Grain Size Analysis

Sample No. 100 A Date

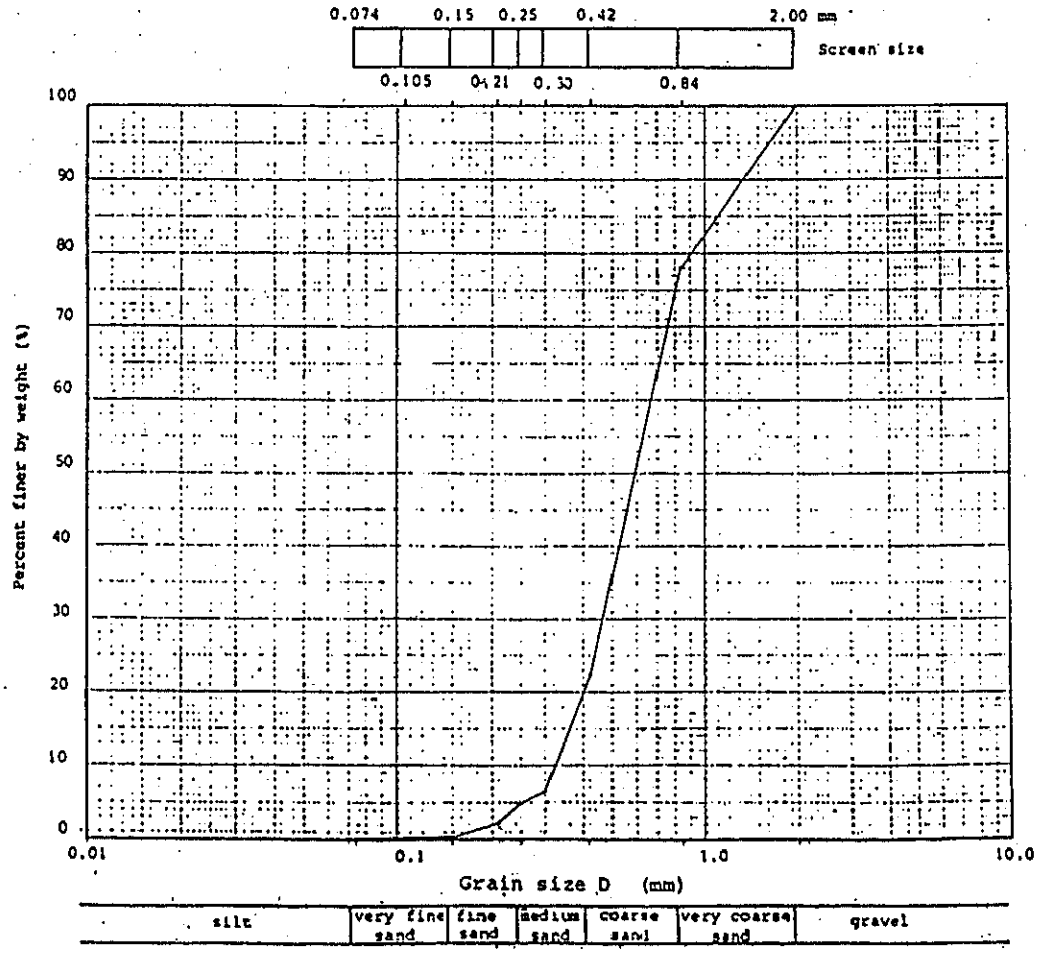
Name of sample Bali Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	43.75	78.125
0.42	111.50	22.375
0.30	31.55	6.6
0.25	3.15	5.025
0.21	5.55	2.25
0.15	4.20	0.15
0.105	0.25	0.025
0.074	0.05	0
	0	-

Very coarse sand (2.00-0.84mm) %	21.875
Coarse sand (0.84-0.42mm) %	55.75
Medium sand (0.42-0.25mm) %	17.35
Fine sand (0.25-0.15mm) %	4.875
Very fine sand (0.15-0.074mm) %	0.15
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.67
30% grain size mm	0.47
10% grain size mm	0.32
Coefficient of uniformity Uc	2.094
Coefficient of curvature Uc'	1.030

Grain size accumulation curve



App.3.179

Grain Size Analysis

Sample No. 100 B Date

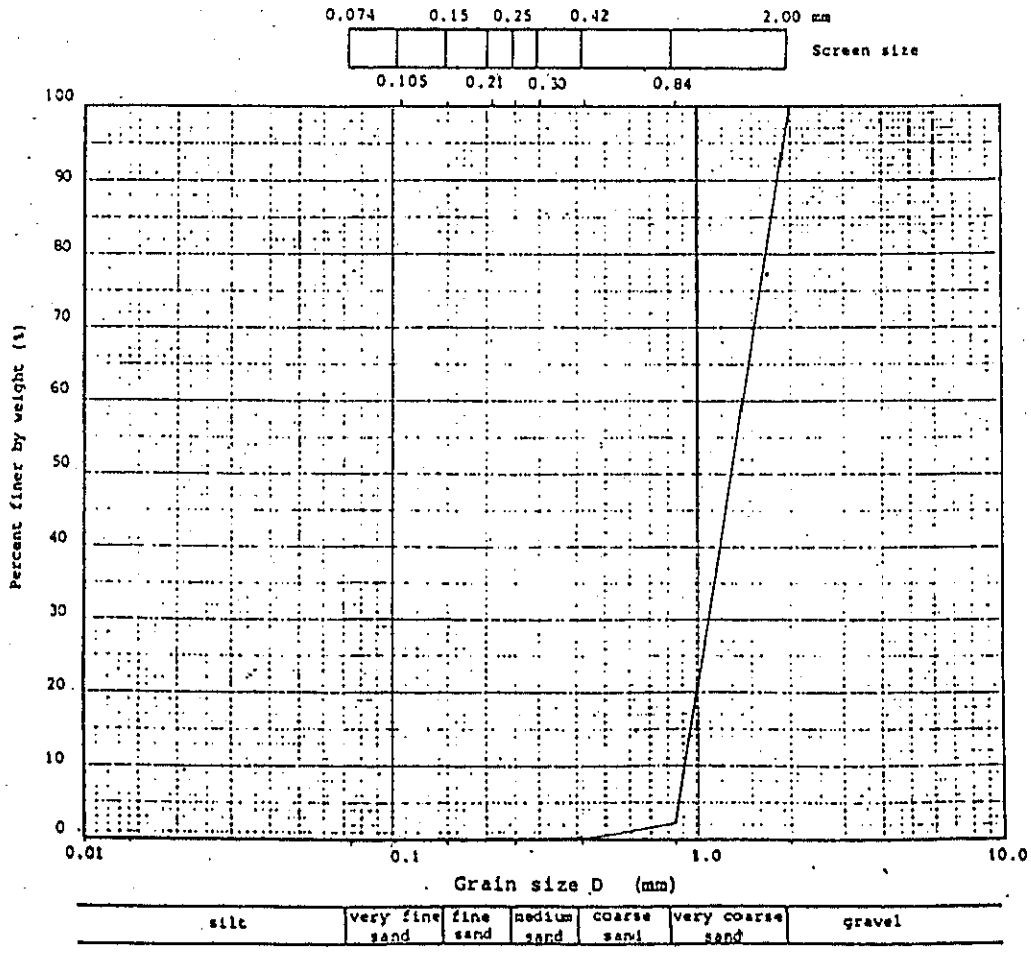
Name of sample Bali Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	195.45	2.275
0.42	4.35	0.10
0.30	0.20	0
0.25	0	0
0.21	0	0
0.15	0	0
0.105	0	0
0.074	0	0
	0	-

Very coarse sand (2.00-0.84mm) %	97.725
Coarse sand (0.84-0.42mm) %	2.175
Medium sand (0.42-0.25mm) %	0.10
Fine sand (0.25-0.15mm) %	0
Very fine sand (0.15-0.074mm) %	0
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	1.4
30% grain size mm	1.10
10% grain size mm	0.91
Coefficient of uniformity Uc	1.538
Coefficient of curvature Uc'	0.950

Grain size accumulation curve



App.3.180

Grain Size Analysis

Sample No. 101 A Date

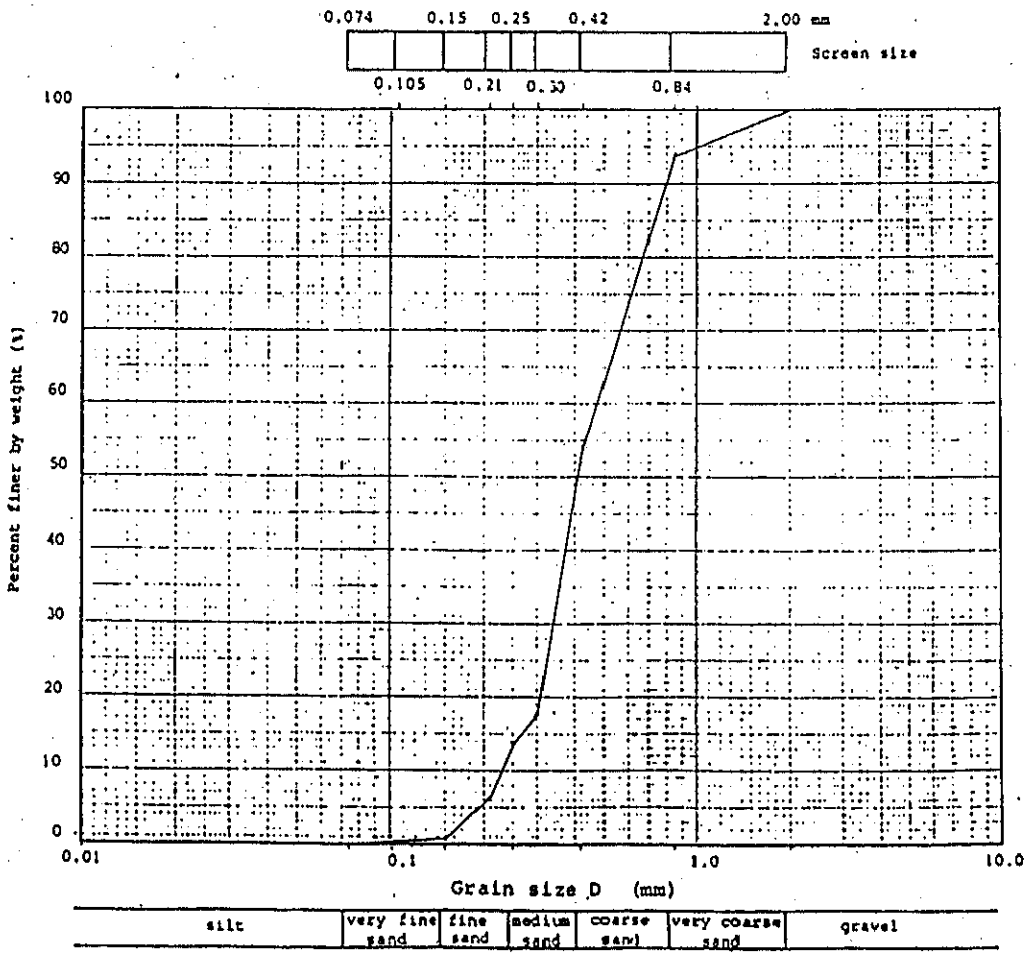
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	12.40	93.8
0.42	79.45	54.075
0.30	72.80	17.675
0.25	7.70	13.825
0.21	15.50	6.075
0.15	11.05	0.55
0.105	0.95	0.075
0.074	0.15	0
	0	-

Very coarse sand (2.00-0.84mm) %	6.20
Coarse sand (0.84-0.42mm) %	39.725
Medium sand (0.42-0.25mm) %	40.25
Fine sand (0.25-0.15mm) %	13.275
Very fine sand (0.15-0.074mm) %	0.55
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.48
30% grain size mm	0.34
10% grain size mm	0.23
Coefficient of uniformity Uc	2.087
Coefficient of curvature Uc'	1.047

Grain size accumulation curve



App.3.181

Grain Size Analysis

Sample No. 101 B Date

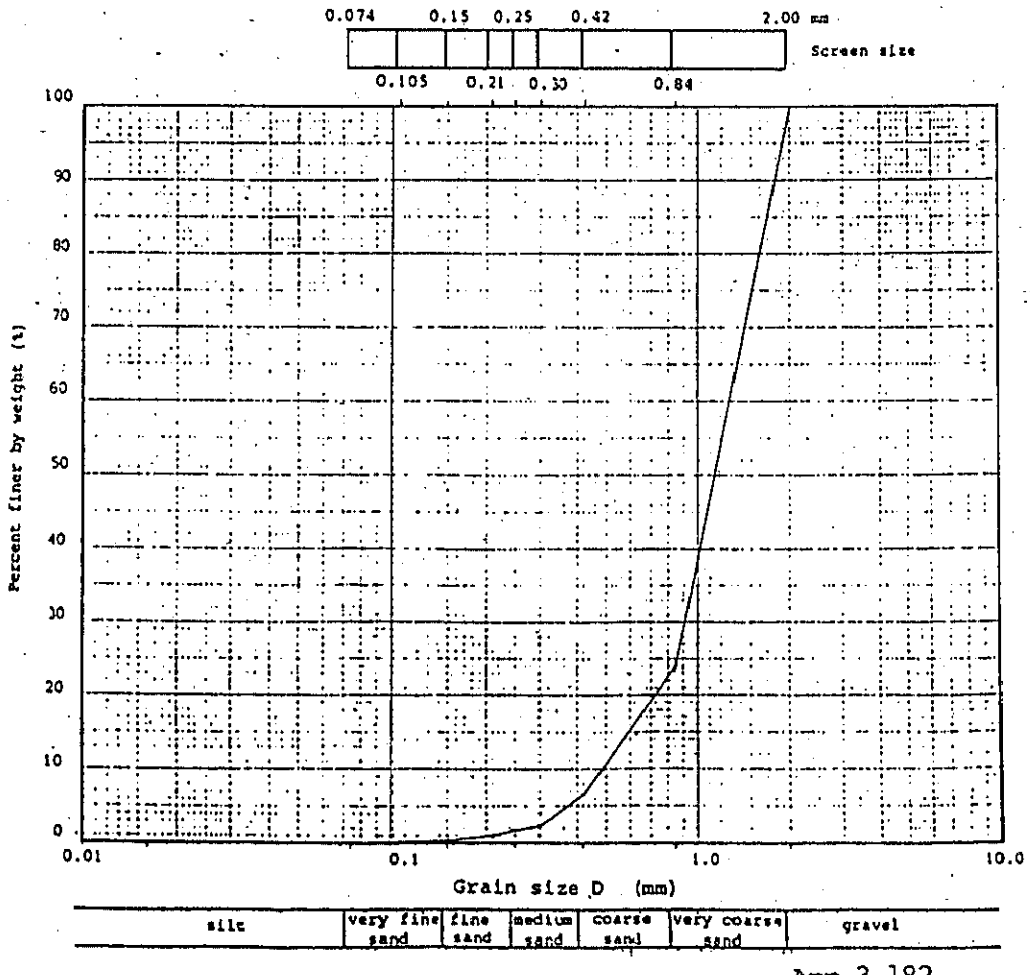
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	152.45	23.775
0.42	34.25	6.65
0.30	8.65	2.325
0.25	0.9	1.875
0.21	1.85	0.95
0.15	1.5	0.2
0.105	0.3	0.05
0.074	0.1	0
	0	-

Very coarse sand (2.00-0.84mm) %	76.225
Coarse sand (0.84-0.42mm) %	17.125
Medium sand (0.42-0.25mm) %	4.775
Fine sand (0.25-0.15mm) %	1.675
Very fine sand (0.15-0.074mm) %	0.20
Silt or clay (under 0.074mm) %	0.
Maximum grain size mm	0.84
60% grain size mm	1.28
30% grain size mm	0.91
10% grain size mm	0.49
Coefficient of uniformity Uc	2.612
Coefficient of curvature Uc'	1.320

Grain size accumulation curve



App.3.182

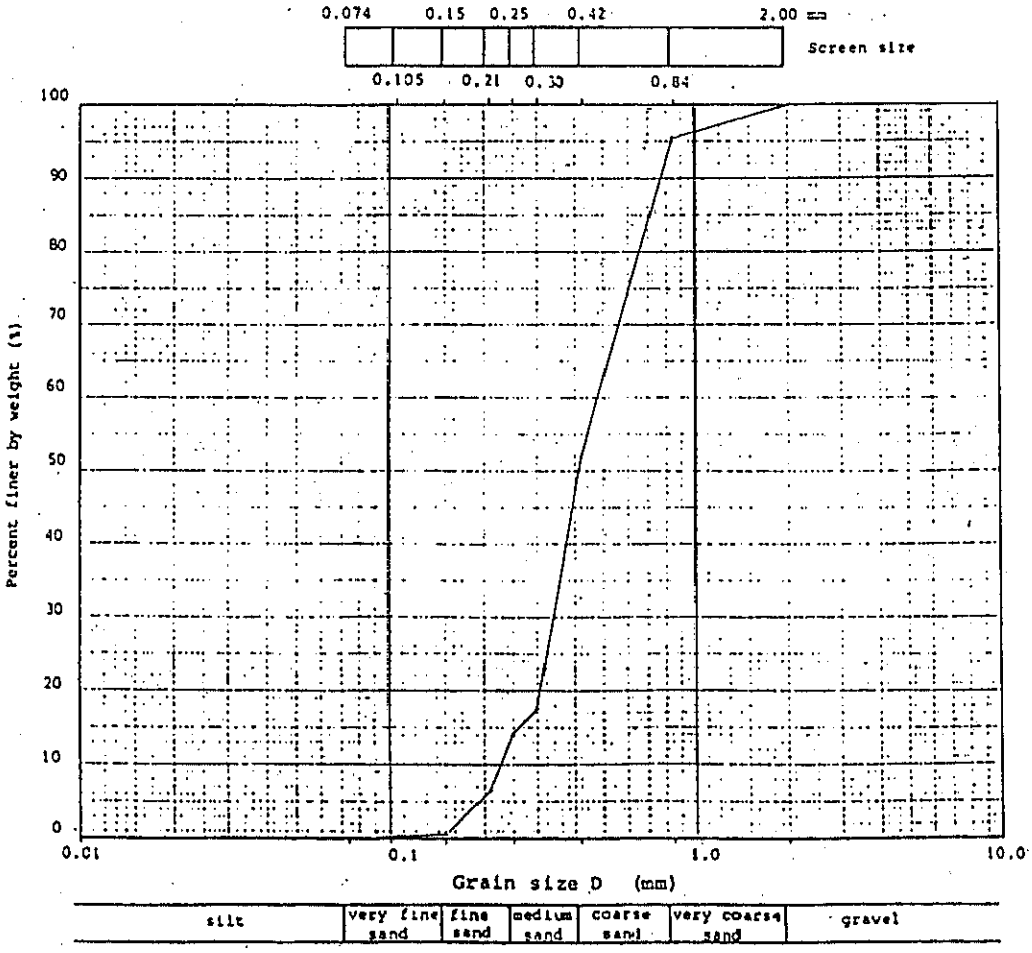
Grain Size Analysis

Sample No. 102 A
Name of sample Bali Beach Sand
Locality Sanur Beach
Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	8.85	95.575
0.42	85.35	52.90
0.30	70.65	17.575
0.25	7.05	14.05
0.21	14.85	6.625
0.15	12.05	0.6
0.105	0.95	0.125
0.074	0.10	0.075
	0.15	-

