

### SUBSURFACE EXPLORATION LOG

BORING NO : BB-9  
SHEET : 1 OF 1  
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA  
LOCATION : BORROW AREA - B  
FEATURE :  
AREA DESIGNATION :  
GROUND ELEVATION : Z = 185.166  
COORDINATES : X = 421245.842 Y = 9222577.891  
DEPTH OF GWL : NONE

COMMENCEMENT DATE : 22 August 1988  
COMPLETION DATE : 22 August 1988  
ANGLE : Vertical BEARING :  
DRILLER : Yudi Koesasih  
SUPERVISOR : H. Oka  
LOGGED : Rudy M. A. S.  
DRILLING MACHINE : KOKEN OE-2L

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16			
														WATER PRESSURE TEST	REMARKS				
DATE	SCALE	DEPTH IN METER	DEPTH IN METER	CORE BARREL & BIT TYPE	DEPTH OF WATER LOSS	GRAPH OF ROD	METHOD OF SAMPLING	DESCRIPTION OF LITHOLOGY	ROCK CLASSIFICATION	WEATHERING	HARDNESS	JOINT SPACING	S.P.T. BLOW/30CM	GRAV. SEC. LOG	LOGGON				
22 AUGUST 1988		0.50		STC dia. 89 mm.	NONE			0.00 - 0.50 m : TOP SOIL (SILT CLAY), brown, high plasticity, firm, moist.	St										
		1.00						0.50 - 7.10 m : CLAY, red, high plasticity, firm to stiff, moist.											
		2.00																	
		3.00																	
		4.00																	
		5.00																	
		6.00																	
		7.10						7.10 - 9.50 m : CLAYEY SILT, yellowish brown to grey, medium to high plasticity, firm to stiff, moist.	St										
		8.00																	
		9.50						9.50 - 10.00 m : Original rock: SANDY TUFF, grey, firm, moist.	St										
		10.00						BOTTOM OF HOLE	St										

Fig. 3.2.19 Subsurface Exploration Log No. BB - 9

### SUBSURFACE EXPLORATION LOG

BORING NO : BB-10  
SHEET : 1 OF 1  
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA  
LOCATION : BORROW AREA - B  
FEATURE :  
AREA DESIGNATION :  
GROUND ELEVATION : Z = 182.181  
COORDINATES : X = 421559.339 Y = 9222769.092  
DEPTH OF GWL : NONE

COMMENCEMENT DATE : 22 August 1988  
COMPLETION DATE : 22 August 1988  
ANGLE : Vertical BEARING :  
DRILLER : Yudi Koesasih  
SUPERVISOR : H. Oka  
LOGGED : Rudy M. A. S.  
DRILLING MACHINE : YSO-1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16			
														WATER PRESSURE TEST	REMARKS				
DATE	SCALE	DEPTH IN METER	DEPTH IN METER	CORE BARREL & BIT TYPE	DEPTH OF WATER LOSS	GRAPH OF ROD	METHOD OF SAMPLING	DESCRIPTION OF LITHOLOGY	ROCK CLASSIFICATION	WEATHERING	HARDNESS	JOINT SPACING	S.P.T. BLOW/30CM	GRAV. SEC. LOG	LOGGON				
22 AUGUST 1988		0.50		STC dia. 73 mm.	NONE			0.00 - 0.40 m : TOP SOIL (SILTY CLAY), brown, high plasticity, very soft, moist. Containing some amount of plant roots.	St										
		1.00						0.40 - 3.30 m : CLAY, brownish red to red, high plasticity, firm to stiff, moist.											
		2.00																	
		3.00																	
		4.00																	
		5.00																	
		6.00																	
		7.00																	
		8.00																	
		9.00						3.30 - 5.60 m : SILT, brown to yellowish brown with white, grey, yellow & red staining, medium to high plasticity, firm to stiff, moist.	St										
		10.00						5.60 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE	St										
		10.00						BOTTOM OF HOLE	St										

Fig. 3.2.20 Subsurface Exploration Log No. BB - 10



SUBSURFACE EXPLORATION LOG

BORING NO BB-13  
SHEET 1 OF 1  
TOTAL DEPTH 10.00 M

PROJECT ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA  
LOCATION BORROW AREA - B  
FEATURE  
AREA DESIGNATION  
GROUND ELEVATION Z = 122.719  
COORDINATES X = 428177.338 Y = 9222035.381  
DEPTH OF GWL NONE  
COMPLETION DATE 28 August 1998  
COMPLETION DATE 28 August 1998  
ANGLE Vertical BEARING  
DRILLER Yaka / Kosasih  
SUPERVISOR H. Oka  
LOGGED Rudy M. Sampo  
DRILLING MACHINE VSO-1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DATE	SCALE	DEPTH IN METERS	DEPTH IN FEET	DEPTH IN METERS	DEPTH IN FEET	GRAPH OF ROD	DESCRIPTION OF LITHOLOGY	DRILLING MACHINE	WATER PRESSURE TEST	REMARKS						REMARKS
28 AUGUST 1998		0.00	0.00	0.00	0.00	GRAPH OF ROD	0.00 - 0.43 m: TOP SOIL (SILTY CLAY), brown, unplastic, very soft, dry. Containing some amount of plant roots.	St								
		0.43	1.41	0.43	1.41	GRAPH OF ROD	0.43 - 5.70 m: CLAY, reddish brown to red, high plasticity, firm to stiff, moist.	St								
		5.70	18.70	5.70	18.70	GRAPH OF ROD	5.70 - 7.80 m: CLAYEY SILT, brown to yellowish brown with white, yellow, orange & grey specklings, high to medium plasticity, firm, moist (SW - MW of tuff).	St								
		7.80	25.59	7.80	25.59	GRAPH OF ROD	7.80 - 10.00 m: Original rock, TUFFACEOUS SANDSTONE.	Rw								
		10.00	32.81	10.00	32.81	GRAPH OF ROD	BOTTOM OF HOLE	Rw								

Fig. 3.2.23 Subsurface Exploration Log No. BB - 13

SUBSURFACE EXPLORATION LOG

BORING NO BB-14  
SHEET 1 OF 1  
TOTAL DEPTH 10.00 M

PROJECT ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA  
LOCATION BORROW AREA - B  
FEATURE  
AREA DESIGNATION  
GROUND ELEVATION Z = 181.987  
COORDINATES X = 428287.648 Y = 9222888.725  
DEPTH OF GWL NONE  
COMPLETION DATE 28 August 1998  
COMPLETION DATE 28 August 1998  
ANGLE Vertical BEARING  
DRILLER Yaka / Kosasih  
SUPERVISOR H. Oka  
LOGGED Tony Estimana  
DRILLING MACHINE KOKEN OE-2L

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DATE	SCALE	DEPTH IN METERS	DEPTH IN FEET	DEPTH IN METERS	DEPTH IN FEET	GRAPH OF ROD	DESCRIPTION OF LITHOLOGY	DRILLING MACHINE	WATER PRESSURE TEST	REMARKS						REMARKS
25 AUGUST 1998		0.00	0.00	0.00	0.00	GRAPH OF ROD	0.00 - 0.20 m: TOP SOIL (SILTY CLAY), reddish brown, soft, unplastic to medium plasticity, moist, containing some amount of plant roots.	St								
		0.20	0.66	0.20	0.66	GRAPH OF ROD	0.20 - 2.80 m: SILTY CLAY, reddish brown to red, firm to medium soil, high plasticity, containing some amount of white speckles of tuff materials, and/or gravel at 4.30 - 4.43 m depth.	St								
		2.80	9.19	2.80	9.19	GRAPH OF ROD	2.80 - 7.43 m: CLAYEY SILTY, with a little amount of sand, brown to yellowish brown, stiff to firm, medium plasticity, containing some amount of white speckles of tuff materials derived from weathered tuff.	St								
		7.43	24.38	7.43	24.38	GRAPH OF ROD	7.43 - 10.00 m: Original rock, TUFFACEOUS SANDSTONE.	Rw								
		10.00	32.81	10.00	32.81	GRAPH OF ROD	BOTTOM OF HOLE	Rw								

