JICA SURVEY FOR
DISASTER INFORMATION COLLECTION IN
INDONESIA

BORING SURVEY FOR BASIC RESPONSE FOR CENTRAL SULAWESI EARTQUAKE (PHASE 1) UNDER THE JICA SURVEY FOR DISASTER INFORMATION COLLECTION IN INDONESIA



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CHAPTER I

INTRODUCTION

I.1 Background

The objectives of Boring Survey Investigation Works are to supplement the geotechnical information for Comprehensive Study and Basic Response Plan for Central Sulawesi Earthquake, Under JICA Survey for Disaster Information Collection in Indonesia. The location of boring survey

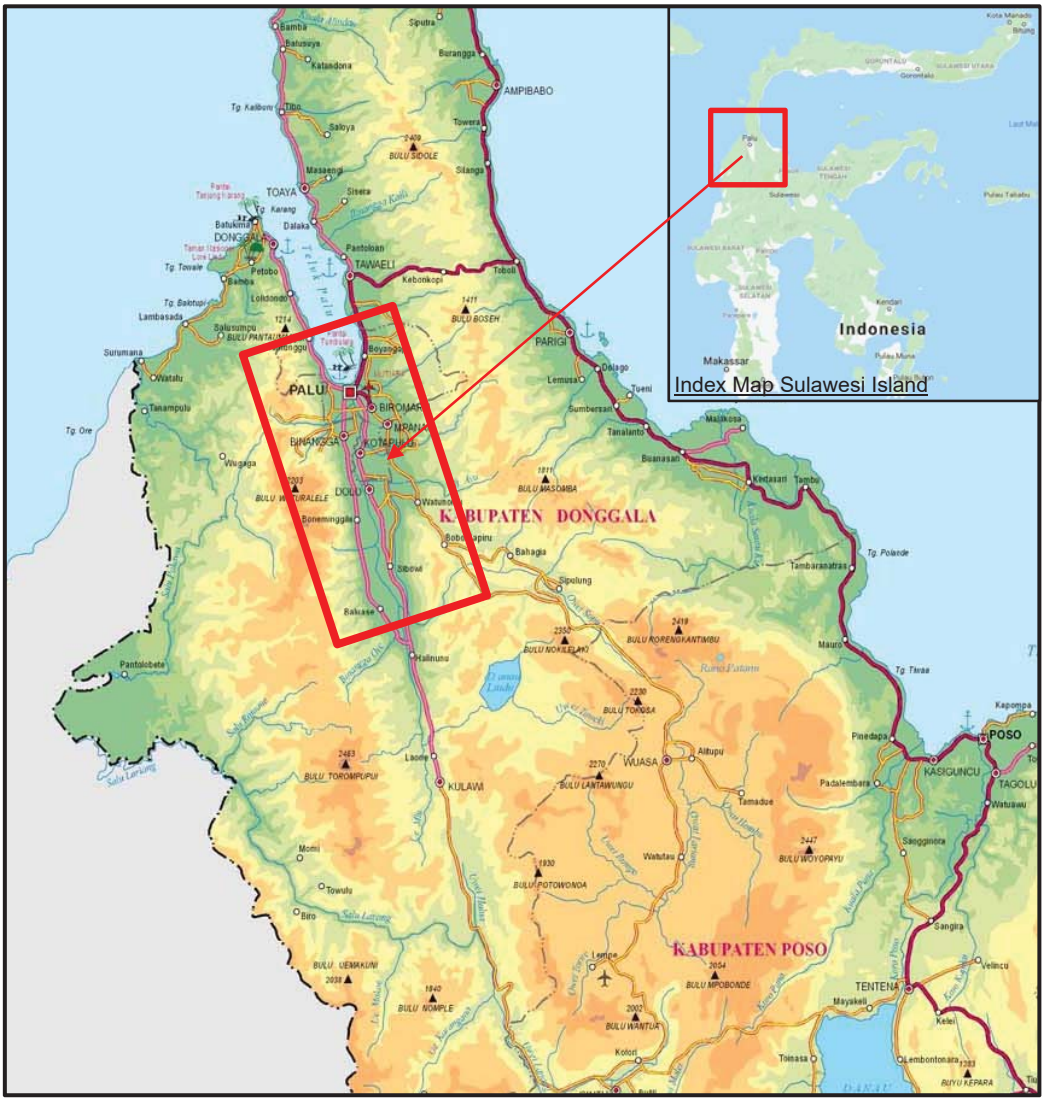


Figure I.1. Location of boring survey (red square line)

I.2 Scope of Works

The Investigation works mainly comprises the following:

(1) Establishing the detailed working plan including time schedule, provision of equipment and test procedures, and negotiation with land owners for permission of trespassing and working in their lands,
(2) Setting coordinate by GPS handheld at 30 core boring points,
(3) Mobilization and site preparation including acquisition of right way and preparation of foot path, if necessary,
(4) Transportation, setting and/or dismantling of equipment, installation of drilling water supply, platform preparation if necessary, tools and materials,
(5) Wooden Core Box for core samples of 5 m long in each box
(6) 30 core borings with the total expected drilling length of 810 meters,
(7) Standard penetrate
(8) on test at 1.0-m interval,
(9) Installation of PVC-Pipe in borehole after drilling completed
(10) Water level measurement in the boreholes during drilling and monitoring after the completion of drilling during investigation works in PVC-Pipe,
(11) Soil sampling (disturbed) for laboratory test,
(12) Photographing of boring cores, field works and laboratory test status,
(13) Logging of boring,
(14) Swedish Sounding Test
(15) Demobilization and site clearing,
(16) Laboratory test,

I.3 Survey Locations

There are thirty boreholes (Table I.1 and Figure II.1) and thirty-three Swedish sounding tests (Table I.2 and Figure II.3) that have conducted in survey area as follows:

Table I.0.1 Coordinate of Boreholes

No.	HOLE	COORDINATE UTM Z 50 m		ELV.	DEPTH	BOX	LOCATION
		X	Y	(m)	(meter)	(nos)	
1	P-1	0826555 m E	9896700 m S	145	11	3	Petobo
2	PO-1	0827243 m E	9889260 m S	144	10	2	Pombewe
3	T-1	0822817 m E	9905416 m S	95	10	2	Talise
4	D-1	0815756 m E	9897963 m S	94	10	2	Duyu
5	B-1	0816138 m E	9899701 m S	74	30	6	Baraloa
6	B-2	0816296 m E	9899931 m S	35	30	6	Baraloa
7	B-3	0816347 m E	9900455 m S	24	30	6	Baraloa
8	B-4	0816423 m E	9899102 m S	33	30	6	Baraloa
9	B-5	0816912 m E	9899918 m S	17	30	6	Baraloa
10	B-6	0816235 m E	9897507 m S	68	30	6	Baraloa
11	LP-1	0825376 m E	9895789 m S	79	35	7	Petobo
12	LP-2	0824472 m E	9895841 m S	62	32	7	Petobo
13	LP-3	0822721 m E	9896233 m S	48	30	6	Petobo
14	LP-4	0824246 m E	9896370 m S	61	30	6	Petobo
15	LP-5	0823692 m E	9897486 m S	67	30	6	Petobo
16	LP-6	0823903 m E	9899203 m S	112	27	6	Petobo
17	J-1	825742 m E	9891240 m S	88	30	6	Jono Oge
18	J-2	825140 m E	9890923 m S	89	25	5	Jono Oge
19	J-3	823812 m E	9890557 m S	65	30	6	Jono Oge
20	J-4	822542 m E	9891390 m S	53	30	6	Jono Oge
21	J-5	824476 m E	9894166 m S	75	28	6	Jono Oge
22	J-6	822628 m E	9894199 m S	56	30	6	Jono Oge
23	J-7	824564 m E	9892721 m S	76	30	6	Jono Oge
24	J-8	823337 m E	9892345 m S	57	30	6	Jono Oge
25	J-9	825484 m E	9888633 m S	101	30	6	Jono Oge
26	J-10	823748 m E	9888547 m S	83	30	6	Jono Oge
27	J-11	825351 m E	9887130 m S	98	30	6	Jono Oge
28	J-12	823649 m E	9887090 m S	81	30	6	Jono Oge
29	J-13	825336 m E	9892623 m S	92	30	6	Jono Oge
30	J-14	824966 m E	9890895 m S	63	10	2	Jono Oge

Table I.2 Coordinate of Swedish Sounding Tests

NO	HOLE	UTM Zone 50M		ELV (m)	DEPTH (m)	LOCATION
		X (m E)	Y (m S)			
1	P-S-1	825042 m E	9895812 m S	72	8,45	Petobo
2	P-S-2	824733 m E	9895841 m S	63	10	Petobo
3	P-S-3	823970 m E	9895907 m S	54	8,68	Petobo
4	P-S-4	823464 m E	9895996 m S	50	10	Petobo
5	P-S-5	824407 m E	9896016 m S	57	6,46	Petobo
6	P-S-6	824362 m E	9896181 m S	55	7,15	Petobo
7	P-S-7	825320 m E	9895832 m S	80		Petobo
	P-S-7A				3,1	Petobo
	P-S-7B				3,35	Petobo
	P-S-7C				3,18	Petobo
8	J-S-1	825534 m E	9891168 m S	76	10	Jono Oge
9	J-S-2	825381 m E	9891070 m S	72	6,85	Jono Oge
10	J-S-3	824829 m E	9890833 m S	60	10	Jono Oge
11	J-S-4	824418 m E	9890714 m S	61	5,34	Jono Oge
12	J-S-5	824112 m E	9890641 m S	62	5,68	Jono Oge
13	J-S-6	825057 m E	9891113 m S	69	10	Jono Oge
14	J-S-7	824916 m E	9891426 m S	60	6,66	Jono Oge
15	J-S-8	824967 m E	9890893 m S	72	5,93	Jono Oge
16	J-S-9	824978 m E	9890911 m S	70	6,35	Jono Oge
17	J-S-10	824978 m E	9890915 m S	63	7,39	Jono Oge
18	J-S-11	824970 m E	9890930 m S	63	9,18	Jono Oge
19	J-S-12	824990 m E	9890886 m S	64	7,32	Jono Oge
20	J-S-13	824995 m E	9890877 m S	64	7,63	Jono Oge

NO	HOLE	UTM Zone 50M		ELV (m)	DEPTH (m)	LOCATION
		X (m E)	Y (m S)			
21	E-S-1	824851 m E	9896705 m S	81		East Area
	E-S-1A				2,86	East Area
	E-S-1B				2,38	East Area
	E-S-1C				2,32	East Area
22	E-S-2	824897 m E	9893532 m S	77		East Area
	E-S-2A				3,6	East Area
	E-S-2B				4,12	East Area
	E-S-2C				4,86	East Area
23	E-S-3	824953 m E	9891972 m S	72		East Area
	E-S-3A				1,3	East Area
	E-S-3B				1,58	East Area
	E-S-3C				1,94	East Area
24	E-S-4	824546 m E	9891530 m S	77		East Area
	E-S-4A				1,79	East Area
	E-S-4B				1,77	East Area
	E-S-4C				1,93	East Area
25	E-S-5	824788 m E	9890319 m S	76	10	East Area
26	E-S-6	825365 m E	9889490 m S	75	10	East Area
27	E-S-7	825742 m E	9887156 m S	108		East Area
	E-S-7A				1,34	East Area
	E-S-7B				1,53	East Area
	E-S-7C				1,81	East Area
28	E-S-8	822693 m E	9895077 m S	74	5,35	East Area
29	E-S-9	823037 m E	9893357 m S	45	10	East Area
30	E-S-10	821844 m E	9891918 m S	36	10	East Area
31	E-S-11	823563 m E	9889723 m S	71	10	East Area

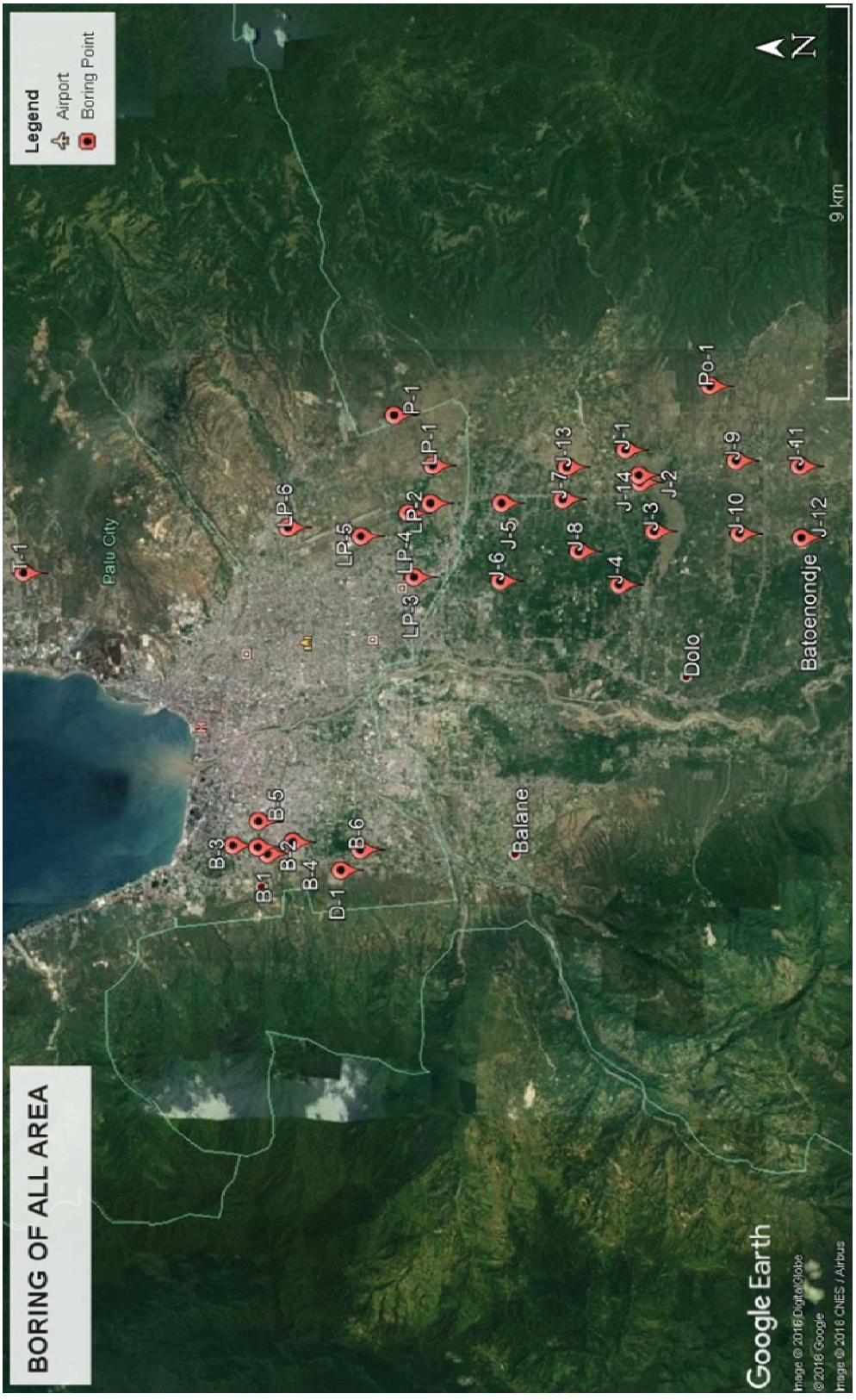


Figure I.2 Location of Boreholes

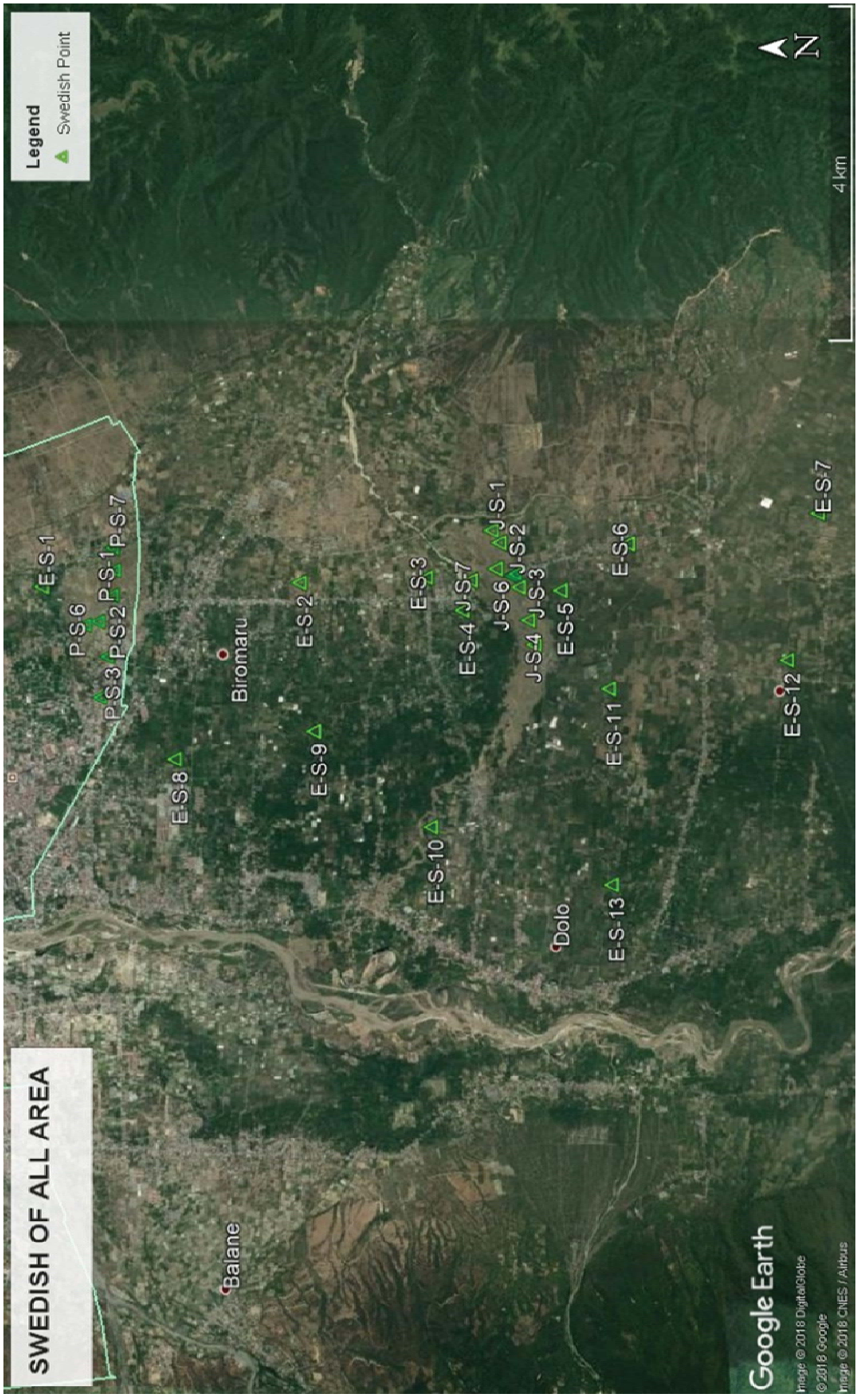


Figure I.3 Location of Swedish Sounding Tests

I.4 Time Schedule

The survey starts from administration and permition activity to the local government. The primary data such boreholes and Swedish sounding test began on November 19th,2018 until December 25th, 2018 and so do the laboratory tests. Analysis of field data and laboratory data have finished on January 21st, 2019 and the final report have finished on January 26th, 2019.

Table I.3 Time Schedule

No.	Uraian Pekerjaan	Nov-18				Des-18				Jan-19			
		I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Mobilization												
2	Drilling												
3	Laboratory												
4	Report												

CHAPTER II

METHODOLOGY

II.1 Field Survey

Field survey has done with some activity in order to get primary data. Many type of field tests that has done carefully in order to get the best of quality data with many method and procedure. Generally, work flow of activity to get primary data describe as follows:

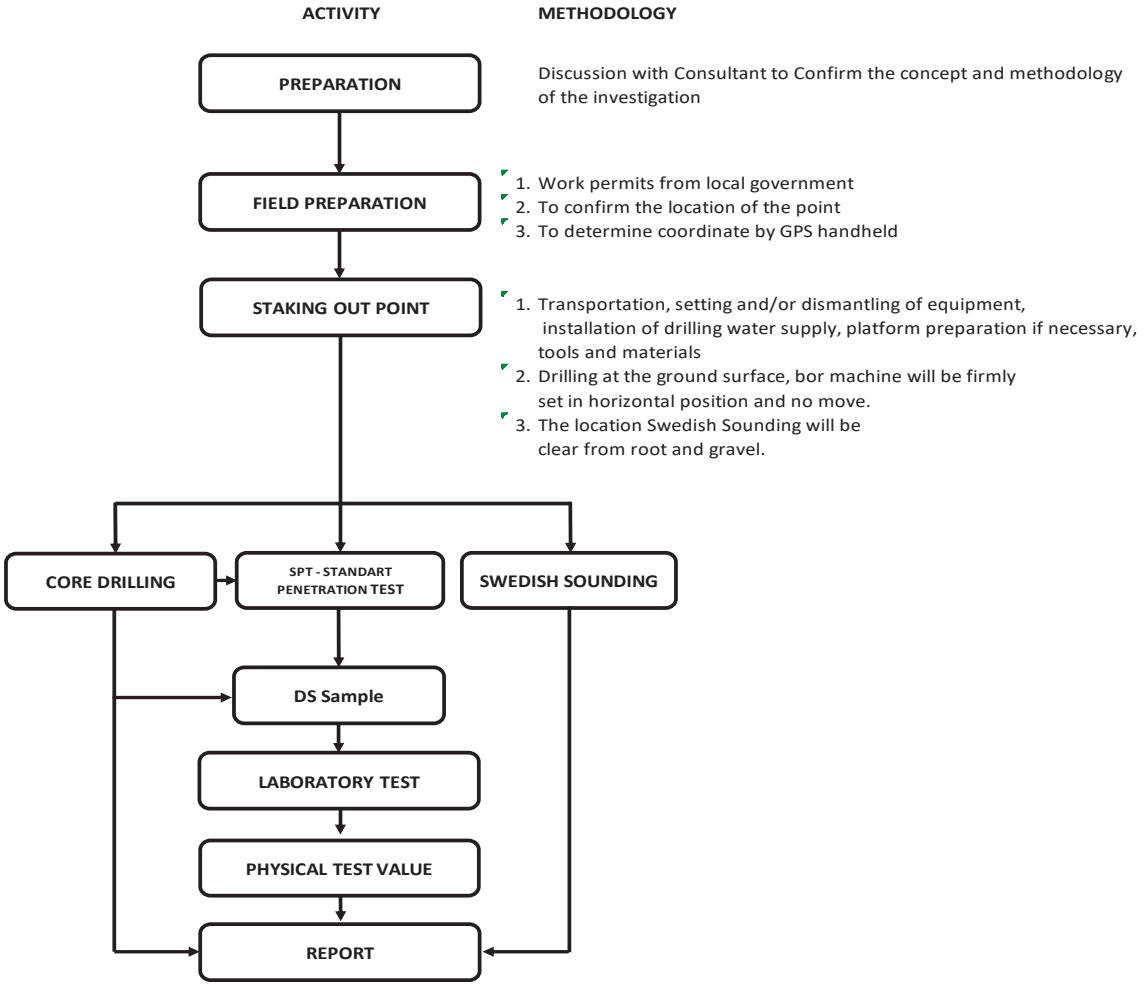


Figure II.1 General Work Flow

II.1.1 Boring Survey

Generally, drilling activity refer to ASTM D-5783 and the drilling will be aim at 100% core recovery in both rock and unconsolidated deposits. Taking of drilling slime will be not be regarded as recovery of core samples. The recovery rate of samples in each ten-meter section of the hole will be not less than 70 percent without acceptable reason. Diameter of the drilled core samples will be not less than 50 mm.

The estimated depth of boreholes specified in BOQ is shown from the ground. The depths of the planned boreholes are generally determined below and are partially subject to change or modification by the Engineer. Geotechnical borings will be drilled up to the required load-bearing layers, which are defined in depth until N-SPT (standard penetration test) > 50 is achieved 5 times or the thickness of the 5 m layer and continued by core drilling to a depth of 20 m or 30 m without SPT testing but if soft soil layer is found again SPT testing will be carried out or as directed by Engineer. Standard penetration test refers to ASTM D 1586.

Generally, core preserve and transport refer to ASTM D 4220. Each recovery core stored in wooden core box in the order of recovery with spaces for not recovered core showing the depth of coring and not recovered clearly. The core box will be separated with wooden plates into rooms where 1 m long core each can be stored. After the core is placed in the box, they will be color photographed by the Contractor.

Necessary notes such as the core boreholes No. and core depth will be clearly marked on each core box. These core boxes will be finally being stored in the warehouse which will be indicated by the Engineer.

Soil samples will be placed in containers in order of depth and submit to the Engineer.

Water level in borehole will be measured and recorded every morning before commencement of the day's drilling work. This measurement will be continued after the completion of drilling during investigation works in PVC-Pipe.

Sampling of disturbed soils will be performed by using SPT sampler will be carried out each 2.0 m. Soil sample collected will be put into water-tight and transparent bag. Immediately after sampling, all soil samples will be labeled sampling number, depth, color, classification, etc.

II.1.2 Standard Penetration Test

The Standard Penetration Test (SPT) will be carried out at 1.0 m intervals at each borehole as directed by the Engineer, in accordance with D1586-84 of ASTM Standards or equivalent method approved by the Engineer.

A set of test consist of a preparatory drive for 15 cm penetration and a test drive for 30 cm penetration of a split tube sampler with shoe with outer diameter of 15 mm and inner diameter of 35 mm by shock of a drive hammer of 63.5 kg in weight freely dropping from 75 cm of height.

The result of the tests will be recorded in the daily report of drilling in number of blows for each 15 cm, 10cm (3 times), and 5 cm each penetration test drive.

II.1.3 Installation of PVC-Pipe in borehole

After completion of each hole, all drilling holes will be preserved for observation of groundwater level by installing perforated PVC pipe up to the bottom of the holes as directed by the Engineer. The upper end of the PVC pipes will be extended above the ground for 50 cm or more, and covered with a PVC cap. On the ground surface, the PVC pipe will be fixed and protected with concrete of 30 cm-square and 10 cm high and labeled of drilling point number (code). During drilling activities, it is known that the depth of the ground water level will be installed perforated PVC pipe.

Water level in borehole (PVC Pipe) will be measured and recorded every day during investigation works.

II.1.4 Swedish Sounding

The objective of the Swedish Sounding test is to get the value of N – SPT from the soil layer. N-SPT values are obtained from the calculation of the number of turns (NSS) of Swedish Sounding.

The Test Procedure are:

- Spiral drill bits that have been assembled with drilling rod and handles are mounted perpendicular to the ground.
- Then the load is placed one by one in sequence with the following weight: 25 kg, 50 kg, 75 kg and 100 kg.
- The handle is rotated and the number of rounds is calculated in every half rotation with a depth of 25 cm penetration and the number of turns is recorded

The following are the types of equipment used for Swedish Sounding:

- Tanifuji
- Marui

The formula of Swedish Sounding Test

$$N_{sw} = \frac{1}{L} x N_a$$

Where:

Nsw= “N” Swedish Sounding

Na= Total Rotation (half rotation)

Wsw= Swedish Sounding Weight

L= Penetration each 25 cm

A set of photographs for each site will include photographs showing operation activity.

II.2 Laboratory Test

Representative soil samples (disturbed) will be sent to the laboratory to obtain their index and engineering properties, in accordance with ASTM as shown below or equivalent method approved by Engineer.

(1) Test Method for Particle-Size Analysis of Soils ASTM D422
(2) Test Method for Specific Gravity of Soils ASTM D854
(3) Test Method for Moisture Content of Soils ASTM D2216-98
(4) Test Method for Atterberg Limits of Soils ASTM D4318-9

CHAPTER III

DATA ANALYSIS

III.1 Geological Condition Based on Boring Data

Boring investigation have conducted at Balaroa. Petobo, Lolu, Jonooge and Talise area (See Appendix of 1). The average depth of boring investigation at least 30 m below the surface. There is some specific condition of geology based on data logging description and it will describe later on the next paragraph.

III.1.1 Balaroa

Generally, Balaroa area is part of alluvial fan deposits that it consists of debris material. Upper part near the hills consists of large material such granite boulders and near Palu city (flat area) consists of finer material relatively such fine sand, silt and clay.

Balaroa area have six boreholes (Figure III.1) that four boreholes lie near Balaroa landslide (B1, B2, B3, B4 and B5). Two Boreholes lie far from Balaroa landslide relatively (B6 and D1). All of boreholes correlation B1 to B6 can find in section A-A' and B-B' (See Appendix 2).

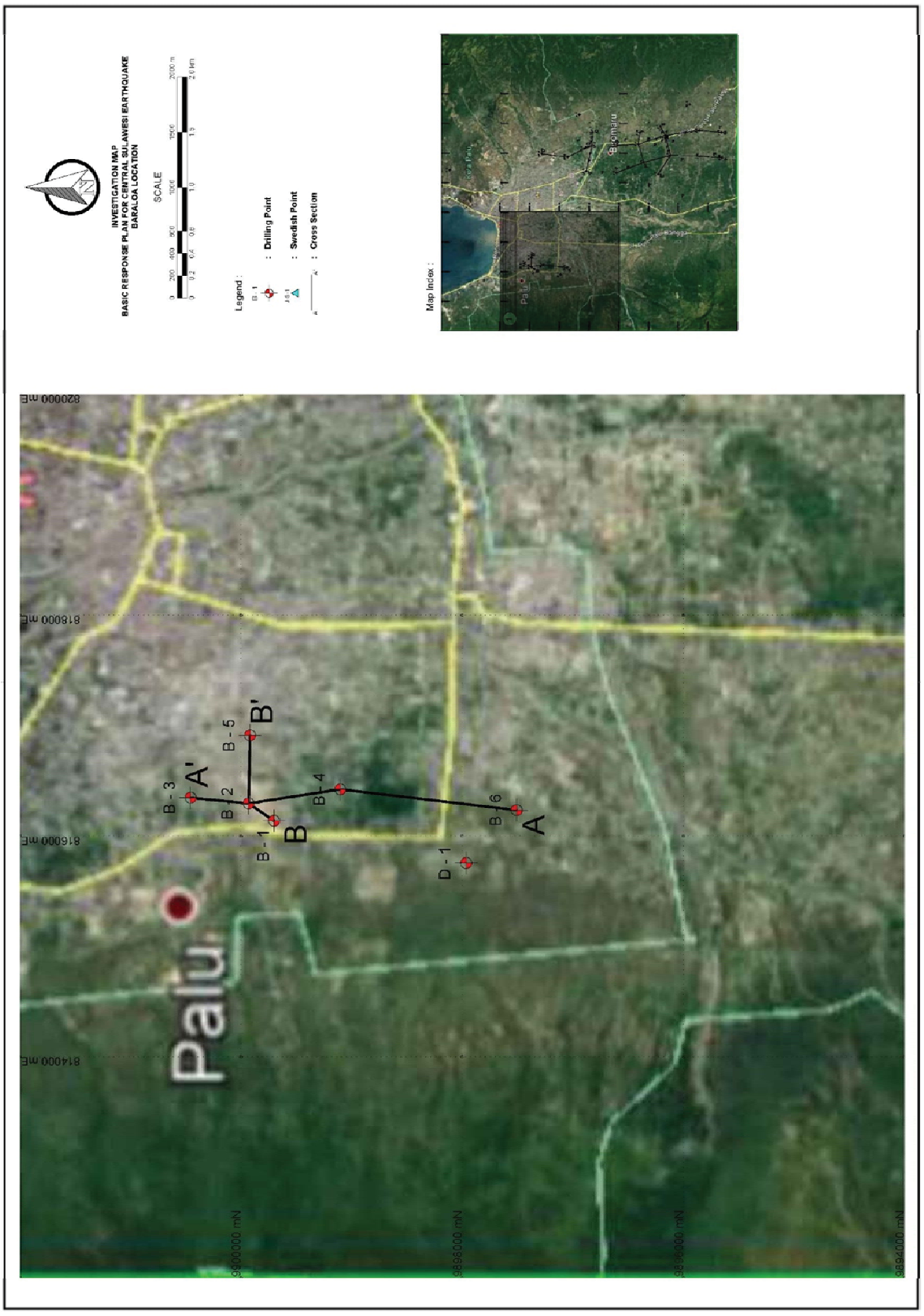


Figure III.1 Boreholes location at Balaroa Area

BH 1 at 30 m below the surface describe that it has at least three different depositional transport energy. BH 1 contains of fine to medium silty sand and sand material found at surface up to 17 m below the surface. The relatively a little bit high energy transport occur at 8-9 m and 17 to 30 m below the surface that deposit sand mix with gravels. However, the original surface material of BH 1 may consists of granite boulder that disappear by landslide when earthquake occurred.

BH 2 lies on the edge of Balaroa landslide and have three different depositional transport energy up to 30 m below the surface The upper part near the surface consists of granite boulder up to 3.1 m. It describes that the source is very close. The relatively low transportation energy than granite boulder found at 3.1m to 10 m as sand layer. The energy at 10 to 30 m below the surface higher than sand layer because gravel appear with sand.

BH3 has high to very high energy of transportation because the lithology consists of granite boulder in upper part and gravelly sand on middle to bottom part at 30 m below the surface.

BH4 on the upper part up to 9.5 m below the surface consists of finer material (silt) and it deposited by very low energy of transportation. However, lithology at middle to bottom part show that material transport by high energy because it found gravel on sand material. Subangular gravel that record on bore log show that its materials near the source relatively.

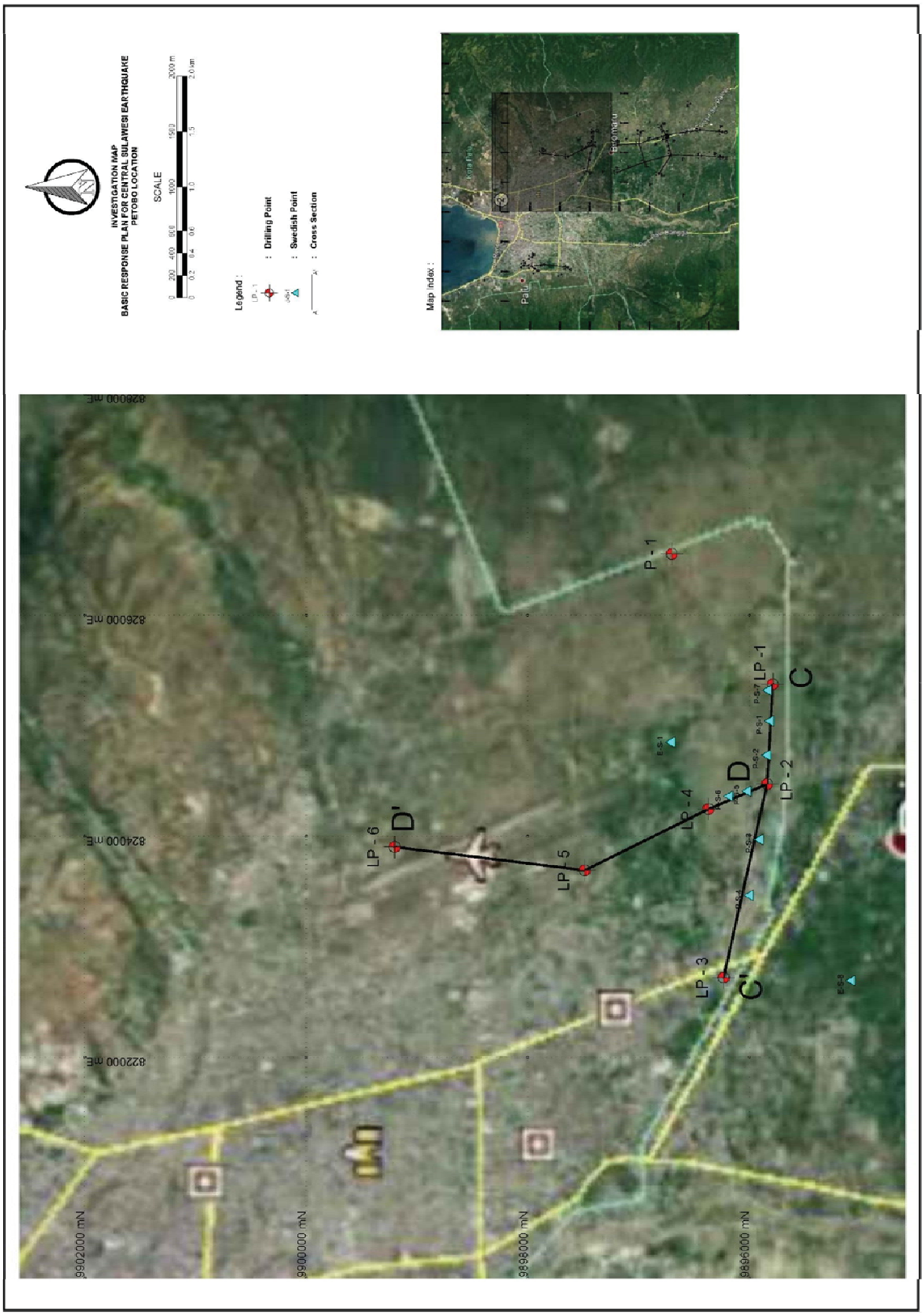
BH5 has very low to low energy of depositional transportation dominantly up to 30 m below the surface because the lithology consists of silt and sand repetition. BH5 may occur at quite environment relatively than the other borehole at Balaroa area although it found gravel with 2 cm of diameter maximum occasionally with sand at 18-22m.

BH 6 has a high energy transportation up to 30 m below the surface relatively because it consists a lot of gravel with 5 cm maximum diameter. Subangular shape of gravel indicate the source near from BH6. The point of interest is medium plastic clay layer at 6-7 m below the surface. It shows that BH 6 have quite environment with very low energy of transportation and far away from the source Borehole of D1 has very different source than others borehole at Balaroa area because it consists only andesite fragment up to 10 m below the surface.

The depth of groundwater level surrounding Balaroa landslide (B1, B2, B3, B4 and B5) less than 3 m below the surface and become artesian type. The condition is different for B6 and D1 that lie far away from Balaroa landslide. B6 show that the groundwater level at 17 m and D1 is not found up to 10 m below the surface. The situation shows Balaroa landslide location has high water pressure naturally.

III.1.2 Petobo

Lithology of Petobo area come from alluvial fan deposit that consists of repetition of gravelly sand, silty sand, sand and silt. Boreholes location is surrounding liquefaction area except LP-6 and P-1 (Figure III.2). The morphology of liquefaction area has gentle slope at least 2^{o} - 3^{o}.



Figu Figure III.2 Boreholes location at Petobo area

LP-1 lies nearby channel irrigation and consists of sandy gravel dominantly up to 30 m below the surface. Sandy gravel indicate LP-1 controlled by high energy sedimentation. Low energy sedimentation occurs on fine sand layer at middle and bottom part of borehole which thickness up to 3 m. Fine sand layer at 26.5 – 28 m has loose density and it may rapidly sedimentation of sheet flood.

LP-2 lies at center part of Petobo or west direction from LP-1 which affected by lateral flow. LP-2 shows low energy of sedimentation because sand layer occurs up to 30 m dominantly. Gravel that indicate high energy of sedimentation occur on middle to bottom part (18.3 to 25 m). Very loose to loose sand occur on the surface up to 10 m below the surface. Very loose to loose sand may part of debris material of lateral flow from the upper part of Petobo (near LP-1) and the other may liquefaction insitu product. It is difficult to distinguish border of insitu sand material and debris material from the upper part of Petobo. Meanwhile, dense to very dense is dominantly density after 10 m below the surface.

LP-3 lies at downstream of Petobo which controlled by low energy of sedimentation up to 30 m below the surface. It consists of sandy clay layer at surface to 8 m and medium dense sand after 14 m. Sand with gravel found at 8 m – 14 m, 16 m – 17 m and 19 m – 20 m. It shows that middle part more high energy of sedimentation than the others.

LP-4 shows the character of sedimentation is active which more repetition of sand, silty sand and gravelly sand up to 30 m below the surface. The density less than 12 m tends loose to dense and it will dense to very dense after 12 m to 30 m. In fact, lithology near surface may debris material with unknown border exactly. The weakness layer which very loose to loose of density occur at 3.3 m, 6.5 m, and 11.5 m. Meanwhile, very dense will find after 12 m to 30 m below the surface.

LP-5 consists of thick fine sand layer from surface to 20 m because of low energy of sedimentation. However, high energy occurs on the middle part up to 30 m below the surface. LP-5 has dense to very dense sand dominantly except near the surface that shows medium dense.

LP-6 lies at east direction from runway which consists of sand mix with gravel, sand and occasionally granite boulder. The main control at LP-6 up to 30 m below the surface is under high energy of sedimentation dominantly and

occasionally lower energy on medium dense to dense layers. LP-6 near from the material source than the other boreholes location at Petobo. It may different source of material compare with bore hole near lateral flow area (LP-1,2,3,4).

Groundwater level which affected by lateral flow is very shallow as shown at LP-2,3, and 4 that the value less than 3 m. However, LP-1 that lies upstream from lateral flow has deeper value at 11,7 m. Groundwater may flow from LP-1 to affected lateral flow area or from east to west direction. Groundwater level will deeper to the east such LP-6 which dry condition up to 30 m below the surface.

Based on bore log data (See Appendix of 1), the subsurface condition of Petobo area will describe on geology profile (See Appendix 2) which C-C' and D-D' profile. C-C' profile has East-West direction from LP-1 to LP-2 and LP-3. C-C' profile shows tilt layer of sand and gravelly sand toward Palu river direction. It can predict as part of alluvial fan system that toe is covered bay impermeable at LP-3. D-D' profile from LP-6 to LP-5,4, and 2 predict as alluvial fan but it may have occurred by different genetic of alluvial fan. Granit boulder at LP-6 will not find in other boreholes and silt layers only appear at LP-4.

III.1.3 Jonooge

The lithology of Jonooge area is similar with Petobo area that consists of sand, silt/clay sand and gravelly sand repetition from alluvial fan deposit. Jonooge liquefaction area has smaller fragment size than Petobo liquefaction area, generally. There are several boreholes that conduct at Jonooge area from J-1 to J-14 (Figure III.3).

J-1 lies at east part of irrigation channel and influenced by low sedimentation energy up 25 m below the surface. Sandy clay layer appears at the surface up to 3 m thickness and then sand layer up to 10.3 m. Sand with clay is dominant from 10.3 to 25 m and contains of less gravel. It means any fluctuation of sedimentation energy when gravel, sand, and clay are mixing each others. The energy of sedimentation is greater after 25 m to 30 m and make sandy gravel layer. If we compare with liquefaction area which J-2 and J-3 include in this area, sand layers are dominant with 15 m to19 m thickness and gravel appear near the surface with 2 cm to 5 cm diameter. Clay that appear on the surface of J-2 perhaps come from

J-1 because of lateral flow. J-2 and J-3 lie on lateral flow area and groundwater level very shallow 0.68 m and 2.7 m below the surface, respectively while J-1 has 14 m below the surface. J-4 lies at the downstream of lateral flow evidence and near the river which dominantly consists of sand. Gravelly sand layers with 1.5 m to 2.1 m show high energy influenced by river deposit. Groundwater level similar with river elevation and we found some seepage near the river. It means groundwater contribute water supply to the river.

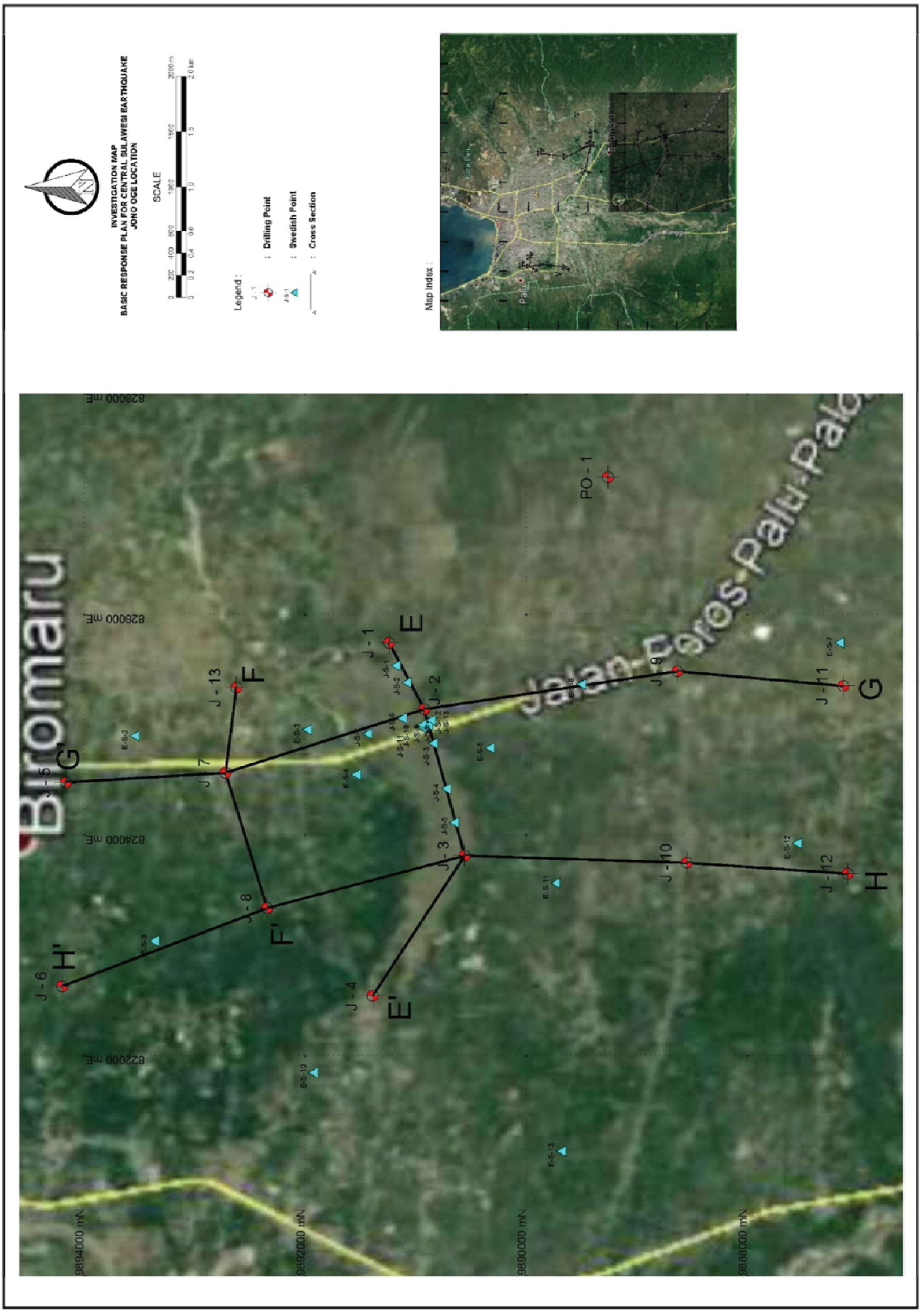


Figure III.3 Boreholes location at Jonooge area

J-5 consists of gravelly sand dominantly up to 30 m below the surface because high energy of sedimentation. Occasionally, sand layers show low energy sedimentation on 1m to 2 m thickness. J-6 that lies west part or downstream from J-5 show the material finer than J-5 and consists of fine to coarse sand. The environment of J-6 may influenced by low sedimentation energy dominantly because it lies at distal alluvial fan. However, J-6 has high energy of sedimentation at 25 m to 29 m below the surface and it indicate different time and source of sedimentation material. Groundwater level between J-5 and J-6 have different behavior. J-5 has artesian type which the water can reach up to 0.15 m above the surface. It may occur because low permeability layer than the others at 13,2 m – 14 m below the surface and cause groundwater system become confined aquifer. The artesian system is not appearing at J-6 which downstream direction from J-5 because J-6 has not low permeability layer and become unconfined aquifer system. It means that low permeability layer such silt or clay material act as lenses layers.

J-13, J-7, and J-8 lie north part from Jonooge lateral flow area. J-13 lies on upstream from J-7. J-13 consists of gravelly sand dominantly up to 30 m below the surface and it shows high energy sedimentation energy from proximal alluvial fan deposit. Occasionally, sand and silty sand layer appear with 0.75 m to 1 m thickness that indicate low energy of sedimentation. The relative thin layer sand and silty sand may occur because of sheet flood section which rapidly sedimentation with lower N value from different time of alluvial fan sedimentation.

J-7 has high energy of sedimentation up to 21 m below the surface that rich of gravels on sand layer. The thickness of clean sand layers less than gravelly sand layers. However, clean sand layers will dominate at 21 m to 30 m and it indicate low energy sedimentation. J-8 which lies downstream from J-7 has clean sand layer more thick than J-7 at 0 to 20 m below the surface. Silt material appear at 20 m to 30 m on sand layer. J-7 and J-8 may occur in same alluvial system because material of J-8 finer than J-7. It means energy of sedimentation from J-7 to J-8 will drop gradually. Groundwater level of J-8 more shallow than J-7 and J-13. Groundwater level of J-13, J-7, and J-8 lie at 11.3 m, 4.3 m and 1.4 m below the surface, respectively.

J-9, J-10, J-11, and J-12 lie on south part from Jonooge lateral flow area. J-9 up to 13 m below the surface controlled by fluctuation sedimentation energy from low energy, high energy and low energy which silty sand, gravelly sand and sand occurred, respectively. High sedimentation energy dominantly control from 13 m to 30 m below the surface that consists of gravelly sand and the fragment can reach up to coble size at 16 m to 25 m below the surface. It indicates that middle to bottom layer of J-9 is part of proximal alluvial fan. J-10 that lies downstream from J-9 perhaps influenced by J-10 alluvial fan deposit system. J-9 on the top and bottom part consists of gravelly sand that controlled by high sedimentation energy. On the other hand, middle part of J-10 from 9,3 m t0 18,1 m below the surface controlled by low energy of sedimentation phase and cause thick fine sand layer which lower N value. Groundwater of J-9 and J-10 lie on 8.73 m and 6.3 m below the surface, respectively.