Very coarse sand (2.00-0.84mm) %	4.425
Coarse sand (0.84-0.42mm) %	42.675
Medium sand (0.42-0.25mm) %	38.85
Fine sand (0.25-0.15mm) %	13.45
Very fine sand (0.15-0.074mm) %	0.525
Silt or clay (under 0.074mm) %	0.075
Maximum grain size mm	0.84
60% grain size mm	0.48
30% grain size mm	0.34
10% grain size mm	0.225
Coefficient of uniformity Uc	2.133
Coefficient of curvature Uc'	1.070

Grain size accumulation curve



App.3.183

Grain Size Analysis

Sample No. 102 B Date

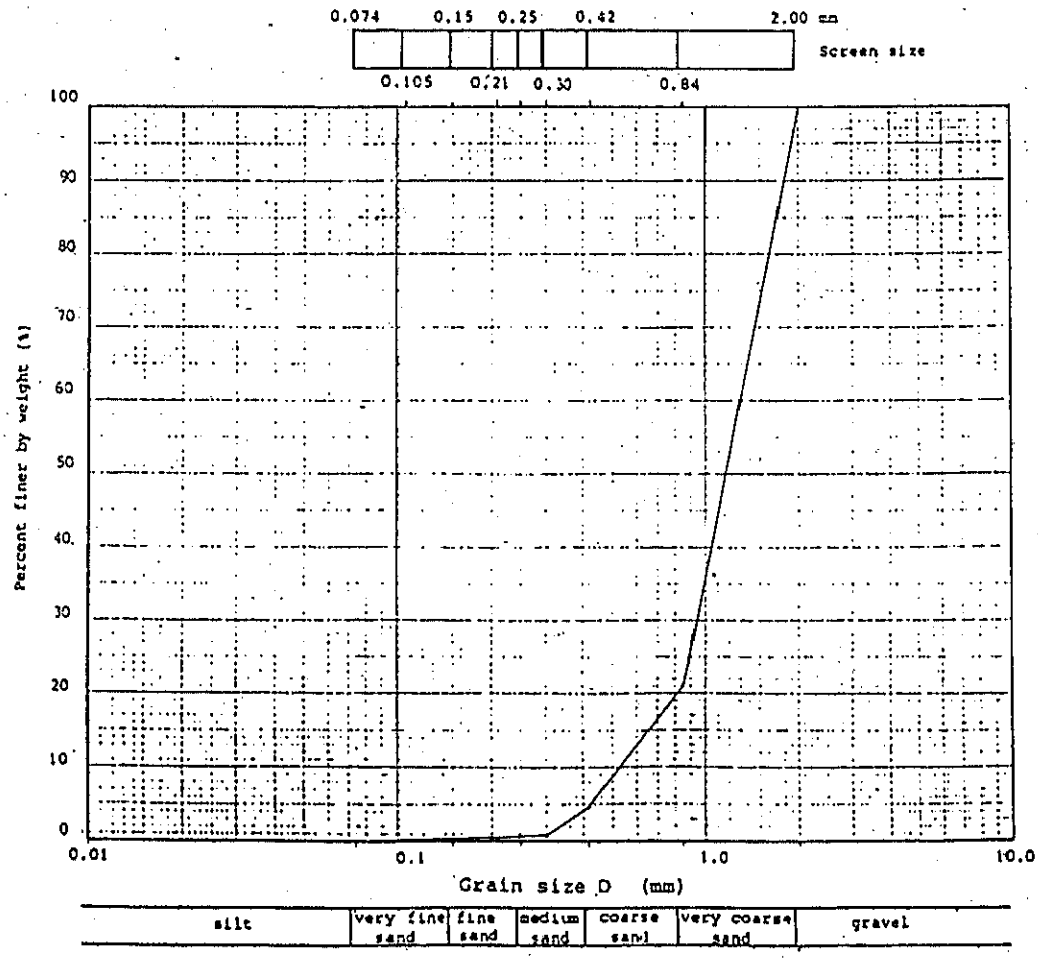
Name of sample Pali Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	158.25	20.875
0.42	32.45	4.65
0.30	7.50	0.90
0.25	0.40	0.80
0.21	0.70	0.35
0.15	0.60	0.05
0.105	0.05	0.025
0.074	0.05	0
	0	-

Very coarse sand (2.00-0.84mm) %	79.125
Coarse sand (0.84-0.42mm) %	16.225
Medium sand (0.42-0.25mm) %	3.85
Fine sand (0.25-0.15mm) %	0.75
Very fine sand (0.15-0.074mm) %	0.05
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	1.29
30% grain size mm	0.94
10% grain size mm	0.53
Coefficient of uniformity Uc	2.434
Coefficient of curvature Uc'	1.292

Grain size accumulation curve



App.3.184

Grain Size Analysis

Sample No. 103 A Date

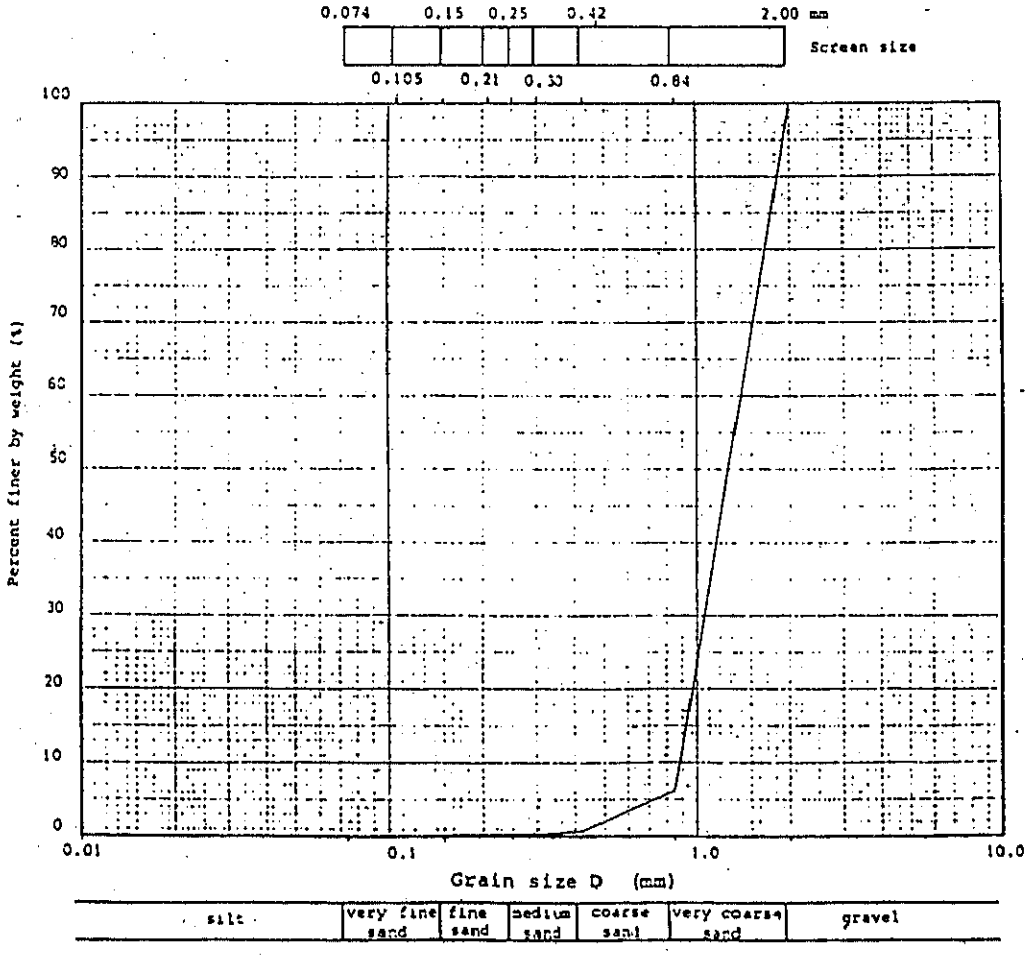
Name of sample Bali Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	187.70	6.15
0.42	10.55	0.875
0.30	1.30	0.225
0.25	0.10	0.175
0.21	0.10	0.125
0.15	0.10	0.075
0.105	0.05	0.05
0.074	0.10	0
	0	-

Very coarse sand (2.00-0.84mm) %	93.85
Coarse sand (0.84-0.42mm) %	5.275
Medium sand (0.42-0.25mm) %	0.70
Fine sand (0.25-0.15mm) %	0.10
Very fine sand (0.15-0.074mm) %	0.075
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	1.39
30% grain size mm	1.06
10% grain size mm	0.89
Coefficient of uniformity Uc	1.562
Coefficient of curvature Uc'	0.908

Grain size accumulation curve



App.3.185

Grain Size Analysis

Sample No. 103 B Date

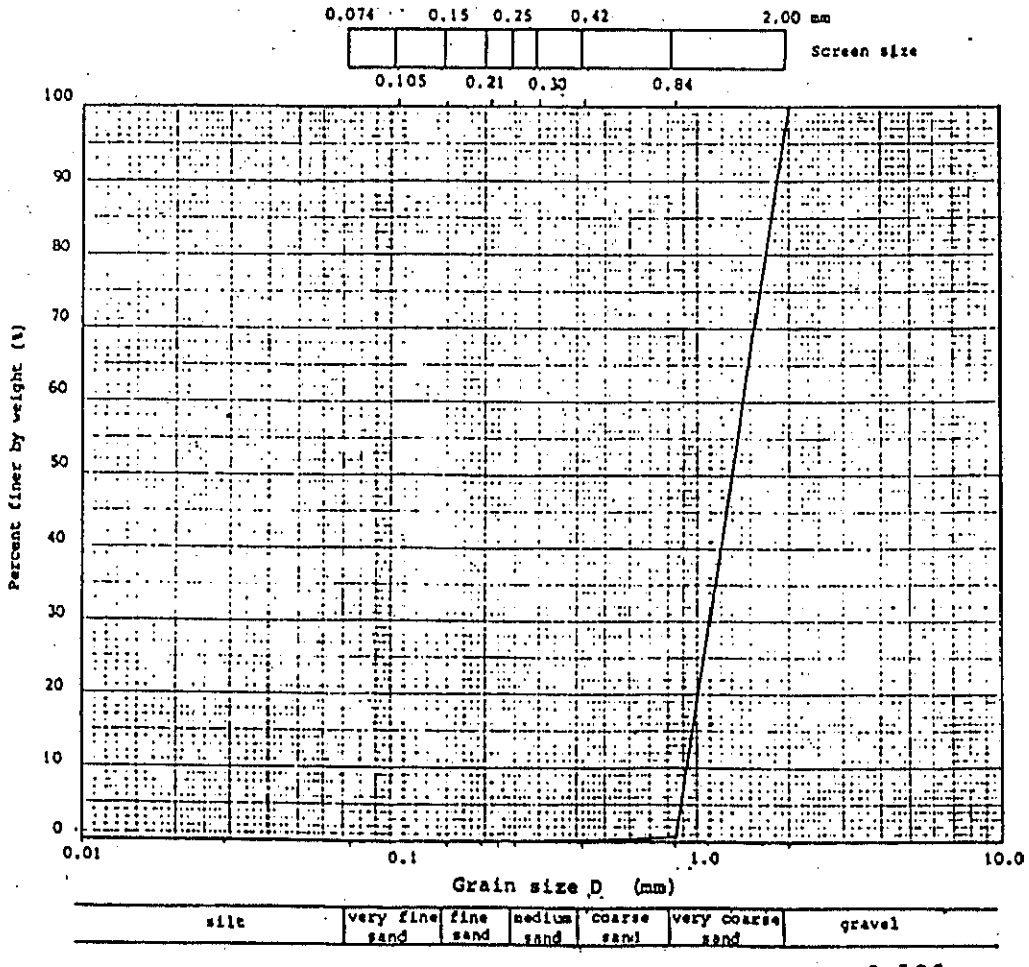
Name of sample Bali Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	199.05	0.475
0.42	0.85	0.05
0.30	0.10	0
0.25	0	0
0.21	0	0
0.15	0	0
0.105	0	0
0.074	0	0
	0	-

Very coarse sand (2.00-0.84mm) %	99.525
Coarse sand (0.84-0.42mm) %	0.425
Medium sand (0.42-0.25mm) %	0.05
Fine sand (0.25-0.15mm) %	0
Very fine sand (0.15-0.074mm) %	0
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	1.4
30% grain size mm	1.1
10% grain size mm	0.925
Coefficient of uniformity Uc	1.514
Coefficient of curvature Uc'	0.934

Grain size accumulation curve



App.3.186

Grain Size Analysis

Sample No. 104 A Date

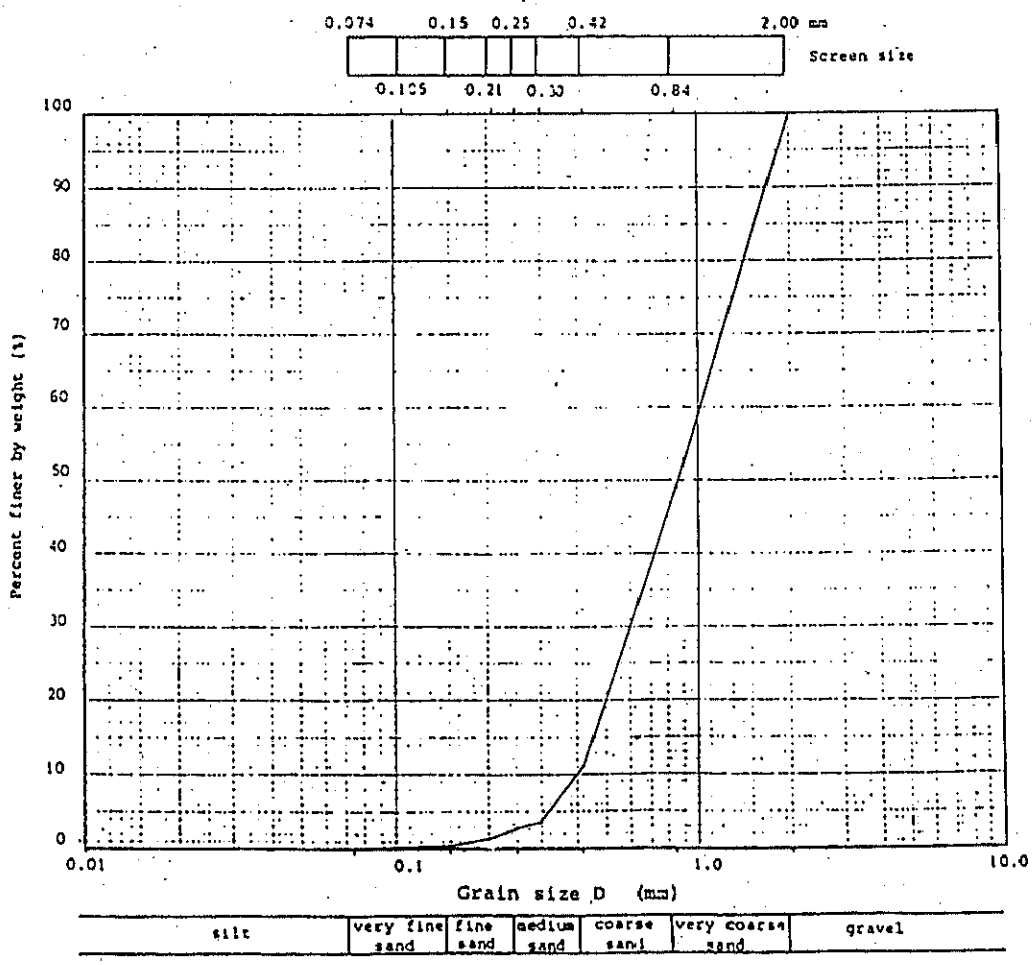
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	102.0	49.0
0.42	75.45	11.275
0.30	15.65	3.45
0.25	1.30	2.8
0.21	2.40	1.6
0.15	2.55	0.325
0.105	0.55	0.05
0.074	0.05	0.025
	0.05	-

Very coarse sand (2.00-0.84mm) %	51.0
Coarse sand (0.84-0.42mm) %	37.725
Medium sand (0.42-0.25mm) %	8.475
Fine sand (0.25-0.15mm) %	2.475
Very fine sand (0.15-0.074mm) %	0.300
Silt or clay (under 0.074mm) %	0.025
Maximum grain size mm	0.84
60% grain size mm	1.01
30% grain size mm	0.6
10% grain size mm	0.4
Coefficient of uniformity Uc	2.525
Coefficient of curvature Uc'	0.891

Grain size accumulation curve



App.3.187

Grain Size Analysis

Sample No. 104 B Date

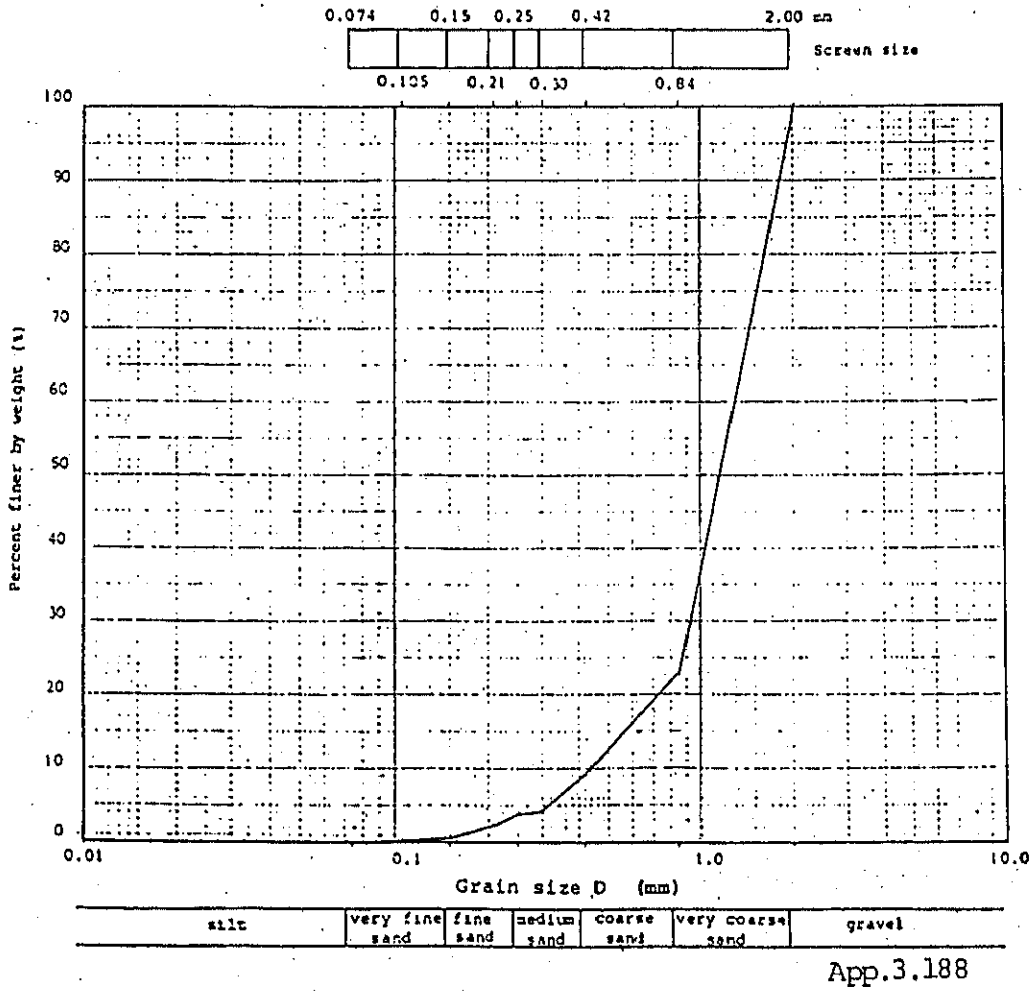
Name of sample Beach Sand Signature

Locality Samur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	154.25	22.875
0.42	27.5	9.125
0.30	9.35	4.2
0.25	0.9	3.75
0.21	3.0	2.25
0.15	3.4	0.55
0.105	1.0	0.05
0.074	0.1	0
	0	-

