

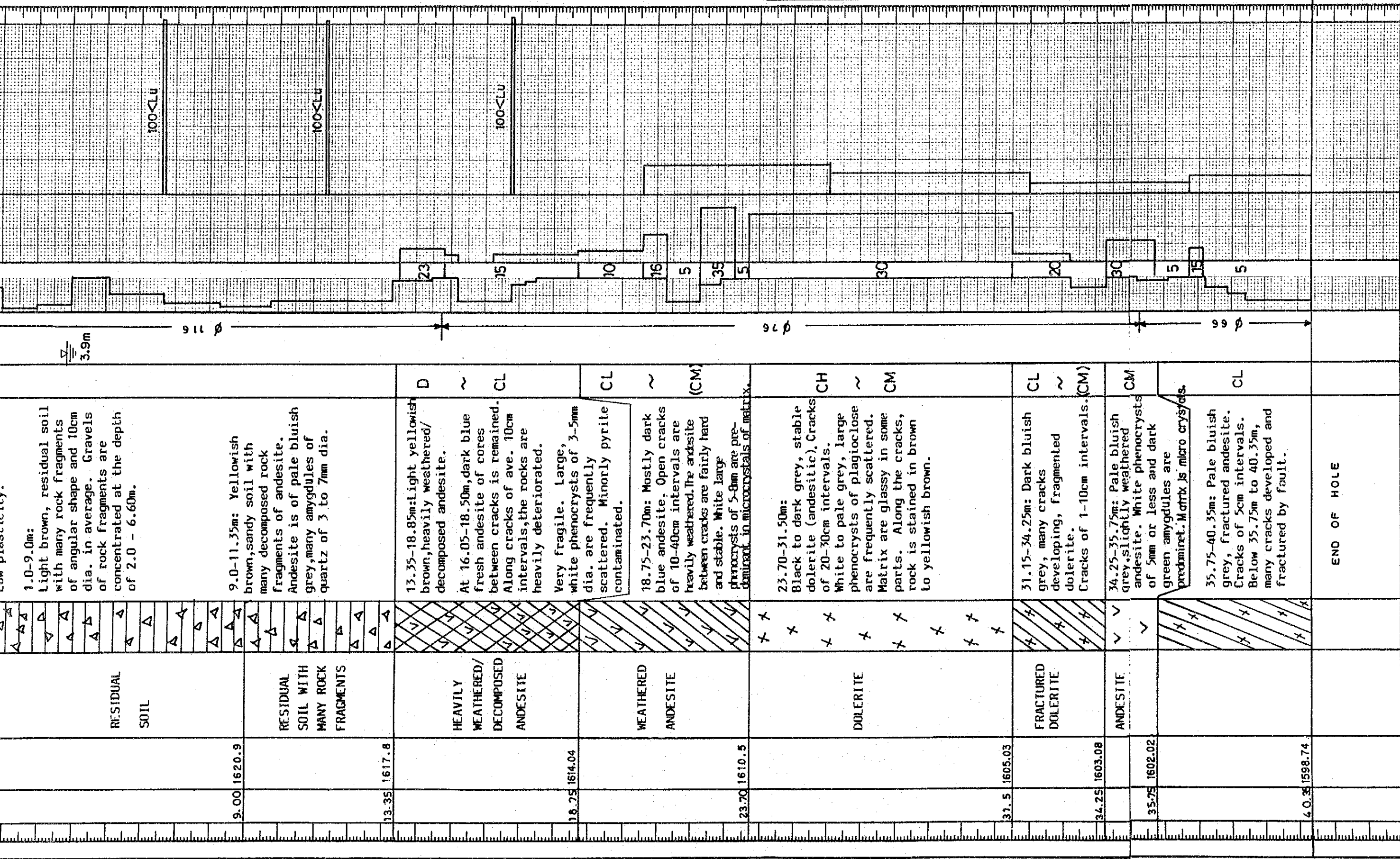
COORDINATION X: 9947, 267.00 Y: 727, 271.00
 ELEVATION 1627.30m.
 HOLE NO. BD 8 SHEET NO. 8 OF 19

DRILL LOG

HOLE NO. BD 8

(8)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D. | WATER PRESSURE TEST LUCEON VALUE | DEPTH |
|------|-------|-----------|--|----------------|--|------------|-------------------|-----------------|----------|----------------------------------|-------|
| | 1.00 | 1626.6 | TOP SOIL | △ | 0-1.0m: Dark reddish chocolate col. top soil with grass roots. Silty. Low plasticity. | | | | | | |
| | 9.00 | 1620.9 | RESIDUAL SOIL | △ | 1.0-9.0m: Light brown, residual soil with many rock fragments of angular shape and 10cm dia. in average. Gravels of rock fragments are concentrated at the depth of 2.0 - 6.60m. | | | | | | |
| | 13.35 | 1617.8 | RESIDUAL SOIL WITH MANY ROCK FRAGMENTS | △ | 9.0-11.35m: Yellowish brown, sandy soil with many decomposed rock fragments of andesite. Andesite is of pale bluish grey, many amygdules of quartz of 3 to 7mm dia. | | | | | | |
| | 18.75 | 1614.04 | HEAVILY WEATHERED/ DECOMPOSED ANDESITE | △ | 13.35-18.85m: Light yellowish brown, heavily weathered/ decomposed andesite. At 16.05-18.50m, dark blue fresh andesite of cores between cracks is remained. Along cracks of ave. 10cm intervals, the rocks are heavily deteriorated. Very fragile. Large, white phenocrysts of 3-5mm dia. are frequently scattered. Minorly pyrite contaminated. | D ~ CL | | | | | |
| | 23.70 | 1610.5 | WEATHERED ANDESITE | △ | 18.75-23.70m: Mostly dark blue andesite. Open cracks of 10-40cm intervals are heavily weathered. The andesite between cracks are fairly hard and stable. White large phenocrysts of 5-8mm are predominant in microcrystals of matrix. | CL ~ (CM) | | | | | |
| | 31.5 | 1605.03 | DOLERITE | △ | 23.70-31.50m: Black to dark grey, stable dolerite (andesitic). Cracks of 20-30cm intervals. White to pale grey, large phenocrysts of plagioclase are frequently scattered. Matrix are glassy in some parts. Along the cracks, rock is stained in brown to yellowish brown. | CH ~ CM | | | | | |
| | 34.25 | 1603.08 | FRACTURED DOLERITE | △ | 31.15-34.25m: Dark bluish grey, many cracks developing, fragmented dolerite. Cracks of 1-10cm intervals. (CM) | CL ~ (CM) | | | | | |
| | 35.75 | 1602.02 | ANDESITE | △ | 34.25-35.75m: Pale bluish grey, slightly weathered andesite. White phenocrysts of 5mm or less and dark green amygdules are predominant. Matrix is micro crystals. | CM | | | | | |



NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9946,955.00, Y: 724,850.00, ELEVATION: 1661.0m.