Fig. 3.2.24 Subsurface Exploration Log No. BB - 14

LOG OF TEST PIT

HOLE	TPA - 1
DEPTH	5.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - A  
 DATE COMMENCED : 03 September 1998  
 DATE COMPLETED : 06 September 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 216.650 m  
 FOREMAN : Agus S.  
 LOGGED BY : Agus S.  
 SUPERVISED BY : H. Otaka  
 COORDINATE: X = 427656.365 Y = 9220605.249

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.30	St	St	St	St	TOP SOI (HUMUS).
1.00	0.30	0.30	0.30	0.30	CLAY: reddish brown, medium to high plasticity, stiff to hard, moist in place, having cobbles (tuff) at 4.00 meter depth.
2.00	Sr	Sr	Sr	Sr	
3.00	0.30	0.30	0.30	0.30	SAMPLING at 2.50 m depth (U) and at 4.50 m depth (L).
3.80	-Sb	-Sb	-Sb	-Sb	
4.00	3.80	3.80	3.80	3.80	CLAYEY SILT: yellowish brown, medium plasticity, firm to stiff, having small amount of gravels & boulders max. dia. 20.0 cm (weathered, breccia, subrounded).
5.00	-Sb	-Sb	-Sb	-Sb	

Fig. 3.2.25 Log of Test Pit No. TPA - 1

LOG OF TEST PIT

HOLE	TPA - 2
DEPTH	5.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - A  
 DATE COMMENCED : 03 September 1998  
 DATE COMPLETED : 06 September 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 216.213 m  
 FOREMAN : Agus S.  
 LOGGED BY : Agus S.  
 SUPERVISED BY : H. Otaka  
 COORDINATE: X = 427656.365 Y = 9220505.249

DEPTH (m)	WALL I (East)	WALL II (South)	WALL III (West)	WALL IV (North)	DESCRIPTION
0.3	St	St	St	St	TOP SOI (HUMUS).
1.00	0.30	0.30	0.30	0.30	CLAY: reddish brown, high plasticity, stiff to hard, moist, having small amount of plant roots.
2.00	Sr	Sr	Sr	Sr	
3.00	0.30	0.30	0.30	0.30	SAMPLING at 2.00 m depth (U) and at 4.00 m depth (L).
4.00	-Sb	-Sb	-Sb	-Sb	
5.00	0.30	0.30	0.30	0.30	

Fig. 3.2.26 Log of Test Pit No. TPA - 2

LOG OF TEST PIT

HOLE	TPA - 3
DEPTH	5.00 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE : GROUND WATER LEVEL : NONE m  
 AREA DESIGNATION : BORROW AREA - A GROUND ELEVATION : 214.095 m  
 DATE COMMENCED : 13 September 1998 COORDINATE: X = 427683.448 Y = 9220403.383  
 DATE COMPLETED : 15 September 1998 FOREMAN : TONNY LESMANA  
 LOGGED BY : TONNY LESMANA  
 SUPERVISED BY : H. OTAKA

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.30	St	St	St	St	TOP SOIL (SANDY SILT): brown, soft, low plasticity, dry; containing some amount of plant roots.
1.00					SILTY CLAY: red, firm to stiff, high plasticity, moist; having black speckles.
2.00	Sr	Sr	Sr	Sr	CLAYEY SILT: yellowish red, low to medium plasticity, soft to firm, moist; having black speckles.
3.00					PYROCLASTIC ROCK: coarse grained, andesite & pumice (as component, dia. 0.5 - 2.0 cm), tuff (as ground mass), high to completely weathered, with yellow mottles of iron oxide and black mottles of carbon.
4.00					Note:
4.60	Rw	Rw	Rw	Rw	
5.00					

Fig. 3.2.27 Log of Test Pit No. TPA - 3

LOG OF TEST PIT

HOLE	TPA - 4
DEPTH	4.40 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE : GROUND WATER LEVEL : NONE m  
 AREA DESIGNATION : BORROW AREA - A GROUND ELEVATION : 213.239 m  
 DATE COMMENCED : 16 September 1998 COORDINATE: X = 427686.341 Y = 9220304.287  
 DATE COMPLETED : 18 September 1998 FOREMAN : TONNY LESMANA  
 LOGGED BY : TONNY LESMANA  
 SUPERVISED BY : H. OTAKA

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.50	St	St	St	St	TOP SOIL (SANDY SILT): brown, soft, low plasticity, dry; containing some amount of plant roots.
1.00					SILTY CLAY: red, firm to stiff, high plasticity, moist; having black speckles.
2.00	Sr	Sr	Sr	Sr	CLAYEY SILT: yellowish red, low to medium plasticity, soft to firm, moist; having black speckles.
2.50					PYROCLASTIC ROCK: yellow, coarse grained, andesite & pumice (as component, dia. 0.5 - 2.0 cm), tuff (as ground mass), highly to completely weathered (HW - CW), with yellow mottles of iron oxide and black mottles of carbon, CL-L.
3.00					Note:
4.00					
4.10					
4.40					
5.00					

Fig. 3.2.28 Log of Test Pit No. TPA - 4

LOG OF TEST PIT

HOLE	TPB - 1
DEPTH	4.90 m.

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - B  
DATE COMMENCED : 29 August 1998  
DATE COMPLETED : 2 September 1998

GROUND WATER LEVEL : NONE m  
GROUND ELEVATION : 190.459 m  
COORDINATE: X = 427565.923 Y = 9222573.977

FOREMAN :  
LOGGED BY : Rudy Muiranto  
SUPERVISED BY: H. Otaka



DEPTH (m)	WALL I	WALL II	WALL III	WALL IV	DESCRIPTION
0.40	St 0:40	St 0:20	St 0:35	St 0:35	SILTY CLAY (TOP SOIL): brown, very soft, unplasticity, dry, occasionally gravels, red - orange, hard, dia. up to 1.00 cm, containing some amount of plant roots.
1.00	Sr	Sr	Sr	Sr	CLAY: reddish brown, high plasticity, firm, moist, no fragment of original rock.
2.00					SAMPLING at 2.00 m depth (U) and at 4.00 m depth (L).
3.00					
3.60	Sb 3:60	Sb 3:70	Sb 3:70	Sb 3:75	
4.00					SILTY CLAY: brown to yellowish brown with white, yellow, orang & grey speckling of weathered fragments, high to medium plasticity, firm, moist. (HW of tufaceous sandstone).
4.90					

Fig. 3.2.29 Log of Test Pit No. TPB - 1

LOG OF TEST PIT

HOLE	TPB - 2
DEPTH	4.50 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - B  
DATE COMMENCED : 29 August 1998  
DATE COMPLETED : 01 September 1998

