

ANNEXES FOR FEASIBILITY STUDY

ANNEX F-4

SOIL INVESTIGATION RESULTS

ANNEX F-4 SOIL INVESTIGATION RESULTS

(1) Total Quantity of Soil Investigation

Items	Unit	Quantity
1. Mechanical Boring		
(1) Transportation to the Site	L.S.	1
(2) Mobilization and Demobilization in the Site	Site	34
(3) Drilling Work		
Clay	m	148.1
Sand	m	35.6
Gravel	m	50.2
Boulder	m	7.6
Rock	m	57.8
Total	m	299.3
(4) Standard Penetration Test	Nos.	272
(5) Undisturbed Sampling	Nos.	5
2. Laboratory Test		
(1) Unit Wight	Nos.	14
(2) Specific Gravity	Nos.	251
(3) Moisture Content	Nos.	240
(4) Particle Size (Hydro Sieve)	Nos.	223
(5) Liquid Limit	Nos.	221
(6) Plastic Limit	Nos.	221
(7) Unconfined Compression	Nos.	228
(8) Compressive Strength for Rock	Nos.	14

(2) Itemized Quantity of Drilling Work (Route 14A1)

River No.	River Name	Km Post	Boring No.	Elevation (m)	Clay (m)	Sand (m)	Gravel (m)	Boulder (m)	Rock (m)	Total (m)	SPT(Nos)	UD(Nos)
1	Thok	54.359	14-1R	131.056	4.70	0.00	0.00	0.00	2.00	6.70	7	0
1	Thok	54.359	14-1L	131.333	4.10	0.00	0.00	0.00	2.90	7.00	4	0
8	Imet	48.367	14-8R	133.303	0.00	0.00	0.00	0.00	1.00	1.00	0	0
11	Thakhong	46.115	14-11R	127.504	7.20	2.10	0.00	0.00	1.00	10.30	9	0
12	Thapxang	45.206	14-12R	127.981	3.50	4.90	0.00	0.00	1.10	9.50	8	0
13	Khone liao	43.930	14-13R	127.423	0.00	2.20	0.00	0.00	1.30	3.50	2	0
14	Khonken	42.713	14-14R	129.181	7.00	5.00	0.00	0.00	1.00	13.00	12	0
15	Hong	41.434	14-15R	130.257	6.50	5.00	0.00	0.00	1.00	12.50	11	0
16	He	40.749	14-16L	125.418	6.00	1.20	0.00	0.00	1.00	8.20	7	1
17	Dua	39.863	14-17L	127.423	3.00	0.00	0.00	0.00	1.90	4.90	5	0
18	Sai	38.332	14-18R	130.983	9.80	0.00	0.00	0.00	1.20	11.00	9	1
18	Sai	38.332	14-18L	130.965	12.00	0.00	0.00	0.00	2.50	14.50	12	0
19	Phaphin	35.404	14-19R	127.930	8.60	0.40	0.00	0.00	3.60	12.60	13	0
19	Phaphin	35.404	14-19L	128.294	10.20	2.10	0.00	0.00	1.20	13.50	14	1
20	Phabang	30.311	14-20R	127.210	8.50	0.00	0.00	0.00	3.20	11.70	12	1
20	Phabang	30.311	14-20L	125.798	7.50	0.00	0.00	0.00	2.00	9.50	10	1
21-1	Sahoua	27.536	14-21-1R	129.002	0.00	6.30	0.00	0.00	3.00	9.30	10	0
21-2	Kok	27.125	14-21-2R	129.216	1.70	4.30	0.00	0.00	4.00	10.00	10	0
22	Thateng	19.136	14-22R	133.959	4.20	0.00	0.00	0.00	2.30	6.50	7	0
22	Thateng	19.136	14-22L	134.674	4.50	0.00	0.00	0.00	4.50	9.00	9	0
23	Manpa	14.255	14-23R	133.335	4.50	0.00	0.00	0.00	2.50	7.00	7	0
23	Manpa	14.255	14-23L	133.314	6.00	0.00	0.00	0.00	3.00	9.00	7	0
Sub-Total	-	-	22 Holes	-	119.50	33.50	0.00	0.00	47.20	200.20	185	5

SPT=Standard Penetration Test, UD=Undisturbed Sampling

(3) Itemized Quantity of Drilling Work (Route 16A)

River No.	River Name	Km Post	Boring No.	Elevation (m)	Clay(m)	Sand(m)	Gravel(m)	Boulder(m)	Rock(m)	Total(m)	SPT(Nos)	UD(Nos)
1	Makchan-Gnai	17.579	16-1R	1142.376	0.60	0.00	1.70	0.00	0.00	2.30	3	0
1	Makchan-Gnai	17.579	16-1L	1142.932	1.60	0.00	3.40	1.00	3.00	9.00	9	0
2	Namtang	35.550	16-2R	821.875	2.80	0.00	4.20	0.00	0.00	7.00	7	0
2	Namtang	35.550	16-2L	821.886	1.40	0.00	2.10	0.00	0.00	3.50	1	0
3	Xe Katam	46.009	16-3R	498.572	3.40	0.00	4.60	0.00	0.00	8.00	8	0
3	Xe Katam	46.009	16-3L	497.829	7.00	1.00	0.00	0.50	1.50	10.00	10	0
4	Xe Namnoy	51.637	16-4R	263.937	1.30	0.00	8.80	0.90	0.00	11.00	9	0
4	Xe Namnoy	51.637	16-4L	263.533	1.00	0.00	7.80	1.70	0.00	10.50	10	0
5	Old Channel	51.841	16-5R	261.949	0.40	0.00	8.00	1.60	0.00	10.00	9	0
5	Old Channel	51.841	16-5L	261.760	0.00	0.40	6.20	0.90	2.10	9.60	9	0
6	Katak-Tok	52.168	16-6R	269.933	4.60	0.70	1.20	1.00	2.00	9.50	6	0
6	Katak-Tok	52.168	16-6L	269.060	2.00	0.00	4.70	0.00	2.00	8.70	6	0
Sub-Total	-	-	12 Holes	-	26.10	2.10	52.70	7.60	10.60	99.10	87	0
Total	-	-	34 Holes	-	145.60	35.60	52.70	7.60	57.80	299.30	272	5

SPT=Standard Penetration Test, Ud=Undisturbed Sampling

(4) Itemized Quantity of Drilling Work (Route 16A)

River No.	River Name	Km Post	Boring No.	Elevation (m)	Clay(m)	Sand(m)	Gravel(m)	Boulder(m)	Rock(m)	Total(m)	SPT(Nos)	UD(Nos)
1	Makchan-Gnai	17.579	16-1R	1142.376	0.60	0.00	1.70	0.00	0.00	2.30	3	0
1	Makchan-Gnai	17.579	16-1L	1142.932	1.60	0.00	3.40	1.00	3.00	9.00	9	0
2	Namtang	35.550	16-2R	821.875	2.80	0.00	4.20	0.00	0.00	7.00	7	0
2	Namtang	35.550	16-2L	821.886	1.40	0.00	2.10	0.00	0.00	3.50	1	0
3	Xe Katam	46.009	16-3R	498.572	3.40	0.00	4.60	0.00	0.00	8.00	8	0
3	Xe Katam	46.009	16-3L	497.829	7.00	1.00	0.00	0.50	1.50	10.00	10	0
4	Xe Namnoy	51.637	16-4R	263.937	1.30	0.00	8.80	0.90	0.00	11.00	9	0
4	Xe Namnoy	51.637	16-4L	263.533	1.00	0.00	7.80	1.70	0.00	10.50	10	0
5	Old Channel	51.841	16-5R	261.949	0.40	0.00	8.00	1.60	0.00	10.00	9	0
5	Old Channel	51.841	16-5L	261.760	0.00	0.40	6.20	0.90	2.10	9.60	9	0
6	Katak-Tok	52.168	16-6R	269.933	4.60	0.70	1.20	1.00	2.00	9.50	6	0
6	Katak-Tok	52.168	16-6L	269.060	2.00	0.00	4.70	0.00	2.00	8.70	6	0
Sub-Total	-	-	12 Holes	-	26.10	2.10	52.70	7.60	10.60	99.10	87	0
Total	-	-	34 Holes	-	145.60	35.60	52.70	7.60	57.80	299.30	272	5

SPT=Standard Penetration Test, Ud=Undisturbed Sampling

(4) SUMMARY OF LABORATORY TESTS ON TEST BORROW PIT MATERIALS

ROAD No. 16A (From Route 16 Junction to Route 11 Junction)				COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TESTS ON TEST BORROW PIT MATERIALS										Sheet : 1 of 1 Date: 26.06.2002																
Project: The Study on Improvement of Road in the Southern Region In Laos P. D. R. Project.																																								
Sample Number	Sample Location			Laboratory Soil Classification Tests																Atterberg Tests AASHTO T 89-T 90			Soil Classification		Natural water content		Compaction Tests AASHTO T 180 - D		Laboratory Soil Strength Tests						Specific gravity AASHTO T 100	Specific gravity AASHTO T 85		Soil Description		
	Station Km	Side Ways m	Depth m	Sieve Analysis and Hydrometer test																LL %	PL %	PI %	AASHTO M-145	Unified	MC %	MDD g/cm ³	OMC %	Strength Tests CBR AASHTO T 193			CBR at percent of MDD			SSD g/cm ²	Water Absorp %					
				50.8 %	38.1 %	25.4 %	19.1 %	12.7 %	9.5 %	4.76 %	2.00 %	0.840 %	0.590 %	0.420 %	0.149 %	0.074 %	0.050 %	0.037 %	0.019 %									0.009 %	0.005 %	10 blows DD CBR	30 blows DD CBR	45 blows DD CBR	Swell %			100 %	98 %		95 %	
BP 01	7+525	L	0.35- 1.35	-	-	100	92.5	66.4	57.4	39.2	26.4	19.7	18.5	17.5	16.4	15.0	7.5	6.7	5.9	4.4	3.6	49.5	39.9	9.6	A-2-5(0)	GC	34.6	1.59	20.2	1.45 37	1.55 74	1.60 85	0.20	83	76	62	2.72			Yellowish brown, clayey laterites.
BP 02-1	17+050	R/2.00	0.50- 4.00	-	-	100	94.5	84.9	78.5	59.1	46.9	42.0	39.9	37.1	26.6	23.8	19.6	16.0	13.7	12.5	10.1	46.1	35.5	10.6	A-2-7(0)	GC	26.1	1.72	17.2	1.57 49	1.68 >100	1.73 >100	0.07	>100	>100	82	2.90			Red, clayey laterites.
BP 02-2	17+300	R/2.00	0.50- 4.00	-	-	100	95.2	75.6	64.3	43.8	37.2	33.0	32.0	30.8	27.0	25.9	22.3	19.6	18.8	16.2	14.4	54.3	36.3	18.0	A-2-7(0)	GC	26.1	1.73	19.4	1.57 17	1.68 51	1.74 69	0.24	66	54	18	3.04			Red, clayey laterites.
BP 03-1	1+432	L/50	0.60- 2.60	-	-	100	92.3	85.3	54.7	27.1	19.4	18.1	16.6	12.3	9.6	8.3	5.0	3.9	2.8	1.7	35.4	28.3	7.1	A-2-4(0)	GC	18.5	2.02	18.0	1.86 50	1.97 >100	1.97 >100	0.03	>100	>100	>100	3.31			Red, clayey laterites.	
BP 03-2	1+432	L/50	0.00- 1.30	-	-	100	93.3	87.1	64.8	44.8	37.0	34.7	31.7	21.0	15.6	9.8	4.6	3.4	2.1	0.8	36.7	30.2	6.5	A-2-4(0)	GC	14.8	1.99	15.8	1.83 58	1.94 >100	2.00 >100	0.05	>100	>100	>100	3.31			Red, clayey laterites.	
BP 04-1	9+800	L/50	0.70- 3.70	-	-	100	90.0	71.4	56.5	32.5	22.5	21.1	20.6	19.8	16.2	15.5	6.8	4.9	2.9	1.7	1.0	42.0	29.0	13.0	A-2-7(0)	GC	8.4	1.90	16.0	1.74 42	1.85 >100	1.92 >100	0.04	>100	>100	86	2.99			Red, clayey laterites.
BP 04-2	9+800	L/50	0.90- 3.00	-	-	100	87.3	74.1	50.9	23.7	20.0	19.0	17.6	11.5	9.4	8.7	5.7	3.6	2.6	1.6	45.5	31.8	13.7	A-2-7(0)	GC	5.9	1.82	18.2	1.67 29	1.78 43	1.84 47	0.03	46	43	38	2.99			Red, clayey laterites.	
BP 04-3	9+800	L/50	0.80- 3.00	-	-	100	93.2	80.2	46.4	31.8	28.8	28.1	26.9	22.9	21.0	13.4	11.6	10.7	9.7	7.9	42.3	30.9	11.4	A-2-7(0)	GC	15.1	1.94	17.2	1.78 41	1.89 >100	1.95 >100	0.08	84	>100	>100	3.00			Red, clayey laterites.	
BP 05-1	9+000	L/R/1	0.50- 2.50	-	-	100	96.2	91.2	76.3	54.6	50.8	49.7	47.6	39.7	34.1	26.7	25.2	23.7	22.2	19.2	45.4	31.1	14.3	A-2-7(1)	GC	15.8	1.89	16.0	1.76 36	1.85 >100	1.91 >100	0.11	>100	>100	70	2.83			Yellowish red, clayey laterites.	
BP 05-2	9+000	L/R/1	0.60- 2.10	-	-	100	86.1	72.3	65.7	59.1	46.3	43.1	42.1	40.5	33.6	20.3	17.9	16.8	15.6	14.4	51.7	33.9	17.8	A-2-7(1)	GC	24.3	1.87	17.2	1.71 25	1.82 >100	1.88 >100	0.04	>100	>100	82	2.87			Reddish yellow red, clayey laterites.	
BP 06-1	61+692	R/R/1	0.60- 1.80	-	-	100	98.3	88.8	61.3	51.9	50.5	50.3	50.1	48.4	46.5	41.0	38.5	34.9	30.0	26.4	56.0	35.1	20.9	A-7-5(5)	GC	7.9	1.82	16.0	1.67 20	1.77 32	1.83 36	0.07	36	33	28	2.70			Yellowish brown, clayey laterites.	
BP 06-2	61+692	R/R/1	0.70- 2.10	-	-	100	96.6	83.3	63.6	47.3	45.1	44.9	44.6	43.0	41.1	35.0	33.8	32.5	31.2	30.0	56.7	36.4	20.3	A-7-5(2)	GC	15.7	1.78	14.6	1.62 10	1.73 54	1.79 70	0.38	68	57	40	2.75			Yellowish brown, clayey laterites.	

