-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	246	721	1144	4026	8988		15125
Weight Percentage (%)	②	1.6	4.8	7.6	26.6	59.4		100
Weight of Before Testing (g)	③	-	-	-	4026	8988		
Number of Particles	④	-	-	-	60	43		
Weight of Soft Particles (g)	⑤	-	-	-	263	-		
Number of Soft Particles	⑥	-	-	-	3	-		
Weight Percentage of Soft Particles (%) $(\textcircled{5} / \textcircled{3}) \times 100$	⑦	6.53	6.53	6.53	6.53	6.53		
Number Percentage of Soft Particles (%) $(\textcircled{6} / \textcircled{4}) \times 100$	⑧	-	-	-	5.00	-		
Weight Percentage of Soft Particles in Aggregates (%) $(\textcircled{2} \times \textcircled{7}) / 100$	⑨	0.11	0.31	0.49	1.74	3.88		6.5

Remarks :

Average percentage of soft particles in Aggregate by weight is 6.7% (Average of two test)



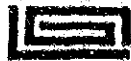
Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 8-7-1987

Sample TME-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	2570	3642	3848	5251	5534		20845
Weight Percentage (%)	②	12.3	17.5	18.5	25.2	26.5		100
Weight of Before Testing (g)	③	2570	3642	3848	5251	5534		
Number of Particles	④	943	436	193	103	39		
Weight of Soft Particles (g)	⑤	575	498	490	226	474		
Number of Soft Particles	⑥	260	78	29	7	4		
Weight Percentage of Soft Particles (%) $(\textcircled{5} / \textcircled{3}) \times 100$	⑦	22.37	13.67	12.73	4.30	8.57		
Number Percentage of Soft Particles (%) $(\textcircled{6} / \textcircled{4}) \times 100$	⑧	27.57	17.98	15.03	6.80	10.26		
Weight Percentage of Soft Particles in Aggregates (%) $(\textcircled{2} \times \textcircled{7}) / 100$	⑨	2.76	2.39	2.35	1.08	2.27		10.9

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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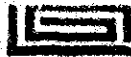
Name of Project Small Hydro Study For Medamit Date 8-7-1987

Sample TME-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	2574	3650	3854	5179	5543		20800
Weight Percentage (%)	②	12.4	17.5	18.5	24.9	26.7		100
Weight of Before Testing (g)	③	2574	3650	3854	5179	5543		
Number of Particles	④	918	441	181	107	39		
Weight of Soft Particles (g)	⑤	660	710	501	705	163		
Number of Soft Particles	⑥	290	104	28	15	2		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	25.64	19.45	13.00	13.61	2.94		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	31.59	23.58	15.47	14.02	5.13		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	3.17	3.41	2.41	3.39	0.78		13.2

Remarks :

Average percentage of soft particles in Aggregate by weight is 12.1% (Average of two test)



Name of Test		SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL					ASTM C 235	
Name of Project		Small Hydro Study For Medamit			Date		4.7.1987	
Sample		TME-5/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	-	-	-	-	11489		11489
Weight Percentage (%)	②	-	-	-	-	100		100
Weight of Before Testing (g)	③	-	-	-	-	11489		
Number of Particles	④	-	-	-	-	46		
Weight of Soft Particles (g)	⑤	-	-	-	-	0		
Number of Soft Particles	⑥	-	-	-	-	0		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	-	-	-	-	0		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	-	-	-	-	0		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	-	-	-	-	0		0.00

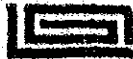
Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL						ASTM C 235	
Name of Project	Small Hydra Study For Medemit				Date	4.7.1987		
Sample	TME-5/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	-	-	-	-	13905	13905		
Weight Percentage (%) ②	-	-	-	-	100	100		
Weight of Before Testing (g) ③	-	-	-	-	13905			
Number of Particles ④	-	-	-	-	49			
Weight of Soft Particles (g) ⑤	-	-	-	-	0			
Number of Soft Particles ⑥	-	-	-	-	0			
Weight Percentage of Soft Particles (%) ⑦ $(\textcircled{5} / \textcircled{3}) \times 100$	-	-	-	-	0			
Number Percentage of Soft Particles (%) ⑧ $(\textcircled{6} / \textcircled{4}) \times 100$	-	-	-	-	0			
Weight Percentage of Soft Particles in Aggregates (%) ⑨ $(\textcircled{2} \times \textcircled{7}) / 100$	-	-	-	-	0	0.00		

Remarks :

Average percentage of soft particles in Aggregate by weight is 0.00% (Average of two test)



Name of Test		SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL					ASTM C 235	
Name of Project		Small Hydro Study For Medamit			Date		6.7.1987	
Sample		TME-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	145	344	627	3055	7411		11582
Weight Percentage (%)	②	1.25	2.97	5.41	26.38	63.99		100
Weight of Before Testing (g)	③	-	-	-	3055	7411		
Number of Particles	④	-	-	-	53	34		
Weight of Soft Particles (g)	⑤	-	-	-	108	166		
Number of Soft Particles	⑥	-	-	-	3	1		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	3.54	3.54	3.54	3.54	2.24		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	-	-	-	5.66	2.94		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	0.04	0.11	0.19	0.93	1.43		2.7