J-11 and J-12 may different alluvial fan deposit system because the material finer than J-9 and J-10 which elevation between J-9 and J-11 almost same elevation and so do between J-10 and J12. J-11 consists of medium to coarse sand dominantly up to 25 m below the surface and silty sand dominant on the top part of J-11. It means that low energy of sedimentation controls this section while occasionally any gravelly sand up to 2 m thickness that controlled by high energy of sedimentation. However, bottom part of J-11 at 25 m to 30 m below the surface consists gravelly sand that controlled by high energy of sedimentation. Generally, J-12 consists of sand layer and silty sand appear near the surface because of low sedimentation energy. The density of silty sand and sand on the upper part up to 8 m below the surface have medium dense and then will change very dense up to 30 m below the surface. High energy of sedimentation find on gravely sand at 10 m to 15 m below the surface which it may one system with gravelly sand at 25 m to 30 m below the surface of J-11. Groundwater elevation of J-11 and J-12 lie on 8.4 m and 4 m, respectively which similar depth with J-9 and J-10, respectively.

III.2 N Value and Liquefaction Analysis

Standard penetration test has conducted with 1m interval range in every borehole. Standard penetration test results N value and described by N field or

N30. N field has many disturbance factors that influence the value and N field necessary corrected carefully. The corrected N value is very useful to determine some analysis such soil liquefaction.

N field will correct by some factor and it becomes N_{60} that means the blow count for an energy ratio of 60% and the equation 1 as below (Idriss and Boulanger, 2008).

$$N60 = C_E C_B C_R C_S N_m \ldots\ldots\ldots\ldots (1)$$

in which C_E is the energy ratio correction factor described above, C_B is a correction factor for borehole diameter, C_R is a correction factor for rod length, and C_S is a correction factor for a sampler that had room for liners but was used without the liners, and N_m is measured blow count. Idriss and Boulanger (2008) determine the value of some correction factors on table III.1.

The range value that use for analysis of corrected value become N_{60} consists of four factor such C_E, C_B, C_R, C_S. C_E. Based on correction table (Table III.1), energy ratio factor (C_E) value will adjust to 0.9, borehole diameter value (C_B) is 1, rod length factors (C_R) vary from 0.75 to 1 depend on the depth, and sampler correction (C_S) use value of 1.

Table III.1 Correction Factors for N SPT Values (Idriss & Boulanger, 2008)

Factor	Description
Energy ratio	Energy measurements are required to determine the delivered energy ratios or to calibrate the specific equipment being used. The correction factor is then computed as $C_E = \frac{ER_m}{60}$ where ER_m is the measured energy ratio as a percentage of the theoretical maximum. Empirical estimates of C_E (for rod lengths of 10 m or more) involve considerable uncertainty, as reflected by the following ranges: Doughnut hammer $C_E = 0.5–1.0$; Safety hammer $C_E = 0.7–1.2$; Automatic triphammer $C_E = 0.8–1.3$ (Seed et al. 1984, Skempton 1986, NCEER 1997)
Borehole diameter	Borehole diameter of 65–115 mm $C_B = 1.0$; Borehole diameter of 150 mm $C_B = 1.05$; Borehole diameter of 200 mm $C_B = 1.15$ (Skempton 1986)
Rod length	Where the ER_m is based on rod lengths of 10 m or more, the ER delivered with shorter rod lengths may be smaller. Recommended values from Youd et al. (2001) are as follows: Rod length < 3 m $C_R = 0.75$; Rod length 3–4 m $C_R = 0.80$; Rod length 4–6 m $C_R = 0.85$; Rod length 6–10 m $C_R = 0.95$; Rod length 10–30 m $C_R = 1.00$
Sampler	Standard split spoon without room for liners (the inside diameter is a constant $1^3/_8$ in.), $C_S = 1.0$. Split-spoon sampler with room for liners but with the liners absent (this increases the inside diameter to $1^1/_2$ in. behind the driving shoe): $C_S = 1.1$ for $(N_1)_{60} \le 10$; $C_S = 1 + \frac{(N_1)_{60}}{100}$ for $10 \le (N_1)_{60} \le 30$; $C_S = 1.3$ for $(N_1)_{60} \ge 30$ (from Seed et al. 1984, equation by Seed et al. 2001)

Penetration resistances are corrected to the equivalent value that would have been obtained in the identical sand if the vertical effective stress had been 1 atm. The overburden corrected penetration resistances, $(N1)_{60}$ is computed by using an overburden correction factor, C_N, as follows (Idriss & Boulanger, 2008):

$$(N1)_{60} = C_N N_{60} \quad \text{.....(2)}$$

In this case, analysis of $(N_1)_{60}$ will use overburden correction factor C_N provided by Liao & Whitman (1986) as follows:

$$CN = \left(\frac{Pa}{\sigma'v}\right)^{0.5} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

where CN is a factor to correct measured penetration resistance for overburden pressure and Pa equals 100 kPa or approximately one atmosphere of pressure in the same units used for overburden effective stress σ'_{vo}.

Overburden correction need unit weight data with depth function. Unit weight data is not conducted on every borehole sample except on test pit samples. We adjust the unit weight in order to calculate overburden pressure based on test pit data. We assume that for sand and gravelly sand use unit weight dry value on 18.1 KN/m^3 and 21.3 KN/m^3 for saturation unit weight. Silty sand lithology will use 15.1 KN/m^3 for dry unit weight and 19.5 KN/m^3 for saturation unit weight. Sandy clay will use 16 KN/m^3 for dry unit weight and 20 KN/m^3 for saturation unit weight. The example of calculation as shown in Table III.2 and all of $(N1)_{60}$ calculation every borehole provides on appendix of 3.

Table III.2 The example of $(N_1)_{60}$ calculation of LP-4 at Petobo

No.	Lithology	Depth (m)	N - Value	N60	N1(60)
1	gravelly SAND	0.50 - 1.00	5	3.0	3.0
2	gravelly SAND	1.50 - 2.00	17	10.2	17.0
3	SAND	2.50 - 3.00	12	7.2	10.4
4	silty SAND	3.50 - 4.00	8	5.1	7.1
5	silty SAND	4.50 - 5.00	3	2.0	2.6
6	SAND	5.50 - 6.00	28	19.0	20.8
7	SAND	6.50 - 7.00	5	3.8	3.9
8	SAND	7.50 - 8.00	42	31.9	30.7
9	gravelly SAND	8.50 - 9.00	33	25.1	22.9
10	gravelly SAND	9.50 - 10.00	37	28.1	24.5
11	SAND	10.50 - 11.00	20	16.0	13.3
12	SAND	11.50 - 12.00	11	8.8	7.0
13	gravelly SAND	12.50 - 13.00	57	45.6	35.2
14	gravelly SAND	13.50 - 14.00	65	52.0	38.8
15	gravelly SAND	14.50 - 15.00	63	50.4	36.4
16	gravelly SAND	15.50 - 16.00	61	48.8	34.2
17	gravelly SAND	16.50 - 17.00	60	48.0	32.7
18	silty SAND	17.50 - 18.00	35	28.0	20.1
19	gravelly SAND	18.50 - 19.00	57	45.6	29.4
20	SAND	19.50 - 20.00	34	27.2	17.1
21	SAND	20.50 - 21.00	59	47.2	29.0
22	SAND	21.50 - 22.00	62	49.6	29.9
23	SAND	22.50 - 23.00	58	46.4	27.3
24	gravelly SAND	23.50 - 24.00	59	47.2	27.3
25	gravelly SAND	24.50 - 25.00	66	52.8	29.9
26	gravelly SAND	25.50 - 26.00	63	50.4	28.0
27	gravelly SAND	26.50 - 27.00	66	52.8	28.8
28	gravelly SAND	27.50 - 28.00	66	52.8	28.3
29	gravelly SAND	28.50 - 29.00	63	50.4	26.6
30	gravelly SAND	29.50 - 30.00	64	51.2	26.5

Prediction of soil liquefaction analysis for Palu earthquake, we use probability suggestion based on Liao and Whitman (1988) as follows:

$$PL = \frac{1}{1+\exp[(\beta_0+\beta_1 \ln(CSR)+\beta_2(N_1)_{60}]} \text{.....4}$$

Where the value of β_0, β_1, β_2 for all case of soil is 10.167; 4.1933; -0.24375, respectively. CSR is cyclic stress ratio that equation as follows (Seed, et.al, 1983)

$$CSR = 0,65 \frac{a_{max}}{g} . \frac{\sigma_0}{\sigma'_0} . r_d \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

in which a max is maximum acceleration at the ground surface; (σ_0 = total overburden pressure on sand layer under consideration; σ'_0 = initial effective overburden pressure on sand layer under consideration; and *rd* = stress reduction factor varying from a value of 1 at the ground surface to a value of 0.9 at depth of about 30 ft (9.6 m). We use a max value from BMKG information that maximum acceleration on September 28, 2018 at least 0.3g. The example of calculation as shown on figure III.5 and all liquefaction probability can find on appendix of 3.

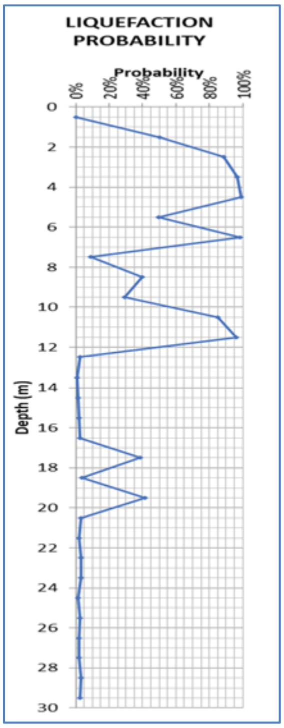


Figure III.4 The example of liquefaction probability at LP-4 Petobo

III.3 N Swedish Convert to N SPT value

Swedish sounding have conducted between boreholes at Jonooge and Balaroa.Swedish will enrichment the data that lack between boreholes. The value N swedish describe the density of soil that substitute N valu from standard penetration test in borehole. The aim of swedish test convert the N swedish value to N value of standard penetration test.

Calculation process to convert become N value use empirical formula. We use Inada's formula to convert N swedish to N value and according Inada (1960), N value depend on loading application (Wsw in kN) and penetration resistance (N_{sw} in ht/m), the equation as follows:

$$N = 2\ W_{sw} + 0.067\ N_{sw} \quad \ldots\ldots 6$$

Swedish sounding test lack on lithology data because there is no other test nearby swedish point. Soil liquefaction prediction from swedish test use analogy of converted N swedish to N SPT. The result of converted N swedish to N SPT can find on appendix of 4.,

Generally, Swedish test at Petobo area can reach between 6 m to 10 m except at P-S-7 that only reach up to 3m. Average converted N value from swedish approximately less than 15 and test will stop if converted N show gretaer than 50 or Nsw greater than 700 ht/m.

Swedish test at Jonooge area more dense at E-S-1 to E-S-4, E-S-7, E-S-8, E-S-12 and the penetration only reach 2 m to 5 m below the surface.On the other hand, E-S-5, E-S-6, E-S-9, E-S-10, E-S-11, and E-S-13 more soft with converted N value up to 28. Location with symbol J-S lie near lateral flow of Jonooge. J-S-1 to J-S-6 that lie at lateral flow area show the N value up to 10 m below the surface less than 14 except at J-S-12, J-S-4, and J-S-6 that stop test on very dense layer at approximately 5 m – 6 m below the surface and N value up to 50.

III.4 Liquefaction Suspectibility from Grain Size

Soil liquefaction susceptibility from grain size (Figure III.6) has described by Tsuchida & Hayashi (1971) that cited by Obermeier (1996). Grain size curve divide in two criteria which has uniform graded and well graded. Inner range curve indicates most liquefiable value and outer range curve indicates potentially liquefiable.

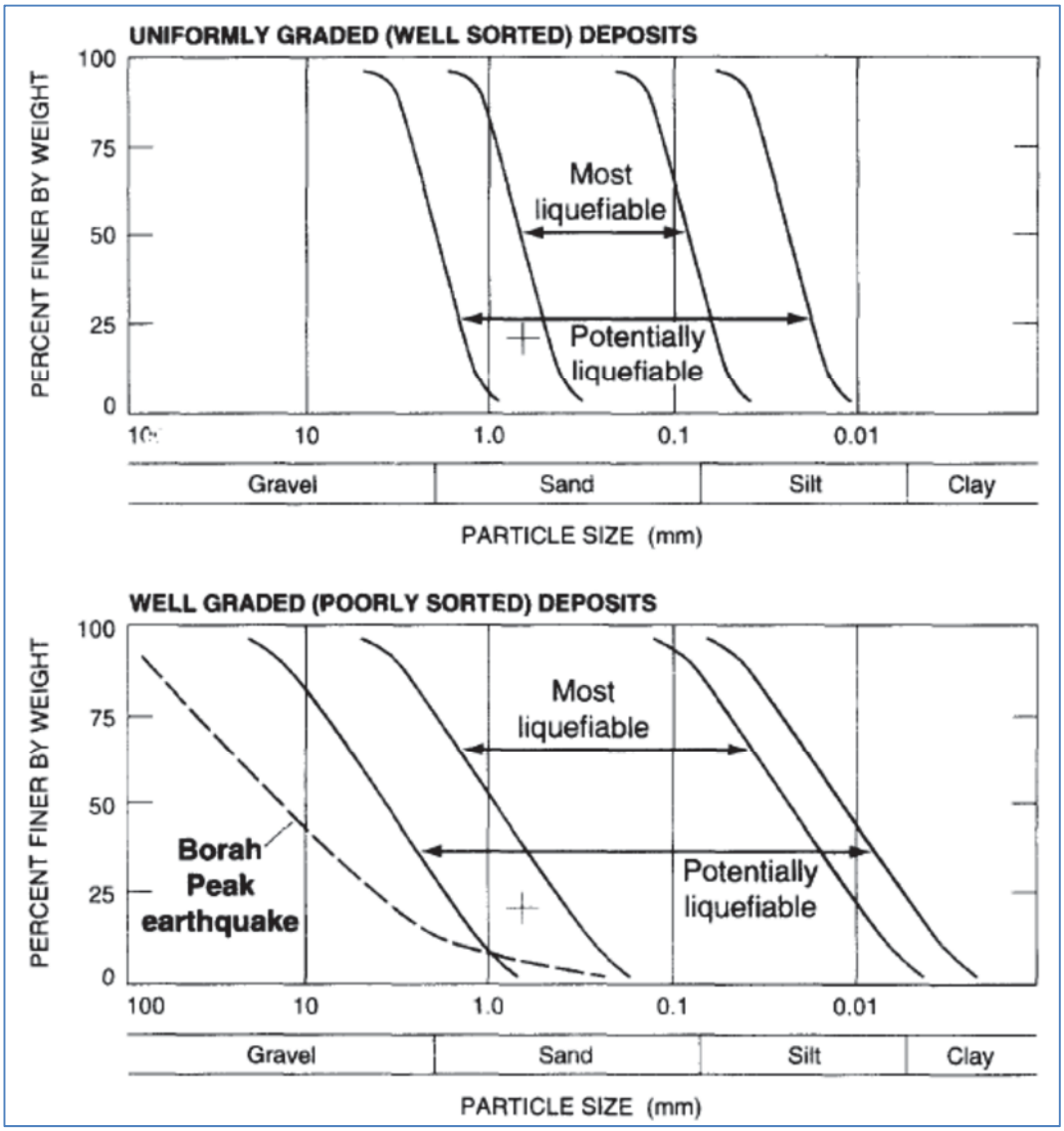


Figure III.5 Gradation curve showing grain sizes most susceptible to liquefaction (Tsuchida & Hayashi, 1971) that cited by Obermeier (1996)

Generally, grain size curve in survey area tends well graded than uniformly graded. Meanwhile, the curve range for each borehole apply well graded curve to analyze liquefaction susceptibility in survey area. The samples come from standard penetration test material in each borehole. The analysis (see appendix of 5) show that almost sand materials include most liquefiable value both of uniformly graded or well graded condition. Samples that have potentially liquefiable criteria find if any more gravel or silt/clay content.

CHAPTER IV

DISCUSSION

A great shaking from earthquake can trigger liquefaction in survey area. Geology condition explain the genetic sedimentation come from alluvial fan process. On the other hand, fluvial process control takes a rule at low land area. Debris material that contains gravel to boulder fragment occur on proximal alluvial fan system with rather steep slope. Sand material transport to the middle until toe of alluvial fan system with gentle slope. Finer material such fine sand, silt and clay appear on the flat morphology and sometime mixed because of fluvial process.

Boreholes in survey area record subsurface data of lithology which talk about the genetic of sedimentation process and behavior of material based on some insitu test. Occasionally, liquefaction evidence appears at the surface surrounding the boreholes point but liquefaction evidence at sub surface well unknown form direct observation. There is two kind of type of liquefaction that occur at survey area such cyclic mobility and flow liquefaction. The cyclic mobility type appears as sand boil at any place but the dangerous flow liquefaction has occurred and kill a lot of people at Balaroa, Petobo, and Jonooge as lateral flow evidence.

The mechanism evidence of lateral flow is questionable. The subsurface identification must know well to answer it. So, coring data, standard penetration test and Swedish sounding test have conducted in order to know where the liquefaction occurs at the subsurface. If observation data compare with coring data and N value from standard penetration test, it will make sure the liquefaction at the sub surface. Back analysis with cyclic stress concept has done on Chapter III with combining groundwater level and lithology description.

Liquefaction probability method from Liao & Whitman (1988) use to describe where is layer that probable to liquefy. The threshold of liquefaction included in class 5 based on Juang et.al (2001). It means the value greater than or equal 85% will “almost certain that it will liquefy”. The summary of liquefaction probability with value greater than or equal 85% have collected for all boreholes with red color cells.

DEPTH (m)			LOCATION																														
			B-1	B-2	B-3	B-4	B-5	B-6	LP-1	LP-2	LP-3	LP-4	LP-5	LP-6	J-1	J-2	J-3	J-4	J-5	J-6	J-7	J-8	J-9	J-10	J-11	J-12	J-13	J-14	P-1	PO-1	D-1	T-1
			N FIELD																														
0.50	-	1.00	8			3					6								8														
1.50	-	2.00	7			7	4				6								13														
2.50	-	3.00	3			3	7					12																					
3.50	-	4.00	5	6		5	3			4		8			10							13											
4.50	-	5.00	4			6	10			7		3																					
5.50	-	6.00	10			11	13			5																10							
6.50	-	7.00	12			13				3		5				5										11							
7.50	-	8.00					16			4																11							
8.50	-	9.00					14			5																							
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34.50	-	35.00																															

Figure IV.1 Summary of liquefaction probability layers (red color) triggered by 0.3 g

Generally, liquefaction occur less than 15 m below the surface except J-8. Verification data from direct surface observation surrounding each borehole that prove to liquefy such at lateral flow area but the others are unknown well.

If liquefaction layer compares with N value (number in red color at figure IV.1), the summary from N value shows liquefaction may occur for N field less than 18 and in saturated condition. Liquefaction dominantly occur on saturated sand and silty sand. However, saturated gravelly sand less potential to liquefaction

Swedish sounding test that disperse between boreholes has Nsw value. Inada (1960) formula change Nsw to N value in order to analyze liquefaction. The lack data of lithology from Swedish test will confuse to detect where is liquefaction layers. Meanwhile, if N value converted by Nsw less than 18, liquefaction will occur on saturated sand or silty sand.

Liquefaction from Tsuchida's curve (Figure III.6), grain size curve (see appendix of 5) will say that material mostly liquefaction or potential to liquefaction. Dominantly, grain size curve in survey area included mostly liquefaction region. It

means that size of grain condition prone to liquefaction naturally both of dry or saturated condition. However, dry condition will not although the grain size is suitable to liquefaction. Meanwhile, Numata & Mori (2004) resume relationship between mean grain size (D_{50}) with ejected soil that occurred in some earthquake in the world (Figure IV.2). Numata & Mori (2004) conclude that most liquefiable soil will occur if mean grain size (D_{50}) between 0.06 to 0.7.

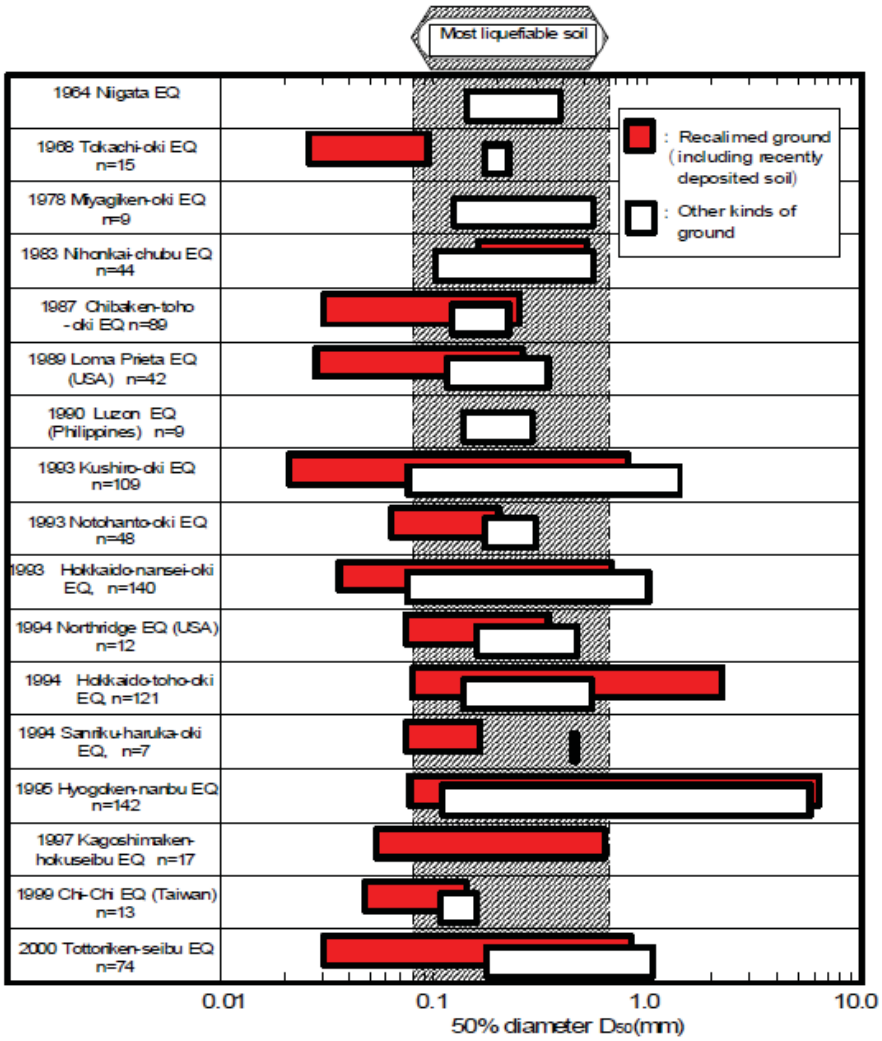


Figure IV.2 Ranges of 50% diameter of ejected soils during each earthquake (Numata & Mori, 2004)

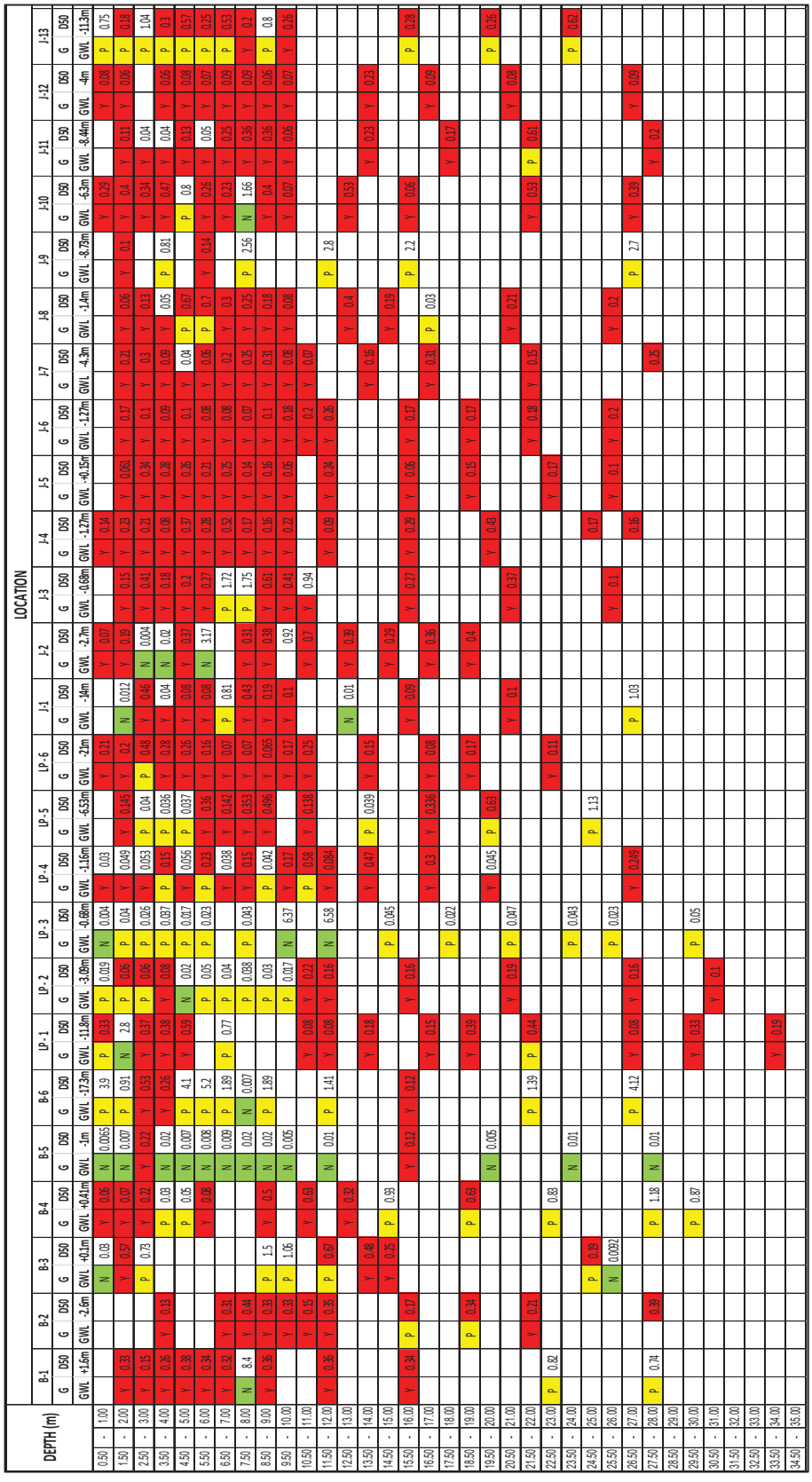


Figure IV.3 Resume of liquefaction prediction between grain size curve and D_{50}

Figure IV.3 show resume of liquefaction prediction from grain size (G) based on tsuchida's criteria and mean grain size (D_{50}) based on Numata's criteria. Y symbol is mostly liquefaction (red color); P is potential to liquefaction (Yellow color) and N is outer range of liquefaction (green color). If we see Figure IV.3, there is a better correlation between liquefaction prediction from grain size curve and mean grain size. The criteria often same value, for example, grain size curve says mostly liquefiable and D_{50} will lie 0.06 to 0.7 or mostly liquefiable too (red color). However, a few data say the opposite.

Relationship between liquefaction probability (Figure IV.1) and grain size parameter (Figure IV.3) show good corelation. It means liquefaction that predict from grain size dominantly suitable with liquefaction probability from N value calculation.

Relocation area such Duyu, Petobo and Talise have very high N value because consists of gravel to boulder material. Relocation area has no groundwater near the surface and the environment show arid area that cactus can live dominantly.

BAB V

CONCLUSION

1. Boreholes say that survey area almost consist of sand, gravelly sand, and silty sand.
2. Groundwater level generally less than 5 m below the surface except the boreholes near up stream or proximal of alluvial fan deposit that can reach up to 10 m and more deep.
3. High pore water pressure that causing artesian condition tend occur near the flat area with slope less than 3^{o}.
4. Generally, lower N value (less than 25) usually record as thinner layer than high N value layers (greater than 30) and often lie upper to middle boreholes.
5. Liquefaction evidence surrounding boreholes near the surface (less than 5 m below the surface) has relationship with low N value less than 13.
6. Liquefaction probability from empirical calculation on saturated sand with silt or gravel will liquefy if N field less than 18.
7. The character of grain size from the curve and mean grain size show that lithology dominantly sands and prone to liquefy or most liquefiable criteria based on some reference.
8. Liquefaction probability at relocation area such Day, Petobo and Talise have no potential to liquefaction because groundwater level doesn't appear and very dense layers.

BIBLIOGRAFY

Idriss, I.M dan Boulanger, R.W., (2004): Soil Liquefaction During Earthquakes, *earthquake engineering research institute*, p.235.

Liao, S. S. C., D. Veneziano, and R. V. Whitman (1988). Regression models for evaluating liquefaction probability. J. Geotech. Eng. Div., ASCE 114(4), 389–411.

Seed, H.B., I.M. Idriss, and I. Arango (1983). "Evaluation of liquefaction potential using field performance data," J. Geotech. Eng., ASCE, 109, No. 3, pp. 458-482.

Juang, C. Hsein; Jiang, Tao; Andrus, Ronald D.; and Lee, Der-Her, "Assessing Probabilistic Methods for Liquefaction Potential Evaluation — An Update" (2001). *International Conferences on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*. 18.

Obermeier, S.F. (1996) Use of Liquefaction-Induced Features for Paleo Seismic Analysis—An Overview of How Seismic Liquefaction Features Can Be Distinguished from Other Features and How Their Origin Can Be Used to Infer the Location and Strength of Holocene Paleo-Earthquakes. Engineering Geology, 44, 1-76.

Numata, A and Mori S., (2004), Limits in The Gradation Curves Of Liquefiable Soils, 13th World Conference on Earthquake Engineering Vancouver, B.C., Canada

APPENDIX-1

BOR LOG AND CORE BOXES

BOR LOG

CORE BOXES

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**D-1**	Surface Elv. (M)	+94.00
Total Depth (M)	10.00	Coordinat	X: 0815756, Y: 9897963



Box - 1

Box - 2

Depth (m)

1 2 3 4 5 6 7 8 9 10

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

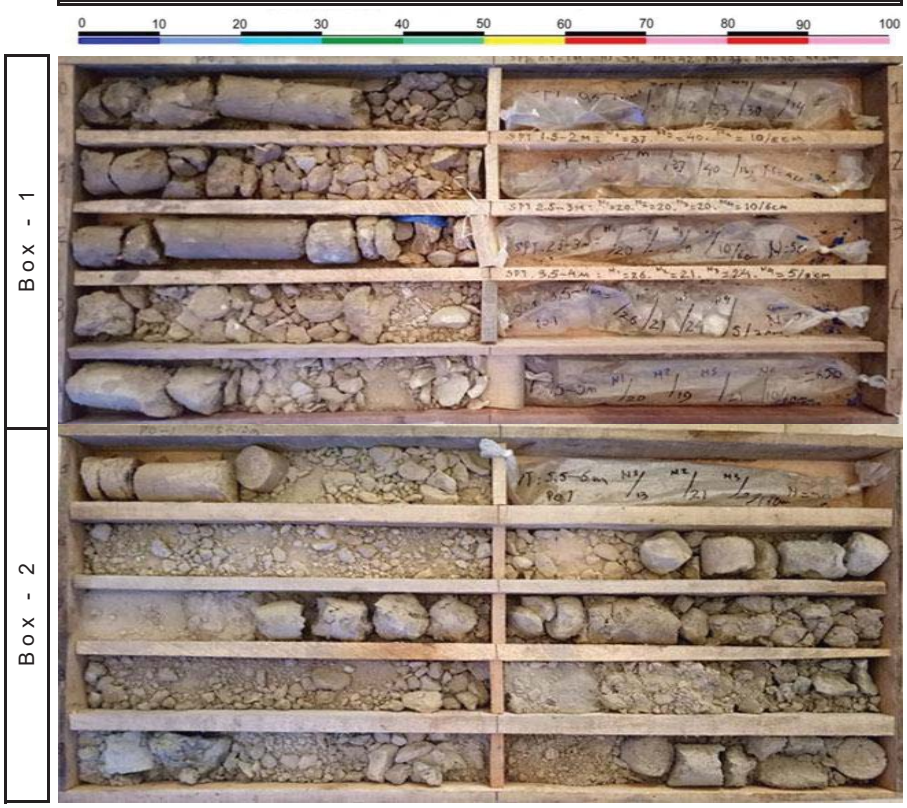
Hole No	**P-1**	Surface Elv. (M)	+145.00
Total Depth (M)	11.00	Coordinat	X: 0826555, Y: 9896700



END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**PO-1**	Surface Elv. (M)	+114.00
Total Depth (M)	10.00	Coordinat	X: 082724, Y: 9889263



END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-1**	Surface Elv. (M)	+74.00
Total Depth (M)	30.0	Coordinat	X: 0816138, Y: 9899701



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-1**	Surface Elv. (M)	+74.00
Total Depth (M)	30.0	Coordinat	X: 0816138, Y: 9899701

Box - 6



Depth (m)

26

27

28

29

30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-2**	Surface Elv. (M)	+35.00
Total Depth (M)	30.0	Coordinat	X: 0816296, Y:9899931



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-2**	Surface Elv. (M)	+35.00
Total Depth (M)	30.0	Coordinat	X: 0816296, Y:9899931

Depth (m)

0 10 20 30 40 50 60 70 80 90 100

Box - 6



26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-3**	Surface Elv. (M)	+24.00
Total Depth (M)	30.0	Coordinat	X: 0816347, Y: 9900455

0 10 20 30 40 50 60 70 80 90 100

Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5



Depth (m)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**B-3**	Surface Elv. (M)	+24.00
Total Depth (M)	30.0	Coordinat	X: 0816347, Y: 9900455

0 10 20 30 40 50 60 70 80 90 100

Depth (m)

Box - 6



26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-4**	Surface Elv. (M)	+33.00
Total Depth (M)	30.00	Coordinat	X: 0816423, Y: 9899102



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-4**	Surface Elv. (M)	+33.00
Total Depth (M)	30.00	Coordinat	X: 0816423, Y: 9899102

Box- 6



Depth (m)

26

27

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29

30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-5**	Surface Elv. (M)	+17.00
Total Depth (M)	30.0	Coordinat	X: 0816912, Y: 9899918

0 10 20 30 40 50 60 70 80 90 100



Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5

Depth (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-5**	Surface Elv. (M)	+17.00
Total Depth (M)	30.0	Coordinat	X: 0816912, Y: 9899918

Box - 6



Depth (m)

26

27

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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-6**	Surface Elv. (M)	+68.00
Total Depth (M)	30.0	Coordinat	X: 0816235, Y: 9897507



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**B-6**	Surface Elv. (M)	+68.00
Total Depth (M)	30.0	Coordinat	X: 0816235, Y: 9897507

Box - 6



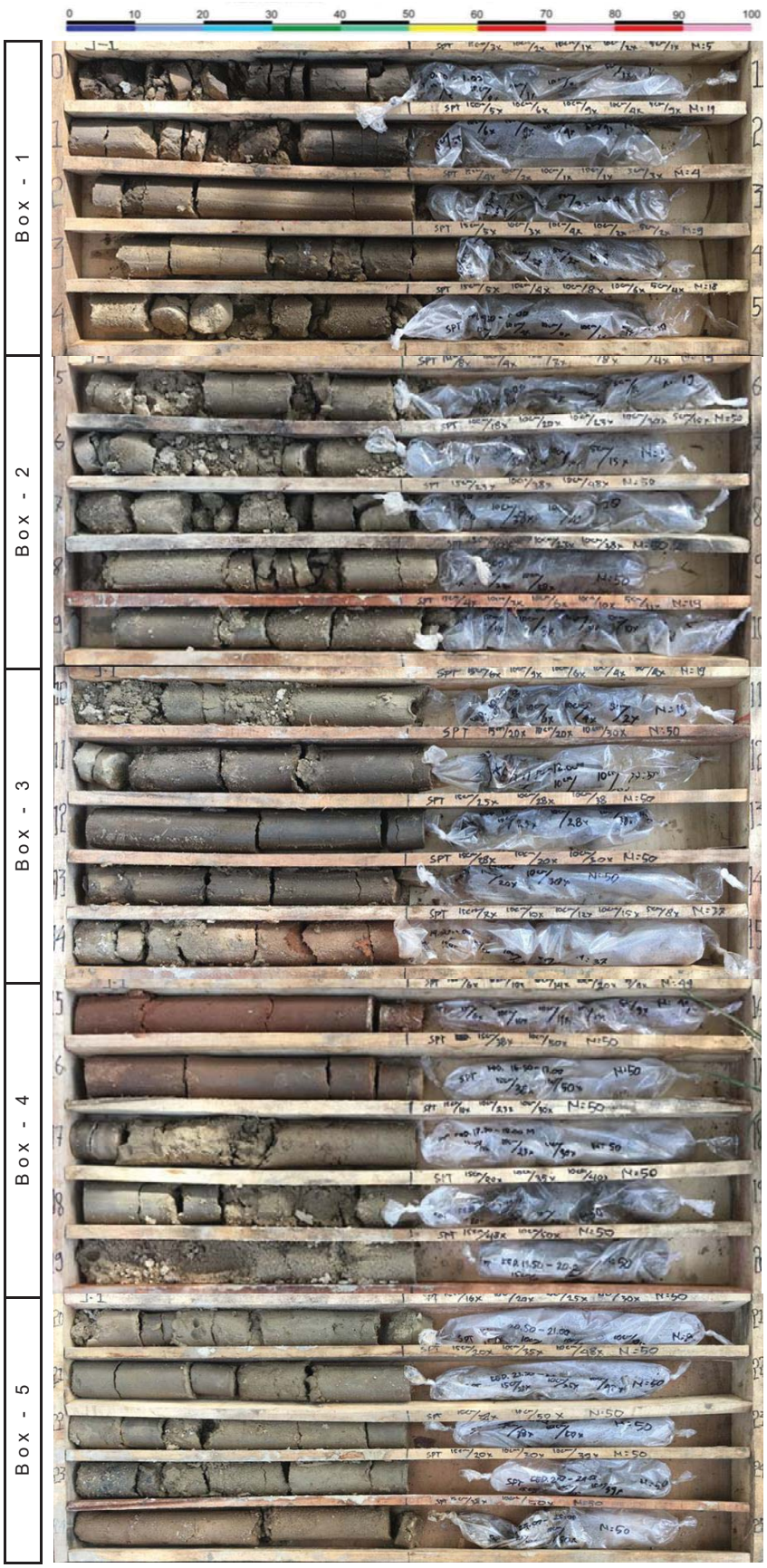
Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-1**	Surface Elv. (M)	+88.00
Total Depth (M)	30.0	Coordinat	X : 825742, Y: 9891240



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**J-1**	Surface Elv. (M)	+88.00
Total Depth (M)	30.0	Coordinat	X : 825742, Y: 9891240

0 10 20 30 40 50 60 70 80 90 100

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-2**	Surface Elv. (M)	+89.00
Total Depth (M)	25.0	Coordinat	X: 825141, Y: 9890924

0 10 20 30 40 50 60 70 80 90 100



Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5

Depth (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-3**	Surface Elv. (M)	+65.00
Total Depth (M)	30.0	Coordinat	X: 823812, Y: 9890557



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**J-3**	Surface Elv. (M)	+65.00
Total Depth (M)	30.0	Coordinat	X: 823812, Y: 9890557

0 10 20 30 40 50 60 70 80 90 100

Depth (m)

Box - 6

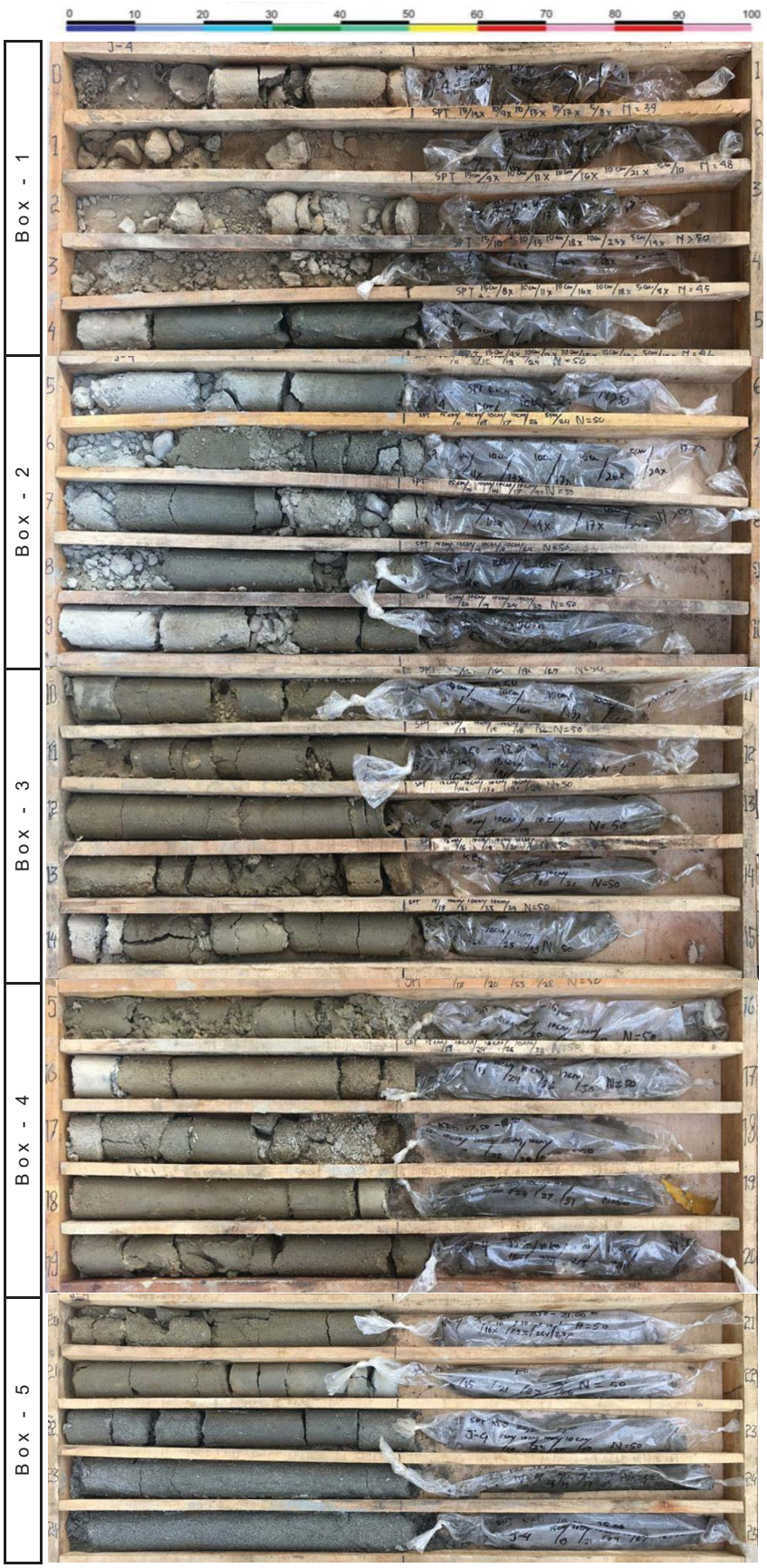


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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-4**	Surface Elv. (M)	+53.00
Total Depth (M)	30.0	Coordinat	X: 822542, Y: 9891390



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-4**	Surface Elv. (M)	+53.00
Total Depth (M)	30.0	Coordinat	X: 822542, Y: 9891390

Box - 6



Depth (m)

26

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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-5**	Surface Elv. (M)	+75.00
Total Depth (M)	30.0	Coordinat	X: 824476, Y: 9894166



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-5**	Surface Elv. (M)	+75.00
Total Depth (M)	30.0	Coordinat	X: 824476, Y: 9894166

Box - 6



Depth (m)
26
27
28
29
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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-6**	Surface Elv. (M)	+56.00
Total Depth (M)	30.0	Coordinat	X: 822628, Y: 9894199



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**J-6**	Surface Elv. (M)	+56.00
Total Depth (M)	30.0	Coordinat	X: 822628, Y: 9894199

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-7**	Surface Elv. (M)	+76.00
Total Depth (M)	30.0	Coordinat	X: 824564, Y: 9892721



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**J-7**	Surface Elv. (M)	+76.00
Total Depth (M)	30.0	Coordinat	X: 824564, Y: 9892721

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-8**	Surface Elv. (M)	+57.00
Total Depth (M)	30.0	Coordinat	X: 82333, Y: 9892345



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**J-8**	Surface Elv. (M)	+57.00
Total Depth (M)	30.0	Coordinat	X: 82333, Y: 9892345

0 10 20 30 40 50 60 70 80 90 100

Box - 6

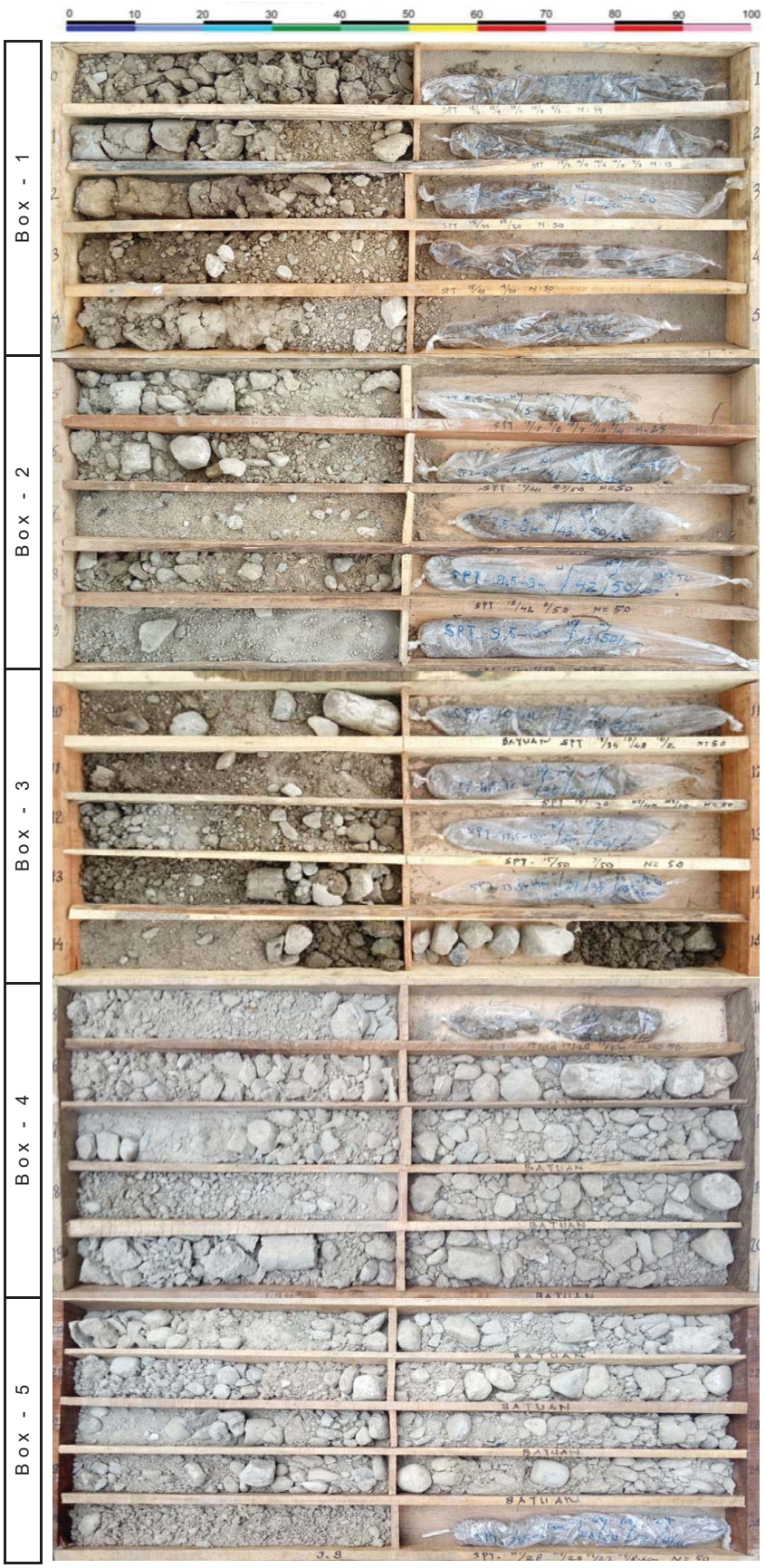


Depth (m)
26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

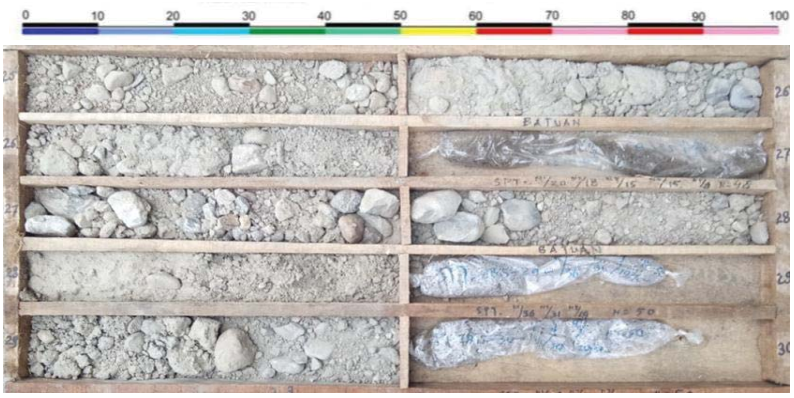
Hole No	**J-9**	Surface Elv. (M)	+101.00
Total Depth (M)	30.0	Coordinat	X: 825484, Y: 9888633



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-9**	Surface Elv. (M)	+101.00
Total Depth (M)	30.0	Coordinat	X: 825484, Y: 9888633

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-10**	Surface Elv. (M)	+83.00
Total Depth (M)	30.0	Coordinat	X: 823748, Y: 988854

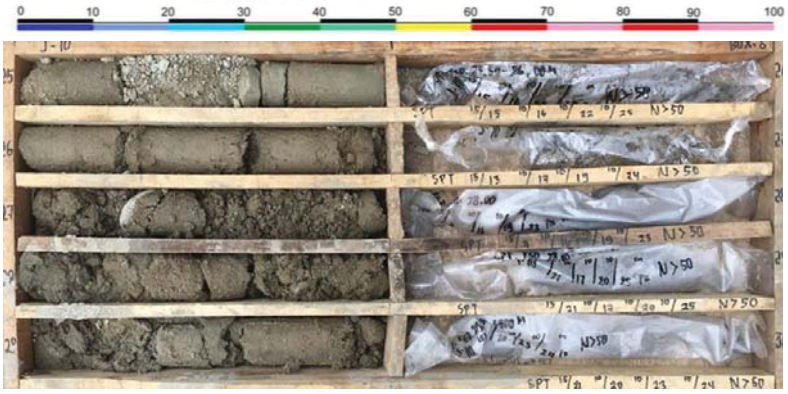


Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-10**	Surface Elv. (M)	+83.00
Total Depth (M)	30.0	Coordinat	X: 823748, Y: 988854