Remark

Legend
 LL Liquid Limit
 PL Plastic Limit
 PI Plasticity Index
 OMC Optimum Moisture Content
 MDD Maximum Dry Density
 FDD Field dry density
 Density

(5) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14 - 1R (HUAY THOK) KM 5+387 DEPTH TO GROUND WATER LEV. :																							COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI						SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 4/07/2002	
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test														Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity							
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve														γ^o	γ^d			T 100 g/cm ³	T 85 g/cm ³	SSD g/cm ³	Absorption %				
S1	0.50-1.00	5+387	Reddish brown, silty clays.	A-4(5)	CL	11.2	29.2	19.7	9.5	-	-	-	-	100	97.0	96.8	96.6	96.3	85.1	72.1	68.4	62.4	58.4	44.4	36.4			1.18	11	2.71	-	-			
S2	1.50-2.00	5+387	Reddish brown, silty clays.	A-4(5)	CL	11.9	30.4	20.4	10.0	-	-	-	-	100	99.6	99.5	99.5	99.3	85.7	72.7	72.4	60.4	52.4	42.4	34.4			1.61	15	2.70	-	-			
S3	2.50-3.00	5+387	Reddish brown, silt - clay - fine sand mixtures.	A-4(6)	CL-ML	12.8	22.6	15.7	6.9	-	-	-	-	-	100	99.9	99.9	99.8	88.7	58.4	52.4	36.4	32.4	24.4			2.15	20	2.70	-	-				
S4	3.50-4.00	5+387	Reddish brown,silt - clay - fine sand mixtures.	A-4(3)	CL-ML	8.8	22.2	15.7	6.5	-	-	-	-	-	100	99.8	99.7	86.3	63.7	57.2	49.2	39.2	33.2	29.2			2.36	22	2.71	-	-				
-	5.00	5+387	Dusky red, CLAYSTONE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>7.0	>70	-	-	-			
-	6.00	5+387	Dusky red, CLAYSTONE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>7.0	>70	-	-	-			
Remark																																			

(6) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14 - 1L (HUAY THOK) KM 5+387 DEPTH TO GROUND WATER LEV. : -											COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI					SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 4/07/2002												
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test														Unit Weight		Unconfined Compressive Strength Kg/cm ²	Standard Penetration Blows/30 Cm N	Specific gravity T 100 g/cm ³		Specific gravity T 85 g/cm ³			
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve														γ ^w	γ ^d			SSD	Absorption %				
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm											
S1	0.50-1.00	5+387	Reddish brown, clayey silts.	A-7-6(14)	ML	22.8	44.2	28.5	15.7	-	-	-	-	100	99.3	98.2	97.0	96.3	87.5	70.2	66.4	58.4	54.4	50.4	46.4			1.29	12	2.51	-	-	
S2	1.50-2.00	5+387	Reddish brown, silty clays.	A-4(6)	CL	9.5	29.7	19.7	10.0	-	-	-	-	100	99.9	99.8	99.8	93.1	80.2	64.4	60.4	48.4	42.4	36.4			>6.0	60	2.66	-	-		
S3	2.50-3.00	5+387	Reddish brown, silty clays.	A-4(2)	CL	8.9	25.2	16.3	8.9	-	-	-	-	100	99.9	99.8	99.7	99.5	75.8	57.8	52.4	46.4	40.4	34.4	32.4			>7.0	>70	2.63	-	-	
S4	3.50-4.00	5+387	Dark red, silty clays.	A-6(9)	CL	13.2	33.0	21.0	12.0	-	-	-	-	100	98.1	92.7	90.7	88.7	82.7	79.0	58.4	52.4	46.4	40.4	32.4			>7.0	>70	2.61	-	-	
-	4.10-5.00	5+387	Dusky red, SILTSTONE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			>7.0	>70	2.62	-	-	
-	5.00-6.00	5+387	Dusky red, SILTSTONE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			>7.0	>70	2.60	-	-	
-	6.00-7.00	5+387	Dusky red, SILTSTONE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			>7.0	>70	2.62	-	-	
Remark																																	

(8) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 10/07/2002												
BORING No. 14-11R (HUAY THAKHONG) Km 13+635																																					
DEPTH TO GROUND WATER LEV. : 4.30M																																					
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85								
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^0	γ^d			g/cm ³	SSD g/cm ³	Absorption %								
							9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm																		
S1	0.50-1.00	13+635	Yellowish brown, silty clays.	A-6(12)	CL	16.8	36.4	23	13.4	-	-	100.0	99.6	99.5	99.3	98.3	92.4	82.4	70.4	62.4	52.4	44.4	-	-	2.47	23	2.74	-	-								
S2	1.50-2.00	13+635	Yellowish brown, silty clays.	A-6(16)	CL	18.0	39.9	25.1	14.8	-	-	100.0	99.7	99.7	99.5	98.8	95.7	87.2	79.2	71.2	59.2	53.2	-	-	2.69	25	2.75	-	-								
S3	2.50-3.00	13+635	Yellowish brown, silty clays.	A-6(17)	CL	23.0	39.8	23.8	16.0	-	-	100.0	99.7	99.6	99.5	98.8	95.0	84.4	78.4	70.4	58.4	50.4	-	-	2.47	23	2.75	-	-								
S4	3.50-4.00	13+635	Yellowish brown, silty clays.	A-6(11)	CL	20.9	34.2	21.2	13.0	-	-	100.0	99.7	99.5	99.4	98.4	93.4	83.2	73.2	63.2	53.2	43.2	-	-	2.25	21	2.75	-	-								
S5	4.50-5.00	13+635	Yellowish brown, silty clays.	A-6(15)	CL	20.9	38.7	23.8	14.9	-	-	100.0	99.8	99.7	99.4	96.8	87.2	83.2	73.2	63.2	53.2	43.2	-	-	2.47	23	2.75	-	-								
S6	5.50-6.00	13+635	Yellowish brown, silty clays.	A-6(13)	CL	18.4	35.6	21.5	14.1	-	-	100.0	99.8	99.8	99.7	99.2	94.7	83.2	75.2	67.2	57.2	49.2	-	-	2.69	25	2.74	-	-								
S7	6.50-7.00	13+635	Yellowish brown, silty clays.	A-6(10)	CL	20.6	33.1	21.2	11.9	-	-	100.0	99.9	99.8	99.6	98.5	92.2	81.2	73.2	63.2	51.2	43.2	-	-	1.50	14	2.74	-	-								
S8	7.50-8.00	13+635	Greenish gray, fine sand.	A-2-4	SM	17.5	-	N-P	-	-	-	100.0	99.8	85.8	34.0	26.4	20.4	16.4	12.4	10.4	-	-	0.96	9	2.70	-	-										
S9	8.50-9.00	13+635	Dark reddish, brown, silty clays.	A-4(3)	CL	25.1	22.4	15.0	7.4	-	100.0	97.6	94.9	94.1	92.9	81.6	66.8	51.2	43.2	35.2	27.2	19.2	-	-	1.18	11	2.71	-	-								
-	9.30-10.30	13+635	Cracked.SILTSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>7.0	>70	-	2.64	2.81									
Remark																																					

(11) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-14R (HUAY KHON KEN) KM 17+037 DEPTH TO GROUND WATER LEV. :						COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI						SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE						Date: 19/06/2002														
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85	
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			g/cm ³	SSD g/cm ³	Absorption %	
S1	0.5-1.0	17+037	Yellowish brown silty clays	A-7-6(15)	CL	16.13	40.5	25.6	14.9	-	-	-	-	-	100	99.4	99.0	98.5	96.4	94.3	92.4	82.4	76.4	60.4	50.4			1.61	15	2.75		
S2	1.50-2.00	17+037	Yellowish brown silty clays	A-4(9)	CL	15.38	33.6	22.9	10.7	-	-	-	-	-	100	99.9	99.7	99.6	98.9	91.6	81.0	67.0	57.0	47.0	41.0			2.04	19	2.72		
S3	2.50-3.00	17+037	Yellowish brown silty clays	A-6(9)	CL	13.63	31.5	21.4	10.1	-	-	-	-	-	100	99.8	99.6	99.5	98.8	92.4	77.0	71.0	53.0	43.0	37.0			2.74	23	2.73		
S4	3.50-4.00	17+037	Yellowish brown silty clays	A-4(8)	CL	16.02	29.5	19.8	9.7	-	-	-	-	-	100	99.8	99.6	99.5	98.6	98.3	80.4	74.4	54.4	42.4	34.4			1.72	16	2.72		
S5	4.50-5.00	17+037	Yellowish brown silty clays	A-6(9)	CL	24.70	31.1	19.7	11.4	-	-	-	-	-	100	99.5	99.4	99.1	97.4	90.5	85.0	81.0	59.0	51.0	43.0			0.97	9	2.68		
S6	5.50-6.00	17+037	Yellowish brown silty clays	A-6(7)	CL	26.11	28.5	18.3	10.2	-	-	-	-	-	100	99.7	99.6	99.4	97.8	88.7	83.0	77.0	53.0	45.0	39.0			1.40	13	2.66		
S7	6.50-7.00	17+037	Yellowish brown silty clays	A-4(6)	CL	27.15	26.2	17.7	8.5	-	-	-	-	100	99.8	99.4	99.2	99.0	97.3	83.9	76.4	72.4	42.4	32.4	26.4			0.75	7	2.72		
S8	7.50-8.00	17+037	Grey, SILTY sands	A-4(0)	SM	29.45	-	N.P	-	-	-	-	-	-	-	-	100	99.8	89.8	49.0	39.0	31.0	15.0	7.0	5.0			0.75	7	2.67		
S9	8.50-9.00	17+037	Grey, SILTY sands	A-4(1)	CL-ML	25.08	20.8	16.6	4.2	-	-	-	-	100	99.9	99.7	99.6	99.6	93.3	53.2	52.4	38.4	20.4	16.4	10.4			0.86	8	2.69		
S10	9.50-10.00	17+037	Grey, SILTY sands	A-4(0)	SM	24.04	-	N.P	-	-	-	-	-	-	100	99.9	99.8	99.8	89.7	39.6	35.0	23.0	17.0	15.0	13.0			0.65	6	2.52		
S11	10.50-11.00	17+037	Grey, SILTY sands	A-2-4(0)	SM	26.19	-	N.P	-	-	-	-	-	100	99.7	99.7	99.7	99.6	85.3	50.3	32.4	18.4	8.4	6.4	4.4			1.29	12	2.52		
S12	11.50-12.00	17+037	Grey, SILTY sands	A-2-4(0)	SM	22.72	-	N.P	-	-	-	-	-	100	99.9	99.8	99.8	99.6	82.2	32.6	32.4	16.4	8.4	4.4	2.4			1.18	11	2.51		
-	12.60-12.80	17+037	Brown, medium strong sandstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.75	2.67	342	-	-	-	2.63	
Remark																																

(13) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT												COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI				SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE				Date: 24/06/2002													
BORING No. 14 - 16L (HUAY HE) KM 19+004																																	
DEPTH TO GROUND WATER LEV. : 3.20m																																	
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85				
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^o	γ^d			g/cm ³	SSD g/cm ³	Absorption %				
												25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm						
S1	0.50-1.00	19+004	Yellowish brown silty clays.	A-4(5)	CL	16.72	25.5	16.8	8.7	-	-	-	-	-	-	100	99.9	99.9	96.3	72.5	72.4	52.4	42.4	34.4	26.4			1.08	10	2.73			
S2	1.50-2.00	19+004	Reddish brown, silty clays.	A-6(15)	CL	22.04	36.9	22.9	14.0	-	-	-	-	-	-	100	99.9	99.2	95.8	82.4	78.4	72.4	54.4	42.4			0.75	7	2.74				
S3	2.50-3.00	19+004	Reddish brown, silty clays.	A-6(9)	CL	17.96	30.4	20.4	10.0	-	-	-	-	-	100	99.9	99.9	99.6	94.1	82.4	76.4	62.4	50.4	38.4			1.18	11	2.72				
S4	3.50-4.00	19+004	Reddish brown, silty clays.	A-4(8)	CL	23.42	28.9	20.1	8.8	-	-	-	-	-	100	99.9	99.9	99.9	92.4	82.4	72.4	62.4	52.4	38.4			1.08	10	2.72				
S5 UD	4.30-4.50	19+004	Reddish brown, silty clays.	A-6(11)	CL	23.20	31.7	19.7	12.0	-	-	-	-	-	100	99.9	99.8	99.7	94.0	81.8	75.8	55.8	45.8	35.8	1.80	1.46	1.30	-	2.70	-	-		
S6	4.50-5.00	19+004	Yellowish brown silty clays.	A-6(13)	CL	20.86	32.0	18.0	14.0	-	-	-	-	100	99.9	99.8	99.7	98.1	89.9	82.4	72.4	62.4	52.4	44.4			1.61	15	2.68				
S7	5.50-6.00	19+004	Greyish red, silt-clay fine sand mixtures.	A-4(5)	CL-ML	20.36	21.8	15.4	6.4	-	-	-	-	100	99.8	99.8	99.7	97.5	83.6	72.4	54.4	42.4	34.4	26.4			1.29	12	2.69				
S8	6.50-7.00	19+004	Greyish red, silty fine sands.	A-4(0)	ML	20.94	-	N-P	-	-	-	-	-	100	99.8	99.7	99.6	99.5	76.1	50.6	36.4	28.4	20.4	14.4	12.4			1.18	11	2.67			
-	7.20-8.20	19+004	Grayish Red sandstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.53	2.45	507	-	-	2.58	1.94		
Remark																																	