DRILL LOG

HOLE NO. BS_1 SHEET NO. 9 OF 19

HOLE NO. BS_1

(9)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|---------------------------|----------------|---|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 1979 | 1.0 | 1660.0 | TOP SOIL | | 0-1.0m: Red-reddish brown laterite with grass roots. | | | | | | |
| | 8.50 | 1652.5 | RESIDUAL SOIL | | 1.0-8.5m: Yellowish red laterite soil with weathered gravels of 5-10cm in dia. The portion from 4m to 8.5m in depth is piled many gravels of larger size. | | | | | | |
| | 9.35 | 1651.65 | WEATHERED ANDESITE | | 8.5-10.1m: Pale pink, highly weathered and moderately decomposed andesite. Cracks of 5 to 10cm intervals are filled with brown thin clay. | CL | | | | | |
| | 10.10 | 1650.9 | | | Amigdale andesite is seen at 9.35-10.10m in filled condition with pink clay oxidized. | | | | | | |
| | 10.50 | 1650.5 | | | | | | | | | |
| | 11.80 | 1649.2 | | | | | | | | | |
| | 13.00 | 1648.0 | | | | | | | | | |
| | 13.40 | 1647.6 | | | | | | | | | |
| | 13.90 | 1647.1 | | | | | | | | | |
| | 14.65 | 1646.55 | | | | | | | | | |
| | 14.70 | 1646.3 | | | | | | | | | |
| | 15.50 | 1645.5 | | | | | | | | | |
| | 15.80 | 1645.2 | | | | | | | | | |
| 198 | 18.35 | 1642.65 | MODERATELY FRESH ANDESITE | | 10.10-30.25m: Dark bluish pink, hard andesite. Green phenocrysts of 1 to 3mm in dia. are sporadically spotted. Very thin Qz veins of 1mm to 20mm thick are distributed in some places, i.e. 10.5m, 11.8m, 13.0m, 13.9m, and 14.45m. Qz veins dip 80°. | CM | | | | | |
| | 18.90 | 1642.1 | | | | | | | | | |
| | 23.23 | 1638.77 | | | | | | | | | |
| | 23.60 | 1637.4 | | | | | | | | | |
| | 27.85 | 1633.15 | | | | | | | | | |
| | 28.80 | 1632.2 | | | | | | | | | |
| 198 | 30.25 | 1630.75 | | | END OF HOLE | | | | | | |

NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9947,051.0°, Y: 724,881.0°, ELEVATION: 1656.70m.

DRILL LOG HOLE NO. BS-2 SHEET NO. 10 OF 19

HOLE NO. BS-2

(10)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUCEON VALUE | DEPTH |
|------|-------|-----------|---------------------------|----------------|--|------------|-------------------|-----------------|---------|---|-------|
| 29 | 1.5 | 1655.2 | TOP SOIL | | 0-1.5m: Dark brown to grey, organic with grass roots, soft clay. Highly moistured | | | | | (1/10: 1/10, 2/10, 3/10) | |
| | 8.25 | 1648.45 | RESIDUAL SOIL | | 1.5-8.25m: Yellowish red, laterite of residual soil. 5-8.25m, Sub-rounded gravels of weathered red andesite are scattered. | | | | | (2/10: 2/10, 3/10, 4/10, 5/10) (9/10: 8/10, 7/10: 9/10) (6/10: 5/10, 8/10: 9/10) (4/10: 5/10, 6/10: 5/10) (7/10: 8/10, 9/10: 10/10) (5/10: 5/10) | |
| | 11.55 | 1645.15 | WEATHERED ANDESITE | | 8.25-11.55m: Pale pink fractured andesite. Crack intervals of 3 to 7cm. Deteriorated along cracks and dark brown col. at the crack surfaces. | CL | | | | S.P.T. (Blows/30cm) | |
| | 13.00 | 1643.7 | ANDESITE | | 11.55-13.00m: Pale bluish pink, moderately fresh and fractured clay. | CM | | | | | |
| | 13.80 | 1642.9 | FRACTURED | | 13.00-13.80m: Highly decomposed andesite | D | | | | | |
| | 16.80 | 1639.9 | MODERATELY FRESH ANDESITE | | 13.80-16.80m: Pale pinkish hard and stable andesite. Almost cylindrical core. Cracks dip 30°-60° and intercalated clay at 14.75 and 15.3m(1cm thickness). | CM | | | | | |
| | 28.20 | 1628.5 | FRAGMENTED ANDESITE | | 16.80-28.20m: Reddish pink, frequently developing cracks of 3 to 10cm intervals, fragmented andesite. Rock is very hard. At 17.0m, 21.2m, 24.8, 25.3m, yellowish brown clay fills thinly. Porous subrounded texture of 2-5mm dia. is distributed mainly in the depth of 24.4m to 26.0m. Core lost in 26.0-26.4m Andesite in 26.40-27.05m is brecciated but well cementated matrix. | CL | | | | | |
| | 29.40 | 1627.3 | CRACK DEVELOPING | | 28.20-29.40m: Crack intervals of ave. 10cm. | CL CM | | | | | |
| | 35.25 | | FRESH ANDESITE | | 29.40-35.25m: Pinkish blue, stable and hard andesite. Green phenocrysts of 2 to 5mm are frequently distributed. All cylindrical core. | CM | | | | | |

END OF HOLE

NIPPON KOEI CO., LTD.

CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9947,211.00, Y: 724,931.00, ELEVATION: 1656.90m.
 HOLE NO. BS_3 SHEET NO. 11 OF 19

HOLE NO. BS_3

(11)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|--|----------------|---|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 7/9 | 1.00 | 1655.9 | TOP SOIL | | 0-1.0m: Black to dark grey organic clay with grass roots. 1.0-6.50m: Light red color laterite of residual soil with gravels. At 6.50-7.60m, angular shaped gravels of 2 to 10cm dia. of Quartzite, andesite are piled. | | | | | | |
| | 6.50 | 1650.4 | RESIDUAL SOIL | | | | | | | | |
| | 7.60 | 1649.3 | | | | | | | | | |
| | 13.20 | 1643.7 | HARD AND FRESH ANDESITE | | 7.60-13.20m: Pale blue to grey, very fresh andesite. Cracks are slightly weathered. At 10.75m, yellowish brown clay is filled thinly along the cracks. White thin Qz veins are tightly distributed. White phenocrysts of 1-3mm are spotted. | CH | | | | | |
| | 15.25 | 1641.55 | SLIGHTLY WEATHERED ANDESITE | | 13.20-15.35m: Pale grey, slightly weathered andesite. The rock condition of andesite is of very hard. Open cracks of 60° dipping are distributed at 13.3m and 14.9m are filled with 1cm thickness. | CM | | | | | |
| | 18.10 | 1638.8 | FRACTURED AND ALTERED FINE SANDSTONE | | 15.35-18.10m: Reddish brown heavily weathered and altered fine sandstone. All the cracks of 3-10cm interval are stained in oxidized col. | CL | | | | | |
| | 25.00 | 1631.9 | MODERATELY FRESH, ALTERED FINE SANDSTONE | | 18.10-25.0m: Greenish blue, moderately hard and fresh fine sandstone contaminated pyrite granules by alteration of andesite intrusive. Along the cracks of 60° dipping weathering is being progressed by dark brown col. | CM | | | | | |
| | 32.50 | 1624.4 | FRACTURED AND ALTERED FINE SANDSTONE | | 25.0-32.50m: Light yellowish brown, very fragmented fine sandstone. Cracks of 2 to 5cm intervals are mostly intercalated thin clay. Along the cracks, heavily decomposed and very fragile | D ~ CL | | | | | |
| | 35.10 | 1621.8 | QUARTZITE | | 32.50-35.10m: Bluish grey, fresh and stable quartzite. Pink phenocrysts of 5-8mm dia. like garnet granules are frequently distributed. Very hard rock. Crack interval of 10-20cm. | CM | | | | | |

