

TEST PIT No.4
(PEN STOCK)



Figure B-5-10 Photograph of Left Bank Test Pit No.4 (1/2)

TEST PIT
No. 4
(PENSTOCK)

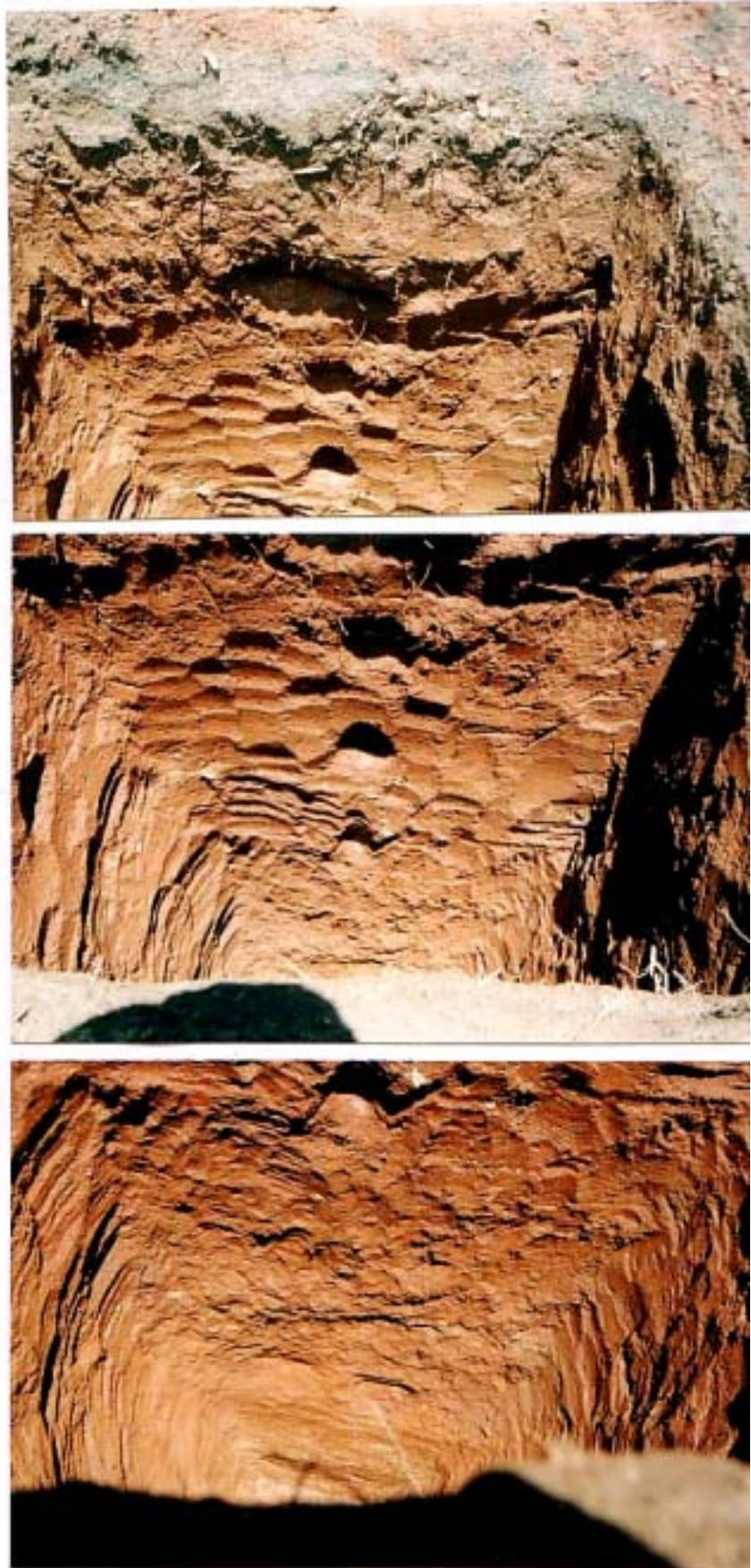


Figure B-5-11 Photograph of Left Bank Test Pit No.4 (2/2)

Geotechnical Engineering

LOG OF TEST PIT OR AUGER HOLE FOR BORROW AND FOUNDATION INVESTIGATIONS

Feature **POWER STATION** Project **HEHO HYDROPOWER PROJECT** Hole No. **TP-5**
 Area Designation----- Coordinates----- Ground Elevation----- Depth to Ground Water Level **NIL**
 Method of Excavation **Manual** Approx. Dimension of Hole **4'X 6'X 15'** Dates of Excavation **25/27-May-01** Hole Logged By **S.Lwin**