(15) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 25/06/2002													
BORING No. 14-18L (HUAY SAI) Km 21+434																																						
DEPTH TO GROUND WATER LEV. : 11.60M																																						
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85									
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^o	γ^d			g/cm ³	SSD g/cm ³	Absorption %									
							9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm																			
S1	0.60-0.90	21+434	Strong brown, silty clays.	A-4(6)	CL	10.0	23.6	16.1	7.5	-	-	-	100.0	99.6	99.0	94.8	88.5	75.2	67.2	45.2	35.2	29.2	-	-	1.07	10	2.69	-	-									
S2	1.65-2.00	21+434	Strong brown, silty clays.	A-4(6)	CL	9.6	25.2	15.8	9.4	-	-	-	100.0	99.9	99.2	84.6	73.2	63.2	45.2	39.2	33.2	-	-	1.39	13	2.70	-	-										
S3	2.50-3.00	21+434	Strong brown, silty clays.	A-4(5)	CL	7.3	24.3	16.9	7.4	-	-	-	100.0	99.9	99.8	99.0	80.3	68.4	52.4	38.4	30.4	24.4	-	-	1.72	16	2.70	-	-									
S4	3.50-4.00	21+434	Strong brown, silty clays.	A-4(7)	CL	11.9	26.4	16.9	9.5	-	-	100.0	99.9	99.9	99.8	99.2	89.2	73.2	63.2	53.2	43.2	39.2	-	-	2.04	19	2.69	-	-									
S5	4.50-5.00	21+434	Strong brown, silty clays.	A-4(7)	CL	11.8	29.8	19.8	10.0	-	-	-	100.0	99.8	99.6	97.8	82.9	72.4	60.4	52.4	44.4	38.4	-	-	1.82	17	2.70	-	-									
S6	5.50-6.00	21+434	Strong brown, silty clays.	A-4(7)	CL	10.2	26.7	16.8	9.9	-	-	-	100.0	99.9	99.8	97.8	87.1	72.4	56.4	46.4	40.4	36.4	-	-	2.79	26	2.71	-	-									
S7	6.50-7.00	21+434	Strong brown, silty clays.	A-4(6)	CL	13.1	28.4	18.4	10.0	-	100.0	99.9	99.7	99.7	99.6	97.2	78.9	71.2	55.2	47.2	43.2	37.2	-	-	3.12	29	2.71	-	-									
S8	7.50-8.00	21+434	Dark yellowish brown, silty clays.	A-6(13)	CL	16.9	35.4	21.4	14.0	-	100.0	99.9	99.8	99.8	99.3	93.9	93.2	83.2	73.2	57.2	47.2	-	-	3.65	34	2.72	-	-										
S9	8.50-9.00	21+434	Dark yellowish brown, silty clays.	A-6(13)	CL	21.6	34.9	21.4	13.5	-	-	-	100.0	99.8	99.2	95.8	93.2	83.2	75.2	61.2	53.2	-	-	2.9	27	2.68	-	-										
S10	9.50-10.00	21+434	Dark yellowish brown, silty clays.	A-6(12)	CL	21.1	33.4	21.0	12.4	-	-	-	100.0	99.9	99.9	99.3	95.3	92.4	82.4	68.4	54.4	44.4	-	-	3.12	29	2.68	-	-									
S11	10.50-11.00	21+434	Dark yellowish brown, silty clays.	A-6(7)	CL	20.3	29.4	18.4	11.0	-	100.0	99.8	99.5	99.4	99.1	90.0	78.8	73.2	63.2	53.2	39.2	33.2	-	-	2.58	24	2.69	-	-									
S12	11.50-12.00	21+434	Dark yellowish brown, silty clays.	A-4(5)	CL	20.2	25.2	16.3	8.9	-	100.0	99.6	98.8	98.5	98.1	89.5	77.7	77.2	65.2	59.2	47.2	37.2	-	-	2.15	20	2.69	-	-									
Remark																																						

(16) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-18R (HUAY SAD) Km 21+434 DEPTH TO GROUND WATER LEV. : 3.40M										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 28/06/2002												
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity										
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^o	γ^d			T 100 g/cm ³	T 85 g/cm ³									
							9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm																		
S1	1.00-1.50	21+434	Brown, silty clays.	A-4(5)	CL	10.2	23.9	16.3	7.6	-	-	-	100.0	99.8	97.4	80.0	72.4	54.4	40.4	30.4	24.4	-	-	1.39	13	2.69	-	-									
S2	2.00-2.50	21+434	Brown, silty clays.	A-4(7)	CL	9.2	26.5	16.6	9.9	-	-	-	100.0	99.9	99.2	92.0	76.4	66.4	52.4	38.4	32.4	-	-	1.18	11	2.70	-	-									
S3	3.00-3.50	21+434	Brown, silty clays.	A-4(7)	CL	12.5	26.3	16.8	9.5	-	-	100.0	99.9	99.8	98.9	90.4	72.4	62.4	48.4	36.4	28.4	-	-	1.29	12	2.70	-	-									
S4	4.00-4.50	21+434	Strong brown, silty clays.	A-4(6)	CL	21.5	25.0	16.1	8.9	-	-	100.0	99.8	99.8	99.7	97.6	88.7	64.4	50.4	38.4	32.4	26.4	-	-	0.86	8	2.70	-	-								
S5	5.00-5.50	21+434	Strong brown, silty clays.	A-4(6)	CL	19.8	24.5	15.5	9.0	-	-	100	99.9	99.8	99.8	94.8	88.5	82.4	62.4	52.4	44.4	38.4	-	-	1.07	10	2.67	-	-								
S6 UD	5.60-5.80	21+434	Strong brown, silty clays.	A-4(5)	CL	17.8	23.1	15.9	7.2	-	-	100.0	99.6	99.5	99.4	91.9	82.4	61.8	51.8	35.8	29.8	25.8	2.01	1.70	0.70	-	2.70	-	-								
S7	6.00-6.50	21+434	Strong brown, silty clays.	A-6(6)	CL	18.5	26.8	16.1	10.7	-	-	100.0	99.9	99.8	96.0	79.6	63.2	55.2	43.2	35.2	32.5	-	-	1.83	17	2.69	-	-									
S8	7.00-7.50	21+434	Strong brown, silty clays.	A-6(9)	CL	18.8	29.6	16.7	12.9	-	-	100	99.9	99.9	99.9	97.5	85.5	74.4	62.4	52.4	42.4	36.4	-	-	0.86	8	2.69	-	-								
S9	8.00-8.50	21+434	Reddish brown, silty clays.	A-4(3)	CL	20.7	21.1	13.6	7.5	-	100.0	97	95.3	95.1	94.8	62.8	51.0	42.4	34.4	30.4	26.4	22.4	-	-	0.75	7	2.67	-	-								
S10	9.00-9.50	21+434	Reddish brown, silty clays.	A-4(4)	CL	22.6	25.6	15.8	9.8	-	100.0	90.8	88.8	88.5	88.1	74.9	67.1	58.4	54.4	46.4	40.4	32.4	-	-	0.64	6	2.69	-	-								
-	10.00	21+434	Dusky red, SILTSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>70	>70	2.73	-	-									
Remark																																					

(17) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 20/06/2002				
BORING No. 14 - 19L (HUAY PHAPHIN) KM 24+340 DEPTH TO GROUND WATER LEV. : 5.10M																													
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity		
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^o	γ^d			T 100	T 85	
							9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm			g/cm ³	SSD g/cm ³	Absorption %					
S1	0.50-1.00	24+340	Reddish yellow, silty clays trace laterites.	A-4(6)	CL	16.1	28.0	19.2	8.8	100	98.4	93.5	91.6	91.3	90.7	84.6	78.4	74.0	66.1	60.2	52.4	44.5	-	-	2.04	19	2.69		
S2	1.50-2.00	24+340	Yellowish red, clayey silts.	A-7-6(22)	ML	15.5	50.0	29.1	20.9	-	100	99.3	98.0	97.7	97.1	94.0	91.3	90.0	84.0	78.0	72.0	64.0	-	-	1.82	17	2.73		
S3	2.50-3.00	24+340	Yellowish gray, clayey silts.	A-7-6(22)	ML	14.7	49.0	28.4	20.6	-	100	99.8	99.0	98.8	98.4	94.7	92.1	80.0	74.0	70.0	60.0	52.0	-	-	1.72	16	2.72		
S4	3.50-4.00	24+340	Very pale brown, silty clays.	A-6(13)	CL	14.9	38.0	22.7	15.3	-	100	99.7	99.6	99.4	99.3	77.3	72.7	66.0	56.0	54.0	48.0	44.0	-	-	2.47	23	2.72		
S5	4.50-5.00	24+340	Very pale brown, silty clays.	A-4(3)	CL	19.0	29.0	20.3	8.7	-	-	100	99.8	99.7	99.5	90.2	60.9	47.2	43.2	39.0	35.2	31.2	-	-	3.12	29	2.66		
S6 UD	5.15-5.35	24+340	Very pale brown, silty clays.	A-4(3)	CL	19.3	23.3	16.4	6.9	-	-	100	99.8	99.5	99.3	77.0	63.5	55.2	49.2	39.2	35.2	33.2	2.22	1.86	1.30				
S7	5.50-6.00	24+340	Very pale brown, silty clays.	A-6(7)	CL	23.1	34.0	20.5	13.5	-	-	100	99.9	99.8	99.8	88.7	69.1	59.2	55.2	51.2	47.2	43.2	-	-	0.75	7	2.68		
S8	6.50-7.00	24+340	Bluish gray, silty sands.	A-4(1)	SM	30.8	20.7	17.7	3.0	-	-	100	99.9	99.8	99.8	64.4	46.1	36.4	28.4	22.4	20.4	16.4	-	-	0.64	6	2.63		
S9	7.50-8.00	24+340	Bluish gray, silty sands.	A-2-4	SM	27.5	-	N.P	-	-	-	-	-	100	83.7	34.0	23.2	19.2	15.2	13.2	11.2	-	-	0.43	4	2.66			
S10	8.50-9.00	24+340	Bluish gray, silt - clay - fine sand mixtures.	A-4(5)	CL-ML	27.9	25.0	18.0	7.0	-	-	100	99.9	99.9	99.9	83.9	74.4	58.0	50.0	42.0	34.0	26.0	-	-	0.64	6	2.65		
S11	9.50-1.00	24+340	Bluish gray silt-clay-fine sand mixtures.	A-4(5)	CL-ML	32.5	24.8	18.2	6.6	-	-	100	99.9	99.9	99.8	92.5	74.6	63.2	53.2	43.2	33.2	27.2	-	-	0.75	7	2.65		
S12	10.50- 11.00	24+340	Bluish gray silt-clay-fine sand mixtures.	A-4(0)	CL-ML	26.1	19.1	13.0	6.1	-	-	100	99.8	99.7	98.1	58.9	52.0	35.2	27.2	23.2	19.2	17.2	-	-	0.75	7	2.67		
S13	11.50- 12.00	24+340	Bluish gray silt-clay-fine sand mixtures.	A-4(2)	CL-ML	27.2	20.8	15.7	5.1	-	-	100	99.9	99.9	99.5	80.1	59.1	53.2	43.2	35.2	27.2	23.2	-	-	0.64	6	2.66		
S14	12.50- 13.50	24+340	Grayish red, SILTSTONE	A-4(1)	SM	-	21.6	15.4	6.2	-	100	86.6	73.0	68.4	63.2	51.3	45.4	42.4	38.4	36.4	32.2	30.4	-	-	>7.0	>70	2.63		
Remark																													

(18) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-19R (HUAY PHAPHIN) Km 24+340 DEPTH TO GROUND WATER LEV. : 3.40M											COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI					SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 03/07/2002														
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test														Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity							
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve														γ^o	γ^d			T 100 g/cm ³	T 85 SSD g/cm ³ Absorption %						
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm													
S1	0.50-1.00	24+340	Very pale brown, silty clays.	A-4(4)	CL	9.8	23.7	15.1	8.6	-	-	-	-	100.0	98.8	97.9	97.5	96.0	74.7	69.0	65.2	59.2	47.2	39.2	35.2	-	-	2.15	20	2.67	-	-			
S2	1.50-2.00	24+340	Reddish yellow, clayey silts.	A-7-6(18)	ML	11.2	48.2	29.4	18.8	-	-	-	-	100.0	99.2	99.0	98.2	90.0	87.2	78.4	74.4	72.4	66.4	60.4	-	-	2.04	19	2.71	-	-				
S3	2.50-3.00	24+340	Reddish yellow, clayey silts.	A-7-6(4)	ML	14.3	43.0	27.1	15.9	-	-	-	100.0	73.3	63.2	55.7	54.0	52.1	51.4	50.8	38.3	35.3	33.9	32.4	31.0	-	-	1.82	17	2.74	-	-			
S4	3.50-4.00	24+340	Strong brown, clayey silts.	A-7-6(17)	ML	11.8	46.2	27.7	18.5	-	100.0	97.5	97.1	93.4	90.5	86.4	85.2	84.1	81.5	79.3	49.5	45.8	43.9	42.0	38.3	-	-	2.58	24	2.75	-	-			
S5	4.50-5.00	24+340	Gray, silty clays.	A-6(9)	CL	13.4	36.3	23.4	12.9	-	-	-	-	100.0	96.5	88.5	86.5	83.9	76.5	74.8	60.4	58.4	52.4	44.4	36.4	-	-	2.69	25	2.78	-	-			
S6	5.50-6.00	24+340	Gray, silty clays.	A-6(4)	CL	11.7	32.5	20.0	12.5	-	-	-	-	100.0	95.3	84.0	78.9	72.6	57.8	51.2	45.2	41.2	37.2	33.2	29.2	-	-	2.58	24	2.79	-	-			
S7	6.50-7.00	24+340	Gray, silty clays.	A-6(6)	CL	11.7	29.0	18.6	10.4	-	-	-	-	100.0	99.3	97.2	96.0	93.8	78.2	75.1	58.4	52.4	48.4	44.4	36.4	-	-	2.36	22	2.77	-	-			
S8	7.50-8.00	24+340	Gray, silty clays.	A-6(7)	CL	13.0	30.0	18.8	11.2	-	-	-	-	100.0	98.2	96.2	95.9	95.0	86.7	79.8	62.4	56.4	46.4	40.4	34.4	-	-	2.79	26	2.77	-	-			
S9	8.50-9.00	24+340	Gray, silty clays.	A-4(6)	CL	15.1	27.6	18.5	9.1	-	-	-	-	100.0	98.1	97.6	96.1	93.8	82.8	79.7	32.4	28.4	24.4	20.4	18.4	-	-	5.48	51	2.78	-	-			
S10	9.00-12.60	24+340	Moderate brown, CLAYSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>70	>70	-	-	-			
Remark																																			