END OF HOLE

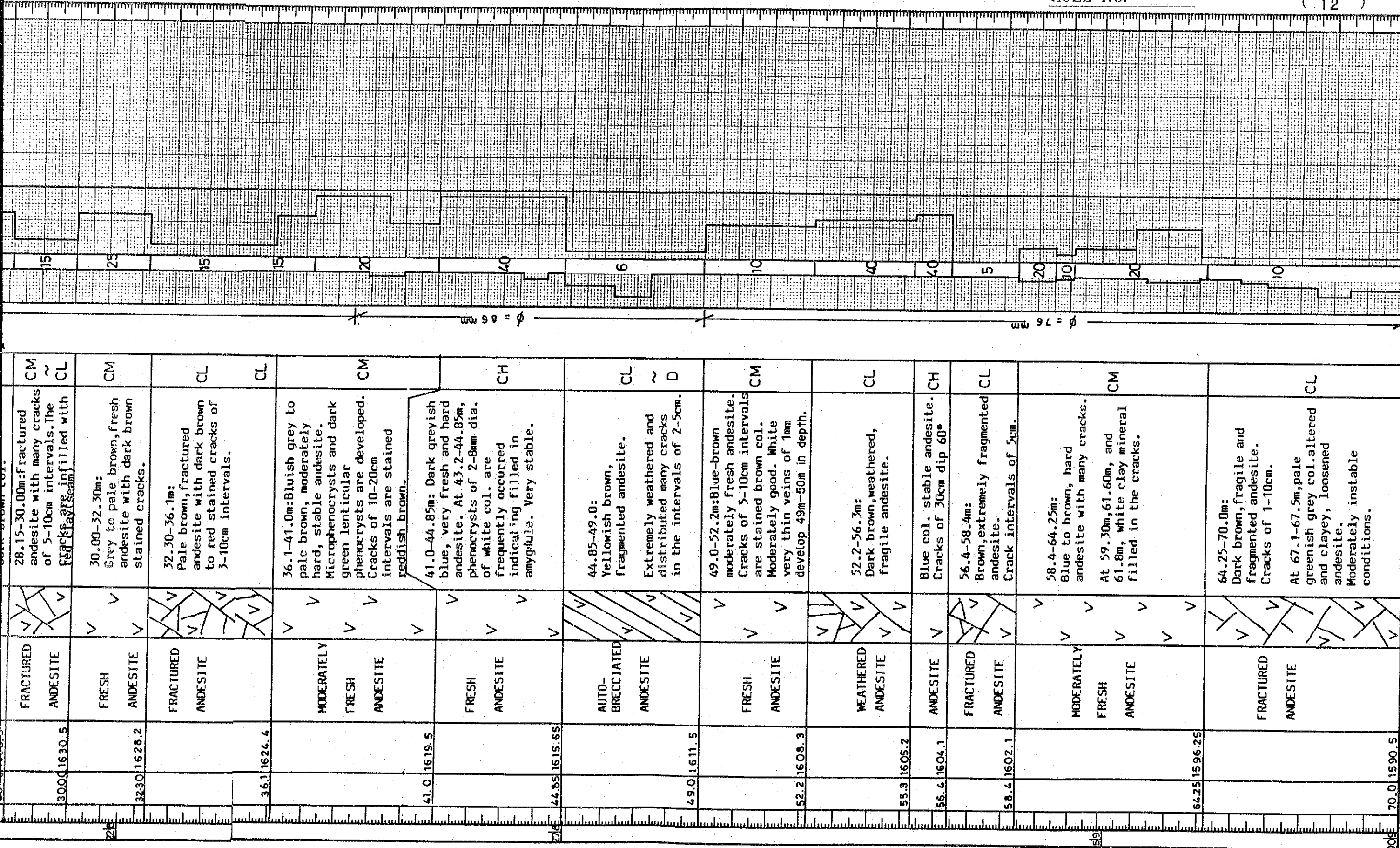
NIPPON KOEI CO., LTD.
 CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9946.970.00, Y: 726,277.00, ELEVATION: 1660.50 m.
DRILL LOG INTAKE HOLE NO. BW1 SHEET NO. 12 OF 19

HOLE NO. BW 1

(12)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|-----------------------------------|----------------|--|------------|-------------------|---------------|---------|----------------------------------|-------|
| | 2.0 | | RESIDUAL SOIL | | | | | | | | |
| | 2.7 | 1657.8 | | | 0-2.7m: Reddish brown to yellow, laterite soil of residual. Rounded andesite breccia of 1-2cm are concentrated at 2-2.7m. | D | | | | | |
| | 7.9 | 1652.6 | HEAVILY WEATHERED ANDESITE | | 2.7-7.9m: Pale brown, easily decomposed, heavily weathered andesite. All the cracks are filled with reddish brown clay. Crack intervals of 5-20cm. | CL | | | | | |
| | 8.4 | 1652.1 | WEATHERED ANDESITE | | | CM | | | | | |
| | 10.25 | 1650.25 | FRESH ANDESITE | | 7.9-8.4m: Pale purple slightly weathered andesite. Cracks of 10cm intervals are stained in brown col. | CH | | | | | |
| | 12.5 | 1648.0 | AUTO-BRECCIATED ANDESITE (SLIMED) | | 8.4-10.25m: Reddish brown, completely decomposed and slimed core. Clayey sand condition. | D | | | | | |
| | 17.4 | 1643.1 | MODERATELY WEATHERED ANDESITE | | 12.5-20.75m: Grey pale brown, moderately weathered andesite. All the cracks of ave. 15cm interval are stained in brown col with thin clay in some portions. | CM | | | | | |
| | 17.9 | 1642.6 | | | | CL | | | | | |
| | 20.75 | 1639.75 | SLIGHTLY WEATHERED ANDESITE | | At 17.4-17.9m, fractured by crack developing and weathering. | CM | | | | | |
| | 22.75 | 1637.75 | FRACTURED ANDESITE | | 20.75-22.75m: Grey, slightly weathered, hard andesite. Stable. | CH ~ CM | | | | | |
| | 24.65 | 1635.85 | FRESH ANDESITE | | 22.75-24.65m: Fractured andesite with many stained cracks of 5-10cm intervals. | CM ~ CL | | | | | |
| | 28.15 | 1630.5 | FRACTURED ANDESITE | | 24.65-28.15m: Grey, very hard and fresh andesite. Cracks of 65° dip and 20° are dominant in the intervals of 20-40cm. The cracks are stained dark brown col. | CM | | | | | |
| | 30.00 | 1630.5 | FRESH ANDESITE | | 28.15-30.00m: Fractured andesite with many cracks of 5-10cm intervals. The cracks are infilled with red clay seam. | CM ~ CL | | | | | |
| | 32.30 | 1628.2 | FRACTURED ANDESITE | | 30.00-32.30m: Grey to pale brown, fresh andesite with dark brown stained cracks. | CM | | | | | |
| | 36.1 | 1624.4 | MODERATELY WEATHERED ANDESITE | | 32.30-36.1m: Pale brown, fractured andesite with dark brown to red stained cracks of 5-10cm intervals. | CL | | | | | |
| | | | | | 36.1-41.0m: Bluish grey to pale brown, moderately hard, stable andesite. Microphenocrysts and dark | CL | | | | | |