CLASSIFICATION SYMBOL		DEPTH (FEET)	SIZE AND TYPE OF SAMPLE TAKEN	CLASSIFICATION AND DESCRIPTION OF MATERIAL (SEE CHART UNIFIED SOIL CLASSIFICATION GIVE GEOLOGIC AND IN-PLACE DESCRIPTION FOR FOUNDATION INVESTIGATION)	PERCENTAGE OF COBBLES AND BOULDERS**				
					VOLUME OF HOLES SAMPLED (CUBIC FEET)	WEIGHT OF 2 TO 3 INCH SAMPLED (LBS)	PERCENTAGE BY VOLUME (%) TO 5 INCH	WEIGHT OF PLUS 5 INCH SAMPLED (LBS)	PERCENTAGE VOLUME OF PLUS TO 5 INCH
SOIL	" " "	0-8.5		0-8.5ft. Reddish brown silty clay (CL)					
	" " "	8.5-11.5		8.5-11.5ft Bedrock. Highly weathered reddish yellow ^{siltstone} and thin bedded limestone-moist and stiff					
	" " "	11.5-12.5		11.5-12.5ft ^{siltstone} Highly weathered yellow, highly plastic very stiff in excavation					
HW	/ / /	12.5-15		12.5-15ft Moderately weathered yellowish white siltstone, dry and dense. very hard to excavate manually. Foundation class CH					
REMARKS									
NOTES Record water test and density test data, if applicable, under remarks					*** (lbs of rock sampled /100)				
*Record after water has reached its natural level, give date of reading adjacent to graphic symbol or in remarks					(bulk specific gravity of rock)624 (Cubic feet hole sampled)				
**Applicable only to borrow pits and to foundations which are potential sources of construction materials					Record bulk specific gravity in remarks, stating how obtained (measured or estimated)				

Figure B-5-12 Log of Left Bank Test Pit No.5

TEST PIT No. 5
POWER HOUSE (TAIL RACE)