Depth (m)

Box - 6



26
27
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29
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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-11**	Surface Elv. (M)	+98.00
Total Depth (M)	30.0	Coordinat	X: 825351, Y: 9887130



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-11**	Surface Elv. (M)	+98.00
Total Depth (M)	30.0	Coordinat	X: 825351, Y: 9887130

Box - 6



Depth (m)

26

27

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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

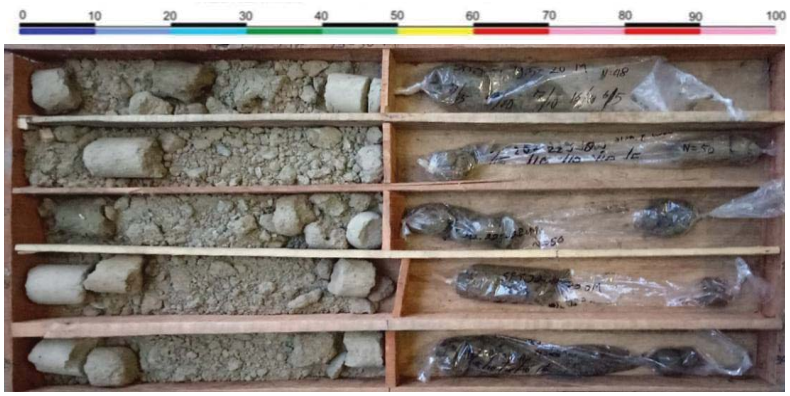
Hole No	**J-12**	Surface Elv. (M)	+81.00
Total Depth (M)	30.0	Coordinat	X: 823649, Y: 9887090



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-12**	Surface Elv. (M)	+81.00
Total Depth (M)	30.0	Coordinat	X: 823649, Y: 9887090

Box - 6



Depth (m)

26

27

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END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-13**	Surface Elv. (M)	+92.00
Total Depth (M)	30.0	Coordinat	X: 825337, Y: 9892624

0 10 20 30 40 50 60 70 80 90 100



Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5

Depth (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-13**	Surface Elv. (M)	+92.00
Total Depth (M)	30.0	Coordinat	X: 825337, Y: 9892624

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**J-14**	Surface Elv. (M)	+63.00
Total Depth (M)	10.0	Coordinat	X: 824966, Y: 9890895



Depth (m)

1
2
3
4
5
6
7
8
9
10

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-1**	Surface Elv. (M)	+79.00
Total Depth (M)	35.0	Coordinat	X: 0825376, Y: 9895789



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**LP-1**	Surface Elv. (M)	+79.00
Total Depth (M)	35.0	Coordinat	X: 0825376, Y: 9895789



END OF DRILLING

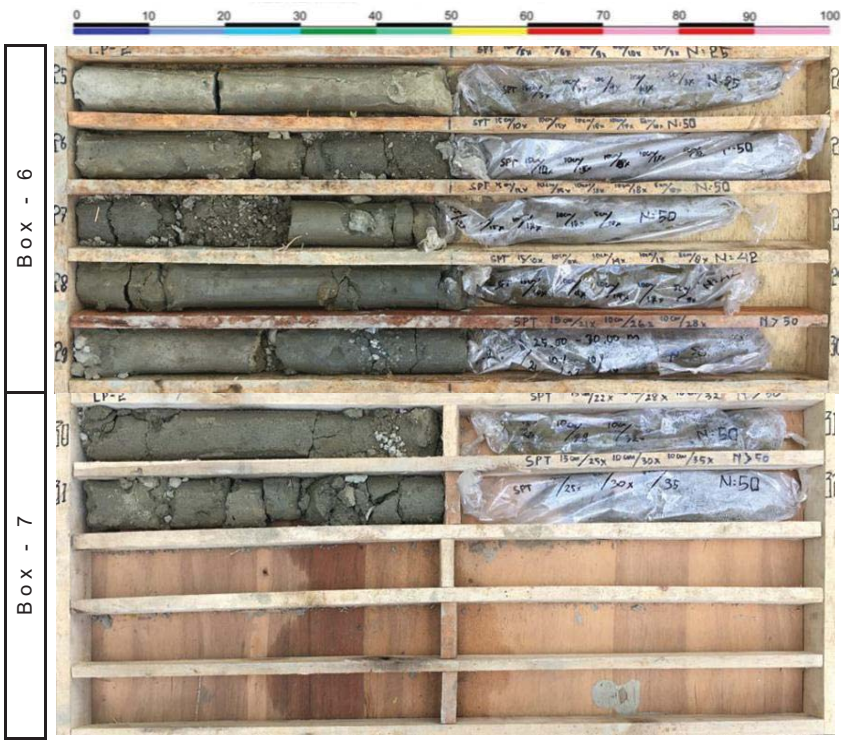
Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-2**	Surface Elv. (M)	+62.00
Total Depth (M)	32.0	Coordinat	X: 082447, Y: 9895841



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-2**	Surface Elv. (M)	+62.00
Total Depth (M)	32.0	Coordinat	X: 082447, Y: 9895841



END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-3**	Surface Elv. (M)	+48.00
Total Depth (M)	30.0	Coordinat	X: 0822721, Y: 989623

0 10 20 30 40 50 60 70 80 90 100



Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5

Depth (m)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-3**	Surface Elv. (M)	+48.00
Total Depth (M)	30.0	Coordinat	X: 0822721, Y: 989623

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-4**	Surface Elv. (M)	+61.00
Total Depth (M)	30.0	Coordinat	X: 0824246, Y: 9896370



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018			
Hole No	**LP-4**	Surface Elv. (M)	+61.00
Total Depth (M)	30.0	Coordinat	X: 0824246, Y: 9896370

0 10 20 30 40 50 60 70 80 90 100

Box - 6



Depth (m)
26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-5**	Surface Elv. (M)	+67.00
Total Depth (M)	30.0	Coordinat	X: 082369, Y: 9897486



Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-5**	Surface Elv. (M)	+67.00
Total Depth (M)	30.0	Coordinat	X: 082369, Y: 9897486

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-6**	Surface Elv. (M)	+112.00
Total Depth (M)	27.0	Coordinat	X: 0823903, Y: 9899203

0 10 20 30 40 50 60 70 80 90 100

Box - 1 | Box - 2 | Box - 3 | Box - 4 | Box - 5



Depth (m)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**LP-6**	Surface Elv. (M)	+112.00
Total Depth (M)	27.0	Coordinat	X: 0823903, Y: 9899203

Box - 6



Depth (m)

26
27
28
29
30

END OF DRILLING

Boring Survey for Basic Response Plan for Central Sulawesi Earthquake 2018

Hole No	**T-1**	Surface Elv. (M)	+95.00
Total Depth (M)	10.00	Coordinat	X: 0822817, Y: 9905416



Box - 1

Box - 2

Depth (m)

1
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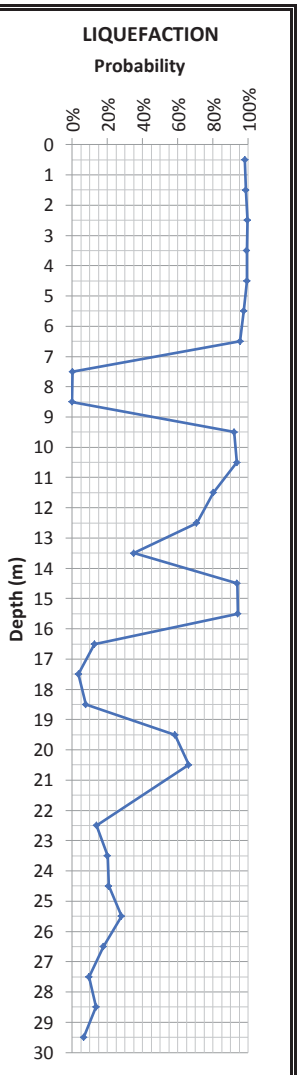
END OF DRILLING

APPENDIX-3

PROBABILITY LIQUEFACTION FRON N VALUE

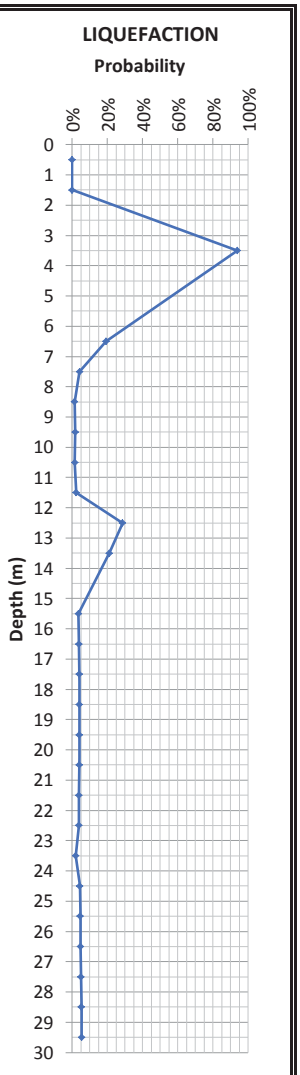
Hole : B - 1
Location : Balaroa
GWL 1.06 m Artesian

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	silty SAND	0.50 - 1.00	8	5.4	9.2	0.39	98.1%	98.1%
2	silty SAND	1.50 - 2.00	7	4.7	8.0	0.39	98.5%	98.5%
3	silty SAND	2.50 - 3.00	3	2.0	3.4	0.38	99.5%	99.5%
4	silty SAND	3.50 - 4.00	5	3.6	5.7	0.38	99.1%	99.1%
5	silty SAND	4.50 - 5.00	4	3.1	4.3	0.38	99.3%	99.3%
6	silty SAND	5.50 - 6.00	10	7.7	9.8	0.37	97.5%	97.5%
7	silty SAND	6.50 - 7.00	12	10.3	12.2	0.37	95.4%	95.4%
8	silty SAND	7.50 - 8.00	52	44.5	49.4	0.37	0.2%	0.2%
9	gravelly SAND	8.50 - 9.00	67	57.3	55.1	0.34	0.0%	0.0%
10	SAND	9.50 - 10.00	16	13.7	12.5	0.33	92.0%	92.0%
11	SAND	10.50 - 11.00	14	12.6	11.0	0.32	93.6%	93.6%
12	SAND	11.50 - 12.00	21	18.9	15.7	0.31	80.1%	80.1%
13	SAND	12.50 - 13.00	24	21.6	17.3	0.30	70.8%	70.8%
14	SAND	13.50 - 14.00	33	29.7	22.9	0.29	34.9%	34.9%
15	SAND	14.50 - 15.00	13	11.7	8.7	0.28	93.7%	93.7%
16	SAND	15.50 - 16.00	12	10.8	7.8	0.27	94.1%	94.1%
17	SAND	16.50 - 17.00	42	37.8	26.5	0.26	12.7%	12.7%
18	gravelly SAND	17.50 - 18.00	51	45.9	31.2	0.25	3.7%	3.7%
19	gravelly SAND	18.50 - 19.00	46	41.4	27.4	0.24	7.7%	7.7%
20	gravelly SAND	19.50 - 20.00	26	23.4	15.1	0.23	58.5%	58.5%
21	gravelly SAND	20.50 - 21.00	23	20.7	13.0	0.22	66.1%	66.1%
22	#N/A	21.50 - 22.00	0	0.0	#N/A	#N/A	#N/A	#N/A
23	gravelly SAND	22.50 - 23.00	40	36.0	21.7	0.20	14.0%	14.0%
24	gravelly SAND	23.50 - 24.00	37	33.3	19.6	0.20	20.2%	20.2%
25	gravelly SAND	24.50 - 25.00	37	33.3	19.2	0.20	20.7%	20.7%
26	gravelly SAND	25.50 - 26.00	34	30.6	17.3	0.19	28.1%	28.1%
27	gravelly SAND	26.50 - 27.00	39	35.1	19.5	0.19	17.7%	17.7%
28	gravelly SAND	27.50 - 28.00	45	40.5	22.1	0.19	9.7%	9.7%
29	gravelly SAND	28.50 - 29.00	42	37.8	20.3	0.18	13.6%	13.6%
30	gravelly SAND	29.50 - 30.00	49	44.1	23.2	0.18	6.7%	6.7%



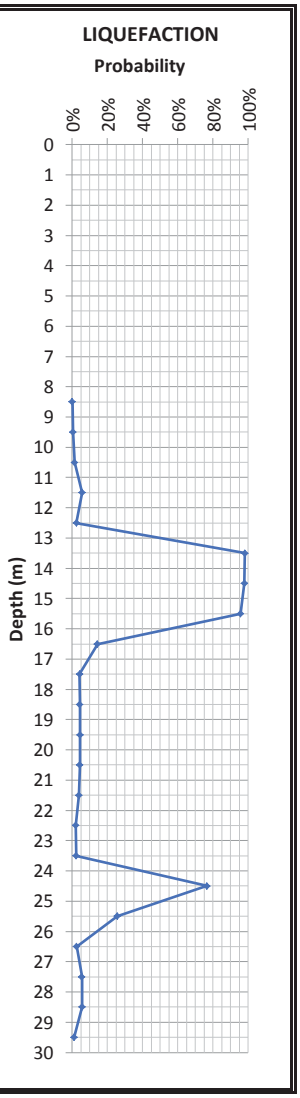
Hole : B - 2
Location : Balaroa
GWL 2.55 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	#N/A	0.50 - 1.00		0.0	0.0	#N/A	#N/A	0.0%
2	#N/A	1.50 - 2.00		0.0	0.0	#N/A	#N/A	0.0%
3	#N/A	2.50 - 3.00		0.0	#N/A	#N/A	#N/A	#N/A
4	SAND	3.50 - 4.00	6	4.3	5.0	0.23	93.8%	93.8%
5	#N/A	4.50 - 5.00		0.0	#N/A	#N/A	#N/A	#N/A
6	#N/A	5.50 - 6.00		0.0	#N/A	#N/A	#N/A	#N/A
7	SAND	6.50 - 7.00	30	25.7	24.4	0.26	19.4%	19.4%
8	SAND	7.50 - 8.00	41	35.1	31.7	0.27	4.3%	4.3%
9	SAND	8.50 - 9.00	50	42.8	36.9	0.27	1.3%	1.3%
10	SAND	9.50 - 10.00	50	42.8	35.4	0.27	1.9%	1.9%
11	gravelly SAND	10.50 - 11.00	50	45.0	35.8	0.27	1.6%	1.6%
12	gravelly SAND	11.50 - 12.00	49	44.1	33.8	0.26	2.4%	2.4%
13	gravelly SAND	12.50 - 13.00	33	29.7	22.0	0.26	28.7%	28.7%
14	gravelly SAND	13.50 - 14.00	36	32.4	23.3	0.25	21.2%	21.2%
15	#N/A	14.50 - 15.00		0.0	#N/A	#N/A	#N/A	#N/A
16	gravelly SAND	15.50 - 16.00	50	45.0	30.5	0.24	3.6%	3.6%
17	gravelly SAND	16.50 - 17.00	50	45.0	29.7	0.23	3.9%	3.9%
18	gravelly SAND	17.50 - 18.00	50	45.0	28.9	0.22	4.1%	4.1%
19	gravelly SAND	18.50 - 19.00	50	45.0	28.2	0.22	4.2%	4.2%
20	gravelly SAND	19.50 - 20.00	50	45.0	27.6	0.21	4.2%	4.2%
21	gravelly SAND	20.50 - 21.00	50	45.0	27.0	0.20	4.1%	4.1%
22	gravelly SAND	21.50 - 22.00	50	45.0	26.4	0.19	4.0%	4.0%
23	gravelly SAND	22.50 - 23.00	50	45.0	25.9	0.18	3.8%	3.8%
24	gravelly SAND	23.50 - 24.00	56	50.4	28.4	0.18	2.0%	2.0%
25	gravelly SAND	24.50 - 25.00	50	45.0	24.9	0.18	4.4%	4.4%
26	gravelly SAND	25.50 - 26.00	50	45.0	24.5	0.18	4.7%	4.7%
27	gravelly SAND	26.50 - 27.00	50	45.0	24.0	0.18	4.9%	4.9%
28	gravelly SAND	27.50 - 28.00	50	45.0	23.6	0.17	5.1%	5.1%
29	gravelly SAND	28.50 - 29.00	50	45.0	23.3	0.17	5.3%	5.3%
30	gravelly SAND	29.50 - 30.00	50	45.0	22.9	0.17	5.5%	5.5%



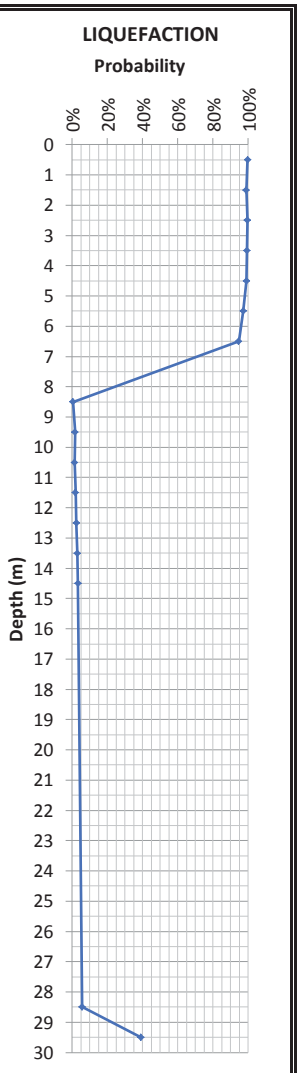
Hole : B - 3
Location : Balaroa
GWL 0.1 m Artesian

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	#N/A	0.50 - 1.00		0.0	#N/A	#N/A	#N/A	#N/A
2	#N/A	1.50 - 2.00		0.0	#N/A	#N/A	#N/A	#N/A
3	#N/A	2.50 - 3.00		0.0	#N/A	#N/A	#N/A	#N/A
4	#N/A	3.50 - 4.00		0.0	#N/A	#N/A	#N/A	#N/A
5	#N/A	4.50 - 5.00		0.0	#N/A	#N/A	#N/A	#N/A
6	#N/A	5.50 - 6.00		0.0	#N/A	#N/A	#N/A	#N/A
7	#N/A	6.50 - 7.00		0.0	#N/A	#N/A	#N/A	#N/A
8	#N/A	7.50 - 8.00		0.0	#N/A	#N/A	#N/A	#N/A
9	gravelly SAND	8.50 - 9.00	61	52.2	50.2	0.34	0.1%	0.1%
10	gravelly SAND	9.50 - 10.00	56	47.9	43.7	0.33	0.6%	0.6%
11	gravelly SAND	10.50 - 11.00	50	45.0	39.2	0.32	1.5%	1.5%
12	gravelly SAND	11.50 - 12.00	44	39.6	33.0	0.31	5.7%	5.7%
13	gravelly SAND	12.50 - 13.00	50	45.0	36.0	0.30	2.5%	2.5%
14	gravelly SAND	13.50 - 14.00	6	5.4	4.2	0.29	98.1%	98.1%
15	gravelly SAND	14.50 - 15.00	6	5.4	4.0	0.28	97.9%	97.9%
16	gravelly SAND	15.50 - 16.00	10	9.0	6.5	0.27	95.6%	95.6%
17	gravelly SAND	16.50 - 17.00	41	36.9	25.8	0.26	14.5%	14.5%
18	gravelly SAND	17.50 - 18.00	50	45.0	30.6	0.25	4.3%	4.3%
19	gravelly SAND	18.50 - 19.00	50	45.0	29.8	0.24	4.5%	4.5%
20	gravelly SAND	19.50 - 20.00	50	45.0	29.0	0.23	4.5%	4.5%
21	gravelly SAND	20.50 - 21.00	50	45.0	28.3	0.22	4.5%	4.5%
22	gravelly SAND	21.50 - 22.00	51	45.9	28.2	0.21	3.8%	3.8%
23	gravelly SAND	22.50 - 23.00	55	49.5	29.8	0.20	2.2%	2.2%
24	gravelly SAND	23.50 - 24.00	55	49.5	29.2	0.20	2.4%	2.4%
25	gravelly SAND	24.50 - 25.00	17	15.3	8.8	0.20	76.7%	76.7%
26	gravelly SAND	25.50 - 26.00	35	31.5	17.8	0.19	25.6%	25.6%
27	gravelly SAND	26.50 - 27.00	56	50.4	28.0	0.19	2.6%	2.6%
28	gravelly SAND	27.50 - 28.00	50	45.0	24.5	0.19	5.6%	5.6%
29	gravelly SAND	28.50 - 29.00	50	45.0	24.1	0.18	5.8%	5.8%
30	gravelly SAND	29.50 - 30.00	64	57.6	30.4	0.18	1.2%	1.2%



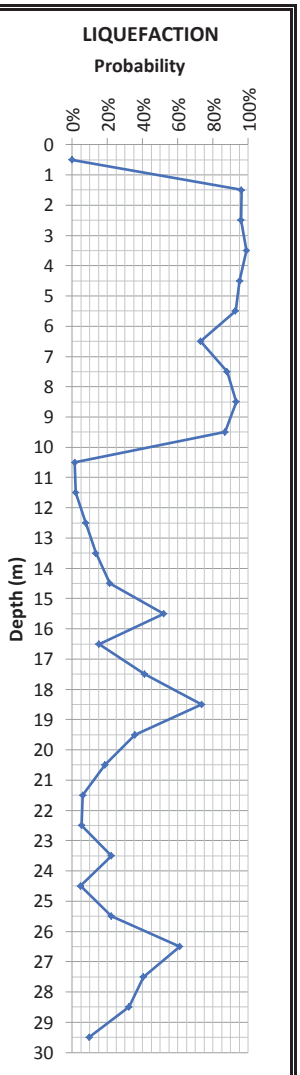
Hole : B - 4
Location : Balaroa
GWL 0.41 m Artesian

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	sandy SILT	0.50 - 1.00	3	2.0	3.4	0.42	99.7%	99.7%
2	sandy SILT	1.50 - 2.00	7	4.7	8.0	0.42	98.9%	98.9%
3	sandy SILT	2.50 - 3.00	3	2.0	3.4	0.41	99.6%	99.6%
4	sandy SILT	3.50 - 4.00	5	3.6	6.1	0.41	99.3%	99.3%
5	sandy SILT	4.50 - 5.00	6	4.6	6.9	0.41	99.1%	99.1%
6	sandy SILT	5.50 - 6.00	11	8.4	11.6	0.40	97.2%	97.2%
7	sandy SILT	6.50 - 7.00	13	11.1	14.2	0.40	94.6%	94.6%
8	#N/A	7.50 - 8.00	0	0.0	#N/A	#N/A	#N/A	#N/A
9	sandy SILT	8.50 - 9.00	50	42.8	48.1	0.39	0.4%	0.4%
10	gravelly SAND	9.50 - 10.00	50	42.8	39.0	0.33	1.8%	1.8%
11	gravelly SAND	10.50 - 11.00	50	45.0	39.2	0.32	1.5%	1.5%
12	gravelly SAND	11.50 - 12.00	50	45.0	37.5	0.31	2.0%	2.0%
13	gravelly SAND	12.50 - 13.00	50	45.0	36.0	0.30	2.5%	2.5%
14	gravelly SAND	13.50 - 14.00	50	45.0	34.7	0.29	2.9%	2.9%
15	gravelly SAND	14.50 - 15.00	50	45.0	33.5	0.28	3.4%	3.4%
16	#N/A	15.50 - 16.00	0	0.0	#N/A	#N/A	#N/A	#N/A
17	#N/A	16.50 - 17.00	0	0.0	#N/A	#N/A	#N/A	#N/A
18	#N/A	17.50 - 18.00	0	0.0	#N/A	#N/A	#N/A	#N/A
19	#N/A	18.50 - 19.00	0	0.0	#N/A	#N/A	#N/A	#N/A
20	#N/A	19.50 - 20.00	0	0.0	#N/A	#N/A	#N/A	#N/A
21	#N/A	20.50 - 21.00	0	0.0	#N/A	#N/A	#N/A	#N/A
22	#N/A	21.50 - 22.00	0	0.0	#N/A	#N/A	#N/A	#N/A
23	#N/A	22.50 - 23.00	0	0.0	#N/A	#N/A	#N/A	#N/A
24	#N/A	23.50 - 24.00	0	0.0	#N/A	#N/A	#N/A	#N/A
25	#N/A	24.50 - 25.00	0	0.0	#N/A	#N/A	#N/A	#N/A
26	#N/A	25.50 - 26.00	0	0.0	#N/A	#N/A	#N/A	#N/A
27	#N/A	26.50 - 27.00	0	0.0	#N/A	#N/A	#N/A	#N/A
28	#N/A	27.50 - 28.00	50	45.0	#N/A	#N/A	#N/A	#N/A
29	gravelly SAND	28.50 - 29.00	50	45.0	24.1	0.18	5.8%	5.8%
30	gravelly SAND	29.50 - 30.00	30	27.0	14.2	0.18	39.1%	39.1%



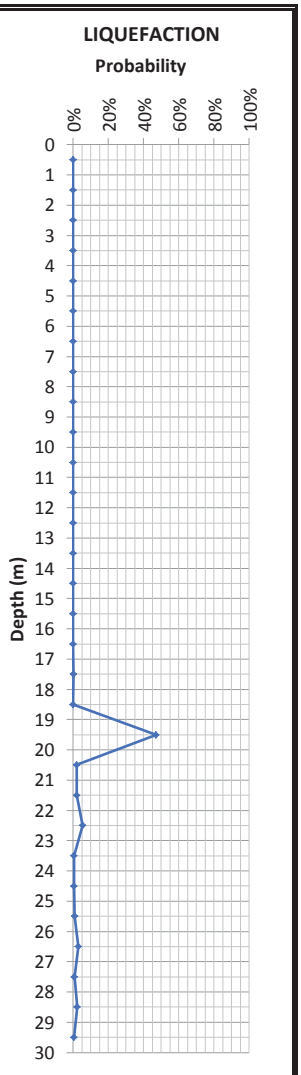
Hole : B - 5
Location : Balaroa
GWL 1 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR	PGA (g) 0.30	PL (%)
1	silty SAND	0.50 - 1.00	3	2.0	2.0	0.19	94.2%	0.0%
2	SAND	1.50 - 2.00	4	2.7	4.6	0.25	96.2%	96.2%
3	sandy SILT	2.50 - 3.00	7	4.7	7.8	0.30	96.0%	96.0%
4	sandy SILT	3.50 - 4.00	3	2.2	3.2	0.32	99.0%	99.0%
5	sandy SILT	4.50 - 5.00	10	7.7	10.4	0.33	95.1%	95.1%
6	sandy SILT	5.50 - 6.00	13	9.9	12.5	0.34	92.8%	92.8%
7	sandy SILT	6.50 - 7.00	19	16.2	19.2	0.34	73.1%	73.1%
8	silty SAND	7.50 - 8.00	16	13.7	14.3	0.33	87.9%	87.9%
9	silty SAND	8.50 - 9.00	14	12.0	11.9	0.33	93.1%	93.1%
10	silty SAND	9.50 - 10.00	18	15.4	14.6	0.32	86.7%	86.7%
11	SAND	10.50 - 11.00	50	45.0	37.7	0.30	1.6%	1.6%
12	SAND	11.50 - 12.00	50	45.0	36.2	0.29	2.0%	2.0%
13	SAND	12.50 - 13.00	43	38.7	30.0	0.28	7.7%	7.7%
14	SAND	13.50 - 14.00	40	36.0	27.0	0.27	13.5%	13.5%
15	SAND	14.50 - 15.00	37	33.3	24.1	0.26	21.5%	21.5%
16	silty SAND	15.50 - 16.00	28	25.2	19.2	0.28	52.0%	52.0%
17	silty SAND	16.50 - 17.00	39	35.1	26.0	0.27	15.3%	15.3%
18	SAND	17.50 - 18.00	31	27.9	18.5	0.24	41.3%	41.3%
19	gravelly SAND	18.50 - 19.00	21	18.9	12.2	0.23	73.7%	73.7%
20	gravelly SAND	19.50 - 20.00	32	28.8	18.2	0.22	35.7%	35.7%
21	gravelly SAND	20.50 - 21.00	38	34.2	21.1	0.21	18.7%	18.7%
22	gravelly SAND	21.50 - 22.00	47	42.3	25.5	0.20	6.2%	6.2%
23	clayey SAND	22.50 - 23.00	46	41.4	26.6	0.21	5.5%	5.5%
24	clayey SAND	23.50 - 24.00	35	31.5	19.8	0.21	22.3%	22.3%
25	clayey SAND	24.50 - 25.00	48	43.2	26.6	0.20	4.9%	4.9%
26	SAND	25.50 - 26.00	36	32.4	18.0	0.19	22.2%	22.2%
27	SAND	26.50 - 27.00	22	19.8	10.8	0.18	61.0%	61.0%
28	SAND	27.50 - 28.00	29	26.1	14.0	0.18	40.4%	40.4%
29	SAND	28.50 - 29.00	32	28.8	15.2	0.18	32.3%	32.3%
30	SAND	29.50 - 30.00	45	40.5	21.0	0.18	9.8%	9.8%



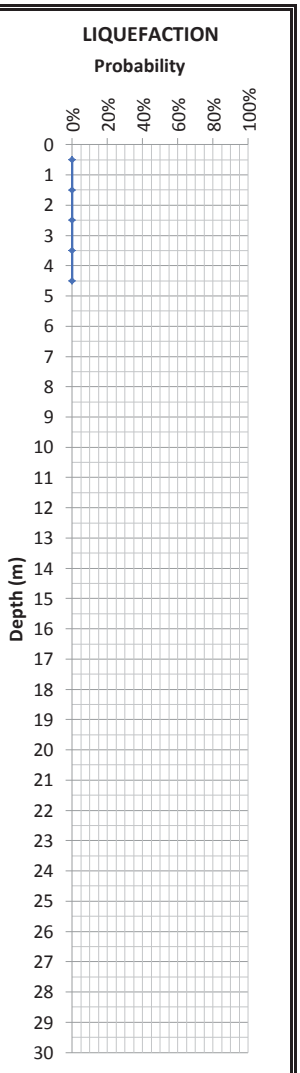
Hole : B - 6
Location : Balaroa
GWL 17.26 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	sandy GRAVEL	0.50 - 1.00	50	33.8	33.8	0.19	0.7%	0.0%
2	sandy GRAVEL	1.50 - 2.00	50	33.8	33.8	0.19	0.7%	0.0%
3	sandy GRAVEL	2.50 - 3.00	50	33.8	33.8	0.19	0.7%	0.0%
4	sandy GRAVEL	3.50 - 4.00	50	36.0	36.0	0.19	0.4%	0.0%
5	sandy GRAVEL	4.50 - 5.00	70	53.6	53.6	0.19	0.0%	0.0%
6	sandy GRAVEL	5.50 - 6.00	50	38.3	38.3	0.19	0.2%	0.0%
7	sandy GRAVEL	6.50 - 7.00	50	42.8	42.8	0.18	0.1%	0.0%
8	CLAY	7.50 - 8.00	14	12.0	12.0	0.18	0.0%	0.0%
9	sandy GRAVEL	8.50 - 9.00	50	42.8	42.8	0.18	0.1%	0.0%
10	sandy GRAVEL	9.50 - 10.00	28	23.9	23.9	0.18	5.1%	0.0%
11	sandy GRAVEL	10.50 - 11.00	50	45.0	45.0	0.17	0.0%	0.0%
12	sandy GRAVEL	11.50 - 12.00	53	47.7	47.7	0.17	0.0%	0.0%
13	sandy GRAVEL	12.50 - 13.00	51	45.9	45.9	0.16	0.0%	0.0%
14	sandy GRAVEL	13.50 - 14.00	50	45.0	45.0	0.16	0.0%	0.0%
15	sandy GRAVEL	14.50 - 15.00	61	54.9	54.9	0.15	0.0%	0.0%
16	sandy GRAVEL	15.50 - 16.00	50	45.0	45.0	0.15	0.0%	0.0%
17	sandy GRAVEL	16.50 - 17.00	68	61.2	61.2	0.14	0.0%	0.0%
18	sandy GRAVEL	17.50 - 18.00	72	64.8	32.7	0.14	0.2%	0.2%
19	gravelly SAND	18.50 - 19.00	85	76.5	38.0	0.14	0.1%	0.1%
20	gravelly SAND	19.50 - 20.00	17	15.3	7.5	0.13	47.2%	47.2%
21	gravelly SAND	20.50 - 21.00	52	46.8	22.6	0.13	2.0%	2.0%
22	gravelly SAND	21.50 - 22.00	51	45.9	21.9	0.13	2.2%	2.2%
23	gravelly SAND	22.50 - 23.00	41	36.9	17.3	0.12	5.5%	5.5%
24	gravelly SAND	23.50 - 24.00	67	60.3	28.0	0.12	0.4%	0.4%
25	gravelly SAND	24.50 - 25.00	65	58.5	26.8	0.12	0.6%	0.6%
26	gravelly SAND	25.50 - 26.00	61	54.9	24.8	0.12	0.9%	0.9%
27	gravelly SAND	26.50 - 27.00	50	45.0	20.1	0.12	2.9%	2.9%
28	gravelly SAND	27.50 - 28.00	65	58.5	25.8	0.12	0.7%	0.7%
29	gravelly SAND	28.50 - 29.00	53	47.7	20.8	0.12	2.4%	2.4%
30	gravelly SAND	29.50 - 30.00	69	62.1	26.8	0.12	0.6%	0.6%



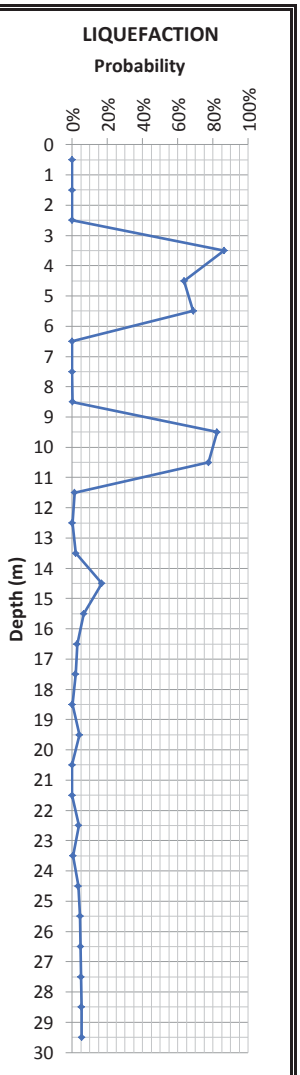
Hole : D - 1
Location : Duyu
GWL - m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	50	33.8	33.8	0.19	0.7%	0.0%
2	gravelly SAND	1.50 - 2.00	66	44.6	44.6	0.19	0.0%	0.0%
3	gravelly SAND	2.50 - 3.00	50	33.8	33.8	0.19	0.7%	0.0%
4	gravelly SAND	3.50 - 4.00	69	49.7	49.7	0.19	0.0%	0.0%
5	gravelly SAND	4.50 - 5.00	67	51.3	51.3	0.19	0.0%	0.0%
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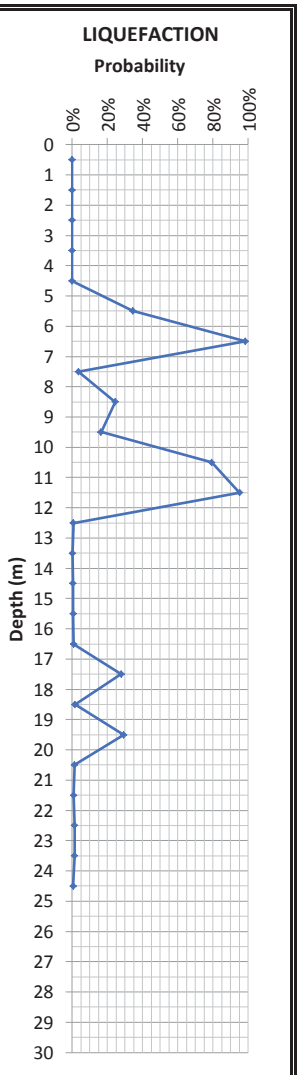
Hole : J - 1
Location : Jonooge
GWL 2.7 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	sandy CLAY	0.50 - 1.00	5	3.4	3.4	0.19	0.0%	0.0%
2	sandy CLAY	1.50 - 2.00	19	12.8	12.8	0.19	0.0%	0.0%
3	sandy CLAY	2.50 - 3.00	4	2.7	3.7	0.20	0.0%	0.0%
4	SAND	3.50 - 4.00	10	7.2	8.3	0.22	86.3%	86.3%
5	SAND	4.50 - 5.00	18	13.8	14.7	0.24	63.7%	63.7%
6	SAND	5.50 - 6.00	19	14.5	14.6	0.25	68.8%	68.8%
7	SAND	6.50 - 7.00	73	62.4	59.1	0.26	0.0%	0.0%
8	SAND	7.50 - 8.00	86	73.5	66.1	0.26	0.0%	0.0%
9	SAND	8.50 - 9.00	61	52.2	44.8	0.27	0.2%	0.2%
10	SAND	9.50 - 10.00	18	15.4	12.7	0.27	82.2%	82.2%
11	clayey SAND	10.50 - 11.00	19	17.1	14.5	0.28	77.6%	77.6%
12	clayey SAND	11.50 - 12.00	50	45.0	36.8	0.27	1.4%	1.4%
13	clayey SAND	12.50 - 13.00	66	59.4	47.1	0.27	0.1%	0.1%
14	clayey SAND	13.50 - 14.00	50	45.0	34.6	0.26	2.0%	2.0%
15	clayey SAND	14.50 - 15.00	37	33.3	24.9	0.26	16.9%	16.9%
16	clayey SAND	15.50 - 16.00	44	39.6	28.8	0.25	6.6%	6.6%
17	clayey SAND	16.50 - 17.00	50	45.0	31.8	0.24	2.9%	2.9%
18	clayey SAND	17.50 - 18.00	53	47.7	32.9	0.24	2.0%	2.0%
19	SAND	18.50 - 19.00	75	67.5	42.2	0.21	0.1%	0.1%
20	SAND	19.50 - 20.00	50	45.0	27.5	0.21	4.2%	4.2%
21	clayey SAND	20.50 - 21.00	80	72.0	46.4	0.21	0.0%	0.0%
22	clayey SAND	21.50 - 22.00	83	74.7	47.2	0.20	0.0%	0.0%
23	SAND	22.50 - 23.00	50	45.0	25.8	0.18	3.8%	3.8%
24	SAND	23.50 - 24.00	69	62.1	34.9	0.18	0.4%	0.4%
25	clayey SAND	24.50 - 25.00	50	45.0	26.9	0.19	3.6%	3.6%
26	gravelly SAND	25.50 - 26.00	50	45.0	24.4	0.18	4.6%	4.6%
27	gravelly SAND	26.50 - 27.00	50	45.0	24.0	0.18	4.9%	4.9%
28	gravelly SAND	27.50 - 28.00	50	45.0	23.6	0.17	5.1%	5.1%
29	gravelly SAND	28.50 - 29.00	50	45.0	23.2	0.17	5.3%	5.3%
30	gravelly SAND	29.50 - 30.00	50	45.0	22.9	0.17	5.4%	5.4%



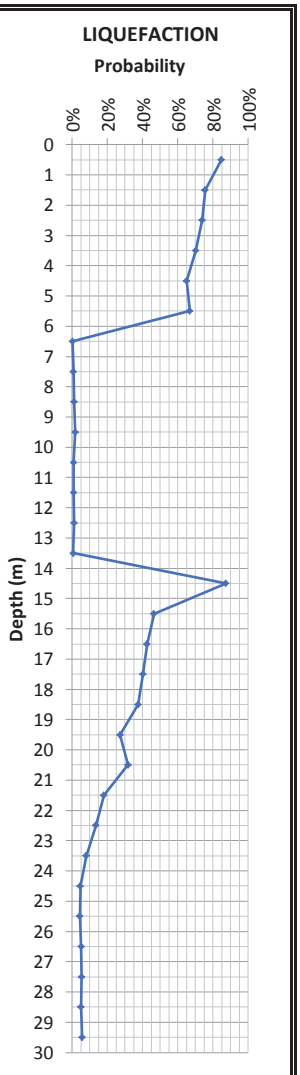
Hole : J - 2
Location : Jonooge
GWL 1.16 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	CLAY	0.50 - 1.00	5	3.4	3.4	0.19	0.0%	0.0%
2	CLAY	1.50 - 2.00	17	11.5	19.5	0.25	0.0%	0.0%
3	CLAY	2.50 - 3.00	12	8.1	13.1	0.28	0.0%	0.0%
4	CLAY	3.50 - 4.00	8	5.8	8.4	0.31	0.0%	0.0%
5	CLAY	4.50 - 5.00	3	2.3	3.1	0.32	0.0%	0.0%
6	sandy GRAVEL	5.50 - 6.00	28	21.4	23.4	0.30	34.5%	34.5%
7	sandy GRAVEL	6.50 - 7.00	5	4.3	4.4	0.30	98.3%	98.3%
8	sandy GRAVEL	7.50 - 8.00	42	35.9	34.6	0.30	3.6%	3.6%
9	sandy GRAVEL	8.50 - 9.00	33	28.2	25.8	0.30	24.6%	24.6%
10	sandy GRAVEL	9.50 - 10.00	37	31.6	27.5	0.30	16.5%	16.5%
11	SAND	10.50 - 11.00	20	18.0	15.0	0.29	79.3%	79.3%
12	SAND	11.50 - 12.00	11	9.9	7.9	0.28	95.1%	95.1%
13	SAND	12.50 - 13.00	57	51.3	39.6	0.28	0.8%	0.8%
14	SAND	13.50 - 14.00	65	58.5	43.6	0.27	0.3%	0.3%
15	SAND	14.50 - 15.00	63	56.7	40.9	0.26	0.4%	0.4%
16	SAND	15.50 - 16.00	61	54.9	38.4	0.25	0.7%	0.7%
17	SAND	16.50 - 17.00	60	54.0	36.7	0.25	0.9%	0.9%
18	SAND	17.50 - 18.00	35	31.5	20.9	0.24	27.9%	27.9%
19	SAND	18.50 - 19.00	57	51.3	33.1	0.23	1.6%	1.6%
20	SAND	19.50 - 20.00	34	30.6	19.3	0.22	29.4%	29.4%
21	SAND	20.50 - 21.00	59	53.1	32.7	0.21	1.3%	1.3%
22	SAND	21.50 - 22.00	62	55.8	33.6	0.20	0.9%	0.9%
23	SAND	22.50 - 23.00	58	52.2	30.8	0.19	1.5%	1.5%
24	SAND	23.50 - 24.00	59	53.1	30.7	0.19	1.4%	1.4%
25	SAND	24.50 - 25.00	66	59.4	33.6	0.19	0.7%	0.7%
26								
27								
28								
29								
30								



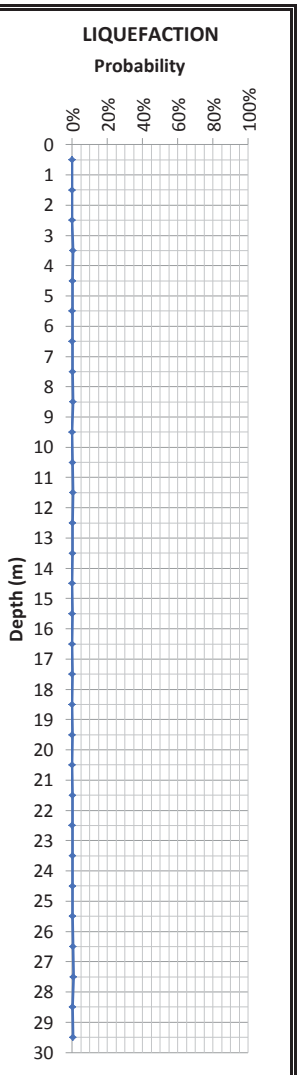
Hole : J - 3
Location : Jonooge
GWL 0.68 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	8	5.4	9.2	0.23	84.7%	84.7%
2	gravelly SAND	1.50 - 2.00	13	8.8	14.9	0.28	75.6%	75.6%
3	SAND	2.50 - 3.00	16	10.8	16.5	0.30	73.9%	73.9%
4	silty SAND	3.50 - 4.00	18	13.0	18.8	0.32	70.3%	70.3%
5	silty SAND	4.50 - 5.00	20	15.3	20.2	0.33	65.1%	65.1%
6	SAND	5.50 - 6.00	22	16.8	18.9	0.31	66.8%	66.8%
7	SAND	6.50 - 7.00	50	42.8	44.8	0.32	0.4%	0.4%
8	SAND	7.50 - 8.00	50	42.8	42.1	0.32	0.7%	0.7%
9	gravelly SAND	8.50 - 9.00	50	42.8	39.9	0.32	1.2%	1.2%
10	gravelly SAND	9.50 - 10.00	50	42.8	37.9	0.31	1.8%	1.8%
11	SAND	10.50 - 11.00	53	47.7	40.5	0.30	0.9%	0.9%
12	SAND	11.50 - 12.00	54	48.6	39.5	0.29	1.0%	1.0%
13	gravelly SAND	12.50 - 13.00	54	48.6	38.1	0.29	1.3%	1.3%
14	gravelly SAND	13.50 - 14.00	59	53.1	40.1	0.28	0.7%	0.7%
15	gravelly SAND	14.50 - 15.00	17	15.3	11.2	0.27	87.4%	87.4%
16	gravelly SAND	15.50 - 16.00	30	27.0	19.1	0.26	46.5%	46.5%
17	gravelly SAND	16.50 - 17.00	31	27.9	19.2	0.25	42.5%	42.5%
18	silty SAND	17.50 - 18.00	31	27.9	20.3	0.26	40.2%	40.2%
19	gravelly SAND	18.50 - 19.00	32	28.8	18.8	0.23	37.6%	37.6%
20	SAND	19.50 - 20.00	35	31.5	20.0	0.22	27.3%	27.3%
21	SAND	20.50 - 21.00	33	29.7	18.5	0.22	31.7%	31.7%
22	SAND	21.50 - 22.00	38	34.2	20.8	0.21	18.1%	18.1%
23	SAND	22.50 - 23.00	40	36.0	21.4	0.20	13.5%	13.5%
24	gravelly SAND	23.50 - 24.00	45	40.5	23.6	0.19	8.0%	8.0%
25	gravelly SAND	24.50 - 25.00	50	45.0	25.7	0.19	4.7%	4.7%
26	gravelly SAND	25.50 - 26.00	51	45.9	25.7	0.19	4.4%	4.4%
27	gravelly SAND	26.50 - 27.00	50	45.0	24.7	0.19	5.2%	5.2%
28	gravelly SAND	27.50 - 28.00	50	45.0	24.3	0.18	5.5%	5.5%
29	gravelly SAND	28.50 - 29.00	51	45.9	24.4	0.18	5.1%	5.1%
30	gravelly SAND	29.50 - 30.00	50	45.0	23.5	0.18	5.8%	5.8%



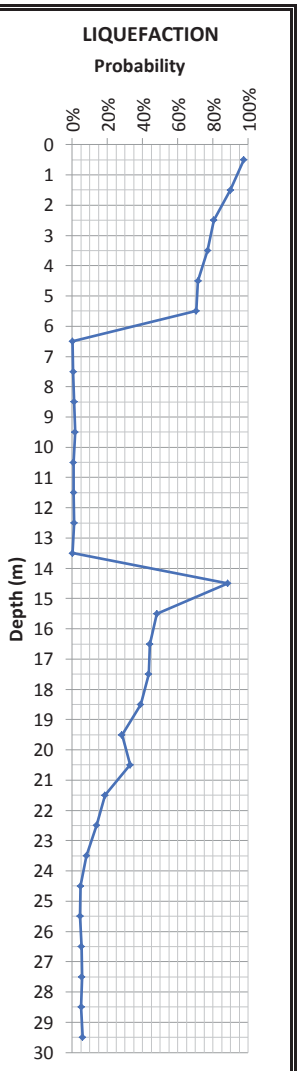
Hole : J - 4
Location : Jonooge
GWL 1.27 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	SAND	0.50 - 1.00	39	26.3	26.3	0.19	4.2%	0.0%
2	SAND	1.50 - 2.00	48	32.4	53.3	0.23	0.0%	0.0%
3	gravelly SAND	2.50 - 3.00	54	36.5	52.1	0.26	0.0%	0.0%
4	gravelly SAND	3.50 - 4.00	45	32.4	41.5	0.28	0.5%	0.5%
5	silty SAND	4.50 - 5.00	46	35.2	44.1	0.30	0.4%	0.4%
6	SAND	5.50 - 6.00	58	44.4	48.1	0.29	0.1%	0.1%
7	SAND	6.50 - 7.00	56	47.9	48.6	0.30	0.1%	0.1%
8	gravelly SAND	7.50 - 8.00	56	47.9	45.9	0.30	0.2%	0.2%
9	SAND	8.50 - 9.00	56	47.9	43.5	0.30	0.4%	0.4%
10	gravelly SAND	9.50 - 10.00	72	61.6	53.4	0.30	0.0%	0.0%
11	SAND	10.50 - 11.00	62	55.8	46.3	0.29	0.2%	0.2%
12	SAND	11.50 - 12.00	59	53.1	42.4	0.28	0.4%	0.4%
13	SAND	12.50 - 13.00	61	54.9	42.2	0.28	0.4%	0.4%
14	gravelly SAND	13.50 - 14.00	63	56.7	42.1	0.27	0.4%	0.4%
15	SAND	14.50 - 15.00	73	65.7	47.3	0.26	0.1%	0.1%
16	gravelly SAND	15.50 - 16.00	71	63.9	44.6	0.25	0.2%	0.2%
17	SAND	16.50 - 17.00	80	72.0	48.9	0.24	0.0%	0.0%
18	SAND	17.50 - 18.00	73	65.7	43.4	0.24	0.2%	0.2%
19	SAND	18.50 - 19.00	78	70.2	45.2	0.23	0.1%	0.1%
20	SAND	19.50 - 20.00	76	68.4	43.0	0.22	0.1%	0.1%
21	SAND	20.50 - 21.00	80	72.0	44.2	0.21	0.1%	0.1%
22	SAND	21.50 - 22.00	70	63.0	37.8	0.20	0.3%	0.3%
23	SAND	22.50 - 23.00	76	68.4	40.2	0.19	0.1%	0.1%
24	SAND	23.50 - 24.00	74	66.6	38.4	0.19	0.2%	0.2%
25	SAND	24.50 - 25.00	72	64.8	36.6	0.19	0.3%	0.3%
26	SAND	25.50 - 26.00	72	64.8	35.9	0.19	0.4%	0.4%
27	SAND	26.50 - 27.00	68	61.2	33.3	0.18	0.6%	0.6%
28	SAND	27.50 - 28.00	67	60.3	32.3	0.18	0.8%	0.8%
29	SAND	28.50 - 29.00	76	68.4	36.0	0.18	0.3%	0.3%
30	SAND	29.50 - 30.00	70	63.0	32.6	0.18	0.6%	0.6%