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 6.7.1987
 Sample TME-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	165	394	618	3057	7946		12180
Weight Percentage (%)	②	1.35	3.23	5.07	25.10	65.24		100
Weight of Before Testing (g)	③	-	-	-	3057	7946		
Number of Particles	④		-	-	46	43		
Weight of Soft Particles (g)	⑤	-	-	-	70	0		
Number of Soft Particles	⑥	-	-	-	1	0		
Weight Percentage of Soft Particles (%) (⑤ / ③) × 100	⑦	2.29	2.29	2.29	2.29	0		
Number Percentage of Soft Particles (%) (⑥ / ④) × 100	⑧	-	-	-	2.17	0		
Weight Percentage of Soft Particles in Aggregates (%) (② × ⑦) / 100	⑨	0.03	0.07	0.12	0.57	0		0.8

Remarks :

Average percentage of soft particles in Aggregate by weight is 1.8% (Average of two test)



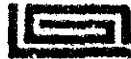
Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medemit Date 8-7-1987

Sample TME-7/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	-	305	1934	6517	8100		16856
Weight Percentage (%)	②	-	1.81	11.47	38.66	48.05		100
Weight of Before Testing (g)	③	-	-	1934	6517	8100		
Number of Particles	④	-	-	80	110	51		
Weight of Soft Particles (g)	⑤	-	-	114	285	75		
Number of Soft Particles	⑥	-	-	8	10	1		
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	-	5.89	5.89	4.37	0.93		
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	-	-	10	9.09	1.96		
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	-	0.11	0.68	1.69	0.44		2.9

Remarks :



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project Small Hydro Study For Medamit Date 8-7-1987

Sample TME-7/Teast 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	0	265	1844	6471	7172		15752
Weight Percentage (%)	②	-	1.68	11.71	41.08	45.53		100
Weight of Before Testing (g)	③	-	-	1844	6471	7172		
Number of Particles	④	-	-	74	101	41		
Weight of Soft Particles (g)	⑤	-	-	135	95	-		
Number of Soft Particles	⑥	-	-	5	2	-		
Weight Percentage of Soft Particles (%) (⑤ / ③) × 100	⑦	-	7.32	7.32	1.47	1.47		
Number Percentage of Soft Particles (%) (⑥ / ④) × 100	⑧	-	-	6.76	1.98	-		
Weight Percentage of Soft Particles in Aggregates (%) (② × ⑦) / 100	⑨	-	0.12	0.86	0.60	0.67		2.3

Remarks :

Average percentage of soft particles in Aggregate by weight is 2.6% (Average of two test)



Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88
Name of Project	Small Hydro Study For Madamit	Date 3.7.1987
Sample	TME-1	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 Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%)	④							
Weight Percentage of Loss Aggregates $(① \times \frac{④}{100})$ (%)	⑤							

Soundness of Gravel

Particle Size (mm)		10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)		725.6	1093.6	2400.7	5661.0	14092.4	4901.9	28875.2
Grading of Original Sample (%)	①	2.5	3.8	8.3	19.6	48.8	17.0	100
Weight of Before Testing (g)	②	-	-	1001.7	1504.2	2995.7	3250.5	
Weight of After Testing (g)	③	-	-	987.7	1475.8	2921.3	3247.7	
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%)	④	1.4	1.4	1.4	1.9	2.5	0.1	
Weight Percentage of Loss Aggregates $(① \times \frac{④}{100})$ (%)	⑤	0.04	0.05	0.12	0.37	1.22	0.02	1.8

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.



Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88
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Name of Project Small Hydro Study For Medemit Date 3.7.1987

Sample TME-4 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)	834.8	980.9	565.8	654.5	1304.8		4340.8
Grading of Original Sample (%) ①	19.2	22.6	13.0	15.1	30.1		100
Weight of Before Testing (g) ②	100.0	100.0	100.0	100.0	100.0		
Weight of After Testing (g) ③	90.4	75.6	85.9	82.7	86.6		
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%) ④	9.6	24.4	14.1	17.3	13.4		
Weight Percentage of Loss Aggregates $(④ \times \frac{④}{100})$ (%) ⑤	1.84	5.51	1.83	2.61	4.03		15.8

Soundness of Gravel

Particle Size (mm)	10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)	1264.0	2772.9	4737.5	7878.9	7317.2	1066.1	25036.6
Grading of Original Sample (%) ①	5.0	11.1	18.9	31.5	29.2	4.3	100
Weight of Before Testing (g) ②	501.2	749.3	1006.4	1513.0	3031.0	-	
Weight of After Testing (g) ③	431.7	666.6	914.3	1336.0	2954.0	-	
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%) ④	13.9	11.0	9.2	11.7	2.5	2.5	
Weight Percentage of Loss Aggregates $(④ \times \frac{④}{100})$ (%) ⑤	0.70	1.22	1.74	3.69	0.73	0.11	8.2

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.



Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88
Name of Project	Small Hydro Study For Medamit	Date 3.7.1987
Sample	TME-7	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)	1368.7	768.7	191.0	15.0	0		2343.4
Grading of Original Sample (%)	① 58.4	32.8	8.2	0.6	0		100
Weight of Before Testing (g)	② 100.0	100.0	100.0	-	-		
Weight of After Testing (g)	③ 81.8	71.1	73.6	-	-		
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%)	④ 18.2	28.9	26.4	26.4	-		
Weight Percentage of Loss Aggregates $(④ \times \frac{④}{100})$ (%)	⑤ 10.63	9.48	2.16	0.16	-		22.4

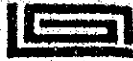
Soundness of Gravel

Particle Size (mm)	10-15	15-20	20-25	25-40	40-60	60-80	Total
Weight of Each Size (g)	0	160.6	652.4	6653.5	12559.4	1789.0	21814.9
Grading of Original Sample (%)	① 0	0.7	3.0	30.5	57.6	8.2	100
Weight of Before Testing (g)	② -	-	-	1500.1	3054.0	1789.0	
Weight of After Testing (g)	③ -	-	-	1495.5	3052.1	1787.2	
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%)	④ -	0.3	0.3	0.3	0.1	0.1	
Weight Percentage of Loss Aggregates $(④ \times \frac{④}{100})$ (%)	⑤ -	0.00	0.01	0.09	0.06	0.01	0.2

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.



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 Medamit		Date		10.7.1987
Sample		TME-1/Test 1 (Grading A)		Tested by		K.H.F.
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
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)						3563
③ Weight of Abrasion loss			①-②	(g)		1437
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		28.7
Remarks: ASTM C131 grading by A Mean of Abrasion loss percent of TME-1 = 13.6%						



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 & ASTM C 535
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Name of Project Small Hydro Study For Medamit Date 28.8.1987

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

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
2.5						
5	2.5					
10	5					
15	10			A	12	725
20	15			A	12	1665
25	20			A	12	1375
40	25			A	12	1235
50	40					
60	50					
80	60					
Total:						5000
② Weight of Retained on 1.7mm Sieve After Testing (g)						3742
③ Weight of Abrasion loss			① - ②	(g)		1258
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		25.2

Remarks:

ASTM C131 grading by A



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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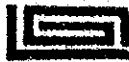
Name of Project Small Hydro Study For Medamit Date 9.7.1987

Sample TME-1/Test 1 (Grading E) Tested by K.H.F.

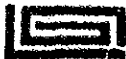
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2500
60	50			E	12	2513
80	60			E	12	5033
Total:						10,046
② Weight of Retained on 1.7mm Sieve After Testing (g)						9221
③ Weight of Abrasion loss			①-②	(g)		825
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		8.2

Remarks:

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



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 Medamit		Date		9.7.1987
Sample		TME-1/Test 2 (Grading E)		Tested by		K.H.F.
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
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	2505
80	60			E	12	5000
Total:						10,005
② Weight of Retained on 1.7mm Sieve After Testing (g)						9446
③ Weight of Abrasion loss			①-② (g)			559
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			5.6
Remarks: JIS A1121 grading by E (The same as ASTM C535 grading 1)						



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project Small Hydro Study For Medamit Date 10.7.1987

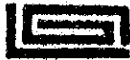
Sample TME-4/Test 1 (Grading A) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
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)					3367
③ Weight of Abrasion loss		①--②	(g)		1633
④ Percent of Abrasion loss		$\frac{③}{①} \times 100$	(%)		32.7

Remarks:

ASTM C131 grading by A
 Mean of Abrasion loss percent of TME-4 = 21.0%



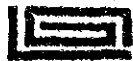
Name of Test		ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)				ASTM C 131 ASTM C 535
Name of Project		Smell Hydro Study For Medemit		Date		10.7.1987
Sample		TME-4/Test 2 (Grading A)		Tested by		K.H.F.
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
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)						3426
③ Weight of Abrasion loss			①-② (g)			1574
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			31.5
Remarks: ASTM C131 grading by A						



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 Medamit		Date		10.7.1987
Sample		TME-4/Test 1 (Grading C)		Tested by		K.H.F.
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (X)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
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)						3482
③ Weight of Abrasion loss			①-② (g)			1518
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (X)			30.4
Remarks: ASTM grading by C						



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 Medemit		Date		28.8.1987
Sample		TME-4/Test 2 (Grading C)		Tested by		K.H.F.
Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
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)						3496
③ Weight of Abrasion loss			①-② (g)			1504
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			30.1
Remarks: ASTM C131 grading by C						



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 Medemit	Date 9.7.1987
Sample	TME-4/Test 1 (Grading E)	Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2505
60	50			E	12	2516
80	60			E	12	5000
Total:						10,021
② Weight of Retained on 1.7mm Sieve After Testing (g)						8958
③ Weight of Abrasion loss			①-② (g)			1063
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			10.6

Remarks:

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



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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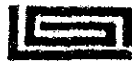
Name of Project Small Hydro Study For Medamit Date 9.7.1987