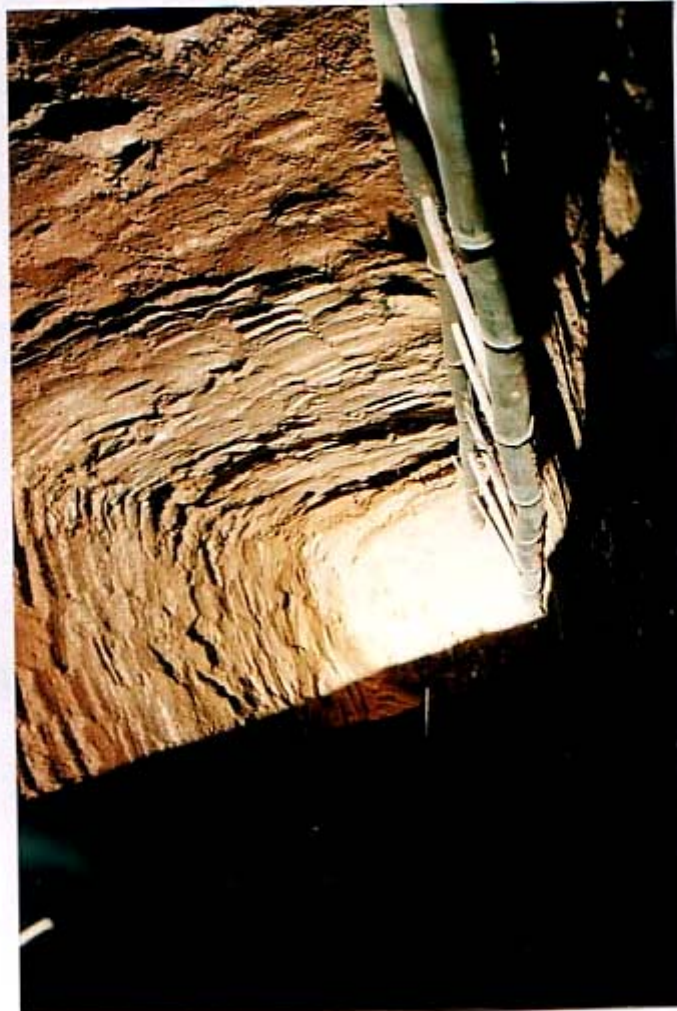
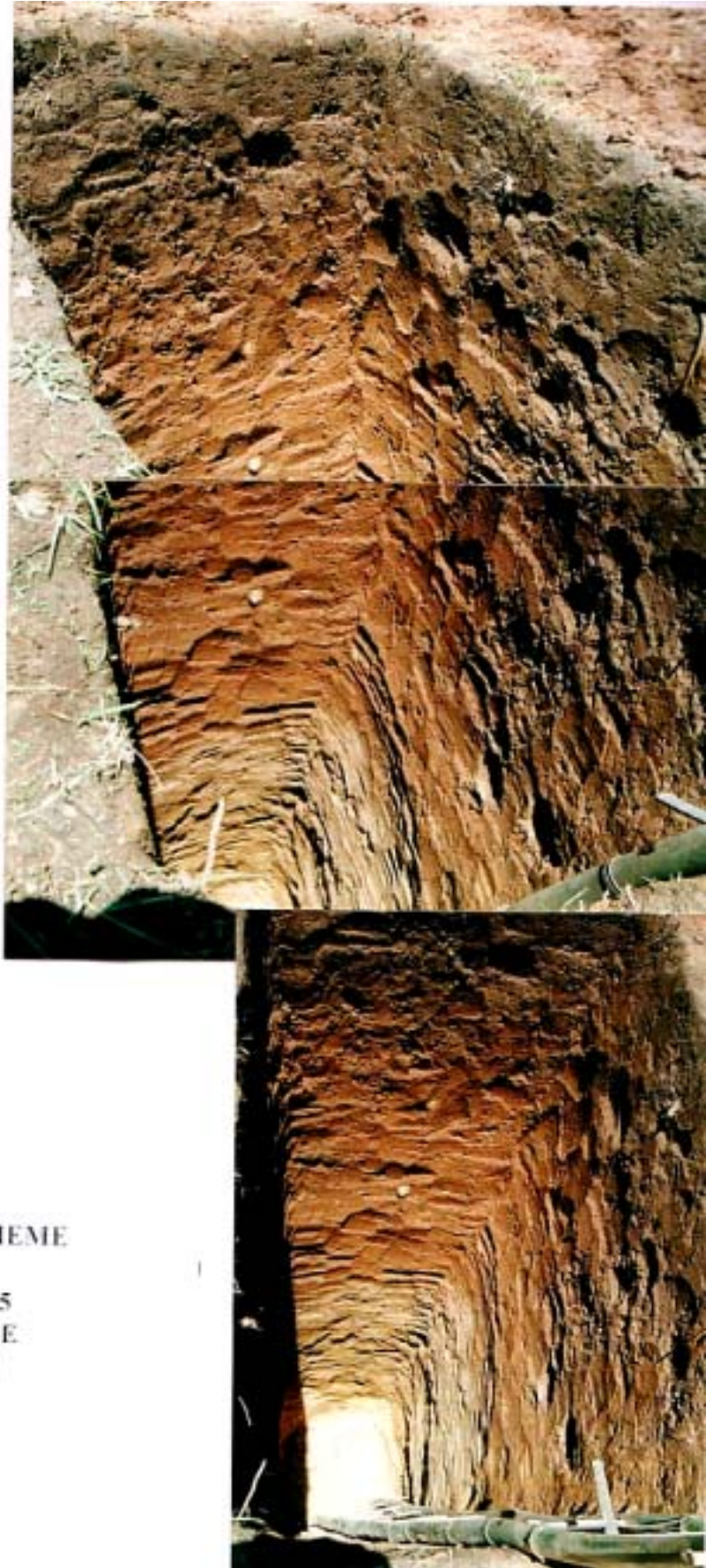


Figure B-5-13 Photograph of Left Bank Test Pit No.5 (1/2)



HEHO FALLS SCHEME

TEST PIT No. 5
POWER HOUSE
(TAIL RACE)

Figure B-5-14 Photograph of Left Bank Test Pit No.5 (2/2)