(19) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 28/06/2002												
BORING No. 14-20L (HUAY PHABANG) Km 29+438										CDRI																											
DEPTH TO GROUND WATER LEV. : 4.60M																																					
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test													Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity										
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve													γ^0	γ^d			T 100 g/cm ³	T 85									
							9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm																		
S1	1.00-1.50	29+438	Strong brown, silty clays.	A-6(14)	CL	20.1	36.6	23.0	13.6	-	-	-	-	100.0	99.7	99.4	98.2	93.2	83.2	69.2	53.2	45.2	-	-	0.75	7	2.74	-	-								
S2	2.00-2.50	29+438	Strong brown, silty clays.	A-6(11)	CL	16.5	33.8	22.0	11.8	-	-	100.0	99.9	99.9	99.8	99.5	95.8	87.2	75.2	61.2	49.0	41.2	-	-	0.86	8	2.73	-	-								
S3	3.00-3.50	29+438	Strong brown, silt-clay-fine sands mixtures.	A-4(6)	CL-ML	23.2	25.0	18.0	7.0	-	-	100.0	99.8	99.8	99.8	99.2	88.0	74.4	58.4	46.4	38.4	32.4	-	-	0.65	6	2.70	-	-								
S4 UD	3.60-3.80	29+438	Strong brown, silt-clay-fine sands mixtures.	A-4(8)	CL-ML	26.6	28.1	21.4	6.7	-	-	100.0	99.6	99.5	99.4	99.1	91.5	81.8	71.8	55.8	37.8	31.8	1.92	1.52	0.4	-	2.72	-	-								
S5	4.00-4.50	29+438	Dark brown, silty clays.	A-4(7)	CL	22.5	26.3	17.4	8.9	-	-	100.0	99.9	99.8	99.8	99.2	88.7	74.4	54.4	38.4	28.4	22.4	-	-	0.22	2	2.71	-	-								
S6	4.50-5.00	29+438	Dark brown, silty clays.	A-4(7)	CL	26.3	25.9	16.4	9.4	-	-	100	99.5	99.4	99.2	98.8	89.4	74.4	60.4	52.4	36.4	30.4	-	-	0.22	2	2.69	-	-								
S7	6.00-6.50	29+438	Dark brown, silty clays.	A-4(7)	CL	25.3	27.8	18.2	9.6	-	-	100.0	99.9	99.8	99.7	98.0	88.4	82.4	70.4	54.4	36.4	30.4	-	-	1.08	10	2.70	-	-								
S8	7.00-7.50	29+438	Dark brown, silty clays.	A-4(7)	CL	33.6	28.8	19.2	9.6	-	100.0	100	99.1	99.0	99.0	97.9	90.0	83.2	73.2	53.2	37.2	31.2	-	-	1.18	11	2.69	-	-								
-	7.70-9.50	29+438	Moderate red, cracked CLAYSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>7.0	>70	-	-	-									
Remark																																					

(22) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14 - 21 - 2R (HUAY KOK) KM 32+625 DEPTH TO GROUND WATER LEV. : 5.60 M										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI					SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 1/07/2002												
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test														Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity				
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve														γ^o	γ^d			T 100 g/cm ³	T 85 Absorption %			
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm										
S1	0.50-1.00	32+625	Yellowish red, silt - clay - fine sand mixtures.	A-4(4)	CL-ML	8.06	23.2	16.7	6.5	-	-	-	-	-	100	99.9	99.9	91.2	74.0	72.4	62.4	44.4	34.4	28.4			1.18	11	2.68			
S2	1.50-2.00	32+625	Yellowish red, silt - clay - fine sand mixtures.	A-4(3)	CL-ML	7.15	20.1	13.8	6.3	-	-	-	-	100	99.9	99.8	83.8	68.3	67.2	49.2	33.2	28.2	21.2			1.29	12	2.67				
S3	2.50-3.00	32+625	Yellowish red, silt - clay - fine sand mixtures.	A-4(2)	CL-ML		18.8	13.1	5.7	-	-	-	-	100	99.8	99.7	82.4	58.8	41.2	33.2	28.2	23.2	19.2			2.26	21	2.67				
S4	3.50-4.00	32+625	Yellowish red, silt - clay - fine sand mixtures.	A-4(2)	CL-ML		18.9	13.9	5.0	-	-	-	-	100	99.9	99.6	82.3	57.3	52.4	42.4	32.4	20.4	16.4			1.83	17	2.67				
S5	4.50-5.00	32+625	Yellowish red, silt - clay - fine sand mixtures.	A-4(2)	CL-ML	24.56	20.4	14.6	5.8	-	-	-	-	100	99.5	97.3	96.9	96.9	71.7	58.3	55.2	45.2	33.2	25.2	21.2			0.75	7	2.67		
S6	5.50-6.00	32+625	Reddish brown, silty clays trace laterites.	A-6(8)	CL	25.08	29.5	18.3	11.2	-	-	-	100	98.8	94.0	93.1	91.5	83.7	71.1	61.3	45.7	41.7	37.8	33.8	31.9			0.97	9	2.72		
S7	6.50-7.00	32+625	Red, cracked claystone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			7.53	+70	2.75		
S8	7.50-8.00	32+625	Red, cracked claystone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			7.53	+70	2.75		
S9	8.50-9.00	32+625	Red, cracked claystone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			7.53	+70	2.70		
S10	9.50-10.00	32+625	Red, cracked claystone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			7.53	+70	2.70		
Remark																																

(23) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-22L (HUAY THATENG) Km 40+614 DEPTH TO GROUND WATER LEV. : -				COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI				SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE														Date: 01/07/2002							
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test Weight Passing Sieve											Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity				
				AASHTO	UNIFIED		LL	PL	PI	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm			γ ^o	γ ^d	T 100 g/cm ³	SSD g/cm ³	Absorption %
S1	0.50-1.00	40+614	Strong brown, silt-clay- fine sands mixtures.	A-4(4)	CL-ML	11.7	21.4	15.4	6.1	-	100.0	95.7	94.0	93.7	92.4	85.9	73.3	58.4	50.4	38.4	28.4	24.8	-	-	1.29	12	2.59	-	-
S2	1.50-2.00	40+614	Strong brown, clayey silts.	A-7-6(2)	ML	22.0	42.0	26.5	15.5	-	100	99.3	98.7	98.5	98.4	95.6	92.3	79.2	75.2	71.2	67.2	61.2	-	-	1.51	14	2.57	-	-
S3	2.50-3.00	40+614	White strong brown, silty clays.	A-6(7)	CL	22.6	32.8	20.9	11.9	-	100.0	93.3	89.3	88.6	87.9	78.1	69.8	57.2	51.2	49.2	47.2	45.2	-	-	1.6	15	2.64	-	-
S4	3.50-4.00	40+614	White strong brown, silty clays.	A-6(7)	CL	18.8	34.4	23.3	11.3	-	100.0	98.4	94.3	92.6	89.6	78.2	71.6	55.2	49.2	45.2	43.2	37.2	-	-	3.65	34	2.66	-	-
S5	4.50-5.00	40+614	Red. CLAYEY SANDS.	A-6(2)	SC	7.2	30.0	18.8	11.2	-	100.0	86.1	71.5	67.9	63.8	51.6	45.7	43.2	39.2	35.2	33.2	29.2	-	-	>70	>70	2.76	-	-
Remark																													

(24) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-22R (HUAY THATENG) Km 40+614 DEPTH TO GROUND WATER LEV. : -										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 02/07/2002				
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity			
				AASHTO	UNIFIED		LL	PL	PI	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm	γ ^o			γ ^d	T 100 g/cm ³	SSD g/cm ³	Absorption %
S1	0.50-1.00	40+614	Strong brown, silty clays.	A-4(5)	CL	15.1	23.3	14.8	8.5	-	-	-	100.0	99.9	99.8	96.5	84.6	54.4	50.4	38.4	28.4	22.4	-	-	1.07	10	2.70	-	-
S2	1.50-2.00	40+614	Strong brown, silty clays.	A-4(5)	CL-ML	7.7	19.0	12.8	6.2	-	-	-	100.0	99.8	99.7	97.6	90.9	60.4	54.4	42.4	36.4	28.4	-	-	1.18	11	2.66	-	-
S3	2.50-3.00	40+614	White strong brown, silty clays.	A-6(6)	CL	15.6	29.0	18.0	11.0	-	100.0	98.6	98.3	98.2	98.0	85.4	74.4	63.2	55.2	51.2	43.2	39.2	-	-	2.90	27	2.68	-	-
S4	3.50-4.00	40+614	White strong brown, silty clays.	A-6(9)	CL	14.8	36.3	24.0	12.3	-	-	100.0	99.3	98.6	97.4	89.7	83.7	62.4	58.4	54.4	50.4	46.4	-	-	3.44	32	2.73	-	-
S5	4.50-5.00	40+614	Red, silty clays.	A-6(5)	CL	14.5	32.3	20.8	11.5	-	100.0	97.3	92.5	90.5	87.4	75.4	68.4	49.2	41.2	35.2	31.2	29.2	-	-	5.38	>50	2.76	-	-
-	5.00-6.50	40+614	Red, CLAYSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>70	>70	2.78	-	-
Remark																													

(25) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 14-23R (HUAY MANPA) KM 45+491 DEPTH TO GROUND WATER LEV. :											COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI					SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 2/07/2002										
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity		
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			T 100 g/cm ³	T 85 SSD g/cm ³ Absorption %	
S1	0.5-1.00	45+491	Strong brown, clayey sands some laterites.	A-2-4(0)	SC	10.90	23.4	15.8	7.6	100	96.9	90.2	87.7	73.4	52.4	47.0	46.0	45.1	39.1	31.9	27.2	24.2	18.4	15.5	12.6			1.61	15	2.77	
S2	1.50-2.00	45+491	Strong brown, clayey sands little laterites.	A-4(1)	SC	11.14	25.1	15.8	9.3	-	-	100	97.7	81.1	62.6	58.4	57.7	57.0	52.0	44.2	36.6	33.4	26.9	23.7	18.8			1.72	16	2.74	
S3	2.50-3.00	45+491	Strong brown, silty clays, trace laterites.	A-6(3)	CL	10.77	28.4	17.1	11.3	-	-	-	100	90.2	79.2	74.6	73.9	73.2	68.3	58.6	47.9	44.3	37.1	31.7	28.1			5.27	49	2.73	
S4	3.50-4.00	45+491	Reddish brown, silty clays.	A-6(3)	CL	17.72	35.0	23.4	11.6	-	-	-	100	95.4	92.7	88.4	85.6	81.2	64.7	59.3	58.1	56.2	52.4	47.2	39.1			3.34	31	2.77	
S5	4.50-5.00	45+491	Reddish brown, silty clays.	A-6(5)	CL	18.84	35.0	23.0	12.0	-	-	-	-	100	93.4	87.2	84.6	81.0	66.3	62.0	57.2	53.2	51.2	45.2	41.2			>7.00	>70	2.75	
S6	5.50-6.00	45+491	Reddish brown, silty clays.	A-6(7)	CL	21.56	37.4	23.5	13.9	-	-	-	-	100	98.0	91.1	88.5	84.9	72.3	66.0	53.2	49.2	45.2	41.2	33.2			>7.00	>70	2.45	
S7	6.50-7.00	45+491	Reddish brown, silty clays.	A-6(3)	CL	13.59	31.5	19.9	11.6	-	-	-	-	100	88.3	73.6	70.7	67.8	57.9	51.9	41.2	37.2	33.2	31.2	27.2			>7.00	>70	2.58	
Remark																															

(26) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE						Date: 2/07/2002							
BORING No. 14-23L (HUAY MANPA) KM 45+491																																	
DEPTH TO GROUND WATER LEV. : 5.70M																																	
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test																Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85	
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve																γ^w	γ^d			g/cm ³		SSD g/cm ³ Absorption %	
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm											
S1	0.50-1.00	45+491	Strong brown, silt-clay-fine sand laterites mixtures.	A-4(2)	CL-ML	11.96	22.5	15.5	7.0	-	-	-	100	92.4	85.1	79.3	78.3	77.3	66.3	57.6	51.9	48.2	40.8	35.3	31.6			3.77	35	2.77			
S2	1.50-2.00	45+491	Yellowish brown, silty clays.	A-4(4)	CL	16.36	23.9	14.7	9.2	-	-	-	100	99.2	98.4	98.2	97.9	84.1	72.8	58.4	52.4	44.4	38.4	34.4			1.51	14	2.67				
S3	2.50-3.00	45+491	Yellowish brown, silty clays.	A-4(2)	CL	11.00	22.3	14.0	8.3	-	-	-	100	96.2	95.8	95.2	63.0	50.3	44.4	38.4	32.4	30.4	26.4			4.30	40	2.68					
S4	3.50-4.00	45+491	Dark olive gray, silty clays, trace laterites.	A-6(2)	CL	11.67	26.9	16.2	10.7	-	-	-	100	98.8	84.5	75.9	74.6	73.3	60.7	52.7	47.7	44.0	39.8	38.0	33.9			4.52	42	2.76			
S5	4.50-5.00	45+491	Dark olive gray, silty clays, trace laterites.	A-6(2)	CL	11.87	30.5	19.4	11.1	-	-	-	100	90.0	73.4	66.0	64.9	64.0	53.0	51.0	40.0	36.4	34.6	32.8	31.0			3.77	35	2.76			
S6	5.50-6.00	45+491	Red silty clays	A-6(5)	CL	17.59	32.2	22.0	10.2	-	-	-	100	90.1	84.5	82.8	80.7	71.7	67.7	62.4	58.4	54.4	52.4	46.4			4.52	42	2.63				
S7	6.50-7.00	45+491	Red silty clays	A-6(3)	CL	27.50	35.2	23.4	11.8	-	-	-	100	95.8	83.4	78.7	73.5	62.6	58.3	52.4	42.4	36.4	32.4	30.4			>7.0	>70	2.70				
S8	7.40-9.00	45+491	Cracked siltstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			>7.0	>70	2.82	-	-		
Remark																																	

(27) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 16-1L (HUAY MAKCHAN) Km 17+579 DEPTH TO GROUND WATER LEV. : 1.40M										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 15/07/2002							
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test Weight Passing Sieve															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity			
				AASHTO	UNIFIED		LL	PL	PI	25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm	γ^o			γ^d	T 100 g/cm ³	SSD g/cm ³	T 85 Absorption %
S1	2.00-2.50	17+579	Greenish gray, clayey silts.	A-7-5(9)	MH	53.8	58.1	42.8	15.3	-	-	-	-	100.0	93.9	87.4	82.5	77.5	67.0	60.6	36.4	30.4	26.4	20.4	18.4	-	-	>7.0	>70	2.70	-	-
S2	3.50-4.00	17+579	Greenish gray, clayey sands, some cracked sandstone.	A-2-7(0)	SC	45.8	48.3	36.9	11.4	94.1	83.6	80.8	77.5	67.7	58.9	48.0	44.3	40.8	32.8	28.8	17.8	15.1	11.1	7.0	4.3	-	-	>7.0	>70	2.73	-	-
S3	4.50-5.00	17+579	Greenish gray, clayey sands, some cracked sandstone.	A-2-5(0)	SC	46.6	45.2	35.2	10.0	-	100.0	97.5	91.8	78.6	65.2	51.4	47.5	43.8	35.5	30.7	17.6	14.4	9.7	5.0	1.9	-	-	>7.0	>70	2.75	-	-
S4	5.50-6.00	17+579	Brown, clayey sands little cracked sandstone.	A-7-5(4)	SC	62.8	58.3	44.5	13.8	-	-	-	100.0	85.9	73.3	63.3	61.9	59.6	53.4	49.2	38.8	27.7	19.2	15.7	12.3	-	-	>7.0	>70	2.75	-	-
S5	6.50-7.00	17+579	Brown, clayey silts.	A-7-5(15)	MH	69.1	62.2	43.8	18.4	-	-	-	-	100.0	93.9	88.1	86.1	84.0	76.8	72.5	42.4	34.4	28.4	20.4	16.4	-	-	>7.0	>70	2.65	-	-
S6	7.50-8.00	17+579	Brown, clayey silts.	A-7-5(17)	MH	61.2	61.9	42.7	19.2	-	-	-	-	100.0	93.5	87.5	85.8	83.9	76.8	72.2	44.4	38.4	32.4	26.4	20.4	-	-	>7.0	>70	2.71	-	-
S7	8.50-9.00	17+579	Brown, clayey silts.	A-7-5(7)	MH	52.2	55.0	43.0	12.0	-	-	-	-	100.0	92.0	80.5	77.0	73.3	64.0	58.9	36.4	30.4	24.4	18.4	14.4	-	-	>7.0	>70	2.72	-	-
Remark																																