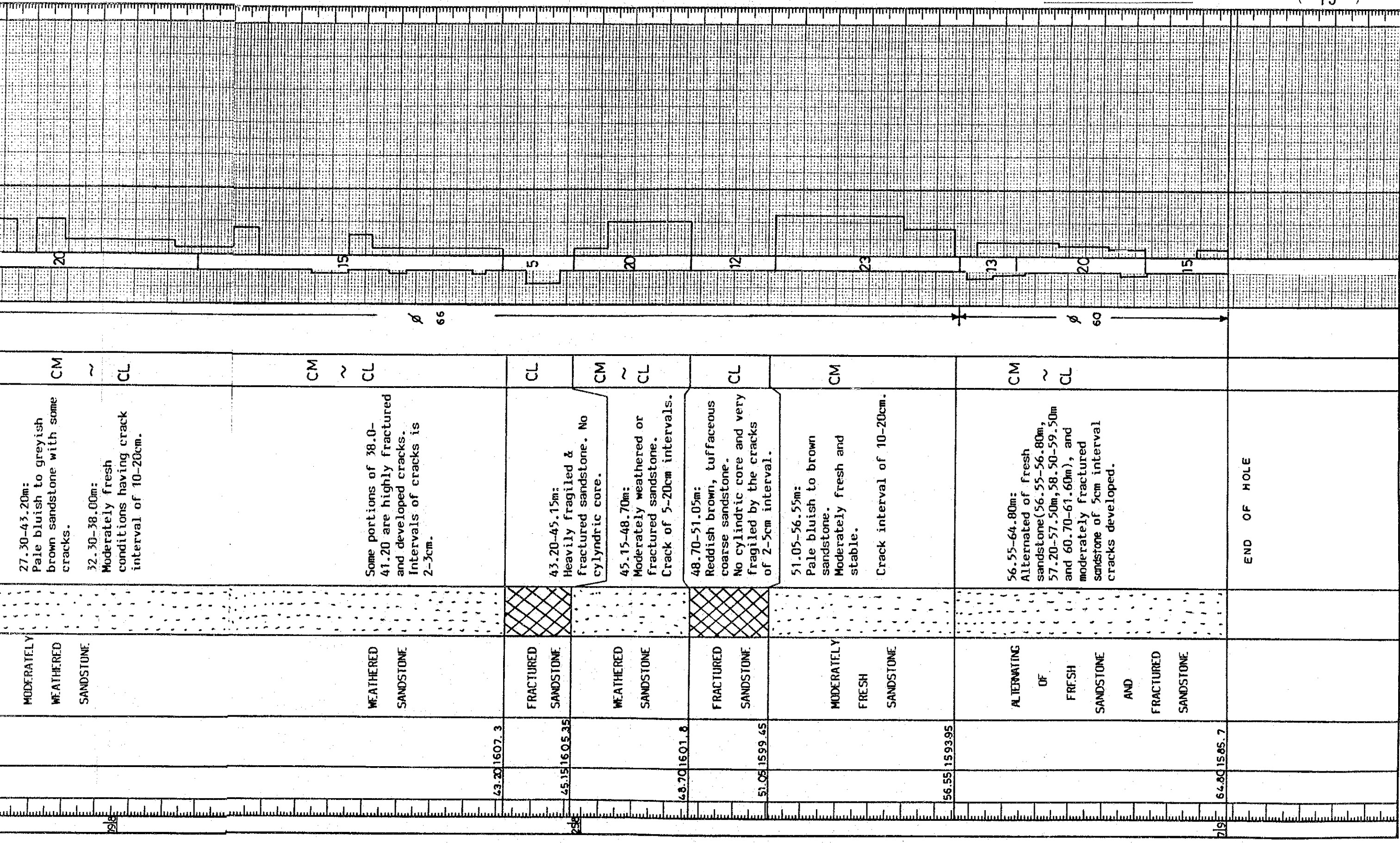


NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

END OF HOLE

LOCATION X: 9949,520.00, Y: 724,640.00, ELEVATION: 1650.50m.
 DRILL LOG THIN TUNNEL COVERING HOLE NO. BW-2 SHEET NO. 13 OF 19

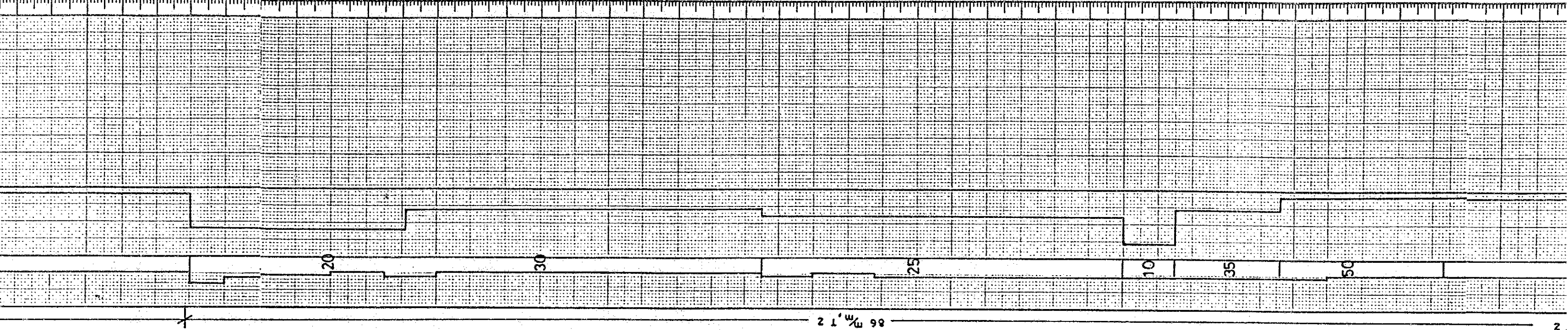
| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|---|----------------|---|------------|-------------------|-----------------|---------|----------------------------------|-------|
| | 1.00 | 1649.5 | TOP SOIL | | 0-1.0m: Dark brown, fertile(organic) soil for banana field cultivated. | | | | | | |
| | 5.00 | 1645.5 | RESIDUAL SOIL | | 1.0-5.0: Reddish brown, laterite soil with heavily weathered pebble of sandstone. | | | | | | |
| | 8.15 | 1642.35 | COMPLETELY WEATHERED SANDSTONE | | 5.0-8.15m: Yellowish dark brown, completely decomposed and loosened by weathering, sandstone. Soil condition. | D | | | | | |
| | 9.80 | 1640.7 | HEAVILY WEATHERED SANDSTONE | | 8.15-9.80m: Pale yellow to brown, tuffaceous coarse sandstone. Heavily weathered and loosened. | CL | | | | | |
| | 12.65 | 1637.85 | HIGHLY WEATHERED SANDSTONE | | 9.80-12.65m: Pale reddish brown, tuffaceous sandstone. Along the cracks of 5-10cm intervals, softened and loosened. | CM ~ CL | | | | | |
| | 17.65 | 1632.95 | MODERATELY WEATHERED SANDSTONE | | 12.65-17.65m: Pale brown, moderately hard, stable sandstone. Almost cylindrical core having the cracks of 10-50cm intervals. Cracks stained dark brown. | CM | | | | | |
| | 19.65 | 1631.85 | FRACTURED | | 17.65-19.65m: Fractured core of cracks developed. | CL | | | | | |
| | 22.25 | 1628.25 | MODERATELY WEATHERED SANDSTONE | | 19.65-22.25m: Light brown sandstone. Cracks interval is 10-20cm. Crack dip 60° and stained in dark brown. | CM ~ CL | | | | | |
| | 27.30 | 1623.2 | CRACKS DEVELOPING (FRACTURED) SANDSTONE | | 22.25-27.30m: Very fractured, pale brown, medium to coarse sandstone. Cracks are of 2-5cm intervals. Some cracks have seams or weathered clay. | CL | | | | | |
| | | | MODERATELY WEATHERED SANDSTONE | | 27.30-43.20m: Pale bluish to greyish brown sandstone with some cracks. 32.30-38.00m: Moderately fresh conditions having crack interval of 10-20cm. | CM ~ CL | | | | | |
| | | | | | | CM ~ CL | | | | | |



NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9952,952.00, Y: 722,623.00, ELEVATION: 1665.0 m
 DRILL LOG SURGE TANK HOLE NO. BW-3 SHEET NO. 14 OF 19

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|----------|-------|-----------|-------------------------------|----------------|---|------------|-------------------|---------------|---------|----------------------------------|-------|
| 29/12/68 | 2.1 | 1662.9 | HEAVILY WEATHERED ANDESITE | | 0-2.1m: Reddish to yellowish brown col. weathered andesite. Crack intervals of 0.1m. Clay filled along cracks. | D | 101 m/m, 12 | 10 | | | 0-2 |
| | 4.8 | 1660.2 | MODERATELY WEATHERED ANDESITE | | 2.1-4.8m: Dark purple brown andesite with hard cores between cracks. Deteriorated along cracks of 0.1-0.2m intervals. | CL | 146 m/m, 165 | 10 | | | 2-5 |
| | 6.35 | 1659.65 | ANDSITE | | 4.8-10.7m: Bluish purple andesite with many cracks of 0.1-0.4m intervals. Many cracks are stained to dark brown to red col. | CH | 131 m/m, 165 | 30 | | | 5-7 |
| | 7.05 | 1657.95 | CRACKS DEVELOPED | | 6.35-7.05m: Vertical crack developing. | CH | | 20 | | | 7-10 |
| | 10.7 | 1654.3 | | | 10.7-32.7m: Mostly Fresh, hard andesite. | CH | | 40 | | | 10-23 |
| | 23.1 | 1641.9 | FRESH ANDESITE | | 10.7-23.1m: Pale purple col. by slightly weathering. 23.1-32.4m: Dark blue col. (fresh conditions). Open cracks are stained black to brown col. at the depth of 12.20m, 15.00m, 15.60m, 17.10m, 18.00-18.20m, 18.70m, 20.50-21.10m (vertical crack), 23.10m, 23.60m, 24.30m, 25.75m and 29.50m. Pyrite contamination in minor scale is in 22.90-23.1m. | CH | 50 | | | 23-32 | |
| | 32.7 | 1632.3 | MODERATELY FRACTURED | | Thin calcite veins of 2-3mm thick are distributed in the depth between 23.1 and 31.5m in the intervals of 0.1-1.0m. 32.7-39.2m: Pale bluish grey, fresh andesite. Cracks of 5-20cm intervals are frequently developed. | CM | | 20 | | | 32-39 |



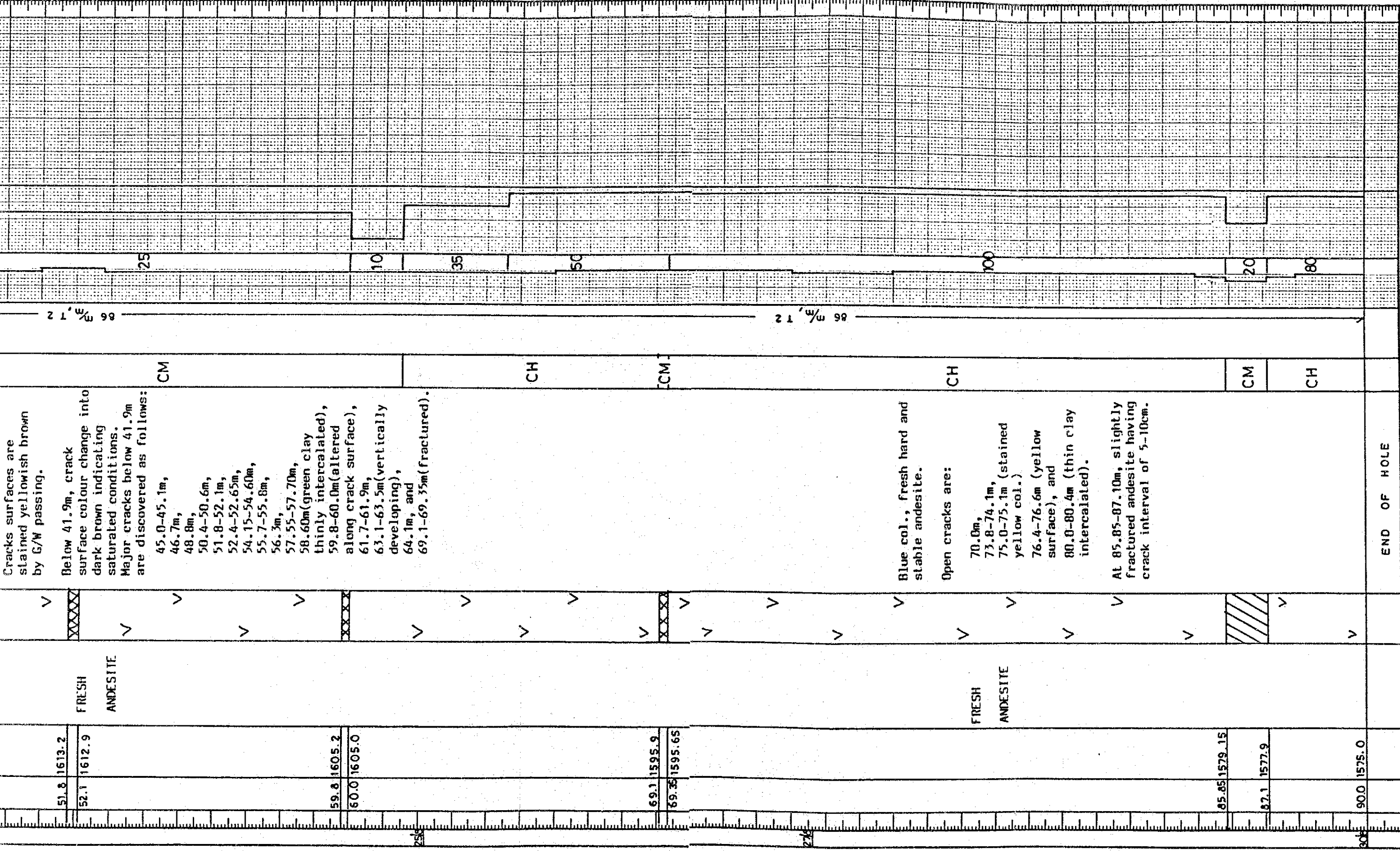
| | | | | | | | |
|------|--|------|--|--|---|-------|---------|
| | CM | | CM | CH | CM | CH | CM |
| | 32.7-39.2m: Pale bluish grey, fresh andesite. Cracks of 5-20cm intervals are frequently developed. | | All the cracks are stained in yellowish brown col. by G/W passing. | 39.2-69.1m: Purple blue col., hard and fresh andesite. Cracks are mostly developing in the depth as following: 39.20-40.80m, 41.50-41.60m, 41.90m. | Cracks surfaces are stained yellowish brown by G/W passing. Below 41.9m, crack surface colour change into dark brown indicating saturated conditions. Major cracks below 41.9m are discovered as follows: 45.0-45.1m, 46.7m, 48.8m, 50.4-50.6m, 51.8-52.1m, 52.4-52.65m, 54.15-54.60m, 55.7-55.8m, 56.5m, 57.55-57.70m, 58.60m(green clay thinly intercalated), 59.8-60.0m(altered along crack surface), 61.7-61.9m, 63.1-63.5m(vertically developing), 64.1m, and 69.1-69.35m(fractured). | | |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MODERATELY | | FRACUTRED ANDESITE. | | FRESH ANDESITE. | | |
| 32.7 | 1632.3 | 39.2 | 1625.8 | 51.8 | 1613.2 | 59.8 | 1605.2 |
| | | | | 52.1 | 1612.9 | 60.0 | 1605.0 |
| | | | | 69.1 | 1595.9 | 69.35 | 1595.65 |