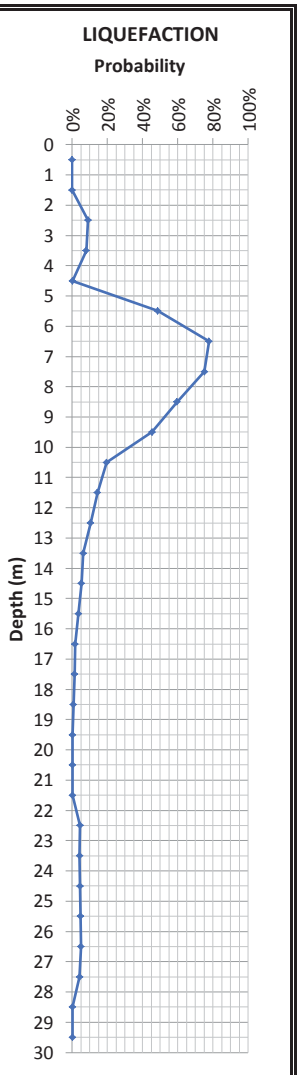
Hole : J - 5
Location : Jonooge
GWL 0.15 m Artesian

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	8	5.4	9.2	0.36	97.4%	97.4%
2	gravelly SAND	1.50 - 2.00	13	8.8	14.9	0.36	90.0%	90.0%
3	gravelly SAND	2.50 - 3.00	16	10.8	18.0	0.35	80.4%	80.4%
4	gravelly SAND	3.50 - 4.00	18	13.0	18.7	0.35	77.0%	77.0%
5	gravelly SAND	4.50 - 5.00	20	15.3	19.7	0.35	71.5%	71.5%
6	gravelly SAND	5.50 - 6.00	22	16.8	19.8	0.34	70.4%	70.4%
7	gravelly SAND	6.50 - 7.00	50	42.8	46.6	0.34	0.3%	0.3%
8	SAND	7.50 - 8.00	50	42.8	43.6	0.34	0.7%	0.7%
9	SAND	8.50 - 9.00	50	42.8	41.1	0.34	1.2%	1.2%
10	gravelly SAND	9.50 - 10.00	50	42.8	39.0	0.33	1.8%	1.8%
11	SAND	10.50 - 11.00	53	47.7	41.5	0.32	0.9%	0.9%
12	gravelly SAND	11.50 - 12.00	54	48.6	40.5	0.31	1.0%	1.0%
13	gravelly SAND	12.50 - 13.00	54	48.6	38.9	0.30	1.2%	1.2%
14	silty SAND	13.50 - 14.00	59	53.1	44.6	0.31	0.4%	0.4%
15	gravelly SAND	14.50 - 15.00	17	15.3	11.4	0.28	88.5%	88.5%
16	gravelly SAND	15.50 - 16.00	30	27.0	19.5	0.27	48.1%	48.1%
17	gravelly SAND	16.50 - 17.00	31	27.9	19.5	0.26	44.0%	44.0%
18	gravelly SAND	17.50 - 18.00	31	27.9	19.0	0.25	43.4%	43.4%
19	gravelly SAND	18.50 - 19.00	32	28.8	19.1	0.24	38.9%	38.9%
20	gravelly SAND	19.50 - 20.00	35	31.5	20.3	0.23	28.3%	28.3%
21	SAND	20.50 - 21.00	33	29.7	18.7	0.22	32.9%	32.9%
22	gravelly SAND	21.50 - 22.00	38	34.2	21.0	0.21	18.7%	18.7%
23	gravelly SAND	22.50 - 23.00	40	36.0	21.7	0.20	14.0%	14.0%
24	gravelly SAND	23.50 - 24.00	45	40.5	23.9	0.20	8.2%	8.2%
25	gravelly SAND	24.50 - 25.00	50	45.0	26.0	0.20	4.8%	4.8%
26	gravelly SAND	25.50 - 26.00	51	45.9	26.0	0.19	4.5%	4.5%
27	gravelly SAND	26.50 - 27.00	50	45.0	25.0	0.19	5.3%	5.3%
28	gravelly SAND	27.50 - 28.00	50	45.0	24.5	0.19	5.6%	5.6%
29	gravelly SAND	28.50 - 29.00	51	45.9	24.6	0.18	5.2%	5.2%
30	gravelly SAND	29.50 - 30.00	50	45.0	23.7	0.18	6.0%	6.0%



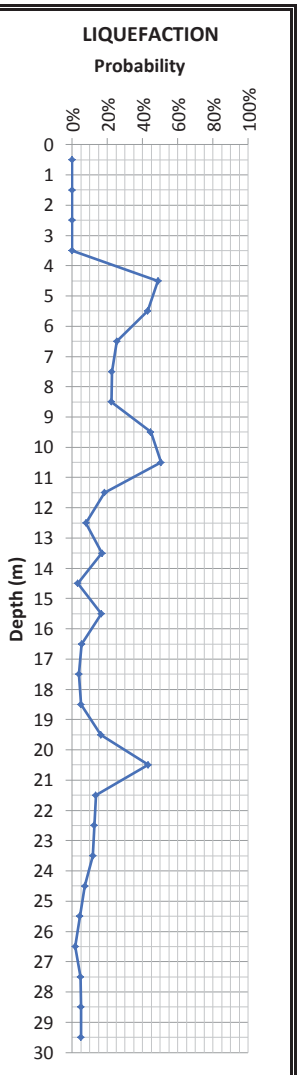
Hole : J - 6
Location : Jonooge
GWL 1.27 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	SAND	0.50 - 1.00	51	34.4	34.4	0.19	0.6%	0.0%
2	SAND	1.50 - 2.00	45	30.4	49.9	0.23	0.0%	0.0%
3	SAND	2.50 - 3.00	29	19.6	28.0	0.26	9.0%	9.0%
4	SAND	3.50 - 4.00	32	23.0	29.5	0.28	8.1%	8.1%
5	SAND	4.50 - 5.00	50	38.3	44.8	0.29	0.2%	0.2%
6	SAND	5.50 - 6.00	25	19.1	20.7	0.29	48.7%	48.7%
7	SAND	6.50 - 7.00	18	15.4	15.6	0.30	77.8%	77.8%
8	SAND	7.50 - 8.00	20	17.1	16.4	0.30	75.2%	75.2%
9	SAND	8.50 - 9.00	25	21.4	19.4	0.30	59.5%	59.5%
10	SAND	9.50 - 10.00	29	24.8	21.5	0.30	45.4%	45.4%
11	SAND	10.50 - 11.00	35	31.5	26.2	0.29	19.7%	19.7%
12	SAND	11.50 - 12.00	38	34.2	27.3	0.28	14.4%	14.4%
13	SAND	12.50 - 13.00	41	36.9	28.4	0.28	10.4%	10.4%
14	SAND	13.50 - 14.00	45	40.5	30.1	0.27	6.4%	6.4%
15	SAND	14.50 - 15.00	47	42.3	30.4	0.26	5.3%	5.3%
16	SAND	15.50 - 16.00	50	45.0	31.4	0.25	3.7%	3.7%
17	SAND	16.50 - 17.00	56	50.4	34.2	0.24	1.7%	1.7%
18	SAND	17.50 - 18.00	58	52.2	34.5	0.24	1.4%	1.4%
19	SAND	18.50 - 19.00	63	56.7	36.5	0.23	0.7%	0.7%
20	SAND	19.50 - 20.00	69	62.1	39.0	0.22	0.3%	0.3%
21	SAND	20.50 - 21.00	71	63.9	39.2	0.21	0.3%	0.3%
22	SAND	21.50 - 22.00	69	62.1	37.3	0.20	0.4%	0.4%
23	SAND	22.50 - 23.00	49	44.1	25.9	0.19	4.5%	4.5%
24	SAND	23.50 - 24.00	50	45.0	25.9	0.19	4.3%	4.3%
25	SAND	24.50 - 25.00	50	45.0	25.4	0.19	4.6%	4.6%
26	gravelly SAND	25.50 - 26.00	50	45.0	25.0	0.19	4.9%	4.9%
27	gravelly SAND	26.50 - 27.00	50	45.0	24.5	0.18	5.1%	5.1%
28	gravelly SAND	27.50 - 28.00	52	46.8	25.0	0.18	4.3%	4.3%
29	gravelly SAND	28.50 - 29.00	74	66.6	35.0	0.18	0.4%	0.4%
30	SAND	29.50 - 30.00	81	72.9	37.7	0.18	0.2%	0.2%



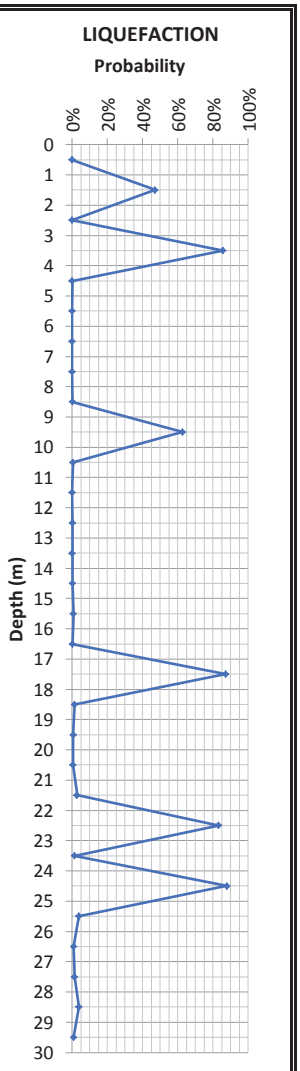
Hole : J - 7
Location : Jonooge
GWL 4.3 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	SAND	0.50 - 1.00	18	12.2	12.2	0.19	57.9%	0.0%
2	gravelly SAND	1.50 - 2.00	9	6.1	6.1	0.19	85.4%	0.0%
3	gravelly SAND	2.50 - 3.00	19	12.8	12.8	0.19	52.2%	0.0%
4	gravelly SAND	3.50 - 4.00	21	15.1	15.1	0.19	37.7%	0.0%
5	gravelly SAND	4.50 - 5.00	19	14.5	14.3	0.20	48.8%	48.8%
6	SAND	5.50 - 6.00	23	17.6	16.3	0.21	43.0%	43.0%
7	SAND	6.50 - 7.00	27	23.1	20.4	0.22	25.5%	25.5%
8	gravelly SAND	7.50 - 8.00	30	25.7	21.7	0.23	22.6%	22.6%
9	gravelly SAND	8.50 - 9.00	32	27.4	22.2	0.24	22.4%	22.4%
10	gravelly SAND	9.50 - 10.00	27	23.1	18.0	0.24	44.6%	44.6%
11	gravelly SAND	10.50 - 11.00	25	22.5	17.0	0.24	50.6%	50.6%
12	gravelly SAND	11.50 - 12.00	35	31.5	23.0	0.24	18.5%	18.5%
13	gravelly SAND	12.50 - 13.00	42	37.8	26.7	0.23	7.9%	7.9%
14	SAND	13.50 - 14.00	37	33.3	22.9	0.23	17.0%	17.0%
15	gravelly SAND	14.50 - 15.00	50	45.0	30.1	0.22	3.2%	3.2%
16	gravelly SAND	15.50 - 16.00	38	34.2	22.3	0.22	16.6%	16.6%
17	SAND	16.50 - 17.00	47	42.3	26.9	0.21	5.5%	5.5%
18	gravelly SAND	17.50 - 18.00	50	45.0	27.9	0.21	3.9%	3.9%
19	gravelly SAND	18.50 - 19.00	48	43.2	26.2	0.20	5.1%	5.1%
20	gravelly SAND	19.50 - 20.00	38	34.2	20.3	0.20	16.4%	16.4%
21	gravelly SAND	20.50 - 21.00	27	24.3	14.1	0.19	43.3%	43.3%
22	SAND	21.50 - 22.00	39	35.1	20.0	0.18	13.5%	13.5%
23	SAND	22.50 - 23.00	39	35.1	19.6	0.17	12.6%	12.6%
24	SAND	23.50 - 24.00	40	36.0	19.8	0.17	11.9%	11.9%
25	SAND	24.50 - 25.00	45	40.5	21.8	0.17	7.2%	7.2%
26	gravelly SAND	25.50 - 26.00	50	45.0	23.8	0.17	4.4%	4.4%
27	SAND	26.50 - 27.00	58	52.2	27.2	0.17	1.9%	1.9%
28	SAND	27.50 - 28.00	50	45.0	23.1	0.17	4.8%	4.8%
29	SAND	28.50 - 29.00	50	45.0	22.7	0.16	5.0%	5.0%
30	SAND	29.50 - 30.00	50	45.0	22.4	0.16	5.1%	5.1%



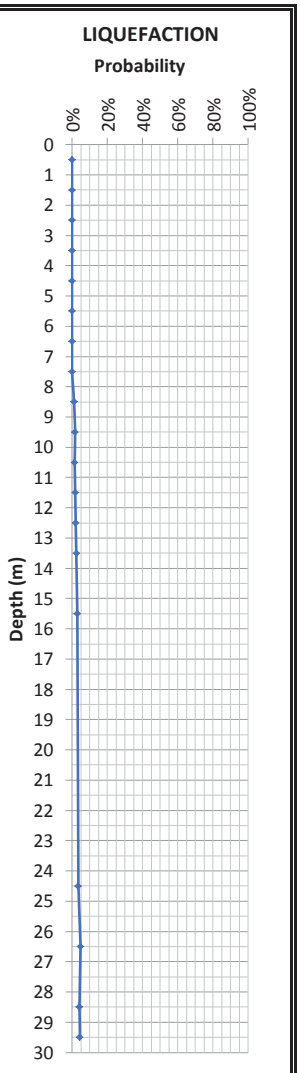
Hole : J - 8
Location : Jonooge
GWL 1.4 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	14	9.5	9.5	0.19	72.6%	0.0%
2	gravelly SAND	1.50 - 2.00	15	10.1	16.4	0.22	47.1%	47.1%
3	SAND	2.50 - 3.00	53	35.8	50.4	0.25	0.0%	0.0%
4	SAND	3.50 - 4.00	13	9.4	11.9	0.27	85.6%	85.6%
5	SAND	4.50 - 5.00	52	39.8	46.1	0.28	0.2%	0.2%
6	gravelly SAND	5.50 - 6.00	64	49.0	52.7	0.29	0.0%	0.0%
7	gravelly SAND	6.50 - 7.00	64	54.7	55.2	0.29	0.0%	0.0%
8	gravelly SAND	7.50 - 8.00	65	55.6	52.9	0.30	0.0%	0.0%
9	gravelly SAND	8.50 - 9.00	60	51.3	46.4	0.30	0.2%	0.2%
10	gravelly SAND	9.50 - 10.00	25	21.4	18.4	0.29	62.7%	62.7%
11	SAND	10.50 - 11.00	56	50.4	41.7	0.29	0.5%	0.5%
12	SAND	11.50 - 12.00	68	61.2	48.6	0.28	0.1%	0.1%
13	gravelly SAND	12.50 - 13.00	65	58.5	44.8	0.27	0.2%	0.2%
14	gravelly SAND	13.50 - 14.00	68	61.2	45.3	0.27	0.2%	0.2%
15	gravelly SAND	14.50 - 15.00	66	59.4	42.6	0.26	0.3%	0.3%
16	gravelly SAND	15.50 - 16.00	61	54.9	38.2	0.25	0.7%	0.7%
17	gravelly SAND	16.50 - 17.00	67	60.3	40.8	0.24	0.3%	0.3%
18	SAND	17.50 - 18.00	15	13.5	8.9	0.23	87.3%	87.3%
19	gravelly SAND	18.50 - 19.00	58	52.2	33.5	0.23	1.4%	1.4%
20	gravelly SAND	19.50 - 20.00	64	57.6	36.1	0.22	0.7%	0.7%
21	SAND	20.50 - 21.00	66	59.4	36.4	0.21	0.5%	0.5%
22	SAND	21.50 - 22.00	53	47.7	28.6	0.20	2.8%	2.8%
23	silty SAND	22.50 - 23.00	14	12.6	8.0	0.21	83.3%	83.3%
24	SAND	23.50 - 24.00	59	53.1	30.5	0.19	1.4%	1.4%
25	silty SAND	24.50 - 25.00	11	9.9	6.1	0.20	87.9%	87.9%
26	SAND	25.50 - 26.00	52	46.8	25.9	0.19	3.8%	3.8%
27	SAND	26.50 - 27.00	64	57.6	31.3	0.18	1.0%	1.0%
28	SAND	27.50 - 28.00	62	55.8	29.8	0.18	1.4%	1.4%
29	gravelly SAND	28.50 - 29.00	53	47.7	25.1	0.18	4.0%	4.0%
30	SAND	29.50 - 30.00	67	60.3	31.2	0.18	0.9%	0.9%



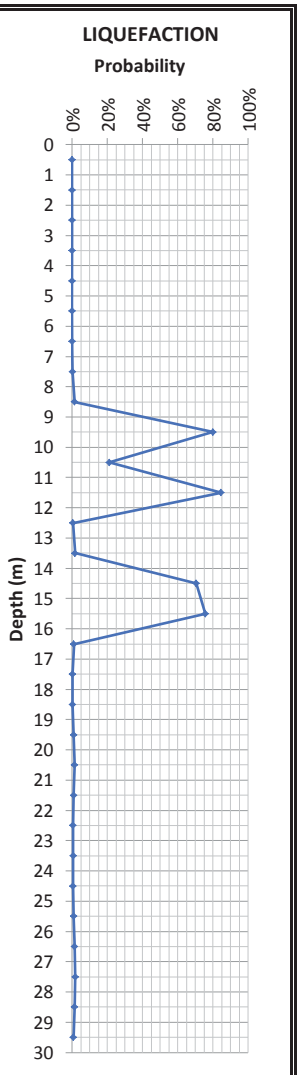
Hole : J - 9
Location : Jonooge
GWL 8.73 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR	PGA (g) 0.30	PL (%)
1	silty SAND	0.50 - 1.00	14	9.5	9.5	0.19	72.6%	0.0%
2	clayey SAND	1.50 - 2.00	13	8.8	8.8	0.19	75.2%	0.0%
3	clayey SAND	2.50 - 3.00	50	33.8	33.8	0.19	0.7%	0.0%
4	sandy SILT	3.50 - 4.00	50	36.0	36.0	0.19	0.4%	0.0%
5	gravelly SAND	4.50 - 5.00	50	38.3	38.3	0.19	0.2%	0.0%
6	gravelly SAND	5.50 - 6.00	25	19.1	19.1	0.19	17.6%	0.0%
7	gravelly SAND	6.50 - 7.00	50	42.8	42.8	0.18	0.1%	0.0%
8	SAND	7.50 - 8.00	50	42.8	42.8	0.18	0.1%	0.0%
9	gravelly SAND	8.50 - 9.00	50	42.8	30.4	0.18	1.3%	1.3%
10	SAND	9.50 - 10.00	50	42.8	29.5	0.19	1.7%	1.7%
11	SAND	10.50 - 11.00	50	45.0	30.2	0.19	1.5%	1.5%
12	SAND	11.50 - 12.00	50	45.0	29.5	0.19	1.9%	1.9%
13	SAND	12.50 - 13.00	50	45.0	28.7	0.19	2.2%	2.2%
14	gravelly SAND	13.50 - 14.00	50	45.0	28.0	0.19	2.5%	2.5%
15	#N/A	14.50 - 15.00		0.0	#N/A	#N/A	#N/A	#N/A
16	gravelly SAND	15.50 - 16.00	50	45.0	26.8	0.18	3.0%	3.0%
17	#N/A	16.50 - 17.00		0.0	#N/A	#N/A	#N/A	#N/A
18	#N/A	17.50 - 18.00		0.0	#N/A	#N/A	#N/A	#N/A
19	#N/A	18.50 - 19.00		0.0	#N/A	#N/A	#N/A	#N/A
20	#N/A	19.50 - 20.00		0.0	#N/A	#N/A	#N/A	#N/A
21	#N/A	20.50 - 21.00		0.0	#N/A	#N/A	#N/A	#N/A
22	#N/A	21.50 - 22.00		0.0	#N/A	#N/A	#N/A	#N/A
23	#N/A	22.50 - 23.00		0.0	#N/A	#N/A	#N/A	#N/A
24	#N/A	23.50 - 24.00		0.0	#N/A	#N/A	#N/A	#N/A
25	sandy GRAVEL	24.50 - 25.00	50	45.0	22.8	0.15	3.5%	3.5%
26	#N/A	25.50 - 26.00		0.0	#N/A	#N/A	#N/A	#N/A
27	sandy GRAVEL	26.50 - 27.00	48	43.2	21.2	0.15	4.8%	4.8%
28	#N/A	27.50 - 28.00		0.0	#N/A	#N/A	#N/A	#N/A
29	sandy GRAVEL	28.50 - 29.00	50	45.0	21.5	0.15	4.3%	4.3%
30	sandy GRAVEL	29.50 - 30.00	50	45.0	21.2	0.15	4.4%	4.4%



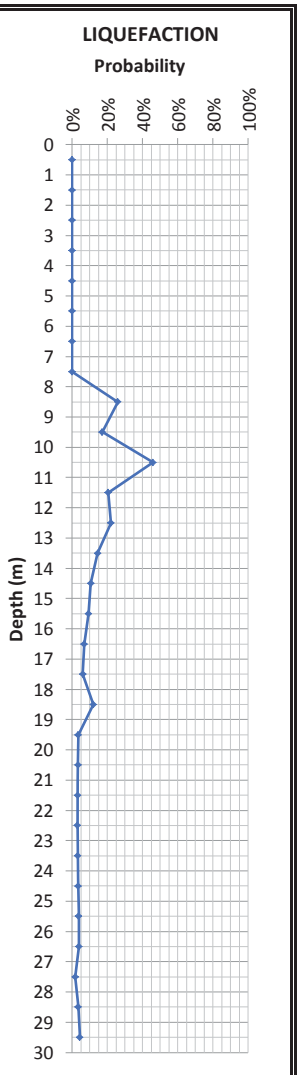
Hole : J - 10
Location : Jonooge
GWL 6.3 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	13	8.8	8.8	0.19	75.8%	0.0%
2	gravelly SAND	1.50 - 2.00	56	37.8	37.8	0.19	0.3%	0.0%
3	gravelly SAND	2.50 - 3.00	16	10.8	10.8	0.19	64.2%	0.0%
4	gravelly SAND	3.50 - 4.00	58	41.8	41.8	0.19	0.1%	0.0%
5	gravelly SAND	4.50 - 5.00	64	49.0	49.0	0.19	0.0%	0.0%
6	gravelly SAND	5.50 - 6.00	53	40.5	40.5	0.19	0.1%	0.0%
7	gravelly SAND	6.50 - 7.00	61	52.2	42.8	0.19	0.1%	0.1%
8	gravelly SAND	7.50 - 8.00	57	48.7	38.5	0.20	0.3%	0.3%
9	gravelly SAND	8.50 - 9.00	50	42.8	32.5	0.21	1.3%	1.3%
10	SAND	9.50 - 10.00	15	12.8	9.4	0.21	80.0%	80.0%
11	SAND	10.50 - 11.00	32	28.8	20.5	0.21	21.2%	21.2%
12	SAND	11.50 - 12.00	13	11.7	8.1	0.21	84.6%	84.6%
13	gravelly SAND	12.50 - 13.00	60	54.0	36.4	0.21	0.5%	0.5%
14	gravelly SAND	13.50 - 14.00	53	47.7	31.3	0.21	1.8%	1.8%
15	SAND	14.50 - 15.00	19	17.1	10.9	0.21	70.5%	70.5%
16	SAND	15.50 - 16.00	17	15.3	9.6	0.20	75.6%	75.6%
17	SAND	16.50 - 17.00	59	53.1	32.4	0.20	1.1%	1.1%
18	SAND	17.50 - 18.00	67	60.3	36.0	0.19	0.4%	0.4%
19	gravelly SAND	18.50 - 19.00	71	63.9	37.4	0.19	0.3%	0.3%
20	gravelly SAND	19.50 - 20.00	61	54.9	31.5	0.18	1.0%	1.0%
21	gravelly SAND	20.50 - 21.00	58	52.2	29.3	0.18	1.4%	1.4%
22	gravelly SAND	21.50 - 22.00	61	54.9	30.3	0.17	1.0%	1.0%
23	gravelly SAND	22.50 - 23.00	65	58.5	31.7	0.16	0.6%	0.6%
24	gravelly SAND	23.50 - 24.00	65	58.5	31.2	0.16	0.6%	0.6%
25	gravelly SAND	24.50 - 25.00	68	61.2	32.1	0.16	0.5%	0.5%
26	gravelly SAND	25.50 - 26.00	63	56.7	29.2	0.16	1.0%	1.0%
27	gravelly SAND	26.50 - 27.00	60	54.0	27.4	0.16	1.5%	1.5%
28	gravelly SAND	27.50 - 28.00	58	52.2	26.1	0.16	1.9%	1.9%
29	gravelly SAND	28.50 - 29.00	62	55.8	27.5	0.16	1.3%	1.3%
30	gravelly SAND	29.50 - 30.00	67	60.3	29.3	0.15	0.8%	0.8%



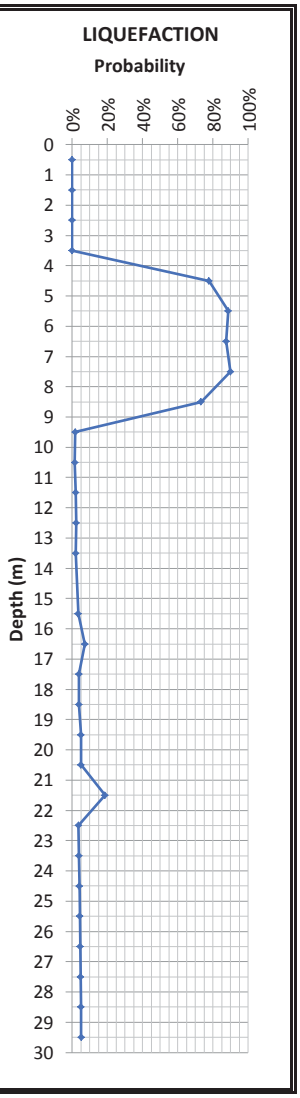
Hole : J - 11
Location : Jonooge
GWL 8.44 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	clayey SAND	0.50 - 1.00	20	13.5	13.5	0.19	49.7%	0.0%
2	clayey SAND	1.50 - 2.00	7	4.7	4.7	0.19	89.0%	0.0%
3	clayey SAND	2.50 - 3.00	34	23.0	23.0	0.19	8.5%	0.0%
4	clayey SAND	3.50 - 4.00	22	15.8	15.8	0.19	33.6%	0.0%
5	clayey SAND	4.50 - 5.00	31	23.7	23.7	0.19	6.7%	0.0%
6	SAND	5.50 - 6.00	36	27.5	27.5	0.19	2.7%	0.0%
7	gravelly SAND	6.50 - 7.00	29	24.8	24.8	0.18	4.9%	0.0%
8	SAND	7.50 - 8.00	25	21.4	21.4	0.18	10.3%	0.0%
9	SAND	8.50 - 9.00	28	23.9	17.2	0.19	25.9%	25.9%
10	gravelly SAND	9.50 - 10.00	33	28.2	19.6	0.19	17.2%	17.2%
11	gravelly SAND	10.50 - 11.00	23	20.7	14.0	0.19	46.0%	46.0%
12	SAND	11.50 - 12.00	32	28.8	19.0	0.19	20.4%	20.4%
13	SAND	12.50 - 13.00	32	28.8	18.5	0.19	22.2%	22.2%
14	silty SAND	13.50 - 14.00	35	31.5	20.9	0.19	14.5%	14.5%
15	silty SAND	14.50 - 15.00	38	34.2	22.2	0.19	10.7%	10.7%
16	SAND	15.50 - 16.00	41	36.9	22.1	0.19	9.3%	9.3%
17	SAND	16.50 - 17.00	44	39.6	23.2	0.18	6.8%	6.8%
18	SAND	17.50 - 18.00	45	40.5	23.3	0.18	6.2%	6.2%
19	SAND	18.50 - 19.00	39	35.1	19.8	0.17	12.2%	12.2%
20	SAND	19.50 - 20.00	50	45.0	24.9	0.17	3.4%	3.4%
21	SAND	20.50 - 21.00	50	45.0	24.5	0.16	3.4%	3.4%
22	SAND	21.50 - 22.00	50	45.0	24.0	0.16	3.3%	3.3%
23	SAND	22.50 - 23.00	50	45.0	23.6	0.15	3.1%	3.1%
24	SAND	23.50 - 24.00	50	45.0	23.3	0.15	3.3%	3.3%
25	SAND	24.50 - 25.00	50	45.0	22.9	0.15	3.6%	3.6%
26	gravelly SAND	25.50 - 26.00	50	45.0	22.5	0.15	3.8%	3.8%
27	gravelly SAND	26.50 - 27.00	50	45.0	22.2	0.15	4.0%	4.0%
28	gravelly SAND	27.50 - 28.00	58	52.2	25.4	0.15	1.8%	1.8%
29	gravelly SAND	28.50 - 29.00	52	46.8	22.5	0.15	3.5%	3.5%
30	gravelly SAND	29.50 - 30.00	50	45.0	21.3	0.15	4.4%	4.4%



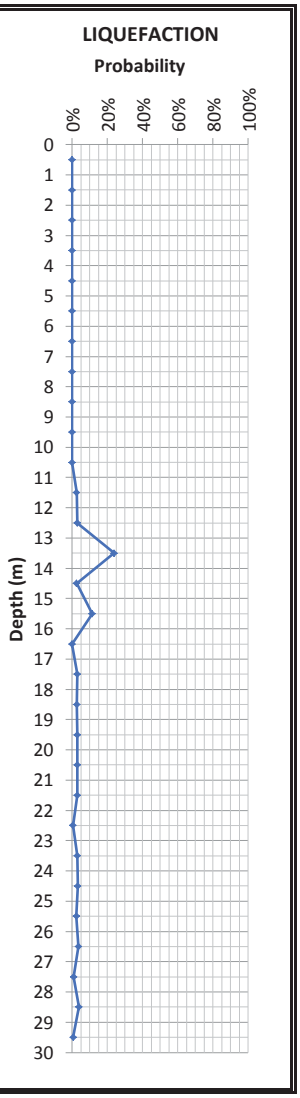
Hole : J - 12
Location : Jonooge
GWL 4 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	clayey SAND	0.50 - 1.00	21	14.2	14.2	0.19	45.6%	0.0%
2	clayey SAND	1.50 - 2.00	7	4.7	4.7	0.19	89.0%	0.0%
3	clayey SAND	2.50 - 3.00	0	0.0	0.0	0.19	96.1%	0.0%
4	silty SAND	3.50 - 4.00	9	6.5	6.5	0.19	83.2%	0.0%
5	silty SAND	4.50 - 5.00	12	9.2	9.6	0.21	77.8%	77.8%
6	SAND	5.50 - 6.00	10	7.7	7.2	0.22	88.7%	88.7%
7	SAND	6.50 - 7.00	11	9.4	8.4	0.23	87.6%	87.6%
8	SAND	7.50 - 8.00	11	9.4	8.0	0.24	89.9%	89.9%
9	SAND	8.50 - 9.00	19	16.2	13.3	0.24	73.2%	73.2%
10	SAND	9.50 - 10.00	50	42.8	33.7	0.24	1.9%	1.9%
11	gravelly SAND	10.50 - 11.00	50	45.0	34.2	0.24	1.6%	1.6%
12	gravelly SAND	11.50 - 12.00	50	45.0	33.1	0.24	2.0%	2.0%
13	gravelly SAND	12.50 - 13.00	50	45.0	32.1	0.24	2.4%	2.4%
14	gravelly SAND	13.50 - 14.00	52	46.8	32.4	0.23	2.1%	2.1%
15	#N/A	14.50 - 15.00		0.0	#N/A	#N/A	#N/A	#N/A
16	SAND	15.50 - 16.00	50	45.0	29.5	0.22	3.5%	3.5%
17	SAND	16.50 - 17.00	45	40.5	25.9	0.22	7.2%	7.2%
18	SAND	17.50 - 18.00	50	45.0	28.1	0.21	3.9%	3.9%
19	SAND	18.50 - 19.00	50	45.0	27.4	0.20	4.0%	4.0%
20	SAND	19.50 - 20.00	48	43.2	25.8	0.20	5.1%	5.1%
21	SAND	20.50 - 21.00	48	43.2	25.2	0.19	5.0%	5.0%
22	SAND	21.50 - 22.00	36	32.4	18.6	0.18	18.8%	18.8%
23	SAND	22.50 - 23.00	50	45.0	25.3	0.18	3.6%	3.6%
24	SAND	23.50 - 24.00	50	45.0	24.8	0.17	3.9%	3.9%
25	SAND	24.50 - 25.00	50	45.0	24.4	0.17	4.2%	4.2%
26	SAND	25.50 - 26.00	50	45.0	23.9	0.17	4.4%	4.4%
27	SAND	26.50 - 27.00	50	45.0	23.6	0.17	4.6%	4.6%
28	SAND	27.50 - 28.00	50	45.0	23.2	0.17	4.9%	4.9%
29	SAND	28.50 - 29.00	50	45.0	22.8	0.17	5.0%	5.0%
30	SAND	29.50 - 30.00	50	45.0	22.5	0.16	5.2%	5.2%



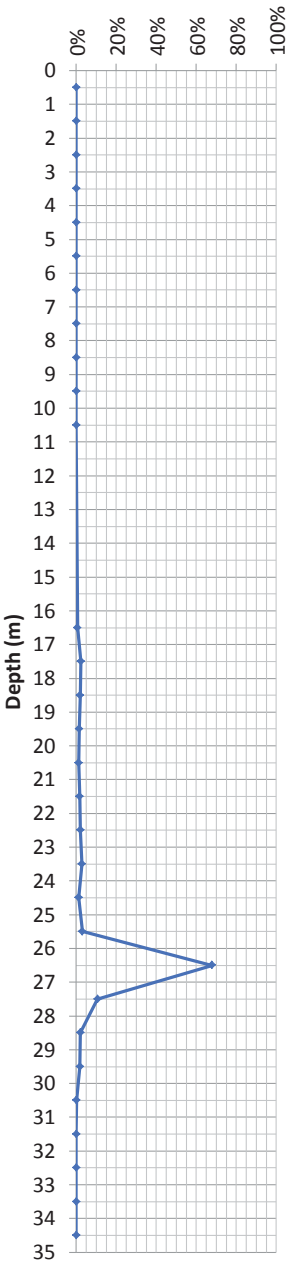
Hole : J - 13
Location : Jonooge
GWL 11.3 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	12	8.1	8.1	0.19	78.7%	0.0%
2	gravelly SAND	1.50 - 2.00	8	5.4	5.4	0.19	87.3%	0.0%
3	gravelly SAND	2.50 - 3.00	50	33.8	33.8	0.19	0.7%	0.0%
4	gravelly SAND	3.50 - 4.00	32	23.0	23.0	0.19	8.1%	0.0%
5	gravelly SAND	4.50 - 5.00	50	38.3	38.3	0.19	0.2%	0.0%
6	gravelly SAND	5.50 - 6.00	50	38.3	38.3	0.19	0.2%	0.0%
7	gravelly SAND	6.50 - 7.00	50	42.8	42.8	0.18	0.1%	0.0%
8	SAND	7.50 - 8.00	20	17.1	17.1	0.18	24.6%	0.0%
9	gravelly SAND	8.50 - 9.00	50	42.8	42.8	0.18	0.1%	0.0%
10	gravelly SAND	9.50 - 10.00	43	36.8	36.8	0.18	0.2%	0.0%
11	gravelly SAND	10.50 - 11.00	50	45.0	45.0	0.17	0.0%	0.0%
12	silty SAND	11.50 - 12.00	45	40.5	26.3	0.17	2.6%	2.6%
13	gravelly SAND	12.50 - 13.00	47	42.3	25.7	0.17	3.0%	3.0%
14	silty SAND	13.50 - 14.00	29	26.1	16.3	0.17	23.9%	23.9%
15	gravelly SAND	14.50 - 15.00	50	45.0	26.2	0.17	2.6%	2.6%
16	gravelly SAND	15.50 - 16.00	38	34.2	19.5	0.17	11.3%	11.3%
17	gravelly SAND	16.50 - 17.00	78	70.2	39.3	0.17	0.1%	0.1%
18	gravelly SAND	17.50 - 18.00	50	45.0	24.7	0.16	3.1%	3.1%
19	gravelly SAND	18.50 - 19.00	51	45.9	24.8	0.16	2.8%	2.8%
20	gravelly SAND	19.50 - 20.00	50	45.0	23.9	0.16	3.1%	3.1%
21	gravelly SAND	20.50 - 21.00	50	45.0	23.5	0.15	3.1%	3.1%
22	gravelly SAND	21.50 - 22.00	50	45.0	23.1	0.15	3.0%	3.0%
23	gravelly SAND	22.50 - 23.00	66	59.4	30.0	0.14	0.5%	0.5%
24	gravelly SAND	23.50 - 24.00	50	45.0	22.4	0.14	3.0%	3.0%
25	silty SAND	24.50 - 25.00	48	43.2	22.5	0.15	3.3%	3.3%
26	SAND	25.50 - 26.00	53	47.7	23.1	0.14	2.5%	2.5%
27	SAND	26.50 - 27.00	50	45.0	21.5	0.14	3.6%	3.6%
28	gravelly SAND	27.50 - 28.00	64	57.6	27.1	0.14	0.9%	0.9%
29	gravelly SAND	28.50 - 29.00	50	45.0	20.9	0.14	3.9%	3.9%
30	silty SAND	29.50 - 30.00	66	59.4	29.0	0.14	0.6%	0.6%



Hole : LP - 1
Location : Petobo
GWL 11.77 m

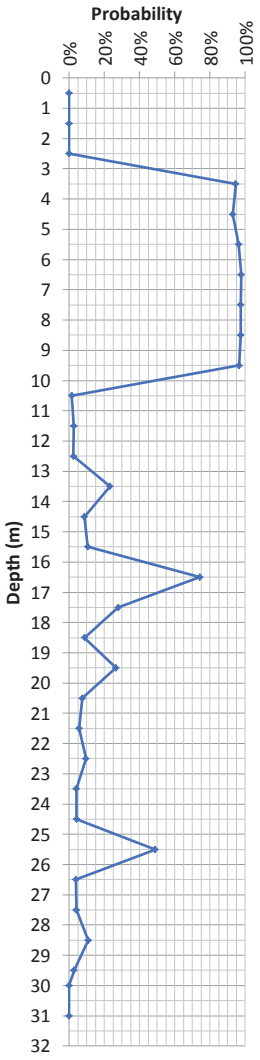
No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR	PL (%)
						PGA (g) 0.30	
1	gravelly SAND	0.50 - 1.00	4	2.7	2.7	0.19	0.0%
2	gravelly SAND	1.50 - 2.00	27	18.2	18.2	0.19	0.0%
3	gravelly SAND	2.50 - 3.00	52	35.1	35.1	0.19	0.0%
4	gravelly SAND	3.50 - 4.00	54	38.9	38.9	0.19	0.0%
5	gravelly SAND	4.50 - 5.00	58	44.4	44.4	0.19	0.0%
6	gravelly SAND	5.50 - 6.00	53	40.5	40.5	0.19	0.0%
7	gravelly SAND	6.50 - 7.00	55	47.0	47.0	0.18	0.0%
8	gravelly SAND	7.50 - 8.00		0.0	0.0	0.18	0.0%
9	gravelly SAND	8.50 - 9.00		0.0	0.0	0.18	0.0%
10	gravelly SAND	9.50 - 10.00		0.0	0.0	0.18	0.0%
11	#N/A	10.50 - 11.00		0.0	0.0	#N/A	0.0%
12	#N/A	11.50 - 12.00		0.0	#N/A	#N/A	#N/A
13	#N/A	12.50 - 13.00		0.0	#N/A	#N/A	#N/A
14	#N/A	13.50 - 14.00		0.0	#N/A	#N/A	#N/A
15	#N/A	14.50 - 15.00		0.0	#N/A	#N/A	#N/A
16	#N/A	15.50 - 16.00		0.0	#N/A	#N/A	#N/A
17	gravelly SAND	16.50 - 17.00	64	57.6	32.0	0.16	0.5%
18	gravelly SAND	17.50 - 18.00	52	46.8	25.5	0.16	2.4%
19	gravelly SAND	18.50 - 19.00	54	48.6	26.0	0.16	1.9%
20	gravelly SAND	19.50 - 20.00	57	51.3	27.0	0.15	1.4%
21	gravelly SAND	20.50 - 21.00	59	53.1	27.5	0.15	1.1%
22	gravelly SAND	21.50 - 22.00	55	49.5	25.2	0.15	1.7%
23	gravelly SAND	22.50 - 23.00	53	47.7	24.0	0.14	2.0%
24	gravelly SAND	23.50 - 24.00	51	45.9	22.7	0.14	2.7%
25	gravelly SAND	24.50 - 25.00	59	53.1	25.9	0.14	1.2%
26	gravelly SAND	25.50 - 26.00	51	45.9	22.1	0.14	3.0%
27	SAND	26.50 - 27.00	11	9.9	4.7	0.14	67.9%
28	SAND	27.50 - 28.00	39	35.1	16.4	0.14	10.6%
29	gravelly SAND	28.50 - 29.00	56	50.4	23.3	0.14	2.1%
30	gravelly SAND	29.50 - 30.00	58	52.2	23.8	0.14	1.8%
31	gravelly SAND	30.50 - 31.00	60	108.0	48.7	0.14	0.0%
32	gravelly SAND	31.50 - 32.00	59	159.3	70.9	0.14	0.0%
33	gravelly SAND	32.50 - 33.00	53	190.8	83.9	0.14	0.0%
34	gravelly SAND	33.50 - 34.00	60	270.0	117.4	0.14	0.0%
35	gravelly SAND	34.50 - 35.00	59	318.6	137.0	0.14	0.0%



Hole : LP - 2
Location : Petobo
GWL 3.09 m

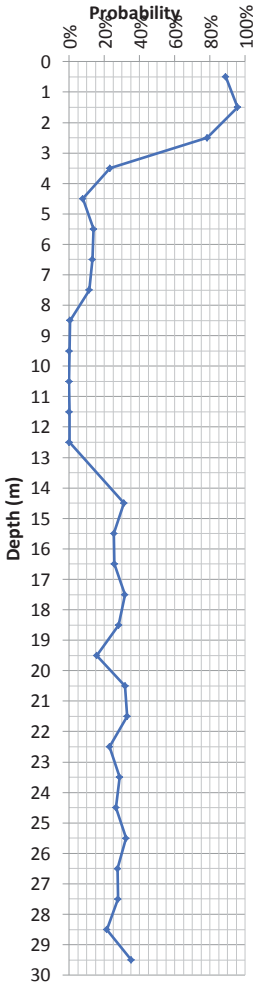
No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	SAND	0.50 - 1.00	3	2.0	2.0	0.19	94.2%	0.0%
2	SAND	1.50 - 2.00	3	2.0	2.0	0.19	94.0%	0.0%
3	SAND	2.50 - 3.00	5	3.4	3.4	0.19	91.6%	0.0%
4	SAND	3.50 - 4.00	4	2.9	3.2	0.21	94.6%	94.6%
5	SAND	4.50 - 5.00	7	5.4	5.6	0.23	93.1%	93.1%
6	SAND	5.50 - 6.00	5	3.8	3.8	0.24	96.3%	96.3%
7	SAND	6.50 - 7.00	3	2.6	2.4	0.25	97.7%	97.7%
8	SAND	7.50 - 8.00	4	3.4	3.0	0.26	97.6%	97.6%
9	SAND	8.50 - 9.00	5	4.3	3.6	0.26	97.4%	97.4%
10	SAND	9.50 - 10.00	7	6.0	4.9	0.26	96.5%	96.5%
11	SAND	10.50 - 11.00	50	45.0	35.2	0.26	1.6%	1.6%
12	SAND	11.50 - 12.00	48	43.2	32.6	0.25	2.8%	2.8%
13	SAND	12.50 - 13.00	50	45.0	32.8	0.25	2.5%	2.5%
14	SAND	13.50 - 14.00	35	31.5	22.3	0.24	23.3%	23.3%
15	SAND	14.50 - 15.00	43	38.7	26.6	0.24	8.8%	8.8%
16	SAND	15.50 - 16.00	42	37.8	25.3	0.23	10.7%	10.7%
17	SAND	16.50 - 17.00	20	18.0	11.7	0.23	74.2%	74.2%
18	SAND	17.50 - 18.00	34	30.6	19.4	0.22	27.9%	27.9%
19	gravelly SAND	18.50 - 19.00	44	39.6	24.6	0.21	8.8%	8.8%
20	gravelly SAND	19.50 - 20.00	34	30.6	18.6	0.20	26.5%	26.5%
21	gravelly SAND	20.50 - 21.00	45	40.5	24.0	0.20	7.5%	7.5%
22	gravelly SAND	21.50 - 22.00	47	42.3	24.6	0.19	5.7%	5.7%
23	gravelly SAND	22.50 - 23.00	42	37.8	21.5	0.18	9.6%	9.6%
24	gravelly SAND	23.50 - 24.00	50	45.0	25.2	0.18	4.0%	4.0%
25	gravelly SAND	24.50 - 25.00	50	45.0	24.7	0.18	4.3%	4.3%
26	clayey SAND	25.50 - 26.00	25	22.5	13.1	0.19	48.9%	48.9%
27	clayey SAND	26.50 - 27.00	50	45.0	25.8	0.19	4.0%	4.0%
28	clayey SAND	27.50 - 28.00	50	45.0	25.3	0.18	4.2%	4.2%
29	clayey SAND	28.50 - 29.00	42	37.8	21.0	0.18	10.9%	10.9%
30	clayey SAND	29.50 - 30.00	54	48.6	26.5	0.18	2.9%	2.9%
31	SAND	30.00 - 31.00	60	108.0	53.7	0.17	0.0%	0.0%
32	SAND	31.00 - 32.00	65	175.5	86.1	0.17	0.0%	0.0%

LIQUEFACTION



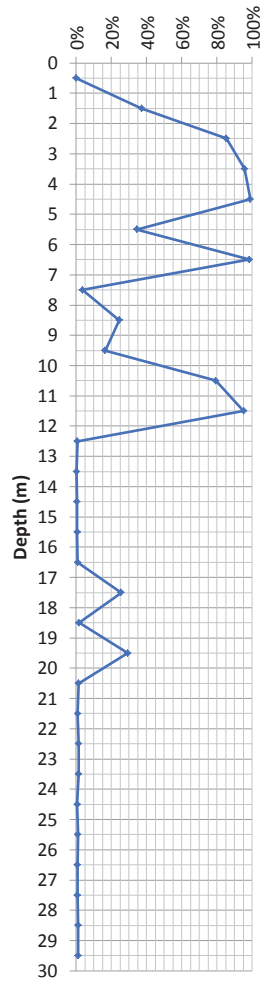
Hole : LP - 3
Location : Petobo
GWL 0.68 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR	PGA (g) 0.30	PL (%)
1	SAND	0.50 - 1.00	6	4.5	7.7	0.23	88.9%	88.9%
2	SAND	1.50 - 2.00	6	4.1	6.9	0.28	95.6%	95.6%
3	SAND	2.50 - 3.00	15	10.1	15.4	0.30	78.5%	78.5%
4	SAND	3.50 - 4.00	27	19.4	26.2	0.31	23.3%	23.3%
5	SAND	4.50 - 5.00	34	26.0	31.8	0.31	7.8%	7.8%
6	SAND	5.50 - 6.00	34	26.0	29.3	0.31	13.9%	13.9%
7	SAND	6.50 - 7.00	33	28.2	29.6	0.32	13.3%	13.3%
8	SAND	7.50 - 8.00	36	30.8	30.3	0.32	11.4%	11.4%
9	gravelly SAND	8.50 - 9.00	55	47.0	43.8	0.32	0.5%	0.5%
10	gravelly SAND	9.50 - 10.00	64	54.7	48.6	0.31	0.1%	0.1%
11	gravelly SAND	10.50 - 11.00	65	58.5	49.6	0.30	0.1%	0.1%
12	gravelly SAND	11.50 - 12.00	66	59.4	48.3	0.29	0.1%	0.1%
13	gravelly SAND	12.50 - 13.00	67	60.3	47.2	0.29	0.1%	0.1%
14	#N/A	13.50 - 14.00		0.0	#N/A	#N/A	#N/A	#N/A
15	SAND	14.50 - 15.00	34	30.6	22.4	0.27	31.2%	31.2%
16	SAND	15.50 - 16.00	36	32.4	23.0	0.26	25.5%	25.5%
17	gravelly SAND	16.50 - 17.00	36	32.4	22.3	0.25	25.8%	25.8%
18	SAND	17.50 - 18.00	34	30.6	20.5	0.24	31.7%	31.7%
19	SAND	18.50 - 19.00	35	31.5	20.5	0.23	28.1%	28.1%
20	gravelly SAND	19.50 - 20.00	40	36.0	22.9	0.22	15.7%	15.7%
21	SAND	20.50 - 21.00	33	29.7	18.5	0.22	31.7%	31.7%
22	SAND	21.50 - 22.00	32	28.8	17.5	0.21	32.9%	32.9%
23	SAND	22.50 - 23.00	35	31.5	18.7	0.20	23.1%	23.1%
24	SAND	23.50 - 24.00	33	29.7	17.3	0.19	28.7%	28.7%
25	SAND	24.50 - 25.00	34	30.6	17.5	0.19	26.7%	26.7%
26	SAND	25.50 - 26.00	32	28.8	16.1	0.19	32.3%	32.3%
27	SAND	26.50 - 27.00	34	30.6	16.8	0.19	27.5%	27.5%
28	SAND	27.50 - 28.00	34	30.6	16.5	0.18	27.7%	27.7%
29	SAND	28.50 - 29.00	37	33.3	17.7	0.18	21.4%	21.4%
30	SAND	29.50 - 30.00	31	27.9	14.6	0.18	35.3%	35.3%