(30) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 04/07/2002										
BORING No. 16-2R (HUAY NAMTANG) KM 35+550																																			
DEPTH TO GROUND WATER LEV. : -																																			
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity						
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			T 100 g/cm ³	T 85 SSD g/cm ³ Absorption %					
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm													
S1	0.50-1.00	35+550	Strong brown, clayey silts	A-7-5(13)	ML	51.08	48.1	32.0	16.1	-	-	-	-	100	96.5	89.7	88.1	85.9	80.3	78.4	67.2	63.2	61.2	55.2	51.2			0.65	6	2.85					
S2	1.50-2.00	35+550	Strong brown, clayey silts	A-7-5(12)	MH	31.51	50.1	35.3	14.8	-	-	-	-	100	90.2	82.9	80.3	77.9	71.7	70.0	55.2	51.2	47.2	43.2	37.2			1.18	11	3.02					
S3	2.50-3.00	35+550	Yellowish brown, clayey sands little cracked basalts.	A-4(2)	SC	40.10	36.0	28.5	7.5	-	100	97.4	95.8	87.2	78.1	70.1	67.8	65.2	56.7	48.6	38.6	33.4	26.4	17.7	12.5			3.23	30	2.91					
S4	3.50-4.00	35+550	Yellowish brown, clayey sands some basalts.	A-2-4(0)	SC	24.19	29.7	22.0	7.7	-	100	77.1	74.0	66.6	58.3	47.2	43.6	39.9	31.8	27.7	17.6	14.9	12.2	6.9	4.3			7.53	+70	2.92					
S5	4.50-5.00	35+550	Yellowish brown, clayey sands some basalts.	A-2-4(0)	SC	25.90	29.0	21.7	7.3	-	-	-	81.0	72.7	63.9	49.6	46.1	42.3	34.6	31.7	19.7	18.7	13.9	8.1	5.2			7.53	+70	2.95					
S6	5.50-6.00	35+550	Yellowish brown, clayey sands little basalts.	A-4(0)	SC	24.36	30.9	23.2	7.7	-	100	89.0	88.0	80.4	71.9	59.4	56.0	52.4	43.5	38.5	27.5	22.7	17.9	14.7	9.9			7.53	+70	2.92					
S7	6.50-7.00	35+550	Yellowish brown, clayey sands some cracked basalts.	A-2-4(0)	SC	30.90	30.2	23.0	7.2	-	100	82.2	77.3	70.0	62.2	52.3	49.8	46.0	37.4	32.6	28.1	22.5	18.3	12.8	9.2			7.53	+70	2.89					
Remark																																			

(32) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE						Date: 10/07/2002											
BORING No. 16-3R (HUAY XEKATAM) Km 46+009 DEPTH TO GROUND WATER LEV. : 4.20M										Particle Size Analysis Test																				Unit Weight		Unconfined Compressive Strength	Standard Penetration	Specific gravity		Specific gravity	
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Weight Passing Sieve															γ^0	γ^d	Kg/cm ³	Blows/30 Cm N	T 100 g/cm ³	T 85							
				AASHTO	UNIFIED		LL	PL	PI	25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm						0.005 mm	SSD g/cm ³	Absorption %					
S1	0.50-1.00	46+009	Grayish brown, clayey silts little cracked sandstone.	A-7-5(11)	MH	40.7	53.6	32.2	21.4	-	-	100.0	94.1	81.8	77.0	73.6	72.6	71.5	66.1	62.8	60.0	55.1	50.2	48.5	43.6	-	-	1.61	15	2.75	-	-					
S2	1.50-2.00	46+009	Grayish brown, clayey silts trace cracked sandstone.	A-7-5(8)	ML	23.9	46.2	33.6	12.6	-	-	100.0	94.1	91.2	88.4	87.2	85.2	72.6	70.5	68.8	63.2	57.5	53.8	50.0	-	-	1.61	15	2.72	-	-						
S3	2.50-3.00	46+009	Grayish brown, clayey silts trace cracked sandstone.	A-7-5(11)	ML	35.8	48.6	31.3	17.3	-	-	100.0	95.0	90.6	89.5	87.3	86.4	84.6	71.3	66.9	66.2	64.4	62.6	57.2	53.6	-	-	1.29	12	2.73	-	-					
S4	3.50-4.00	46+009	Grayish brown, clayey silts little cracked sandstone.	A-7-6(5)	ML	30.4	42.0	26.3	15.7	-	100.0	90.6	88.7	83.8	80.8	77.9	76.5	74.1	58.3	52.6	44.7	43.0	39.7	36.3	32.9	-	-	>7.53	>70	2.70	-	-					
S5	4.50-5.00	46+009	Grayish brown, clayey gravels+boulders.	A-2-4(0)	GC	22.9	30.6	22.1	8.5	-	100.0	79.1	75.6	57.8	49.8	45.0	43.7	42.0	34.8	31.4	30.9	26.2	22.7	19.3	14.6	-	-	>7.53	>70	2.75	-	-					
S6	5.50-6.00	46+009	Grayish brown, clayey gravels+boulders.	A-2-6(0)	GC	21.8	37.2	26.8	10.4	-	100.0	90.4	83.0	64.7	56.7	48.9	46.7	44.4	37.8	34.8	26.6	21.4	17.5	12.4	8.5	-	-	>7.53	>70	2.73	-	-					
S7	6.50-7.00	46+009	Grayish brown, clayey gravels+boulders.	A-2-6(0)	GC	33.2	39.7	29.5	10.2	-	100.0	87.9	80.4	64.6	50.1	47.9	45.2	40.3	37.9	35.5	27.9	24.0	18.8	15.0	12.4	-	-	>7.53	>70	2.72	-	-					
S8	7.50-8.00	46+009	Grayish brown, clayey gravels+boulders.	A-2-7(0)	GC	38.3	50.0	31.0	19.0	-	100.0	82.8	69.7	47.6	39.7	33.3	31.4	29.0	23.0	20.7	15.8	12.9	11.0	8.2	7.2	-	-	>7.53	>70	2.70	-	-					
Remark																																					

(33) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 16-4L (HUAY XENAMNOY) Km 51+637 DEPTH TO GROUND WATER LEV. : 8.60M											COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI						SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 17/07/2002										
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity			
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			T 100 g/cm ³	T 85 SSD g/cm ³ Absorption %		
S1	0.50-1.00	51+637	Yellowish red, clayey sand little laterites+gravels.	A-2-4(0)	SC	22.1	37.8	28.0	9.8	-	-	100.0	96.2	81.0	62.1	50.6	47.1	43.5	33.7	30.1	8.4	6.8	5.2	3.5	1.9	-	-	2.58	24	3.10	-	-
S2	2.50-3.00	51+637	Brown, clayey sands little cracked sandstone.	A-2-4(0)	SC	21.5	33.0	23.0	10.0	100.0	96.4	89.1	85.0	73.1	57.8	49.5	47.4	44.7	34.9	30.6	28.0	25.1	23.7	17.8	16.4	-	-	>7.0	>70	2.80	-	-
S3	4.00-4.50	51+637	Brown, clayey sands some cracked sandstone+gravels.	A-2-6(0)	SC	21.5	33.9	22.3	11.6	94.6	93.9	89.6	85.5	66.0	63.1	56.4	56.3	52.9	37.2	31.6	27.2	24.6	20.6	18.0	16.3	-	-	>7.0	>70	2.78	-	-
	5.30-5.50	51+637	Very dusky,purple, vesicular basalt.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.01	2.98	658	-	-	2.57	1.55
S4	7.00-7.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-7(0)	GC	27.9	42.6	28.9	13.7	61.3	61.3	56.6	54.8	44.4	38.2	33.5	32.1	30.6	25.5	23.0	20.4	19.5	17.8	16.0	14.3	-	-	>7.0	>70	2.79	-	-
S5	8.00-8.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-7(0)	GC	34.5	46.6	33.6	13.0	90.7	84.2	74.7	69.5	55.6	43.3	33.5	31.0	28.4	22.2	18.4	12.4	10.2	9.1	6.9	5.8	-	-	>7.0	>70	2.84	-	-
S6	9.00-9.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-4(0)	GC	22.1	36.6	27.1	9.5	95.7	91.9	83.7	79.1	58.2	49.1	37.8	34.8	31.1	22.3	19.2	15.3	13.0	9.5	7.2	3.7	-	-	>7.0	>70	2.79	-	-
S7	10.00-10.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-4(0)	GC	22.5	29.8	20.9	8.9	86.9	78.2	67.4	61.5	47.5	37.8	30.1	27.8	25.0	15.1	12.6	8.2	7.2	5.3	4.4	3.4	-	-	>7.0	>70	2.79	-	-
Remark																																

(34) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE						Date: 16/07/2002						
BORING No. 16-4R (HUAY XENAMNOY) Km 51+637										CDRI																						
DEPTH TO GROUND WATER LEV. : -																																
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity			
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^0	γ^d			T 100 g/cm ³	T 85 SSD g/cm ³ Absorption %		
S1	0.50-1.00	51+637	Reddish brown, clayey sands, little laterites+gravels.	A-2-7(1)	SC	22.5	42.4	28.3	14.1	-	100.0	99.5	95.5	82.4	69.8	59.2	55.8	51.7	38.8	31.2	29.0	24.1	20.8	15.8	14.2	-	-	2.15	20	3.02	-	-
S2	1.50-2.00	51+637	Greenish gray, clayey gravels+laterites.	A-2-6(0)	GC	15.0	39.8	28.2	11.6	80.5	73.4	66.8	60.2	40.1	32.4	28.8	27.7	26.4	21.5	19.0	15.7	12.5	10.9	8.5	6.9	-	-	>7.0	>70	2.79	-	-
S3	2.50-3.00	51+637	Greenish gray, clayey sands some gravels.	A-2-4(0)	SC	23.0	36.0	26.4	9.6	-	100.0	91.5	87.2	71.9	64.5	57.5	54.7	51.3	39.0	32.9	26.2	21.9	17.6	13.3	10.4	-	-	>7.0	>70	2.77	-	-
S4	4.00-4.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-6(0)	GC	20.8	35.3	24.6	10.7	92.5	78.0	68.8	65.2	55.1	48.1	42.7	40.8	38.5	29.2	24.8	18.9	17.8	14.5	11.2	9.0	-	-	>7.0	>70	2.75	-	-
S5	5.00-5.50	51+637	Greenish gray, clayey cracked sandstone+gravels.	A-2-7(0)	GC	25.9	40.8	25.9	14.9	80.8	74.2	68.0	65.5	53.5	43.0	37.0	35.6	33.8	25.0	22.1	17.8	14.6	12.4	10.3	9.2	-	-	>7.0	>70	2.79	-	-
S6	7.00-7.50	51+637	Greenish gray, clayey cracked sandstone+laterites.	A-2-7(0)	GC	43.0	48.5	34.7	13.8	95.5	87.6	75.9	65.3	40.7	30.4	25.5	24.4	23.1	18.5	16.8	13.5	12.6	11.2	10.2	9.4	-	-	>7.0	>70	2.79	-	-
S7	8.00-8.50	51+637	Greenish gray, clayey cracked sandstone+laterites.	A-2-7(0)	GC	45.7	47.5	28.6	18.9	79.4	70.2	59.9	56.2	47.4	45.0	40.9	39.2	36.8	27.8	23.4	14.4	11.6	9.7	5.9	3.0	-	-	>7.0	>70	2.82	-	-
S8	9.00-9.50	51+637	Brown, clayey cracked sandstone.	A-2-6(0)	GC	24.7	39.8	25.2	14.6	100.0	88.6	84.7	77.3	60.7	49.5	41.2	39.0	36.8	30.7	28.8	23.2	20.8	17.2	13.6	9.9	-	-	>7.0	>70	2.86	-	-
S9	10.00-10.5	51+637	Brown, clayey cracked sandstone.	A-2-6(0)	GC	20.7	34.9	22.9	12.0	86.7	78.9	70.1	66.2	52.8	44.9	36.4	34.3	32.1	26.5	24.4	20.4	18.2	14.0	9.8	6.6	-	-	>7.0	>70	2.89	-	-
Remark																																

(35) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 16-5L (HUAY XENAMNOY) KM 51+841 DEPTH TO GROUND WATER LEV. :												COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI					SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE					Date: 16/07/2002										
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85	
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			g/cm ³	SSD g/cm ³	Absorption %	
S1	0.50-1.00	51+841	Yellowish red, clayey sands little laterites.	A-2-4(1)	SC	13.3	23.6	16.3	7.3	100	97.3	95.8	92.4	81.5	72.4	64.9	61.0	55.1	32.0	26.1	18.9	17.3	15.7	12.4	10.8	-	-	>7.0	>70	2.73		
S2	1.50-2.00	51+841	Dark brown, clayey sands, some laterites.	A-2-4(1)	SC	20.1	27.4	17.5	9.9	100	95.9	87.9	84.3	74.7	62.7	53.0	49.0	43.5	28.8	23.1	18.2	15.2	13.7	12.2	9.2	-	-	>7.0	>70	2.72		
S3	3.50-4.00	51+841	Yellowish brown, clayey gravels+laterites.	A-2-4(0)	GC	8.4	20.0	13.5	6.5	80.6	74.7	71.3	68.8	58.1	49.2	41.9	39.5	36.1	25.9	20.8	16.9	14.6	12.3	10.0	7.7	-	-	>7.0	>70	2.73		
S4	6.00-6.50	51+841	Yellowish brown, clayey gravels and boulder.	A-1-b	GC	7.1	19.2	13.8	5.4	90.2	84.1	76.9	70.7	55.5	45.3	37.5	35.3	32.2	21.4	17.6	15.8	13.5	11.3	9.1	6.9	-	-	>7.0	>70	2.73		
S5	7.00-7.50	51+841	Yellowish brown, clayey gravels and boulder.	A-2-4(0)	GC	9.7	23.6	15.2	8.4	91.6	81.8	72.1	69.1	59.9	53.7	48.6	46.7	43.7	31.0	25.0	19.9	16.3	13.9	11.5	10.3	-	-	>7.0	>70	2.72		
	8.00-8.15	51+841	Yellowish gray, SANDSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.54	2.51	563.00	-	-	2.62	1.28
	8.85-8.95	51+841	Yellowish gray, SANDSTONE.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.48	2.45	573	-	-	-	1.21
Remark																																