GROUND WATER LEVEL : NONE m  
GROUND ELEVATION : 187.145 m  
COORDINATE: X = 427588.264 Y = 9222659.597

FOREMAN :  
LOGGED BY : Rudy Muiranto  
SUPERVISED BY: H. Otaka



DEPTH (m)	WALL I	WALL II	WALL III	WALL IV	DESCRIPTION
0.20	St 0:20	St 0:20	St 0:20	St 0:20	SILTY CLAY (TOP SOIL): brown, very soft, unplasticity, very soft, dry, no fragments; occasionally gravels with dia. up to 0.50 cm, containing some amount of plant roots.
1.00	Sr	Sr	Sr	Sr	CLAY: reddish brown, high plasticity, firm, moist, no fragments of original rock.
2.00					SAMPLING at 2.00 m depth (U) and at 4.00 m depth (L).
3.00	Sb 3:20	Sb 3:00	Sb 3:20	Sb 3:00	
4.00					SILTY CLAY: brown to yellowish brown with white, yellow & orange & grey specklings of weathered fragments, medium to high plasticity, firm, moist (HW of tufaceous sandstone).
4.50					

Fig. 3.2.30 Log of Test Pit No. TPB - 2

LOG OF TEST PIT

HOLE	TPB - 3
DEPTH	4.80 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE : GROUND WATER LEVEL : NONE m FOREMAN :  
 AREA DESIGNATION : BORROW AREA - B GROUND ELEVATION : 187.145 m LOGGED BY : Rudy Muiranto  
 DATE COMMENCED : 29 August 1998 COORDINATE: X = 427688.264 Y = 9222659.597 SUPERVISED BY: H. Otaka  
 DATE COMPLETED : 01 September 1998

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.20	St 0:30	St 0:30	St 0:30	St 0:30	TOP SOIL (SILTY CLAY): dark brown, firm, high plasticity, moist; containing some amount of plant roots.
1.00	Sr	Sr	Sr	Sr	SILTY CLAY: brownish red, firm, high plasticity, moist; sometimes containing plant roots, andesite boulder at 1.00 m depth with dia. 40 cm.
2.00					SAMPLING at 2.50 m depth (U). and at 4.50 m depth (L).
3.00	Sb 3:10	Sb 3:10	Sb 3:10	Sb 3:00	CLAYEY SILT (derived from weathered TUFF): brown to yellowish brown, firm, medium to low plasticity, moist; white speckles of tuff materials with yellow & red mottled, tuaf and andesite boulders at 3.00 m depth with dia. 40 cm.
4.00					
4.80					

Fig. 3.2.31 Log of Test Pit No. TPB - 3

LOG OF TEST PIT

HOLE	TPB - 4
DEPTH	4.60 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE : GROUND WATER LEVEL : NONE m FOREMAN :  
 AREA DESIGNATION : BORROW AREA - B GROUND ELEVATION : 178.706 m LOGGED BY : Tonny Lesmana  
 DATE COMMENCED : 24 August 1998 COORDINATE: X = 428293.494 Y = 9222994.857 SUPERVISED BY: H. Otaka  
 DATE COMPLETED : 28 August 1998


DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.20	St 0:30	St 0:30	St 0:30	St 0:30	TOP SOIL (SILTY CLAY): dark brown, medium plasticity, hard, dry; containing some amount of plant roots & occasionally tuff gravels.
1.00	Sr	Sr	Sr	Sr	SILTY CLAY: red to brownish red, high plasticity, stiff to firm, moist, containing small amount of plant roots.
2.00					Note:  SAMPLING at 2.50 m depth (U). and at 4.20 m depth (L).
3.00					
4.00	Sb 3:50	Sb 3:50	Sb 3:50	Sb 3:50	CLAYEY SILT (derived from weathered TUFF): brown to yellowish brown, medium to high plasticity, firm, moist.
4.60					

Fig. 3.2.32 Log of Test Pit No. TPB - 4

LOG OF TEST PIT

HOLE	TPB - 5
DEPTH	4.60 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - B  
 DATE COMMENCED : 24 August 1998  
 DATE COMPLETED : 28 August 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 172.256 m  
 COORDINATE: X = 428297.075 Y = 9223123.024  
 FOREMAN :  
 LOGGED BY : Tonny Lesmana  
 SUPERVISED BY : H. Otaka



DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.20	St 0-20	St 0-20	St 0-20	St 0-20	TOP SOIL (CLAYEY SILT): brown, low plasticity, firm, dry; containing some amount of plant roots.
1.00	Sr	Sr	Sr	Sr	SILTY CLAY: red to yellowish red, high plasticity, stiff to firm, moist, with black mottled.
2.00					CLAYEY SILT (derived from weathered TUFF): brown to yellowish brown, high plasticity, firm, small amount of yellow & white mottled of tuff materials.
3.00	2.70 Sb	2.70 Sb	2.70 Sb	2.70 Sb	SAMPLING at 2.00 m depth (U) and at 4.20 m depth (L).
4.00					
4.60					
5.00					

Fig. 3.2.33 Log of Test Pit No. TPB - 5

LOG OF TEST PIT

HOLE	TPB - 6
DEPTH	5.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - B  
 DATE COMMENCED : 29 August 1998  
 DATE COMPLETED : 2 September 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 181.084 m  
 COORDINATE: X = 428349.404 Y = 9222971.969  
 FOREMAN :  
 LOGGED BY : Tonny Lesmana  
 SUPERVISED BY : H. Otaka



DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
0.30	St 0-30	St 0-30	St 0-30	St 0-30	TOP SOIL (SILTY CLAY): dark brown, medium plasticity, firm, moist; containing some amount of plant roots.
1.00	Sr	Sr	Sr	Sr	SILTY CLAY: reddish brown to red, high plasticity, firm to stiff, moist; occasionally boulders of tuff with dia. up to 30.00 cm.
2.00					SAMPLING at 3.00 m depth (U) and at 5.00 m depth (L).
3.00					
4.00					CLAYEY SILT (derived from weathered tuff): brown to reddish brown, medium plasticity, firm, moist; containing small amount of black minerals.
4.30	4.30 Sb	4.30 Sb	4.30 Sb	4.30 Sb	
5.00					

Fig. 3.2.34 Log of Test Pit No. TPB - 6



LOG OF TEST PIT

HOLE	TPD - 1
DEPTH	4.80 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - B  
 DATE COMMENCED : 04 September 1998  
 DATE COMPLETED : 08 September 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 150.131 m  
 COORDINATE: X = 428228.059 Y = 9222305.693  
 FOREMAN :  
 LOGGED BY : Agus S.  
 SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (South)	WALL II (West)	WALL III (North)	WALL IV (East)	DESCRIPTION
1.00	St	St	St	St	TOP SOIL (HUMUS). SILTY CLAY: reddish brown, moist; containing some amount of plant roots and small amount of sand, gravels, boulders, with dia. up to 30.00 cm (weathered tuff), high plasticity, stiff to hard. Sampling: at 2.50 m depth.
1.30	1-30	1-30	1-30	1-30	
2.00	Sr	Sr	Sr	Sr	Note : SAMPLING at 2.50 m depth (U). and at 4.50 m depth (L).
3.00	3-20	3-20	3-20	3-20	
4.00	Sb	Sb	Sb	Sb	SILTY CLAY: light brown, moist in place, high plasticity, small amount of weathered gravels and sand, stiff to hard. Sampling: at 4.50 m depth.
4.80					

Fig. 3.2.35 Log of Test Pit No. TPD - 1

LOG OF TEST PIT

HOLE	TPD - 2
DEPTH	4.90 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - B  
 DATE COMMENCED : 01 September 1998  
 DATE COMPLETED : 04 September 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 139.759 m  
 COORDINATE: X = 428258.511 Y = 9222352.942  
 FOREMAN :  
 LOGGED BY : Agus S.  
 SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (South)	WALL II (West)	WALL III (North)	WALL IV (East)	DESCRIPTION
1.00	St	St	St	St	TOP SOIL (HUMUS). SILTY CLAY: reddish brown to brown, high plasticity, stiff to hard, moist in place, small amount of plant roots.
2.00	0-20	0-20	0-20	0-20	
3.00	Sr	Sr	Sr	Sr	Note : SAMPLING at 2.00 m depth (U). and at 3.50 m depth (L).
4.00	3-00	3-00	3-00	3-00	
4.90	Sb	Sb	Sb	Sb	CLAYEY SILT: yellowish brown, medium to high plasticity, firm to stiff; containing small amount of sand and gravels (weathered).