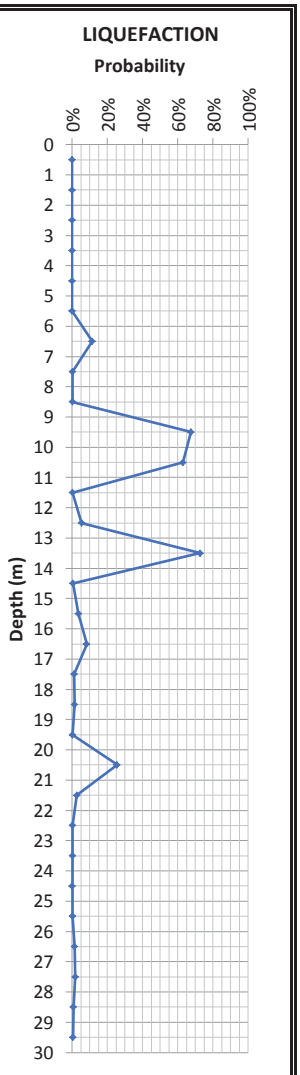
Hole : LP - 4
Location : Petobo
GWL 1.16 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR	PGA (g) 0.30	PL (%)
1	gravelly SAND	0.50 - 1.00	5	3.4	3.4	0.19	92.1%	0.0%
2	gravelly SAND	1.50 - 2.00	17	11.5	19.2	0.24	37.2%	37.2%
3	SAND	2.50 - 3.00	12	8.1	11.7	0.27	85.2%	85.2%
4	silty SAND	3.50 - 4.00	8	5.8	8.0	0.29	95.7%	95.7%
5	silty SAND	4.50 - 5.00	3	2.3	2.9	0.31	98.9%	98.9%
6	SAND	5.50 - 6.00	28	21.4	23.4	0.30	34.5%	34.5%
7	SAND	6.50 - 7.00	5	4.3	4.4	0.30	98.3%	98.3%
8	SAND	7.50 - 8.00	42	35.9	34.6	0.30	3.6%	3.6%
9	gravelly SAND	8.50 - 9.00	33	28.2	25.8	0.30	24.6%	24.6%
10	gravelly SAND	9.50 - 10.00	37	31.6	27.5	0.30	16.5%	16.5%
11	SAND	10.50 - 11.00	20	18.0	15.0	0.29	79.3%	79.3%
12	SAND	11.50 - 12.00	11	9.9	7.9	0.28	95.1%	95.1%
13	gravelly SAND	12.50 - 13.00	57	51.3	39.6	0.28	0.8%	0.8%
14	gravelly SAND	13.50 - 14.00	65	58.5	43.6	0.27	0.3%	0.3%
15	gravelly SAND	14.50 - 15.00	63	56.7	40.9	0.26	0.4%	0.4%
16	gravelly SAND	15.50 - 16.00	61	54.9	38.4	0.25	0.7%	0.7%
17	gravelly SAND	16.50 - 17.00	60	54.0	36.7	0.25	0.9%	0.9%
18	silty SAND	17.50 - 18.00	35	31.5	22.6	0.26	25.5%	25.5%
19	gravelly SAND	18.50 - 19.00	57	51.3	33.1	0.23	1.6%	1.6%
20	SAND	19.50 - 20.00	34	30.6	19.3	0.22	29.4%	29.4%
21	SAND	20.50 - 21.00	59	53.1	32.7	0.21	1.3%	1.3%
22	SAND	21.50 - 22.00	62	55.8	33.6	0.20	0.9%	0.9%
23	SAND	22.50 - 23.00	58	52.2	30.8	0.19	1.5%	1.5%
24	gravelly SAND	23.50 - 24.00	59	53.1	30.7	0.19	1.4%	1.4%
25	gravelly SAND	24.50 - 25.00	66	59.4	33.6	0.19	0.7%	0.7%
26	gravelly SAND	25.50 - 26.00	63	56.7	31.5	0.19	1.0%	1.0%
27	gravelly SAND	26.50 - 27.00	66	59.4	32.4	0.18	0.8%	0.8%
28	gravelly SAND	27.50 - 28.00	66	59.4	31.8	0.18	0.9%	0.9%
29	gravelly SAND	28.50 - 29.00	63	56.7	29.9	0.18	1.3%	1.3%
30	gravelly SAND	29.50 - 30.00	64	57.6	29.9	0.18	1.2%	1.2%



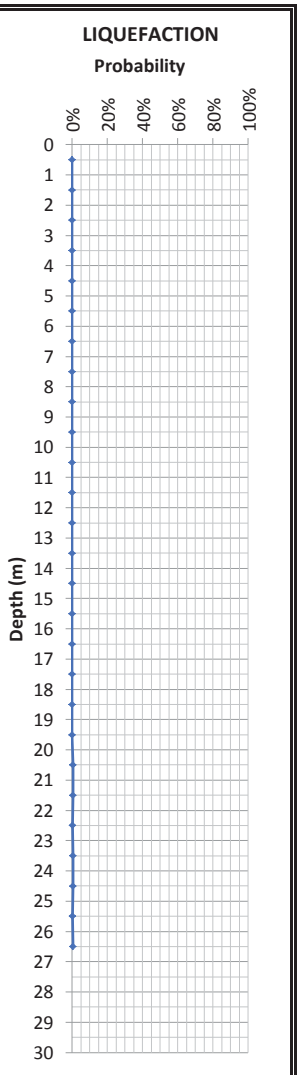
Hole : LP - 5
Location : Petobo
GWL 6.53 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	SAND	0.50 - 1.00	17	11.5	11.5	0.19	61.8%	0.0%
2	SAND	1.50 - 2.00	21	14.2	14.2	0.19	44.8%	0.0%
3	SAND	2.50 - 3.00	21	14.2	14.2	0.19	44.0%	0.0%
4	SAND	3.50 - 4.00	19	13.7	13.7	0.19	46.2%	0.0%
5	SAND	4.50 - 5.00	20	15.3	15.3	0.19	35.9%	0.0%
6	SAND	5.50 - 6.00	54	41.3	41.3	0.19	0.1%	0.0%
7	SAND	6.50 - 7.00	31	26.5	21.6	0.19	11.4%	11.4%
8	SAND	7.50 - 8.00	58	49.6	38.9	0.20	0.2%	0.2%
9	SAND	8.50 - 9.00	58	49.6	37.5	0.21	0.4%	0.4%
10	SAND	9.50 - 10.00	19	16.2	11.9	0.21	67.6%	67.6%
11	SAND	10.50 - 11.00	20	18.0	12.8	0.21	63.0%	63.0%
12	SAND	11.50 - 12.00	63	56.7	39.0	0.21	0.3%	0.3%
13	SAND	12.50 - 13.00	44	39.6	26.5	0.21	5.4%	5.4%
14	SAND	13.50 - 14.00	18	16.2	10.6	0.21	72.8%	72.8%
15	SAND	14.50 - 15.00	63	56.7	36.1	0.20	0.5%	0.5%
16	gravelly SAND	15.50 - 16.00	49	44.1	27.4	0.20	3.7%	3.7%
17	gravelly SAND	16.50 - 17.00	43	38.7	23.5	0.20	8.3%	8.3%
18	gravelly SAND	17.50 - 18.00	59	53.1	31.6	0.19	1.1%	1.1%
19	gravelly SAND	18.50 - 19.00	58	52.2	30.4	0.19	1.4%	1.4%
20	gravelly SAND	19.50 - 20.00	70	63.0	36.0	0.18	0.3%	0.3%
21	SAND	20.50 - 21.00	32	28.8	16.1	0.18	25.5%	25.5%
22	silty SAND	21.50 - 22.00	50	45.0	26.4	0.18	2.8%	2.8%
23	gravelly SAND	22.50 - 23.00	69	62.1	33.5	0.16	0.4%	0.4%
24	gravelly SAND	23.50 - 24.00	72	64.8	34.4	0.16	0.3%	0.3%
25	gravelly SAND	24.50 - 25.00	79	71.1	37.1	0.16	0.1%	0.1%
26	gravelly SAND	25.50 - 26.00	77	69.3	35.6	0.16	0.2%	0.2%
27	gravelly SAND	26.50 - 27.00	60	54.0	27.3	0.16	1.4%	1.4%
28	gravelly SAND	27.50 - 28.00	58	52.2	26.0	0.16	1.9%	1.9%
29	gravelly SAND	28.50 - 29.00	67	60.3	29.6	0.16	0.8%	0.8%
30	gravelly SAND	29.50 - 30.00	73	65.7	31.8	0.15	0.4%	0.4%



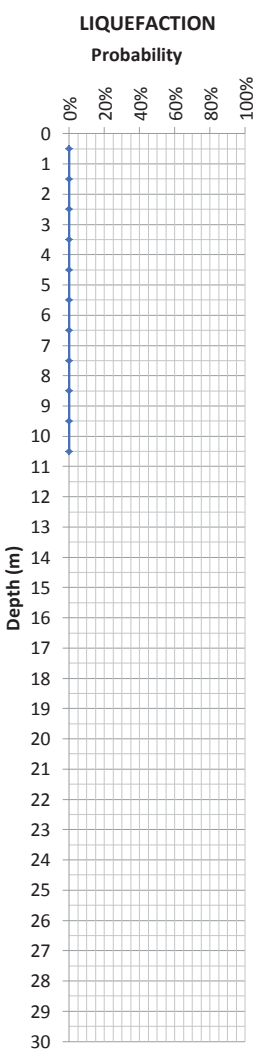
Hole : LP - 6
Location : Petobo
GWL 20.95 m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	29	19.6	19.6	0.19	18.4%	0.0%
2	gravelly SAND	1.50 - 2.00	36	24.3	24.3	0.19	6.4%	0.0%
3	gravelly SAND	2.50 - 3.00	60	40.5	40.5	0.19	0.1%	0.0%
4	gravelly SAND	3.50 - 4.00	62	44.6	44.6	0.19	0.0%	0.0%
5	gravelly SAND	4.50 - 5.00	64	49.0	49.0	0.19	0.0%	0.0%
6	gravelly SAND	5.50 - 6.00	60	45.9	45.9	0.19	0.0%	0.0%
7	SAND	6.50 - 7.00	27	23.1	23.1	0.18	7.3%	0.0%
8	SAND	7.50 - 8.00	24	20.5	20.5	0.18	12.4%	0.0%
9	SAND	8.50 - 9.00	25	21.4	21.4	0.18	10.0%	0.0%
10	gravelly SAND	9.50 - 10.00	62	53.0	53.0	0.18	0.0%	0.0%
11	gravelly SAND	10.50 - 11.00	60	54.0	54.0	0.17	0.0%	0.0%
12	gravelly SAND	11.50 - 12.00	61	54.9	54.9	0.17	0.0%	0.0%
13	SAND	12.50 - 13.00	64	57.6	57.6	0.16	0.0%	0.0%
14	gravelly SAND	13.50 - 14.00	59	53.1	53.1	0.16	0.0%	0.0%
15	gravelly SAND	14.50 - 15.00	60	54.0	54.0	0.15	0.0%	0.0%
16	#N/A	15.50 - 16.00	0	0.0	0.0	#N/A	#N/A	0.0%
17	gravelly SAND	16.50 - 17.00	63	56.7	56.7	0.14	0.0%	0.0%
18	gravelly SAND	17.50 - 18.00	64	57.6	57.6	0.14	0.0%	0.0%
19	gravelly SAND	18.50 - 19.00	60	54.0	54.0	0.13	0.0%	0.0%
20	gravelly SAND	19.50 - 20.00	55	49.5	49.5	0.12	0.0%	0.0%
21	SAND	20.50 - 21.00	66	59.4	27.5	0.12	0.4%	0.4%
22	SAND	21.50 - 22.00	66	59.4	27.2	0.12	0.4%	0.4%
23	gravelly SAND	22.50 - 23.00	69	62.1	28.0	0.11	0.3%	0.3%
24	gravelly SAND	23.50 - 24.00	67	60.3	26.9	0.11	0.4%	0.4%
25	SAND	24.50 - 25.00	68	61.2	27.0	0.11	0.4%	0.4%
26	gravelly SAND	25.50 - 26.00	69	62.1	27.1	0.11	0.4%	0.4%
27	gravelly SAND	26.50 - 27.00	69	62.1	26.8	0.11	0.4%	0.4%
28								
29								
30								



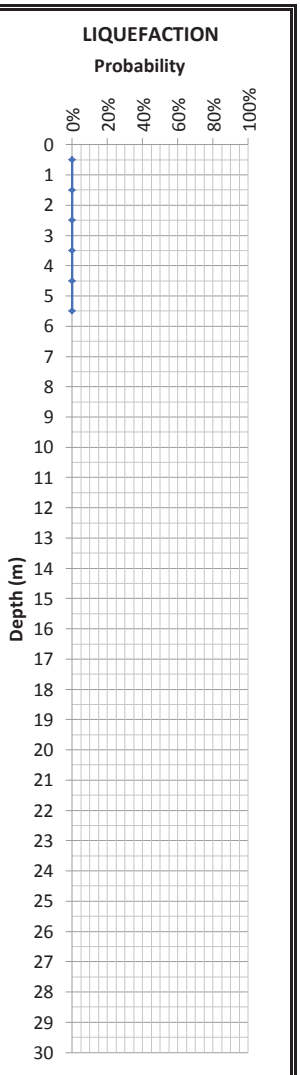
Hole : P - 1
Location : Petobo
GWL - m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	8	5.4	5.4	0.19	87.7%	0.0%
2	gravelly SAND	1.50 - 2.00	13	8.8	8.8	0.19	75.2%	0.0%
3	gravelly SAND	2.50 - 3.00	16	10.8	10.8	0.19	64.2%	0.0%
4	gravelly SAND	3.50 - 4.00	18	13.0	13.0	0.19	50.6%	0.0%
5	gravelly SAND	4.50 - 5.00	20	15.3	15.3	0.19	35.9%	0.0%
6	gravelly SAND	5.50 - 6.00	22	16.8	16.8	0.19	27.1%	0.0%
7	gravelly SAND	6.50 - 7.00	50	42.8	42.8	0.18	0.1%	0.0%
8	gravelly SAND	7.50 - 8.00	50	42.8	42.8	0.18	0.1%	0.0%
9	gravelly SAND	8.50 - 9.00	50	42.8	42.8	0.18	0.1%	0.0%
10	gravelly SAND	9.50 - 10.00	50	42.8	42.8	0.18	0.1%	0.0%
11	gravelly SAND	10.50 - 11.00	53	47.7	47.7	0.17	0.0%	0.0%
12								
13								
14								
15								
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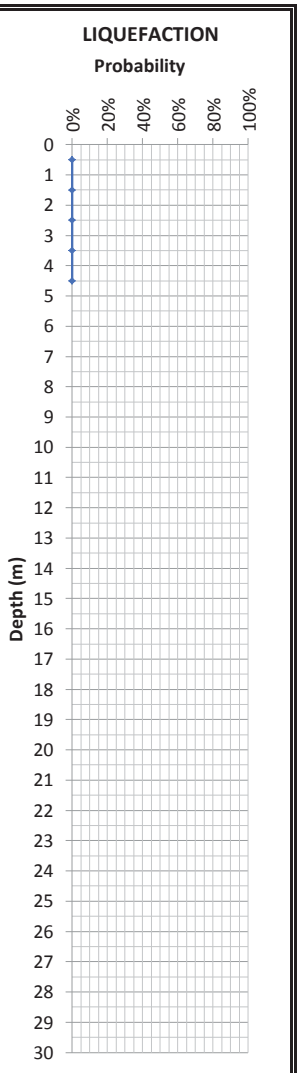
Hole : PO - 1
Location : Petobo
GWL - m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	114	77.0	77.0	0.19	0.0%	0.0%
2	gravelly SAND	1.50 - 2.00	50	33.8	33.8	0.19	0.7%	0.0%
3	gravelly SAND	2.50 - 3.00	50	33.8	33.8	0.19	0.7%	0.0%
4	gravelly SAND	3.50 - 4.00	50	36.0	36.0	0.19	0.4%	0.0%
5	gravelly SAND	4.50 - 5.00	50	38.3	38.3	0.19	0.2%	0.0%
6	gravelly SAND	5.50 - 6.00	50	38.3	38.3	0.19	0.2%	0.0%
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Hole : P - 1
Location : Petobo
GWL - m

No.	Lithology	Depth (m)	N - Value	N60	N1(60)	CSR		PL (%)
						PGA (g) 0.30		
1	gravelly SAND	0.50 - 1.00	51	34.4	34.4	0.19	0.6%	0.0%
2	gravelly SAND	1.50 - 2.00	73	49.3	49.3	0.19	0.0%	0.0%
3	gravelly SAND	2.50 - 3.00	92	62.1	62.1	0.19	0.0%	0.0%
4	gravelly SAND	3.50 - 4.00	66	47.5	47.5	0.19	0.0%	0.0%
5	gravelly SAND	4.50 - 5.00	62	47.4	47.4	0.19	0.0%	0.0%
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APPENDIX-4

SWEDISH

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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 14, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-1-1		COORDINAT	X = 824851	Y = 9896705		Elevation		+81 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	6	0,25	0,25	24	4						
100	9	0,50	0,25	36	4						
100	5	0,75	0,25	20	3						
100	5	1,00	0,25	20	3						
100	4	1,25	0,25	16	3						
100	2	1,50	0,25	8	3						
100	6	1,75	0,25	24	4						
100	2	2,00	0,25	8	3						
100	2	2,25	0,25	8	3						
100	2	2,50	0,25	8	3						
100	6	2,75	0,25	24	4						
100	80	2,86	0,11	727	51						

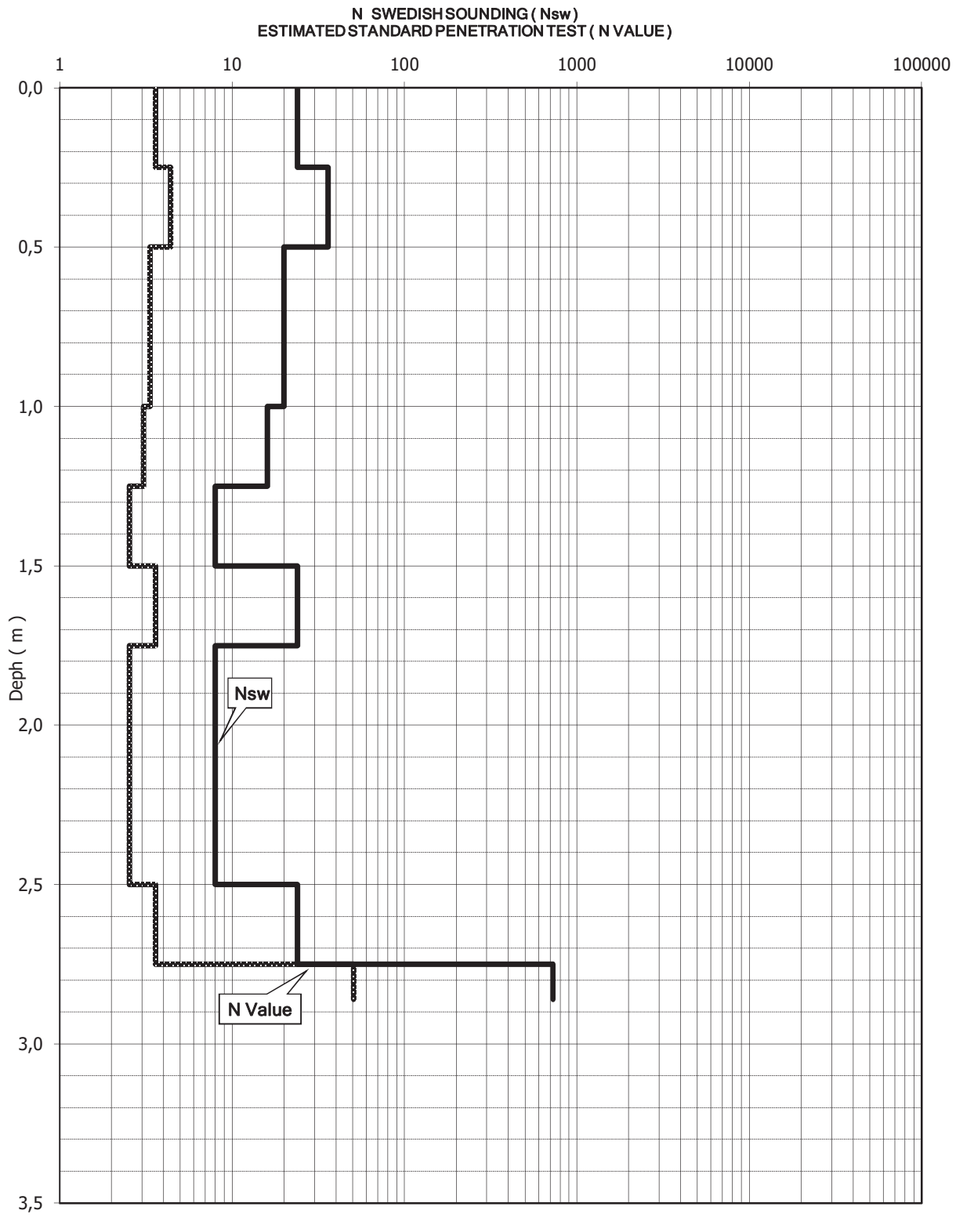
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BUMN
Hadir untuk negeri

ISO 9001 CQ56 - 001764
ISO 14001 CQ56 - 001764
OHSAS 18001 CQ56 - 001764

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-1-1	DATE	December 14, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	2,86	TESTED BY	REDY ARIANTO
COORDINAT	X = 824851	Y = 9896705	GWL (m)		ELEVATION	+81 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 14, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-1-2		COORDINAT	X = 824851	Y = 9896705		Elevation		+81 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	12	0,25	0,25	48	5						
100	12	0,50	0,25	48	5						
100	5	0,75	0,25	20	3						
100	5	1,00	0,25	20	3						
100	4	1,25	0,25	16	3						
100	7	1,50	0,25	28	4						
100	3	1,75	0,25	12	3						
100	4	2,00	0,25	16	3						
100	20	2,25	0,25	80	7						
100	95	2,38	0,13	731	51						

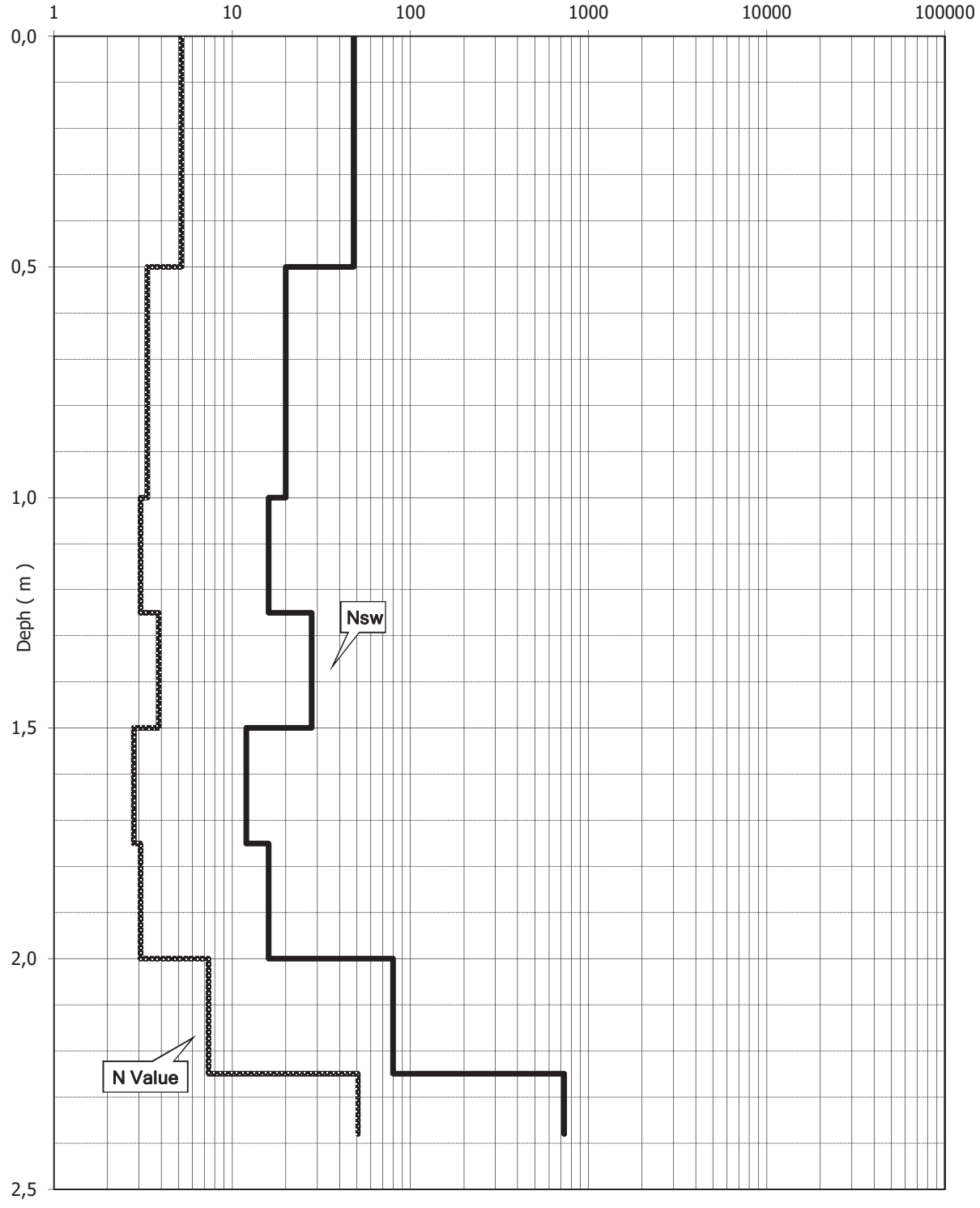
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311788

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-1-2	DATE	December 14, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	2,38	TESTED BY	REDY ARIANTO
COORDINAT	X = 824851	Y = 9896705	GWL (m)		ELEVATION	+81 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 14, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-1-3		COORDINAT	X = 824851	Y = 9896705		Elevation		+81 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	9	0,25	0,25	36	4						
100	10	0,50	0,25	40	5						
100	6	0,75	0,25	24	4						
100	8	1,00	0,25	32	4						
100	4	1,25	0,25	16	3						
100	5	1,50	0,25	20	3						
100	4	1,75	0,25	16	3						
100	3	2,00	0,25	12	3						
100	12	2,25	0,25	48	5						
100	50	2,32	0,07	714	50						

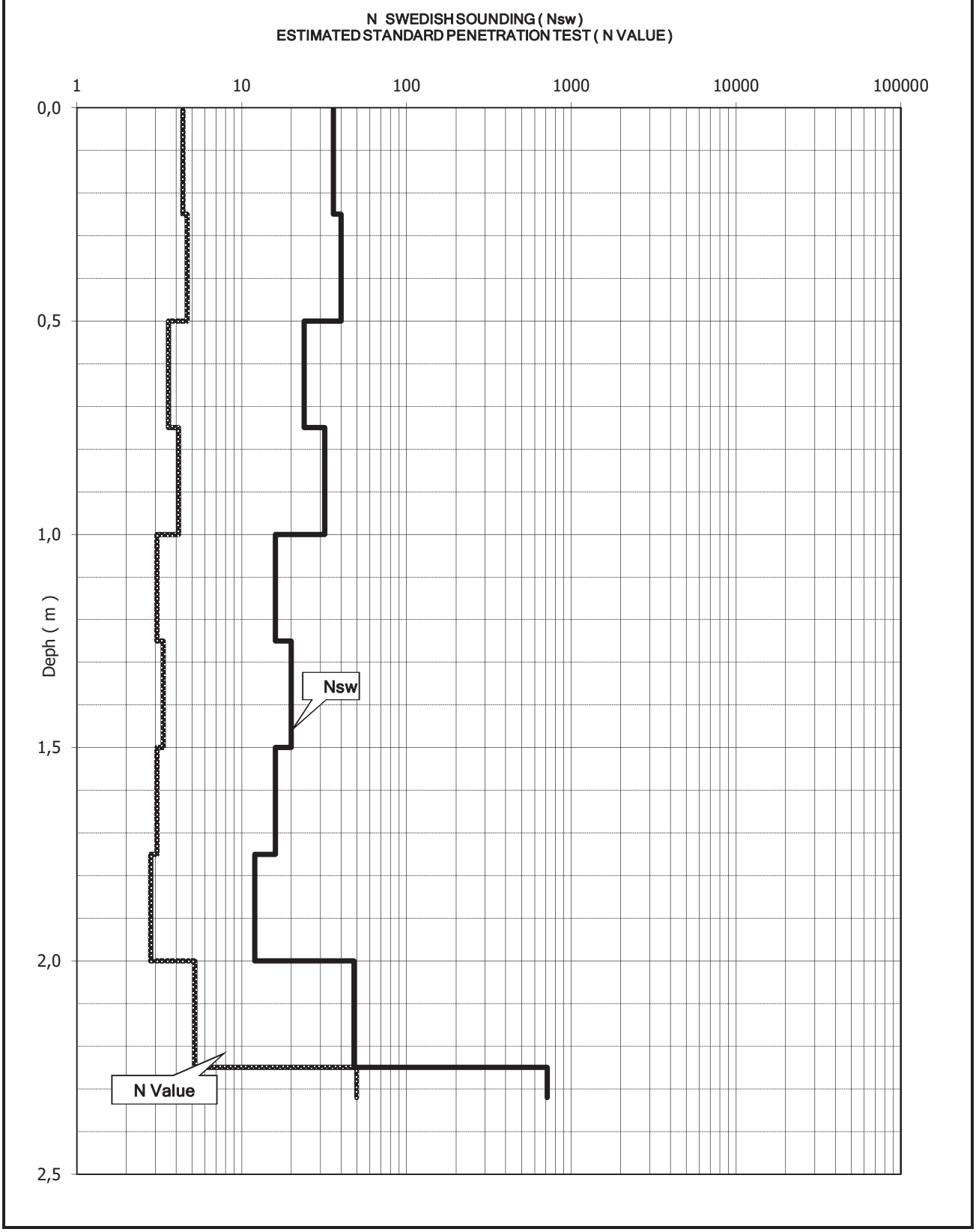
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311664
OHSAS 18001 CQ99 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-1-3	DATE	December 14, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	2,32	TESTED BY	REDY ARIANTO
COORDINAT	X = 824851	Y = 9896705	GWL (m)		ELEVATION	+81 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-2-1		COORDINAT	x = 824897		y = 9893532	Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	15	0,25	0,25	60	6						
100	51	0,50	0,25	204	16						
100	15	0,75	0,25	60	6						
100	5	1,00	0,25	20	3						
100	12	1,25	0,25	48	5						
100	41	1,50	0,25	164	13						
100	36	1,75	0,25	144	12						
100	9	2,00	0,25	36	4						
100	6	2,25	0,25	24	4						
100	16	2,50	0,25	64	6						
100	12	2,75	0,25	48	5						
100	11	3,00	0,25	44	5						
100	3	3,25	0,25	12	3						
100	58	3,50	0,25	232	18						
100	100	3,60	0,10	1000	69						

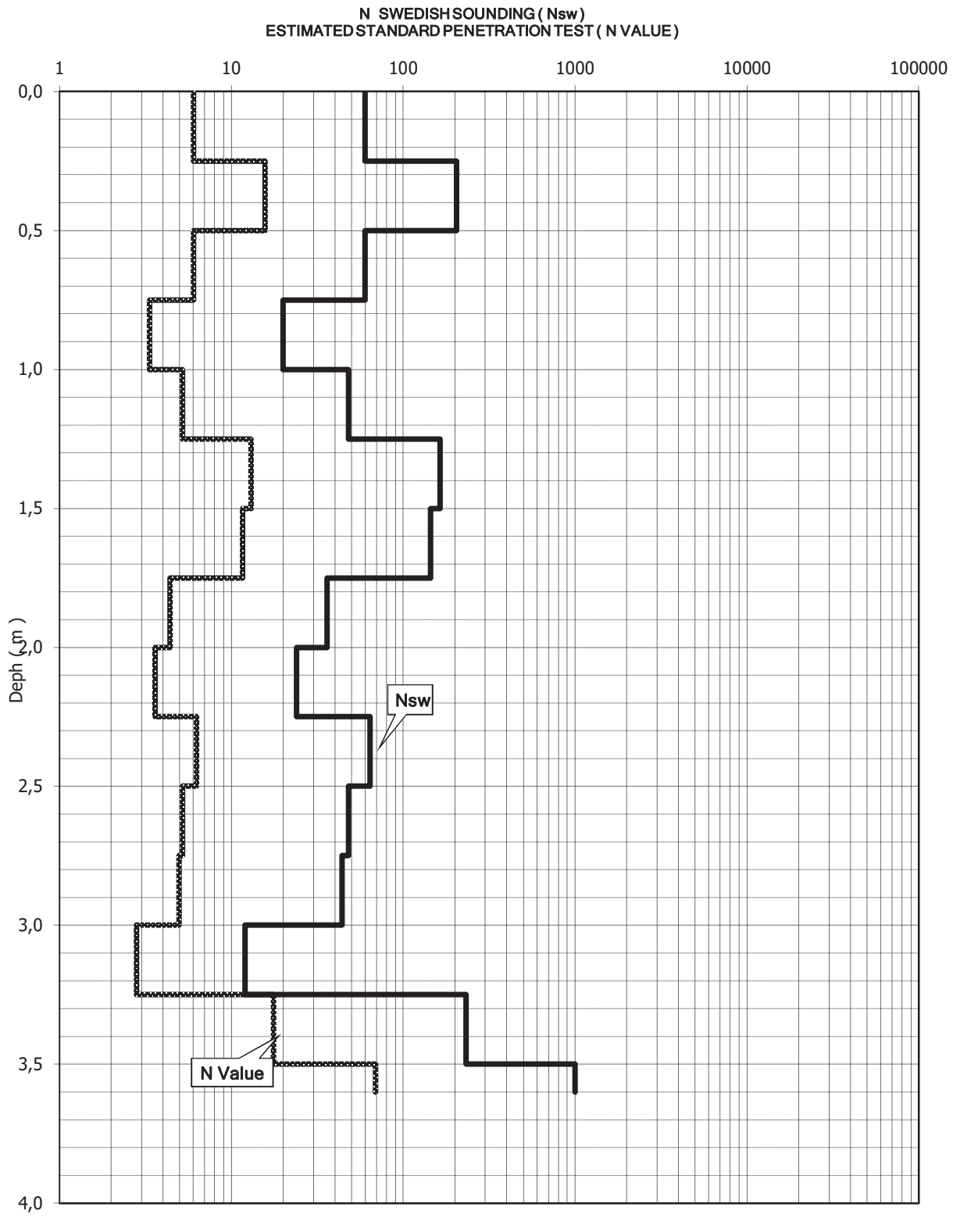
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ISO 9001 CQ96 - 201788
ISO 14001 CQ96 - 3H0884
OHSAS 18001 CQ99 - 3H1627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-2-1	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	3,60	TESTED BY	REDY ARIANTO
COORDINAT	x = 824897	y = 9893532	GWL (m)		ELEVATION	+77 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-2-2		COORDINAT	x = 824897	y = 9893532		Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	256	0,25	0,25	1024	71						
100	38	0,50	0,25	152	12						
100	21	0,75	0,25	84	8						
100	10	1,00	0,25	40	5						
100	8	1,25	0,25	32	4						
100	38	1,50	0,25	152	12						
100	31	1,75	0,25	124	10						
100	12	2,00	0,25	48	5						
100	12	2,25	0,25	48	5						
100	21	2,50	0,25	84	8						
100	15	2,75	0,25	60	6						
100	11	3,00	0,25	44	5						
100	6	3,25	0,25	24	4						
100	40	3,50	0,25	160	13						
100	68	3,75	0,25	272	20						
100	98	4,00	0,25	392	28						
100	100	4,12	0,12	833	58						

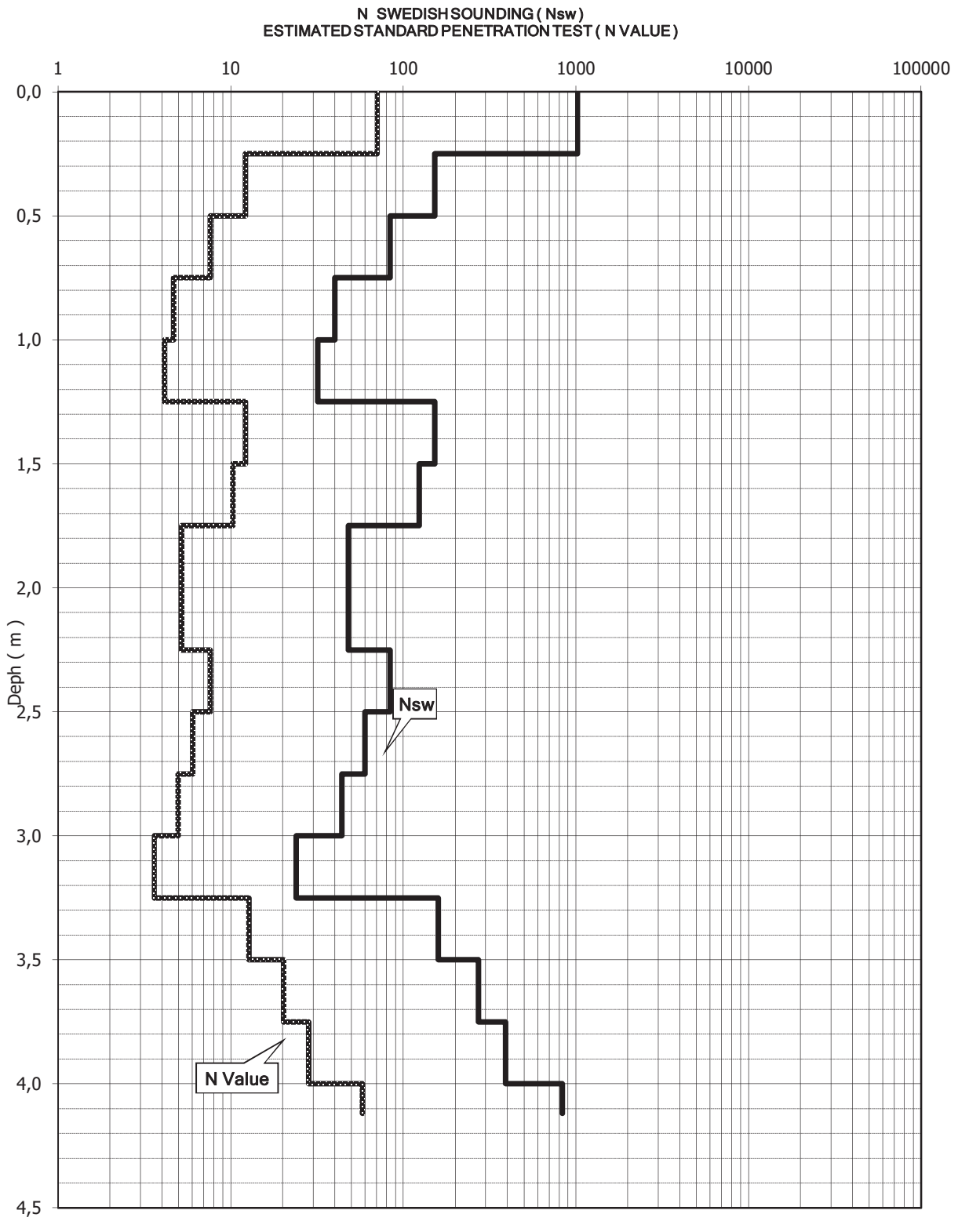
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ISO 9001 CQRS - 311
ISO 14001 CQRS - 3
OHSAS 18001 CQRS - 3

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY	NO. OF TEST	E-S-2-2	DATE	December 12, 2018
LOCATION	JONO OGE	TOTAL DEPTH (m)	4,12	TESTED BY	REDY ARIANTO
COORDINAT	x = 824897 y = 9893532	GWL (m)		ELEVATION	+77 meter



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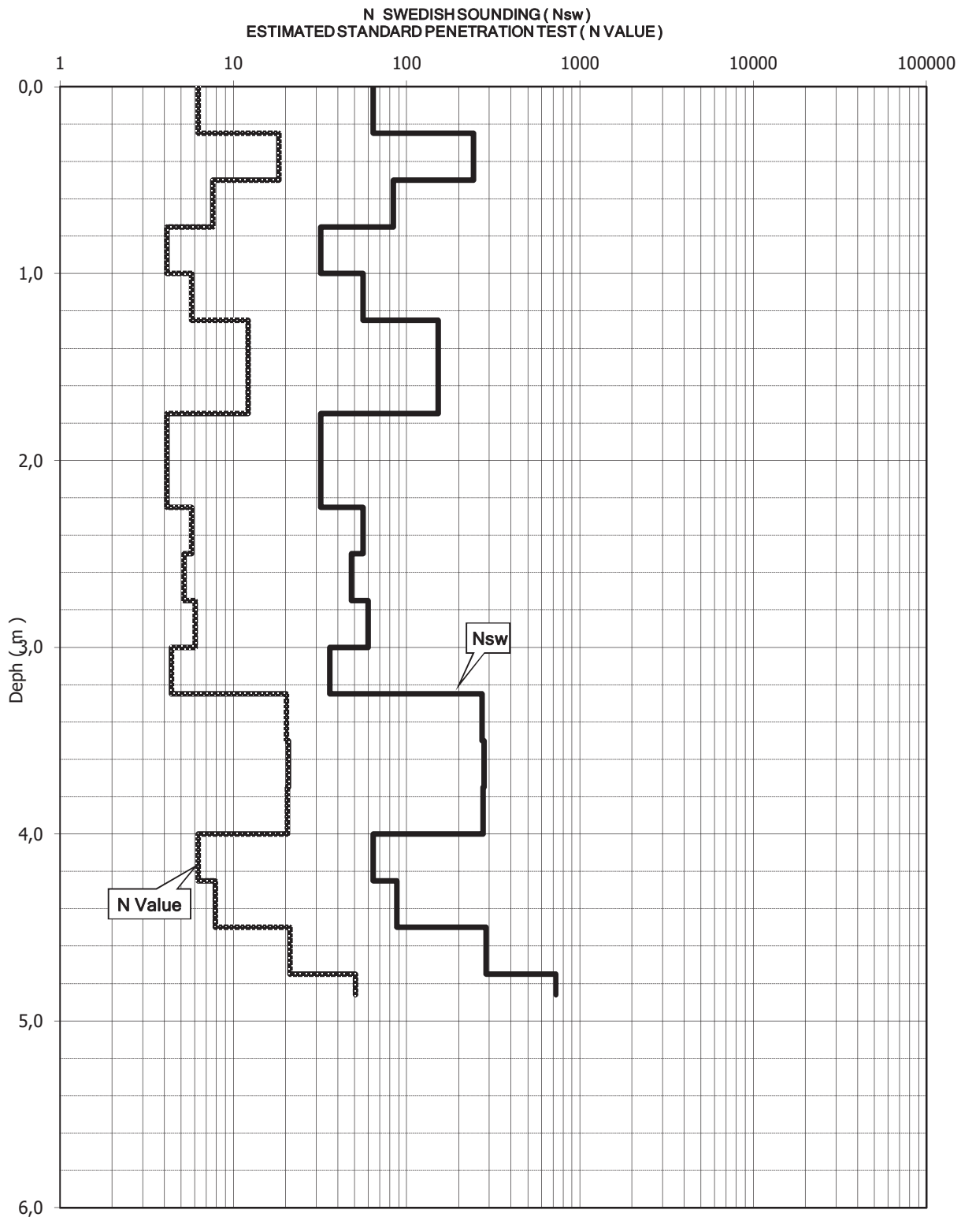
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-2-3		COORDINAT	x = 824897		y = 9893532	Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	16	0,25	0,25	64	6						
100	61	0,50	0,25	244	18						
100	21	0,75	0,25	84	8						
100	8	1,00	0,25	32	4						
100	14	1,25	0,25	56	6						
100	38	1,50	0,25	152	12						
100	38	1,75	0,25	152	12						
100	8	2,00	0,25	32	4						
100	8	2,25	0,25	32	4						
100	14	2,50	0,25	56	6						
100	12	2,75	0,25	48	5						
100	15	3,00	0,25	60	6						
100	9	3,25	0,25	36	4						
100	68	3,50	0,25	272	20						
100	70	3,75	0,25	280	21						
100	69	4,00	0,25	276	20						
100	16	4,25	0,25	64	6						
100	22	4,50	0,25	88	8						
100	72	4,75	0,25	288	21						
100	80	4,86	0,11	727	51						

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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-2-3	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	4,86	TESTED BY	REDY ARIANTO
COORDINAT	x = 824897	y = 9893532	GWL (m)		ELEVATION	+77 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-3-1		COORDINAT	x = 824953		y = 9891972	Elevation		+72 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	11	0,25	0,25	44	5						
100	24	0,50	0,25	96	8						
100	22	0,75	0,25	88	8						
100	38	1,00	0,25	152	12						
100	83	1,25	0,25	332	24						
100	50	1,30	0,05	1000	69						

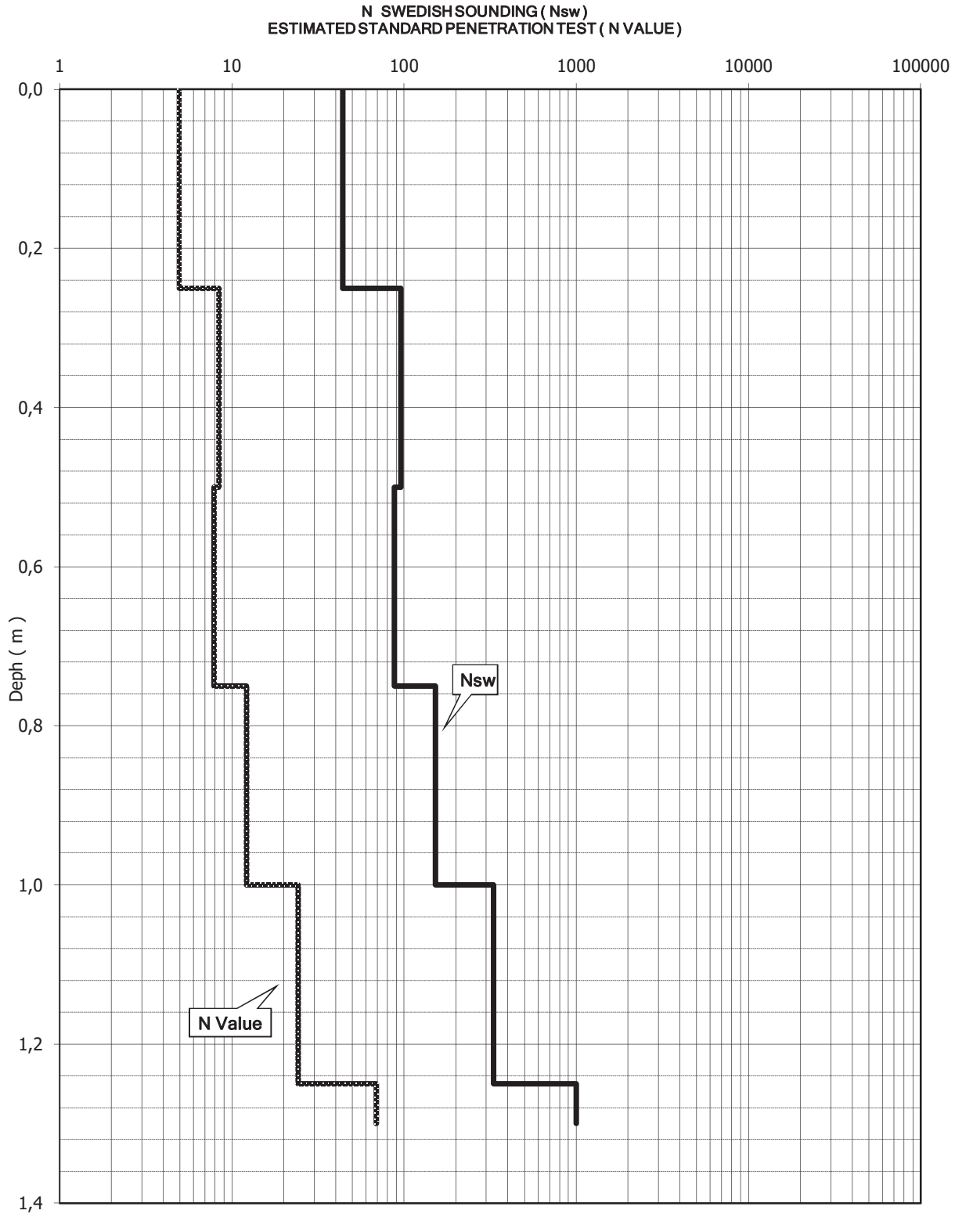
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-3-1	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,30	TESTED BY	REDY ARIANTO
COORDINAT	x = 824953	y = 9891972	GWL (m)		ELEVATION	+72 meter



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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-3-2		COORDINAT	x = 824953		y = 9891972	Elevation		+72 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	16	0,25	0,25	64	6						
100	35	0,50	0,25	140	11						
100	40	0,75	0,25	160	13						
100	28	1,00	0,25	112	10						
100	96	1,25	0,25	384	28						
100	80	1,50	0,25	320	23						
100	60	1,58	0,08	750	52						