Sample TME-4/Test 2 (Grading E) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
2.5						
5	2.5					
10	5					
15	10					
20	15					
25	20					
40	25					
50	40			E	12	2511
60	50			E	12	2515
80	60			E	12	5000
Total:						10,026
② Weight of Retained on 1.7mm Sieve After Testing (g)						8927
③ Weight of Abrasion loss			①-② (g)			1099
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			11.0

Remarks:

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



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project Small Hydro Study For Medamit Date 9.7.1987

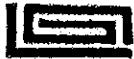
Sample TME-7/Test 1 (Grading A) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
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)						4126
③ Weight of Abrasion loss			①-② (g)			874
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			17.5

Remarks:

ASTM C131 grading by A

Mean of Abrasion loss percent of TME-7 = 10.3%



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project	Small Hydro Study For Medamit	Date	28.8.1987
Sample	TME-7/Test 2 (Grading A)	Tested by	K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained	(g)	(%)			(g)
2.5						
5	2.5					
10	5					
15	10			A	12	127
20	15			A	12	373
25	20			A	12	3109
40	25			A	12	1391
50	40					
60	50					
80	60					
Total:						5000
② Weight of Retained on 1.7mm Sieve After Testing (g)						4174
③ Weight of Abrasion loss			①--② (g)			826
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			16.5

Remarks: ASTM C131 grading by A



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project Small Hydro Study For Medemit Date 6.7.1987Sample TME-7/Test 1 (Grading E) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
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	2502
80	60			E	12	5000
Total:						10,002
② Weight of Retained on 1.7mm Sieve After Testing (g)						9114
③ Weight of Abrasion loss			①-②	(g)		888
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		9.0

Remarks:

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



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project Small Hydro Study For Medamit Date 6.7.1987Sample TME-7/Test 2 (Grading E) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
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
Totals:						10,000
② Weight of Retained on 1.7mm Sieve After Testing (g)						9498
③ Weight of Abrasion loss			①-②	(g)		502
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		5.0

Remarks:

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



Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29
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Name of Project	Small Hydro Study For Medamit	Date	17.6.1987
Sample	TME-4	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	9.46 %		
Specific Gravity(SSD) ②	2.34	Absorption ③	4.13 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			17.6.1987	17.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		12,000	12,000	
Weight of Mold (g)	⑤		9,000	9,000	
Weight of Specimen (g)	⑥	④-⑤	3,000	3,000	
Unit Weight (t/m ³)	⑦	⑥/①	1.302	1.302	1.302
Solid Volume Percentage (%)	⑧	$\frac{⑦ * (100 + ③)}{②}$	57.9	57.9	57.9
Void Ratio (%)	⑨	100-⑧	42.1	42.1	42.1

Remarks :



Name of Test	UNIT WEIGHT TEST OF AGGREGATES (SAND)	ASTM C 29
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Name of Project	Small Hydro Study For Madamit	Date	18.6.1987
Sample	TME-7	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	17.50 %		
Specific Gravity(SSD) ②	2.36	Absorption ③	5.51 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			18.6.1987	18.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		12,000	12,300	
Weight of Mold (g)	⑤		9,000	9,000	
Weight of Specimen (g)	⑥	④-⑤	3,000	3,300	
Unit Weight (t/m ³)	⑦	⑥/①	1.302	1.432	1.367
Solid Volume Percentage (%)	⑧	$\frac{⑦ \times (100 + ③)}{②}$	58.2	64.0	61.1
Void Ratio (%)	⑨	100-⑧	41.8	36.0	38.9

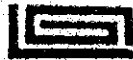
Remarks :



Name of Test	UNIT WBIGHT TEST OF AGGREGATES (<u>GRAVEL</u>)	ASTM C 29
Name of Project	<u>Small Hydro Study For Medamit</u>	Date <u>17.6.1987</u>
Sample	<u>TME-1</u>	Tested by <u>B.C.L.</u>
Inside Diameter of Mold	<u>30 cm</u>	Volume ① <u>21500 cm³</u>
Number of Blows	<u>25</u>	Layers <u>3</u>
Moisture Condition of Sample	<u>4.62 %</u>	
Specific Gravity(SSD) ②	<u>2.56</u>	Absorption ③ <u>1.39 %</u>

Specimen NO.			1	2	Mean Value
Date of Specimen Made			17.6.1987	17.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		48,500	47,500	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④-⑤	38,500	37,500	
Unit Weight (t/m ³)	⑦	⑥/①	1.791	1.744	1.768
Solid Volume Percentage (%)	⑧	$\frac{⑦ * (100 + ③)}{②}$	70.9	69.1	70.0
Void Ratio (%)	⑨	100-⑧	29.1	30.9	30.0

Remarks :



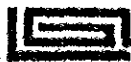
Name of Test	UNIT WEIGHT TEST OF AGGREGATES (GRAVEL)	ASTM C 29
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Name of Project	Small Hydro Study For Medamit	Date	17.6.1987
Sample	TME-4	Tested by	B.C.L.