Fig. 3.2.36 Log of Test Pit No. TPD - 2

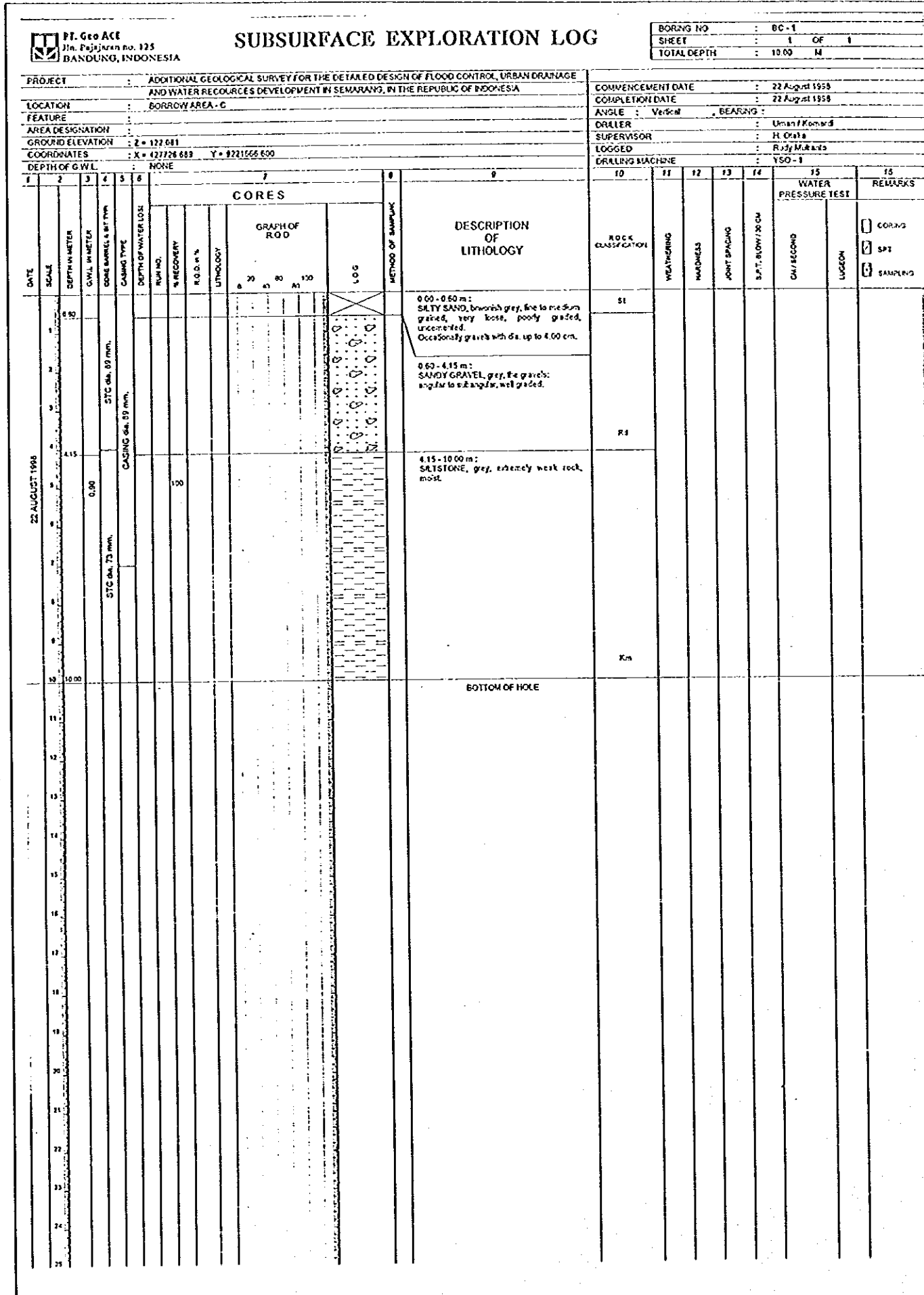


Fig. 3.3.1 Subsurface Exploration Log No. BC - 1

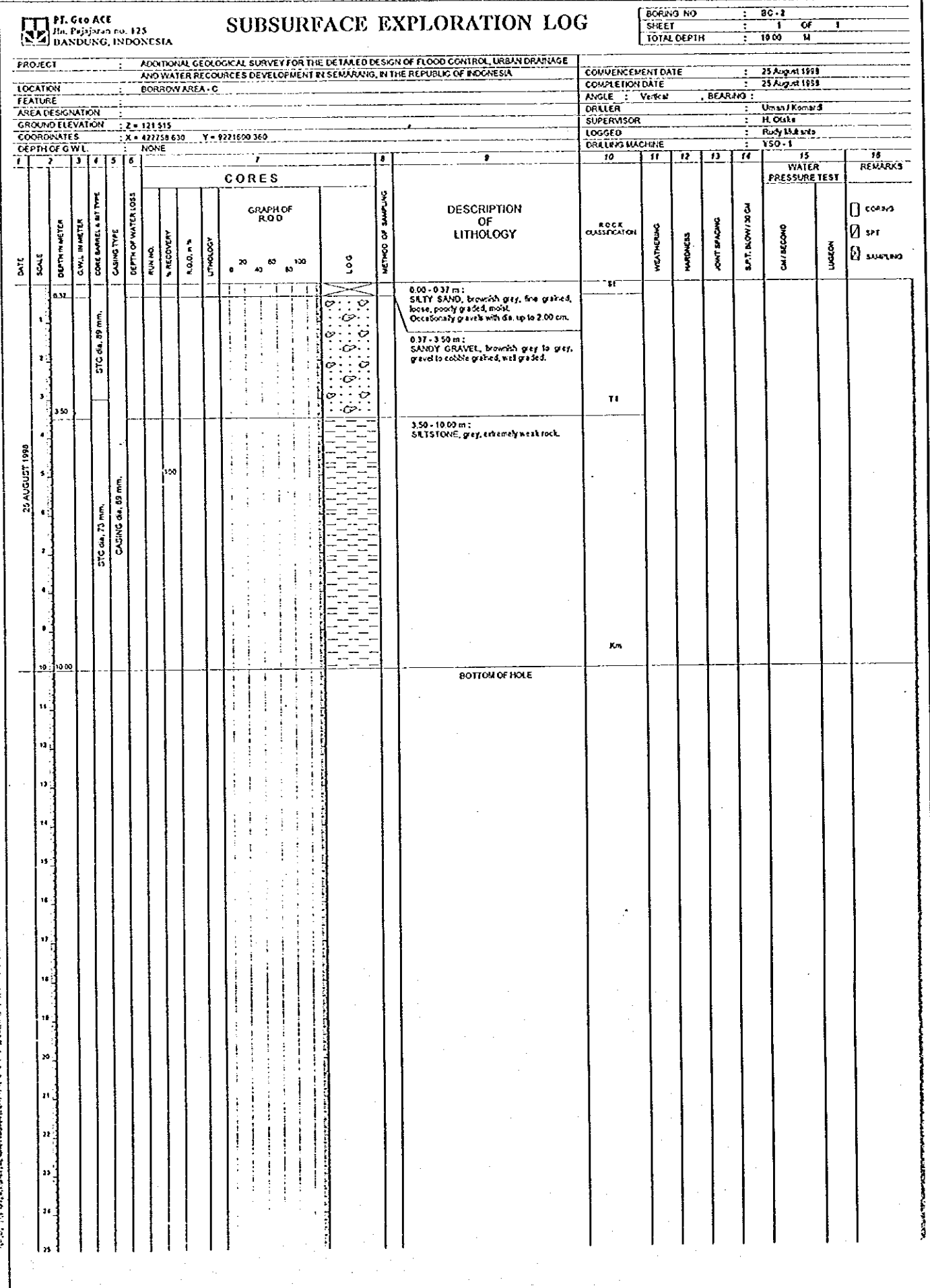


Fig. 3.3.2 Subsurface Exploration Log No. BC - 2

SUBSURFACE EXPLORATION LOG

BORING NO : BC-3  
SHEET : 1 OF 1  
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA										COMMENCEMENT DATE : 27 August 1998		COMPLETION DATE : 27 August 1998		DRILLER : Utan / Komard		SUPERVISOR : H. Ota		LOGGED : Rudy M. Manto		DRILLING MACHINE : YSO-1		
LOCATION : BORROW AREA - C										ANGLE : Vertikal		BEARING :		AREA DESIGNATION :		GROUND ELEVATION : Z = 124.355		COORDINATES : X = 427756.232 Y = 9221500.378		DEPTH OF GWL : NONE		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16							
DATE	SCALE	DEPTH IN METER	G.W.L. IN METER	CORE BARREL & BIT TYPE	CASING TYPE	DEPTH OF WATER LOSS	RUN NO.	% RECOVERY	R.O.D. IN %	LITHOLOGY	GRAPH OF ROD	METHOD OF SAMPLING	DESCRIPTION OF LITHOLOGY	ROCK CLASSIFICATION	WEATHERING	HARDNESS	JOINT SPACING	S.P.T. BLOW/30 CM	CM/SECOND	LOGON	REMARKS	
27 AUGUST 1998		0.00		STC dia. 89 mm.	CASING dia. 89 mm.								0.00 - 0.40 m : SILTY SAND, brown, fine grained, loose, poorly graded.	Sl								
		1.00		STC dia. 89 mm.									0.40 - 1.00 m : SILTY CLAY, brownish grey, high plasticity, firm, moist.	Tu								
		10.00											1.00 - 10.00 m : SILTYSTONE, grey, extremely weak rock.	Km								