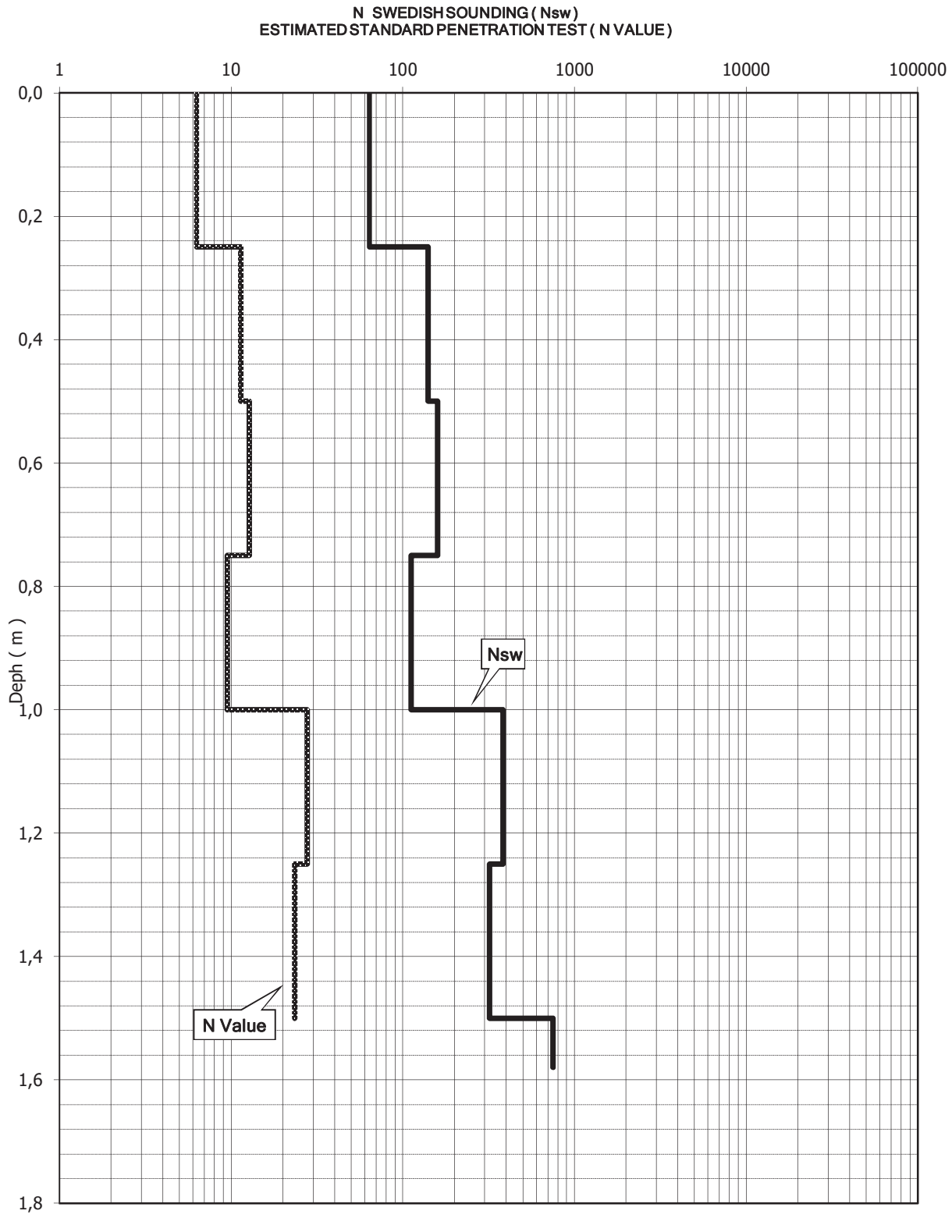
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Hadir untuk negeri

ISO 9001 CQ96 - 201788
ISO 14001 CQ96 - 3H0884
OHSAS 18001 CQ99 - 3H1627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-3-2	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,58	TESTED BY	REDY ARIANTO
COORDINAT	x = 824953	y = 9891972	GWL (m)		ELEVATION	+72 meter



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ISO 9001 ISO 14001 OHSAS 18001

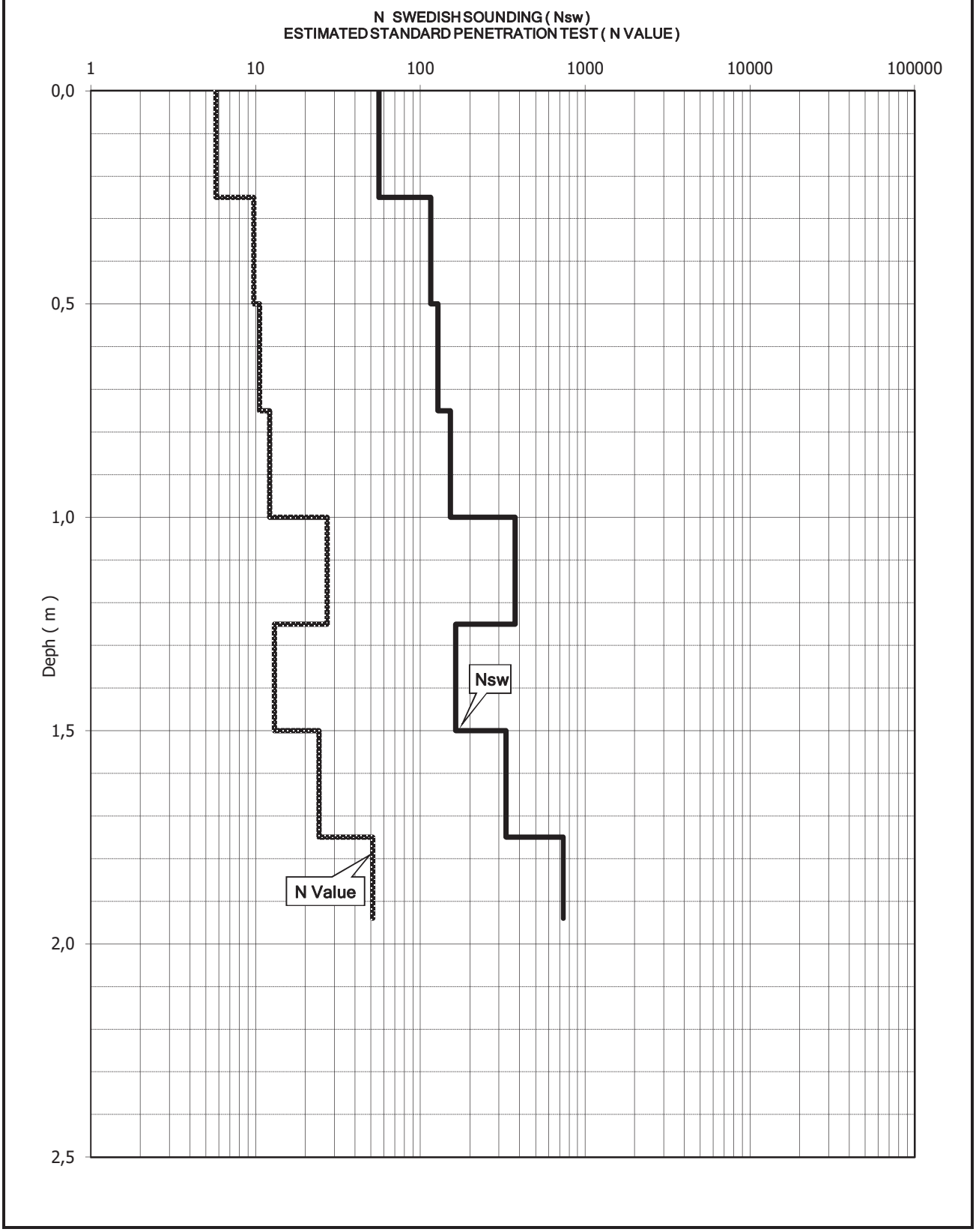
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-3-3		COORDINAT	x = 824953		y = 9891972	Elevation		+72 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	14	0,25	0,25	56	6						
100	29	0,50	0,25	116	10						
100	32	0,75	0,25	128	11						
100	38	1,00	0,25	152	12						
100	94	1,25	0,25	376	27						
100	41	1,50	0,25	164	13						
100	83	1,75	0,25	332	24						
100	140	1,94	0,19	737	51						

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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-3-3	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,94	TESTED BY	REDY ARIANTO
COORDINAT	x = 824953	y = 9891972	GWL (m)		ELEVATION	+72 meter



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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-4-1		COORDINAT	x = 824546		y = 9891530	Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	15	0,25	0,25	60	6						
100	23	0,50	0,25	92	8						
100	15	0,75	0,25	60	6						
100	16	1,00	0,25	64	6						
100	16	1,25	0,25	64	6						
100	64	1,50	0,25	256	19						
100	130	1,75	0,25	520	37						
100	30	1,79	0,04	750	52						

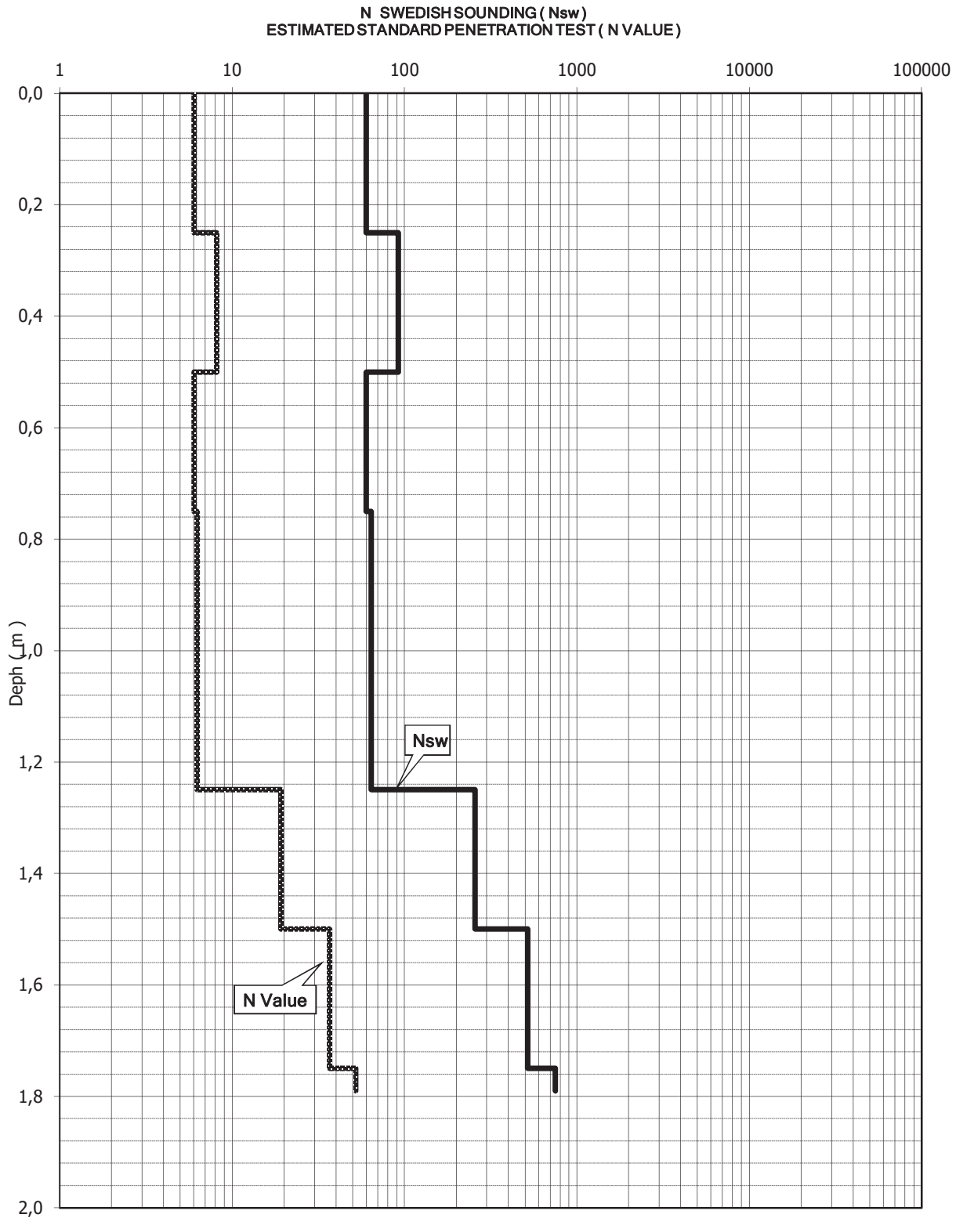
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BUMN
Hadir untuk negeri

ISO 9001 CQ85 - 311764
ISO 14001 CQ85 - 311664
OHSAS 18001 CQ85 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-4-1	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,79	TESTED BY	REDY ARIANTO
COORDINAT	x = 824546	y = 9891530	GWL (m)		ELEVATION	+77 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-4-2		COORDINAT	x = 824546		y = 9891530	Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	9	0,25	0,25	36	4						
100	6	0,50	0,25	24	4						
100	4	0,75	0,25	16	3						
100	2	1,00	0,25	8	3						
100	11	1,25	0,25	44	5						
100	27	1,50	0,25	108	9						
100	58	1,75	0,25	232	18						
100	15	1,77	0,02	750	52						

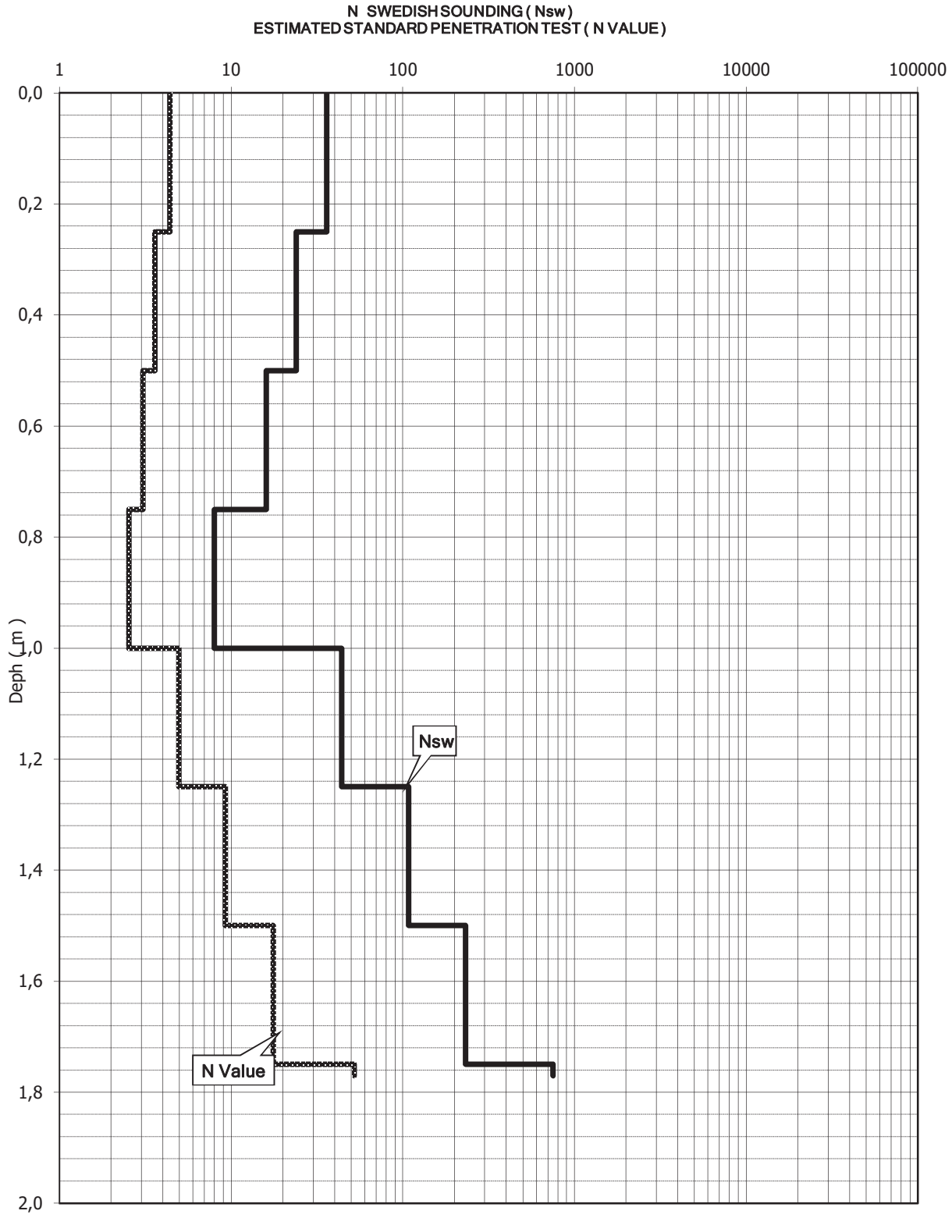
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BUMN
Hadir untuk negeri

ISO 9001 COBS - 3117564
ISO 14001 COBS - 3118564
OHSAS 18001 COBS - 3117627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-4-2	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,77	TESTED BY	REDY ARIANTO
COORDINAT	x = 824546	y = 9891530	GWL (m)		ELEVATION	+77 meter



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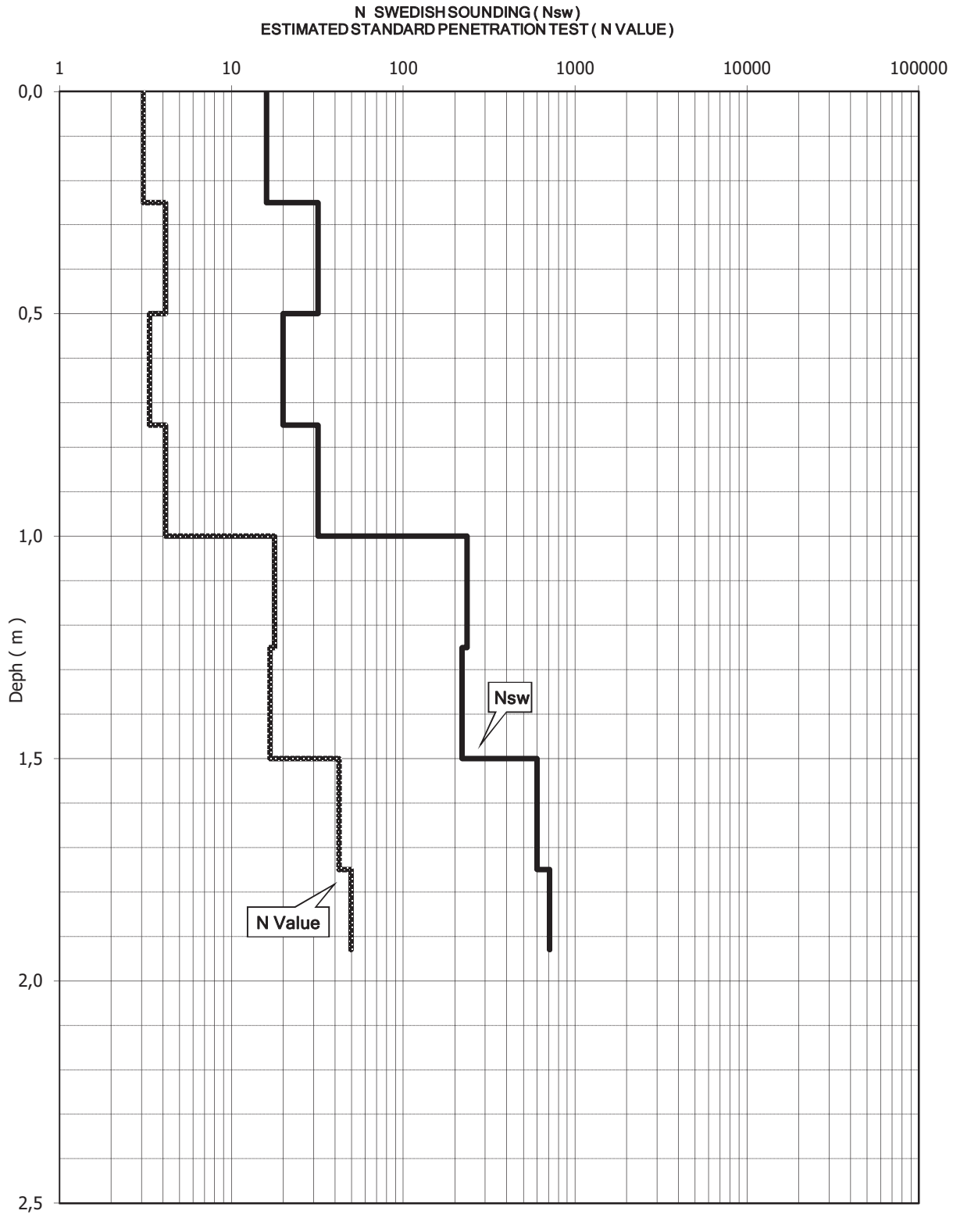
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 12, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-4-3		COORDINAT	x = 824546		y = 9891530	Elevation		+77 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	4	0,25	0,25	16	3						
100	8	0,50	0,25	32	4						
100	5	0,75	0,25	20	3						
100	8	1,00	0,25	32	4						
100	59	1,25	0,25	236	18						
100	55	1,50	0,25	220	17						
100	150	1,75	0,25	600	42						
100	128	1,93	0,18	711	50						

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ISO 9001 OCBS - 311764
ISO 14001 OCBS - 311764
OHSAS 18001 OCBS - 311827

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-4-3	DATE	December 12, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,93	TESTED BY	REDY ARIANTO
COORDINAT	x = 824546	y = 9891530	GWL (m)		ELEVATION	+77 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 11, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-5		COORDINAT	x = 824788		y = 9890319	Elevation		+76 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	3	0,25	0,25	12	1						
25	12	0,50	0,25	48	4						
25	7	0,75	0,25	28	2						
25	11	1,00	0,25	44	3						
25	21	1,25	0,25	84	6						
50	15	1,50	0,25	60	5						
50	24	1,75	0,25	96	7						
50	24	2,00	0,25	96	7						
100	8	2,25	0,25	32	4						
100	1	2,50	0,25	4	2						
100	3	2,75	0,25	12	3						
100	21	3,00	0,25	84	8						
100	41	3,25	0,25	164	13						
50	15	3,50	0,25	60	5						
50	51	3,75	0,25	204	15						
50	66	4,00	0,25	264	19						
50	64	4,25	0,25	256	18						
100	64	4,50	0,25	256	19						
100	10	4,75	0,25	40	5						
100	20	5,00	0,25	80	7						
100	20	5,25	0,25	80	7						
100	32	5,50	0,25	128	11						
100	70	5,75	0,25	280	21						
100	60	6,00	0,25	240	18						
100	40	6,25	0,25	160	13						
100	65	6,50	0,25	260	19						
100	39	6,75	0,25	156	12						
100	62	7,00	0,25	248	19						
100	66	7,25	0,25	264	20						
100	68	7,50	0,25	272	20						
100	72	7,75	0,25	288	21						
100	100	8,00	0,25	400	29						
100	86	8,25	0,25	344	25						
100	103	8,50	0,25	412	30						
100	97	8,75	0,25	388	28						
100	81	9,00	0,25	324	24						
100	81	9,25	0,25	324	24						
100	94	9,50	0,25	376	27						
100	83	9,75	0,25	332	24						
100	98	10,00	0,25	392	28						

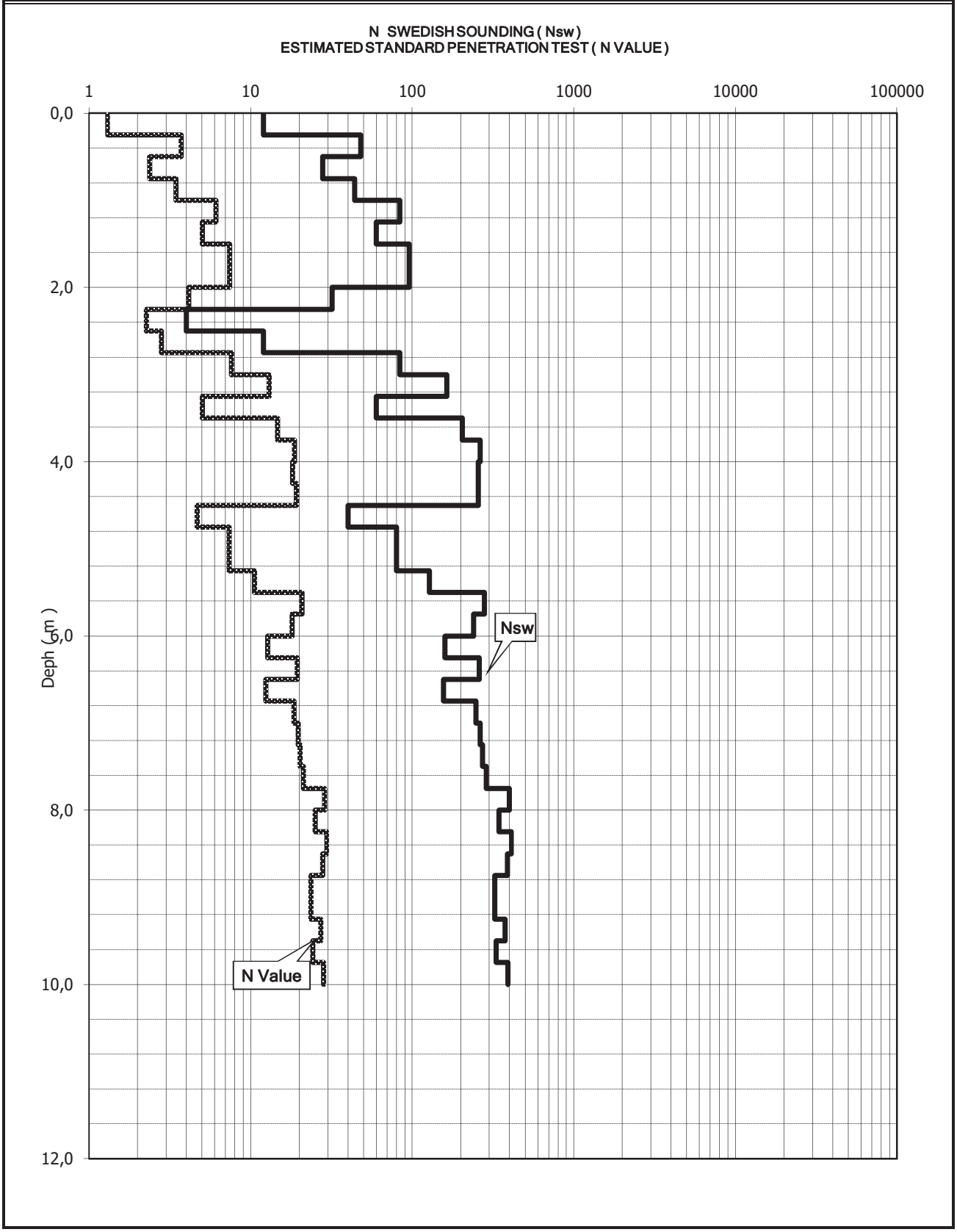
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311827

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY	NO. OF TEST	E-S-5	DATE	December 11, 2018
LOCATION	JONO OGE	TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 824788 y = 9890319	GWL (m)	0,35	ELEVATION	+76 meter



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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY							D a t e		December 14, 2018	
LOCATION	JONO OGE							Tested by		REDY ARIANTO	
NO. OF TEST	E-S-6		COORDINAT	x = 825365		y = 9889490		Elevation		+75 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	18	0,25	0,25	72	7						
100	71	0,50	0,25	284	21						
100	6	0,75	0,25	24	4						
100	2	1,00	0,25	8	3						
100	1	1,25	0,25	4	2						
100	5	1,50	0,25	20	3						
100	12	1,75	0,25	48	5						
100	27	2,00	0,25	108	9						
100	44	2,25	0,25	176	14						
100	37	2,50	0,25	148	12						
100	44	2,75	0,25	176	14						
100	62	3,00	0,25	248	19						
100	60	3,25	0,25	240	18						
50	23	3,50	0,25	92	7						
50	1	3,75	0,25	4	1						
50	8	4,00	0,25	32	3						
50	13	4,25	0,25	52	4						
100	8	4,50	0,25	32	4						
100	7	4,75	0,25	28	4						
100	5	5,00	0,25	20	3						
100	6	5,25	0,25	24	4						
100	6	5,50	0,25	24	4						
100	19	5,75	0,25	76	7						
100	22	6,00	0,25	88	8						
100	18	6,25	0,25	72	7						
100	21	6,50	0,25	84	8						
100	27	6,75	0,25	108	9						
100	19	7,00	0,25	76	7						
100	10	7,25	0,25	40	5						
100	8	7,50	0,25	32	4						
100	16	7,75	0,25	64	6						
100	17	8,00	0,25	68	7						
100	4	8,25	0,25	16	3						
100	7	8,50	0,25	28	4						
100	20	8,75	0,25	80	7						
100	22	9,00	0,25	88	8						
100	41	9,25	0,25	164	13						
100	48	9,50	0,25	192	15						
100	59	9,75	0,25	236	18						
100	41	10,00	0,25	164	13						

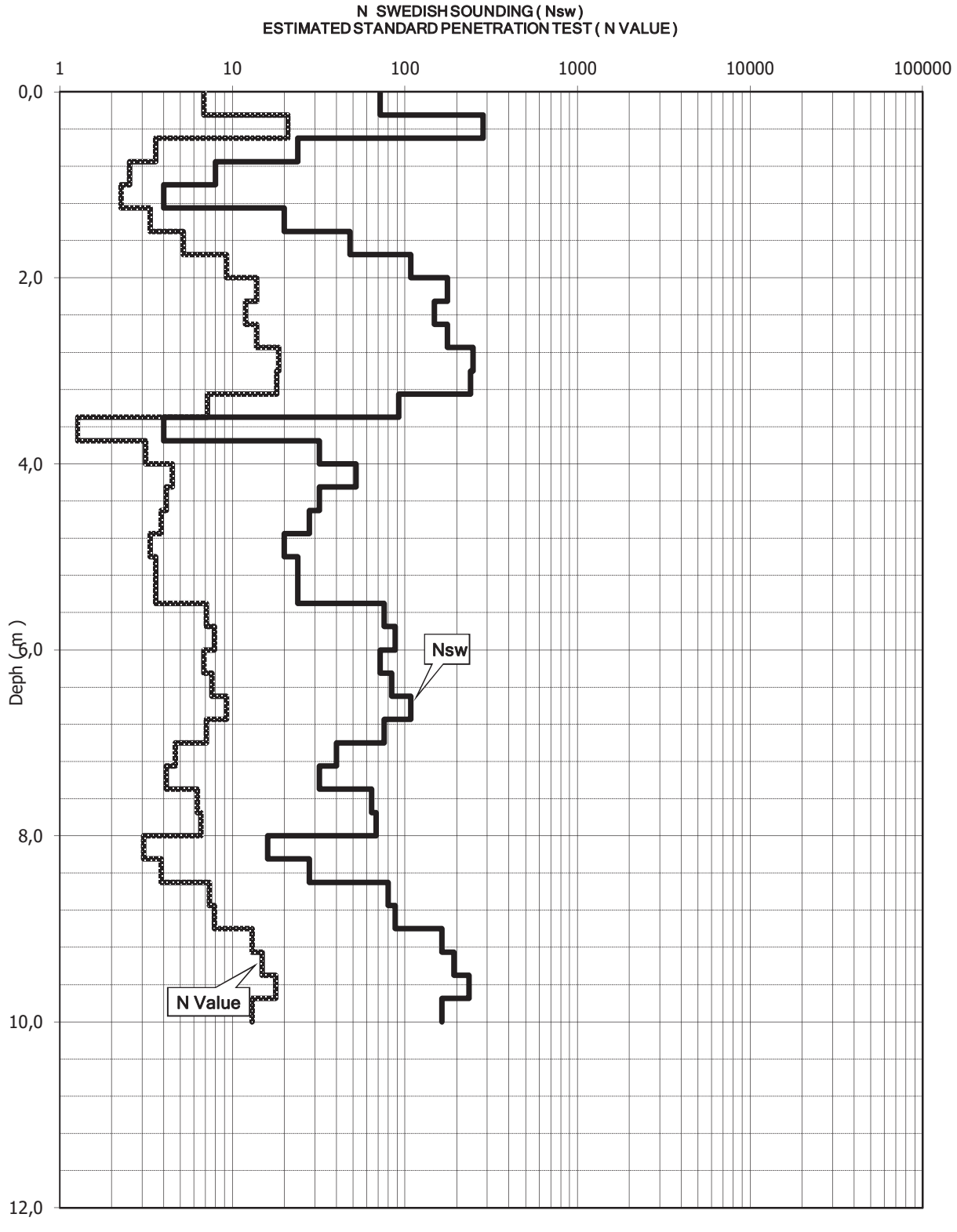
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311827

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-6	DATE	December 14, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 825365	y = 9889490	GWL (m)		ELEVATION	+75 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-7-1		COORDINAT	x = 825742		y = 9887156	Elevation		+108 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	7	0,25	0,25	28	4						
100	8	0,50	0,25	32	4						
100	11	0,75	0,25	44	5						
100	10	1,00	0,25	40	5						
100	14	1,25	0,25	56	6						
100	65	1,34	0,09	722	50						

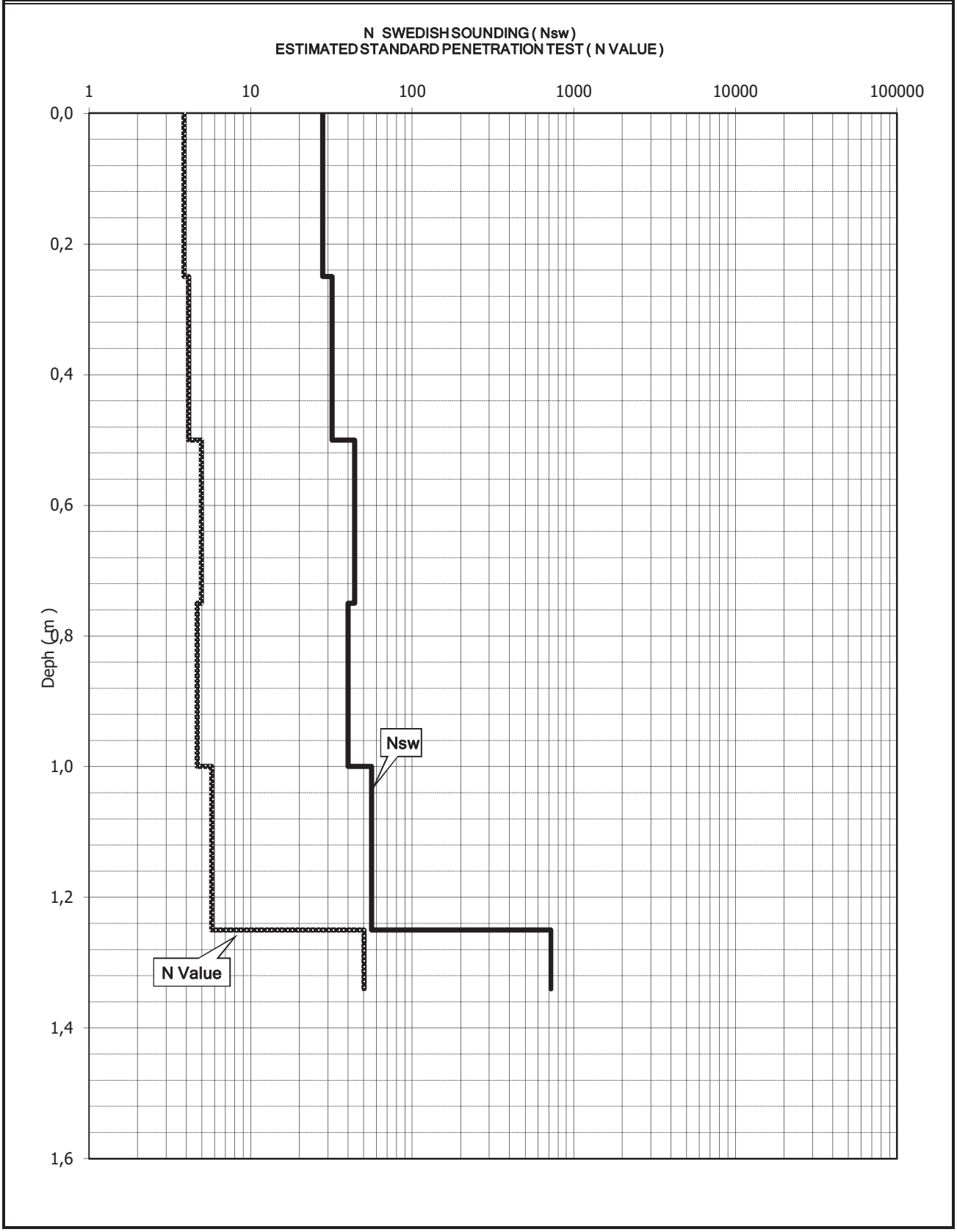
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-7-1	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,34	TESTED BY	REDY ARIANTO
COORDINAT	x = 825742	y = 9887156	GWL (m)		ELEVATION	+108 meter



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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-7-2		COORDINAT	x = 825742	y = 9887156		Elevation		+108 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	3	0,25	0,25	12	3						
100	13	0,50	0,25	52	5						
100	37	0,75	0,25	148	12						
100	32	1,00	0,25	128	11						
100	16	1,25	0,25	64	6						
100	93	1,50	0,25	372	27						
100	25	1,53	0,03	833	58						

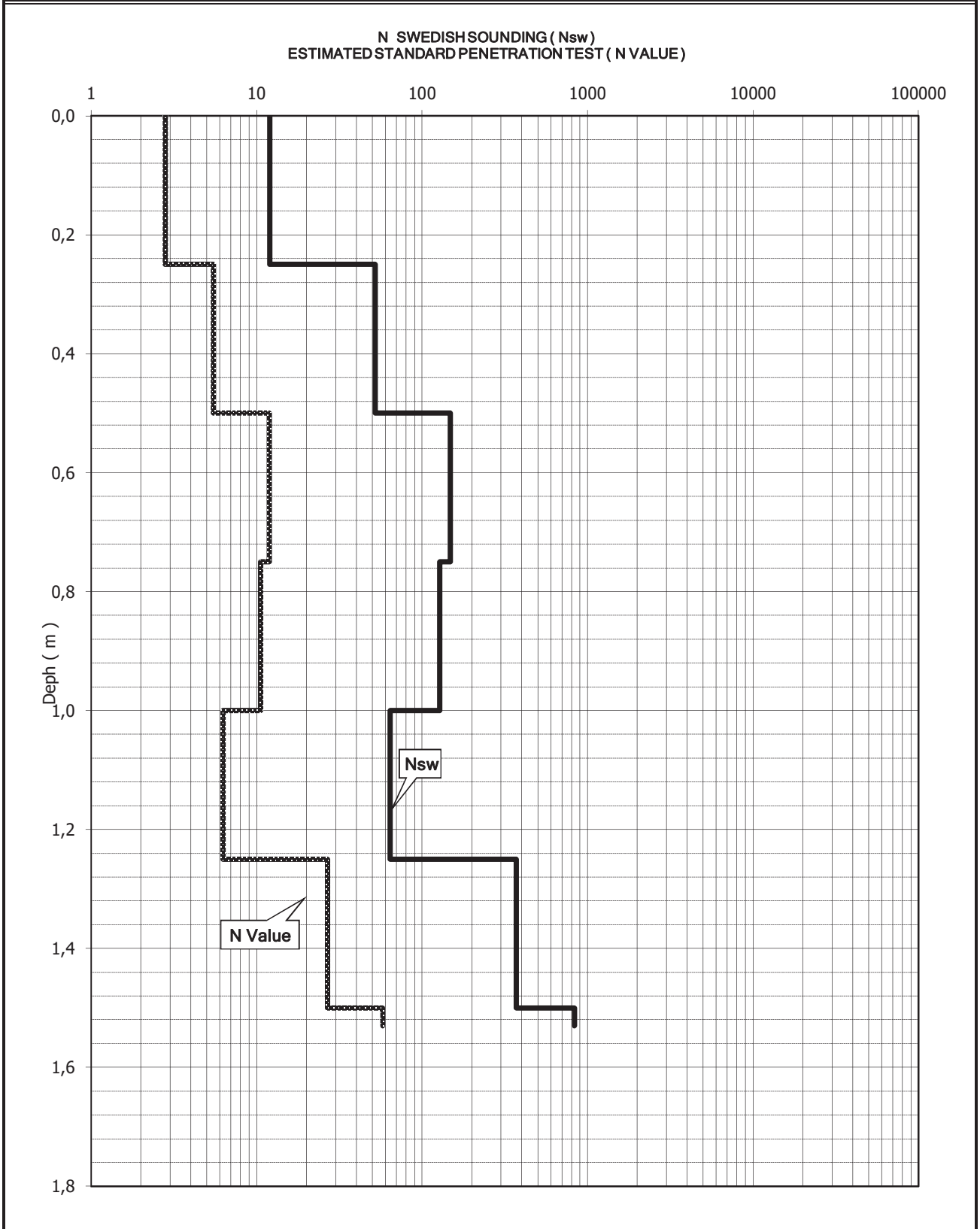
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Hadir untuk negeri

ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-7-2	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,53	TESTED BY	REDY ARIANTO
COORDINAT	x = 825742	y = 9887156	GWL (m)		ELEVATION	+108 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-7-3		COORDINAT	x = 825742		y = 9887156	Elevation		+108 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	9	0,25	0,25	36	4						
100	12	0,50	0,25	48	5						
100	27	0,75	0,25	108	9						
100	38	1,00	0,25	152	12						
100	14	1,25	0,25	56	6						
100	87	1,50	0,25	348	25						
100	94	1,75	0,25	376	27						
100	45	1,81	0,06	750	52						

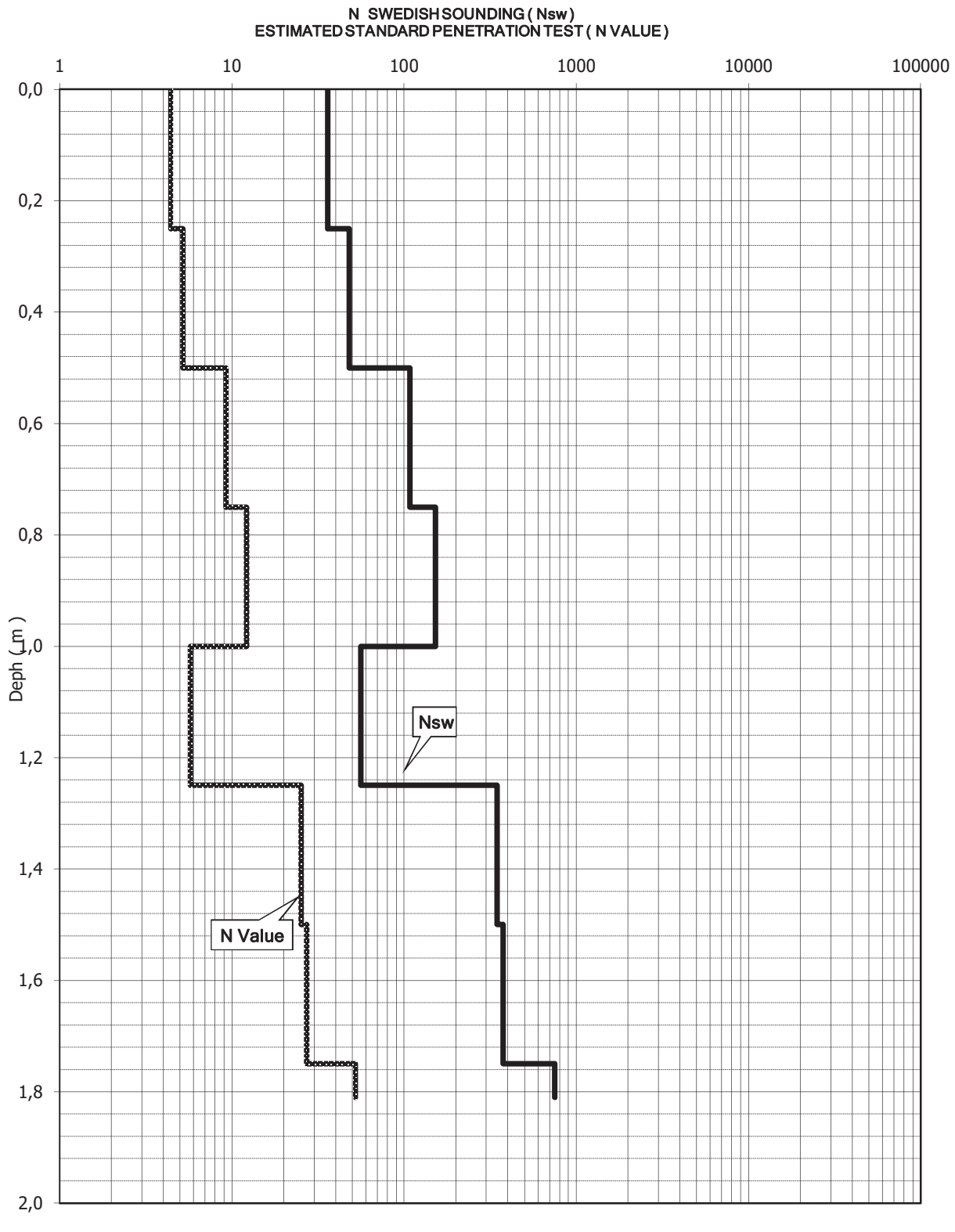
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BUMN
Hadir untuk negeri

ISO 9001 CQ56 - 311764
ISO 14001 CQ56 - 311764
OHSAS 18001 CQ59 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-7-3	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	1,81	TESTED BY	REDY ARIANTO
COORDINAT	x = 825742	y = 9887156	GWL (m)		ELEVATION	+108 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-8		COORDINAT	x = 822693		y = 9895077	Elevation		+74 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	30	0,25	0,25	120	10						
100	19	0,50	0,25	76	7						
100	30	0,75	0,25	120	10						
100	14	1,00	0,25	56	6						
100	1	1,25	0,25	4	2						
100	2	1,50	0,25	8	3						
100	5	1,75	0,25	20	3						
100	20	2,00	0,25	80	7						
100	28	2,25	0,25	112	10						
100	42	2,50	0,25	168	13						
100	108	2,75	0,25	432	31						
100	52	3,00	0,25	208	16						
100	75	3,25	0,25	300	22						
100	46	3,50	0,25	184	14						
100	62	3,75	0,25	248	19						
100	54	4,00	0,25	216	16						
100	60	4,25	0,25	240	18						
100	42	4,50	0,25	168	13						
100	81	4,75	0,25	324	24						
100	58	5,00	0,25	232	18						
100	63	5,25	0,25	252	19						
100	75	5,35	0,10	750	52						

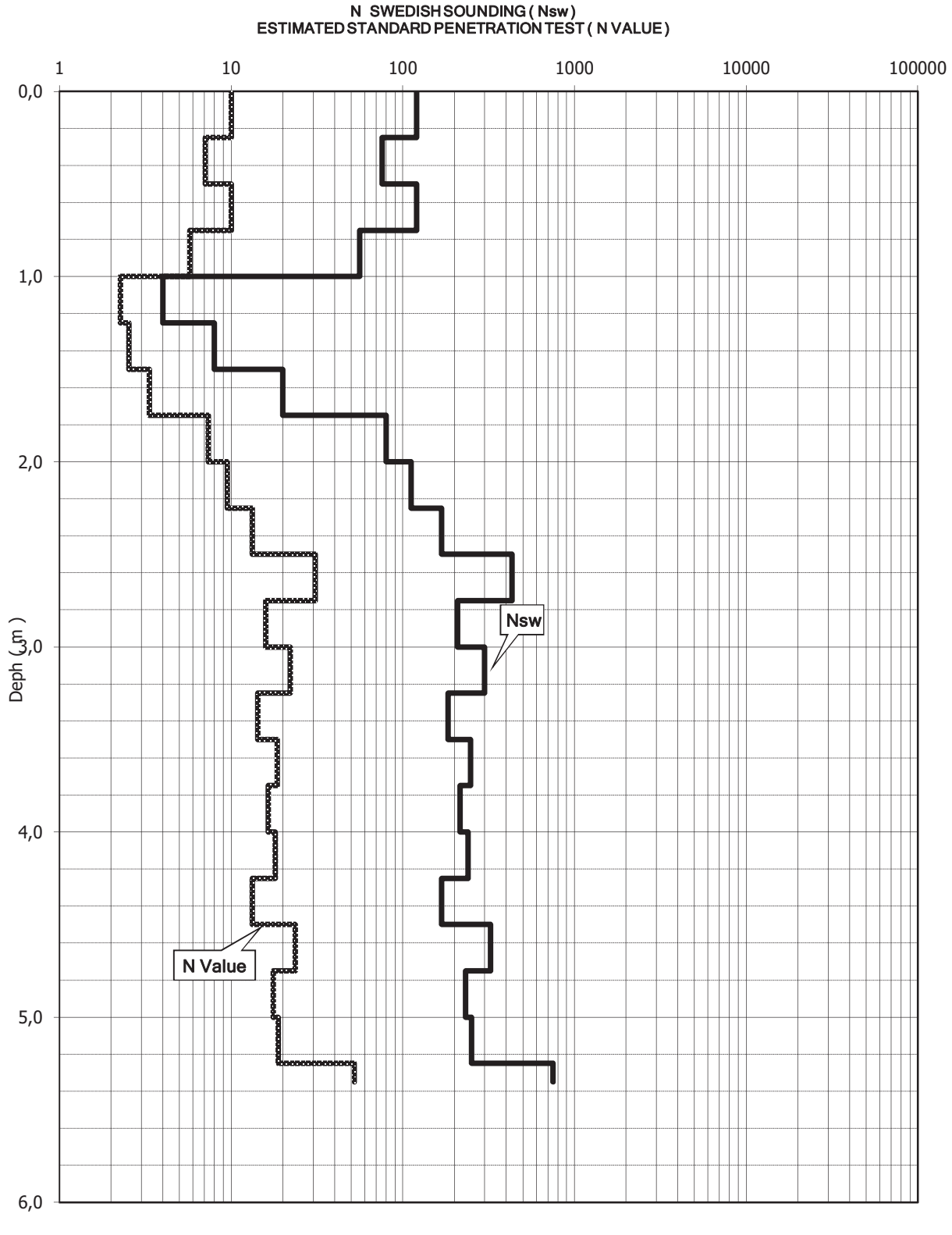
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311789
OHSAS 18001 CQ96 - 311787

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-8	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	5,35	TESTED BY	REDY ARIANTO
COORDINAT	x = 822693	y = 9895077	GWL (m)		ELEVATION	+74 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 13, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-9		COORDINAT	x = 823037	y = 9893357		Elevation		+45 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	1	0,25	0,25	4	2						
100	2	0,50	0,25	8	3						
100	1	0,75	0,25	4	2						
100	1	1,00	0,25	4	2						
100	1	1,25	0,25	4	2						
100	2	1,50	0,25	8	3						
100	4	1,75	0,25	16	3						
100	20	2,00	0,25	80	7						
100	17	2,25	0,25	68	7						
100	50	2,50	0,25	200	15						
100	22	2,75	0,25	88	8						
100	16	3,00	0,25	64	6						
100	17	3,25	0,25	68	7						
100	4	3,50	0,25	16	3						
100	7	3,75	0,25	28	4						
100	13	4,00	0,25	52	5						
100	3	4,25	0,25	12	3						
100	12	4,50	0,25	48	5						
100	4	4,75	0,25	16	3						
100	7	5,00	0,25	28	4						
100	17	5,25	0,25	68	7						
100	5	5,50	0,25	20	3						
100	25	5,75	0,25	100	9						
100	46	6,00	0,25	184	14						
100	42	6,25	0,25	168	13						
100	85	6,50	0,25	340	25						
100	76	6,75	0,25	304	22						
100	62	7,00	0,25	248	19						
100	40	7,25	0,25	160	13						
100	89	7,50	0,25	356	26						
100	58	7,75	0,25	232	18						
100	41	8,00	0,25	164	13						
100	48	8,25	0,25	192	15						
100	42	8,50	0,25	168	13						
100	59	8,75	0,25	236	18						
100	68	9,00	0,25	272	20						
100	38	9,25	0,25	152	12						
100	41	9,50	0,25	164	13						
100	96	9,75	0,25	384	28						
100	87	10,00	0,25	348	25						