Figure B-5-15 Log of Right Bank Test Pit No.1

<p style="text-align: center;">GEODYNAMICS CO., LTD. Geotechnical Engineering</p> <p style="text-align: center;">LOG OF TEST PIT OR AUGER HOLE FOR BORROW AND FOUNDATION INVESTIGATIONS</p>												
Feature		Flat Plane, Right bank		Project		Heho Hydropower Project		Hole No.		1		
Area Designation		Intake Area		Coordinates		Ground Elevation		Depth to Ground Water Level		14 ft		
Method of Excavation		Manual		Approx; Dimension of Hole		4*6*14.5 ft		Dates of Excavation		19/21-12-01		
								Hole Logged By		S.Lwin		
CLASSIFICATION SYMBOL		DEPTH (FEET)	SIZE AND TYPE OF SAMPLE TAKEN	CLASSIFICATION AND DESCRIPTION OF MATERIAL (SEE CHART "UNITED SOIL CLASSIFICATION" GIVE GEOLOGIC AND IN-PLACE DESCRIPTION FOR FOUNDATION INVESTIGATIONS)				PERCENTAGE OF COBBLES AND BOULDERS **				
LETTER	GRAPHIC							VOLUME OF FINE SANDS (% OF TOTAL)	PERCENT OF SILT AND CLAY	PERCENTAGE OF VOLUME OF 1 TO 10 CM	WEIGHT OF PLUS 10 CM SAMPLES	PERCENTAGE OF VOLUME OF PLUS 10 CM
		0-1.5 1.5-2.3 2.3-2.5 2.5-4.5 4.5-4.9 4.9-6.3 6.3-6.5 6.5-7.7 7.7-8.0 8.0-14 14-14.5		0-1.5	Dark grey, silty clayey soil with shell pieces, and vegetation roots. Moist, little cohesive.							
				1.5-2.3	Whitish yellow, calcareous sand, derived from tuffa. Loose, moist.							
				2.3-2.5	Grey, ashy color, silty Paleo-soil layer, slightly plastic, moist, with pieces of tuffa							
				2.5-4.5	Whitish yellow - calcareous sand, derived from tuffa, with pieces of tuffa, moist, soft, easy to excavate with hand tools.							
				4.5-4.9	2 nd layer of paleo-soil, Grey ashy color, slightly plastic, moist.							
				4.9-6.3	Whitish yellow - tuffaceous sand with pieces of tuff.							
				6.3-6.5	3 rd layer of paleo-soil grey, slightly plastic, moist.							
				6.5-7.7	Yellowish white - tuffaceous sand, soft, moist.							
				7.7-8.0	4 th layer of grey paleo-soil, slightly plastic, moist.							
				8.0-14	Yellowish white - tuffaceous sand with pieces of tuffa, soft, moist.							
				14-14.5	5 th layer of grey paleo-soil, saturated, soft							
<p>REMARKS: Besides the top dark gray, silty clayey soil layer, five horizons of paleo-soil layer are observed in this test pit, indicating that there are at least six¹ times of deposition and hiatus took place in the past at this site.</p>												
<p>NOTES: Record water level and slant test data, if applicable, under space. ¹ Record after water has reached its state of level, give date of reading adjacent to graphic symbol or in remarks. ** Applicable only to borrow pits and to foundations which are potential sources of construction materials. *** 1 lb. of rock sampled 1 1/2" (Check specific gravity of rock) 62.4 (if not list of hole sampled) Record ball, specific gravity in Remarks, noting how obtained (corrected or corrected)</p>												

