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

# SUBSURFACE EXPLORATION LOG

BORING NO : A-7
SHEET : 2 OF 3
TOTAL DEPTH : 70.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 539.569 meter
COORDINATES : x = 437058.773 y = 9207710.026
DEPTH OF G.W.L :

COMMENCEMENT DATE : 30 NOVEMBER 1997
COMPLETION DATE : 6 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADEKOSASSI
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE: WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | 11 Water Pressure Test: CM / SECOND | LUGEON | 12 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 DECEMBER 1997 | 25 | | | | | | | | | | | | | 9.70 - 48.20 m ANDESITE, medium strong to strong rock, dip of crack 20° - 40°. | | | | | | | ■ CORING ▨ SPT ▩ UNDISTURB |
| 3 DECEMBER 1997 | 36 | | | N.M.L.C | | | 16 | 100 | 82 | | | | | | | | | | | | |
| | 37 | | | | | | | | 46 | | | | | | | | | | | | |
| | 38 | | | | | | 17 | 100 | 75 | | | | | | | | | | | | |
| | 39 | | | | | | | | 88 | | | | | | | | | | | | |
| | 40 | | | | | | 18 | 100 | 89 | CH | | | | | | | | | | | |
| | 41 | | | | | | | | 84 | | | | | | | | | | | | |
| | 42 | | | | | | 19 | 100 | 92 | | | | | | | | | | | | |
| | 43 | | | | | | | | 96 | | | | | | | | | | | | |
| | 44 | | | | | | 20 | 100 | 87 | | | | | | | | | | | | |
| | 45 | | | | | | | | 78 | | | | | | | | | | | | |
| | 46 | | | | | | 21 | 100 | 100 | | | | | | | | | | | | |
| | 47 | | | | | | | | 85 | | | | | | | | | | | | |
| | 48 | | | | | | 22 | 100 | 90 | | | | | | | | | | | | |
| | 49 | | | | | | | | 48 | | | | | | | | | | | | |
| 4 DECEMBER 1997 | 50 | | | | | | | | 81 | | | | | | | | | | | | |
| | 51 | | | | | | 23 | 100 | 93 | CM | | | | | | | | | | | |
| | 52 | | | | | | | | 78 | | | | | | | | | | | | |
| | 53 | | | | | | | | 83 | | | | | | | | | | | | |
| | 54 | | | | | | 24 | 100 | 85 | | | | | | | | | | | | |
| | 55 | 48.20 | | | | | | | 72 | | | | | | | | | | | | |
| | 56 | | | | | | 24 | 100 | 54 | CL | | | | 48.20 - 56.00 m ANDESITE, medium strong to weak rock, dip of crack 20° - 40°. | | | | | | | | |

Fig. 3.1.8 Surface Exploration Log No. A – 7 (2 of 3)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A-7
SHEET : 3 OF 3
TOTAL DEPTH : 70.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 539.569 meter
COORDINATES : x = 437058.773 y = 9207710.026
DEPTH OF G.W.L :

COMMENCEMENT DATE : 30 NOVEMBER 1997
COMPLETION DATE : 6 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADEKOSASSI
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE: WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | 11 Water Pressure Test: CM / SECOND | LUGEON | 12 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 DECEMBER 1997 | 50 | | | | | | | | 30 | | | | | 48.20 - 56.00 m ANDESITE, medium strong to weak rock, dip of crack 20° - 40°. | | | | | | | ■ CORING ▨ SPT ▩ UNDISTURB |
| | 51 | | | | | | 25 | 100 | 85 | | | | | | | | | | | | |
| | 52 | | | | | | | | 47 | | | | | | | | | | | | |
| | 53 | | | | | | | | 71 | | | | | | | | | | | | |
| | 54 | | | | | | 26 | 100 | 90 | | | | | | | | | | | | |
| | 55 | 56.00 | | | | | | | 60 | | | | | | | | | | | | |
| | 56 | | | | | | 27 | 100 | 19 | | | | | 56.00 - 69.00 m ANDESITE, weak to extremely weak rock. | | | | | | | | |
| | 57 | | | | | | 28 | 100 | 18 | | | | | | | | | | | | |
| | 58 | | | | | | | | 18 | | | | | | | | | | | | |
| | 59 | | | | | | 29 | 100 | 43 | | | | | | | | | | | | |
| 5 DECEMBER 1997 | 60 | | | N.M.L.C | | | 30 | 100 | 18 | | | | | | | | | | | | |
| | 61 | | | | | | | | 57 | | | | | | | | | | | | |
| | 62 | | | | | | 31 | 100 | 43 | | | | | | | | | | | | |
| | 63 | | | | | | | | 18 | | | | | | | | | | | | |
| | 64 | | | | | | 32 | 100 | 80 | | | | | | | | | | | | |
| | 65 | | | | | | | | 88 | | | | | | | | | | | | |
| | 66 | | | | | | | | 87 | | | | | | | | | | | | |
| 6 DECEMBER 1997 | 67 | | | | | | 33 | 100 | 77 | | | | | | | | | | | | |
| | 68 | | | | | | | | 78 | | | | | | | | | | | | |
| | 69 | 68.00 | | | | | 34 | 100 | 83 | CL | | | | 69.00 - 70.00 m ANDESITE, weak to medium strong. | | | | | | | | |
| | 70 | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |
| | 71 | | | | | | | | | | | | | | | | | | | | |
| | 72 | | | | | | | | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | | | | | | | | | | | |
| | 74 | | | | | | | | | | | | | | | | | | | | |
| | 75 | | | | | | | | | | | | | | | | | | | | |

Fig. 3.1.8 Surface Exploration Log No. A – 7 (3 of 3)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 8
SHEET : 1 OF 2
TOTAL DEPTH : 50.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 525.454 meter
COORDINATES : x = 437138.268 y = 9207721.155
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 NOVEMBER 1997
COMPLETION DATE : 28 NOVEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADE/KOSASIH
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: 7 RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: OM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 NOVEMBER 1997 | | 0.35 | | | | | 1 | 100 | 0 | | | | | 0.00 - 0.35 m Clayey SILT (Top Soil), brown, low plasticity, very soft, moist, containing plants' roots. | | | | | | | | CORING |
| | 1 | 1.20 | | | | | 2 | 100 | | | | | | 0.35 - 1.20 m Silty CLAY, reddish brown, high plasticity, firm to stiff, moist | | | | | | | | SPT |
| | | | | | | | 3 | 100 | 0 | | | | | | | | | | | | | UNDISTURB |
| | 2 | | | | | | 4 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 5 | 100 | 0 | | | | | | | | | | | | | |
| | 3 | | | | | | 6 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 7 | 100 | 0 | | | | | | | | | | | | | |
| | 4 | 4.30 | | 72 mm | | | 8 | 100 | | | | | | 1.20 - 4.30 m Sandy Clayey SILT, reddish brown, greyish white, medium to low plasticity, firm to stiff (derived from highly weathered andesite). | | | | | | | | |
| | | | | | | | 9 | 100 | 0 | D | | | | | | | | | | | | |
| | 5 | | | | | | 10 | 100 | 0 | | | | | 4.30 - 9.60 m ANDESITE, greyish brown, extremely weak to weak rock, containing biotite, pyroxene, plagioclase. | | | | | | | | |
| | | | | | | | 11 | 100 | 18 | | | | | | | | | | | | | |
| | 6 | | | | | | 12 | 100 | 53 | | | | | | | | | | | | | |
| | | | | | | | | | 48 | | | | | | | | | | | | | |
| | 7 | | | | | | | | 38 | | | | | | | | | | | | | |
| | | 9.60 | | | | | | | 65 | CL | | | | | | | | | | | | |
| | 8 | 10.00 | | | | | 13 | 100 | 84 | | | | | 9.60 - 10.00 m ANDESITE, weak to medium strong rock, light to dark grey. | | | | | | | | |
| | | | | | | | | | 83 | | | | | | | | | | | | | |
| | 9 | | | | | | | | 95 | | | | | | | | | | | | | |
| | | | | | | | 14 | 100 | 84 | CM | | | | 10.00 - 35.40 m ANDESITE, medium strong to strong rock. | | | | | | | | |
| | 10 | | | | | | | | 84 | | | | | | | | | | | | | |
| | | | | | | | 15 | 100 | 97 | | | | | | | | | | | | | |
| | 11 | | | | | | | | 29 | | | | | | | | | | | | | |
| | | | | | | | | | 8 | | | | | | | | | | | | | |
| | 12 | | | | | | 16 | 100 | 85 | | | | | | | | | | | | | |
| | | | | | | | | | 90 | | | | | | | | | | | | | |
| | 13 | | | | | | | | 78 | | | | | | | | | | | | | |
| 24 NOVEMBER 1997 | | | | N M L C | | | 17 | 100 | 95 | | | | | | | | | | | | | |
| | 14 | | | | | | | | 99 | | | | | | | | | | | | | |
| | | | | | | | | | 84 | | | | | | | | | | | | | |
| | 15 | | | | | | 18 | 100 | 94 | | | | | | | | | | | | | |
| 25 NOVEMBER 1997 | | | | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | | | |
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| | 17 | | | | | | | | | | | | | | | | | | | | | |
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| | 18 | | | | | | | | | | | | | | | | | | | | | |
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| | 19 | | | | | | | | | | | | | | | | | | | | | |
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| | 20 | | | | | | | | | | | | | | | | | | | | | |
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| | 21 | | | | | | | | | | | | | | | | | | | | | |
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| | 22 | | | | | | | | | | | | | | | | | | | | | |
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| | 23 | | | | | | | | | | | | | | | | | | | | | |
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| | 24 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | | | | | | |

Fig. 3.1.9 Surface Exploration Log No. A – 8 (1 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 8
SHEET : 2 OF 2
TOTAL DEPTH : 50.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 525.454 meter
COORDINATES : x = 437138.268 y = 9207721.155
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 NOVEMBER 1997
COMPLETION DATE : 28 NOVEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADE/KOSASIH
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: 7 RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: OM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 NOV. 1997 | 25 | | | | | | 18 | 100 | 78 | | | | | 10.00 - 35.40 m ANDESITE, medium strong to strong rock. | | | | | | | | CORING |
| | 26 | | | | | | | | | | | | | | | | | | | | | SPT |
| | | | | | | | 20 | 100 | 82 | | | | | | | | | | | | | UNDISTURB |
| | 27 | | | | | | | | 44 | | | | | | | | | | | | | |
| | 28 | | | | | | 21 | 100 | 90 | | | | | | | | | | | | | |
| | 29 | | | | | | | | 68 | | | | | | | | | | | | | |
| | 30 | | | | | | 22 | 100 | 90 | | | | | | | | | | | | | |
| | 31 | | | | | | | | 48 | | | | | | | | | | | | | |
| | 32 | | | | | | 23 | 100 | 72 | | | | | | | | | | | | | |
| | 33 | | | | | | | | 95 | | | | | | | | | | | | | |
| | 34 | | | | | | 24 | 100 | 54 | | | | | | | | | | | | | |
| | 35 | 35.40 | | | | | | | 69 | CM | | | | 35.40 - 38.20 m ANDESITE, medium strong to weak rock | | | | | | | | |
| | 36 | | | | | | 25 | 100 | 47 | | | | | | | | | | | | | |
| 27 NOVEMBER 1997 | | 38.20 | | N M L C | | | | | 68 | CM | | | | | | | | | | | | |
| | 37 | | | | | | | | 29 | | | | | 38.20 - 50.00 m ANDESITE, weak to extremely weak rock. | | | | | | | | |
| | 38 | | | | | | 26 | 100 | 8 | | | | | | | | | | | | | |
| | 39 | | | | | | | | 38 | | | | | | | | | | | | | |
| | 40 | | | | | | 27 | 100 | 17 | | | | | | | | | | | | | |
| | 41 | | | | | | | | 48 | | | | | | | | | | | | | |
| | 42 | | | | | | 28 | 100 | 32 | | | | | | | | | | | | | |
| | 43 | | | | | | | | 18 | | | | | | | | | | | | | |
| | 44 | | | | | | 29 | 100 | 8 | | | | | | | | | | | | | |
| | 45 | | | | | | | | 33 | | | | | | | | | | | | | |
| 28 NOVEMBER 1997 | 46 | | | | | | 30 | 100 | 18 | | | | | | | | | | | | | |
| | 47 | | | | | | | | 28 | | | | | | | | | | | | | |
| | 48 | | | | | | 31 | 100 | 8 | | | | | | | | | | | | | |
| | 49 | | | | | | | | 53 | | | | | | | | | | | | | |
| | 50 | 50.00 | | | | | 32 | 100 | 18 | | | | | | | | | | | | | |
| | 51 | | | | | | | | 28 | | | | | | | | | | | | | |
| | 52 | | | | | | 33 | 100 | 80 | | | | | | | | | | | | | |

Fig. 3.1.9 Surface Exploration Log No. A – 8 (2 of 2)

**Pt. Geo ACE**
Jln. Pajajaran no. 125
BANDUNG, INDONESIA

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 9
SHEET : 1 OF 2
TOTAL DEPTH : 40.00 M

| | | | |
|---|---|---|---|
| PROJECT | SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA | COMMENCEMENT DATE | 15 NOVEMBER 1997 |
| LOCATION | QUARRY SITE | COMPLETION DATE | 21 NOVEMBER 1997 |
| FEATURE | | ANGLE | 90° (VERTICAL) |
| AREA DESIGNATION | | BEARING | |
| GROUND ELEVATION | 500.185 meter | DRILLER | ADEKOSASSI |
| COORDINATES | x = 437258.474 y = 9207750.288 | SUPERVISOR | |
| DEPTH OF G.W.L | | LOGGED | Rudy Mulyanto |
| | | DRILLING MACHINE | YBM - 3ES |

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: CM / SECOND | 15 Water Pressure Test: LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 NOVEMBER 1997 | | 0.00 | | | | | | | | | | | | 0.00 - 4.10 m Clayey SILT, brown to yellowish brown, medium to low plasticity, firm to stiff, moist (derived from highly weathered tuff). | | | | | | | | |
| | | 4.10 | | 73 mm | | | 1 | 100 | 8 | ML | | | | | | | | | | | | |
| | | | | | | | 2 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 3 | 100 | 8 | | | | | | | | | | | | | |
| | | | | | | | 4 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 5 | 100 | 9 | | | | | | | | | | | | | |
| | | | | | | | 6 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 7 | 100 | 8 | | | | | 4.10 - 6.60 m ANDESITE, extremely weak to weak rock, reddish grey to grey, containing biotite, pyroxene, plagioclase. | | | | | | | | |
| | | 6.60 | | | | | 8 | 100 | 23 | | | | | | | | | | | | | |
| | | | | | | | | | 57 | | | | | | | | | | | | | |
| 16 NOVEMBER 1997 | | | | | | | 9 | 100 | 34 | CL | | | | 6.60 - 40.00 m ANDESITE, weak to strong rock. | | | | | | | | |
| | | | | | | | | | 72 | | | | | | | | | | | | | |
| | | | | | | | | | 25 | CM | | | | | | | | | | | | |
| | | | | | | | 10 | 100 | 25 | | | | | | | | | | | | | |
| | | | | | | | | | 87 | | | | | | | | | | | | | |
| | | | | | | | 11 | 100 | 96 | | | | | | | | | | | | | |
| 17 NOVEMBER 1997 | | | | | | | | | 82 | | | | | | | | | | | | | |
| | | | | | | | 12 | 100 | 95 | CH | | | | | | | | | | | | |
| | | | | | | | | | 92 | | | | | | | | | | | | | |
| | | | | | | | 13 | 100 | 88 | | | | | | | | | | | | | |
| | | | | | | | | | 89 | | | | | | | | | | | | | |
| 18 NOVEMBER 1997 | | | | | | | 14 | 100 | 88 | | | | | | | | | | | | | |
| | | | | | | | | | 80 | | | | | | | | | | | | | |
| | | | | | | | 15 | 100 | 83 | | | | | | | | | | | | | |
| | | | | | | | | | 78 | | | | | | | | | | | | | |
| | | | | | | | | | 89 | | | | | | | | | | | | | |
| 19 NOVEMBER 1997 | | | | | | | 16 | 100 | 55 | | | | | | | | | | | | | |
| | | | | | | | | | 70 | | | | | | | | | | | | | |

NMLC

Fig. 3.1.10 Surface Exploration Log No. A – 9 (1 of 2)

**Pt. Geo ACE**
Jln. Pajajaran no. 125
BANDUNG, INDONESIA

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 9
SHEET : 2 OF 2
TOTAL DEPTH : 40.00 M

| | | | |
|---|---|---|---|
| PROJECT | SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA | COMMENCEMENT DATE | 15 NOVEMBER 1997 |
| LOCATION | QUARRY SITE | COMPLETION DATE | 21 NOVEMBER 1997 |
| FEATURE | | ANGLE | 90° (VERTICAL) |
| AREA DESIGNATION | | BEARING | |
| GROUND ELEVATION | 500.185 meter | DRILLER | ADEKOSASSI |
| COORDINATES | x = 437258.474 y = 9207750.288 | SUPERVISOR | |
| DEPTH OF G.W.L | | LOGGED | Rudy Mulyanto |
| | | DRILLING MACHINE | YBM - 3ES |

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: CM / SECOND | 15 Water Pressure Test: LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 NOVEMBER 1997 | | 25 | | | | | | | | | | | | 6.60 - 40.00 m ANDESITE, weak to strong rock. | | | | | | | | |
| | | | | | | | 17 | 100 | 68 | CH | | | | | | | | | | | | |
| | | | | | | | | | 86 | | | | | | | | | | | | | |
| | | | | | | | 17 | 100 | 55 | | | | | | | | | | | | | |
| | | | | | | | | | 82 | | | | | | | | | | | | | |
| | | | | | | | 18 | 100 | 92 | | | | | | | | | | | | | |
| | | | | | | | | | 64 | | | | | | | | | | | | | |
| | | | | | | | 19 | 100 | 87 | | | | | | | | | | | | | |
| | | | | | | | | | 93 | | | | | | | | | | | | | |
| | | | | | | | 20 | 100 | 96 | | | | | | | | | | | | | |
| 20 NOVEMBER 1997 | | | | | | | | | 98 | | | | | | | | | | | | | |
| | | | | | | | 21 | 100 | 94 | | | | | | | | | | | | | |
| | | | | | | | | | 87 | | | | | | | | | | | | | |
| | | | | | | | 22 | 100 | 80 | | | | | | | | | | | | | |
| | | | | | | | | | 45 | CH | | | | | | | | | | | | |
| 21 NOVEMBER 1997 | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

NMLC

Fig. 3.1.10 Surface Exploration Log No. A – 9 (2 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 10
SHEET : 1 OF 2
TOTAL DEPTH : 40.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 507.931 meter
COORDINATES : x = 436648.824 y = 9207805.872
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 DECEMBER 1997
COMPLETION DATE : 25 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADE/KOSASIH
SUPERVISOR :
LOGGED : Rudy M./Anto
DRILLING MACHINE : YBM - 3ES

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | CORES | | | | | | | | | | | | | | Water Pressure Test | REMARKS |
| DATE | SCALE | DEPTH IN METER | G.W.L IN METER | CORE BARREL & BIT TYPE | CASING TYPE | DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (20 40 60 80 100) | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK STRUCTURE | WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | CM / SECOND | LUGEON | |
| 23 DECEMBER 1997 | 1 | 4.10 | | 73 mm | | | 1 | 100 | 0 | CH | | | | 0.00 - 4.10 m<br>Silty CLAY, reddish brown, soft to firm, high plasticity, moist. | | | | | | | | CORING<br>SPT<br>UNDISTURB |
| | | | | | | | 2 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 3 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 4 | 100 | 0 | | | | | | | | | | | | | |
| | | 5.50 | | | | | 5 | 100 | 0 | SL | | | | 4.10 - 5.50 m<br>Clayey SILT, greyish brown, low plasticity, moist (derived from highly weathered andesite). | | | | | | | | |
| | | | | | | | 6 | 100 | 0 | | | | | | | | | | | | | |
| | | 7.50 | | | | | 7 | 100 | 0 | SP | | | | 5.50 - 7.50 m<br>Silty SAND, greyish brown, medium to coarse grained, medium dense, poorly graded, derived from highly weathered andesite. | | | | | | | | |
| | | | | | | | 8 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 9 | 100 | 0 | | | | | 7.50 - 23.00 m<br>ANDESITE, brownish grey, extremely weak to weak rock, containing biotite, plagioclase, pyroxene. | | | | | | | | |
| | | | | | | | 10 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 11 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 12 | 100 | 20 | | | | | | | | | | | | | |
| | | | | | | | 13 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 14 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 15 | 100 | 12 | | | | | | | | | | | | | |
| | | | | | | | 16 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 17 | 100 | 13 | | | | | | | | | | | | | |
| | | | | | | | 18 | 100 | 64 | | | | | | | | | | | | | |
| | | | | | | | 19 | 100 | 25 | | | | | | | | | | | | | |
| | | | | | | | 20 | 100 | 28 | | | | | | | | | | | | | |
| | | | | | | | 21 | 100 | 50 | | | | | | | | | | | | | |
| | | | | | | | 22 | 100 | 0 | CL | | | | | | | | | | | | |
| | | 23.00 | | | | | 23 | 100 | 80 | | | | | 23.00 - 32.00 m<br>ANDESITE, grey, weak to medium strong. | | | | | | | | |
| | | | | | | | 24 | 100 | 99 | | | | | | | | | | | | | |
| 25 DEC. 1997 | | | | | | | 25 | 100 | 97 | | | | | | | | | | | | | |