Very coarse sand (2.00-0.84mm) %	77.125
Coarse sand (0.84-0.42mm) %	13.75
Medium sand (0.42-0.25mm) %	5.375
Fine sand (0.25-0.15mm) %	3.2
Very fine sand (0.15-0.074mm) %	0.55
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	1.3
30% grain size mm	0.925
10% grain size mm	0.44
Coefficient of uniformity Uc	2.955
Coefficient of curvature Uc'	1.496

Grain size accumulation curve



App.3.188

Grain Size Analysis

Sample No. 105 A Date

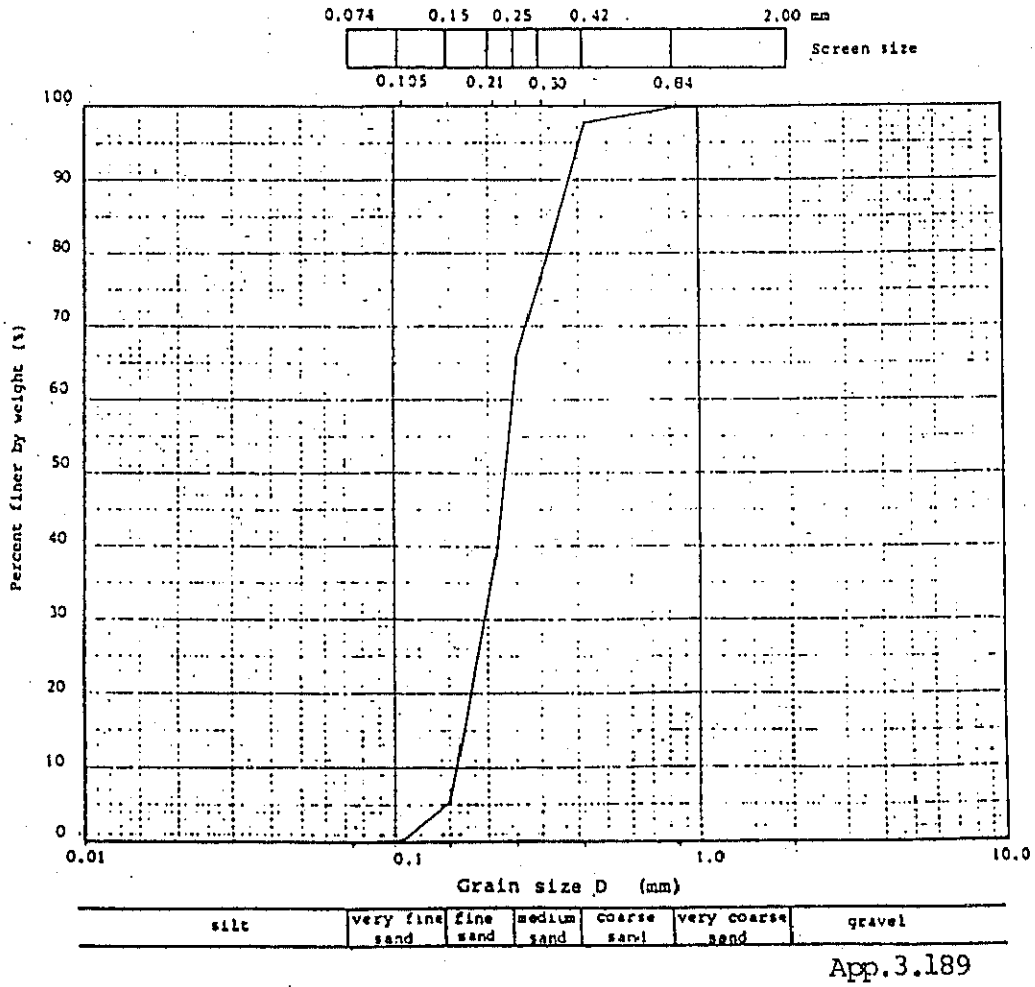
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
	-	
2.00		100
0.84	0.1	99.95
0.42	4.4	97.75
0.30	41.65	76.925
0.25	22.10	65.875
0.21	55.55	38.1
0.15	65.70	5.25
0.105	9.95	0.275
0.074	0.55	0
	0	-

Very coarse sand (2.00-0.84mm) %	0.05
Coarse sand (0.84-0.42mm) %	2.2
Medium sand (0.42-0.25mm) %	31.875
Fine sand (0.25-0.15mm) %	60.625
Very fine sand (0.15-0.074mm) %	5.25
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.24
30% grain size mm	0.193
10% grain size mm	0.159
Coefficient of uniformity Uc	1.509
Coefficient of curvature Uc'	0.976

Grain size accumulation curve



App.3.189

Grain Size Analysis

Sample No. 105 B Date

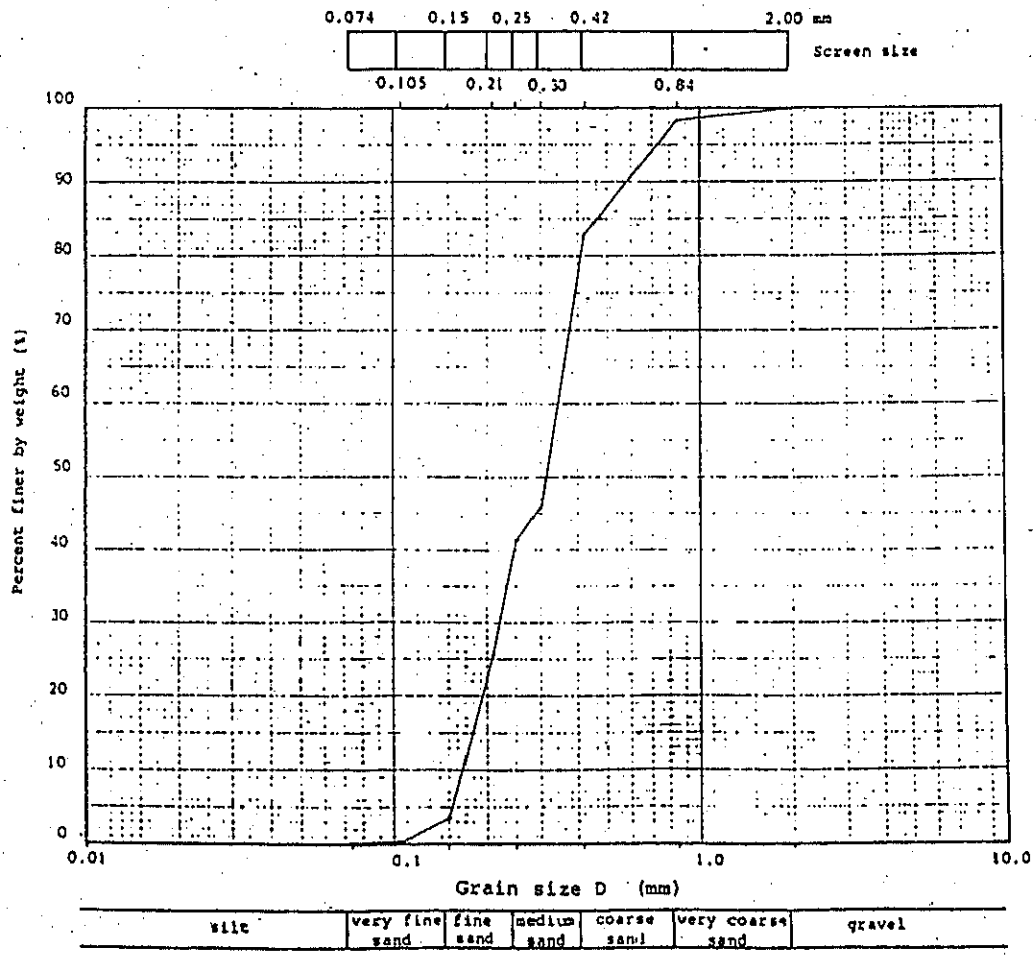
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
		-
2.00		100
0.84	3.25	98.375
0.42	30.8	82.975
0.30	74.6	45.675
0.25	8.35	41.5
0.21	31.7	25.65
0.15	43.9	3.7
0.105	6.75	0.325
0.074	0.55	0.05
	0.10	-

Very coarse sand (2.00-0.84mm) %	1.625
Coarse sand (0.84-0.42mm) %	15.4
Medium sand (0.42-0.25mm) %	41.475
Fine sand (0.25-0.15mm) %	37.8
Very fine sand (0.15-0.074mm) %	3.65
Silt or clay (under 0.074mm) %	0.05
Maximum grain size mm	0.84
60% grain size mm	0.34
30% grain size mm	0.22
10% grain size mm	0.165
Coefficient of uniformity Uc	2.06
Coefficient of curvature Uc'	0.863

Grain size accumulation curve



App.3.190

Grain Size Analysis

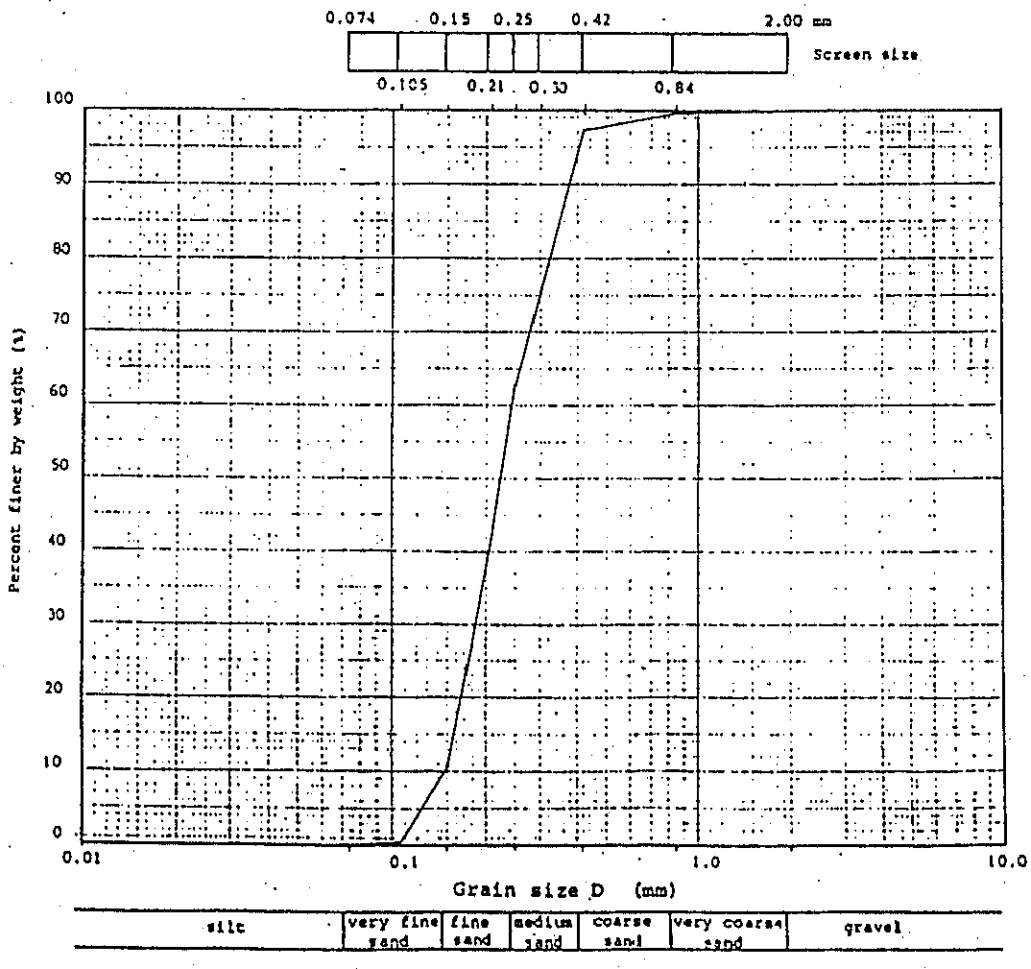
Sample No. 106 A
Name of sample Bali Beach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	0.55	99.725
0.42	4.6	97.425
0.30	43.85	75.5
0.25	25.70	62.65
0.21	39.35	42.975
0.15	64.30	10.825
0.105	18.15	1.75
0.074	3.50	0
	0	-

Very coarse sand (2.00-0.84mm) %	0.275
Coarse sand (0.84-0.42mm) %	2.3
Medium sand (0.42-0.25mm) %	34.775
Fine sand (0.25-0.15mm) %	51.825
Very fine sand (0.15-0.074mm) %	10.825
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.24
30% grain size mm	0.184
10% grain size mm	0.145
Coefficient of uniformity Uc	1.655
Coefficient of curvature Uc'	0.973

Grain size accumulation curve



App.3.191

Grain Size Analysis

Sample No. 106 B Date

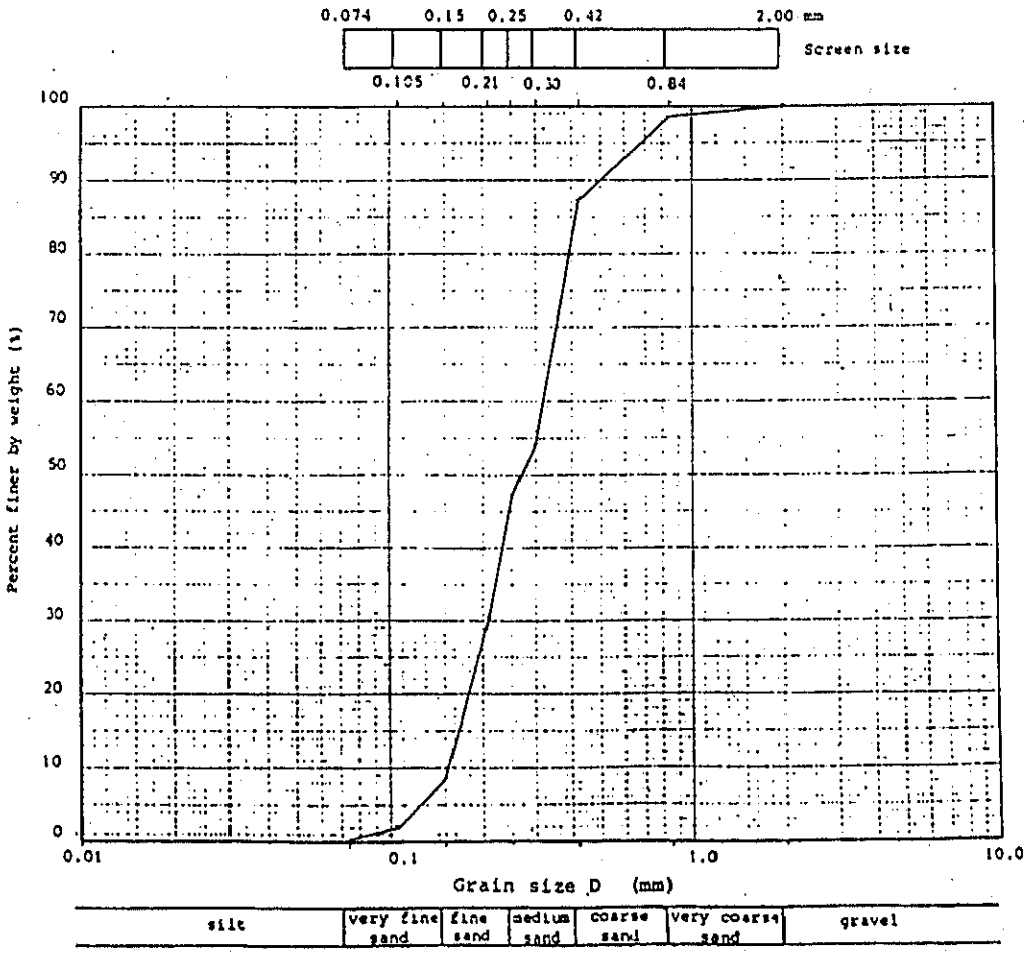
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	2.95	98.525
0.42	22.75	87.15
0.30	65.55	54.375
0.25	14.3	47.225
0.21	33.75	30.35
0.15	43.3	8.7
0.105	13.2	2.1
0.074	3.4	0.4
	0.8	-

Very coarse sand (2.00-0.84mm) %	1.475
Coarse sand (0.84-0.42mm) %	11.375
Medium sand (0.42-0.25mm) %	39.925
Fine sand (0.25-0.15mm) %	38.525
Very fine sand (0.15-0.074mm) %	8.3
Silt or clay (under 0.074mm) %	0.4
Maximum grain size mm	0.84
60% grain size mm	0.32
30% grain size mm	0.209
10% grain size mm	0.152
Coefficient of uniformity Uc	2.105
Coefficient of curvature Uc'	0.698

Grain size accumulation curve



App.3.192

Grain Size Analysis

Sample No. 107 A Date

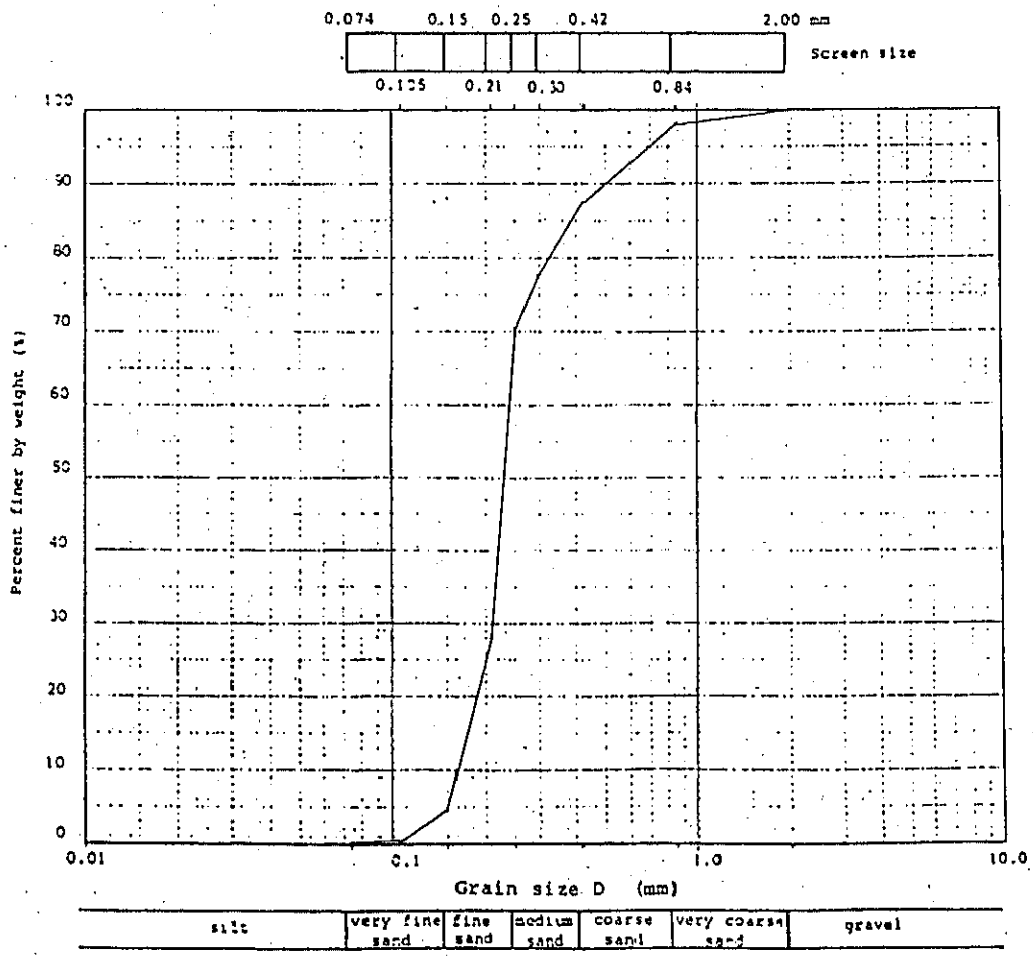
Name of sample Beach Sand Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
-		
2.00		100
0.84	4.2	97.9
0.42	20.85	87.475
0.30	59.2	57.875
0.25	14.75	50.5
0.21	45.10	27.95
0.15	47.3	4.3
0.105	8.10	0.25
0.074	0.05	0.225
	0.45	-