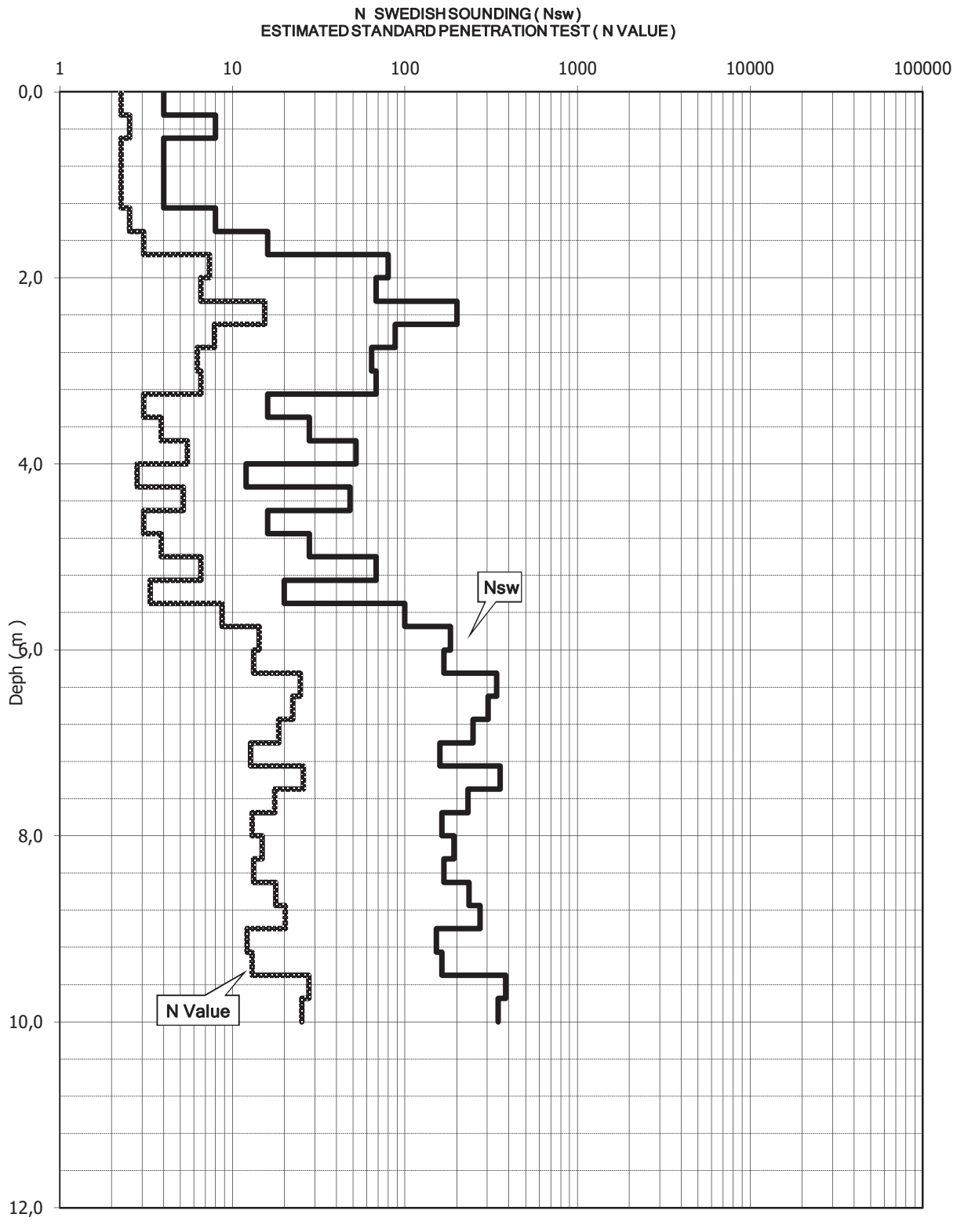
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ99 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-9	DATE	December 13, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 823037	y = 9893357	GWL (m)		ELEVATION	+45 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 13, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-9		COORDINAT	x = 821844	y = 9891918		Elevation		+36 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	23	0,25	0,25	92	7						
25	35	0,50	0,25	140	10						
25	25	0,75	0,25	100	7						
50	3	1,00	0,25	12	2						
50	8	1,25	0,25	32	3						
50	11	1,50	0,25	44	4						
50	20	1,75	0,25	80	6						
100	6	2,00	0,25	24	4						
100	11	2,25	0,25	44	5						
100	4	2,50	0,25	16	3						
100	16	2,75	0,25	64	6						
100	32	3,00	0,25	128	11						
100	11	3,25	0,25	44	5						
100	6	3,50	0,25	24	4						
100	13	3,75	0,25	52	5						
100	8	4,00	0,25	32	4						
100	12	4,25	0,25	48	5						
100	7	4,50	0,25	28	4						
100	4	4,75	0,25	16	3						
100	20	5,00	0,25	80	7						
100	18	5,25	0,25	72	7						
100	25	5,50	0,25	100	9						
100	61	5,75	0,25	244	18						
100	52	6,00	0,25	208	16						
100	38	6,25	0,25	152	12						
100	48	6,50	0,25	192	15						
100	28	6,75	0,25	112	10						
100	58	7,00	0,25	232	18						
100	35	7,25	0,25	140	11						
100	48	7,50	0,25	192	15						
100	61	7,75	0,25	244	18						
100	81	8,00	0,25	324	24						
100	64	8,25	0,25	256	19						
100	41	8,50	0,25	164	13						
100	83	8,75	0,25	332	24						
100	63	9,00	0,25	252	19						
100	62	9,25	0,25	248	19						
100	68	9,50	0,25	272	20						
100	77	9,75	0,25	308	23						
100	69	10,00	0,25	276	20						

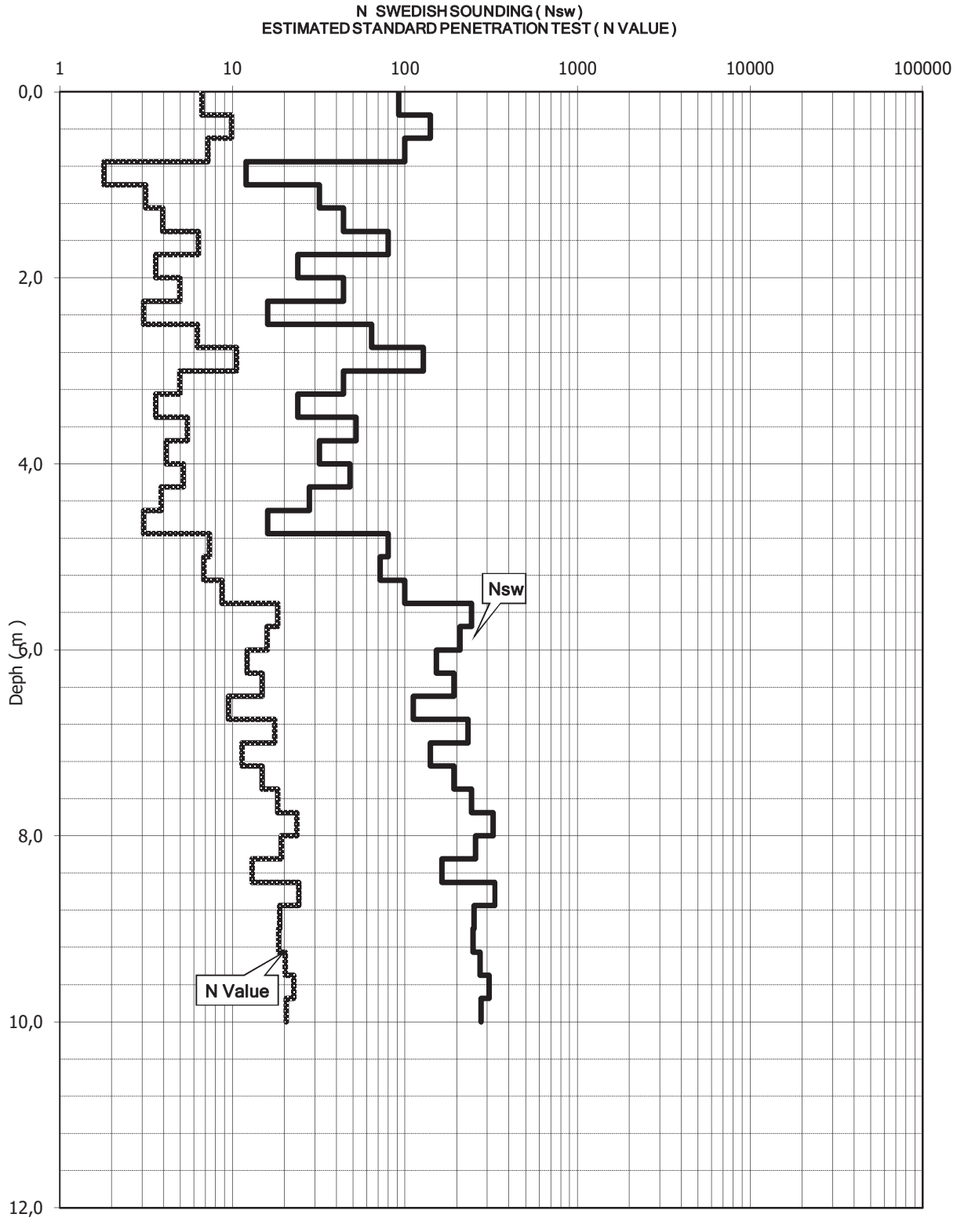
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BUMN
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ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311827

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-9	DATE	December 13, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 821844	y = 9891918	GWL (m)	2,25	ELEVATION	+36 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 14, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-11		COORDINAT	x = 823563	y = 9889723		Elevation		+71 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	1	0,25	0,25	4	1						
25	20	0,50	0,25	80	6						
25	18	0,75	0,25	72	5						
50	2	1,00	0,25	8	2						
50	60	1,25	0,25	240	17						
100	5	1,50	0,25	20	3						
100	8	1,75	0,25	32	4						
100	14	2,00	0,25	56	6						
100	16	2,25	0,25	64	6						
100	23	2,50	0,25	92	8						
100	33	2,75	0,25	132	11						
100	30	3,00	0,25	120	10						
100	29	3,25	0,25	116	10						
100	11	3,50	0,25	44	5						
100	9	3,75	0,25	36	4						
100	16	4,00	0,25	64	6						
50	14	4,25	0,25	56	5						
100	2	4,50	0,25	8	3						
100	15	4,75	0,25	60	6						
100	40	5,00	0,25	160	13						
100	35	5,25	0,25	140	11						
100	6	5,50	0,25	24	4						
100	29	5,75	0,25	116	10						
100	32	6,00	0,25	128	11						
100	42	6,25	0,25	168	13						
100	38	6,50	0,25	152	12						
100	41	6,75	0,25	164	13						
100	44	7,00	0,25	176	14						
100	38	7,25	0,25	152	12						
100	36	7,50	0,25	144	12						
100	61	7,75	0,25	244	18						
100	82	8,00	0,25	328	24						
100	63	8,25	0,25	252	19						
100	81	8,50	0,25	324	24						
100	61	8,75	0,25	244	18						
100	34	9,00	0,25	136	11						
100	62	9,25	0,25	248	19						
100	46	9,50	0,25	184	14						
100	86	9,75	0,25	344	25						
100	88	10,00	0,25	352	26						

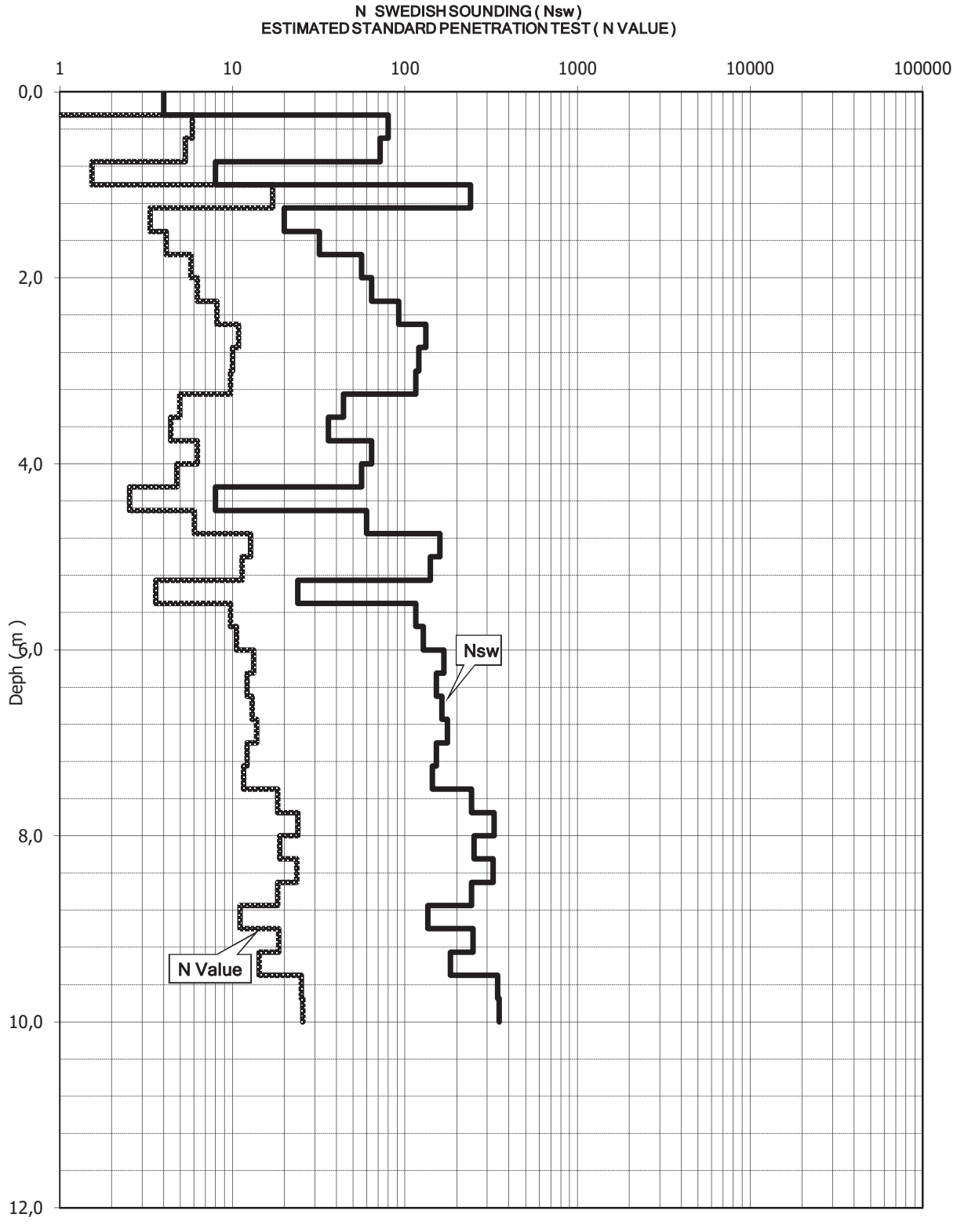
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-11	DATE	December 14, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 823563	y = 9889723	GWL (m)	1,85	ELEVATION	+71 meter



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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-12-1		COORDINAT	x = 823923		y = 9887538	Elevation		+84 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	13	0,25	0,25	52	5						
100	68	0,50	0,25	272	20						
100	46	0,75	0,25	184	14						
100	24	1,00	0,25	96	8						
100	6	1,25	0,25	24	4						
100	3	1,50	0,25	12	3						
100	5	1,75	0,25	20	3						
100	2	2,00	0,25	8	3						
100	4	2,25	0,25	16	3						
100	30	2,50	0,25	120	10						
100	51	2,75	0,25	204	16						
100	15	3,00	0,25	60	6						
100	25	3,03	0,03	833	58						

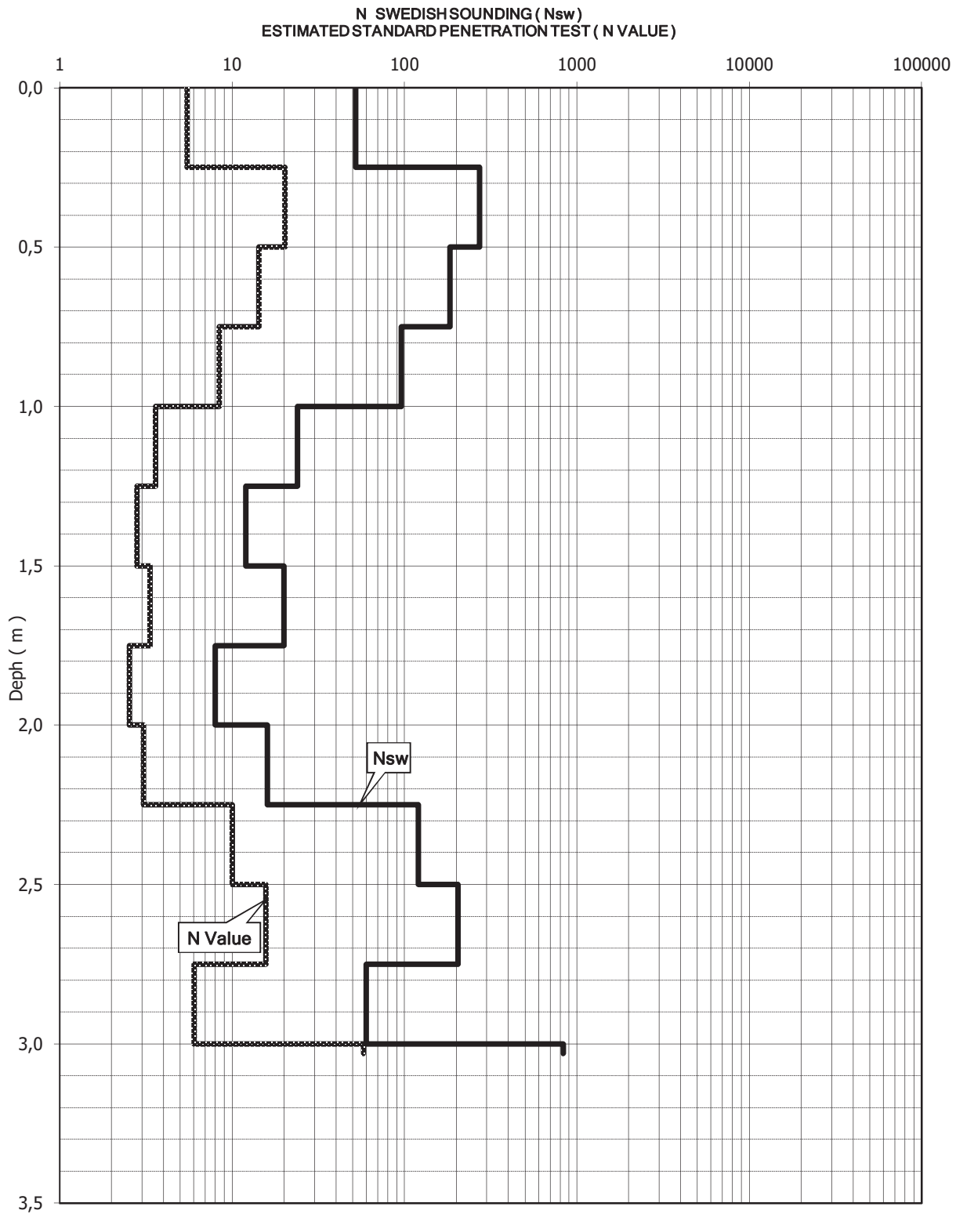
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ISO 9001 CQ96 - 311764
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OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-12-1	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	3,03	TESTED BY	REDY ARIANTO
COORDINAT	x = 823923	y = 9887538	GWL (m)		ELEVATION	+84 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-12-2		COORDINAT	x = 823923		y = 9887538	Elevation		+84 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	8	0,25	0,25	32	4						
100	24	0,50	0,25	96	8						
100	18	0,75	0,25	72	7						
100	11	1,00	0,25	44	5						
100	4	1,25	0,25	16	3						
100	3	1,50	0,25	12	3						
100	4	1,75	0,25	16	3						
100	1	2,00	0,25	4	2						
100	6	2,25	0,25	24	4						
100	13	2,50	0,25	52	5						
100	34	2,75	0,25	136	11						
100	30	3,00	0,25	120	10						
100	90	3,12	0,12	750	52						

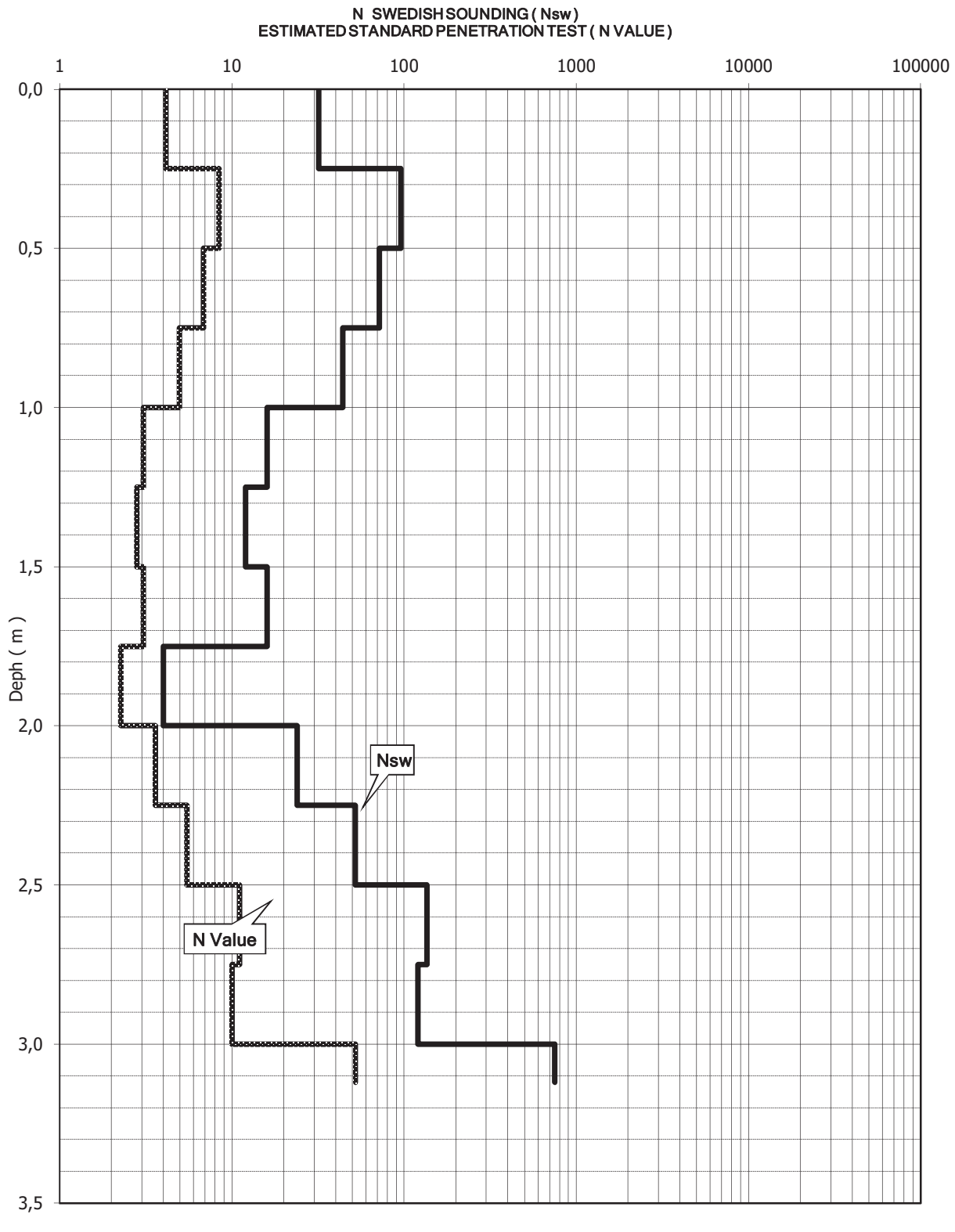
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BUMN
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ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311884
OHSAS 18001 CQ96 - 311927

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-12-2	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	3,12	TESTED BY	REDY ARIANTO
COORDINAT	x = 823923	y = 9887538	GWL (m)		ELEVATION	+84 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 15, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-12-3		COORDINAT	x = 823923		y = 9887538	Elevation		+84 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
100	12	0,25	0,25	48	5						
100	46	0,50	0,25	184	14						
100	29	0,75	0,25	116	10						
100	24	1,00	0,25	96	8						
100	8	1,25	0,25	32	4						
100	6	1,50	0,25	24	4						
100	3	1,75	0,25	12	3						
100	2	2,00	0,25	8	3						
100	4	2,25	0,25	16	3						
100	36	2,50	0,25	144	12						
100	38	2,75	0,25	152	12						
100	40	3,00	0,25	160	13						
100	45	3,06	0,06	750	52						

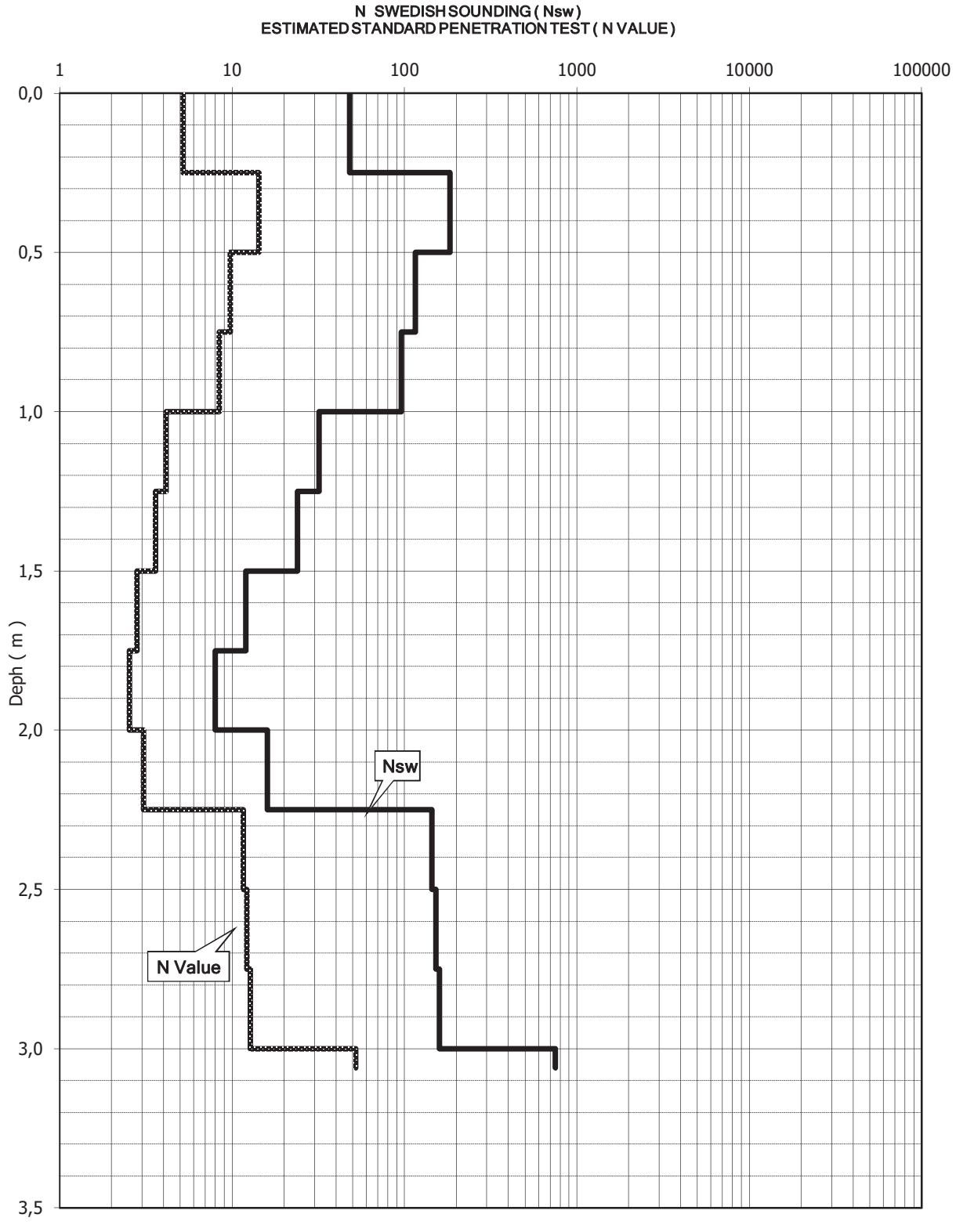
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OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	E-S-12-3	DATE	December 15, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	3,06	TESTED BY	REDY ARIANTO
COORDINAT	x = 823923	y = 9887538	GWL (m)		ELEVATION	+84 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 13, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		E-S-13		COORDINAT	x = 821131		y = 9889671	Elevation		+46 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	3	0,25	0,25	12	2						
50	4	0,50	0,25	16	2						
50	1	0,75	0,25	4	1						
50	1	1,00	0,25	4	1						
50	10	1,25	0,25	40	4						
50	38	1,50	0,25	152	11						
100	18	1,75	0,25	72	7						
100	15	2,00	0,25	60	6						
100	13	2,25	0,25	52	5						
100	9	2,50	0,25	36	4						
100	36	2,75	0,25	144	12						
100	40	3,00	0,25	160	13						
100	43	3,25	0,25	172	14						
100	48	3,50	0,25	192	15						
100	43	3,75	0,25	172	14						
100	52	4,00	0,25	208	16						
50	40	4,25	0,25	160	12						
100	39	4,50	0,25	156	12						
100	58	4,75	0,25	232	18						
100	60	5,00	0,25	240	18						
100	40	5,25	0,25	160	13						
100	52	5,50	0,25	208	16						
100	59	5,75	0,25	236	18						
100	62	6,00	0,25	248	19						
100	39	6,25	0,25	156	12						
100	28	6,50	0,25	112	10						
100	51	6,75	0,25	204	16						
100	48	7,00	0,25	192	15						
100	59	7,25	0,25	236	18						
100	61	7,50	0,25	244	18						
100	70	7,75	0,25	280	21						
100	63	8,00	0,25	252	19						
100	20	8,25	0,25	80	7						
100	32	8,50	0,25	128	11						
100	51	8,75	0,25	204	16						
100	66	9,00	0,25	264	20						
100	64	9,25	0,25	256	19						
100	86	9,50	0,25	344	25						
100	63	9,75	0,25	252	19						
100	94	10,00	0,25	376	27						

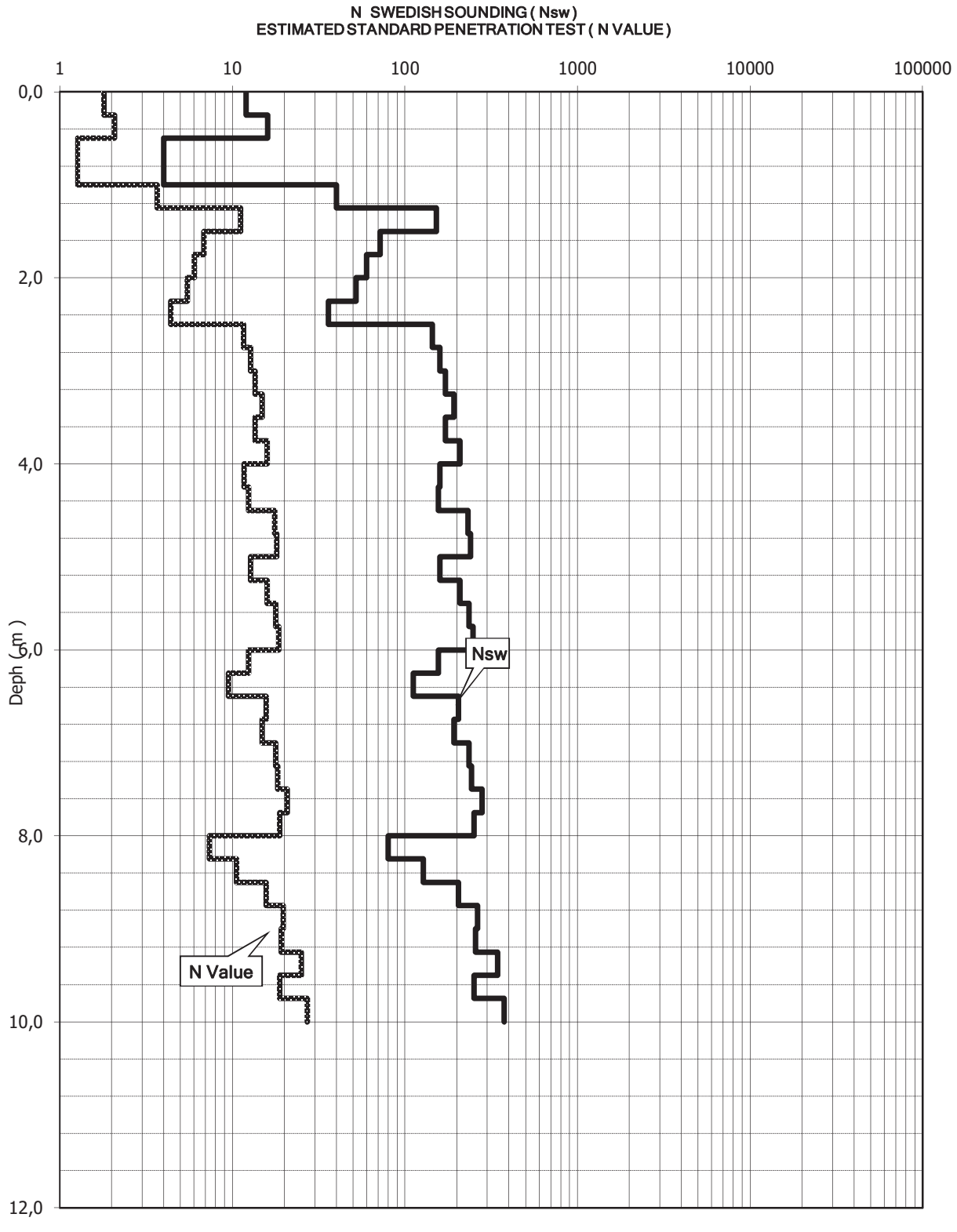
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311827

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY	NO. OF TEST	E-S-13	DATE	December 13, 2018
LOCATION	JONO OGE	TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 821131 y = 9889671	GWL (m)	1	ELEVATION	+46 meter



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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY							D a t e		December 18, 2018	
LOCATION	JONO OGE							Tested by		REDY ARIANTO	
NO. OF TEST	J-S-8		COORDINAT	x = 824967		y = 9890893		Elevation		+72 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	20	0,25	0,25	80	6						
50	13	0,50	0,25	52	4						
50	1	0,75	0,25	4	1						
50	1	1,00	0,25	4	1						
50	4	1,25	0,25	16	2						
50	15	1,50	0,25	60	5						
50	15	1,75	0,25	60	5						
50	4	2,00	0,25	16	2						
50	7	2,25	0,25	28	3						
50	28	2,50	0,25	112	9						
50	21	2,75	0,25	84	7						
50	35	3,00	0,25	140	10						
100	20	3,25	0,25	80	7						
100	7	3,50	0,25	28	4						
100	12	3,75	0,25	48	5						
100	14	4,00	0,25	56	6						
100	11	4,25	0,25	44	5						
100	22	4,50	0,25	88	8						
100	14	4,75	0,25	56	6						
100	10	5,00	0,25	40	5						
100	6	5,25	0,25	24	4						
100	6	5,50	0,25	24	4						
100	53	5,75	0,25	212	16						
100	120	5,93	0,18	667	47						

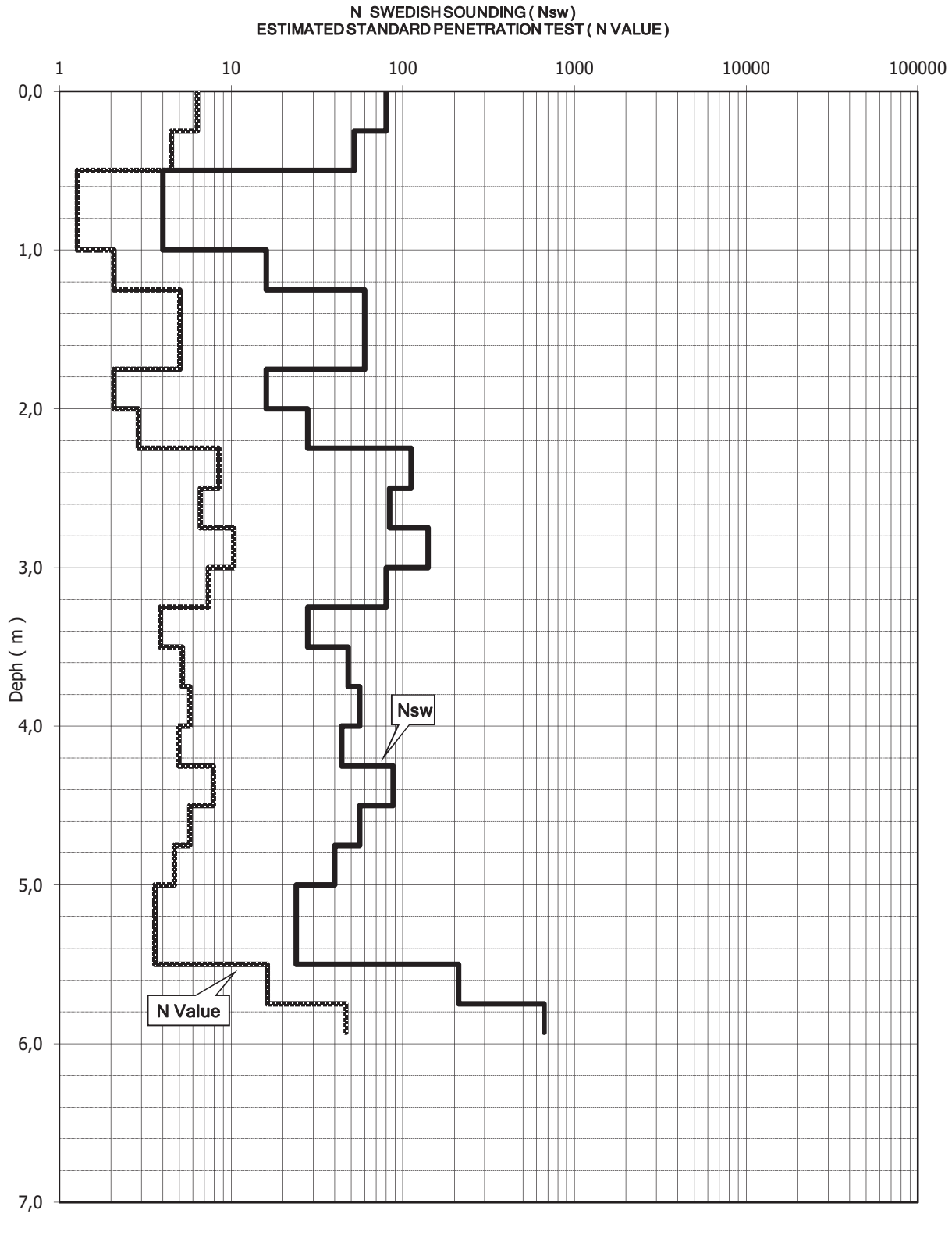
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ96 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	J-S-8	DATE	December 18, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	5,93	TESTED BY	REDY ARIANTO
COORDINAT	x = 824967	y = 9890893	GWL (m)		ELEVATION	+72 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 18, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		J-S-9		COORDINAT	x = 824978		y = 9890911	Elevation		+70 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	1	0,25	0,25	4	1						
50	1	0,50	0,25	4	1						
50	1	0,75	0,25	4	1						
50	1	1,00	0,25	4	1						
50	13	1,25	0,25	52	4						
50	12	1,50	0,25	48	4						
50	8	1,75	0,25	32	3						
50	8	2,00	0,25	32	3						
50	20	2,25	0,25	80	6						
50	30	2,50	0,25	120	9						
100	21	2,75	0,25	84	8						
100	40	3,00	0,25	160	13						
100	25	3,25	0,25	100	9						
100	10	3,50	0,25	40	5						
100	15	3,75	0,25	60	6						
100	20	4,00	0,25	80	7						
100	11	4,25	0,25	44	5						
100	11	4,50	0,25	44	5						
100	21	4,75	0,25	84	8						
100	18	5,00	0,25	72	7						
100	8	5,25	0,25	32	4						
100	8	5,50	0,25	32	4						
100	60	5,75	0,25	240	18						
100	120	6,00	0,25	480	34						
100	100	6,25	0,25	400	29						
100	80	6,35	0,10	800	56						

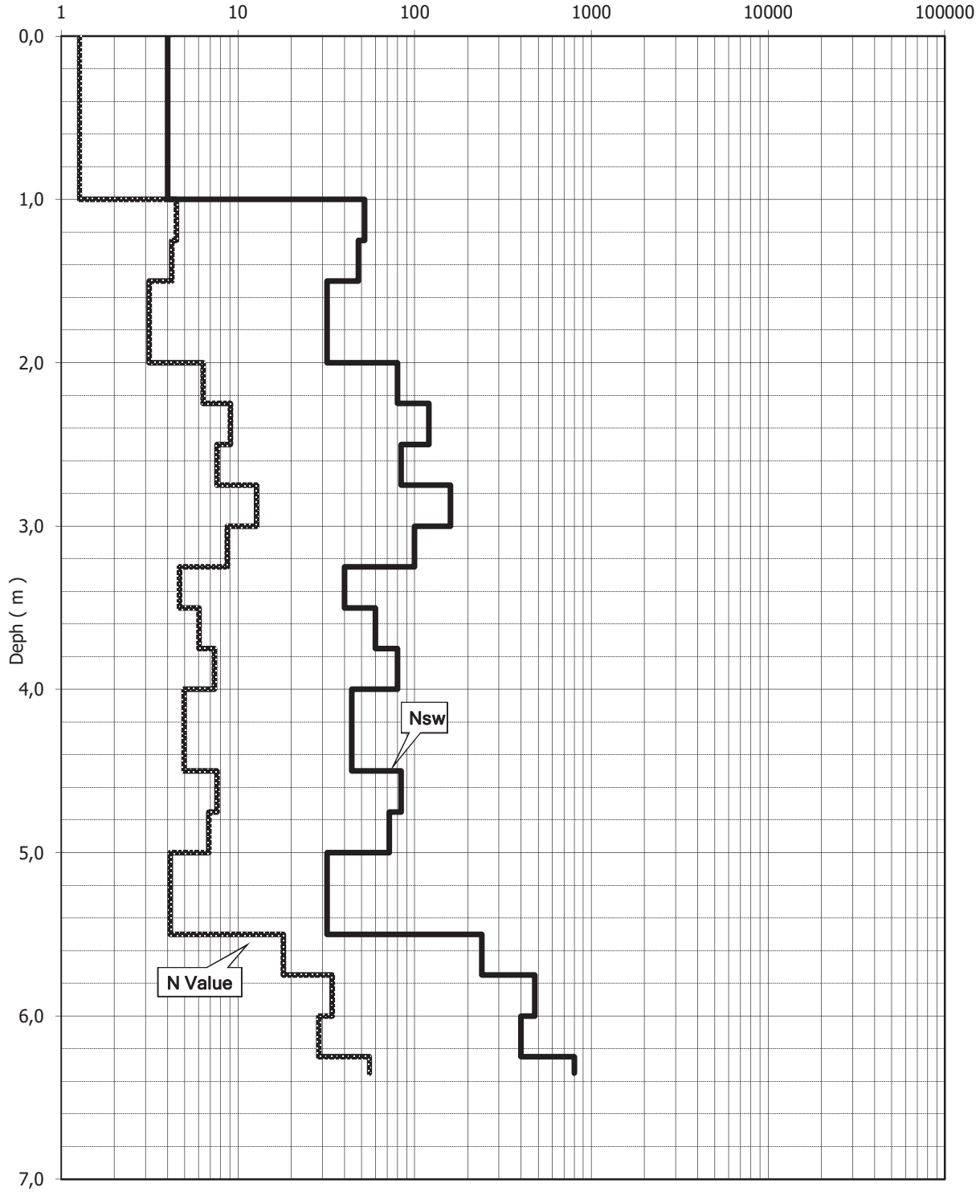
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311764
ISO 14001 CQ96 - 311764
OHSAS 18001 CQ96 - 311767

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	J-S-9	DATE	December 18, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	6,35	TESTED BY	REDY ARIANTO
COORDINAT	x = 824978	y = 9890911	GWL (m)	0,6	ELEVATION	+70 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

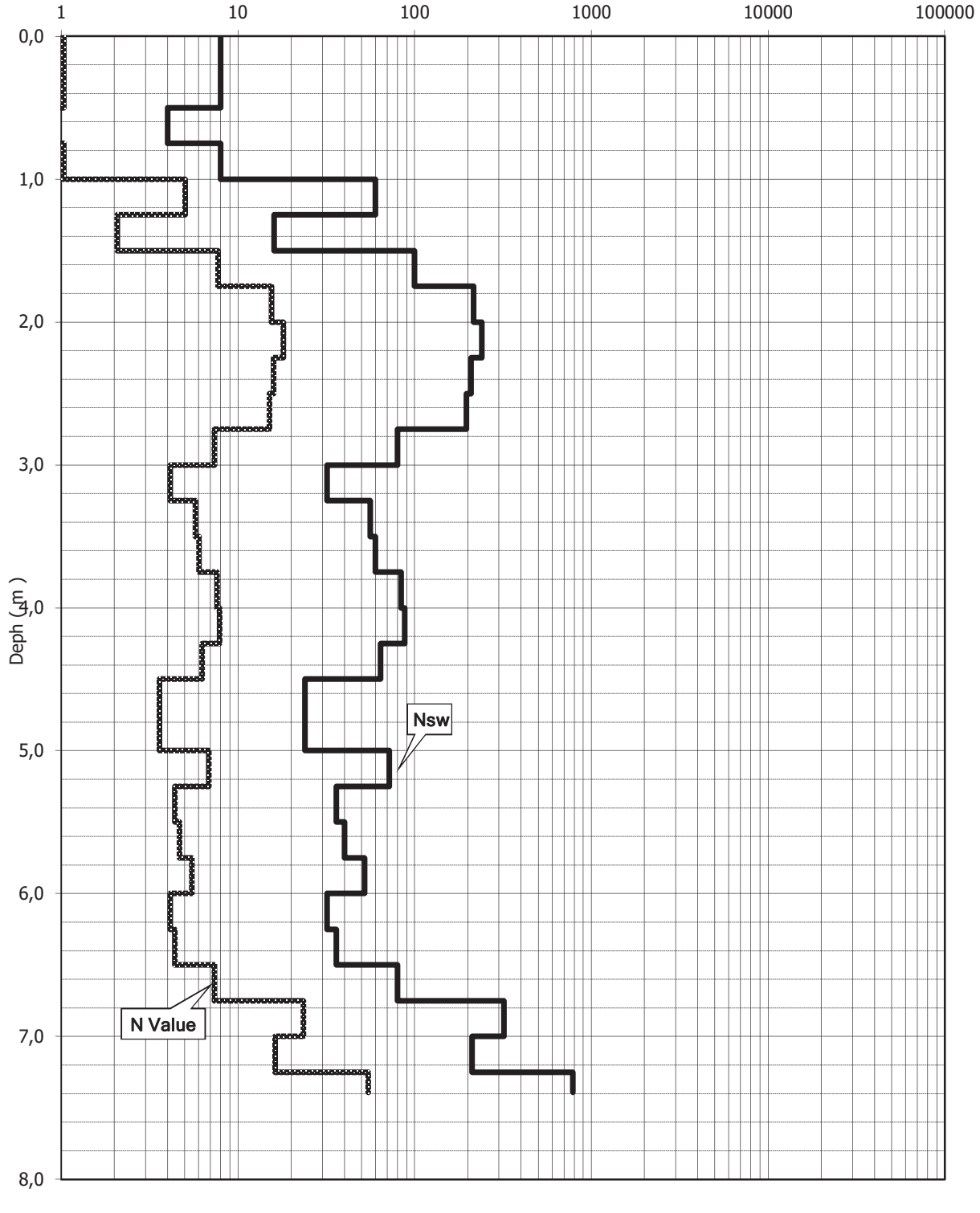
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 22, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		J-S-10		COORDINAT	x = 824978		y = 9890915	Elevation		+63 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	2	0,25	0,25	8	1						
25	2	0,50	0,25	8	1						
25	1	0,75	0,25	4	1						
25	2	1,00	0,25	8	1						
50	15	1,25	0,25	60	5						
50	4	1,50	0,25	16	2						
50	25	1,75	0,25	100	8						
50	54	2,00	0,25	216	15						
100	60	2,25	0,25	240	18						
100	52	2,50	0,25	208	16						
100	49	2,75	0,25	196	15						
100	20	3,00	0,25	80	7						
100	8	3,25	0,25	32	4						
100	14	3,50	0,25	56	6						
100	15	3,75	0,25	60	6						
100	21	4,00	0,25	84	8						
100	22	4,25	0,25	88	8						
100	16	4,50	0,25	64	6						
100	6	4,75	0,25	24	4						
100	6	5,00	0,25	24	4						
100	18	5,25	0,25	72	7						
100	9	5,50	0,25	36	4						
100	10	5,75	0,25	40	5						
100	13	6,00	0,25	52	5						
100	8	6,25	0,25	32	4						
100	9	6,50	0,25	36	4						
100	20	6,75	0,25	80	7						
100	80	7,00	0,25	320	23						
100	53	7,25	0,25	212	16						
100	110	7,39	0,14	786	55						