N.M.L.C

Fig. 3.1.11 Surface Exploration Log No. A – 10 (1 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 10
SHEET : 2 OF 2
TOTAL DEPTH : 40.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 507.931 meter
COORDINATES : x = 436648.824 y = 9207805.872
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 DECEMBER 1997
COMPLETION DATE : 25 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ADE/KOSASIH
SUPERVISOR :
LOGGED : Rudy M./Anto
DRILLING MACHINE : YBM - 3ES

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | CORES | | | | | | | | | | | | | | Water Pressure Test | REMARKS |
| DATE | SCALE | DEPTH IN METER | G.W.L IN METER | CORE BARREL & BIT TYPE | CASING TYPE | DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (20 40 60 80 100) | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK STRUCTURE | WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | CM / SECOND | LUGEON | |
| 25 DECEMBER 1997 | 16 | 32.00 | | N.M.L.C | | | 24 | 100 | 80 | CM | | | | 23.00 - 32.00 m:<br>ANDESITE, grey, weak to medium strong, dip of crack 60°. | | | | | | | | CORING<br>SPT<br>UNDISTURB |
| | | | | | | | 25 | 100 | 80 | | | | | | | | | | | | | |
| | | | | | | | 26 | 100 | 60 | | | | | | | | | | | | | |
| | | | | | | | 27 | 100 | 50 | | | | | | | | | | | | | |
| | | | | | | | 28 | 100 | 90 | | | | | | | | | | | | | |
| | | | | | | | 29 | 100 | 100 | | | | | ANDESITE, grey, weak to medium strong, dip of crack 60° - 80°. | | | | | | | | |
| | | | | | | | 30 | 100 | 55 | | | | | | | | | | | | | |
| | | | | | | | 31 | 100 | 82 | | | | | | | | | | | | | |
| | | | | | | | 32 | 100 | 100 | | | | | 32.00 - 40.00 M<br>ANDESITE, medium strong to strong rock. | | | | | | | | |
| | | | | | | | 33 | 100 | 99 | | | | | | | | | | | | | |
| | | | | | | | 34 | 100 | 98 | | | | | | | | | | | | | |
| 26 DECEMBER 1997 | | | | | | | 35 | 100 | 97 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.1.11 Surface Exploration Log No. A – 10 (2 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 11
SHEET : 1 OF 2
TOTAL DEPTH : 30.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 493.879 meter
COORDINATES : x = 437048.314 y = 9207614.359
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 DECEMBER 1997
COMPLETION DATE : 25 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : Sudarmaji
SUPERVISOR :
LOGGED : Rudy Mulyana
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 5 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: CM / SECOND | LUGEON | 16 REMAKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 DECEMBER 1997 | | 0.00 | | | | | 1 | 100 | 0 | CH | | | | 0.00 - 4.70 m Silty CLAY, brown to reddish brown, high plasticity, firm, moist.. | | | | | | | | CORING |
| | | | | | | | 2 | 100 | 0 | | | | | | | | | | | | | SPT |
| | | | | | | | 3 | 100 | 0 | | | | | | | | | | | | | UNDISTURB |
| | | | | | | | 4 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 5 | 100 | 0 | | | | | | | | | | | | | |
| | | 4.70 | | | | | 6 | 100 | 0 | D | | | | 4.70 - 5.80 m SILT, greyish brown, low plasticity, firm, moist, derived from highly weathered andesite. | | | | | | | | |
| | | 5.80 | | | | | 7 | 100 | 55 | | | | | 5.80 - 8.80 m ANDESITE, extremely weak to weak rock, brownish grey, containing biotite, plagioclase, pyroxene. | | | | | | | | |
| | | | | | | | 8 | 100 | 78 | | | | | | | | | | | | | |
| | | 8.80 | | | | | | | 80 | CL | | | | 8.80 - 11.68 m ANDESITE, weak to medium strong rock, grey, dip of crack 30°. | | | | | | | | |
| | | | | | | | | | 74 | | | | | | | | | | | | | |
| | | | | | | | 9 | 100 | 74 | | | | | | | | | | | | | |
| | | 11.68 | | | | | | | 79 | | | | | 11.68 - 23.80 m ANDESITE, medium strong to strong rock, grey, dip of crack 60° - 90°. | | | | | | | | |
| | | | | | | | 10 | 100 | 79 | | | | | | | | | | | | | |
| | | | | | | | | | 95 | | | | | | | | | | | | | |
| | | | | | | | 11 | 100 | 86 | | | | | | | | | | | | | |
| | | | | | | | | | 80 | | | | | | | | | | | | | |
| | | | | | | | 12 | 100 | 90 | | | | | | | | | | | | | |
| | | | | | | | | | 78 | | | | | | | | | | | | | |
| | | | | | | | 13 | 100 | 100 | | | | | | | | | | | | | |
| | | | | | | | | | 100 | | | | | | | | | | | | | |
| | | | | | | | 14 | 100 | 80 | | | | | | | | | | | | | |
| | | | | | | | | | 87 | | | | | | | | | | | | | |
| | | | | | | | | | 84 | | | | | | | | | | | | | |
| | | 23.80 | | | | | 15 | 100 | 45 | | | | | 23.80 - 24.50 m ANDESITE, weak to medium strong rock. | | | | | | | | |
| | | 24.50 | | | | | | | 54 | | | | | 24.50 - 25.00 m ANDESITE, black, medium strong to strong rock. | | | | | | | | |
| 24 DECEMBER 1997 | | 25.00 | | | | | | | | | | | | | | | | | | | | |

Fig. 3.1.12 Surface Exploration Log No. A – 11 (1 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 11
SHEET : 2 OF 2
TOTAL DEPTH : 30.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 493.879 meter
COORDINATES : x = 437048.314 y = 9207614.359
DEPTH OF G.W.L :

COMMENCEMENT DATE : 23 DECEMBER 1997
COMPLETION DATE : 24 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : Sudarmaji
SUPERVISOR :
LOGGED : Rudy Mulyana
DRILLING MACHINE : YBM - 3ES

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 5 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: CM / SECOND | LUGEON | 16 REMAKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 DECEMBER 1997 | | 25.00 | | | | | 16 | 100 | 63 | CM | | | | 25.00 - 25.85 m ANDESITE, grey, medium strong to weak. | | | | | | | | CORING |
| | | 25.85 | | | | | | | 72 | | | | | 25.85 - 28.45 m ANDESITE, reddish orange to yellowish brown, weak to extremely weak rock. | | | | | | | | SPT |
| | | | | | | | 17 | 100 | 50 | D | | | | | | | | | | | | UNDISTURB |
| | | 28.45 | | | | | | | 20 | | | | | 28.45 - 30.00 m ANDESITE, dark brown to black, extremely weak to weak rock. | | | | | | | | |
| | | | | | | | 18 | 100 | 78 | CL | | | | | | | | | | | | |
| | | 30.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.1.12 Surface Exploration Log No. A – 11 (2 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 12
SHEET : 1 OF 2
TOTAL DEPTH : 30.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 458.300 meter
COORDINATES : x = 437145.159 y = 9207821.448
DEPTH OF G.W.L :

COMMENCEMENT DATE : 22 DECEMBER 1997
COMPLETION DATE : 25 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ASEP/SOBANDI
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - SES

| 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 | CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (25 40 80 100) | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK STRUCTURE | WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | Water Pressure Test: CM / SECOND | Water Pressure Test: LUGEON | REMAKS |

22 DECEMBER 1997 — 24 DECEMBER 1997 — 25 DECEMBER 1997 — N.M.L.C

0.00 - 0.35 m
Clayey SILT, brown, low plasticity, firm, moist.

0.35 - 0.65 m
Silty SAND, brownish grey, fine to medium grained, loose, poorly graded.

0.65 - 2.00 m
ANDESITE, greyish brown, extremely weak to weak rock, containing biotite, plagioclase, pyroxene.

2.00 - 10.00 m
ANDESITE, grey, weak to medium strong, dip of crack 30°.

At 5 m depth:
ANDESITE, weak to medium strong rock, dip of crack 40° - 60°.

10.00 - 30.00 m
ANDESITE, grey to dark grey, medium strong to strong rock, dip of crack 60° - 90°.

Fig. 3.1.13 Surface Exploration Log No. A – 12 (1 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 12
SHEET : 2 OF 2
TOTAL DEPTH : 30.00 M

PROJECT : SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
LOCATION : QUARRY SITE
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : 458.300 meter
COORDINATES : x = 437145.159 y = 9207821.448
DEPTH OF G.W.L :

COMMENCEMENT DATE : 22 DECEMBER 1997
COMPLETION DATE : 25 DECEMBER 1997
ANGLE : 90° (VERTICAL)
BEARING :
DRILLER : ASEP/SOBANDI
SUPERVISOR :
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YBM - SES

| 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 | CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF RQD (25 40 80 100) | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK STRUCTURE | WEATHERING | STRENGTH | JOINT SPACING | S.P.T. BLOW / 30 cm | Water Pressure Test: CM / SECOND | Water Pressure Test: LUGEON | REMAKS |

22 DECEMBER 1997 — 24 DECEMBER 1997 — N.M.L.C

10.00 - 30.00 m
ANDESITE, grey to dark grey, medium strong to strong rock, dip of crack 60° - 90°.