Very coarse sand (2.00-0.84mm) %	2.1
Coarse sand (0.84-0.42mm) %	10.425
Medium sand (0.42-0.25mm) %	36.975
Fine sand (0.25-0.15mm) %	46.2
Very fine sand (0.15-0.074mm) %	4.075
Silt or clay (under 0.074mm) %	0.225
Maximum grain size mm	1.84
60% grain size mm	0.24
30% grain size mm	0.21
10% grain size mm	0.16
Coefficient of uniformity Uc	1.5
Coefficient of curvature Uc'	1.148

Grain size accumulation curve



App.3.193

Grain Size Analysis

Sample No. 107 B　　Date

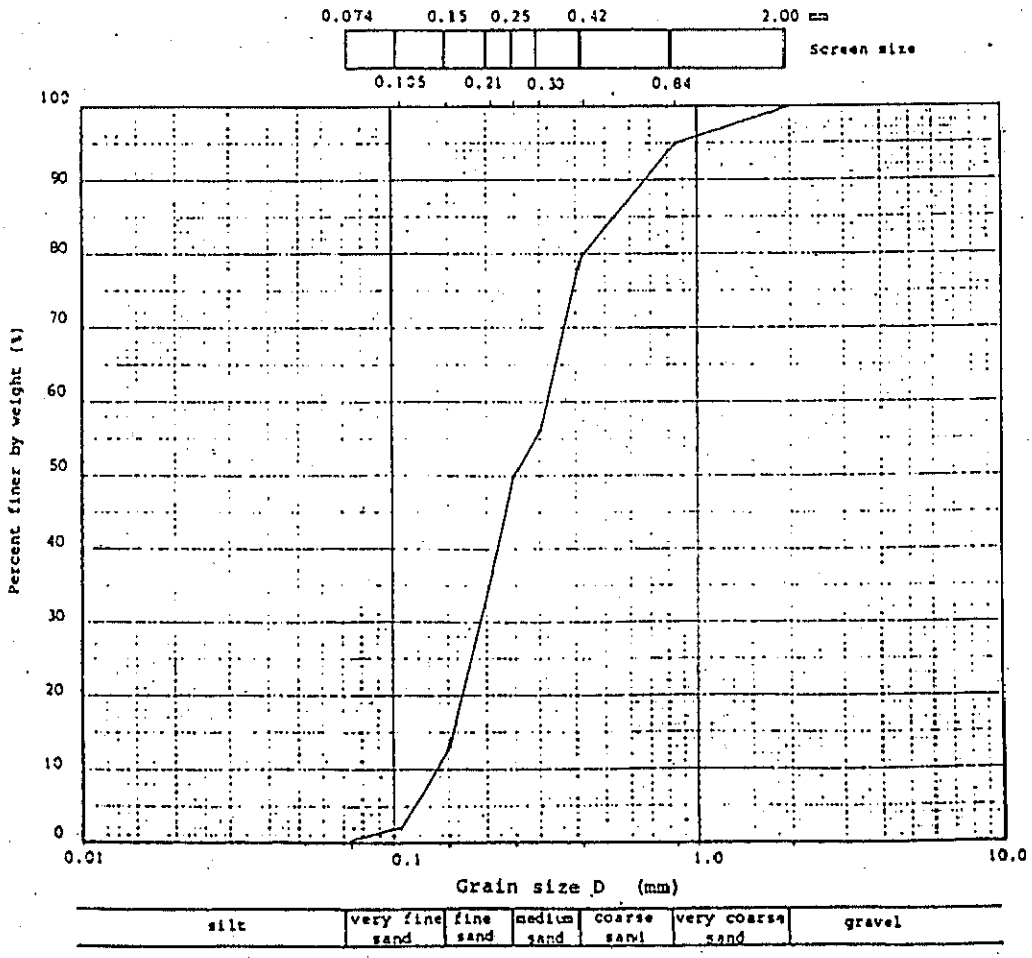
Name of sample Bali Beach Sand　　Signature

Locality Sanur Beach

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	9.75	95.125
0.42	32.40	79.925
0.30	45.85	56.00
0.25	12.65	49.675
0.21	24.75	37.30
0.15	49.05	12.775
0.105	21.40	2.075
0.074	3.85	0.150
	0.30	-

	%
Very coarse sand (2.00~0.84mm) %	4.875
Coarse sand (0.84~0.42mm) %	16.20
Medium sand (0.42~0.25mm) %	29.25
Fine sand (0.25~0.15mm) %	36.90
Very fine sand (0.15~0.074mm) %	12.625
Silt or clay (under 0.074mm) %	0.15
Maximum grain size mm	0.84
60% grain size mm	0.32
30% grain size mm	0.19
10% grain size mm	0.138
Coefficient of uniformity Uc	2.319
Coefficient of curvature Uc'	0.817

Grain size accumulation curve



App.3.194

Grain Size Analysis

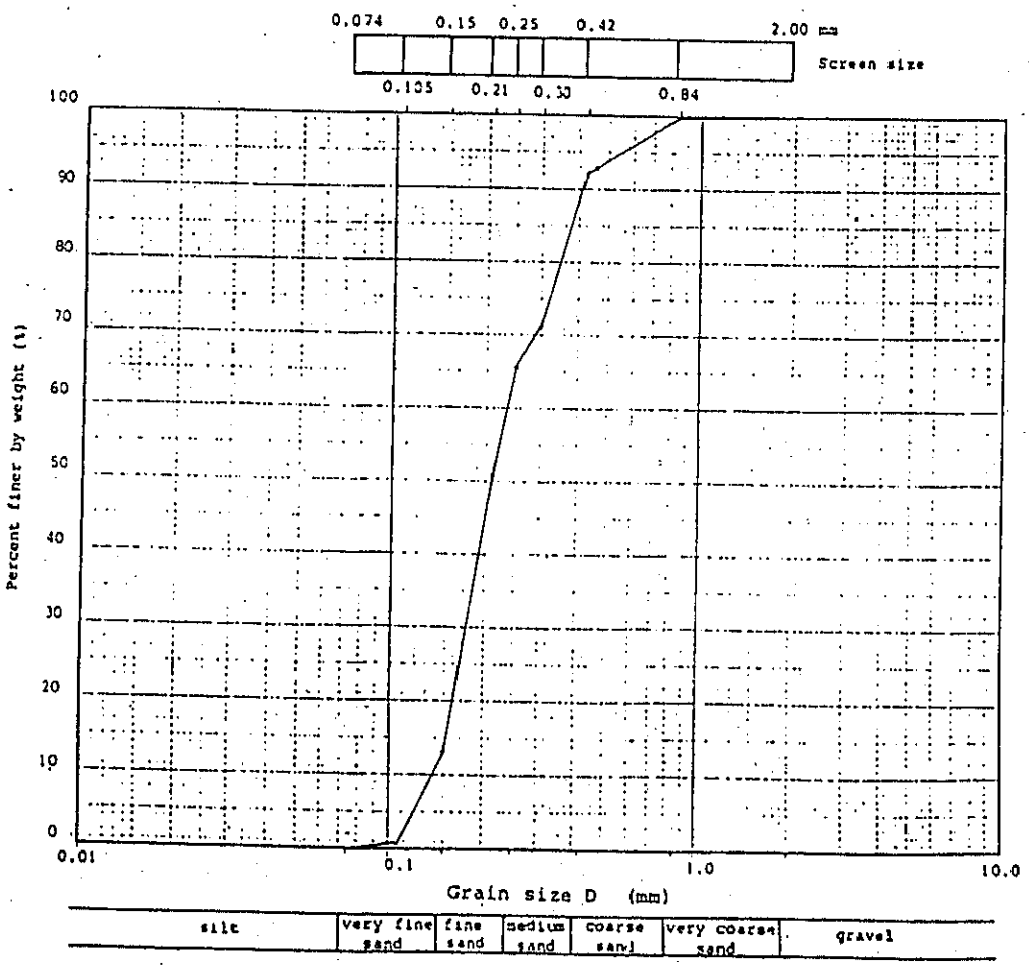
Sample No. 108 A
Name of sample Peach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	0.25	99.875
0.42	15.85	91.95
0.30	41.55	71.175
0.25	11.35	65.5
0.21	28.35	51.325
0.15	76.4	13.125
0.105	22.55	1.85
0.074	3.70	0
	0	-

Very coarse sand (2.00-0.84mm) %	0.125
Coarse sand (0.84-0.42mm) %	7.925
Medium sand (0.42-0.25mm) %	26.45
Fine sand (0.25-0.15mm) %	52.375
Very fine sand (0.15-0.074mm) %	13.125
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.235
30% grain size mm	0.175
10% grain size mm	0.138
Coefficient of uniformity Uc	1.703
Coefficient of curvature Uc'	0.944

Grain size accumulation curve



App.3.195

Grain Size Analysis

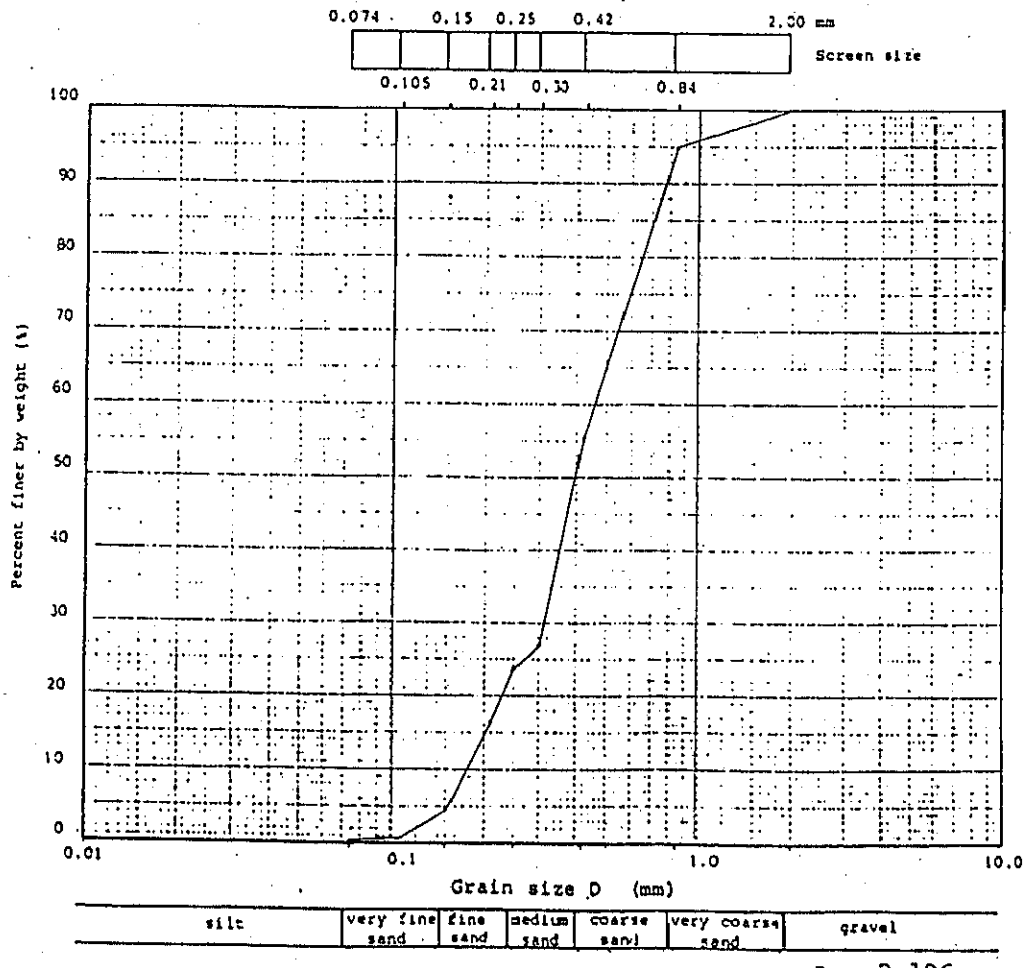
Sample No. 108 B
Name of sample Beach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	9.4	95.3
0.42	79.2	55.7
0.30	57.33	27.035
0.25	6.67	23.7
0.21	14.15	16.625
0.15	23.95	4.65
0.105	8.15	0.575
0.074	0.55	0.30
	0.60	-

Very coarse sand (2.00-0.84mm) %	4.7
Coarse sand (0.84-0.42mm) %	39.6
Medium sand (0.42-0.25mm) %	32.0
Fine sand (0.25-0.15mm) %	19.05
Very fine sand (0.15-0.074mm) %	4.35
Silt or clay (under 0.074mm) %	0.30
Maximum grain size mm	0.84
60% grain size mm	0.46
30% grain size mm	0.31
10% grain size mm	0.175
Coefficient of uniformity Uc	2.629
Coefficient of curvature Uc'	1.194

Grain size accumulation curve



App.3.196

Grain Size Analysis

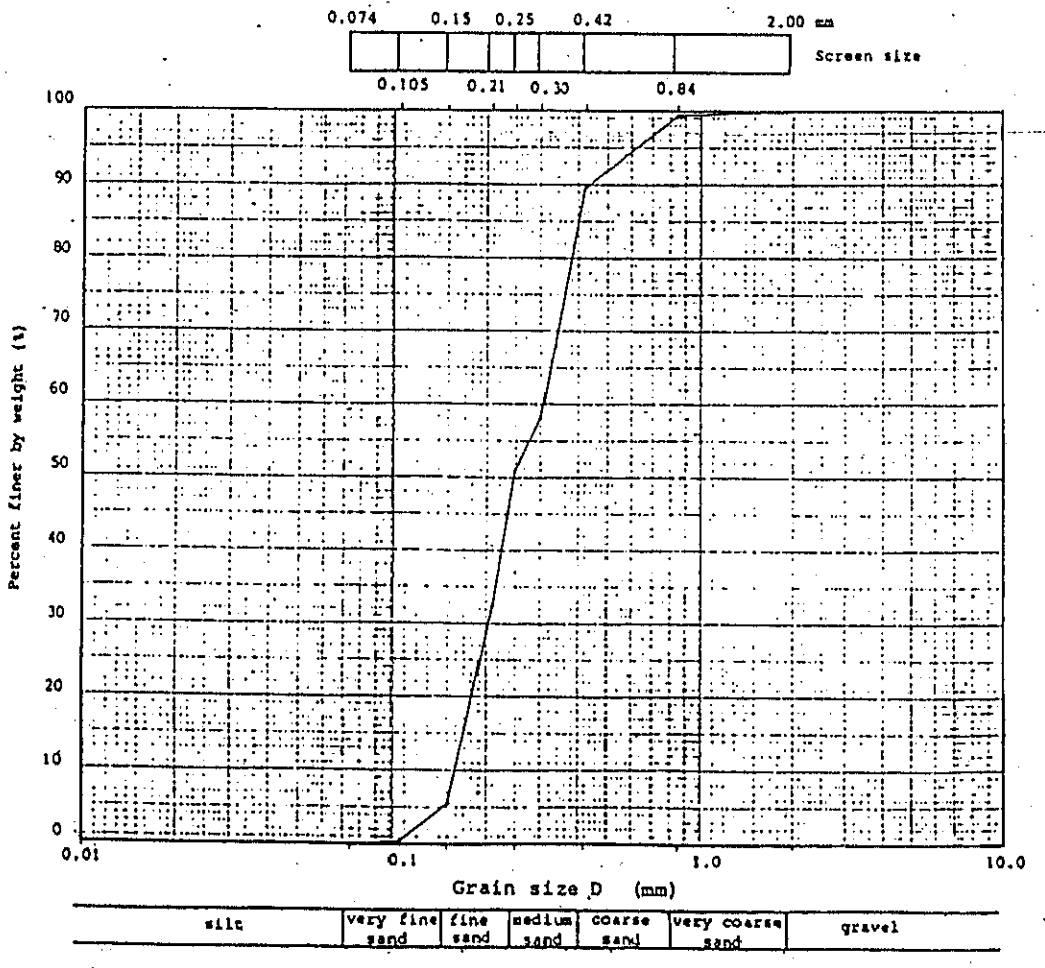
Sample No. 109 A
Name of sample Beach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	1.15	99.425
0.42	19.85	89.5
0.30	62.8	58.1
0.25	14.0	51.10
0.21	37.05	32.575
0.15	54.5	5.325
0.105	10.1	0.275
0.074	0.55	0
	0	-

Very coarse sand (2.00-0.84mm) %	0.575
Coarse sand (0.84-0.42mm) %	9.925
Medium sand (0.42-0.25mm) %	38.4
Fine sand (0.25-0.15mm) %	45.775
Very fine sand (0.15-0.074mm) %	5.325
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.305
30% grain size mm	0.205
10% grain size mm	0.16
Coefficient of uniformity Uc	1.906
Coefficient of curvature Uc'	0.861

Grain size accumulation curve



App.3.197

Grain Size Analysis

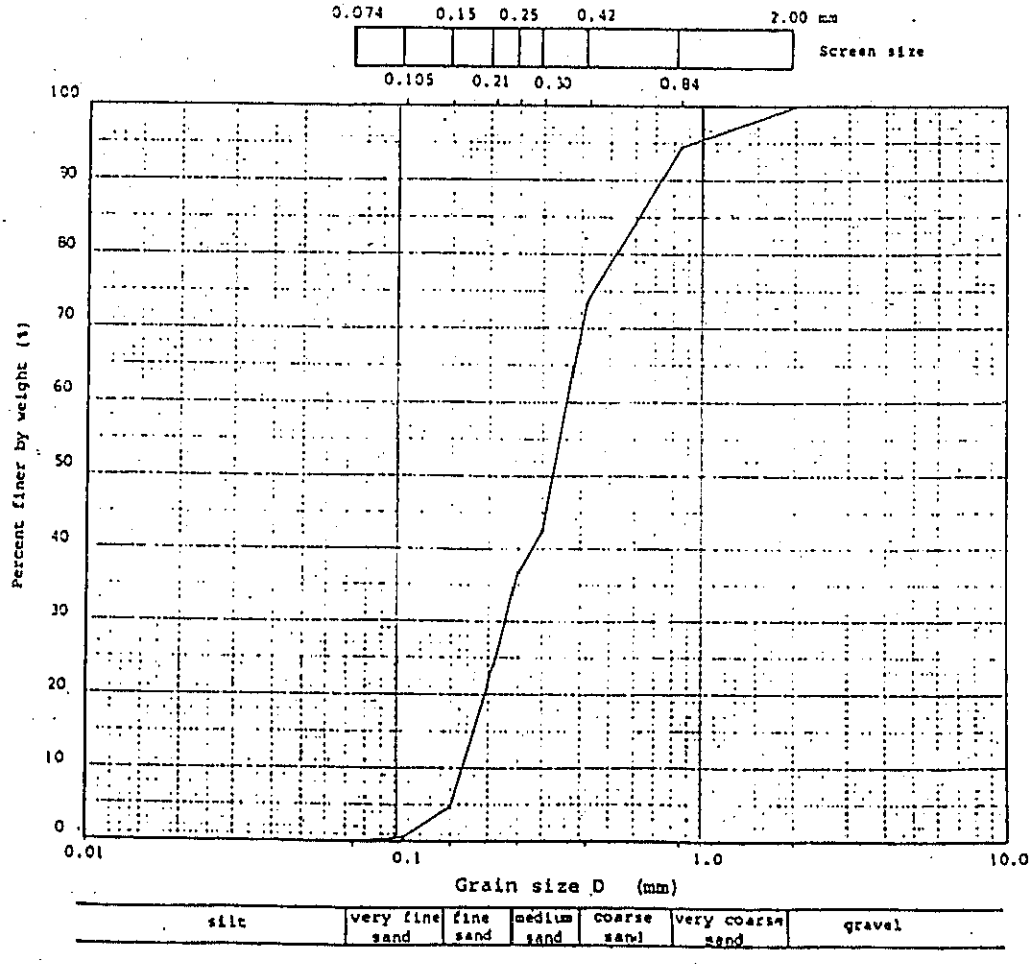
Sample No. 109 E
Name of sample Pali Beach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	10.85	94.575
0.42	42.10	73.525
0.30	62.10	42.475
0.25	11.30	36.825
0.21	25.50	24.075
0.15	38.85	4.65
0.105	8.35	0.475
0.074	0.95	0
	0	-