HOLE NO.

(14)

HOLE NO.

(14)



NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

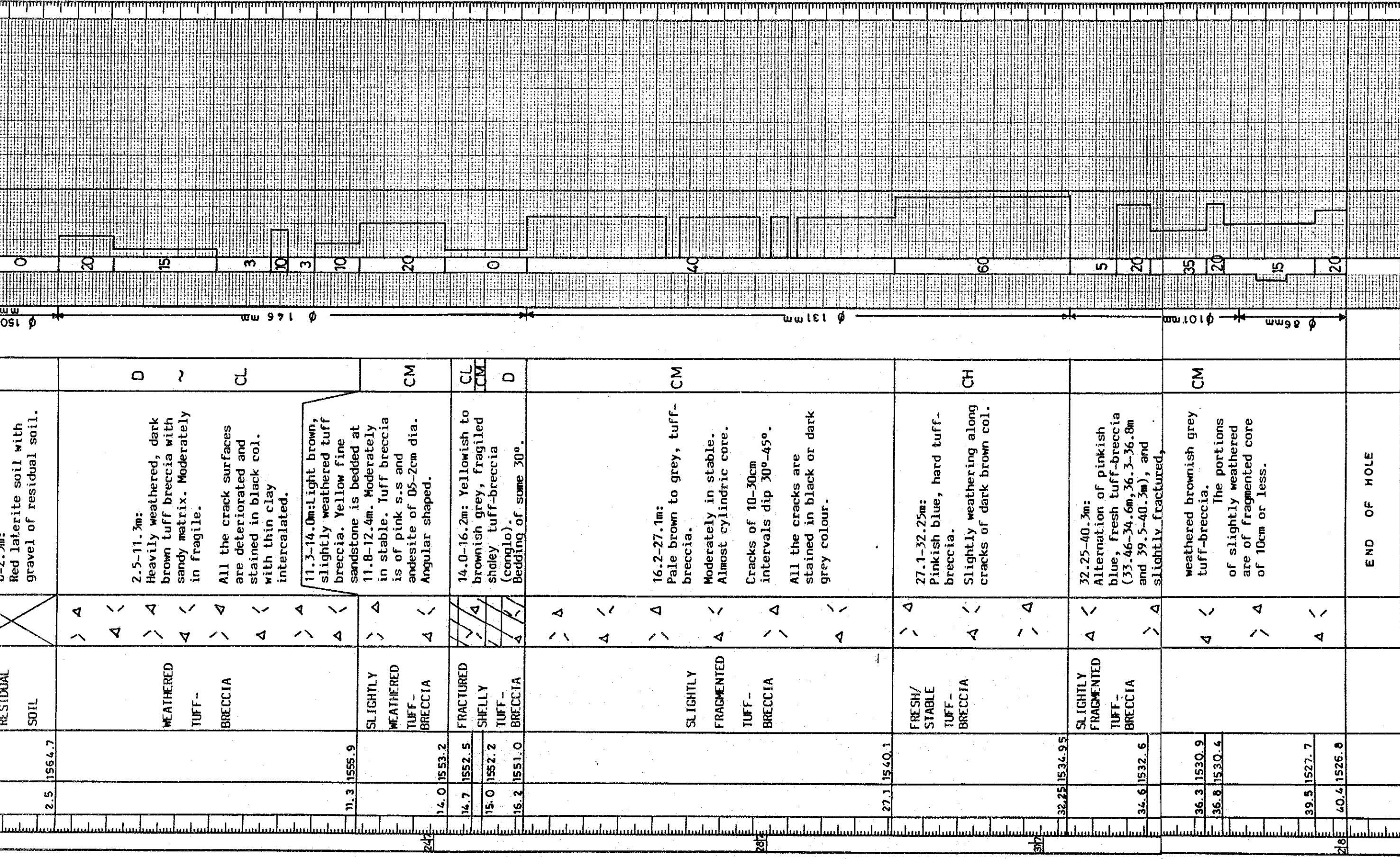
LOCATION X: 9953.329.°, Y: 722.282.°, ELEVATION: 1567.20m.

DRILL LOG PENSTOCK LINE HOLE NO. BW_4 SHEET NO. 15 OF 19

HOLE NO. BW_4

(15)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|----------------------------------|----------------|--|------------|-------------------|---------------|---------|----------------------------------|-------|
| 27/7 | | | RESIDUAL SOIL | | 0-2.5m: Red laterite soil with gravel of residual soil. | | | | | | |
| | 2.5 | 1564.7 | | | | | | | | | |
| | 11.3 | 1555.9 | WEATHERED TUFF-BRECCIA | | 2.5-11.3m: Heavily weathered, dark brown tuff breccia with sandy matrix. Moderately in fragile. All the crack surfaces are deteriorated and stained in black col. with thin clay intercalated. | D ~ CL | | | | | |
| | 11.3 | 1555.9 | | | 11.3-14.0m: Light brown, slightly weathered tuff breccia. Yellow fine sandstone is bedded at 11.8-12.4m. Moderately in stable. Tuff breccia is of pink s-s and andesite of 05-2cm dia. Angular shaped. | | | | | | |
| 24/7 | 14.0 | 1553.2 | SLIGHTLY WEATHERED TUFF-BRECCIA | | 14.0-16.2m: Yellowish to brownish grey, fragiled sholey tuff-breccia (conгло). Bedding of some 30°. | CL CM | | | | | |
| | 14.7 | 1552.5 | | | | | | | | | |
| | 15.0 | 1552.2 | | | | | | | | | |
| | 16.2 | 1551.0 | | | | | | | | | |
| 28/7 | | | SLIGHTLY FRAGMENTED TUFF-BRECCIA | | 16.2-27.1m: Pale brown to grey, tuff-breccia. Moderately in stable. Almost cylindrical core. Cracks of 10-30cm intervals dip 30°-45°. All the cracks are stained in black or dark grey colour. | CM | | | | | |
| | 27.1 | 1540.1 | | | | | | | | | |
| 30/7 | 32.25 | 1534.95 | FRESH/STABLE TUFF-BRECCIA | | 27.1-32.25m: Pinkish blue, hard tuff-breccia. Slightly weathering along cracks of dark brown col. | CH | | | | | |
| | 32.25 | 1534.95 | | | | | | | | | |
| | 34.6 | 1532.6 | | | | | | | | | |
| | 36.3 | 1530.9 | | | | | | | | | |
| | 36.8 | 1530.4 | | | | | | | | | |



NIPPON KOEI CO., LTD.
CONSULTING ENGINEERS, TOKYO.