(36) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE										Date: 15/07/2002							
BORING No. 16-5R (HUAY XENAMNOY) KM 51+841																																					
DEPTH TO GROUND WATER LEV. :																																					
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85						
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^w	γ^d			g/cm ³		SSD g/cm ³ Absorption %						
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm															
S1	0.50-1.00	51+841	Dark brown, clayey sands and laterites.	A-2-4(0)	GC	10.8	20.3	13.9	6.4	-	100	77.4	70.3	58.8	55.0	49.3	46.5	42.7	29.5	23.6	20.3	15.6	12.0	9.7	7.3	-	-	>7.0	>70	2.72							
S2	2.00-2.50	51+841	Yellowish red, clayey sands and gravel + cracked basalt.	A-2-6(0)	SC	19.2	31.1	19.6	11.5	100	87.1	82.9	79.5	65.5	58.2	51.3	48.5	45.2	33.0	27.7	26.5	22.5	19.9	17.3	14.7	-	-	>7.0	>70	2.74							
S3	4.00-4.50	51+841	Yellowish red, clayey sands and gravel + cracked sandstone.	A-6(0)	SC	12.4	28.7	16.8	11.9	-	100	94.7	92.0	83.5	77.6	70.2	66.9	62.5	45.9	38.7	28.7	23.7	20.4	17.0	15.4	-	-	>7.0	>70	2.74							
S4	6.50-7.00	51+841	Yellowish red, clayey sand and gravel + cracked boulder.	A-2-4(0)	SC	10.5	25.4	17.1	8.3	-	100	76.2	73.9	66.7	58.1	51.1	48.5	44.9	29.3	24.7	22.9	17.6	13.6	12.2	10.9	-	-	>7.0	>70	2.74							
S5	7.50-8.00	51+841	Dark brown, clayey sands some gravels.	A-2-4(0)	SC	12.9	22.0	13.3	8.7	-	100	85.6	80.2	70.5	64.3	57.4	54.2	49.6	32.8	26.5	22.8	15.8	13.0	10.2	7.3	-	-	>7.0	>70	2.74							
	8.10-10.00	51+841	Boulder SANDSTONE boulder BASALT.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	>7.0	>70	-	2.58	1.20						
Remark																																					

(37) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 16-6R (HUAY KATAK - TOK) (HO) KM 52+168 DEPTH TO GROUND WATER LEV. :												COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI						SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE						Date: 12/07/2002											
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test														Unit Weight		Unconfined Compressive Strength Kg/cm ²	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85					
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve														γ ^o	γ ^d			g/cm ³	SSD g/cm ³	Absorption %					
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm													
S1	0.50-1.00	52+168	Gray, clayey gravels.	A-2-4(0)	GC	7.49	25.1	15.8	9.3	85.5	66.5	55.5	48.1	33.8	26.4	19.9	17.8	15.5	13.9	8.7	7.9	7.2	6.5	5.9	5.2	-	-	>70	>70	2.69					
S2	1.50-2.00	52+168	Reddish brown, clayey cracked sandstone.	A-4(0)	GC	10.09	25.0	16.1	8.9	100	86.9	79.9	75.7	65.9	59.3	54.3	53.1	51.9	46.0	38.9	33.8	29.8	25.9	21.9	19.3	-	-	1.18	11	2.71					
S3	2.50-3.00	52+168	Reddish brown, clayey cracked sandstone.	A-4(0)	GC	11.06	25.2	16.2	9.0	92.0	85.8	79.0	77.2	65.3	59.8	54.6	53.2	51.7	45.8	38.7	33.0	29.1	26.5	23.8	19.9	-	-	1.50	14	2.73					
S4	3.50-4.00	52+168	Reddish brown, clayey cracked sandstone.	A-2-4(0)	GC	10.57	24.8	15.3	9.5	95.5	83.9	76.0	68.2	50.9	45.6	41.7	40.3	38.9	33.4	27.7	23.7	20.6	18.6	16.5	14.5	-	-	1.72	16	2.71					
S5	4.50-5.00	52+168	Reddish brown, clayey cracked sandstone.	A-2-4(0)	GC	13.88	26.4	17.8	8.6	100	95.0	82.9	77.2	62.5	54.2	48.7	47.0	45.4	40.2	34.6	27.0	24.5	19.5	17.0	14.5	-	-	2.37	22	2.71					
-	6.70-6.90	52+168	Dusky red, very strong sandstone.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.59	2.57	1.146	-	-	2.67	1.44				
Remark																																			

(38) SUMMARY OF LABORATORY TEST RESULTS FOR BORE HOLE

SOIL INVESTIGATION FOR : THE STUDY ON IMPROVEMENT OF ROAD IN THE SOUTHERN REGION IN LAO P.D.R RPROJECT BORING No. 16-6L (HUAY KATAK - TOK) (HO) KM 52+168 DEPTH TO GROUND WATER LEV. :										COMMUNICATION DESIGN AND RESEARCH INSTITUTE CDRI										SUMMARY OF LABORATORY TEST RESULTS IN BORE HOLE										Date: 11/07/2002							
Sample No.	Depth m.	Station Km	Description of soil	Soil Classification		Natural water Content %	Atterberg Limite %			Particle Size Analysis Test															Unit Weight		Unconfined Compressive Strength Kg/cm ³	Standard Penetration Blows/30 Cm N	Specific gravity T 100		Specific gravity T 85						
				AASHTO	UNIFIED		LL	PL	PI	Weight Passing Sieve															γ^o	γ^d			g/cm ³	SSD g/cm ³	Absorption %						
							25.4 mm	19.1 mm	12.7 mm	9.52 mm	4.76 mm	2.00 mm	0.840 mm	0.590 mm	0.420 mm	0.149 mm	0.075 mm	0.050 mm	0.037 mm	0.019 mm	0.009 mm	0.005 mm															
S1	0.50-1.00	52+168	Gray, clayey gravels.	A-2-4(0)	GC	9.06	24.4	14.5	9.9	93.5	82.2	66.8	58.4	49.6	42.8	36.7	34.3	30.7	19.7	16.0	12.1	10.1	9.1	8.1	6.1	-	-	>7.0	>7.0	2.70							
S2	1.50-2.00	52+168	Gray, clayey gravels.	A-2-4(0)	GC	7.91	24.3	15.9	8.4	100	88.3	67.8	63.4	54.7	47.7	41.9	39.3	35.4	23.2	18.9	17.6	16.6	14.4	13.3	11.1	-	-	>7.0	>7.0	2.71							
S3	2.50-3.00	52+168	Yellowish brown, clayey sands some cracked sandstone.	A-6(1)	SC	10.34	27.3	16.3	11.0	-	100	84.4	79.4	76.4	72.1	66.4	64.7	62.9	55.8	47.5	40.1	34.0	30.9	24.8	23.3	-	-	4.84	45	2.71							
S4	3.50-4.00	52+168	Yellowish brown, clayey sands, little cracked sandstone.	A-6(3)	SC	9.31	27.2	15.4	11.8	100	91.4	86.9	85.7	82.0	78.1	73.8	72.5	71.2	64.3	49.9	49.5	47.9	43.0	36.4	34.8	-	-	2.26	21	2.70							
S5	4.50-5.00	52+168	Yellowish brown, clayey cracked sandstone.	A-2-6(0)	GC	13.04	27.6	16.7	10.9	80.6	61.6	54.7	49.7	36.4	30.1	26.3	25.2	24.0	20.3	17.4	14.0	12.6	11.1	9.6	8.2	-	-	>7.0	>7.0	2.72							
S6	5.50-6.00	52+168	Yellowish brown, clayey cracked sandstone.	A-2-6(0)	GC	13.47	28.2	18.0	10.2	90.3	62.9	55.2	50.3	42.6	36.4	33.1	30.5	26.3	22.1	18.8	17.2	15.3	13.4	12.2	11.3	-	-	>7.0	>7.0	2.71							
	9.30-9.50	52+168	Dusky. red, very strong sandstone.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.65	2.63	1.153	-	-	2.68	0.93					
Remark																																					

(6) Boring Logs of the Route 14A

1) R14-1L: Thok River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit —(%) Plastic Limit —x(%) Moisture Content —o(%)	Specific Gravity —o(%) Aparent Specific Gravity —.(%)	Unit Weight (g/cm ³) —o— Soil —·— Rock	Absorption (%) —·— Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)	
														Compressive Strength (Rock) —(10 ³ kg/cm ²)				
		97.88	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50			
1					Silty clay (AC)	Stiff	Reddish brown silty clay with medium plasticity and moistness.	51									12	1
2		96.38	1.50		Silt (RS)	Hard	Reddish brown silt with low plasticity and little moistness.	52								60	2	
3					Clayey silt (RS)	Hard	Dark red clayey silt with high plasticity.	53		74	3							
4		93.78	4.10		Silt stone (MS)		Weathered dusky red silt stone.	54		120	4							
5																		5
6																		6
7		90.88	7.00															7
8																		8
9																		9
10																		10
11																		11
12																		12
13																		13
14																		14
15																		15

Remarks :

Symbol of Geological Formation
 BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
 AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
 AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
 AG: Alluvial Gravel RS: Residual Soil

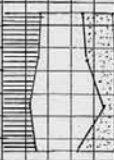
Symbol of Particle Size

Clay 0.005mm >
 Silt 0.005mm - 0.075mm
 Sand 0.075mm - 2.000mm
 Gravel 2.000mm <





Sample No.

S: Disturbed Sample
 UD: Undisturbed Sample
 R: Rock Sample

2) R14-1R: Thok River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity (%)	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)	
														(Soil) (kg/cm ²)	(Rock) (10 ³ kg/cm ²)			
		97.61	0.00		Silty clay (AC)	Stiff Very Stiff	Reddish brown silty clay with low plasticity and moistness.	S1 S2 S3 S4										
1																11	1	
2																15	2	
3																20	3	
4																22	4	
5		92.91	4.70		Silt stone (MS)		Weathered red silt stone with moistness.									103	5	
6																1320	6	
7		90.91	6.70														7	
8																	8	
9																	9	
10																	10	
11																	11	
12																	12	
13																	13	
14																	14	
15																	15	

Remarks : Symbol of Geological Formation
 BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
 AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
 AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
 AG: Alluvial Gravel RS: Residual Soil

Symbol of Particle Size
 Clay 0.005mm >
 Silt 0.005mm ~ 0.075mm
 Sand 0.075mm ~ 2.000mm
 Gravel 2.000mm <

Sample No.
 S: Disturbed Sample
 UD: Undisturbed Sample
 R: Rock Sample

4) R14-8R: Imet River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) (10 ³ kg/cm ²)		
1		74.05	0.00		Silty clay (AC)	Very stiff	Yellowish green silty clay with medium plasticity and little moistness.	S1								23	1
2								S2								25	2
3								S3								23	3
4	4.30							S4								21	4
5								S5								23	5
6		88.05	6.00					S6								25	6
7		86.85	7.20		Silt (AC)	stiff	Yellowish brown silt with low plasticity and medium moistness.	S7								14	7
8		85.55	8.50		Sand (AS)	Loose	Greenish gray sand with no plasticity.	S8								9	8
9		84.75	7.30		Clayey sand (AS)	Medium	Dark reddish brown clayey sand.	S9								11	9
10		83.75	10.30		Silt stone (MS)		Red silt stone.	R1									10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks :

BS: Banking Soil	TC: Terrace Silt and Clay	MS: Mudstone (Silt stone and Clay stone)
AC: Alluvial Silt and Clay	TS: Terrace Sand	SS: Sand Stone
AS: Alluvial Sand	TG: Terrace Gravel	BA: Basalt
AG: Alluvial Gravel	RS: Residual Soil	

Symbol of Particle Size	
	Clay 0.005mm >
	Silt 0.005mm - 0.075mm
	Sand 0.075mm - 2.000mm
	Gravel 2.000mm <

Sample No.	
S	Disturbed Sample
UD	Undisturbed Sample
R	Rock Sample

5) R14-12R: Thapxang River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														1-8 (kg/cm ²)	Compressive Strength (Rock) (10 ³ kg/cm ²)		
		94.53	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1					Silt (AC)	Stiff ~ Very Stiff	Dark brown silt with low plasticity and little moistness.	S1								9	1
2								S2								12	2
3								S3								18	3
4	3.80	91.03	3.50		Clayey Sand (AS)	Loose ~ Medium	Reddish brown loose clayey sand with low moistness.	S4								13	4
5								S5								8	5
6								S6								9	6
7								S7								6	7
8		87.03	7.50		Sandy Silt (AC)	Stiff	Greenish gray sandy silt.	S8								9	8
9		86.13	8.40		Sandstone (SS)		Grayish red sandstone.	R1									9
10		85.03	9.50														10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks : Symbol of Geological Formation
 BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
 AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
 AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
 AG: Alluvial Gravel RS: Residual Soil

Symbol of Particle Size
 Clay 0.005mm >
 Silt 0.005mm ~ 0.075mm
 Sand 0.075mm ~ 2.000mm
 Gravel 2.000mm <

Sample No.
 S: Disturbed Sample
 UD: Undisturbed Sample
 R: Rock Sample

6) R14-13R: Khone liao River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)		
1		93.97	0.00		Silty Sand (AS)	Medium	Brown colored silty sand with little moistness.	S1									1
2		91.77	2.20		Sandstone (SS)		Gray colored medium sandstone	S2									2
3		90.47	3.50		Sandstone (SS)		Gray colored medium sandstone	R1									3
4																	4
5																	5
6																	6
7																	7
8																	8
9																	9
10																	10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks :

Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

7) R14-14R: Khoneken River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)		
														1-8 (kg/cm ²)	Compressive Strength (Rock) --- (10 ³ kg/cm ²)				
		95.73	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50				
1				[Symbol for Silt+ (AC)]	Silt+ (AC)	Very Stiff	Yellowish brown silt with low Plasticity.	S1	[Particle Size Analysis Graph]	[Liquid Limit, Plastic Limit, Moisture Content Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression (Soil) Graph]	[Compressive Strength (Rock) Graph]	[N Value Graph]	15	1	
2			19		2														
3			23		3														
4			16		4														
5	5.00				9	5													
6					13	6													
7		88.33	7.00			7	7												
8				[Symbol for Sand (AS)]	Sand (AS)	Loose ~ Medium	Gray colored fine sand with moistness.	S8	NP								7	8	
9						S9												8	9
10						S10												6	10
11						S11												12	11
12		83.73	12.00			S12												11	12
13		82.73	13.00	[Symbol for Sandstone (SS)]	Sandstone (SS)		Dusky red Sandstone	R1										13	
14																		14	
15																		15	

Remarks :

Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- [Symbol] Clay 0.005mm >
- [Symbol] Silt 0.005mm ~ 0.075mm
- [Symbol] Sand 0.075mm ~ 2.000mm
- [Symbol] Gravel 2.000mm <

Sample No

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

8) R14-15R: Hong River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)
														Soil (kg/cm ²)	Rock (10 ³ kg/cm ²)		
1		96.81	0.00		Silt (AC)	Stiff	Yellowish brown silt with low plasticity.	S1								10	1
2								S2								14	2
3		93.31	3.50		Silty Sand (AS)	Medium	Brown ~ Yellowish brown silty sand with moistness.	S3								14	3
4								S4								16	4
5								S5								13	5
6								S6								14	6
7		89.31	7.50		Silty Clay (AC)	Stiff	Dark yellowish brown silty clay.	S7								16	7
8		88.31	8.50		Sand (AS)	Medium	Greenish gray fine sand.	S8								11	8
9		87.31	9.50		Sandy Silt (AC)	Stiff ~ Very Stiff	Gray sandy silt with high moistness.	S9								12	9
10								S10								10	10
11		85.31	11.50		Claystone (CMS)		Moderated red claystone.	S11								16	11
12		84.31	12.50													53	12
13																	13
14																	14
15																	15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

9) R14-15R: Hong River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) ---Soil ---Rock	Absorption (%) ---Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														1	2		
		91.97	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1		90.47	1.50	[Symbol]	Silt (AC)	Stiff	Yellowish brown silt with low plasticity.	S1	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	10	1
2				[Symbol]	Silty clay (AC)	Medium-Stiff	Reddish brown silty clay with medium plasticity.	S2	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	7	2
3	3.20			[Symbol]				S3	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	11	3	
4		87.47	4.50	[Symbol]				S4	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	10	4	
5				[Symbol]	Silt (AC)	Stiff	Yellowish brown silt with low plasticity.	S5 (UD)	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	15	5	
6		85.97	6.00	[Symbol]				S6	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	12	6	
7		84.77	7.20	[Symbol]	Silty Sand (AS)	Medium	Gray colored silty sand.	S7	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	11	7	
8		83.77	8.20	[Symbol]	Sand stone (SS)		Grayish red sandstone.	R1	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]	[Graph]		8	
9																9	
10																10	
11																11	
12																12	
13																13	
14																14	
15																15	

Remarks : Symbol of Geological Formation

BS: Banking Soil	TC: Terrace Silt and Clay	MS: Mudstone (Silt stone and Clay stone)
AC: Alluvial Silt and Clay	TS: Terrace Sand	SS: Sand Stone
AS: Alluvial Sand	TG: Terrace Gravel	BA: Basalt
AG: Alluvial Gravel	RS: Residual Soil	

Symbol of Particle Size

[Symbol]	Clay	0.005mm >
[Symbol]	Silt	0.005mm ~ 0.075mm
[Symbol]	Sand	0.075mm ~ 2.000mm
[Symbol]	Gravel	2.000mm <

Sample No.

S:	Disturbed Sample
UD:	Undisturbed Sample
R:	Rock Sample

10) R14-17L: Dua River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit —(%) Plastic Limit —x(%) Moisture Content —o(%)	Specific Gravity —o(%) Aparent Specific Gravity —(%)	Unit Weight (g/cm ³) —o— Soil —•— Rock	Absorption (%) —•— Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														—o— (kg/cm ²)	—•— (10 ³ kg/cm ²)		
		93.97	0.00		Silt (AC)	Very Stiff	Yellowish brown silt with low plasticity.		20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1								S1								20	1
2								S2								21	2
3		90.97	3.00		Sandstone (SS)		Dusky red sandstone	S3								15 1020	3
4								R1								1080	4
5		89.07	4.90													1080	5
6																	6
7																	7
8																	8
9																	9
10																	10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks: Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

11) R14-18L: Sai River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit ---(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)
														Soil (kg/cm ²)	Rock (10 ³ kg/cm ²)		
		97.52	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1				[Symbol for Silt (AC)]	Silt (AC)	Stiff ~ Very Stiff	Dark brown silt with low plasticity.	S1	[Particle Size Graph]	[Liquid Limit Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression Graph]	[N Value Graph]	10	1
2			S2					13								2	
3			S3					16								3	
4			S4					19								4	
5			S5					17								5	
6		91.52	6.00	[Symbol for Silt (RS)]	Silt (RS)	Very Stiff ~ Hard	Dark brown silt with low plasticity.	S6	[Particle Size Graph]	[Liquid Limit Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression Graph]	[N Value Graph]	26	6
7			S7					29								7	
8		87.02	8.50	[Symbol for Silty Clay (RS)]	Silty Clay (RS)	Very Stiff	Dark yellowish brown silty clay.	S8	[Particle Size Graph]	[Liquid Limit Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression Graph]	[N Value Graph]	34	8
9																S9	27
10		88.02	9.50	[Symbol for Silt (RS)]	Silt (RS)	Very Stiff	Yellowish brown silt with low plasticity.	S10	[Particle Size Graph]	[Liquid Limit Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression Graph]	[N Value Graph]	29	10
11								S11								24	11
12	11.60	85.52	12.00	[Symbol for Siltstone (MS)]	Siltstone (MS)		Dusky red silt stone.	S12	[Particle Size Graph]	[Liquid Limit Graph]	[Specific Gravity Graph]	[Unit Weight Graph]	[Absorption Graph]	[Unconfined Compression Graph]	[N Value Graph]	20	12
13																13	
14																14	
15		83.02	14.50														15

Remarks: Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- [Symbol] Clay 0.005mm >
- [Symbol] Silt 0.005mm - 0.075mm
- [Symbol] Sand 0.075mm - 2.000mm
- [Symbol] Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

13) R14-19L: Phaphin River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)	
														1 2 3 4 5 6 7 8	10 11			
		74.84	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50			
1					Silty Clay (AC)	Very Stiff	Reddish yellow silty clay with laterite	S1									19	1
2							Yellowish red silty clay with low plasticity.	S2									27	2
3								S3									26	3
4							Pale brown silty clay with low plasticity.	S4									23	4
5	5.10							S5									29	5
6		88.84	6.00			Soft		S6 (UD)									7	6
7					Silty Sand (AS)	Loose	Light bluish gray silty sand.	S8									6	7
8		86.74	2.10					S9									4	8
9					Silty Clay (AC)	Medium	Bluish gray silty clay with medium plasticity.	S10									6	9
10								S11									7	10
11								S12									7	11
12		82.54	12.30					S13									6	12
13		81.34	13.50		Silt stone (MS)		Grayish red silt stone.										310	13
14																	330	14
15																		15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

14) R14-19R: Phaphin River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit ---x(%) Moisture Content ---o(%)	Specific Gravity ---o(%) Aparent Specific Gravity ---o(%)	Unit Weight (g/cm ³) ---o--- Soil ---o--- Rock	Absorption (%) ---o--- Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)	
														Soil (kg/cm ²)	Rock (10 ³ kg/cm ²)			
		74.48	0.00		Silty Sand (AS)		Brown silty sand.		20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50			
1		74.08	0.40		Silty clay (AC)	Very Stiff	Pale brown silty clay.	S1									20	1
2							Reddish yellow silty clay.	S2									19	2
3	3.40						Dark brown silty clay.	S3									17	3
4								S4									24	4
5								S5									25	5
6							Gray silty clay.	S6									24	6
7								S7									22	7
8		86.18	8.30		Clay (RS)	Hard	Gray clay.	S8									26	8
9		85.48	9.00		Claystone (MS)		Moderate brown clay stone.	S9									51	9
10																	1230	10
11																	184	11
12																	440	12
13		81.88	12.60															13
14																		14
15																		15

Remarks :

- Symbol of Geological Formation
- BS: Banking Soil
 - AC: Alluvial Silt and Clay
 - AS: Alluvial Sand
 - AG: Alluvial Gravel
 - TC: Terrace Silt and Clay
 - TS: Terrace Sand
 - TG: Terrace Gravel
 - RS: Residual Soil
 - MS: Mudstone (Silt stone and Clay stone)
 - SS: Sand Stone
 - BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

15) R14-20L: Phabang River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)			
														(Soil) (kg/cm ²)	(Rock) (10 ³ kg/cm ²)					
		72.35	0.00																	
1					Silty clay (AC)	Medium	Dark brown silty clay.	S1										1		
2																		S2	7	
3																		S3	8	
4								Dark brown silty clay with sand										S4(UD)	6	
5	4.60					Soft	Dark brown silty clay.	S5										2		
6								S6										2		
7						stiff		S7										10		
8		84.85	7.50			Clay stone (MS)		Moderate brown clay stone.										S8		
9																				140
10		82.85	9.50																	255
11																			340	
12																				
13																				
14																				
15																				

Remarks : Symbol of Geological Formation

BS: Banking Soil	TC: Terrace Silt and Clay	MS: Mudstone (Silt stone and Clay stone)
AC: Alluvial Silt and Clay	TS: Terrace Sand	SS: Sand Stone
AS: Alluvial Sand	TG: Terrace Gravel	BA: Basalt
AG: Alluvial Gravel	RS: Residual Soil	

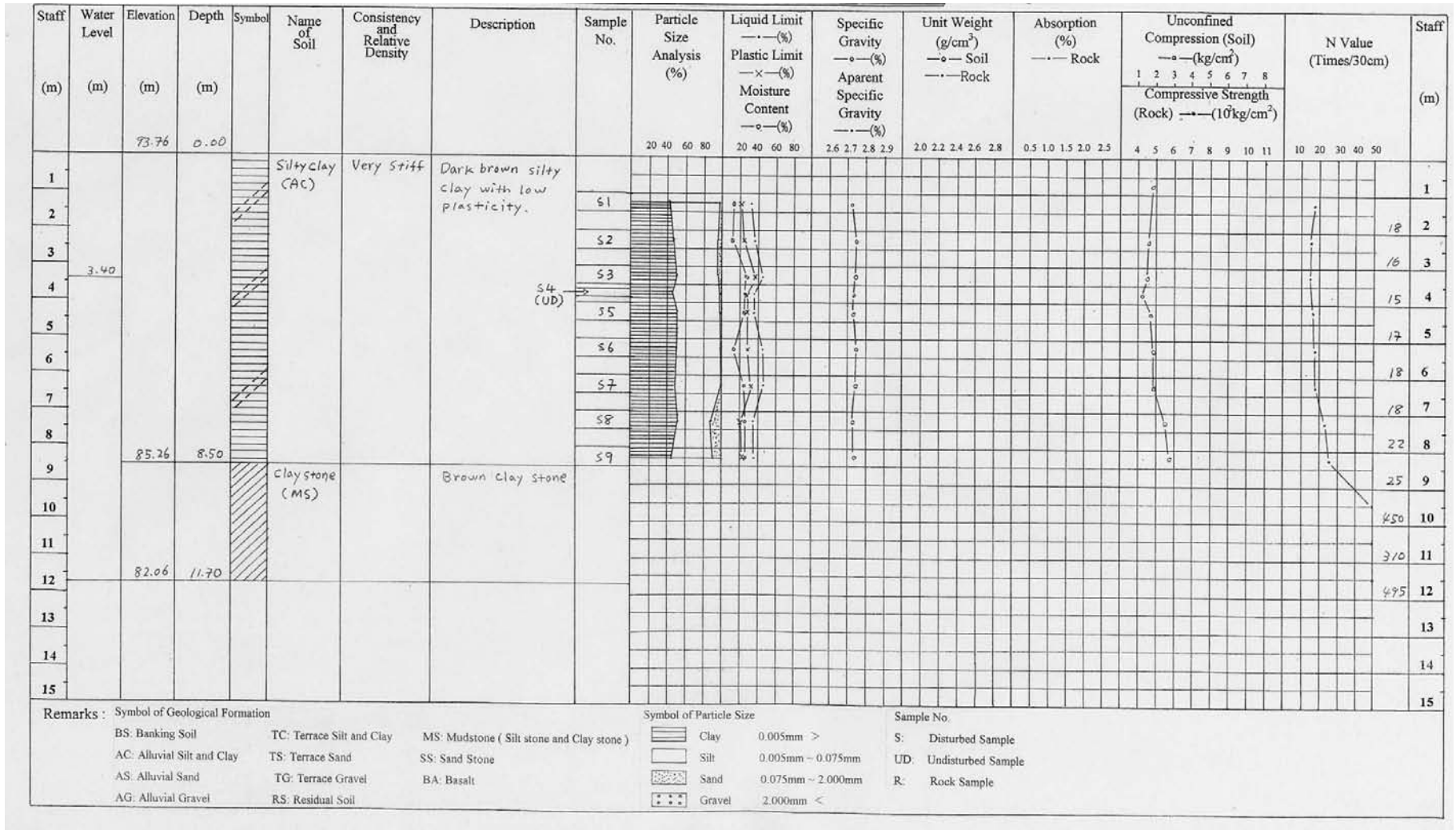
Symbol of Particle Size

	Clay	0.005mm >
	Silt	0.005mm - 0.075mm
	Sand	0.075mm - 2.000mm
	Gravel	2.000mm <

Sample No.

S:	Disturbed Sample
UD:	Undisturbed Sample
R:	Rock Sample

16) R14-20R: Phabang River



18) R14-21-2R: Kok River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)	
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)			
1		95.77	0.00		Silty Sand (AS)	Medium	Reddish brown silty sand	S1									11	1
2								S2									12	2
3								S3									21	3
4		91.47	4.30					S4									17	4
5					Silty Clay (AC)	Medium~Stiff	Reddish brown silty clay with sand	S5									7	5
6	5.60	87.77	6.00					S6									9	6
7					Clay stone (MS)		Red clay stone										246	7
8																	147	8
9																	830	9
10		85.77	10.00														308	10
11																		11
12																		12
13																		13
14																		14
15																		15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

19) R14-22L: Thateng River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil) ---(kg/cm ²)		N Value (Times/30cm)	Staff (m)			
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)					
1		101.22	0.00		Silt (AC)	Stiff	Dark brown silt.	S1									12	1		
2		99.12	2.10		Clay (RS)	Very Stiff ~ Hard	Dark brown clay. Red clay.	S2									14	2		
3				S3															15	3
4		96.72	4.50	S4															39	4
5				SS(R)				Clay Stone (MS)		Red clay stone.										330
6																	340	6		
7																	400	7		
8																	615	8		
9		92.22	9.00														1290	9		
10																		10		
11																		11		
12																		12		
13																		13		
14																		14		
15																		15		

Remarks: Symbol of Geological Formation
 BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
 AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
 AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
 AG: Alluvial Gravel RS: Residual Soil

Symbol of Particle Size
 Clay 0.005mm >
 Silt 0.005mm ~ 0.075mm
 Sand 0.075mm ~ 2.000mm
 Gravel 2.000mm <

Sample No.
 S: Disturbed Sample
 UD: Undisturbed Sample
 R: Rock Sample

20) R14-22R: Thateng River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit —(%) Plastic Limit —x(%) Moisture Content —o(%)	Specific Gravity —o(%) Aparent Specific Gravity —.(%)	Unit Weight (g/cm ³) —o— Soil —·— Rock	Absorption (%) —·— Rock	Unconfined Compression (Soil) —o—(kg/cm ²)		N Value (Times/30cm)	Staff (m)	
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) —·—(10 ³ kg/cm ²)			
		100.51	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50			
1					Silt (AC)	Stiff	Dark brown silt.	S1								10	1	
2		98.21	2.30		Clay (RS)	Very Stiff ~ Hard	Dark brown clay.	S2								11	2	
3					Clay (RS)	Very Stiff ~ Hard	Dark brown clay.	S3									27	3
4		96.31	4.20		Clay (RS)	Very Stiff ~ Hard	Red clay.	S4									32	4
5					Claystone (MS)		Red clay stone.	S5(R)									100	5
6		94.01	6.50		Claystone (MS)		Red clay stone.										137	6
7																308	7	
8																	8	
9																	9	
10																	10	
11																	11	
12																	12	
13																	13	
14																	14	
15																	15	

Remarks : Symbol of Geological Formation

BS: Banking Soil	TC: Terrace Silt and Clay	MS: Mudstone (Silt stone and Clay stone)
AC: Alluvial Silt and Clay	TS: Terrace Sand	SS: Sand Stone
AS: Alluvial Sand	TG: Terrace Gravel	BA: Basalt
AG: Alluvial Gravel	RS: Residual Soil	

Symbol of Particle Size

	Clay	0.005mm >
	Silt	0.005mm ~ 0.075mm
	Sand	0.075mm ~ 2.000mm
	Gravel	2.000mm <

Sample No.