BOTTOM OF HOLE

Fig. 3.1.13 Surface Exploration Log No. A – 12 (2 of 2)

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

# SUBSURFACE EXPLORATION LOG

BORING NO : A - 13
SHEET : 1 OF 2
TOTAL DEPTH : 30.00 M

| | | | |
|---|---|---|---|
| PROJECT | SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA | COMMENCEMENT DATE | 16 DECEMBER 1997 |
| LOCATION | QUARRY SITE | COMPLETION DATE | 20 DECEMBER 1997 |
| FEATURE | | ANGLE | 90° (VERTICAL) |
| AREA DESIGNATION | | BEARING | |
| GROUND ELEVATION | 458.567 meter | DRILLER | Asep/Sobandi |
| COORDINATES | x = 437267.850 y = 9207637.264 | SUPERVISOR | |
| DEPTH OF G.W.L | | LOGGED | Rudy Mufraini |
| | | DRILLING MACHINE | YBM - 3ES |

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: ON / SECOND | LUGEON | 16 REMAKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 DECEMBER 1997 | | 2.65 | | 73 mm | | | 1 | 100 | 0 | | | | | 0.00 - 2.65 m CLAY, brown to light brown, high plasticity, firm to stiff, moist. | | | | | | | | CORING |
| | | | | | | | 2 | 100 | 0 | | | | | | | | | | | | | SPT |
| | | | | | | | 3 | 100 | 0 | | | | | | | | | | | | | UNDISTURB |
| | | | | | | | 4 | 100 | 0 | | | | | | | | | | | | | |
| | | | | | | | 5 | 100 | 0 | | | | | | | | | | | | | |
| | | 5.00 | | | | | 6 | 100 | 0 | | | | | 2.65 - 5.00 m Sandy SILT, brown to reddish grey, low plasticity, stiff, moist (derived from highly weathered andesite). | | | | | | | | | |
| | | | | | | | 7 | 100 | 0 | | | | | | | | | | | | | |
| | | 5.55 | | | | | 8 | 100 | 47 | | | | | 5.00 - 5.55 m ANDESITE, grey, extremely weak to weak rock, containing pyroxene, plagioclase, biotite. | | | | | | | | | |
| | | | | | | | 9 | 100 | 35 | | | | | | | | | | | | | |
| | | 7.90 | | | | | 10 | 100 | 85 | | | | | 5.55 - 7.90 m ANDESITE, weak to medium strong rock, dip of crack 40° - 60° | | | | | | | | | |
| 17 DECEMBER 1997 | | | | | | | 11 | 100 | 87 | | | | | | | | | | | | | |
| | | | | | | | 12 | 100 | 100 | | | | | 7.90 - 19.00 m ANDESITE, medium strong to strong rock, dip of crack 15° - 30°, at 11.00 m depth, dip = 60° - 80°. | | | | | | | | | |
| | | | | | | | 13 | 100 | 100 | | | | | | | | | | | | | |
| | | | | | | | 14 | 100 | 61 | | | | | | | | | | | | | |
| | | | | | | | 15 | 100 | 24 | | | | | | | | | | | | | |
| | | | | | | | 16 | 100 | 82 | | | | | | | | | | | | | |
| | | | | | | | 17 | 100 | 87 | | | | | | | | | | | | | |
| | | 19.00 | | N M L C | | | 18 | 100 | | CM | | | | | | | | | | | | |
| | | | | | | | 19 | 100 | 32 | | | | | 19.00 - 28.60 m ANDESITE, medium strong to weak rock, dip of crack 60° - 90°. | | | | | | | | | |
| | | | | | | | 20 | 100 | 48 | | | | | | | | | | | | | |
| | | | | | | | 21 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 22 | 100 | 32 | | | | | | | | | | | | | |
| | | | | | | | 23 | 100 | 40 | | | | | | | | | | | | | |
| 20 DECEMBER 1997 | | | | | | | 24 | 100 | 25 | | | | | | | | | | | | | |
| | | | | | | | 25 | 100 | 30 | | | | | | | | | | | | | |

Fig. 3.1.14 Surface Exploration Log No. A – 13 (1 of 2)

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

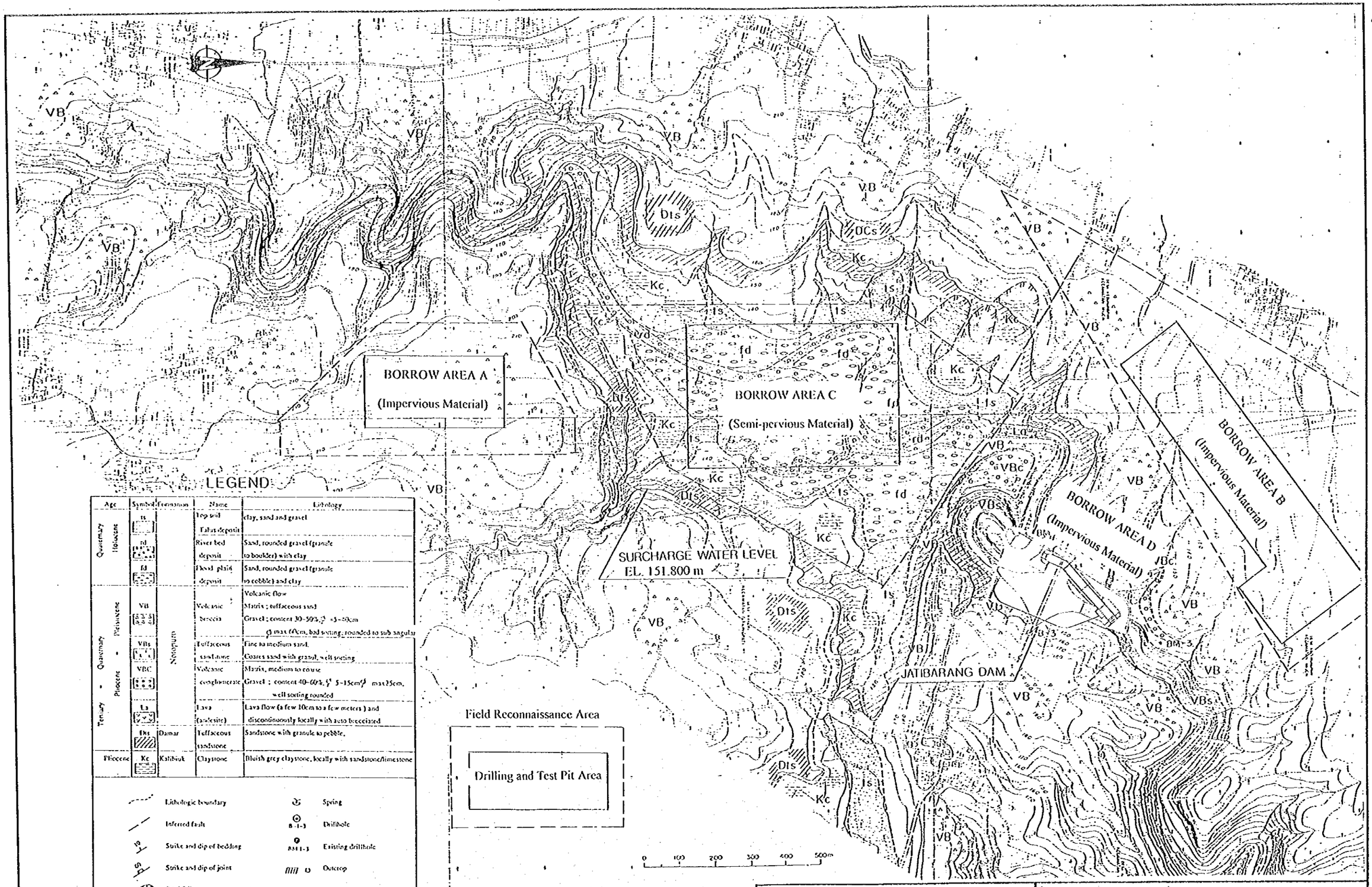
# SUBSURFACE EXPLORATION LOG

BORING NO : A - 13
SHEET : 2 OF 2
TOTAL DEPTH : 30.00 M

| | | | |
|---|---|---|---|
| PROJECT | SOIL MECHANICS SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA | COMMENCEMENT DATE | 16 DECEMBER 1997 |
| LOCATION | QUARRY SITE | COMPLETION DATE | 20 DECEMBER 1997 |
| FEATURE | | ANGLE | 90° (VERTICAL) |
| AREA DESIGNATION | | BEARING | |
| GROUND ELEVATION | 458.567 meter | DRILLER | Asep/Sobandi |
| COORDINATES | x = 437267.850 y = 9207637.264 | SUPERVISOR | |
| DEPTH OF G.W.L | | LOGGED | Rudy Mufraini |
| | | DRILLING MACHINE | YBM - 3ES |

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | CLASSIFICATION | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK STRUCTURE | 11 WEATHERING | 12 STRENGTH | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 cm | 15 Water Pressure Test: ON / SECOND | LUGEON | 16 REMAKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 DECEMBER 1997 | | 28.60 | | N M L C | | | 26 | 100 | 88 | | | | | 19.00 - 28.60 m ANDESITE, medium strong to weak rock, dip of crack 60° - 90°. | | | | | | | | CORING |
| | | | | | | | 27 | 100 | 55 | CM | | | | | | | | | | | | SPT |
| | | | | | | | 28 | 100 | 98 | | | | | 28.60 - 30.00 m ANDESITE, reddish grey, weak to extremely weak rock. | | | | | | | | UNDISTURB |
| | | 30.00 | | | | | | | 40 | CL | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.1.14 Surface Exploration Log No. A – 13 (2 of 2)