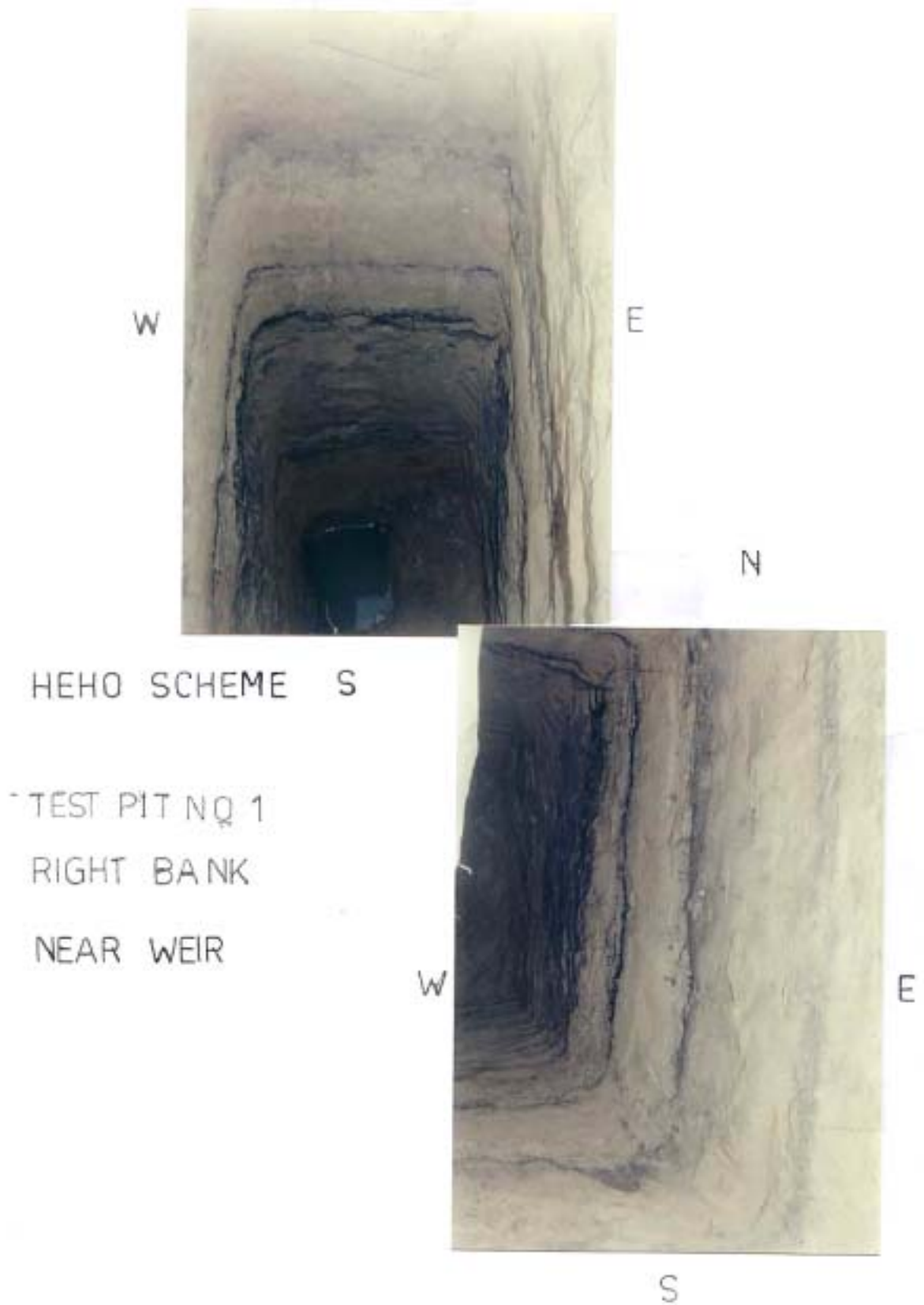


Figure B-5-16 Photograph of Right Bank Test Pit No.1 (1/3)



Figure B-5-17 Photograph of Right Bank Test Pit No.1 (2/3)