LOCATION X: 9953,757.00, Y: 721,586.00, ELEVATION: 1512.80m.
DRILL LOG POWER HOUSE HOLE NO. BW_5 SHEET NO. 16 OF 19

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------------|-----------|---|----------------|---|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 187 | 2.0 | 1510.8 | TOP SOIL | X | 0-2.0m: Red col. top & residual soil of clay with Qz grains. | | | | | | |
| | 2.0-7.0 | | COMPLETELY WEATHERED GRANODIORITE | + | 2.0-7.0m: Light brown, completely decomposed and weathered granodiorite (same conditions as sand/gravel) | <D | | 0 | | | |
| | 7.0-9.5 | 1505.8 | HEAVILY WEATHERED GRANODIORITE | + | 7.0-9.5: Light brown, heavily weathered granodiorite. Remaining the original rock textures. Very fragile. | D | | 0 | | | |
| | 9.5-15.4 | 1503.3 | COMPLETELY DECOMPOSED GRANODIORITE | + | 9.5-15.4m: Light brown to brown, completely decomposed granodiorite (same conditions as sand) | <D | | 0 | | | |
| | 15.4-18.45 | 1497.6 | EXTREMELY WEATHERED GRANODIORITE | + | Light brown, extremely weathered granodiorite. Fragile. Fragmented core. Remaining the original rock conditions. Joint of 60 dipping. | D ~ CL | | 10 | | | |
| | 18.45-22.95 | 1494.35 | HIGHLY WEATHERED GRANODIORITE | + | 18.45-24.45m: Brown, highly weathered granodiorite. Feldspar is converted into clay minerals. Partly decomposed along the joints of 30°-40° dipping. Joints surface is stained black color. | CL | | 60 | | | |
| | 22.95-24.45 | 1489.85 | MODERATELY TO HIGHLY WEATHERED GRANODIORITE | + | 24.45-32.0m: Pale brown, moderately to highly weathered granodiorite. Decomposed portions are 29.25-30.35m and 31.25m Joints of 30°-45° dip are stained in reddish brown color. | CM ~ CL | | 30 | | | |
| | 24.45-29.25 | 1488.35 | MODERATELY TO HIGHLY WEATHERED GRANODIORITE | + | | | | | | | |
| | 29.25-30.35 | 1483.55 | MODERATELY TO HIGHLY WEATHERED GRANODIORITE | + | | | | | | | |
| | 30.35-31.25 | 1482.45 | MODERATELY TO HIGHLY WEATHERED GRANODIORITE | + | | | | | | | |
| | 31.25-32.0 | 1481.55 | MODERATELY TO HIGHLY WEATHERED GRANODIORITE | + | | | | | | | |
| | 32.0 | 1480.8 | MODERATELY WEATHERED GRANODIORITE | + | 32.0-41.6m: Pale brownish white, moderately weathered granodiorite. Cracks and joints of 30°-45° dip are stained in brown color. | CM | | 15 | | | |

| | | | | |
|---------------|---|---|---------|----|
| 29.25-1483.55 | WEATHERED GRANODIORITE | + | CL | 10 |
| 30.35-1482.45 | | + | | |
| 31.25-1481.55 | | + | | |
| 32.0-1480.8 | | + | | |
| 41.6-1471.2 | MODERATELY WEATHERED GRANODIORITE | + | CM | 15 |
| 46.1-1466.7 | | + | | |
| 46.5-1466.3 | | + | | |
| 52.0-1460.8 | | + | | |
| 53.5-1459.3 | | + | | |
| 54.4-1458.4 | | + | | |
| 56.7-1456.1 | | + | | |
| 60.7-1452.1 | | + | | |
| 61.2-1451.5 | | + | | |
| 62.1-1450.7 | | + | | |
| 64.3-1448.4 | PARTIALLY AND SLIGHTLY FRACTURED GRANODIORITE | + | CM ~ CH | 20 |
| 66.4-1446.4 | | + | | |
| 70.0 | | + | | |
| 70.55-1442.25 | FRESH GRANODIORITE | + | B | 50 |

CL: Joints of 30°-45° dip are stained in reddish brown color.

CM: 32.0-41.6m: Pale brownish white, moderately weathered granodiorite.
 Cracks and joints of 30°-45° dip are stained in brown color.
 Feldspar is converted into pink to pale brown clay minerals.
 Rock is hard and strong.

CM ~ CH: 41.6-46.1m: White, slightly weathered granodiorite. Surfaces of joints of 0.2-0.3m intervals are stained light brown color. Very hard and strong.

B: 46.1-70.55m: Pale bluish white, fresh granodiorite. Mostly no trace of weathering.
 Surfaces of some joints at the depth of 46.5m, 52.0m, 53.5m, 54.4m, 56.7m, 60.7-62.1m, 64.3-66.4m and 68.6m are very slightly weathered and stained pale brown color.

101 m, 12 86 m, 12

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END OF HOLE

LOCATION X: 9949,000, Y: 722,000, ELEVATION: 1650m.
DRILL LOG QUARRY-1 (RIGARI) HOLE NO. BQ_1 SHEET NO. 17 OF 19

HOLE NO. BQ_1

(17)

NIPPON KOEI CO., LTD.
 CONSULTING ENGINEERS, TOKYO.

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|-------|-------|-----------|--|----------------|--|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 2/8/9 | | | | △ | | | | 10 | | | |
| | 3.0 | 1667.0 | | △ | 0-11.60m: Reddish brown, debris and clay with much gravels of dia. 5 to 20cm. | | | 20 | | | |
| | 3.4 | 1666.6 | | △ | Gravels are of pinkish weathered andesite. | | | 5 | | | |
| | | | OVERBURDEN (DEBRIS) | △ | At 3.0-3.4m, Red col, laterite soil. | | | 10 | | | |
| | | | | △ | | | | 2 | | | |
| | 9.60 | 1640.6 | | △ | 9.60-11.10m: Reddish brown, stiff clay piled. | | | 5 | | | |
| | 11.10 | 1638.9 | | △ | | | | 0 | | | |
| | 11.60 | 1638.4 | | △ | | | | 5 | | | |
| | | | | △ | | | | 10 | | | |
| | 14.10 | 1635.9 | | △ | 11.60-21.00m: Pale reddish brown, heavily weathered andesite. | | | 13 | | | |
| | 14.65 | 1635.35 | | △ | No hard core distributed. | | | 15 | | | |
| | | | HEAVILY WEATHERED ANDESITE | △ | Very fragiled and fragmented, tuffaceous andesite. | | | 19 | | | |
| | | | | △ | At 14.10-14.65m and 20.15-20.30m, cylindrical core. | | | 5 | | | |
| | | | | △ | The next section is of fragmented core. | CL | | 10 | | | |
| | 20.15 | 1629.65 | | △ | Crack interval of 3-5cm | | | 8 | | | |
| | 20.30 | 1629.7 | | △ | | | | 10 | | | |
| | 21.0 | 1629.0 | | △ | 21.00-26.60m: Blue to reddish brown, weathered andesite. Many cracks developing in the interval of 5-10cm. | | | 5 | | | |
| | | | FRACTURED ANDESITE | △ | All the crack surfaces are stained dark reddish brown. | | | 8 | | | |
| | | | | △ | | | | 20 | | | |
| | 26.60 | 1623.4 | | △ | 26.60-30.10m: Dark blue, completely fragmented andesite enclosing many feldspar-granules. Cracks of 2-5cm intervals are stained in oxidized col. | | | 10 | | | |
| | | | FRACTURED ANDESITE | △ | | | | 5 | | | |
| | | | | △ | | | | 7 | | | |
| | | | | △ | | | | 3 | | | |
| | | | | △ | | | | 5 | | | |
| | 30.10 | 1619.9 | | △ | | | | 6 | | | |
| | | | | △ | END OF HOLE | | | | | | |
| | | | Note: This Rigari Quarry site was abandoned due to poor conditions of rock quality discovered by this hole BQ-1. | | | | | | | | |