S:	Disturbed Sample
UD:	Undisturbed Sample
R:	Rock Sample

21) R14-23L: Mampa River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit ---(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)		
		99.86	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1		98.36	1.50		Banking Soil (BS)	Hard	Dark brown silt with laterite.	S1								35	1
2		97.36	2.50		Silty clay (AC)	Stiff	Yellowish brown silty clay.	S2								14	2
3					clay (RS)	Hard	Dark olive gray clay with laterite.	S3								40	3
4								S4								42	4
5								S5								35	5
6	5.70	93.86	6.00		claystone (MS)		Red clay stone.	S6								42	6
7								S7(CR)								375	7
8																	8
9		90.86	9.00														9
10																	10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks : Symbol of Geological Formation
 BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
 AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
 AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
 AG: Alluvial Gravel RS: Residual Soil

Symbol of Particle Size
 Clay 0.005mm >
 Silt 0.005mm - 0.075mm
 Sand 0.075mm - 2.000mm
 Gravel 2.000mm <

Sample No.
 S: Disturbed Sample
 UD: Undisturbed Sample
 R: Rock Sample

22) R14-23R: Mampa River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)	
														(kg/cm ²)	(10 ³ kg/cm ²)			
1		97.89	0.00		Banking Soil (BS)	Stiff	Dark brown silt with laterite	S1									15	1
2		98.37	1.50		Silt (AC)	Very Stiff	Dark brown silt with laterite	S2									16	2
3		97.39	2.50		Clay (RS)	Hard	Reddish brown clay.	S3									49	3
4								S4									31	4
5		95.39	4.50		Clay Stone (MS)		Reddish brown clay stone.	S5(R1)									82	5
6								S6(R2)									110	6
7		92.89	7.00					S7(R3)									234	7
8																		8
9																		9
10																		10
11																		11
12																		12
13																		13
14																		14
15																		15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
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- AG: Alluvial Gravel
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- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

2) R16-1R: Makchan-Gnai River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)	
														(Soil) --- (kg/cm ²)	(Rock) --- (10 ³ kg/cm ²)			
									20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	1 2 3 4 5 6 7 8	4 5 6 7 8 9 10 11	10 20 30 40 50		
1	1.10	1142.38	0.00	○ ○ ○ ○ ○	Gravel (AG)		Green's gravel vesicular basalt with clay.										270	1
2		1140.08	2.30	○ ○ ○ ○ ○				SI(R)										2
3								Gravel										3
4																		4
5																		5
6																		6
7																		7
8																		8
9																		9
10																		10
11																		11
12																		12
13																		13
14																		14
15																		15

Remarks : Symbol of Geological Formation

- BS: Banking Soil TC: Terrace Silt and Clay MS: Mudstone (Silt stone and Clay stone)
- AC: Alluvial Silt and Clay TS: Terrace Sand SS: Sand Stone
- AS: Alluvial Sand TG: Terrace Gravel BA: Basalt
- AG: Alluvial Gravel RS: Residual Soil

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

3) R16-2L: Namtang River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit -x-(%) Moisture Content -o-(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression								N Value (Times/30cm)	Staff (m)		
														Soil (kg/cm ²)				Rock (10 ³ kg/cm ²)						10 20 30 40 50	
														1	2	3	4	1	2	3	4				
		821.89	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11											
1		821.37	0.50	---	Silt (TC)	Stiff	Brown silty and clayey laterite.	S1	100	100	2.7	2.4	1.0												
2		820.49	1.40	○	Gravel (TG)		Reddish gray basalt with sandy clay.	S2(R1)	100	100	2.7	2.4	1.0												
3				○				S3(R2)																	
4		818.39	3.50	○				Gravel																	
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									

Remarks : Symbol of Geological Formation

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- AG: Alluvial Gravel
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- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

4) R16-2R: Namtang River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit —(%) Plastic Limit —x(%) Moisture Content —o(%)	Specific Gravity —o(%) Aparent Specific Gravity —(%)	Unit Weight (g/cm ³) —o— Soil —x— Rock	Absorption (%) —x— Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)
														Soil (kg/cm ²)	Rock (10 ³ kg/cm ²)		
		821.88	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1		820.88	1.00		Silt+Clay (TC)	Medium	Brown clayey silt.	S1								6	1
2					Silty clay (TC)	Stiff Very stiff	Brown silty clay.	S2								11	2
3		819.08	2.80		Gravel (TG)		Cracky weathered basalt with yellowish brown clayey sand.	S3								30	3
4					Gravel (TG)			S4								180	4
5					Gravel (TG)			S5								210	5
6					Gravel (TG)			S6								195	6
7		818.88	7.00		Gravel (TG)			S7								300	7
8																	8
9																	9
10																	10
11																	11
12																	12
13																	13
14																	14
15																	15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
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- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

5) R16-3L: Xe Katam River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)																														
														(Soil) (kg/cm ²)	(Rock) (10 ³ kg/cm ²)																																
														1 2 3 4 5 6 7 8	10 20 30 40 50																																
1		497.83	0.00		Silty clay (TC)	Very stiff	Brown silty clay with sand and gravel.	S1									16	1																													
2								S2									17	2																													
3							Brown silty clay.	S3									15	3																													
4								S4									17	4																													
5						stiff		S5									11	5																													
6							Brown silty clay with sand and gravel.	S6									12	6																													
7	7.00	470.83	7.00			Very stiff		S7									20	7																													
8		470.33	7.50		Boulder (TG)		Basalt										410																														
9		489.33	8.50		Silty sand (TCr)	Dense	Silty sand with gravel.	S8									30	8																													
10		487.83	10.00		Basalt (BA)		Grayish green weathered vesicular basalt.	R1									240	9																													
11																		10																													
12																		11																													
13																		12																													
14																		13																													
15																		14																													
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BS: Banking Soil	TC: Terrace Silt and Clay	MS: Mudstone (Silt stone and Clay stone)																																													
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UD:	Undisturbed Sample																																														
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6) R16-3R: Xe Katam River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit —(%) Plastic Limit —x(%) Moisture Content —o(%)	Specific Gravity —o(%) Aparent Specific Gravity —(%)	Unit Weight (g/cm ³) —o— Soil —•— Rock	Absorption (%) —•— Rock	Unconfined Compression (Soil) —o—(kg/cm ²)		N Value (Times/30cm)	Staff (m)		
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) —•—(10 ³ kg/cm ²) 4 5 6 7 8 9 10 11				
1		498.57	0.00		Silty clay (TC)	Stiff	Grayish brown silty clay with gravel of sand stone.	S1									15	1	
2								S2										15	2
3								S3										12	3
4	4.20	495.17	3.40		Gravel (TG)		Grayish brown sandstone and basalt with clayey silt.	S4										87	4
5								S5										110	5
6								S6										146	6
7								S7										198	7
8		490.57	8.00					S8										163	8
9																			9
10																			10
11																			11
12																			12
13																			13
14																			14
15																			15

Remarks : Symbol of Geological Formation

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Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

7) R16-4L: Xe Namnoy River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit ---(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil) ---(kg/cm ²)		N Value (Times/30cm)	Staff (m)
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)		
		267.53	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50		
1		262.53	1.00		Silty clay (TC)	Very stiff	Silty clay with sand and gravel.	S1								24	1
2					Gravel (TG)		Sandstone and basalt with clayey sand.									210	2
3		260.53	3.00					S2							28	3	
4		259.93	3.60		Boulder (TG)		Basalt								141	3	
5					Gravel (TG)		Sandstone and basalt with clayey sand.	S3							26	4	
6		258.03	5.50		Boulder (TG)		Basalt and sandstone	R1							228	5	
7		256.93	6.60		Gravel (TG)		Sandstone and basalt with clayey sand.	Gravel (Basalt)							195	6	
8								S4							258	8	
9	2.60							S5							300	9	
10								S6							205	10	
11		253.03	10.50					S7							171	10	
12																	12
13																	13
14																	14
15																	15

Remarks: Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

9) R16-4R: Xe Namnoy River

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit ---(%) Plastic Limit ---(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)		
														(Soil) ---(kg/cm ²)	(Rock) ---(10 ³ kg/cm ²)				
		262.94	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50				
1		262.64	1.30		Silty clay (TC)	Very stiff	Reddish brown silty clay with sand and gravel.	S1									20	1	
2					Gravel (TG)		Sandstone and basalt with silty clay.	S2									31	2	
3		260.84	2.10		Boulder (TG)		Sandstone	S3									171	3	
4		260.34	2.60		Gravel (TG)		Sandstone and basalt with silty clay.	S4										246	4
5					Boulder (TG)		Sandstone	S5									215	5	
6		257.64	6.30		Gravel (TG)		Sandstone and basalt with silty clay.	S6										141	6
7		257.24	6.70		Boulder (TG)		Sandstone	S7									29	7	
8					Gravel (TG)		Sandstone and basalt with silty clay.	S8									85	8	
9					Gravel (TG)		Sandstone and basalt with silty clay.	S9									228	9	
10					Gravel (TG)		Sandstone and basalt with silty clay.										180	10	
11		252.94	11.00															11	
12																		12	
13																		13	
14																		14	
15																		15	

Remarks : Symbol of Geological Formation

- BS: Banking Soil
- AC: Alluvial Silt and Clay
- AS: Alluvial Sand
- AG: Alluvial Gravel
- TC: Terrace Silt and Clay
- TS: Terrace Sand
- TG: Terrace Gravel
- RS: Residual Soil
- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

12) R16-6L: Katak-Tok River (Ho River)

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%) 20 40 60 80	Liquid Limit ---(%) Plastic Limit ---(%) Moisture Content ---(%)	Specific Gravity ---(%) Aparent Specific Gravity ---(%)	Unit Weight (g/cm ³) --- Soil --- Rock	Absorption (%) --- Rock	Unconfined Compression (Soil)		N Value (Times/30cm)	Staff (m)		
														1 2 3 4 5 6 7 8	Compressive Strength (Rock) --- (10 ³ kg/cm ²)				
		267.06	0.00																
1		268.56	0.50		Silt (TC)		Silt with gravel	S1										270	1
2					Gravel (TG)		Sand stone with clayey sand.	S2										225	2
3		266.06	3.00					S3										45	3
4					Clay (TC)	very stiff	Yellowish brown silty clay with gravel.	S4										21	4
5		264.56	4.50					S5										150	5
6					Gravel (TG)		Sand stone with yellowish brown clayey sand.	S6										210	6
7		262.36	6.70																7
8					Silt stone (MS)		Reddish brown weathered silt stone.												8
9		260.36	8.70				(5.60 ~ 6.00m gray sand stone)	R1											9
10																			10
11																			11
12																			12
13																			13
14																			14
15																			15

Remarks: Symbol of Geological Formation

- BS: Banking Soil
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- MS: Mudstone (Silt stone and Clay stone)
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Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm ~ 0.075mm
- Sand 0.075mm ~ 2.000mm
- Gravel 2.000mm <

Sample No.

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample

13) R16-6R: Katak-Tok River (Ho River)

Staff (m)	Water Level (m)	Elevation (m)	Depth (m)	Symbol	Name of Soil	Consistency and Relative Density	Description	Sample No.	Particle Size Analysis (%)	Liquid Limit (%) Plastic Limit (%) Moisture Content (%)	Specific Gravity Aparent Specific Gravity (%)	Unit Weight (g/cm ³) Soil Rock	Absorption (%) Rock	Unconfined Compression		N Value (Times/30cm)	Staff (m)	
														(Soil) (kg/cm ²)	(Rock) (10 ³ kg/cm ²)			
		269.93	0.00						20 40 60 80	20 40 60 80	2.6 2.7 2.8 2.9	2.0 2.2 2.4 2.6 2.8	0.5 1.0 1.5 2.0 2.5	4 5 6 7 8 9 10 11	10 20 30 40 50			
1		269.63	0.30	○ ○	Silt (TC) Gravel (TG)		Silt with gravel sand stone with clayey sand.	S1									300	1
2		268.93	1.00	▨	clay (TC)	Stiff	Reddish brown silty clay with gravel.	S2									11	2
3				▨				S3									14	3
4				▨		very stiff		S4									16	4
5		264.63	5.30	○	Boulder (TG)		Sand stone.	S5									22	5
6		263.63	6.30	○	Gravel (TG)		Sand stone with sandy silt.	R1									180	6
7		262.43	7.50	○ ○ ○	Gravel (TG)		Reddish brown silt stone.	Gravel										7
8				▨	Silt stone (MS)													8
9																		9
10		260.93	9.50															10
11																		11
12																		12
13																		13
14																		14
15																		15

Remarks : Symbol of Geological Formation

- BS: Banking Soil
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- TC: Terrace Silt and Clay
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- TG: Terrace Gravel
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- MS: Mudstone (Silt stone and Clay stone)
- SS: Sand Stone
- BA: Basalt

Symbol of Particle Size

- Clay 0.005mm >
- Silt 0.005mm - 0.075mm
- Sand 0.075mm - 2.000mm
- Gravel 2.000mm <

Sample No

- S: Disturbed Sample
- UD: Undisturbed Sample
- R: Rock Sample