Inside Diameter of Mold	30 cm	Volume ①	21500 cm ³
Number of Blows	25	Layers	3
Moisture Condition of Sample	6.50 %		
Specific Gravity(SSD) ②	2.57	Absorption ③	1.70 %

Specimen NO.			1	2	Mean Value
Date of Specimen Made			17.6.1987	17.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		48,500	48,000	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④-⑤	38,500	38,000	
Unit Weight (t/m ³)	⑦	⑥/①	1.791	1.767	1.779
Solid Volume Percentage (%)	⑧	$\frac{⑦ * (100 + ③)}{②}$	70.9	69.9	70.4
Void Ratio (%)	⑨	100-⑧	29.1	30.1	29.6

Remarks :



Name of Test	UNIT WEIGHT TEST OF AGGREGATES (<u>GRAVEL</u>)	ASTM C 29
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Name of Project <u>Small Hydro Study For Madamit</u>	Date <u>18.6.1987</u>
Sample <u>TME-7</u>	Tested by <u>B.C.L.</u>

Inside Diameter of Mold <u>30 cm</u>	Volume ① <u>21500 cm³</u>
Number of Blows <u>25</u>	Layers <u>3</u>
Moisture Condition of Sample <u>4.15 %</u>	
Specific Gravity(SSD) ② <u>2.59</u>	Absorption ③ <u>1.01 %</u>

Specimen NO.			1	2	Mean Value
Date of Specimen Made			18.6.1987	18.6.1987	
Mold No.					
Weight of (Specimen + Mold) (g)	④		48,000	47,500	
Weight of Mold (g)	⑤		10,000	10,000	
Weight of Specimen (g)	⑥	④-⑤	38,000	37,500	
Unit Weight (t/m ³)	⑦	⑥/①	1.767	1.744	1.756
Solid Volume Percentage (%)	⑧	$\frac{⑦ \times (100 + ③)}{②}$	68.9	68.0	68.5
Void Ratio (%)	⑨	100-⑧	31.1	32.0	31.6

Remarks :



Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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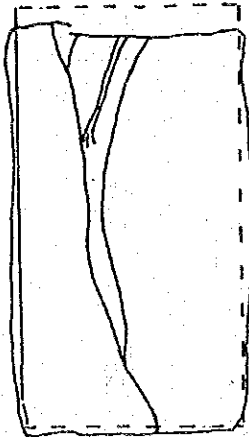
Name of Project	Small Hydro Study For Medamit	Date	3.9.1987
Sample	BME-1	Tested by	C. H. Wang

Moisture Condition of Sample	0.53 % (In-Situ)			
Specific Gravity	-	Unit Weight : 2.63 Mg/m ³	Absorption	
Rate of loading	90 KN Per Minute		Rock Type	SANDSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-1	15.50 - 15.80m	5.40	10.25	499.76

Mean Value	
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Remarks :



Failure along weak subvertical plane

Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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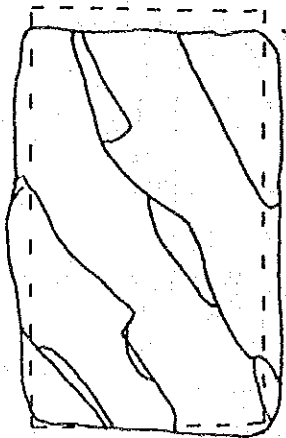
Name of Project	Small Hydro Study For Medamit	Date	3.9.1987
Sample	BME-2	Tested by	C. H. Wang

Moisture Condition of Sample	0.29 % (In-Situ)		
Specific Gravity	-	Unit Weight : 2.69 Mg/m ³	Absorption
Rate of loading	90 KN Per Minute		Rock Type
			SHALE

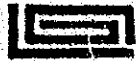
Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-2	19.60 - 19.80m	5.40	9.97	21.52

Mean Value	
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Remarks :



Failure along weak subvertical plane



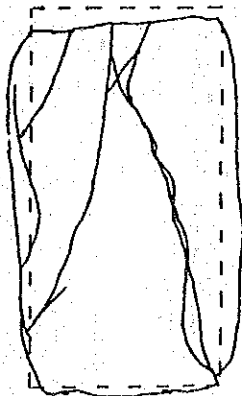
Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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Name of Project	Small Hydro Study For Medamit	Date	20.8.1987
Sample	BME-3	Tested by	C. H. Wang

Moisture Condition of Sample	0.55 % (In-Situ)			
Specific Gravity	-	Unit Weight	2.64 Mg/m ³	
		Absorption	1.40 %	
Rate of loading	90 KN Per Minute		Rock Type	SHALE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-3	5.30 - 5.55m	5.40	9.80	86.06
Mean Value				

Remarks :



Failure along weak subvertical plane



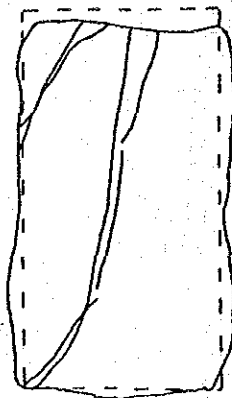
Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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Name of Project Small Hydro Study For Madamit Date 20.8.1987
Sample BME-4/Sample A Tested by C. H. Wang