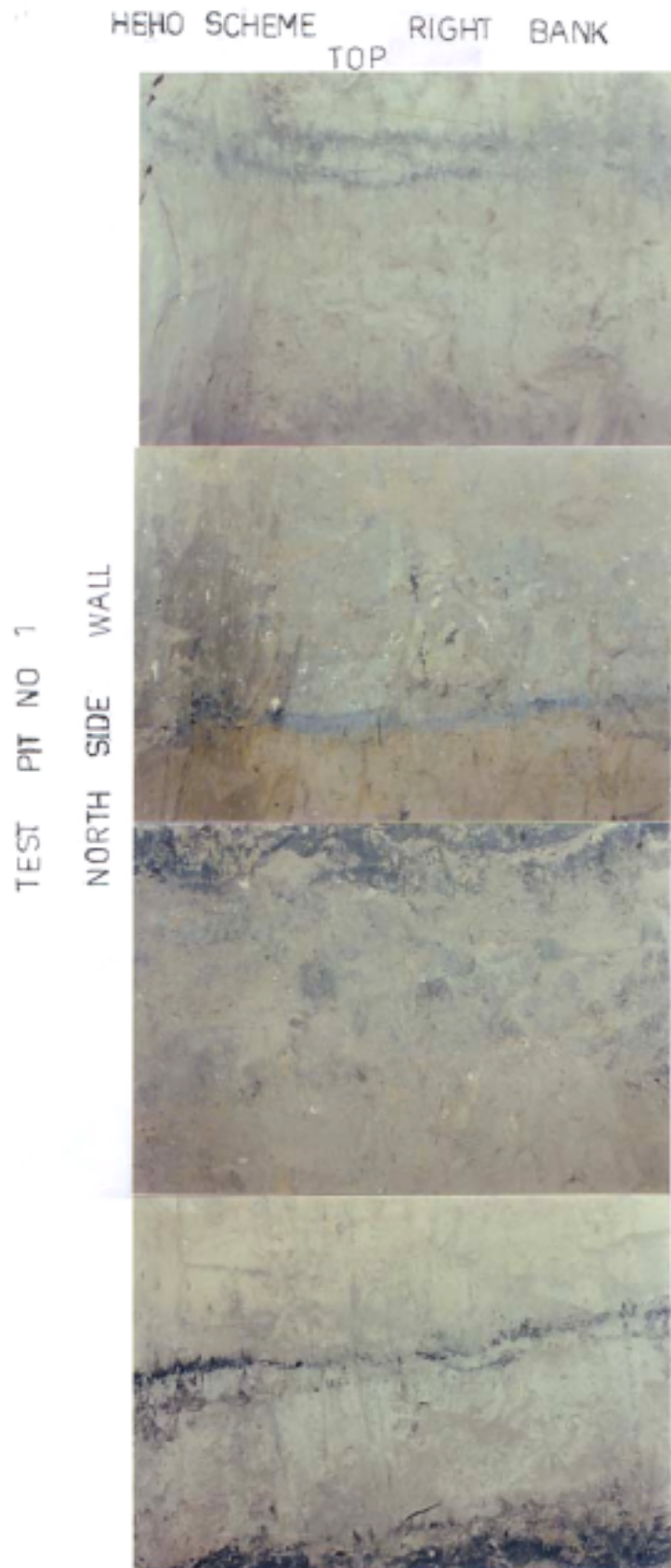


Figure B-5-18 Photograph of Right Bank Test Pit No.1 (3/3)

Figure B-5-19 Log of Right Bank Test Pit No.2

<p style="text-align: center;">GEODYNAMICS CO., LTD. Geotechnical Engineering</p> <p style="text-align: center;">LOG OF TEST PIT OR AUGER HOLE FOR BORROW AND FOUNDATION INVESTIGATIONS</p>									
Feature		Slightly sloping Ground		Project	Heho Hydropower Project	Hole No.	2		
Area Designation		Penstock alignment		Coordinates		Ground Elevation	910 (approx)		
Method of Excavation		Manual		Approx; Dimension of Hole	4*6*7.5 ft	Dates of Excavation	19/21-12-01		
						Hole Logged By	S.Lwin		
CLASSIFICATION SYMBOL		DEPTH (FEET)	SIZE AND TYPE OF SAMPLE TAKEN	CLASSIFICATION AND DESCRIPTION OF MATERIAL (SEE CHART "UNIFIED SOIL CLASSIFICATION" GIVE GEOLOGIC AND IN-PLACE DESCRIPTION FOR FOUNDATION INVESTIGATIONS)	PERCENTAGE OF COBBLES AND BouldERS **				
LETTER	GRAPHIC				PERCENT OF COBBLES & BouldERS	WEIGHT OF 1 TO 100% SAMPLE(S)	VOLUME OF 1 TO 100% SAMPLE(S)	WEIGHT OF PLUS 100% SAMPLE(S)	PERCENT OF PLUS 100% SAMPLE(S)
		0-3.5		Reddish brown highly plastic, moist, slope wash materials mixed with 3-12 inches subangular limestone pebbles and boulders.					
		3.5-7.0		Reddish brown highly plastic, moist, slope wash materials with scattered limestone pebbles, subangular to subrounded.					
		7.0-7.5		Limestone boulder, 1.5-2.0 ft, subangular, covered the whole test pit bottom. The observed mode of deposition of the boulders at the pit bottom indicated that the stream on the left of this pit, once flow over this place.					
<p>REMARKS</p> <p>The ground between this test pit and about the contour No. 910 (approx) is made up of talus materials. The limestone boulders are slightly weathered with whitish weathered crust.</p>									
<p>NOTES: Record name test and describe test data, if applicable, under remarks. * Record other notes for unusual features of soil, give date of reading adjacent to graphic number in remarks. ** Applicable only to borrow pits and to foundations which are potential sources of construction material.</p>									