													BOTTOM OF HOLE									

Fig. 3.3.3 Subsurface Exploration Log No. BC - 3

SUBSURFACE EXPLORATION LOG

BORING NO : BC-4  
SHEET : 1 OF 1  
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA										COMMENCEMENT DATE : 20 August 1998		COMPLETION DATE : 20 August 1998		DRILLER : Utan / Komard		SUPERVISOR : H. Ota		LOGGED : Rudy M. Manto		DRILLING MACHINE : YSO-1		
LOCATION : BORROW AREA - C										ANGLE : Vertikal		BEARING :		AREA DESIGNATION :		GROUND ELEVATION : Z = 125.484		COORDINATES : X = 427758.843 Y = 9221420.395		DEPTH OF GWL : NONE		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16							
DATE	SCALE	DEPTH IN METER	G.W.L. IN METER	CORE BARREL & BIT TYPE	CASING TYPE	DEPTH OF WATER LOSS	RUN NO.	% RECOVERY	R.O.D. IN %	LITHOLOGY	GRAPH OF ROD	METHOD OF SAMPLING	DESCRIPTION OF LITHOLOGY	ROCK CLASSIFICATION	WEATHERING	HARDNESS	JOINT SPACING	S.P.T. BLOW/30 CM	CM/SECOND	LOGON	REMARKS	
20 AUGUST 1998		0.00		STC dia. 89 mm.	CASING dia. 89 mm.								0.00 - 0.20 m : SANDY CLAY (TOP SOIL) very soft, high plasticity, moist, having some amount of plant roots.	Sl								
		1.00		STC dia. 73 mm.									0.20 - 1.83 m : SILTY CLAY, brownish grey, soft, high plasticity, moist, containing some amount of gravel and boulders.	Tu								
		10.00											1.83 - 10.00 m : SILTYSTONE / MUDDSTONE, grey, extremely weak rock.	Km								
													BOTTOM OF HOLE									