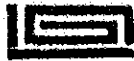
Moisture Condition of Sample Saturated
Specific Gravity - Unit Weight 2.62 Mg/m³ Absorption 0.2 %
Rate of loading 90 KN Per Minute Rock Type SANDSTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-4/ Sample A	3.07 - 3.33m	5.40	9.80	561.66
Mean Value				

Remarks :



Failure along weak subvertical plane



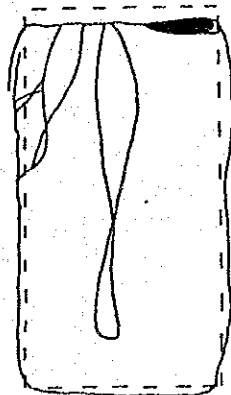
Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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Name of Project	Small Hydro Study For Madamit	Date	20.8.1987
Sample	BME-4/Sample B	Tested by	C. H. Wang

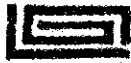
Moisture Condition of Sample	Saturated				
Specific Gravity	-	Unit Weight	2.64 Mg/m ³	Absorption	0.2 %
Rate of loading	90 KN Per Minute		Rock Type	SANDSTONE	

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-4/ Sample B	17.15 - 17.35m	5.40	9.80	643.02
Mean Value				

Remarks :



Failure along weak subvertical plane



Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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Name of Project Small Hydro Study for Medamit Date 20.7.1987

Sample BME-5 Tested by C. H. Wang

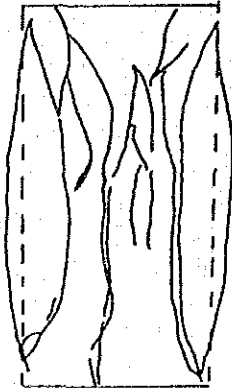
Moisture Condition of Sample (Saturated)

Specific Gravity - Unit Weight 2.57 Mg/m³ Absorption 1.83 %

Rate of loading 90KN per minute Rock Type SHALE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-5	26.40 - 26.55	5.40	9.60	172.74
Mean Value				

Remarks :



Failure along weak subvertical plane



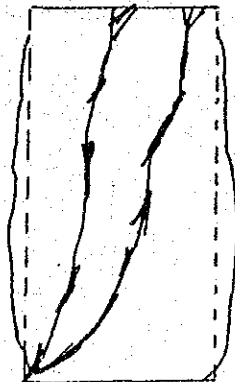
Name of Test	COMPRESSIVE STRENGTH	ASTM D 2938
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Name of Project Small Hydro Study for Medamit Date 20.7.1987
Sample BME-7 Tested by C. H. Wang

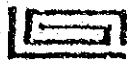
Moisture Condition of Sample (Saturated)
Specific Gravity - Unit Weight 2.66 Mg/m³ Absorption 0.22 %
Rate of loading 90KN per minute Rock Type LIMESTONE

Sample No	Depth	Diameter (cm)	Height (cm)	Compressive Strength (kg/cm ²)
BME-7	9.15 - 9.33m	5.40	9.90	259.01
Mean Value				

Remarks :



Failure along weak subvertical plane



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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Name of Project SESCO Medamit Quarry Date 3.6.88

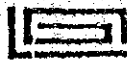
Sample Medamit Quarry Samples (Crushed Rock) Tested by B.C.L.

Test 1

Particle Size (mm)	(mm)	9.5-12.5	12.5-19.0	19.0-25.0	25.0-37.5	37.5-50.0		Total
Weight of Each Size (g)	①	4097	4097	5343	7890	24675		46,102
Weight Percentage (%)	②	8.89	8.89	11.59	17.11	53.52		100
Weight of Before Testing (g)	③	200	600	1500	4500	12000		
Number of Particles	④	145	176	175	144	113		
Weight of Soft Particles (g)	⑤	0	0	0	0	69.8		
Number of Soft Particles	⑥	0	0	0	0	1		
Weight Percentage of Soft Particles (%) $(\frac{⑤}{③}) \times 100$	⑦	0.58	0.58	0.58	0.58	0.58		
Number Percentage of Soft Particles (%) $(\frac{⑥}{④}) \times 100$	⑧	0	0	0	0	0.88		
Weight Percentage of Soft Particles in Aggregates (%) $(\frac{② \times ⑦}{100})$	⑨	0.052	0.052	0.067	0.099	0.31		0.6

Remarks :

Average percentage of soft particles in Aggregate by weight is 0.3%. (Average of two tests)



Name of Test	SCRATCH HARDNESS OF SOFT PARTICLES IN GRAVEL	ASTM C 235
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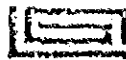
Name of Project SESCO Medamit Quarry Date 3.6.88

Sample Medamit Quarry Samples (Crushed Rock) Tested by B.C.L.