Very coarse sand (2.00-0.84mm) %	5.425
Coarse sand (0.84-0.42mm) %	21.05
Medium sand (0.42-0.25mm) %	36.70
Fine sand (0.25-0.15mm) %	32.175
Very fine sand (0.15-0.074mm) %	4.65
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.84
60% grain size mm	0.36
30% grain size mm	0.225
10% grain size mm	0.165
Coefficient of uniformity Uc	2.182
Coefficient of curvature Uc'	0.852

Grain size accumulation curve



App.3.198

Grain Size Analysis

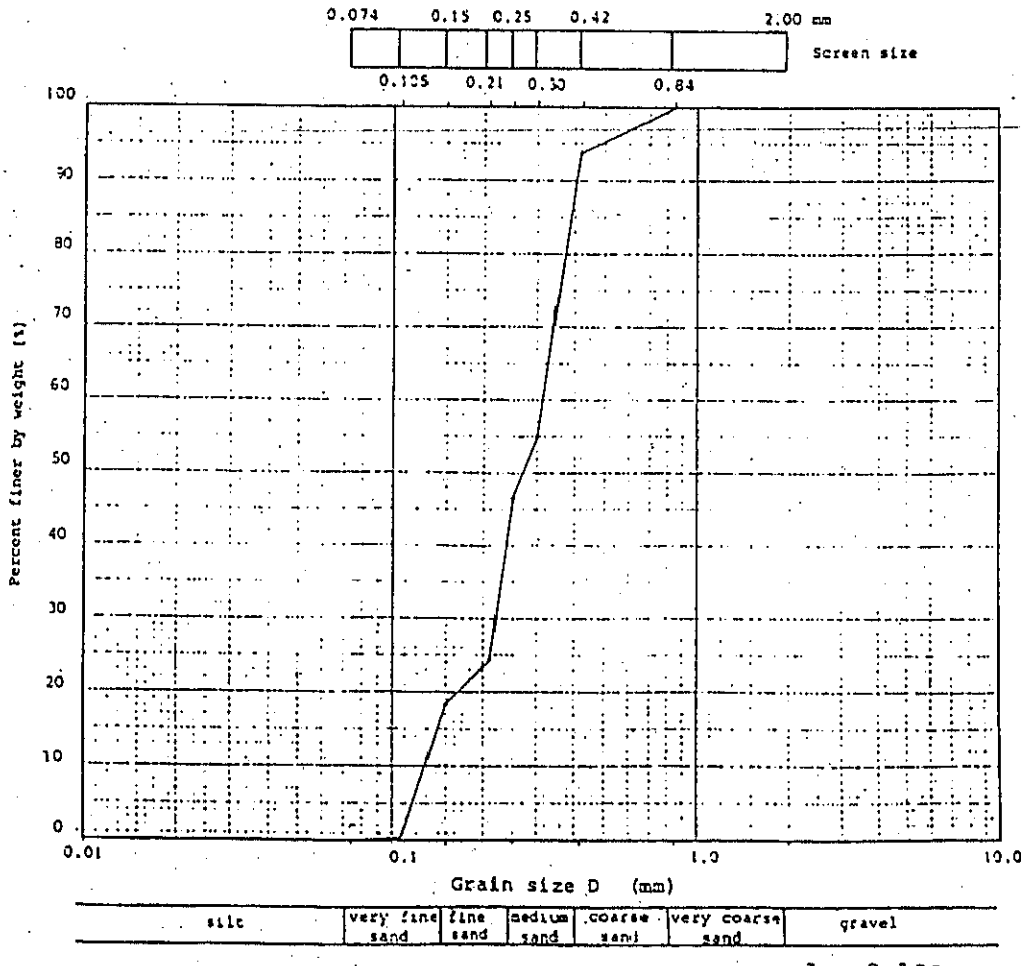
Sample No. 110 A
Name of sample Beach Sand
Locality Sanur Bali

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84		100
0.42	11.85	94.075
0.30	77.90	55.126
0.25	16.75	46.75
0.21	44.85	24.325
0.15	42.95	2.85
0.105	5.6	0.05
0.074	0.1	0
	0	-

Very coarse sand (2.00-0.84mm) %	0
Coarse sand (0.84-0.42mm) %	5.925
Medium sand (0.42-0.25mm) %	47.325
Fine sand (0.25-0.15mm) %	43.90
Very fine sand (0.15-0.074mm) %	2.85
Silt or clay (under 0.074mm) %	0
Maximum grain size mm	0.42
60% grain size mm	0.32
30% grain size mm	0.22
10% grain size mm	0.129
Coefficient of uniformity Uc	2.481
Coefficient of curvature Uc'	1.172

Grain size accumulation curve



App.3.199

Grain Size Analysis

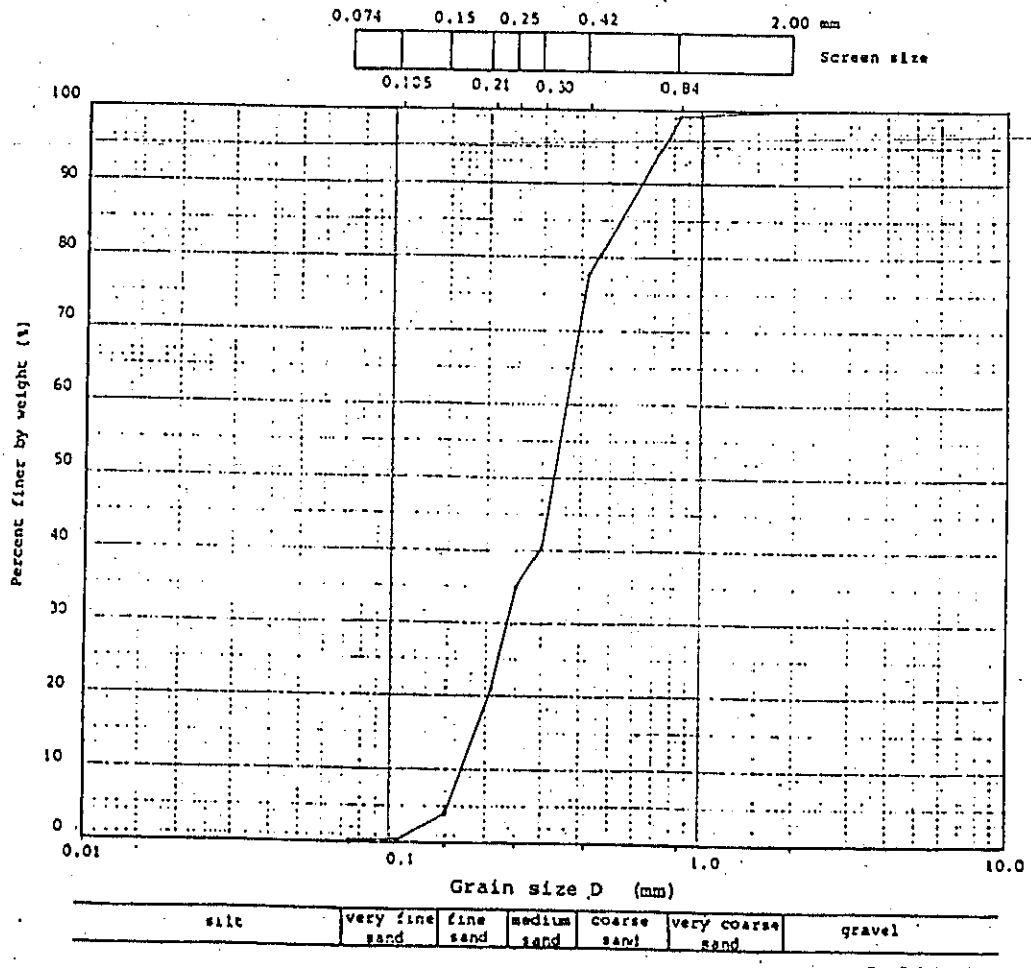
Sample No. 110 B
Name of sample Beach Sand
Locality Sanur Beach

Date
Signature

Grain size (mm)	Weight (g)	Weight percent (%)
2.00		100
0.84	1.45	99.275
0.42	43.1	77.725
0.30	74.65	40.4
0.25	10.8	35.0
0.21	28.25	20.875
0.15	33.85	3.95
0.105	7.05	0.425
0.074	0.45	0.20
	0.40	-

Very coarse sand (2.00-0.84mm) %	0.725
Coarse sand (0.84-0.42mm) %	21.55
Medium sand (0.42-0.25mm) %	42.725
Fine sand (0.25-0.15mm) %	31.05
Very fine sand (0.15-0.074mm) %	3.75
Silt or clay (under 0.074mm) %	0.20
Maximum grain size mm	0.84
60% grain size mm	0.36
30% grain size mm	0.23
10% grain size mm	0.17
Coefficient of uniformity Uc	2.118
Coefficient of curvature Uc'	0.864

Grain size accumulation curve



App.3.200

I-2. Specific Gravity

Specific Gravity

Name of sample River & Beach Sand

Locality Bali Beach Conservation Project
(Sample location as in Table)

Date

Signature

Sample No.	Weight of sample Ws (g)	Weight of measuring flask Wf (g)	Weight totaled measuring flask and pure water, at T'°C Wa' (g)	T' °C	Weight totaled measuring flask, pure water and sample, at T°C Wb (g)	T °C	Weight totaled measuring flask and pure water, at T°C (by calculation) Wa (g)	Specific gravity (T°C/T°C)	Specific gravity (T°C/15°C)	Specific gravity (T°C/4°C)
1.	400	169.10	663.90	27.5	916.40	25.5	664.16837	2.706	2.700	2.698
2.	400	169.70	665.35	26.5	917.55	25.5	665.48199	2.704	2.698	2.696
5.	400	165.50	661.05	27	915.90	25.5	661.24911	2.752	2.746	2.744
11.	400	149.65	645.35	27	897.60	25.5	645.54917	2.704	2.698	2.696
20.	400	161.50	657.20	27	910.0	25.5	657.39917	2.714	2.708	2.706
22 A	400	154.35	650.00	26.5	902.50	25.5	650.13199	2.709	2.703	2.700
24 A	400	156.50	651.90	26°	903.15	25.5	651.96484	2.688	2.682	2.680
26 A	400	165.30	661.10	27	912.55	25.5	661.29921	2.689	2.683	2.581
28 A	400	151.65	648.90	26	901.35	25.5	648.96509	2.710	2.704	2.702
30 A	400	170.45	666.30	27	921.00	26	666.43432	2.750	2.744	2.741
32 A	400	149.65	645.35	27	899.20	26	645.48428	2.734	2.728	2.725
34 A	400	170.55	665.65	27	919.85	26	665.78412	2.740	2.734	2.731
36 A	400	170.45	666.30	27	915.10	25.5	666.49923	2.642	2.636	2.634
38 A	400	156.50	651.90	26	907.85	26.5	651.83287	2.778	1.771	2.769
40 A	400	148.9	643.60	27	895.95	25.5	643.79877	2.705	2.699	2.697
42 A	400	161.50	657.20	27	907.25	25.5	657.39917	2.664	2.658	2.656
43 A	400	169.10	663.90	27.5	917.80	26.5	664.03651	2.735	2.728	2.726
45 A	400	151.65	648.90	26	904.30	26.5	648.83262	2.768	2.761	2.759

Specific Gravity

Name of sample River & Beach Sand

Locality Bali Beach Conservation Project
(sample Location as in Table)

Date _____

Signature _____

Sample No.	Weight of sample Ws (g)	Weight of measuring flask Wf (g)	Weight totaled measuring flask and pure water, at T'°C Wa' (g)	T' °C	Weight totaled measuring flask, pure water and sample, at T°C Wb (g)	T °C	Weight totaled measuring flask and pure water, at T°C (by calculation) Wa (g)	Specific gravity (T°C/T°C)	Specific gravity (T°C/15°C)	Specific gravity (T°C/4°C)
47.A	400	151.80	646.70	27	900.70	25.5	646.89885	2.736	2.730	2.728
49 A	400	148.90	643.60	27	899.50	25.5	643.79877	2.772	2.766	2.764
51-2A	400	145.50	641.10	27	895.15	25.5	641.29913	2.737	2.731	2.729
53 A	400	169.10	663.90	27.5	918.55	25.5	664.16837	2.747	2.741	2.739
55 A	400	148.80	644.35	27	897.60	25.5	644.54911	2.722	2.716	2.714
57 A	400	151.80	646.70	27	900.05	26	646.83406	2.725	2.719	2.716
59 A	400	154.35	650.00	26.5	904.85	25.5	650.13199	2.753	2.747	2.745
61 A	355.95	166.15	661.00	26	886.85	25	661.12955	2.733	2.727	2.725
65 A	400	170.55	665.65	27	919.05	25.5	665.84893	2.725	2.719	2.717
67 A	400	168.75	663.75	27.5	918.75	25	664.08333	2.752	2.746	2.744
70 A	400	151.65	648.90	26	902.20	25	649.03018	2.724	2.718	2.716
73 A	400	162.15	657.60	27	910.50	26	657.73421	2.717	2.711	2.708
75 A	400	169.70	665.35	26.5	919.95	25	665.54692	2.747	2.741	2.739
76 A	400	154.35	650.00	26.5	903.05	27.5	649.8632	2.725	2.718	2.715
78 A	400	161.20	657.00	27.5	912.50	25.5	657.26892	2.763	2.757	2.755
80-1 A	400	149.65	645.35	27	901.30	25.5	645.54917	2.773	2.767	2.765
80-2A	400	151.65	648.90	26	904.20	25.5	648.88909	2.763	2.756	2.755
81 A	400	161.90	657.20	27	910.30	26	657.43838	2.715	2.709	2.706
83 A	400	149.45	645.15	27	897.15	25.5	645.64917	2.699	2.693	2.691

Specific Gravity

Name of sample: River & Beach Sand

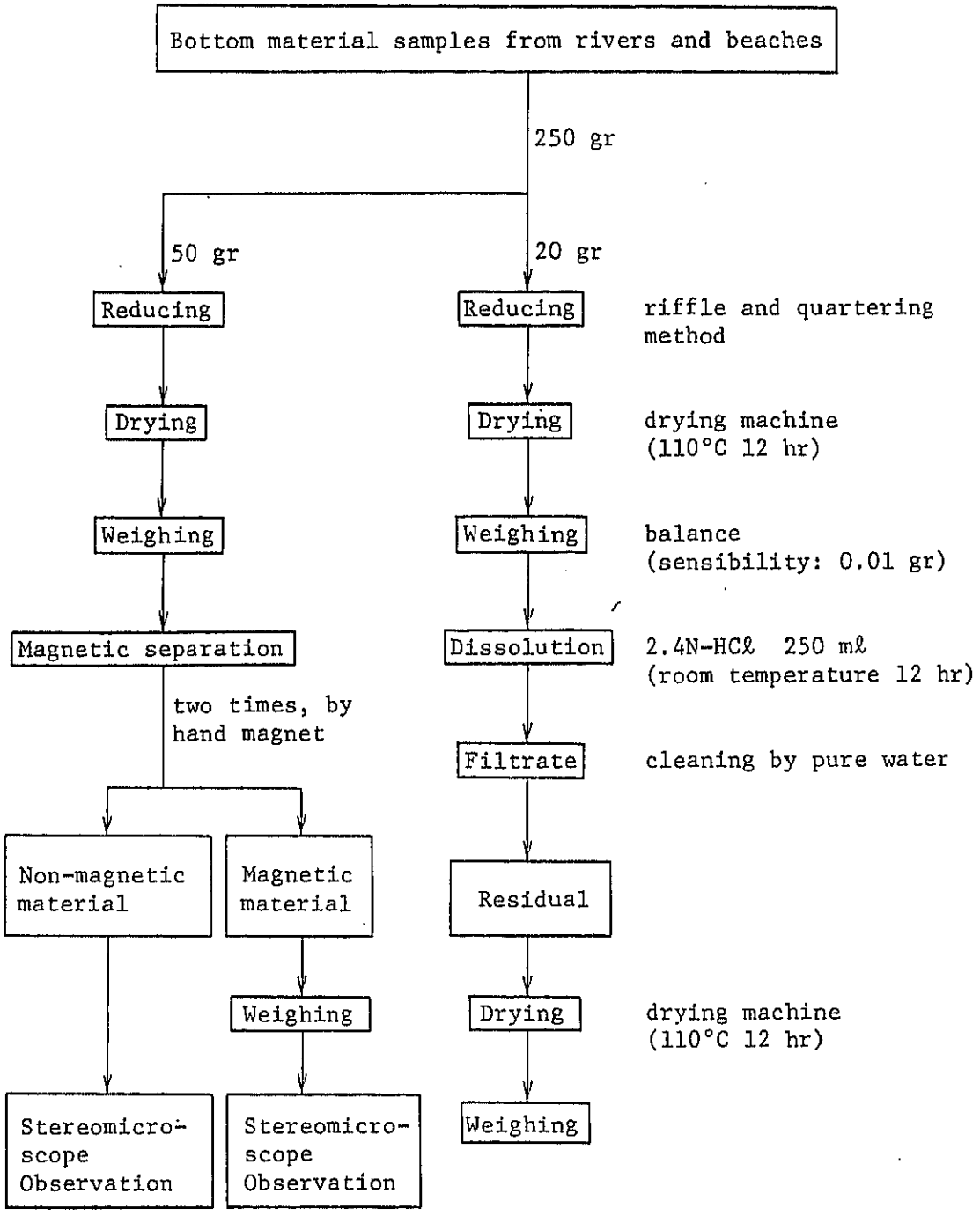
Locality: Bali Beach Conservation Project
(Sample Location as in Table)