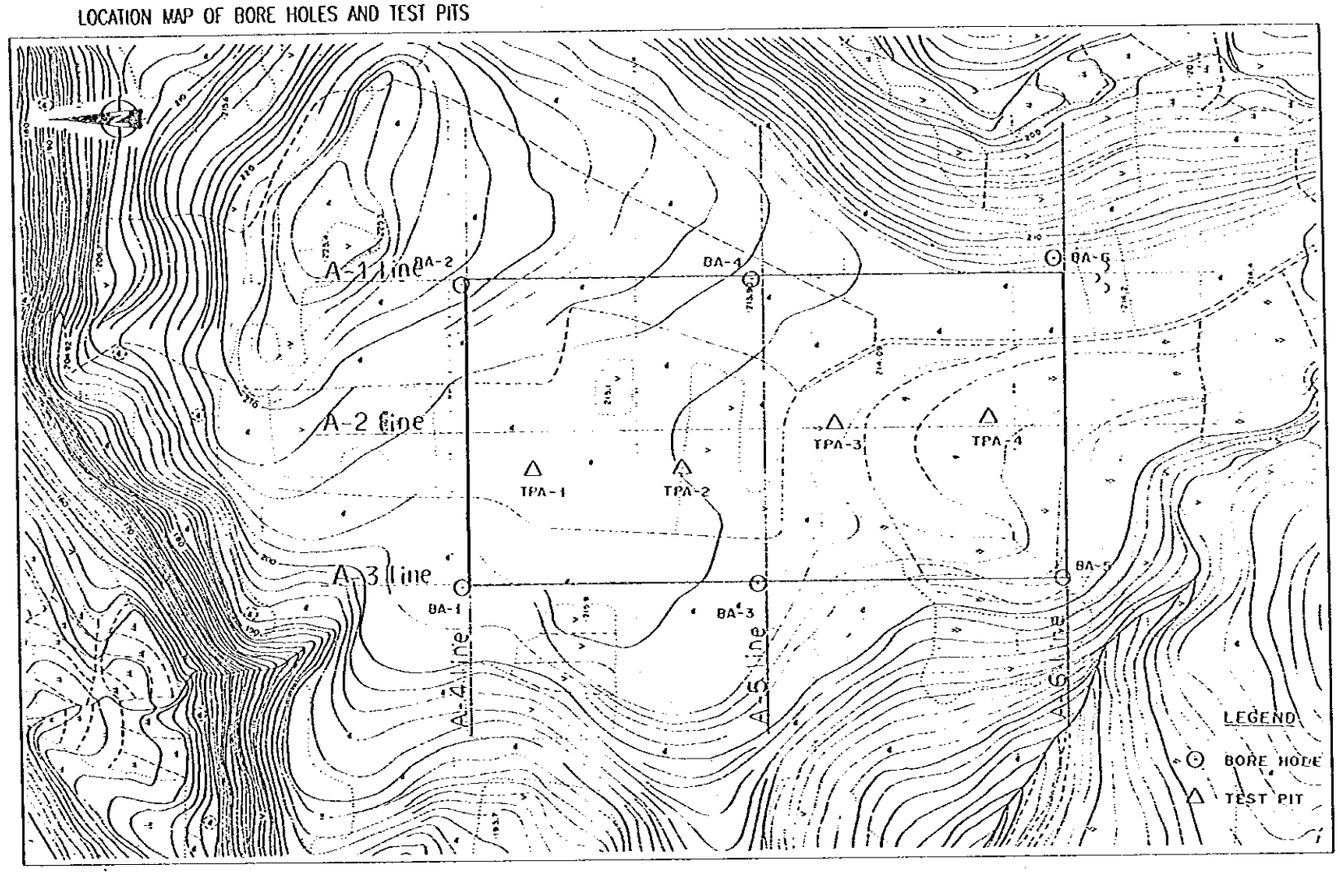

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.2.1

LOCATION MAP OF BORROW AREAS

LOCATION MAP OF BORE HOLES AND TEST PITS




N

0 40 80 120 160 200m

## LEGEND

HOLE NUMBER(DEPTH)
○ : BORE HOLE

PIT NUMBER
△ : TEST PIT POINT

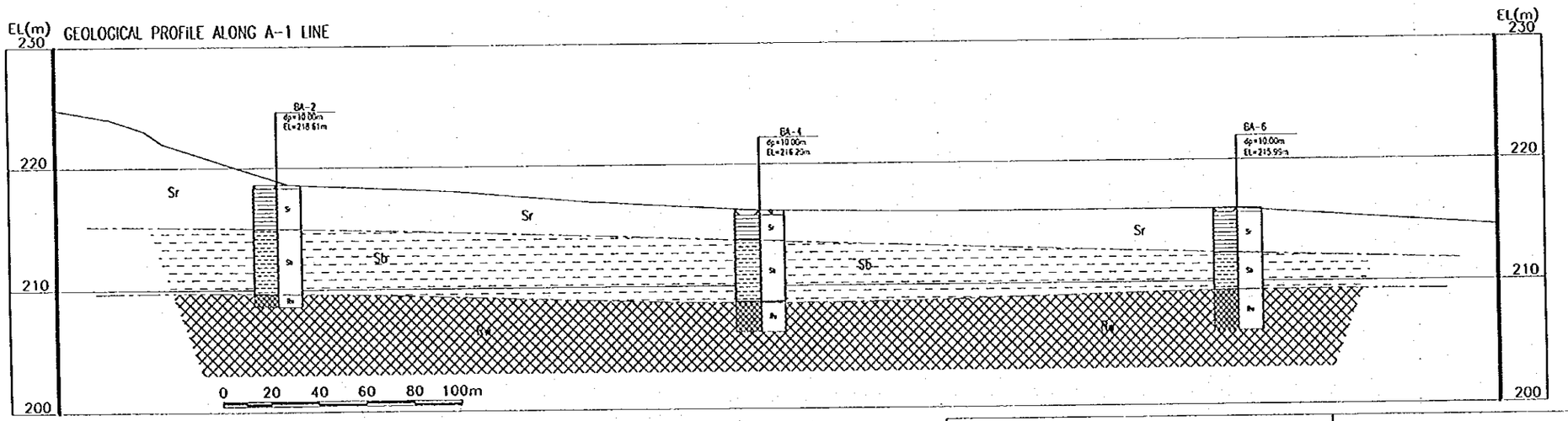
(Soil Division)

| Division | | Symbol | Description |
|---|---|---|---|
| Weathered Soil Zone | Topsoil | Ts | Topsoil mainly consists of clay and silt, and there is no original structure of mother rock. The soil has loose condition, and contains roots of plants and organic material. |
| | Reddish Soil | Sr | Reddish soil mainly consists of clay and silt, and there is no original structure of mother rock, no fragment which composes rock. Therefore it consists of clay and silt mainly. The soil has high plasticity, but moisture content is not so high. |
| | Brownish Soil | Sb | Brownish soil mainly consists of clay and silt, and there is no original structure of mother rock. But the fragments are recognized partly or generally as the mass of clay mineral and the quality of fragments is very soft. The soil has high plasticity like Reddish Soil, but mixture content is slightly high. |
| High Weathered Rock Zone | | Rw | About half of the rock material has been weathered to clay minerals, and is converted to soil partly. But it is possible to classify the original rock. |

(Note)