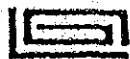
Test 2

Particle Size (mm)		9.5-12.5	12.5-19.0	19.0-25.0	25.0-37.5	37.5-50.0	Total
Weight of Each Size (g)	①	4097	4097	5343	7890	24675	46,102
Weight Percentage (%)	②	8.89	8.89	11.59	17.11	53.52	100
Weight of Before Testing (g)	③	250	680	1680	3350	12,000	
Number of Particles	④	188	208	175	118	127	
Weight of Soft Particles (g)	⑤	0	0	0	0	0	
Number of Soft Particles	⑥	0	0	0	0	0	
Weight Percentage of Soft Particles (%) $(\text{⑤} / \text{③}) \times 100$	⑦	0	0	0	0	0	
Number Percentage of Soft Particles (%) $(\text{⑥} / \text{④}) \times 100$	⑧	0	0	0	0	0	
Weight Percentage of Soft Particles in Aggregates (%) $(\text{②} \times \text{⑦}) / 100$	⑨	0	0	0	0	0	

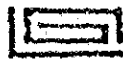
Remarks :



Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Material Test On Medemit Quarry Rock Samples		Date 3.6.88	
Sample		Medemit Quarry Sample (Crushed Rock) Test 1		Tested by K.H.F.	
Specimen NO.		1	2	3	
Saturated-Surface-Dry Weight of Specimen	①	4453	4189		
Weight of (Specimen + Basket) in Water	②	3356	3188		
Weight of Basket in Water	③	598	598		
Weight of Specimen in Water	④	②-③	2758	2590	
Dry Weight of Specimen	⑤	4412	4150		
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.603	2.595	
Mean Value	⑦	2.599			
Weight of Pore Water	⑧	①-⑤	41	39	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	0.93	0.94	
Mean Value %		0.94			
SSD Specific Gravity		$\frac{①}{①-④}$	2.627	2.620	
Mean Value		2.624			
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.667	2.660	
Mean Value		2.664			
Remarks :					



Name of Test		SPECIFIC GRAVITY AND ABSORPTION OF GRAVEL		ASTM C 127	
Name of Project		Material Test On Medamit Quarry Rock Samples		Date 9.6.88	
Sample		Medamit Quarry Sample (Crushed Rock) Test 2		Tested by K.H.F.	
Specimen NO.		3		4	
Saturated-Surface-Dry Weight of Specimen	①	3291	3218		
Weight of (Specimen + Basket) in Water	②	2647	2598		
Weight of Basket in Water	③	598	598		
Weight of Specimen in Water	④	②-③	2049	2000	
Dry Weight of Specimen	⑤	3272	3198		
Bulk Specific Gravity	⑥	$\frac{⑤}{①-④}$	2.634	2.626	
Mean Value	⑦	2.630			
Weight of Pore Water	⑧	①-⑤	19	20	
Absorption %	⑨	$\frac{⑧}{⑤} \times 100$	0.58	0.63	
Mean Value %		0.605			
SSD Specific Gravity		$\frac{①}{①-④}$	2.650	2.642	
Mean Value		2.646			
Apparent Specific Gravity		$\frac{⑤}{⑤-④}$	2.675	2.669	
Mean Value		2.672			
Remarks :					



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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Name of Project Material Tests on Madamit Quarry Sample Date 4.6.1988

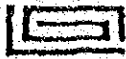
Sample Grading A/Test 1 (Crushed Rock) Tested by K.H.F.

Sieve (mm)		Height of Each Size (g)	Height Percentage (%)	Grading	Number of Spheres	① Height of Before Testing (g)
Passing	Retained					
100.	90					
90	75					
75	63					
63	50					
50	37.5					
37.5	25			A	12	1250
25	19			A	12	1250
19.0	12.5			A	12	1250
12.5	9.5			A	12	1250
Total:				A	12	5000
② Weight of Retained on 1.7mm Sieve After Testing (g)						3818
③ Weight of Abrasion loss			① - ②	(g)		1182
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)		23.6

Remarks:

ASTM C131 grading by A

Means of Abrasion loss percent of Quarry Sample = 17.8%.



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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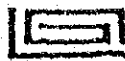
Name of Project Material Tests on Medamit Quarry Sample Date 4.6.1988

Sample Grading A/Test 2 (Crushed Rock) Tested by K.H.F.

Sieve (mm)		Weight of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained	(g)	(%)			(g)
100	90					
90	75					
75	63					
63	50					
50	37.5					
37.5	25			A	12	1250
25	19			A	12	1250
19.0	12.5			A	12	1250
12.5	9.5			A	12	1253
Total:				A	12	5003
② Weight of Retained on 1.7mm Sieve After Testing (g)					3830	
③ Weight of Abrasion loss			①-②	(g)	1173	
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)	23.4	

Remarks:

ASTM C131 grading by A



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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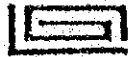
Name of Project Material Tests on Madamit Quarry Sample Date 4.6.1988

Sample Grading E/Test 1 (Crushed Rock) Tested by K.H.F.