Date: _____

Signature: _____

Sample No.	Weight of sample Ws (g)	Weight of measuring flask Wf (g)	Weight totaled measuring flask and pure water, at T'°C Wa' (g)	T' °C	Weight totaled measuring flask, pure water and sample, at T°C Wb (g)	T °C	Weight totaled measuring flask and pure water, at T°C (by calculation) Wa (g)	Specific gravity (T°C/T°C)	Specific gravity (T°C/15°C)	Specific gravity (T°C/4°C)
85 A	400	149.45	645.15	27	898.70	26	645.28428	2.729	2.723	2.720
88 A	400	156.50	651.90	26	907.80	25	652.02969	2.773	2.767	2.764
91 A	400	165.50	661.05	27	910.45	25.5	661.24911	2.653	2.647	2.645
94 A	400	165.50	661.05	27	912.70	25.5	661.24911	2.693	2.687	2.685
97 A	400	162.15	657.60	27	908.95	25.5	657.79907	2.687	2.681	2.678
100 A	400	145.50	641.10	27	897.00	25.5	641.29913	2.772	2.766	2.764
101 A	400	148.80	644.35	27	901.40	26.5	644.41709	2.797	2.790	2.788
102 A	400	166.15	661.00	26	917.30	26.5	660.93294	2.785	2.778	2.776
104 A	400	169.70	665.35	26.5	921.70	26	665.41711	2.783	2.777	2.774
105 A	400	161.20	657.00	27.5	968.15	26	657.20397	4.492	4.482	4.478
106 A	400	168.75	663.75	27.5	963.0	26	663.95364	3.962	3.953	3.949
108 A	400	154.35	650.00	26.5	953.45	25.5	650.13199	4.137	4.128	4.124
110 A	400	165.30	661.10	27	975.65	26	661.23431	4.674	4.663	4.659

I-3. Mineral Composition Test



Flow Sheet showing the Procedures of Magnetic Separation and 2.4N-HCℓ Soluble Test

Mineral Composition

Name of sample: Beach Sand — Date: ____

Locality: Bali Beach — Signature: ____

Sample No.	Solubility test by 20% HCl					Magnetic separation				
	Weight of sample (g)	Soluble m.		Unsoluble m.		Weight of sample (g)	Magnetic m.		Non-magnetic m.	
		Weight (g)	%	Weight (g)	%		Weight (g)	%	Weight (g)	%
1	20	19.76	98.80	0.24	1.20	100	1.54	1.54	98.46	98.46
2	20	19.74	98.70	0.26	1.30	100	1.71	1.71	98.29	98.29
5	20	4.54	22.70	15.46	77.30	100	5.71	5.71	94.29	94.29
11	20	1.55	7.75	18.45	92.25	100	49.69	49.69	50.31	50.31
20 A	20	1.36	6.80	18.64	93.20	100	31.52	31.52	68.48	68.48
22 A	20	18.71	93.55	1.29	6.45	100	2.32	2.32	97.68	97.68
24 A	20	18.92	94.60	1.08	5.40	100	4.21	4.21	95.79	95.79
26 A	20	18.96	94.80	1.04	5.20	100	3.55	3.55	96.45	96.45
28 A	20	19.07	95.35	0.93	4.65	100	3.55	3.55	96.45	96.45
30 A	20	19.20	96.00	0.80	4.00	100	3.87	3.87	96.13	96.13
32 A	20	19.45	97.25	0.55	2.75	100	1.90	1.90	98.10	98.10
34 A	20	19.12	95.60	0.88	4.40	100	3.31	3.31	96.69	96.69
36 A	20	19.40	97.00	0.60	3.00	100	2.71	2.71	97.29	97.29
38 A	20	19.85	99.25	0.15	0.75	100	2.26	2.26	97.74	97.74
40 A	20	19.78	98.90	0.22	1.10	100	1.28	1.28	98.72	98.72

App. 2.1.

Mineral Composition

Name of sample Beach Sand Date _____

Locality Bali Beach Signature _____

Sample No.	Solubility test by 20% HCl					Magnetic separate				
	Weight of sample (g)	Soluble m.		Unsoluble m.		Weight of sample (g)	Magnetic m.		Non-magnetic m.	
		Weight (g)	%	Weight (g)	%		Weight (g)	%	Weight (g)	%
42 A	20	19.79	98.95	0.21	1.05	100	1.49	1.49	98.51	98.51
43 A	20	19.61	98.05	0.39	1.95	100	1.92	1.92	98.08	98.08
45 A	20	18.36	91.80	1.64	8.20	100	0.95	0.95	99.05	99.05
47 A	20	18.47	92.35	1.53	7.65	100	3.30	3.30	96.70	96.70
49 A	20	18.55	92.75	1.45	7.25	100	3.63	3.63	96.37	96.37
51-2A	20	16.39	81.95	3.61	18.05	100	3.19	3.19	96.81	96.81
53 A	20	16.07	80.35	3.93	19.65	100	5.94	5.94	94.06	94.06
55 A	20	13.96	69.80	6.04	30.20	100	5.29	5.29	94.71	94.71
57 A	20	17.35	86.75	2.65	13.25	100	5.13	5.13	94.87	94.87
59 A	20	19.15	95.75	0.85	4.25	100	3.53	3.53	96.47	96.47
61 A	20	16.18	80.90	3.82	19.10	100	2.46	2.46	97.54	97.54
65 A	20	11.93	59.65	8.07	40.35	100	9.95	9.95	90.05	90.05
67 A	20	15.06	75.30	4.94	24.70	100	6.49	6.49	93.51	93.51
70 A	20	12.83	64.15	7.17	35.85	100	10.00	10.0	90.00	90.00
73 A	20	14.35	71.75	5.65	28.25	100	15.00	15.0	85.00	85.00

App. 2.2.

Mineral Composition

Name of sample: Beach Sand — Date: _____

Locality: Bali Beach — Signature: _____

Sample No.	Solubility test by 20% HCl					Magnetic separation				
	Weight of sample (g)	Soluble m.		Unsoluble m.		Weight of sample (g)	Magnetic m.		Non-magnetic m.	
		Weight (g)	%	Weight (g)	%		Weight (g)	%	Weight (g)	%
75 A	20	12.95	64.75	7.05	35.25	100	14.06	14.06	85.94	85.94
76 A	20	11.22	56.10	8.78	43.90	100	11.00	11.00	89.00	89.00
78 A	20	11.05	55.25	8.95	44.75	100	10.03	10.03	89.97	89.97
80-1 A	20	10.95	54.75	9.05	45.25	100	14.51	14.51	85.49	85.49
80-2 A	20	15.51	77.55	4.49	22.45	100	7.15	7.15	92.85	92.85
81 A	20	19.93	99.65	0.07	0.35	100	0.15	0.15	99.85	99.85
83 A	20	19.82	99.10	0.18	0.90	100	0.30	0.30	99.70	99.70
85 A	20	19.86	99.30	0.14	0.70	100	0.45	0.45	99.55	99.55
88 A	20	19.55	97.75	0.45	2.25	100	1.17	1.17	98.83	98.83
91 A	20	19.95	99.75	0.05	0.25	100	0.27	0.27	99.73	99.73
94 A	20	19.91	99.55	0.09	0.45	100	0.06	0.06	99.94	99.94
97 A	20	19.64	98.20	0.36	1.80	100	0.74	0.74	99.26	99.26
100 A	20	19.62	98.10	0.38	1.90	100	1.39	1.39	98.61	98.61
101 A	20	19.41	97.05	0.59	2.95	100	2.36	2.36	97.64	97.64
102 A	20	19.53	97.65	0.47	2.35	100	0.27	0.27	99.73	99.73

App. 2.3.

Mineral Composition

Name of sample: Beach Sand
Locality: Bali Beach
Date: _____
Signature: _____

Sample No.	Solubility test by 20% HCl					Magnetic separation				
	Weight of sample (g)	Soluble m.		Unsoluble m.		Weight of sample (g)	Magnetic m.		Non-magnetic m.	
		Weight (g)	%	Weight (g)	%		Weight (g)	%	Weight (g)	%
104 A	20	14.40	72.00	5.60	28.00	100	20,56	20.56	79,44	79.44
105 A	20	1.95	9.75	18.05	90.25	100	95,88	95.88	4.12	4.12
106 A	20	1.66	8.30	18.34	91.70	100	81.37	81.37	18.63	18.63
108 A	20	1.98	9.90	18.02	90.10	100	95.05	95.05	4,95	4.95
110 A	20	1.21	6.05	18.79	93.95	100	97.48	97.48	2.52	2.52

App. 2.4.

Result of Stereomicroscope Observation
on the Bottom Material in River and Beach

(1)

Bottom Material		Magnetic Material	Non-magnetic Material
in River	River between Sawangan and Petangan Village	Magnetic material consists mainly of magnetite, and partly contains quartz, amphibole and brown iron-oxide material.	Non-magnetic material consists mainly of brown iron-oxide material including plagioclase, amorphous material and coral limestone fragment, and rarely contains amphibole and quartz.
	Ayung River	Magnetic material consists mainly of magnetite, and partly contains quartz, plagioclase, amphibole and andesite ∿ basalt fragment, including magnetite.	Non-magnetic material consists mainly of white unknown material (clay mineral?), andesite ∿ basalt, welded tuff (lahar) and obsidian fragment, and rarely contains quartz, amphibole and pyroxene.
	Loloan River	Magnetic material consists mainly of magnetite, and partly contains quartz, plagioclase, amphibole and andesite ∿ basalt fragment, including magnetite.	Non-magnetic material consists mainly of white unknown material (clay mineral?), andesite ∿ basalt and welded tuff (lahar) fragment, and rarely contains quartz, amphibole and pyroxene.

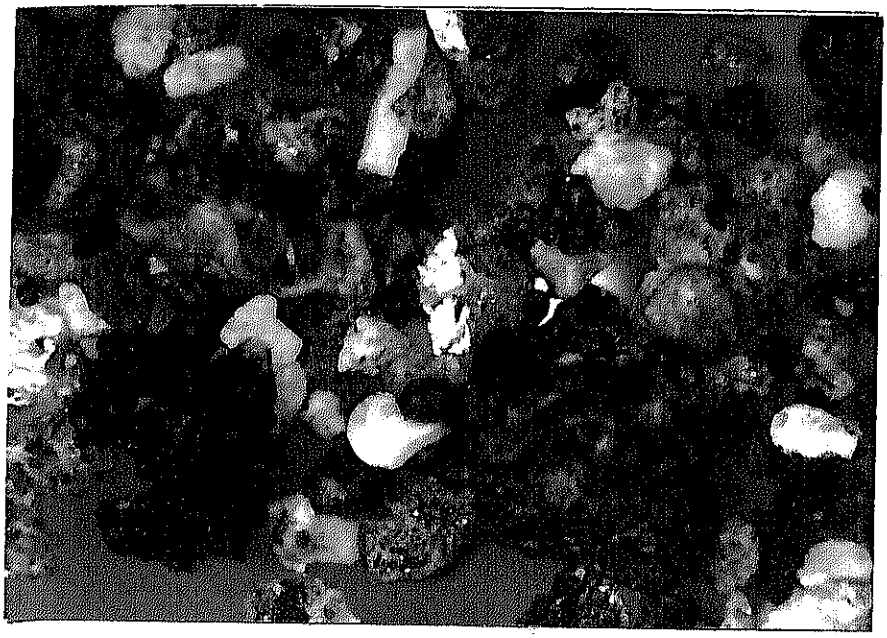
(2)

Bottom Material			Magnetic Material	Non-Magnetic Material
in Beach	Kuta Beach		Magnetic material consists mainly of magnetite, and partly contains quartz, plagioclase, amphibole, pyroxene, andesite ∿ basalt, obsidian and coral fragment, including magnetite.	Non-magnetic material consists mainly of coral fragment (ball, dendritic shape etc.), and partly contains quartz, plagioclase, amphibole, pyroxene, andesite ∿ basalt, obsidian and coral limestone fragment.
	Nusa Dua Beach		Magnetic material consists mainly of magnetite, and partly contains quartz, amphibole, pyroxene, reddish brown unknown material and coral fragment, including magnetite.	Non-magnetic material consists mainly of coral fragment (ball, star, dendritic shape etc.), and rarely contains quartz, amphibole, reddish brown unknown material, obsidian and coral limestone fragment.
	Sanur Beach	The Southern side from the Groin	Magnetic material consists mainly of magnetite, and partly contains quartz, amphibole, pyroxene, andesite ∿ basalt, obsidian and coral fragment, including magnetite.	Non-magnetic material consists mainly of coral fragment (ball, dendritic shape etc.), and rarely contains quartz, plagioclase, amphibole, pyroxene, andesite ∿ basalt, obsidian and coral limestone fragment.

(3)

Bottom Material			Magnetic Material	Non-magnetic Material
in Beach	Sanur Beach	Between the Groin and the Coral Reef Edge	Magnetic material consists mainly of magnetite, and partly contains quartz, amphibole, pyroxene, andesite ∿ basalt, welded tuff (lahar) and obsidian fragment, including magnetite.	Non-magnetic material consists mainly of coral fragment, and partly contains quatz, plagioclase, amphibole, pyroxene, andesite ∿ basalt, obsidian and coral limestone fragment.
		The Northern Side from the Coral Reef Edge	Magnetic material consists almost wholly of magnetite, and rarely contains quartz, plagioclase, amphibole, pyroxene and andesite ∿ basalt fragment, including magnetite.	Non-magnetic material consists of quartz, plagioclase, amphibole, pyroxene, andesite ∿ basalt fragment and carbonate material.

Stereo-microscopic photographs of the bottom material in beach (1)



0 0.5m/m
Scale

Magnification: x 50

Sample No. 67 A: Magnetic materials (beach sand), in Kuta Beach.

0 1.0m/m
Scale

Magnification: x 20

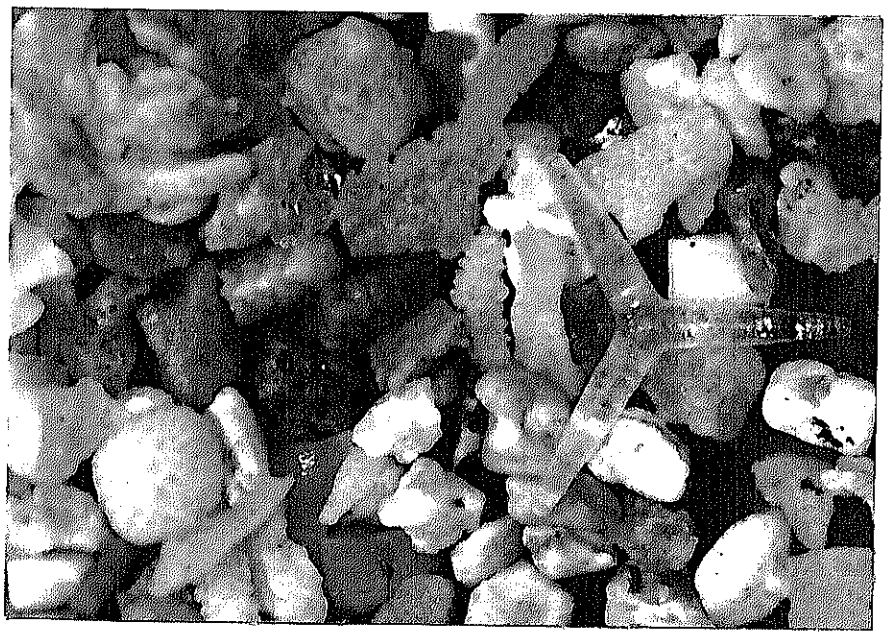
Sample No.67 A : Non-magnetic materials (beach sand), in Kuta Beach.

Stereo-microscopic photographs of the bottom material in beach (2)

0 ——— 1.0m/m
Scale

Magnification: x25

Sample No.34 A : Magnetic materials (beach sand), in Nusa Dua Beach.



0 ——— 1.0m/m
Scale

Magnification: x 25

Sample No.34 A : Non-magnetic materials (beach sand), in Nusa Dua Beach.

Stereo-microscopic photographs of the bottom material in beach (3)

0 1.0m/m
Scale

Magnification: x 20

Sample No.100 A : Magnetic materials (beach sand), the southern side from the groin of Bali Beach Hotel, in Snur Beach.

0 1.0 m/m
Scale

Magnification: x 15

Sample No.100 A : Non-magnetic material (beach sand), the southern side from the groin of Bali Beach Hotel, in Sanur Beach.

Stereo-microscopic photographs of the bottom material in beach (4)

0 1.0 m/m
Scale

Magnification: x 15

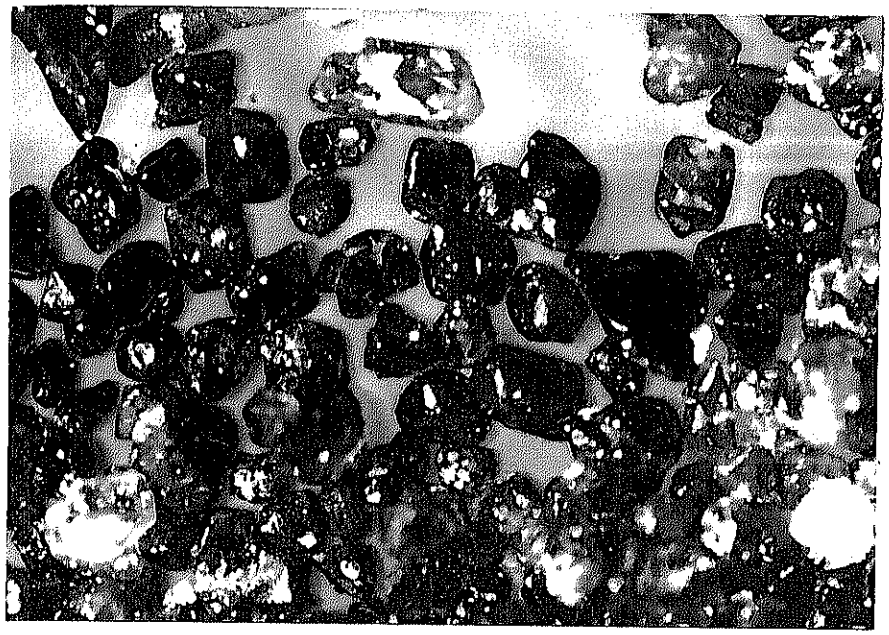
Sample No.104 A : Magnetic materials (beach sand), between the groin of Bali Beach Hotel and the coral reef edge, in Sanur Beach.

0 1.0 m/m
Scale

Magnification: x 15

Sample No.104 A : Non-magnetic materials (beach sand), between the groin of Bali Beach Hotel and the coral reef edge, in Sanur Beach.

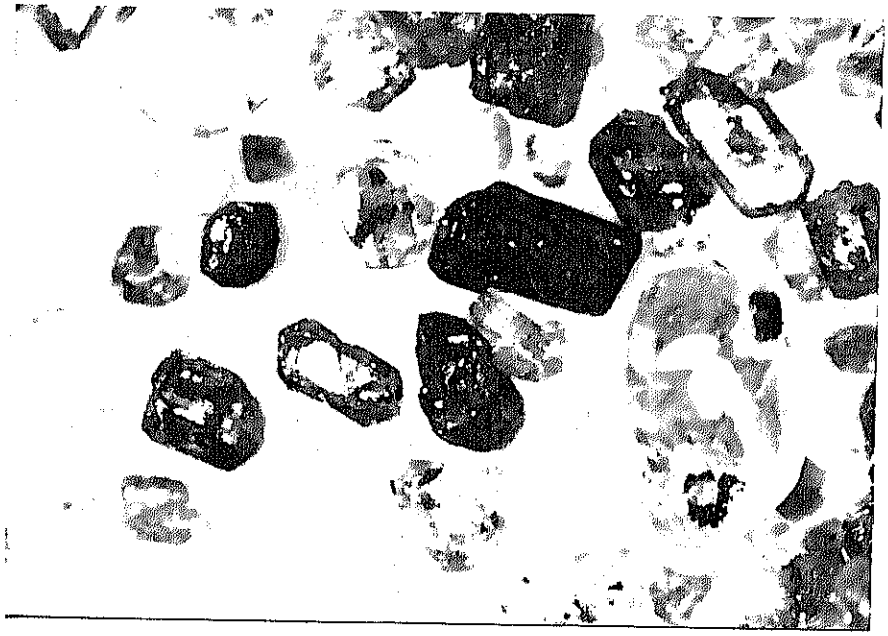
Stereo-microscopic photographs of the bottom material in beach (5)



0 0.5 m/m
Scale

Magnification: x 40

Sample No.105 A : Magnetic materials (beach sand), the northern side from the coral reef edge, in Sanur beach.