Boundary of Soils and Weathered Rock

EL(m) GEOLOGICAL PROFILE ALONG A-1 LINE

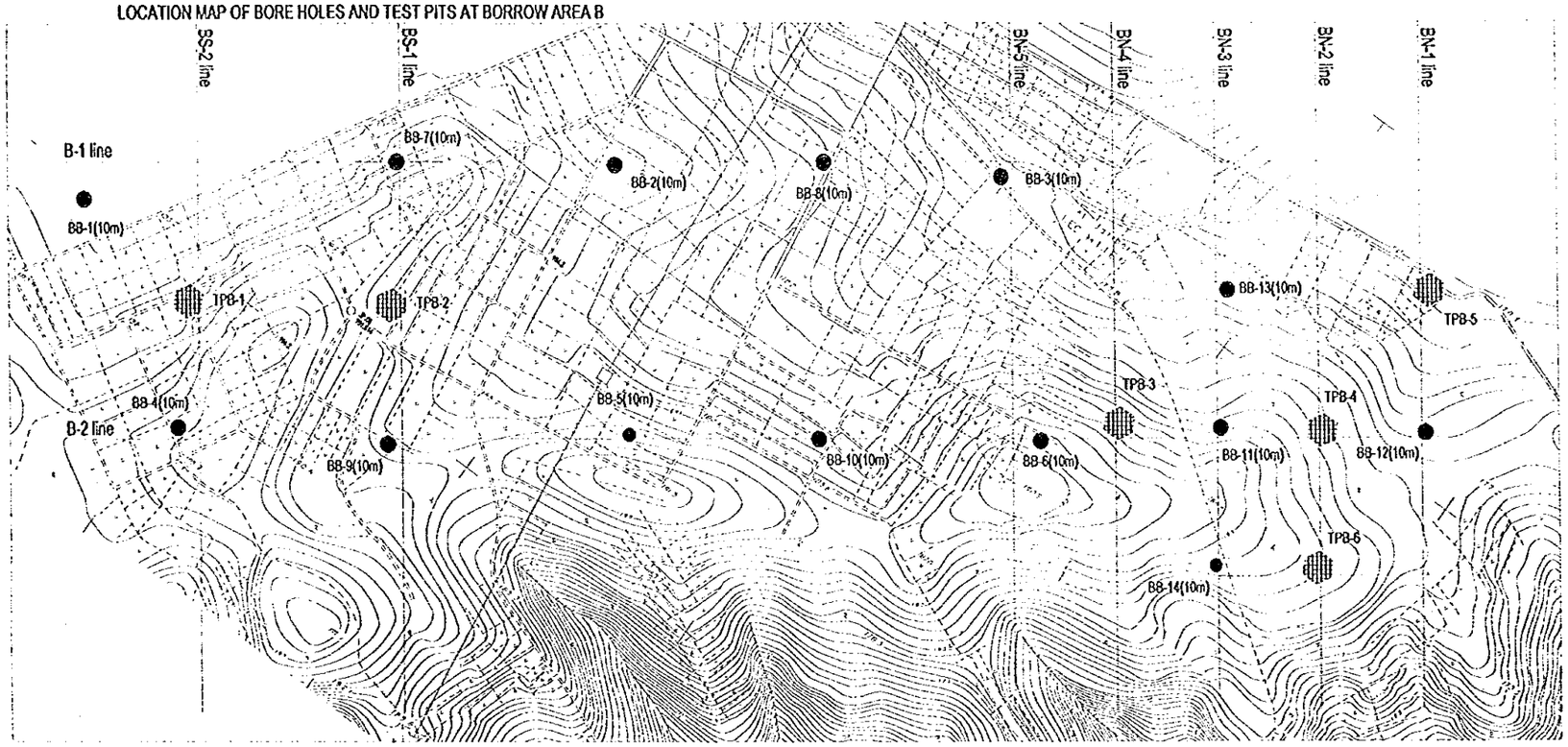


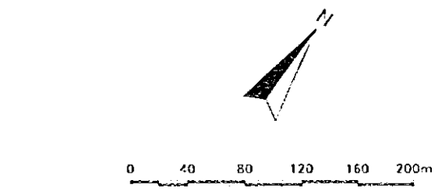

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.2.2
LOCATION MAP AND GEOLOGICAL PROFILE AT BORROW AREA A

## LOCATION MAP OF BORE HOLES AND TEST PITS AT BORROW AREA B



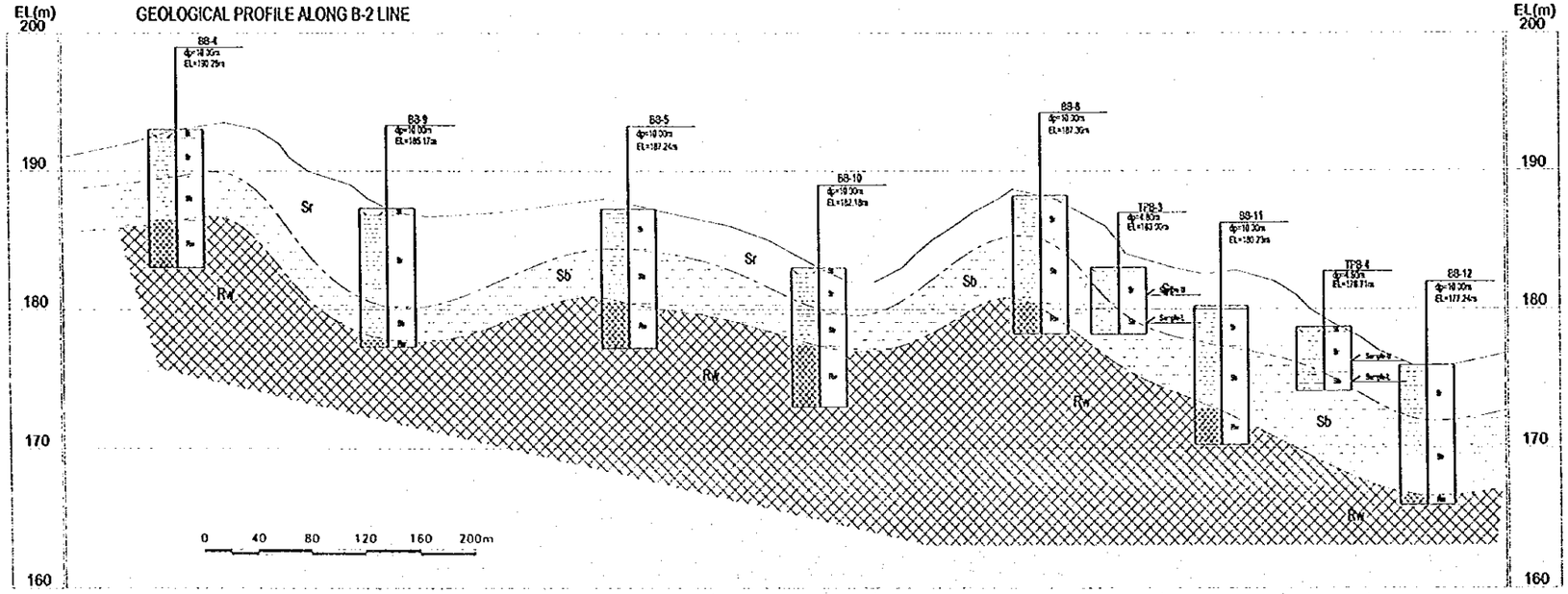




## LEGEND

HOLE NUMBER(DEPTH) : BORE HOLE

PIT NUMBER : TEST PIT POINT

## GEOLOGICAL PROFILE ALONG B-2 LINE




(Soil Division)

| Division | | Symbol | Description |
|---|---|---|---|
| Weathered Soil Zone | Topsoil | Ts | Topsoil mainly consists of clay and silt, and there is no original structure of mother rock. The soil has loose condition, and contains roots of plants and organic material. |
| | Reddish Soil | Sr | Reddish soil mainly consists of clay and silt, and there is no original structure of mother rock, no fragment which composes rock. Therefore it consists of clay and silt mainly. The soil has high plasticity, but moisture content is not so high. |
| | Brownish Soil | Sb | Brownish soil mainly consists of clay and silt, and there is no original structure of mother rock. But the fragments are recognized partly or generally as the mass of clay mineral and the quality of fragments is very soft. The soil has high plasticity like Reddish Soil, but moisture content is slightly high. |
| High Weathered Rock Zone | | Rw | About half of the rock material has been weathered to clay minerals, and is converted to soil partly. But it is possible to classify the original rock. |

(Note)

Boundary of Soils and Weathered Rock

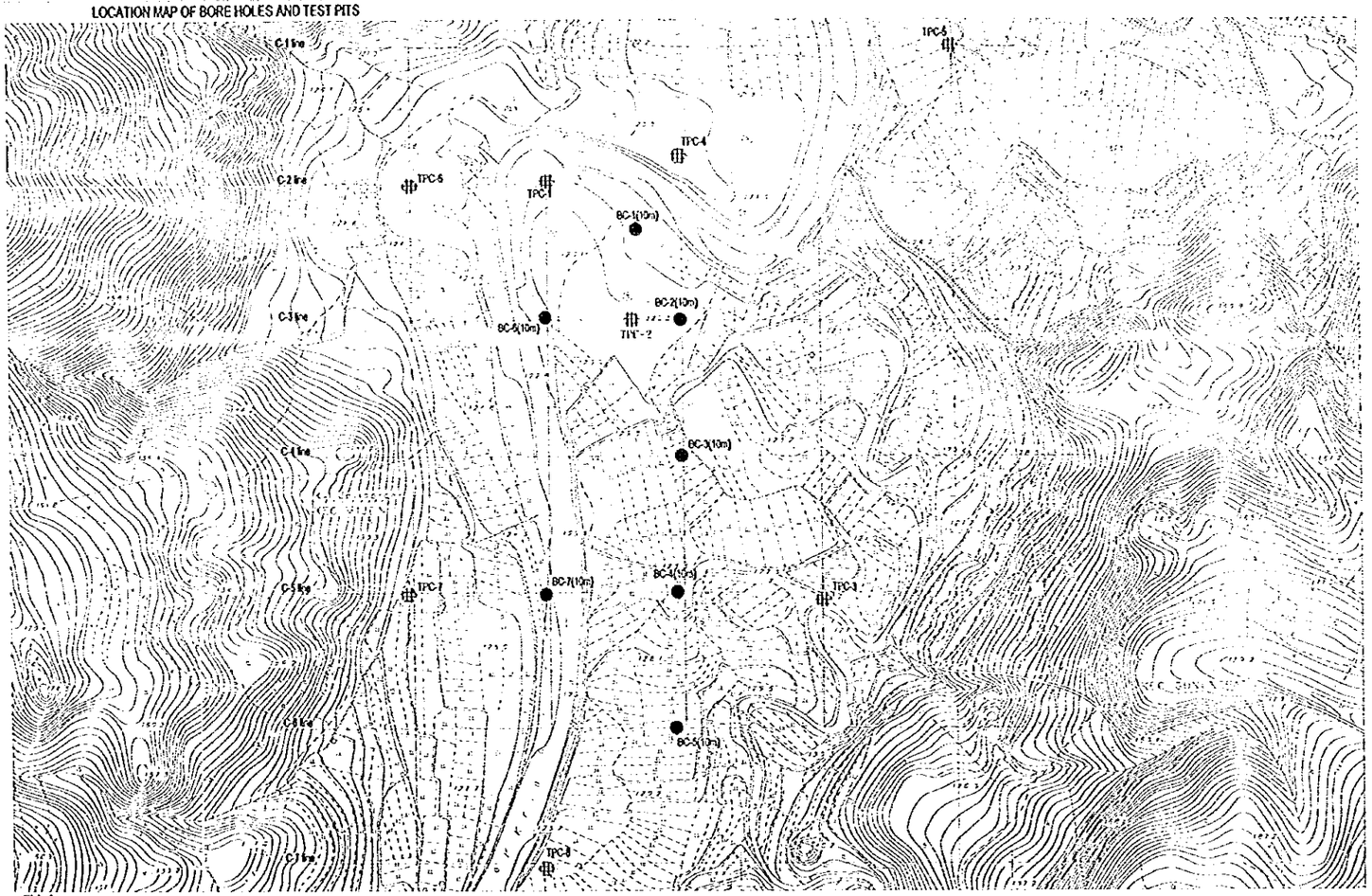
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.2.3

LOCATION MAP AND GEOLOGICAL PROFILE AT BORROW AREA B

LOCATION MAP OF BORE HOLES AND TEST PITS




## LEGEND

HOLE NUMBER(DEPTH)

● : BORE HOLE

PIT NUMBER

⫴ : TEST PIT POINT

N

0 40 80 120 160 200m

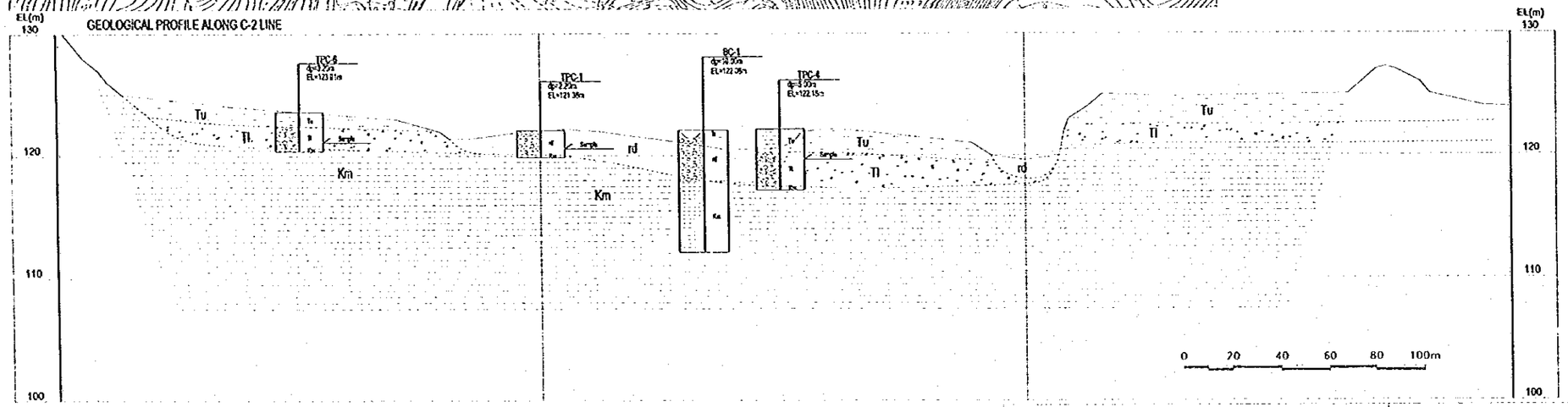
(Geological Strata)

| Age | | Formation and Strata Name | Symbol | Description |
|---|---|---|---|---|
| Quaternary | Holocene | Topsoil | Ts | The topsoil is distributed at the surface of terrace deposit. It consists of loose soil, and contains organic material and many roots of plants. |
| | | Riverbed deposit | Rd | The deposit is distributed at the present riverbed and the flood plain. It mainly consists of boulder, cobble, pebble and sand, and it contains silt and clay with small quantity. But the deposit contains the gravel of siltstone, which has soft quality and is crushed easily, the total rate of fine material may be more than 10 % of the deposit. |
| | | Talus deposit | Td | The deposit is distributed at the skirt of the mountainside slope. It consists of failure soil and sand, detritus and fallen rocks, and the total rate of fine material is more than 50 % of the deposit. |
| | Terrace deposit | Upper Layer | Tu | The deposit forms the terrace plain along the riverbed, and the relative height of the plain is less than 3 m from the riverbed. The upper layer of terrace deposit mainly consists of silt, and contains sand and gravel with small quantity. |
| | | Lower Layer | Tl | The lower layer of terrace deposit mainly consists of boulder, cobble, pebble and sand, and it contains more quantities of silt and clay than riverbed deposit. The deposit contains the gravel of siltstone, which has soft quality and is crushed easily, the total rate of fine material may be more than 20 % of the deposit. |
| Tertiary | Miocene-Pliocene | Kerek | Siltstone | Km | Kerek formation is distributed under the secondary deposits which include all layers in Quaternary, and it forms the bedrock of this area. It consists of siltstone whose color is greenish dark gray, and partly contains coral limestone. The hardness of siltstone is comparatively low. |

(Note)