LOCATION X: 9948,150.00 , Y: 726,960.00 , ELEVATION: 1666.80m.

DRILL LOG DOWNSTREAM OF DAM QUARRY OF 1km HOLE NO. BQ-2 SHEET NO. 18 OF 19

HOLE NO. BQ-2

(18)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|--------------------------------|----------------|---|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 28/9 | 1.50 | 1665.30 | TOP SOIL & RESIDUAL SOIL | X | 0-1.5m: Reddish brown, sandy soil with gravels and boulders of 10cm dia. | | | | | | |
| | 3.00 | 1663.80 | ANDESITE STONE WITH SANDY SOIL | 4.4 | 1.5-3.0m: Pale brown, weathered andesitic stones (angular). Dia. of 5-10cm. | | | | | | |
| | 6.00 | 1662.80 | WEATHERED ANDESITE | 4 | 3.0-4.0m: Pale bluish brown, weathered andesite. Cracks of 10cm intervals are stained heavily with clay. Many amygdalae distributing. | CL | | 8 | | | |
| | 10.2 | 1656.60 | SLIGHTLY WEATHERED ANDESITE | ✓ | 4.0-10.2m: Pale bluish grey, moderately hard andesite. Many white amygdalae are welded. Cracks of 10-20cm intervals stained in black to reddish brown. | CM | | 10 | | | |
| 25/9 | | | FRESH ANDESITE | ✓ | 10.2-35.15m: Grey to dark grey, very hard and strong andesite. Many amygdalae are tightly infilled with feldspar of fresh conditions. At 11.80-12.45m, dark green col. clay mineral like chlorite is distributed in amygdalae and along cracks filled with quartzite vein. Very small lenticular cavities of 1-3cm dia. are coated by quartzite layer crystallized. | CH | | 25 | | | |
| | | | | ✓ | Cracks of 10 to 30cm intervals dip 30°-60°. Very distinguishable vertical cracks are developing in the depth of 24.8-25.4m, 27.4-27.5m, 27.9-28.3m, 30.5-30.8m, and 32.9-33.5m. Phenocrysts are white feldspar (major), green clay mineral (chlorite?) and pink authoclase(minor). | | | | | | |
| | | | | ✓ | Very small amygdalae of 1mm dia. are partially distributed in the depth of 31.5 to 35.15m. As a whole, andesite is of glassy to microphenocrysts demonstrating favourable for rock quarry. | | | | | | |
| 30/9 | 35.15 | 1631.65 | | ✓ | | | | 30 | | | |

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END OF HOLE

LOCATION X : 9948,455.00 Y : 727,075.00, ELEVATION: 1651.00 m.
 QUARRY OF 1km
 DRILL LOG DOWNSTREAM OF DAM HOLE NO. BQ_3 SHEET NO. 19 OF 19

HOLE NO. BQ_3

(19)

| DATE | DEPTH | ELEVATION | ROCK TYPE OR FORMATION | COLUMN SECTION | DESCRIPTION | ROCK GRADE | GROUNDWATER LEVEL | CORE RECOVERY % | R. Q. D | WATER PRESSURE TEST LUGEON VALUE | DEPTH |
|------|-------|-----------|--|----------------|--|------------|-------------------|-----------------|---------|----------------------------------|-------|
| 5/10 | 0.50 | 1650.50 | TOP SOIL | | 0-0.50m: Organic clay with grass roots. | | | 0 | | | |
| | 2.00 | 1649.00 | RESIDUAL SOIL | | 0.50-3.50m: Reddish brown, high plastic fine clay. Many gravels of 5cm dia. piled at the lower layer. | | | 5 | | | |
| | 3.50 | 1647.50 | WEATHERED ANDESITE | ✓ | 3.50-5.90m: Pale grey to brown, moderately weathered andesite. Brecciated condition like tuff breccia of 2-10cm angulated. | CM ~ CL | φ66mm | 15 | | | |
| | 5.90 | 1645.10 | AUTO-BRECCIATED ANDESITE | ✓ | 5.90-8.20m: Grey to greenish blue, auto brecciated andesite lava. Various parts with quartzite and green porphyritic rocks are slightly mixed. | CM | | 25 | | | |
| | 8.20 | 1642.8 | CAVE MARGINES OF ANDESITIC LAVAS | ✓ | 8.20-11.20m: Cave or big size open cracks caused by the boundary of lavas. All slime (sandy core) in very poor recovery. | D | | 0 | | | |
| | 11.20 | 1639.80 | AUTO-BRECCIATED ANDESITE (TUFF-BRECCIA OR AGGLOMERATE) | ✓ | 11.20-16.0m: Grey to pale brown, slightly weathered andesite of auto-brecciated like agglomerate. Dark green part and grey quartzite part are tightly mixed in angulated conditions. At 15.0m, yellow thin clay is intercalated along the light brown col. cracks (seam). | CM | | 50 | | | |
| | 15.00 | 1636.00 | SLIGHTLY WEATHERED ANDESITE | ✓ | 16.0-17.90m: Pale grey slightly weathered andesite. White phenocrysts altered from feldspar of 1-5mm dia. are frequently distributed. Cracks of 10 to 50cm intervals are mostly stained in light brown col. | CM ~ CH | φ76mm | 60 | | | |
| | 16.00 | 1635.00 | FRESH ANDESITE | ✓ | 17.90-35.1m: Bluish grey to dark grey, very stable and very hard andesite. Cracks are poorly distributed at 19.20m, 20.70m, 23.5m, 30.0-30.1m, 30.6m, 31.3m and 32.8m. Cracks dip 30-45° and stained pale brown col. Thin Qz vein develop vertically. Pale grey to white col. amydales lenticularly welded dip 30° at the depth of 25.10m to 25.8m. Dark green spots of 1.5mm dia. likely clay minerals and pyrite contaminated are sporadically found at some places. All cylindrical core. | CH | φ66mm | 100 | | | |
| 5/10 | 35.1 | 1615.90 | | ✓ | | | | | | | |

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END OF HOLE