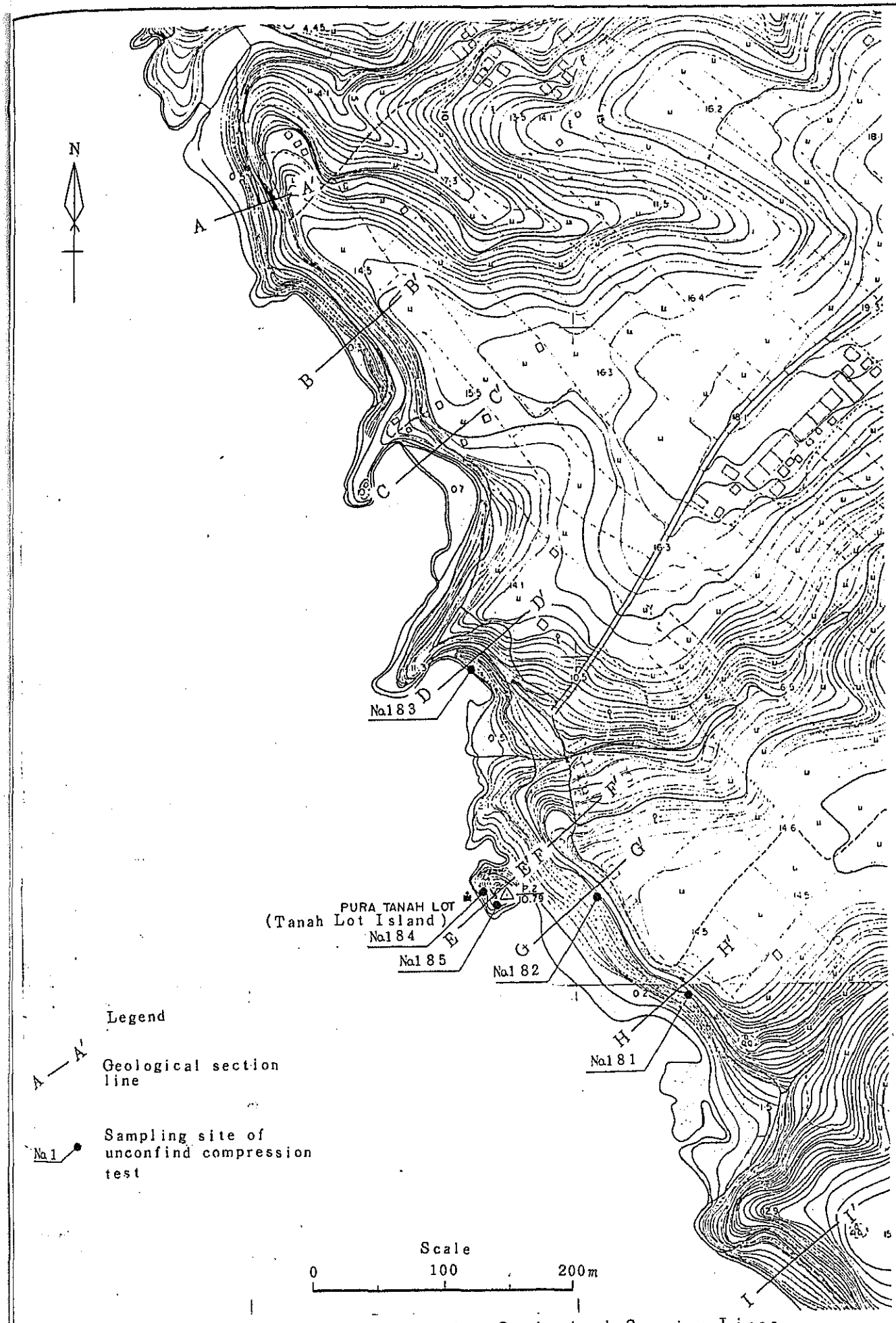


0 0.5 m/m
Scale

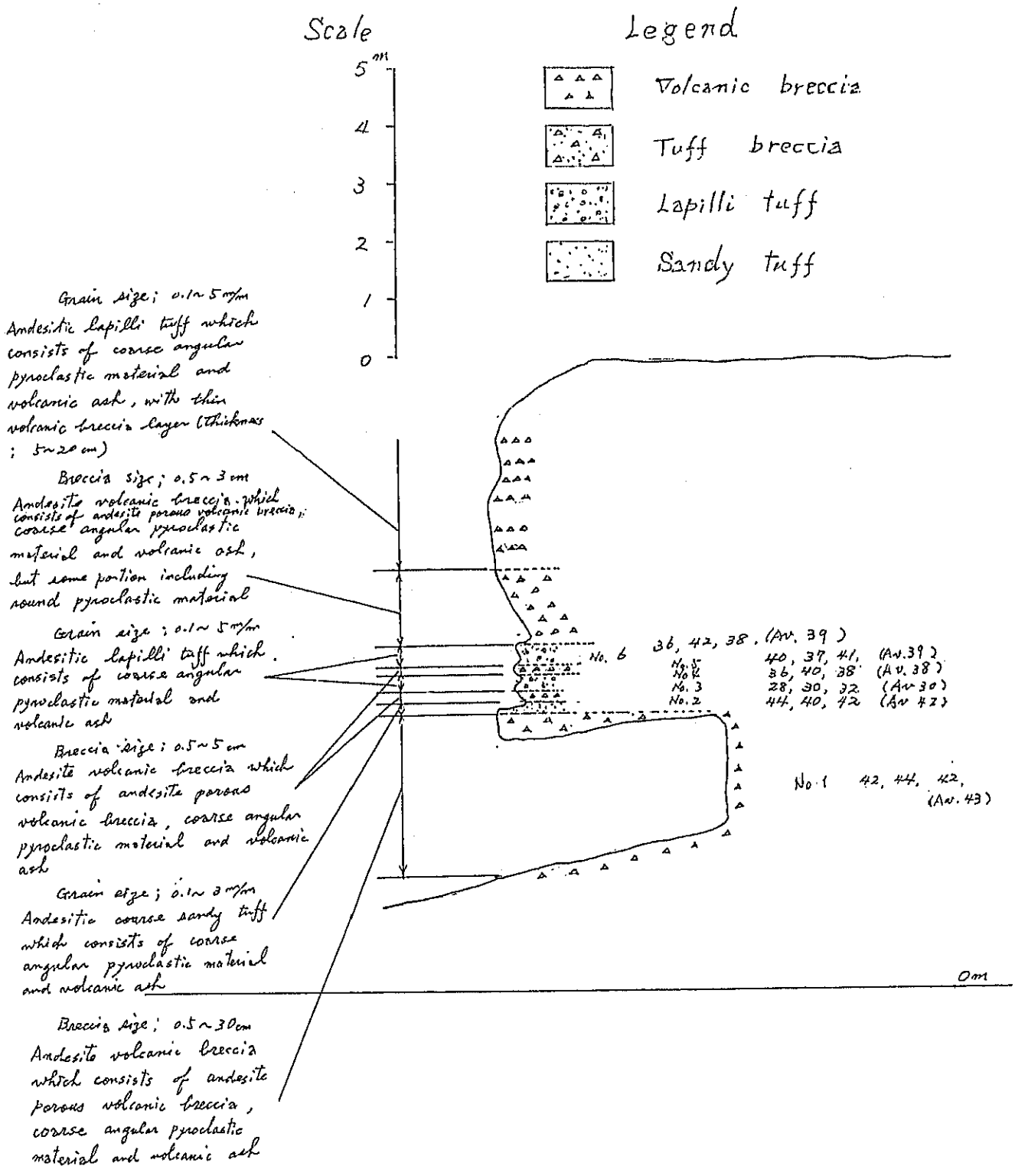
Magnification: x 40

Sample No.105 A : Non-magnetic materials (beach sand), the northern side from the coral reef edge, in Sanur Beach.

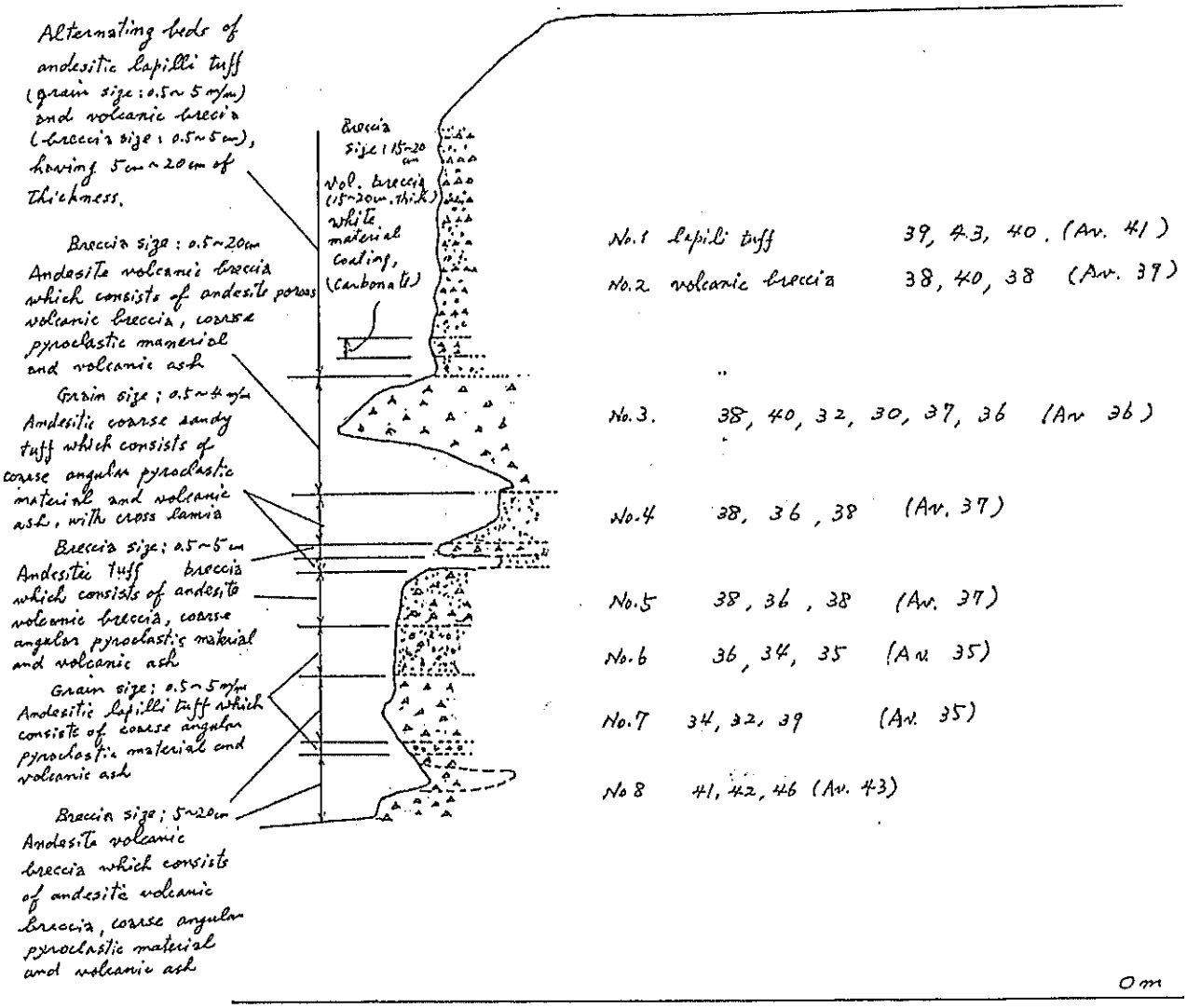
II. Geological Survey and Unconfined Compression Test, Tanah Lot



Location Map showing Geological Section Lines and Sampling Sites on Unconfined Compression Test, Tanah Lot



GEOLOGICAL SECTION A-A'