Fig. 3.3.4 Subsurface Exploration Log No. BC - 4

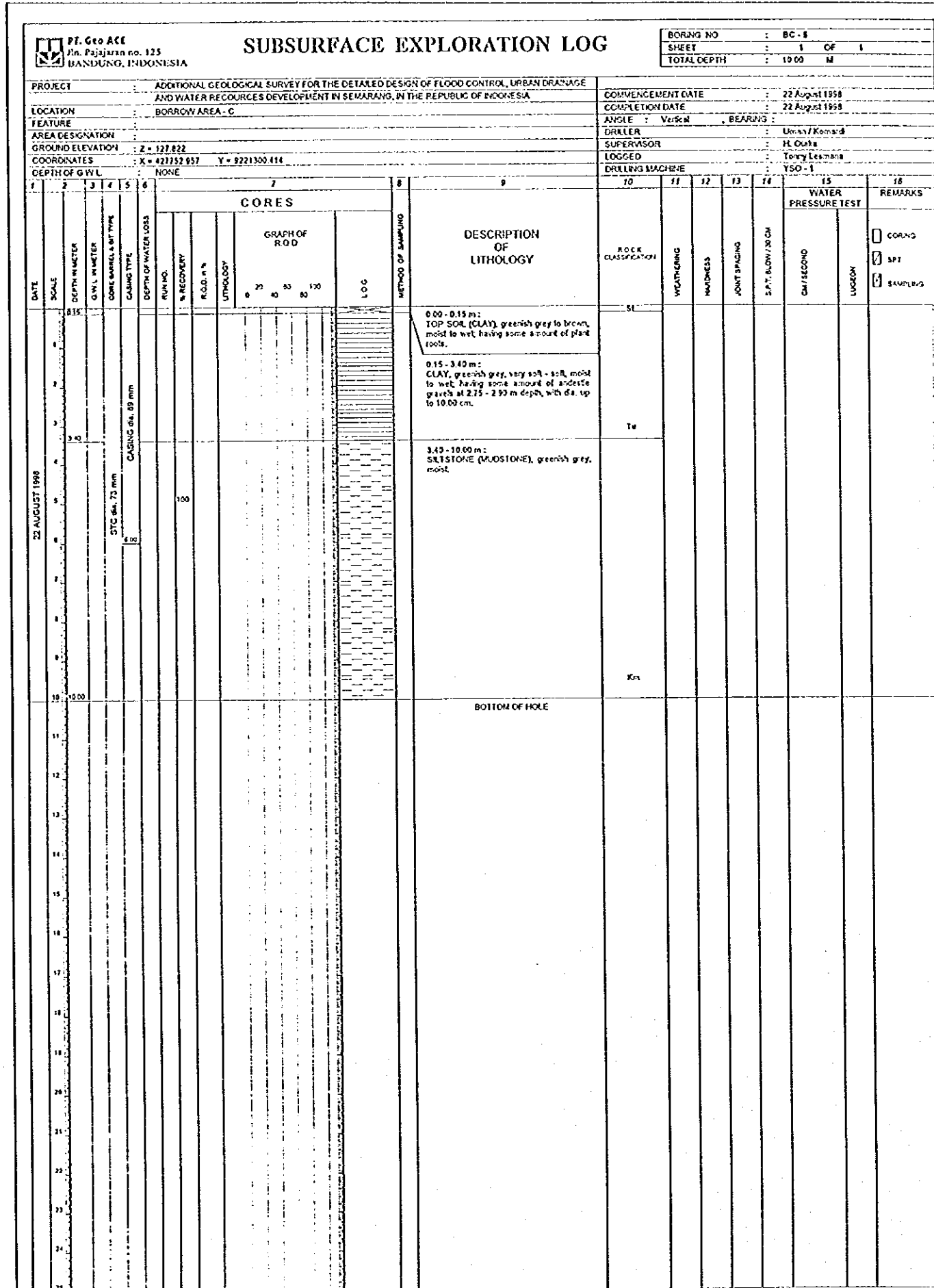


Fig. 3.3.5 Subsurface Exploration Log No. BC - 5

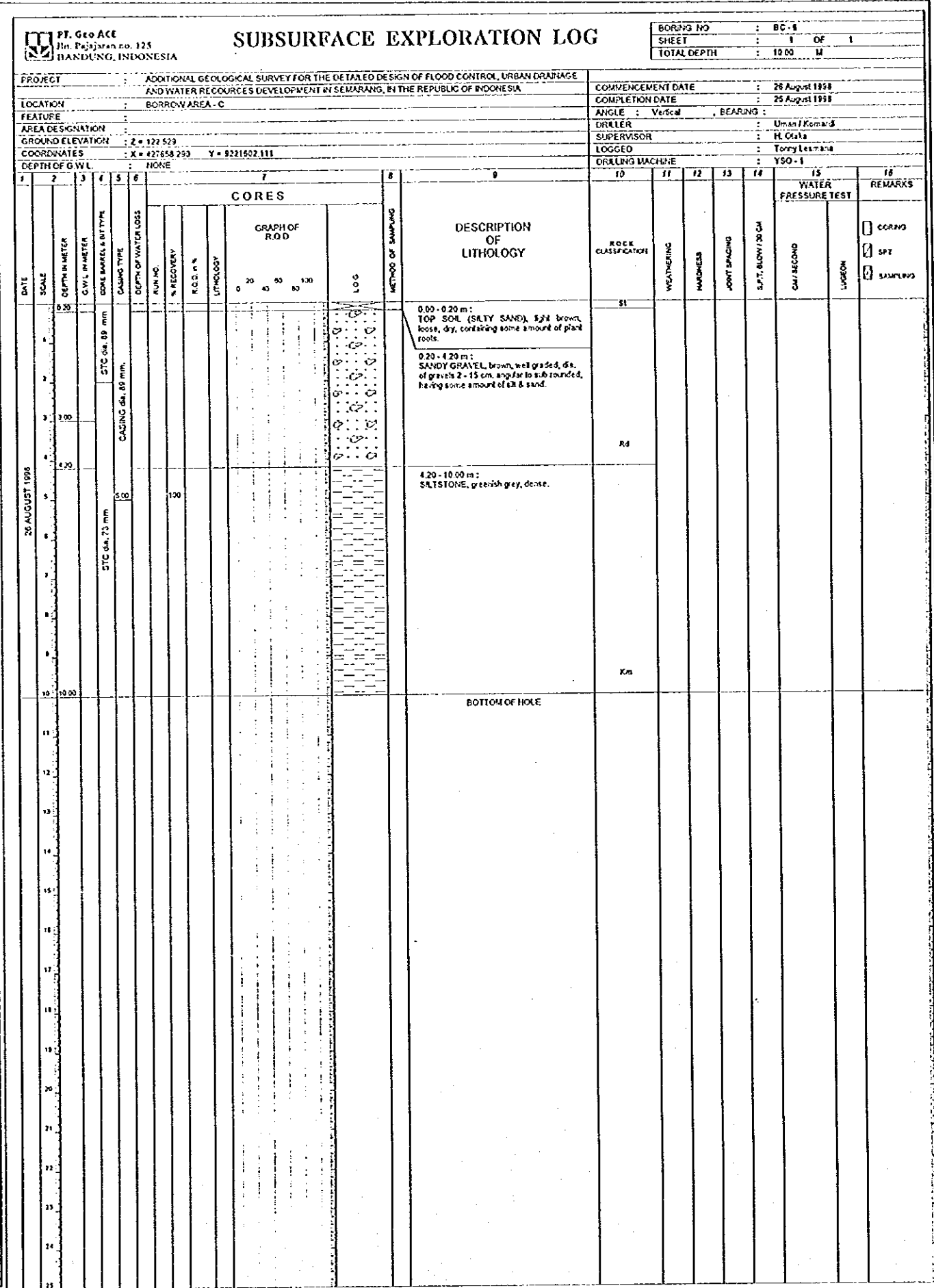


Fig. 3.3.6 Subsurface Exploration Log No. BC - 6

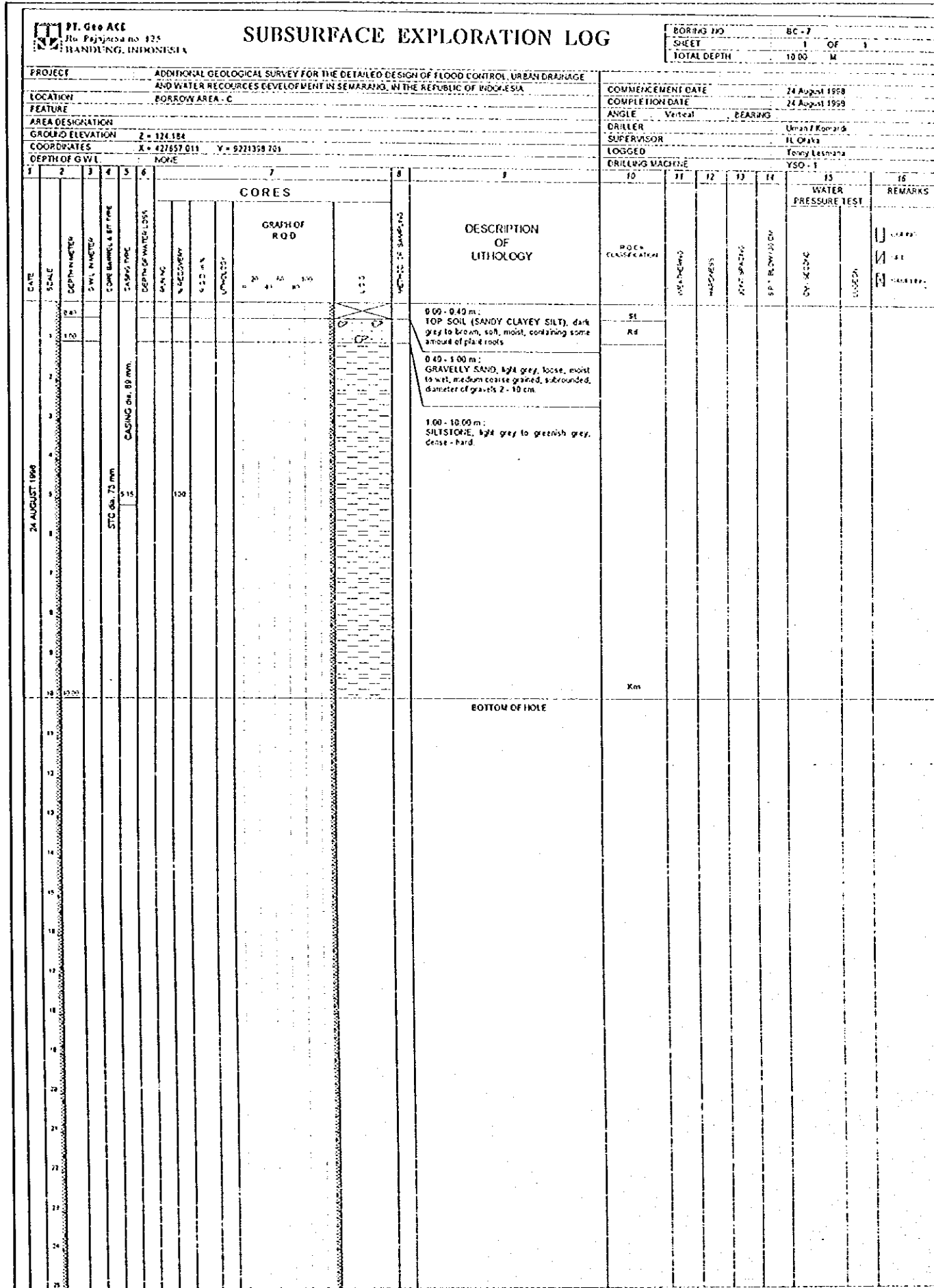


Fig. 3.3.7 Subsurface Exploration Log No. BC - 7

PT. Geo ACE  
 Jln. Pajajaran no. 125  
 BANDUNG, INDONESIA

LOG OF TEST PIT

HOLE : TPC-1  
 DEPTH : 2.20 m

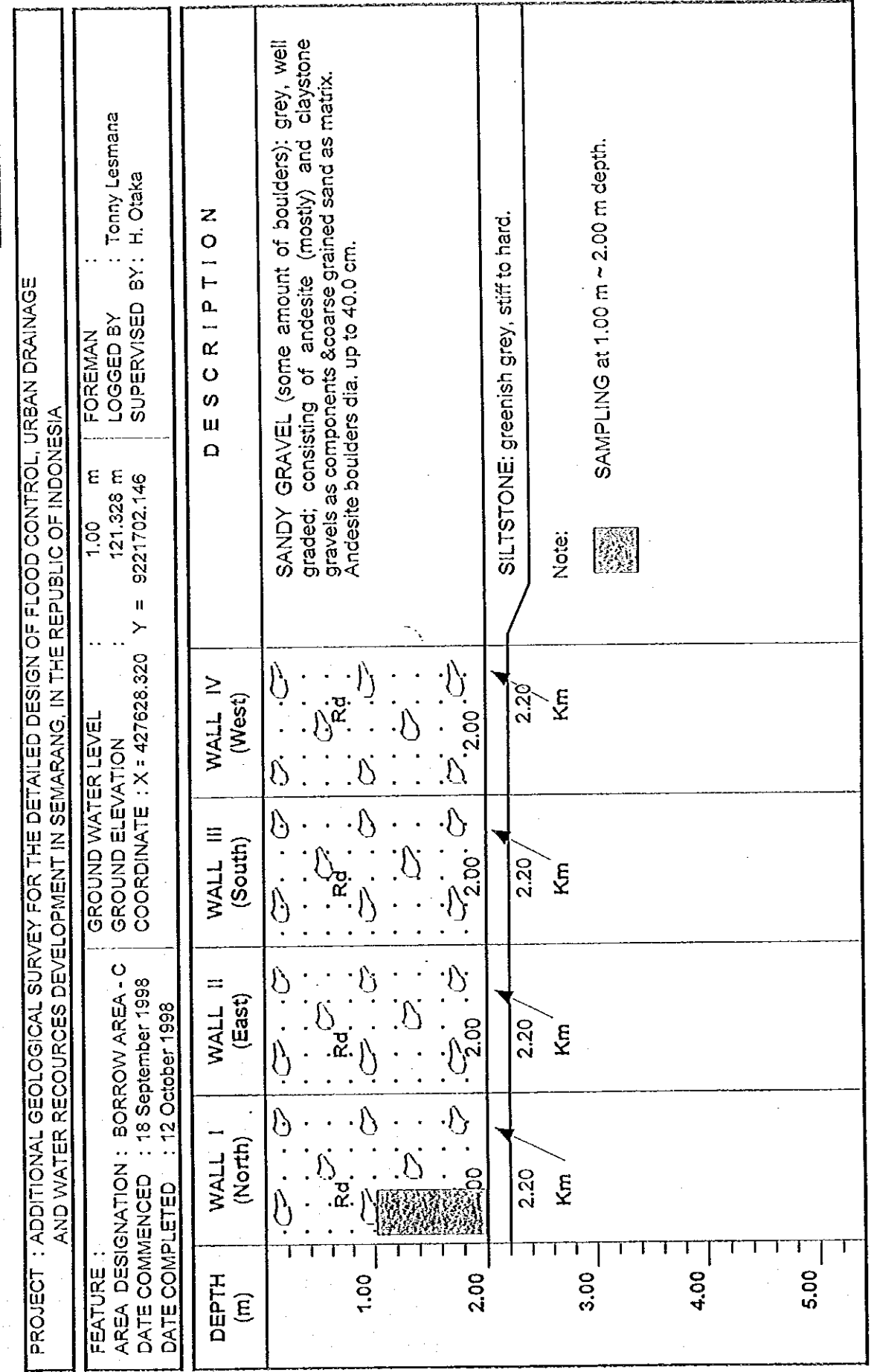


Fig. 3.3.8 Log of Test Pit TPC - 1

LOG OF TEST PIT

HOLE	TPC - 2
DEPTH	3.20 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - C  
DATE COMMENCED : 6 October 1998  
DATE COMPLETED : 10 October 1998

GROUND WATER LEVEL : 1.50 m  
GROUND ELEVATION : 121.380 m  
COORDINATE: X = 427722.967 Y = 92211635.405

FOREMAN :  
LOGGED BY : Tonny Lesmana  
SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Tu	0.15	0.15	0.15	0.15	TOP SOIL (SILTY SAND): brown, loose, fine grained, having some amount of plant roots.
1.00	0.25	0.25	0.25	0.25	GRAVELLY SAND: brown, loose, fine sand (matrix) & andesite gravels (component) with diam. 0.5 - 3.0 cm.
1.30	0.90	0.90	0.90	0.90	SANDY SILT: grey, medium dense, fine grained, poorly graded, moist, small amount of gravels, diam. up to 0.5 cm; having yellow mottled of iron oxide.
2.00	1.30	1.30	1.30	1.30	SANDY SILT with GRAVEL: yellowish brown, fine to medium grained. Gravels diam. 0.5 - 3.0 cm.
3.00	3.00	3.00	3.00	3.00	GRAVELY SAND: brown, medium dense, medium grained, poorly graded, wet.
Km	3.20	3.20	3.20	3.20	SILTY SAND and GRAVEL: yellowish brown, well graded. Component: andesite & claystone gravels. The gravels diam. up to 40.0 cm.
4.00					SILTSTONE: greenish grey, hard.
5.00					

Note:

SAMPLING at 2.00 m depth.