Boundary of Geological Strata

GEOLOGICAL PROFILE ALONG C-2 LINE




THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.2.4
LOCATION MAP AND GEOLOGICAL PROFILE AT BORROW AREA C

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 1
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = +214.231
COORDINATES : X = +427577.519 Y = +9220655.936
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 4 September 1998
COMPLETION DATE : 4 September 1998
ANGLE : Vertical , BEARING :
DRILLER : Yuta / Kosuh
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
DRILLING MACHINE : YSO - 01

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO | % RECOVERY | R.Q.D. % | LITHOLOGY | GRAPH OF R.Q.D (0 20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 WATER RETURN/LOSS | 15 WATER PRESSURE TEST: DAY/SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 SEPTEMBER 1998 | | 0.00 | | | | | | | | | | | | 0.00 - 0.30 m : TOP SOIL (SILTY CLAY), reddish brown, soft, low plasticity, moist, containing plant roots | SC | | | | | | | CORING / SPT / SAMPLING |
| | | 0.30 | | | | | | | | | | | | 0.30 - 3.50 m : CLAY, brownish red, soft, low plasticity, moist | Sr | | | | | | | |
| | | 3.50 | | STC dia. 73 mm | CASING dia. 89 mm | | | 100 | | | | | | 3.50 - 6.50 m : SILTY CLAY, light brown, soft, low plasticity, moist | Sb | | | | | | | |
| | | 6.50 | | | | | | | | | | | | 6.50 - 10.00 m : Original rock: VOLCANIC BRECCIA, Hard rock fragments are contained partly | Rw | | | | | | | |
| | | 10.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.5 Subsurface Exploration Log No. BA – 1

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 2
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = +218.607
COORDINATES : X = +427727.668 Y = +9220657.643
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 2 September 1998
COMPLETION DATE : 3 September 1998
ANGLE : Vertical , BEARING :
DRILLER : Yuta / Kosuh
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
DRILLING MACHINE : KOKEN OE - 2L

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO | % RECOVERY | R.Q.D. % | LITHOLOGY | GRAPH OF R.Q.D (0 20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 WATER RETURN/LOSS | 15 WATER PRESSURE TEST: DAY/SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 SEPTEMBER 1998 | | 0.00 | | | | | | | | | | | | 0.00 - 0.30 m : TOP SOIL, dark brown, soft to firm, moist, containing plant roots. | SC | | | | | | | CORING / SPT / SAMPLING |
| | | 0.30 | | | | | | | | | | | | 0.30 - 3.50 m : SILTY CLAY, dark brown, firm, high plasticity, moist. | Sr | | | | | | | |
| | | 3.50 | | STC dia. 73 mm | NONE | | | 100 | | | | | | 3.50 - 9.00 m : SILTY CLAY, yellowish brown, firm, high plasticity, moist. | Sb | | | | | | | |
| 3 SEPTEMBER 1998 | | 9.00 | | | | | | | | | | | | 9.00 - 10.00 m : Original rock: TUFF (ash). | Rw | | | | | | | |
| | | 10.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.6 Subsurface Exploration Log No. BA – 2

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 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 RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 218.463
COORDINATES : X = 423578.654 Y = 9220454.223
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 3 September 1998
COMPLETION DATE : 3 September 1998
ANGLE : Vertical BEARING :
DRILLER : Untung Komardi
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
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 METER | G.W.L IN METER | CORE BARREL & BIT TYPE | CASING TYPE | DEPTH OF WATER LOSS | CORES: BORING, % RECOVERY, R.Q.D. in %, LITHOLOGY, GRAPH OF R.Q.D. | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK CLASSIFICATION | WEATHERING | HARDNESS | JOINT SPACING | B.P.T. BLOW/30 CM | WATER PRESSURE TEST: CM/SECOND, LUGEON | REMARKS: CORING, SPT, SAMPLING |

3 SEPTEMBER 1998

0.00 - 0.30 m :
TOP SOIL (SILTY CLAY), red, soft, low plasticity, containing some amount of plant roots.

0.30 - 3.50 m :
CLAY, brownish red, soft, low plasticity, moist

3.50 - 7.10 m :
CLAY, light brown, soft, high plasticity, moist

7.10 - 10.00 m :
Original rock: VOLCANIC BRECCIA
Hard rock fragments are contained partly

BOTTOM OF HOLE

STC dia. 73 mm
CASING dia. 89 mm
100

Fig. 3.2.7 Subsurface Exploration Log No. BA – 3

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 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 RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVAT(m) : Z = 218.204
COORDINATES : X = 423727.668 Y = 9220456.538
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 1 September 1998
COMPLETION DATE : 2 September 1998
ANGLE : Vertical BEARING :
DRILLER : Yalla / Kossih
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
DRILLING MACHINE : YSO - 01

| 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 | CORES: RUN NO., % RECOVERY, R.Q.D. in %, LITHOLOGY, GRAPH OF R.Q.D. | LOG | METHOD OF SAMPLING | DESCRIPTION OF LITHOLOGY | ROCK CLASSIFICATION | WEATHERING | HARDNESS | JOINT SPACING | B.P.T. BLOW/30 CM | WATER PRESSURE TEST: CM/SECOND, LUGEON | REMARKS: CORING, SPT, SAMPLING |

1 SEPTEMBER 1998
2 SEPTEMBER 1998

0.00 - 0.40 m :
TOP SOIL (SILTY CLAY), red to brown, soft, medium to low plasticity, moist.

0.40 - 2.50 m :
SILTY CLAY, red, high plasticity, stiff to firm, moist.

2.50 - 7.50 m :
CLAYEY SILT, yellowish brown, high plasticity, firm, moist, having white speckles of tuff material's, white & yellow mottled.

7.10 - 10.00 m :
Original rock: TUFFACEOUS SANDSTONE.

BOTTOM OF HOLE

STC dia. 89 mm
CASING dia. 89 mm
STC dia. 73 mm
100

Fig. 3.2.8 Subsurface Exploration Log No. BA – 4

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 5
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 159.518
COORDINATES : X = 427583.020 Y = 9220252.549
DEPTH OF G.W.L. : NONE

COMMENCEMENT DATE : 4 September 1998
COMPLETION DATE : 4 September 1998
ANGLE : Vertical , BEARING :
DRILLER : Uman / Komardi
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
DRILLING MACHINE : KOKEN OE - 2L

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 CORES: DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 SEPTEMBER 1998 | | 0.35 | | STC dia. 89 mm | CASING dia. 89 mm | | | | | | | | | 0.00 - 0.30 m : TOP SOIL (SILTY CLAY), brown, soft, low plasticity, moist, containing some amount of plant roots. | SL | | | | | | | CORING / SPT / SAMPLING |
| | | 3.10 | | | | | | | | | | | | 0.30 - 3.10 m : CLAY, brownish red, soft, high plasticity, moist. | Sr | | | | | | | |
| | | 3.60 | | | | 4.10 | | | | | | | | 3.10 - 5.60 m : SILTY CLAY, light brown, soft, high plasticity, moist. | Sb | | | | | | | |
| | | 5.60 | | STC dia. 73 mm | | | | 100 | | | | | | 5.60 - 10.00 m : Original rock, VOLCANIC BRECCIA. Hard rock fragments are contained partly. | Rw | | | | | | | |
| | | 10.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.9 Subsurface Exploration Log No. BA – 5

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BA - 6
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - A
FEATURE :
AREA DESIGNATION :
GROUND ELEVAT(m) : Z = 215.953
COORDINATES : X = 427790.815 Y = 9220257.857
DEPTH OF G.W.L. : NONE

COMMENCEMENT DATE : 1 September 1998
COMPLETION DATE : 2 September 1998
ANGLE : Vertical , BEARING :
DRILLER : Uman / Komardi
SUPERVISOR : H. Otaka
LOGGED : Tonny Lesmana
DRILLING MACHINE : YSO - 01

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 CORES: DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 SEPTEMBER 1998 | | 0.35 | | STC dia. 73 mm | CASING dia. 89 mm | | | | | | | | | 0.00 - 0.35 m : TOP SOIL (SILTY CLAY), red to brown, soft, high plasticity, moist. Containing some amount of plant roots. | SL | | | | | | | CORING / SPT / SAMPLING |
| | | 3.70 | | | | | | 100 | | | | | | 0.35 - 3.70 m : CLAY, brownish red, soft, high plasticity, wet. | Sr | | | | | | | |
| 2 SEPTEMBER 1998 | | 6.70 | | | | | | | | | | | | 3.70 - 6.70 m : CLAYEY SILT, yellowish brown, high plasticity, firm to still, with yellow mottled of iron oxide (derived from left). | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 6.70 - 10.00 m : Original rock, VOLCANIC BRECCIA. Hard rock fragments are contained partly. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.10 Subsurface Exploration Log No. BA – 6

PT. Geo ACE
Jln. Pajajaran no. 135
BANDUNG, INDONESIA

# SUBSURFACE EXPLORATION LOG

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

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 186.765
COORDINATES : X = 427450.892 Y = 9222588.124
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 20 August 1998
COMPLETION DATE : 20 August 1998
ANGLE : Vertical , BEARING :
DRILLER : Yata / Kosash
SUPERVISOR : H. Otaka
LOGGED : Rudy Mulyanto
DRILLING MACHINE : KOKEN OE-2L

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 AUGUST 1998 | | 0.60 | | STC dia. 73 mm. | CASING dia. 89 mm. | | | 100 | | | | | | 0.00 - 0.60 m : TOP SOIL (SILTY CLAY), brown, soft, high plasticity, moist. Containing: some amount of plant roots. | St | | | | | | | CORING; SPT; SAMPLING |
| | | 3.40 | | | | | | | | | | | | 0.60 - 3.40 m : CLAY, brown to reddish brown, high plasticity, firm to stiff, moist, occasionally gravels, dia. up to 0.50 cm. | Sr | | | | | | | |
| | | 7.40 | | | | | | | | | | | | 3.40 - 7.40 m : CLAYEY SILT, brown to yellowish brown with white and grey, yellow, orange mottled, medium to high plasticity, firm to stiff, moist, HW - MW of Mt. | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 7.40 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE. Original STRUCTURE of rock is left generally, but rock fragments are soft by weathering. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.11 Subsurface Exploration Log No. BB – 1

PT. Geo ACE
Jln. Pajajaran no. 135
BANDUNG, INDONESIA

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 2
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 183.143
COORDINATES : X = 427760.559 Y = 9222839.559
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 20 August 1998
COMPLETION DATE : 20 August 1998
ANGLE : Vertical , BEARING :
DRILLER : Unan / Kosash
SUPERVISOR : H. Otaka
LOGGED : Rudy Mulyanto
DRILLING MACHINE : YSO - 1