Scale

Legend

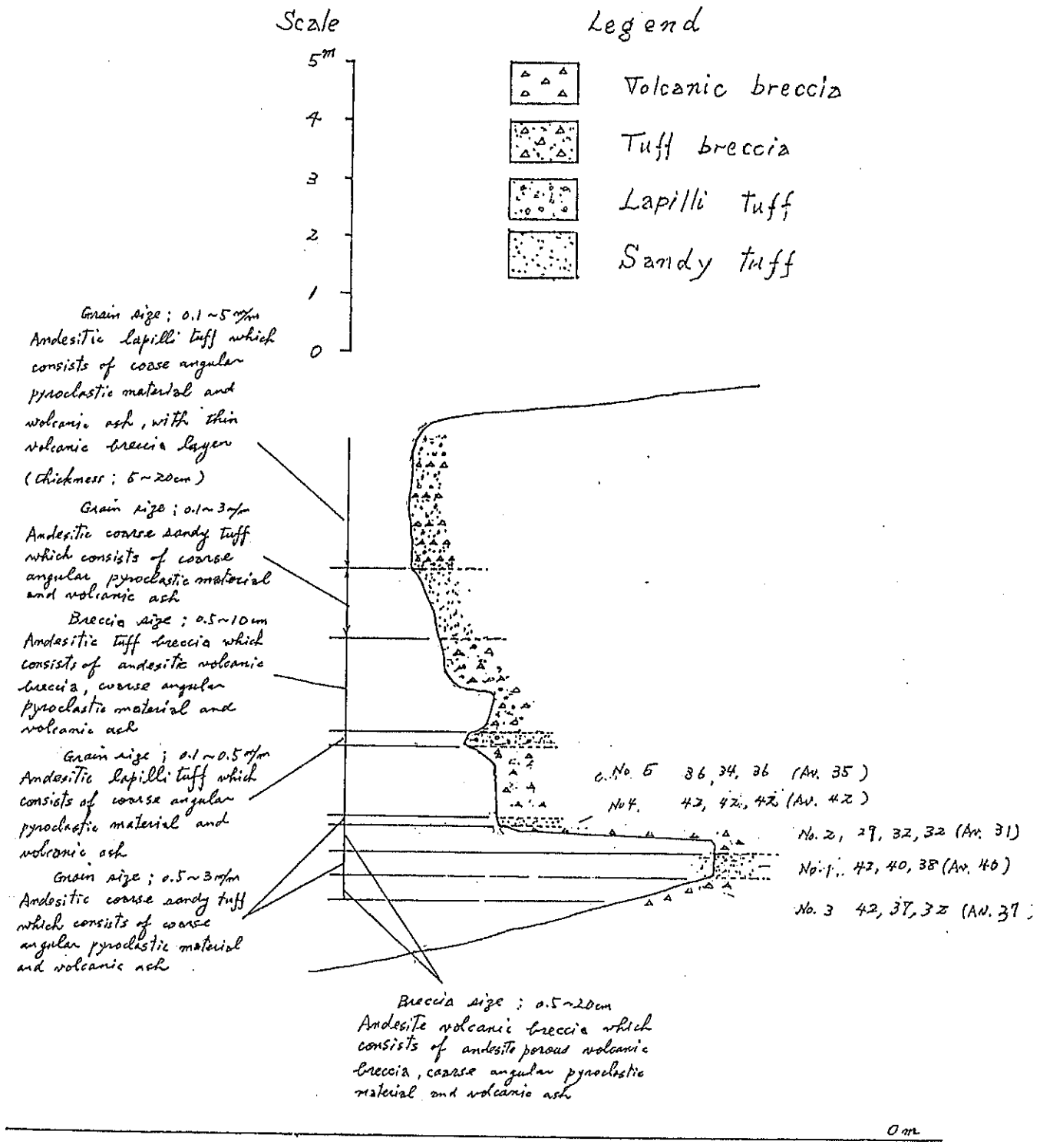
Volcanic breccia

Tuff breccia

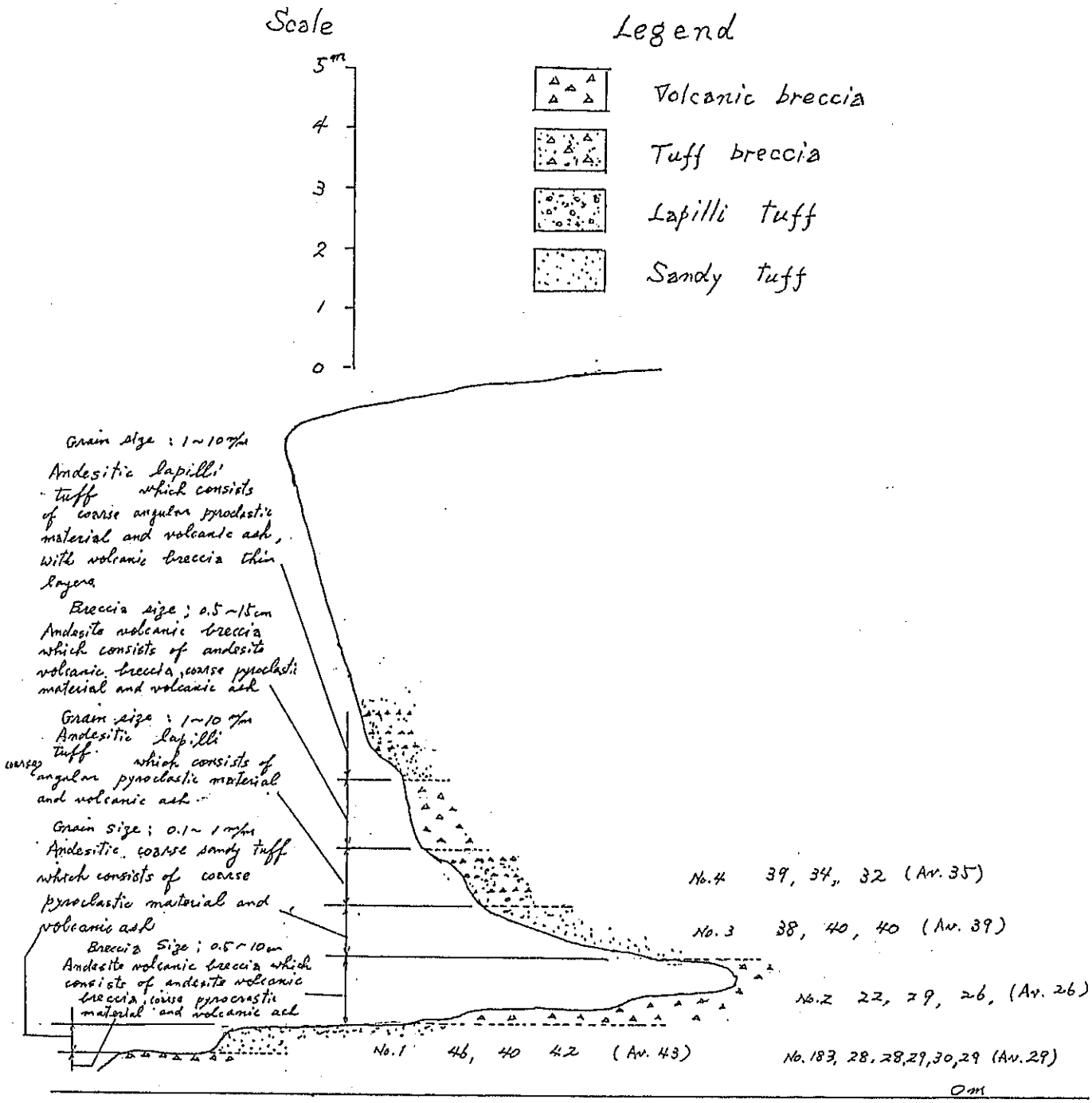
Lapilli tuff

Sandy tuff

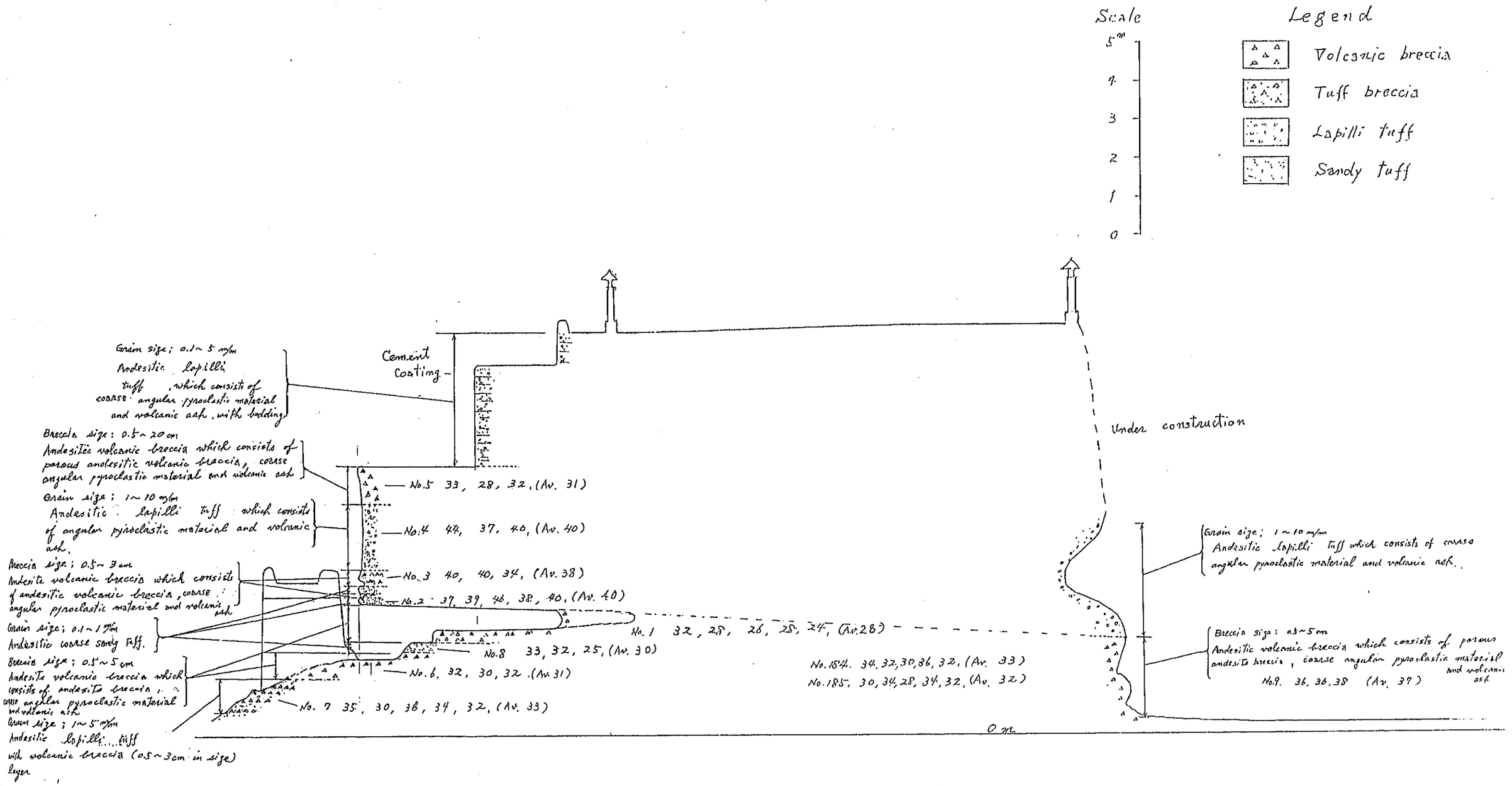
GEOLOGICAL SECTION B – B'



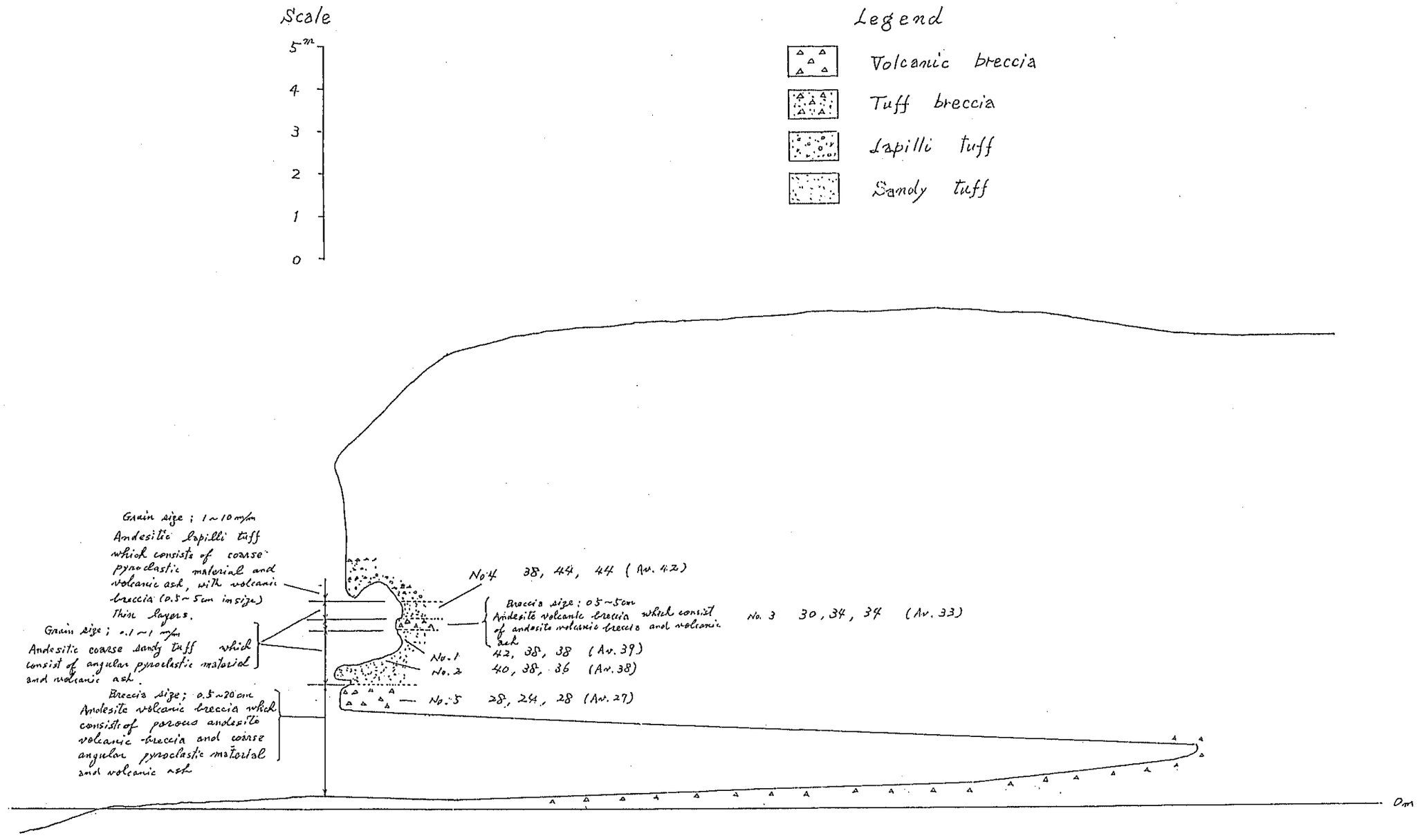
GEOLOGICAL SECTION C-C'



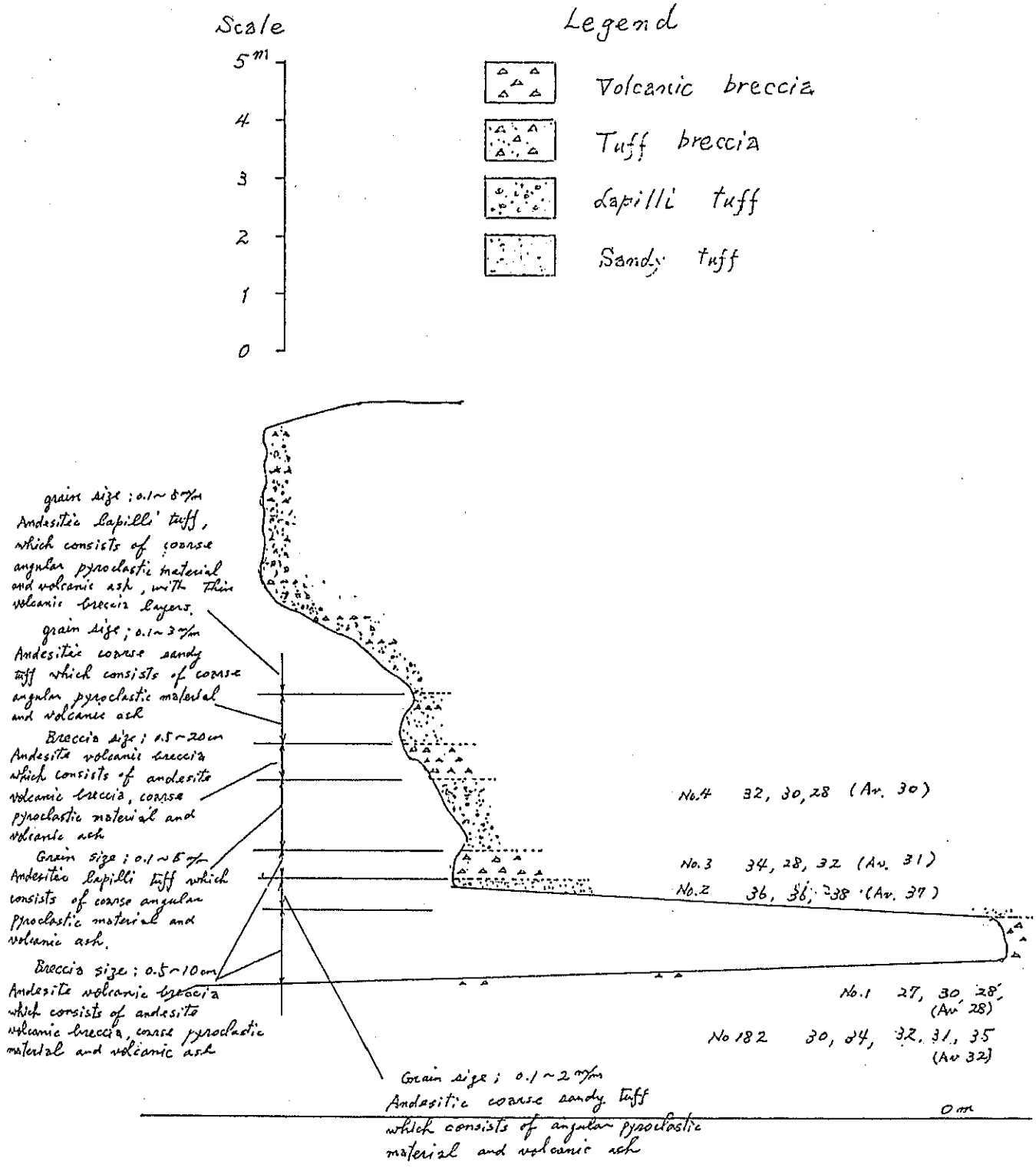
GEOLOGICAL SECTION D-D'



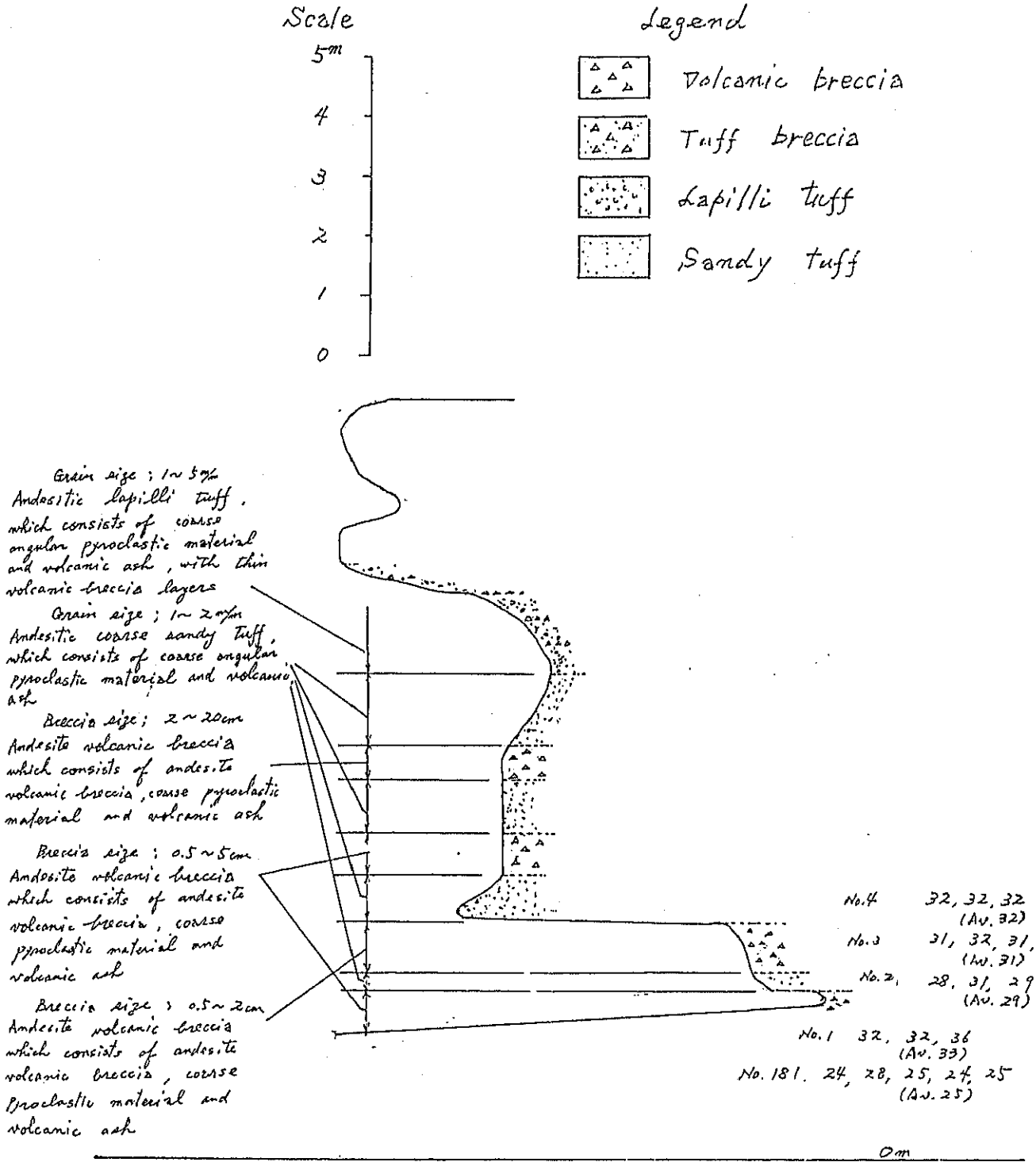
GEOLOGICAL SECTION E-E'



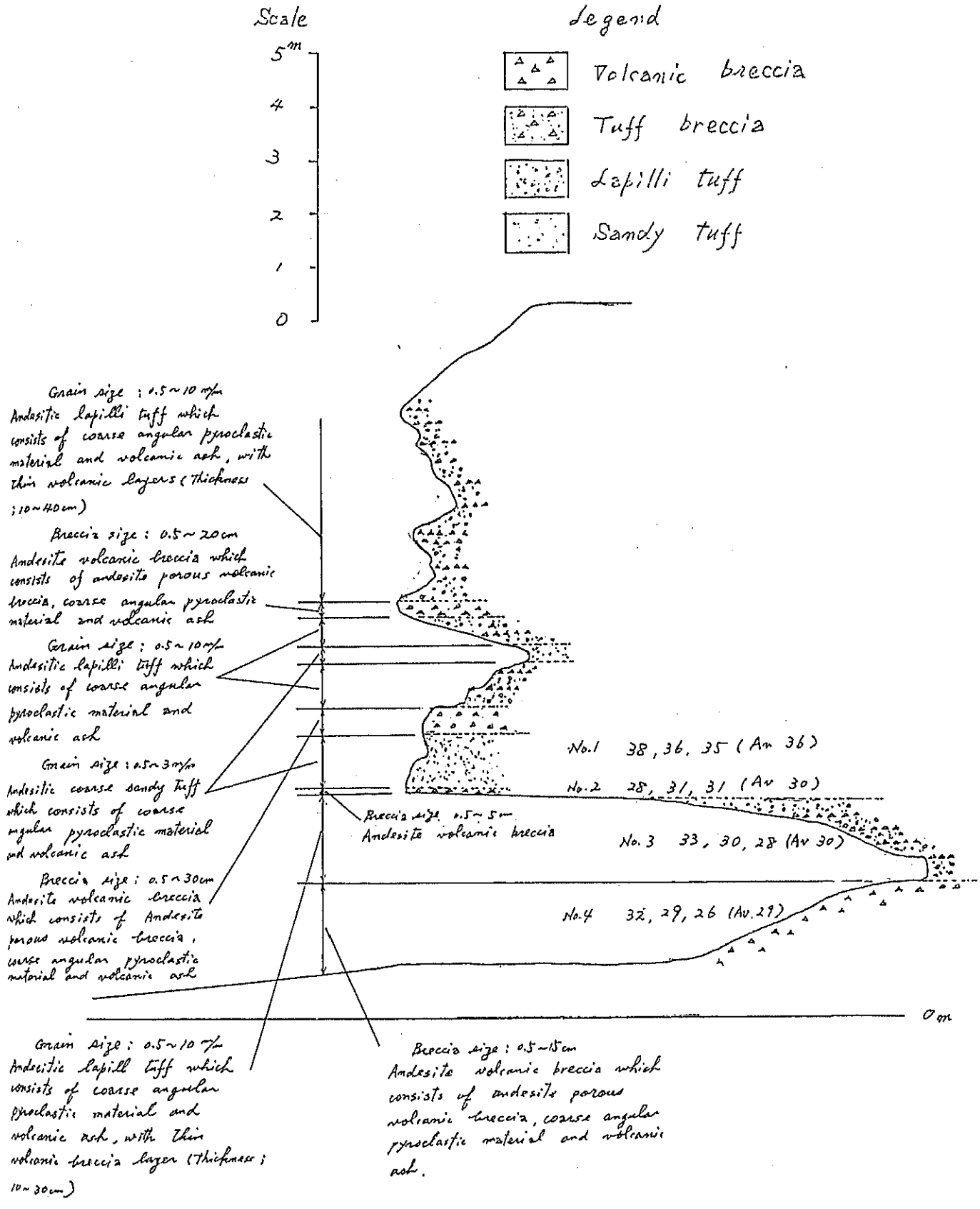
GEOLOGICAL SECTION F-F'



GEOLGICAL SECTION G-G'



GEOLOGICAL SECTION H-H'



GEOLOGICAL SECTION I-I'