Sieve (mm)		Height of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained	(g)	(%)			(g)
100.	90					
90	75					
75	63			E	12	2608
63	50			E	12	2520
50	37.5			E	12	5023
37.5	25					
25	19					
19.0	12.5					
12.5	9.5					
Total:				E	12	10151
② Weight of Retained on 1.7mm Sieve After Testing (g)					8655	
③ Weight of Abrasion loss			①-②	(g)	1496	
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$	(%)	14.7	

Remarks:

JIS A 1121 grading by E
(The same as ASTM C535 grading 1)



Name of Test	ABRASION TEST OF GRAVEL (USING THE LOS ANGELES MACHINE)	ASTM C 131 ASTM C 535
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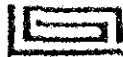
Name of Project Material Tests on Madamit Quarry Sample Date: 4.6.1988

Sample Grading E/Test 2 (Crushed Rock) Tested by K.H.F.

Sieve (mm)		Height of Each Size (g)	Weight Percentage (%)	Grading	Number of Spheres	① Weight of Before Testing (g)
Passing	Retained					
100	90					
90	75					
75	63			E	12	2566
63	50			E	12	2530
50	37.5			E	12	5017
37.5	25					
25	19					
19.0	12.5					
12.5	9.5					
Total:				E	12	10113
② Weight of Retained on 1.7mm Sieve After Testing (g)						8568
③ Weight of Abrasion loss			①-② (g)			1545
④ Percent of Abrasion loss			$\frac{③}{①} \times 100$ (%)			15.3

Remarks:

JIS A 1121 grading by E
(The same as ASTM C535 grading 1)



Name of Test	Soundness of Aggregates by Use of Sodium Sulphate	ASTM C 88
Name of Project	Material Test on Medamit Quarry Sample	Date 3.6.88
Sample	Crushed Sample	Tested by L.S.M.

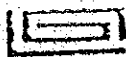
Soundness of Gravel (Test 1)

Particle Size (mm)	63.0-50.0	50.0-37.5	37.5-26.5	26.5-19.0	19.0-13.2	13.2-9.5	9.5-4.75	Total
Weight of Each Size (g)	13310	24675	7725	5508	3986	4208	1685	61097
Grading of Original Sample (%) ①	62.17		21.66		13.41		2.76	100.0
Height of Before Testing (g) ②	5156.0		1519.7		996.0		301.7	
Height of After Testing (g) ③	5105.0		1488.6		986.1		295.3	
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%) ④	0.989		2.046		0.994		2.121	
Weight Percentage of Loss Aggregates $(① \times \frac{④}{100})$ (%) ⑤	0.61		0.44		0.13		0.06	1.24

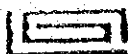
Soundness of Gravel (Test 2)

Particle Size (mm)	63.0-50.0	50.0-37.5	37.5-26.5	26.5-19.0	19.0-13.2	13.2-9.5	9.5-4.75	Total
Weight of Each Size (g)	13310	24675	7725	5508	3986	4208	1685	61097
Grading of Original Sample (%) ①	62.17		21.66		13.41		2.76	100.0
Height of Before Testing (g) ②	5064.0		1504.6		1003.7		306.3	
Height of After Testing (g) ③	5044.0		1477.0		988.2		298.7	
Weight Percentage of Each Size Loss Particle $(1 - \frac{③}{②}) \times 100$ (%) ④	0.395		1.834		1.544		2.481	
Weight Percentage of Loss Aggregates $(① \times \frac{④}{100})$ (%) ⑤	0.25		0.40		0.21		0.07	0.93

Remarks : i) Sieves of 13.2mm & 26.5mm were used instead of 12.5mm & 25mm
 ii) Test 1. 3126.0g(63.0-50.0mm)+2030.0g(50.0-37.5mm) = 5156.0g
 1007.4g(37.5-26.5mm)+512.3g(26.5-19.0mm) = 1519.7g
 663.3g(19.0-13.2mm)+332.7g(13.2-9.5mm) = 996.0g
 Test 2. 3022.0g(63.0-50.0mm)+2042.0g(50.0-37.5mm) = 5064.0g
 1002.6g(37.5-26.5mm)+502.0g(26.5-19.0mm) = 1504.6g
 673.0g(19.0-13.2mm)+330.7g(13.2-9.5mm) = 1003.7g



Name of Test	AGGREGATE IMPACT VALUE	BS 812
<p>Name of Project <u>Material Tests on Madamit Quarry Sample</u> Date <u>6.6.1988</u></p> <p>Sample _____ Tested by <u>CML</u></p>		
<p>Test Results :</p> <p style="text-align: center;"><u>Average of two tests : 18%</u></p> <p>Test 1 : 17.7%</p> <p>Test 2 : 18.8%</p>		
<p>Remarks :</p> <p>BS 812</p>		



Name of Test	AGGREGATE CRUSHING VALUE	BS 812
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Name of Project Material Tests on Madamit Quarry Sample Date 6.6.1988
Sample _____ Tested by CML

Test Results :

Average of two tests : 19%.

Test 1 : 19.3%

Test 2 : 19.1%

Remarks :

BS 812