Fig. 3.3.9

Log of Test Pit TPC - 2

LOG OF TEST PIT

HOLE	TPC - 3
DEPTH	4.00 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - C  
DATE COMMENCED : 15 September 1998  
DATE COMPLETED : 01 October 1998

GROUND WATER LEVEL : 1.50 m  
GROUND ELEVATION : 126.660 m  
COORDINATE: X = 427860.461 Y = 9221394.423

FOREMAN :  
LOGGED BY : Tonny Lesmana  
SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Ts	0.10	0.10	0.10	0.10	TOP SOIL (SILTY CLAY): brown, firm, low plasticity, dry.
1.00					SILTY CLAY: brown, firm, low plasticity, moist.
2.00	1.30	1.30	1.30	1.30	SILT with GRAVEL: yellowish brown, firm, high plasticity, wet to saturated, having small amount of gravels, dia. up to 2.0 cm.
Tu	2.10	2.10	2.10	2.10	SILT with GRAVEL and SAND.
3.00					
3.40	3.40	3.40	3.40	3.40	SILTY SAND and GRAVEL: brown, dense to medium dense, well graded, components dia. 0.5 - 10.0 cm. Component: andesite (mostly); claystone, sandstone. Ground mass: sand & clay small amount).
4.00	4.00	4.00	4.00	4.00	
5.00					

Fig. 3.3.10

Log of Test Pit TPC - 3

LOG OF TEST PIT

HOLE	TPC - 4
DEPTH	5.00 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - C  
DATE COMMENCED : 17 September 1998  
DATE COMPLETED : 13 October 1998

GROUND WATER LEVEL : 2.30 m  
GROUND ELEVATION : 122.180 m  
COORDINATE: X = 4227758.724 Y = 9221800.430

FOREMAN :  
LOGGED BY : Tonny Lesmana  
SUPERVISED BY : H. Otaka


DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Ts 0.10	0.10	0.10	0.10	0.10	TOP SOIL (SILTY SAND): dark brown, loose, moist, having some amount of plant roots.
1.00					SANDY SILT: light brown, soft to firm, low plasticity, moist.
Tu					Note:  SAMPLING at 2.00 m ~ 2.90 m depth.
2.00	1.90	1.90	1.90	1.90	GRAVELY SAND: light brown, medium dense, coarse to medium grained, well graded, small amount of gravels with diam. 0.5 - 3.0 cm.
3.00	2.30	2.30	2.30	2.30	SILTY SANDY GRAVEL: brown, well graded. Consisting of andesite (mostly) & claystone fragments, diam. 0.5 - 30.0 cm. Small amount of andesite boulders with diam. up to 50.0 cm.
Tl	3.00	3.00	3.00	3.00	SAND and GRAVEL: grey, poorly graded. Consisting of andesite (mostly) & claystone fragments, and clay. Having small amount of andesite boulders.
4.00	4.70	4.70	4.70	4.70	SILTSTONE: greenish grey, soft to hard.
Km					
5.00					

Fig. 3.3.11 Log of Test Pit TPC - 4

LOG OF TEST PIT

HOLE	TPC - 5
DEPTH	2.40 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
AREA DESIGNATION : BORROW AREA - C  
DATE COMMENCED : 10 September 1998  
DATE COMPLETED : 13 October 1998

GROUND WATER LEVEL : 2.00 m  
GROUND ELEVATION : Z = 121.120 m  
COORDINATE: X = 427958.721 Y = 9221800.512

FOREMAN :  
LOGGED BY : Tonny Lesmana  
SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Ts					TOP SOIL (SILTY CLAY): light brown, soft, low plasticity, moist; having some amount of plant roots.
Tu					SANDY SILT: brown to yellowish brown, soft, low palsticity, moist, having black speckles.
1.00	0.80	0.80	0.80	0.80	GRAVELS and SAND (SILTY): brown, well graded; consisting of andesite (mostly) & claystone fragments and sand. Having small amount of andesite boulders with diam. up to 50 cm.
Tl	2.10	2.10	2.10	2.10	SILTSTONE: brown to greenish grey, soft to hard, highly weathered (HW).
2.00					
Km	2.40	2.40	2.40	2.40	
3.00					
4.00					
5.00					

Fig. 3.3.12 Log of Test Pit TPC - 5

LOG OF TEST PIT

HOLE	TPC - 6
DEPTH	3.20 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - C  
 DATE COMMENCED : 1 September 1998  
 DATE COMPLETED : 13 October 1998  
 GROUND WATER LEVEL : 1.40 m  
 GROUND ELEVATION : 123.008 m  
 COORDINATE : X = 427559.878 Y = 9221698.820  
 FOREMAN : Tonny Lesmana  
 LOGGED BY :  
 SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Ts	0.20	0.20	0.20	0.20	TOP SOIL (SILTY SAND): brown, loose, fine grained, moist, having some amount of plant roots.
Tu					SANDY SILT: brown, medium dense, fine grained sand, poorly graded, moist.
1.00					
2.00	1.20	1.20	1.20	1.20	SILTY SAND (with small amount of GRAVELS): dark brown, medium dense, fine grained sand, poorly graded; gravels dia. up to 2.0 cm.
TI	1.70	1.70	1.70	1.70	SAND and GRAVEL: brown, well graded. The gravels diam. 0.5 - 15.0 cm. Small amount of boulders (diam. up to 40.0 cm).
3.00	2.50	2.50	2.50	2.50	SILT with GRAVEL (with some amount of boulders): grey, poorly graded, having some amount of clay, and gravels to boulder of andesite or claystone.
Km	3.00	3.00	3.00	3.00	
	3.20	3.20	3.20	3.20	SILTSTONE: greenish grey, hard.
4.00					
5.00					

Note:



SAMPLING at 2.20 m ~ 2.80 m depth.

Fig. 3.3.13 Log of Test Pit TPC - 6

LOG OF TEST PIT

HOLE	TPC - 7
DEPTH	2.50 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :  
 AREA DESIGNATION : BORROW AREA - C  
 DATE COMMENCED : 10 September 1998  
 DATE COMPLETED : 1 October 1998  
 GROUND WATER LEVEL : NONE m  
 GROUND ELEVATION : 124.184 m  
 COORDINATE : X = 427556.060 Y = 9221398.647  
 FOREMAN : Sugino  
 LOGGED BY : Agus S.  
 SUPERVISED BY : H. Otaka

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
1.00					SILTY CLAY: brown, firm to stiff, medium plasticity, small amount of gravels and cobbles.
Cd	1.00	1.00	1.00	1.00	SILTY CLAY: brown to grey, firm to stiff, medium to high plasticity, small amount of gravels (max. diam. 10.0 cm).
1.70					
2.00					
Km					
2.50	2.50	2.50	2.50	2.50	SILTSTONE.
3.00					
4.00					
5.00					

Fig. 3.3.14 Log of Test Pit TPC - 7



### LOG OF TEST PIT

HOLE	TPC-8
DEPTH	3.40 m

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER REOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA

FEATURE :	GROUND WATER LEVEL : 2.10 m	FOREMAN :
AREA DESIGNATION : BORROW AREA - C	GROUND ELEVATION : Z = 129.402 m	LOGGED BY : Tonny Lesmana
DATE COMMENCED : 20 September 1998	COORDINATE : X = 427655.301 Y = 9221196.295	SUPERVISED BY : H. Otaka
DATE COMPLETED : 1 October 1998		

DEPTH (m)	WALL I (North)	WALL II (East)	WALL III (South)	WALL IV (West)	DESCRIPTION
Ts 0.1 T0					TOP SOIL (SILTY CLAY): dark brown, soft, high plasticity, moist; having some amount of plant roots.
1.00	0.80	0.80	0.80	0.80	SANDY SILT: brown, firm to stiff, high plasticity, moist, having black mottled of iron oxide, containing alittle amount of gravels (diam. up to 2.0 cm) and tuff material.
2.00					SAND and GRAVEL (SILTY): with some amount of boulders, brown, well graded; having some amount of andesite (mostly) and claystone fragment gravels (diam. 0.5 - 10.0 cm) and silt & sand. Some boulders of andesite (diam up to 50 cm).
3.00	2.70	2.70	2.70	2.70	CLAYEY SANDY GRAVELS: grey, poorly graded, having some amount of andesite & claystone gravels (diam. 0.5 - 10.0 cm) and clay & sand. Some boulders of andesite (diam. up to 50.0 cm).
Km	3.40	3.40	3.40	3.40	SILTSTONE: greenish grey, hard.
4.00					
5.00					

Fig. 3.3.15 Log of Test Pit TPC - 8