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 6 DEPTH OF WATER LOSS | 7 CORES: RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 AUGUST 1998 | | 0.20 | | STC dia. 89 mm. | NONE | | | 100 | | | | | | 0.00 - 0.20 m : TOP SOIL (SILTY CLAY), red, soft, high to medium plasticity, moist. Containing: some amount of plant roots. | St | | | | | | | CORING; SPT; SAMPLING |
| | | 3.40 | | | | | | | | | | | | 0.20 - 3.40 m : CLAY, brownish red, high plasticity, firm to stiff, moist. | Sr | | | | | | | |
| | | 8.30 | | | | | | | | | | | | 3.40 - 8.30 m : SILTY CLAY, reddish brown with black & grey mottled, very stiff, high plasticity, moist. (HW of Mt). | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 8.30 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.12 Subsurface Exploration Log No. BB – 2

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 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 RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 170.763
COORDINATES : X = 427955.243 Y = 9222302.649
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 21 August 1958
COMPLETION DATE : 21 August 1958
ANGLE : Vertical BEARING :
DRILLER : Tatang / Ek
SUPERVISOR : H. Otaka
LOGGED : Rudy Mukarto
DRILLING MACHINE : YSO - 1

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (0 20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 AUGUST 1958 | | 0.00 | | | | | | | | | | | | 0.00 - 0.30 m : TOP SOIL (SILTY CLAY), dark brown, soft to firm, high plasticity, moist. Containing some amount of plant roots. | St | | | | | | | CORING / SPT / SAMPLING |
| | | 0.30 | | | | | | | | | | | | 0.30 - 6.80 m : CLAY, brown to brownish red, high plasticity, firm to stiff. | Sr | | | | | | | |
| | | 6.80 | | | | | | | | | | | | 6.80 - 9.60 m : CLAYEY SILT, brown to light brown with white & orange speckling, medium plasticity, firm, moist to tuff) | Sh | | | | | | | |
| | | 9.60 | | | | | | | | | | | | 9.60 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE. | Rw | | | | | | | |
| | | 10.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

STC dia. 73 mm.
NONE
100

Fig. 3.2.13 Subsurface Exploration Log No. BB – 3

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 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 RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 193.278
COORDINATES : X = 427613.491 Y = 9222455.177
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 19 August 1958
COMPLETION DATE : 19 August 1958
ANGLE : Vertical , BEARING :
DRILLER : Yata / Kosash
SUPERVISOR : H. Otaka
LOGGED : Rudy Mukarto
DRILLING MACHINE : KOKEN OE - 2L

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF R.Q.D (0 20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 AUGUST 1958 | | 0.00 | | | | | | | | | | | | 0.00 - 0.60 m : TOP SOIL (SILTY CLAY), brown, soft to firm, medium to high plasticity, moist. Containing some amount of plant roots. | St | | | | | | | CORING / SPT / SAMPLING |
| | | 0.60 | | | | | | | | | | | | 0.60 - 3.40 m : CLAY, brownish red, high plasticity, firm to stiff, moist. | Sr | | | | | | | |
| | | 3.40 | | | | | | | | | | | | 3.40 - 6.60 m : CLAYEY SILT, light brown to yellowish brown with yellow, orange, white & grey speckling, medium to high plasticity, firm to stiff moist, occasionally gravels with dia. up to 1.00 cm. | Sh | | | | | | | |
| | | 6.60 | | | | | | | | | | | | 6.60 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE. | Rw | | | | | | | |
| | | 10.00 | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

STC dia. 73 mm.
NONE
100

Fig. 3.2.14 Subsurface Exploration Log No. BB – 4

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 5
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 187.243
COORDINATES : X = 428884.216 Y = 9222688.538
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 19 August 1998
COMPLETION DATE : 19 August 1998
ANGLE : Vertical BEARING :
DRILLER : Utiarf Komardi
SUPERVISOR : H. Otaka
LOGGED : Rudy Mulyadi
DRILLING MACHINE : YSO - 1

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: 8 RUN NO | 9 % RECOVERY | 10 R.Q.D. in % | 11 LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 12 METHOD OF SAMPLING | 13 DESCRIPTION OF LITHOLOGY | 14 ROCK CLASSIFICATION | 15 WEATHERING | 16 HARDNESS | 17 JOINT SPACING | 18 S.P.T. BLOW / 30 CM | WATER PRESSURE TEST: 19 CM / SECOND | 20 LUGEON | 21 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 AUGUST 1998 | | 2.90 | | STC dia. 59 mm. | CASING dia. 89 mm. | | | | | | | | | 0.00 - 2.90 m : CLAY, reddish brown, high plassicity, firm to stiff, moist. Containing: some amount of plant roots. | Sr | | | | | | | CORING / SPT / SAMPLING |
| | | 6.80 | | STC dia. 73 mm. | | | | 100 | | | | | | 2.90 - 6.80 m : SILTY CLAY, brown to yellowish brown, and yellow, red, black, grey mottled, medium to high plassicity, firm to stiff, moist, H.V of bit. | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 6.80 - 10.00 m : Original rock : CONGLOMERATIC SANDSTONE to CONGLOMERATE. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.15 Subsurface Exploration Log No. BB – 5

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 6
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 187.355
COORDINATES : X = 428939.324 Y = 9222805.362
DEPTH OF G.W.L :

COMMENCEMENT DATE : 19 August 1998
COMPLETION DATE : 20 August 1998
ANGLE : Vertical BEARING :
DRILLER : Tatang F.M.
SUPERVISOR : H. Otaka
LOGGED : Rudy Mulyadi
DRILLING MACHINE : YSO - 1

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 DEPTH OF WATER LOSS | CORES: 8 RUN NO | 9 % RECOVERY | 10 R.Q.D. in % | 11 LITHOLOGY | GRAPH OF R.Q.D (20 40 60 80 100) | LOG | 12 METHOD OF SAMPLING | 13 DESCRIPTION OF LITHOLOGY | 14 ROCK CLASSIFICATION | 15 WEATHERING | 16 HARDNESS | 17 JOINT SPACING | 18 S.P.T. BLOW / 30 CM | WATER PRESSURE TEST: 19 CM / SECOND | 20 LUGEON | 21 REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 AUGUST 1998 | | 3.20 | | STC dia. 59 mm. | NONE | | | | | | | | | 0.00 - 0.30 m : TOP SOIL (SILTY CLAY), brown, high plasticity, very soft to soft, moist Containing: some amount of plant roots. | St | | | | | | | CORING / SPT / SAMPLING |
| | | | | | | | | | | | | | | 0.30 - 3.20 m : CLAY, red, firm to stiff, high plasticity, moist. | Sr | | | | | | | |
| 20 AUGUST 1998 | | 7.80 | | STC dia. 73 mm. | | | | 150 | | | | | | 3.20 - 7.80 m : CLAYEY SILT, brown to brownish grey and yellow mottled, medium to high plasticity, firm to stiff, moist, occasionaly gravels with dia up to 2.00 cm. | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 7.80 - 10.00 m : Original rock : CONGLOMERATIC SANDSTONE to TUFFACEOUS SANDSTONE | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.16 Subsurface Exploration Log No. BB – 6

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 7
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 183.395
COORDINATES : X = 427530.907 Y = 9222745.571
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 24 August 1998
COMPLETION DATE : 24 August 1998
ANGLE : Vertical , BEARING :
DRILLER : Yafa / Kosasih
SUPERVISOR : H. Otsuka
LOGGED : Rudy Mukarto
DRILLING MACHINE : KOKEN CE - 2L

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 CORES: DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF RQD (0 20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS: CORING / SPT / SAMPLING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 AUGUST 1998 | | 0.40 | | STC dia. 73 mm. | | | | 100 | | | | | | 0.00 - 0.40 m : TOP SOIL (SILTY CLAY), brown, very soft, high plasticity, moist. Containing: occasionly some plant roots. | St | | | | | | | |
| | | 2.10 | | | | | | | | | | | | 0.40 - 2.10 m : CLAY, brownish red, high plasticity, firm to stiff, moist, (HW of tuff). | St | | | | | | | |
| | | 6.80 | | | | | | | | | | | | 2.10 - 6.80 m : CLAYEY SILT, yelowish brown, high to medium plasticity, firm, moist. (MW of tuff). | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 6.80 - 10.00 m : Original rock: LAPILI TUFF or TUFFACEOUS SANDSTONE. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.17 Subsurface Exploration Log No. BB – 7

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

# SUBSURFACE EXPLORATION LOG

BORING NO : BB - 8
SHEET : 1 OF 1
TOTAL DEPTH : 10.00 M

PROJECT : ADDITIONAL GEOLOGICAL SURVEY FOR THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RECOURCES DEVELOPMENT IN SEMARANG, IN THE REPUBLIC OF INDONESIA
LOCATION : BORROW AREA - B
FEATURE :
AREA DESIGNATION :
GROUND ELEVATION : Z = 177.057
COORDINATES : X = 427683.663 Y = 9222932.872
DEPTH OF G.W.L : NONE

COMMENCEMENT DATE : 23 August 1998
COMPLETION DATE : 23 August 1998
ANGLE : Vertical , BEARING :
DRILLER : Tatang / Udi
SUPERVISOR : H. Otsuka
LOGGED : Rudy Mukarto
DRILLING MACHINE : YSO - 1

| 1 DATE | 2 SCALE | 3 DEPTH IN METER | 4 G.W.L IN METER | 5 CORE BARREL & BIT TYPE | 6 CASING TYPE | 7 CORES: DEPTH OF WATER LOSS | RUN NO. | % RECOVERY | R.Q.D. in % | LITHOLOGY | GRAPH OF RQD (20 40 60 80 100) | LOG | 8 METHOD OF SAMPLING | 9 DESCRIPTION OF LITHOLOGY | 10 ROCK CLASSIFICATION | 11 WEATHERING | 12 HARDNESS | 13 JOINT SPACING | 14 S.P.T. BLOW / 30 CM | 15 WATER PRESSURE TEST: CM / SECOND | LUGEON | 16 REMARKS: CORING / SPT / SAMPLING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 AUGUST 1998 | | 0.45 | | STC dia. 73 mm. | | | | 100 | | | | | | 0.00 - 0.45 m : TOP SOIL (SILTY CLAY), brown, very soft, high plasticity, moist. Containing: some amount of plant roots. | St | | | | | | | |
| | | 2.30 | | | | | | | | | | | | 0.45 - 2.30 m : CLAY, red, high plasticity, firm to stiff, moist. | St | | | | | | | |
| | | 7.00 | | | | | | | | | | | | 2.30 - 7.00 m : CLAYEY SILT, brown with yellow, grey & orange speckles, high to medium plasticity, firm to stiff, moist (HW to MW of tuff). | Sb | | | | | | | |
| | | 10.00 | | | | | | | | | | | | 7.00 - 10.00 m : Original rock: CONGLOMERATIC SANDSTONE. | Rw | | | | | | | |
| | | | | | | | | | | | | | | BOTTOM OF HOLE | | | | | | | | |

Fig. 3.2.18 Subsurface Exploration Log No. BB – 8