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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	J-S-10	DATE	December 22, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	7,39	TESTED BY	REDY ARIANTO
COORDINAT	x = 824978	y = 9890915	GWL (m)	0,8	ELEVATION	+63 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 22, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		J-S-11		COORDINAT	x = 824970	y = 9890930		Elevation		+63 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	2	0,25	0,25	8	1						
25	1	0,50	0,25	4	1						
25	1	0,75	0,25	4	1						
25	3	1,00	0,25	12	1						
25	15	1,25	0,25	60	5						
25	3	1,50	0,25	12	1						
25	20	1,75	0,25	80	6						
50	44	2,00	0,25	176	13						
50	40	2,25	0,25	160	12						
50	36	2,50	0,25	144	11						
100	48	2,75	0,25	192	15						
100	20	3,00	0,25	80	7						
100	8	3,25	0,25	32	4						
100	16	3,50	0,25	64	6						
100	30	3,75	0,25	120	10						
100	21	4,00	0,25	84	8						
100	22	4,25	0,25	88	8						
100	18	4,50	0,25	72	7						
100	8	4,75	0,25	32	4						
100	9	5,00	0,25	36	4						
100	20	5,25	0,25	80	7						
100	16	5,50	0,25	64	6						
100	7	5,75	0,25	28	4						
100	8	6,00	0,25	32	4						
100	11	6,25	0,25	44	5						
100	23	6,50	0,25	92	8						
100	16	6,75	0,25	64	6						
100	10	7,00	0,25	40	5						
100	8	7,25	0,25	32	4						
100	14	7,50	0,25	56	6						
100	22	7,75	0,25	88	8						
100	10	8,00	0,25	40	5						
100	8	8,25	0,25	32	4						
100	68	8,50	0,25	272	20						
100	58	8,75	0,25	232	18						
100	40	9,00	0,25	160	13						
100	130	9,18	0,18	722	50						

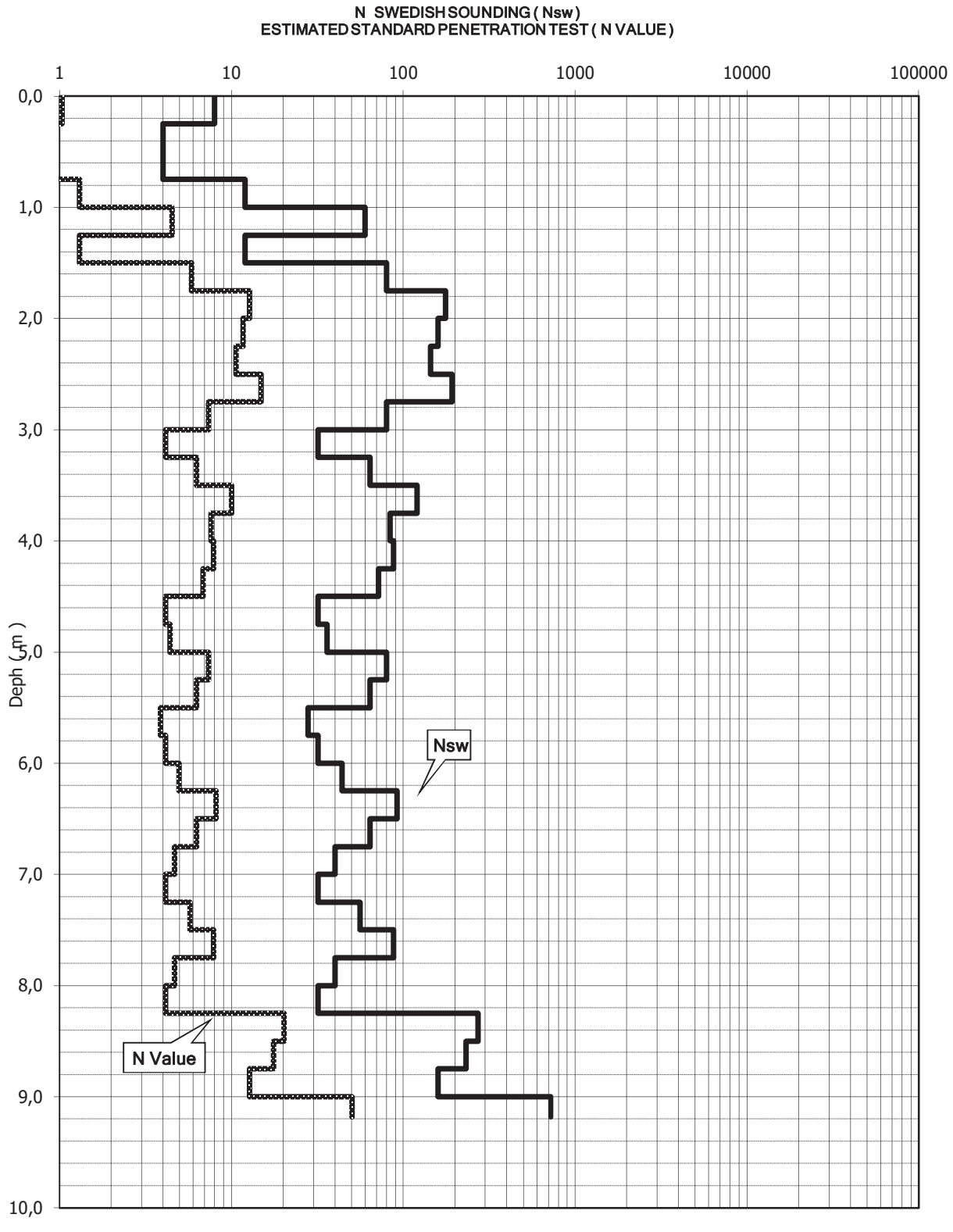
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311884
OHSAS 18001 CQ96 - 311927

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	J-S-11	DATE	December 22, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	9,18	TESTED BY	REDY ARIANTO
COORDINAT	x = 824970	y = 9890930	GWL (m)	0,5	ELEVATION	+63 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 22, 2018	
LOCATION		JONO OGE						Tested by		REDY ARIANTO	
NO. OF TEST		J-S-12		COORDINAT	x = 824990		y = 9890886	Elevation		+64 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	3	0,25	0,25	12	2						
50	4	0,50	0,25	16	2						
50	8	0,75	0,25	32	3						
50	5	1,00	0,25	20	2						
50	15	1,25	0,25	60	5						
50	3	1,50	0,25	12	2						
50	13	1,75	0,25	52	4						
50	20	2,00	0,25	80	6						
100	1	2,25	0,25	4	2						
100	3	2,50	0,25	12	3						
100	2	2,75	0,25	8	3						
100	17	3,00	0,25	68	7						
100	19	3,25	0,25	76	7						
100	55	3,50	0,25	220	17						
100	14	3,75	0,25	56	6						
100	13	4,00	0,25	52	5						
100	12	4,25	0,25	48	5						
100	14	4,50	0,25	56	6						
100	14	4,75	0,25	56	6						
100	13	5,00	0,25	52	5						
100	10	5,25	0,25	40	5						
100	9	5,50	0,25	36	4						
100	8	5,75	0,25	32	4						
100	7	6,00	0,25	28	4						
100	5	6,25	0,25	20	3						
100	8	6,50	0,25	32	4						
100	11	6,75	0,25	44	5						
100	24	7,00	0,25	96	8						
100	25	7,25	0,25	100	9						
100	60	7,32	0,07	857	59						

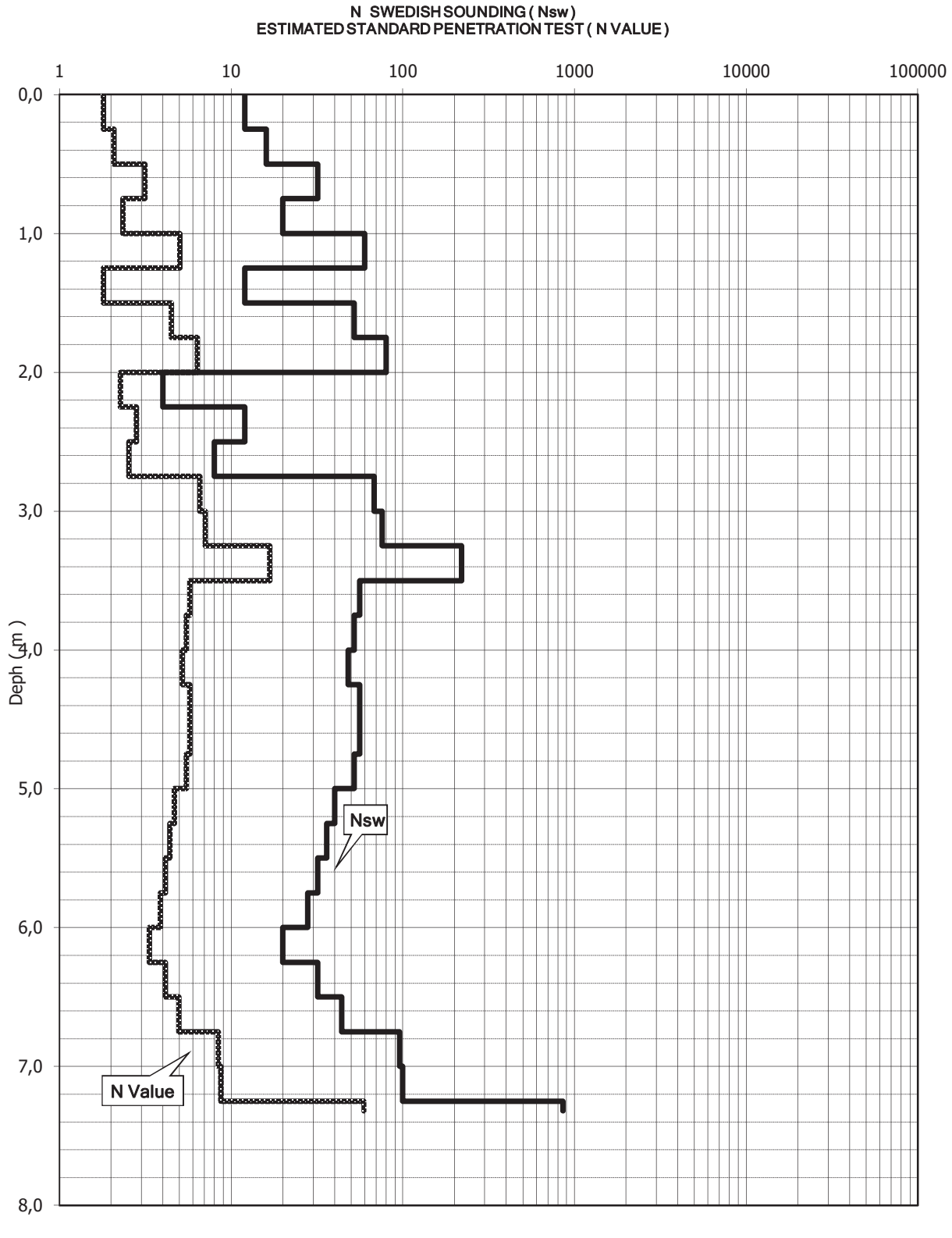
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BUMN
Hadir untuk negeri

ISO 9001 CQ85 - 311764
ISO 14001 CQ85 - 311864
OHSAS 18001 CQ85 - 311927

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	J-S-12	DATE	December 22, 2018
LOCATION	JONO OGE		TOTAL DEPTH (m)	7,32	TESTED BY	REDY ARIANTO
COORDINAT	x = 824990	y = 9890886	GWL (m)	1,2	ELEVATION	+64 meter



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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY							D a t e		December 22, 2018	
LOCATION	JONO OGE							Tested by		REDY ARIANTO	
NO. OF TEST	J-S-13		COORDINAT	x = 824995		y = 9890877		Elevation		+64 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	3	0,25	0,25	12	1						
25	9	0,50	0,25	36	3						
25	6	0,75	0,25	24	2						
25	3	1,00	0,25	12	1						
25	5	1,25	0,25	20	2						
25	17	1,50	0,25	68	5						
50	13	1,75	0,25	52	4						
50	11	2,00	0,25	44	4						
50	6	2,25	0,25	24	3						
50	10	2,50	0,25	40	4						
50	29	2,75	0,25	116	9						
50	31	3,00	0,25	124	9						
100	28	3,25	0,25	112	10						
100	9	3,50	0,25	36	4						
100	9	3,75	0,25	36	4						
100	29	4,00	0,25	116	10						
100	20	4,25	0,25	80	7						
100	19	4,50	0,25	76	7						
100	13	4,75	0,25	52	5						
100	8	5,00	0,25	32	4						
100	8	5,25	0,25	32	4						
100	4	5,50	0,25	16	3						
100	4	5,75	0,25	16	3						
100	4	6,00	0,25	16	3						
100	10	6,25	0,25	40	5						
100	27	6,50	0,25	108	9						
100	32	6,75	0,25	128	11						
100	9	7,00	0,25	36	4						
100	7	7,25	0,25	28	4						
100	21	7,50	0,25	84	8						
100	100	7,63	0,13	769	54						

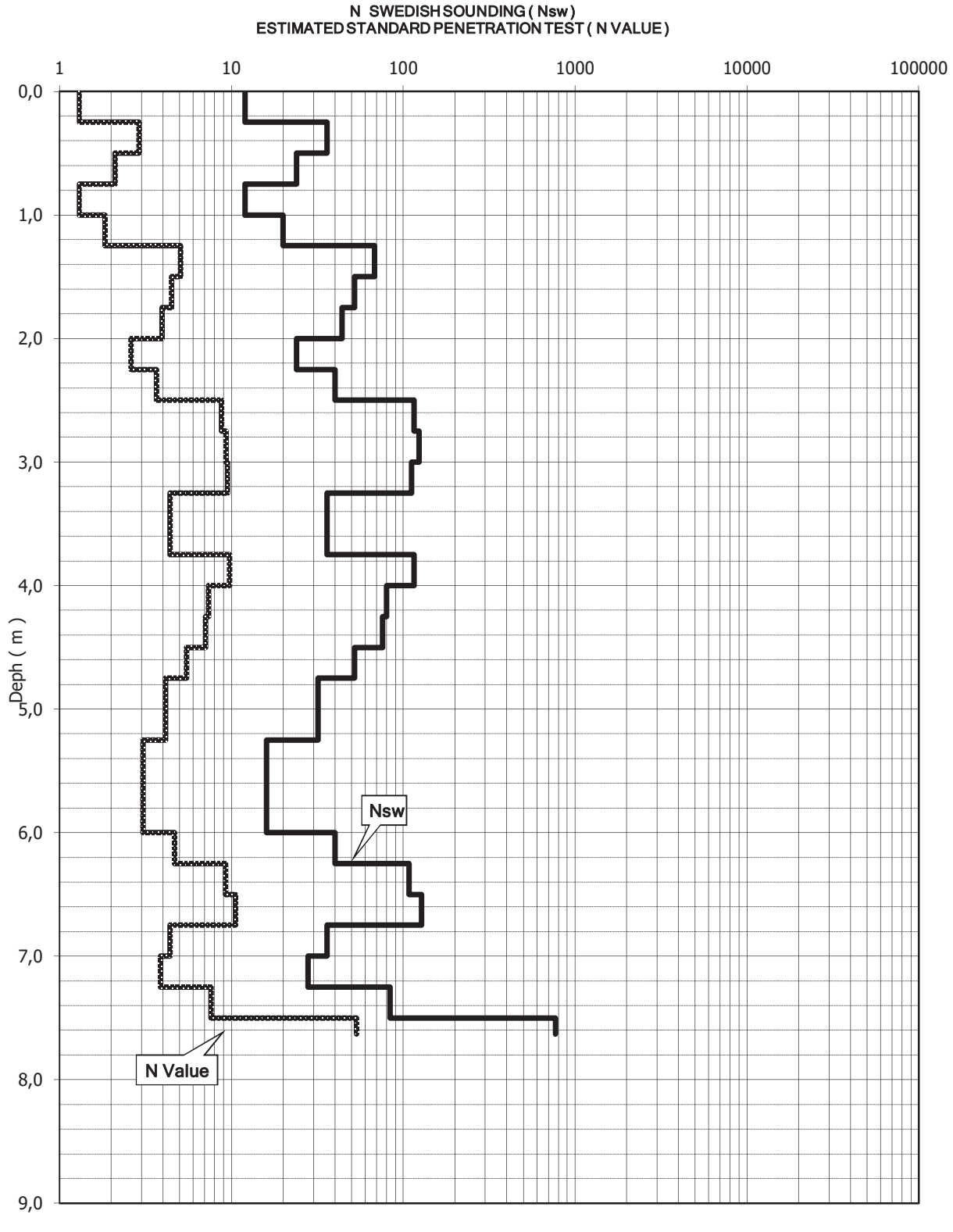
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 201788
ISO 14001 CQ96 - 2418664
OHSAS 18001 CQ96 - 2418627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY	NO. OF TEST	J-S-13	DATE	December 22, 2018
LOCATION	JONO OGE	TOTAL DEPTH (m)	7,63	TESTED BY	REDY ARIANTO
COORDINAT	x = 824995 y = 9890877	GWL (m)	1	ELEVATION	+64 meter



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ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 7, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-1		COORDINAT	x = 825042		y = 9895812	Elevation		+72 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	7	0,25	0,25	28	3						
50	7	0,50	0,25	28	3						
50	2	0,75	0,25	8	2						
50	3	1,00	0,25	12	2						
50	10	1,25	0,25	40	4						
50	50	1,50	0,25	200	14						
50	51	1,75	0,25	204	15						
50	30	2,00	0,25	120	9						
100	19	2,25	0,25	76	7						
100	10	2,50	0,25	40	5						
100	10	2,75	0,25	40	5						
100	18	3,00	0,25	72	7						
100	17	3,25	0,25	68	7						
100	30	3,50	0,25	120	10						
100	10	3,75	0,25	40	5						
100	16	4,00	0,25	64	6						
100	12	4,25	0,25	48	5						
100	13	4,50	0,25	52	5						
100	10	4,75	0,25	40	5						
100	19	5,00	0,25	76	7						
100	16	5,25	0,25	64	6						
100	30	5,50	0,25	120	10						
100	26	5,75	0,25	104	9						
100	35	6,00	0,25	140	11						
100	25	6,25	0,25	100	9						
100	16	6,50	0,25	64	6						
100	27	6,75	0,25	108	9						
100	18	7,00	0,25	72	7						
100	20	7,25	0,25	80	7						
100	22	7,50	0,25	88	8						
100	40	7,75	0,25	160	13						
100	35	8,00	0,25	140	11						
100	19	8,25	0,25	76	7						
100	150	8,45	0,20	750	52						

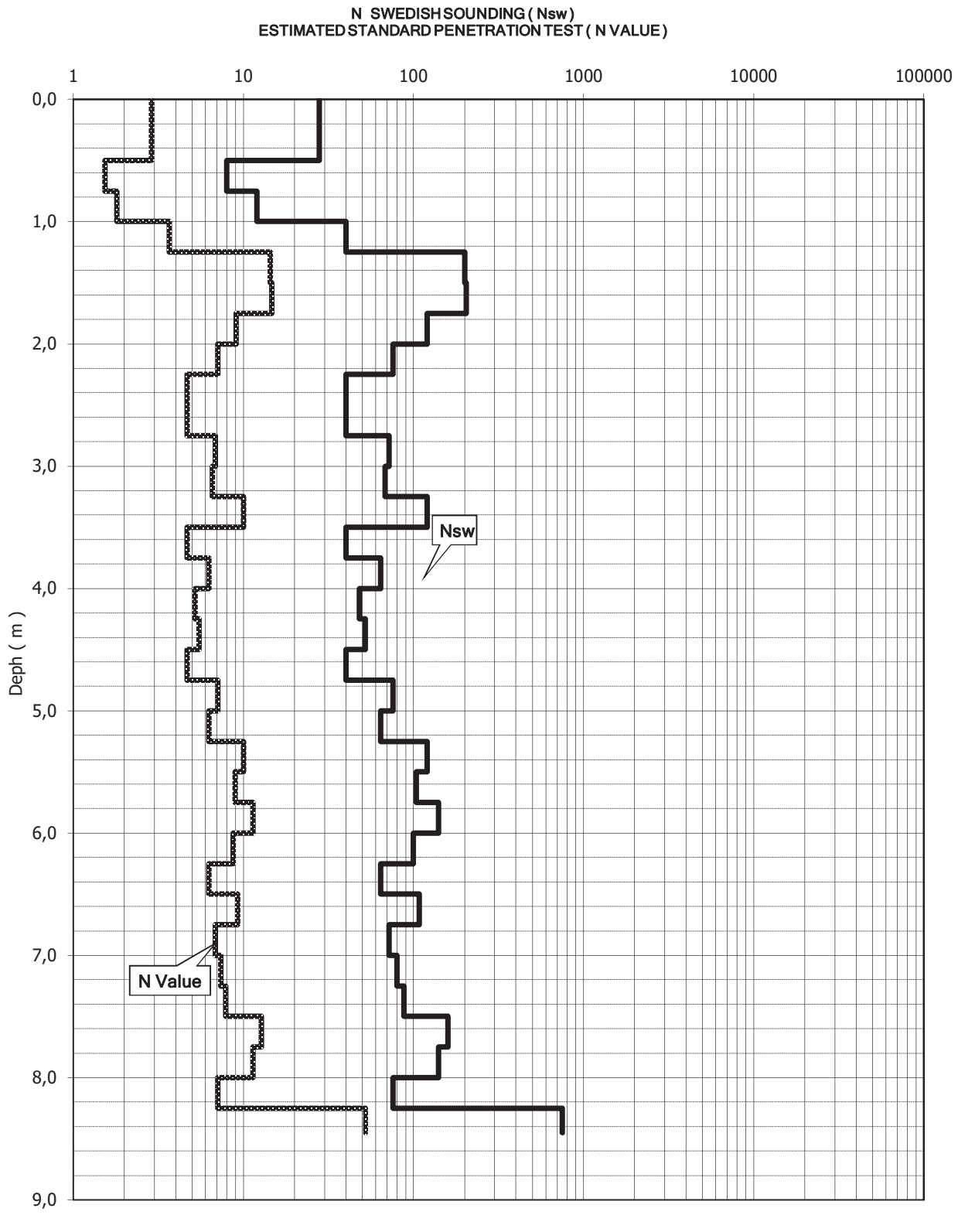
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BUMN
Hadir untuk negeri

ISO 9001 CQRS - 311/00
ISO 14001 CQRS - 3110004
OHSAS 18001 CQRS - 3110027

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-1	DATE	December 7, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	8,45	TESTED BY	REDY ARIANTO
COORDINAT	x = 825042	y = 9895812	GWL (m)		ELEVATION	+72 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 8, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-2		COORDINAT	x = 824733		y = 9895841	Elevation		+63 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	2	0,25	0,25	8	1						
25	2	0,50	0,25	8	1						
25	1	0,75	0,25	4	1						
25	1	1,00	0,25	4	1						
25	2	1,25	0,25	8	1						
25	2	1,50	0,25	8	1						
25	2	1,75	0,25	8	1						
25	3	2,00	0,25	12	1						
25	2	2,25	0,25	8	1						
25	2	2,50	0,25	8	1						
25	3	2,75	0,25	12	1						
25	3	3,00	0,25	12	1						
25	6	3,25	0,25	24	2						
25	4	3,50	0,25	16	2						
25	5	3,75	0,25	20	2						
25	11	4,00	0,25	44	3						
25	13	4,25	0,25	52	4						
25	15	4,50	0,25	60	5						
50	27	4,75	0,25	108	8						
50	20	5,00	0,25	80	6						
50	22	5,25	0,25	88	7						
50	12	5,50	0,25	48	4						
50	9	5,75	0,25	36	3						
50	9	6,00	0,25	36	3						
50	11	6,25	0,25	44	4						
50	12	6,50	0,25	48	4						
50	18	6,75	0,25	72	6						
50	11	7,00	0,25	44	4						
50	13	7,25	0,25	52	4						
50	14	7,50	0,25	56	5						
50	15	7,75	0,25	60	5						
100	6	8,00	0,25	24	4						
100	8	8,25	0,25	32	4						
100	19	8,50	0,25	76	7						
100	20	8,75	0,25	80	7						
100	18	9,00	0,25	72	7						
100	22	9,25	0,25	88	8						
100	24	9,50	0,25	96	8						
100	16	9,75	0,25	64	6						
100	19	10,00	0,25	76	7						

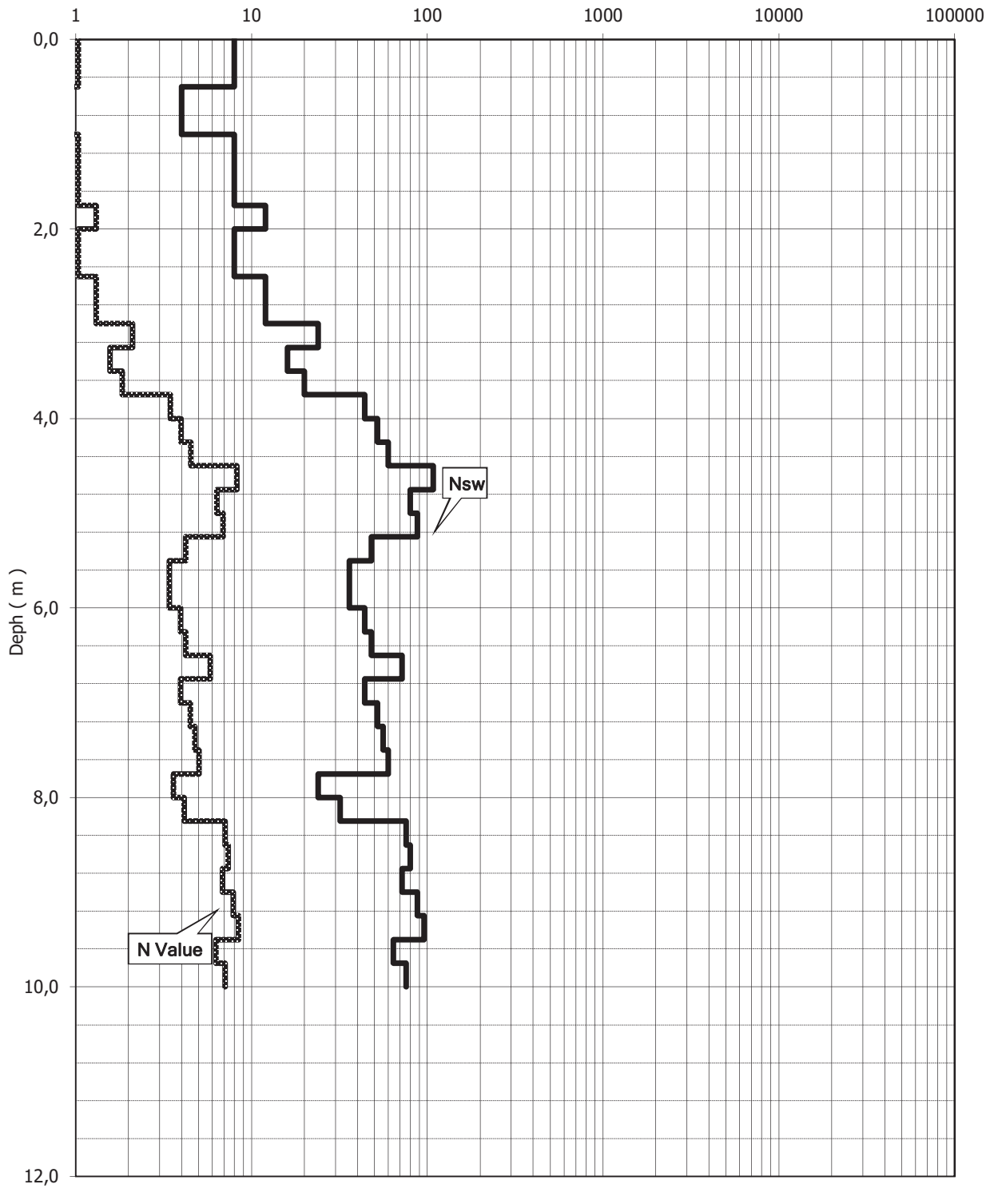
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BUMN
Hadir untuk negeri

ISO 9001 CQRS - 311764
ISO 14001 CQRS - 3110564
OHSAS 18001 CQRS - 3110527

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-2	DATE	December 8, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 824733	y = 9895841	GWL (m)	0,8	ELEVATION	+63 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 5, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-3		COORDINAT	x = 823970		y = 9895907	Elevation		+54 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	5	0,25	0,25	20	2						
25	6	0,50	0,25	24	2						
25	3	0,75	0,25	12	1						
25	2	1,00	0,25	8	1						
25	5	1,25	0,25	20	2						
25	5	1,50	0,25	20	2						
25	6	1,75	0,25	24	2						
25	5	2,00	0,25	20	2						
25	2	2,25	0,25	8	1						
25	2	2,50	0,25	8	1						
25	6	2,75	0,25	24	2						
25	9	3,00	0,25	36	3						
25	56	3,25	0,25	224	16						
100	19	3,50	0,25	76	7						
100	10	3,75	0,25	40	5						
100	2	4,00	0,25	8	3						
100	2	4,25	0,25	8	3						
100	2	4,50	0,25	8	3						
100	3	4,75	0,25	12	3						
100	11	5,00	0,25	44	5						
100	5	5,25	0,25	20	3						
100	10	5,50	0,25	40	5						
100	18	5,75	0,25	72	7						
100	17	6,00	0,25	68	7						
100	11	6,25	0,25	44	5						
100	10	6,50	0,25	40	5						
100	17	6,75	0,25	68	7						
100	9	7,00	0,25	36	4						
100	7	7,25	0,25	28	4						
100	4	7,50	0,25	16	3						
100	4	7,75	0,25	16	3						
100	15	8,00	0,25	60	6						
100	56	8,25	0,25	224	17						
100	40	8,50	0,25	160	13						
100	150	8,68	0,18	833	58						

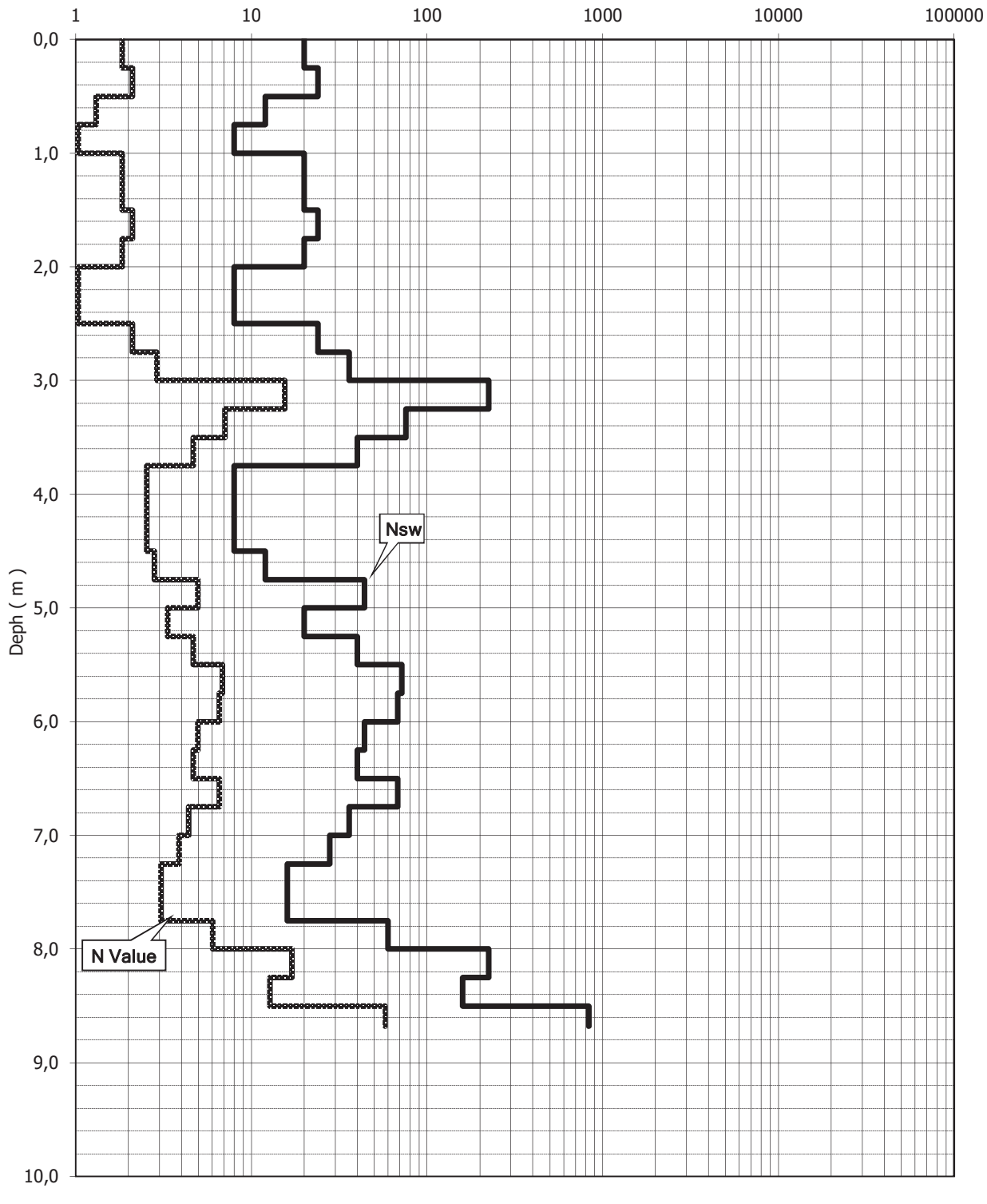
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BUMN
Hadir untuk negeri

ISO 9001 : 2008 CERT-001
ISO 14001 : 2004 CERT-002
OHSAS 18001 : 2007 CERT-003

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-3	DATE	December 5, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	8,68	TESTED BY	REDY ARIANTO
COORDINAT	x = 823970	y = 9895907	GWL (m)	2	ELEVATION	+54 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 4, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-4		COORDINAT	x = 823464		y = 9895996	Elevation		+50 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	16	0,25	0,25	64	5						
50	7	0,50	0,25	28	3						
50	4	0,75	0,25	16	2						
50	6	1,00	0,25	24	3						
50	6	1,25	0,25	24	3						
50	5	1,50	0,25	20	2						
50	4	1,75	0,25	16	2						
50	8	2,00	0,25	32	3						
50	3	2,25	0,25	12	2						
50	8	2,50	0,25	32	3						
50	14	2,75	0,25	56	5						
50	17	3,00	0,25	68	6						
50	27	3,25	0,25	108	8						
100	12	3,50	0,25	48	5						
100	6	3,75	0,25	24	4						
100	11	4,00	0,25	44	5						
100	9	4,25	0,25	36	4						
100	10	4,50	0,25	40	5						
100	7	4,75	0,25	28	4						
100	8	5,00	0,25	32	4						
100	14	5,25	0,25	56	6						
100	8	5,50	0,25	32	4						
100	8	5,75	0,25	32	4						
100	8	6,00	0,25	32	4						
100	8	6,25	0,25	32	4						
100	9	6,50	0,25	36	4						
100	7	6,75	0,25	28	4						
100	11	7,00	0,25	44	5						
100	14	7,25	0,25	56	6						
100	13	7,50	0,25	52	5						
100	13	7,75	0,25	52	5						
100	17	8,00	0,25	68	7						
100	20	8,25	0,25	80	7						
100	18	8,50	0,25	72	7						
100	18	8,75	0,25	72	7						
100	18	9,00	0,25	72	7						
100	15	9,25	0,25	60	6						
100	20	9,50	0,25	80	7						
100	17	9,75	0,25	68	7						
100	19	10,00	0,25	76	7						

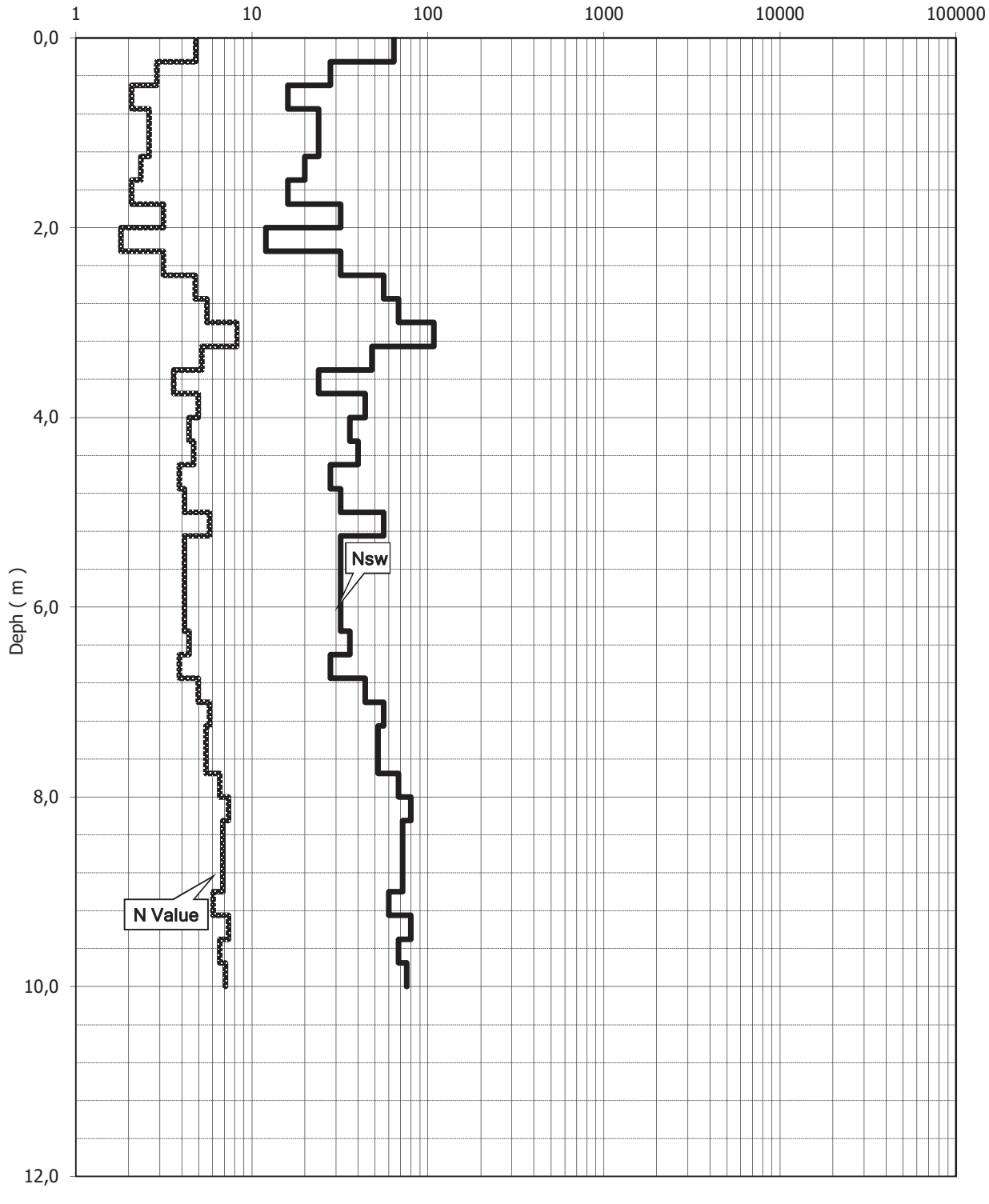
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BUMN
Hadir untuk negeri

ISO 9001 CQ56 - 311764
ISO 14001 CQ56 - 311764
OHSAS 18001 CQ59 - 311627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-4	DATE	December 4, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	10,00	TESTED BY	REDY ARIANTO
COORDINAT	x = 823464	y = 9895996	GWL (m)	2	ELEVATION	+50 meter



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Dhi. Sbl : Jalan Jend. Sudirman 27 Malang Telp.: (0341) 362881, Fax.: (0341) 324402, E-mail : divisi_sl@indrakarya.co.id atau lab_geoteknik_ika@yahoo.com

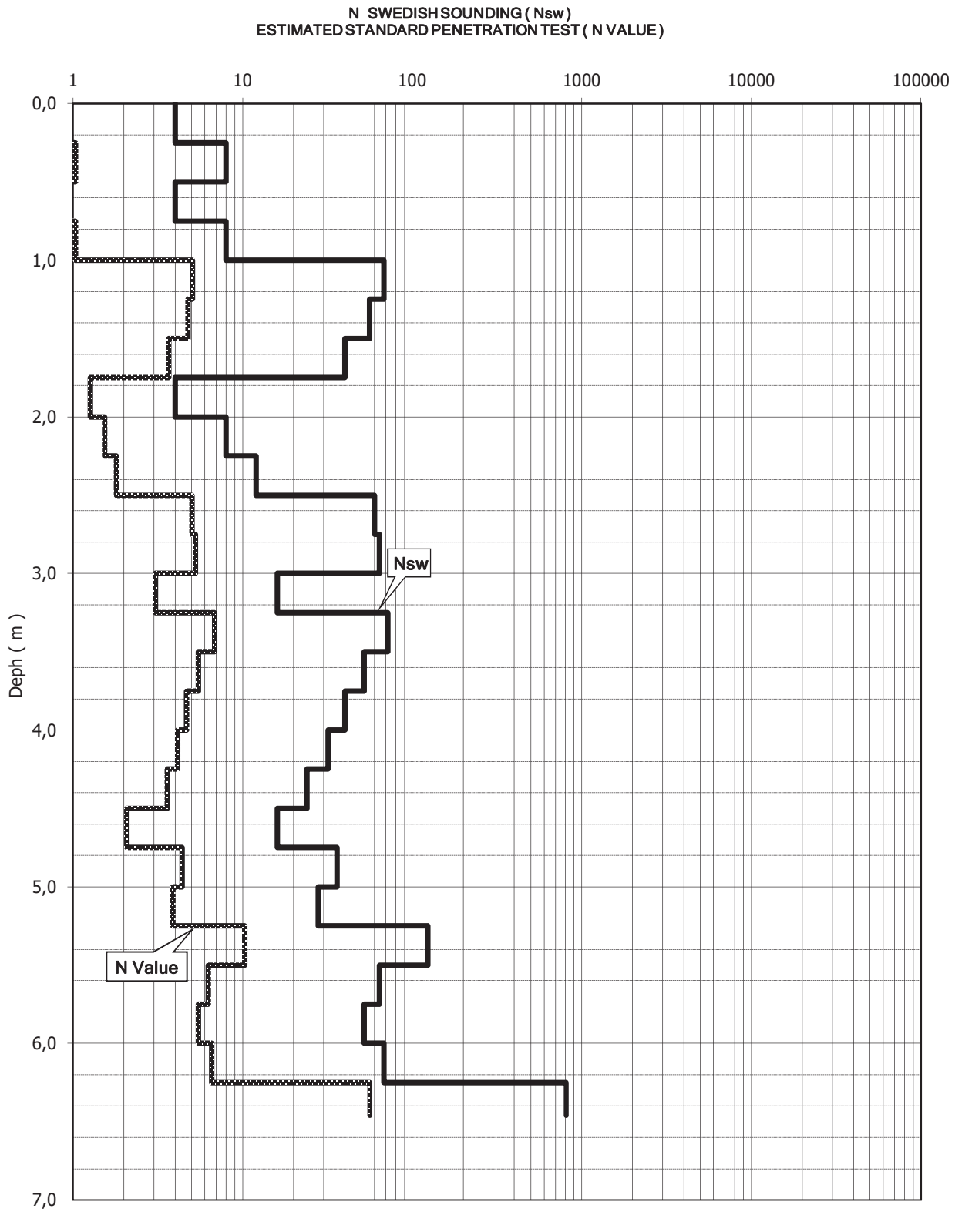
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 6, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-5		COORDINAT	x = 824407		y = 9896016	Elevation		+57 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	1	0,25	0,25	4	1						
25	2	0,50	0,25	8	1						
25	1	0,75	0,25	4	1						
25	2	1,00	0,25	8	1						
25	17	1,25	0,25	68	5						
50	14	1,50	0,25	56	5						
50	10	1,75	0,25	40	4						
50	1	2,00	0,25	4	1						
50	2	2,25	0,25	8	2						
50	3	2,50	0,25	12	2						
50	15	2,75	0,25	60	5						
50	16	3,00	0,25	64	5						
100	4	3,25	0,25	16	3						
100	18	3,50	0,25	72	7						
100	13	3,75	0,25	52	5						
100	10	4,00	0,25	40	5						
100	8	4,25	0,25	32	4						
100	6	4,50	0,25	24	4						
50	4	4,75	0,25	16	2						
100	9	5,00	0,25	36	4						
100	7	5,25	0,25	28	4						
100	31	5,50	0,25	124	10						
100	16	5,75	0,25	64	6						
100	13	6,00	0,25	52	5						
100	17	6,25	0,25	68	7						
100	170	6,46	0,21	810	56						

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Cbg. Sulteng : Jalan Jendral Sudirman No.27 Palu Telp.: (0451) 422241, Fax.: (0451) 424402, E-mail : cbgsulteng@indrakarya.co.id

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-5	DATE	December 6, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	6,46	TESTED BY	REDY ARIANTO
COORDINAT	x = 824407	y = 9896016	GWL (m)	1,5	ELEVATION	+57 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

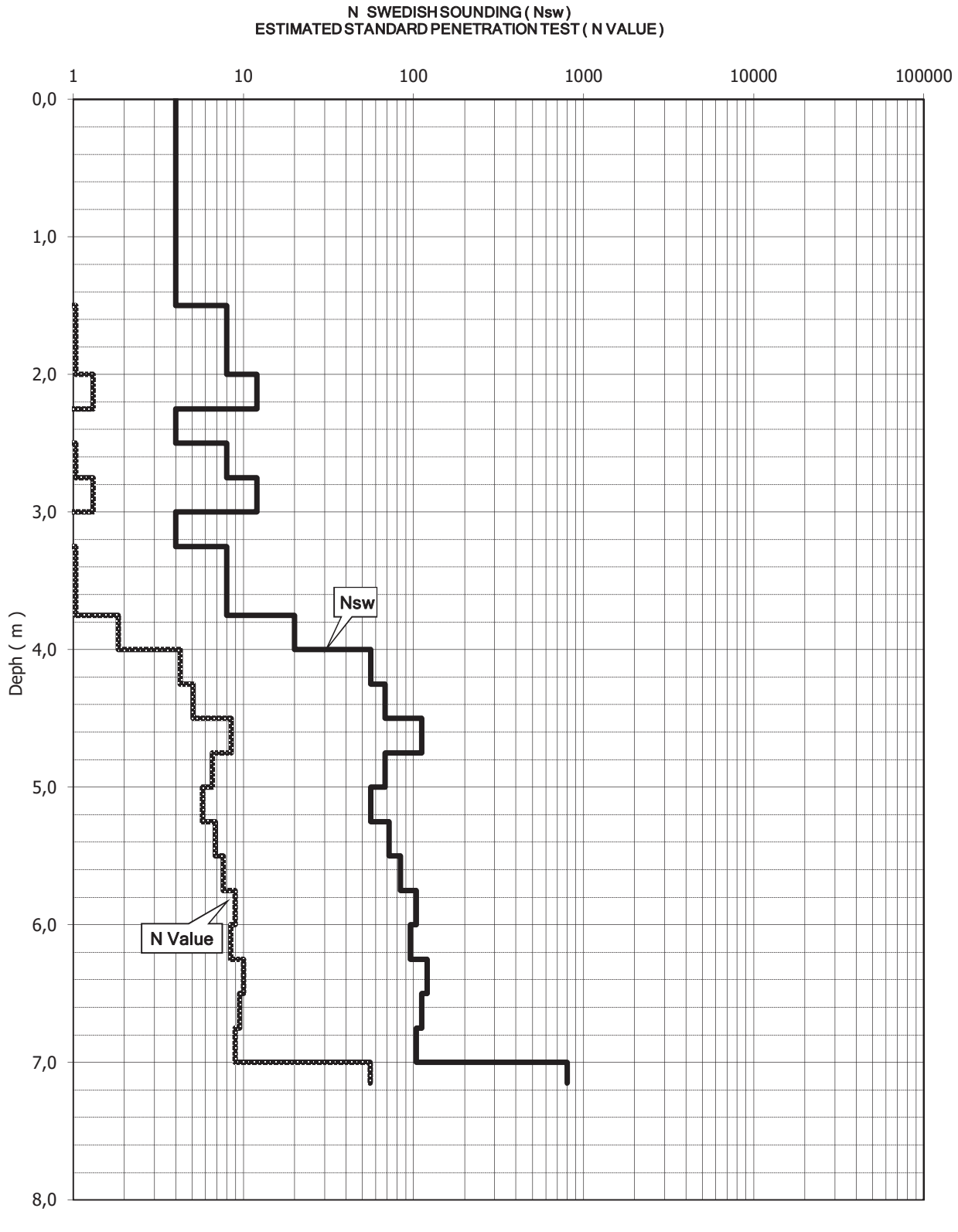
SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY							D a t e		December 6, 2018	
LOCATION	PETOBO							Tested by		REDY ARIANTO	
NO. OF TEST	P-S-6		COORDINAT	x = 824362		y = 9896181		Elevation		+55 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	1	0,25	0,25	4	1						
25	1	0,50	0,25	4	1						
25	1	0,75	0,25	4	1						
25	1	1,00	0,25	4	1						
25	1	1,25	0,25	4	1						
25	1	1,50	0,25	4	1						
25	2	1,75	0,25	8	1						
25	2	2,00	0,25	8	1						
25	3	2,25	0,25	12	1						
25	1	2,50	0,25	4	1						
25	2	2,75	0,25	8	1						
25	3	3,00	0,25	12	1						
25	1	3,25	0,25	4	1						
25	2	3,50	0,25	8	1						
25	2	3,75	0,25	8	1						
25	5	4,00	0,25	20	2						
25	14	4,25	0,25	56	4						
25	17	4,50	0,25	68	5						
50	28	4,75	0,25	112	9						
100	17	5,00	0,25	68	7						
100	14	5,25	0,25	56	6						
100	18	5,50	0,25	72	7						
100	21	5,75	0,25	84	8						
100	26	6,00	0,25	104	9						
100	24	6,25	0,25	96	8						
100	30	6,50	0,25	120	10						
100	28	6,75	0,25	112	10						
100	26	7,00	0,25	104	9						
100	120	7,15	0,15	800	56						

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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-6	DATE	December 6, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	7,15	TESTED BY	REDY ARIANTO
COORDINAT	x = 824362	y = 9896181	GWL (m)	0,5	ELEVATION	+55 meter



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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 4, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-7-1		COORDINAT	x = 825320		y = 9895832	Elevation		+80 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	6	0,25	0,25	24	2						
25	16	0,50	0,25	64	5						
25	5	0,75	0,25	20	2						
25	8	1,00	0,25	32	3						
25	21	1,25	0,25	84	6						
25	13	1,50	0,25	52	4						
25	15	1,75	0,25	60	5						
25	26	2,00	0,25	104	7						
25	38	2,25	0,25	152	11						
25	63	2,50	0,25	252	17						
50	4	2,75	0,25	16	2						
50	4	3,00	0,25	16	2						
100	100	3,10	0,10	1000	69						

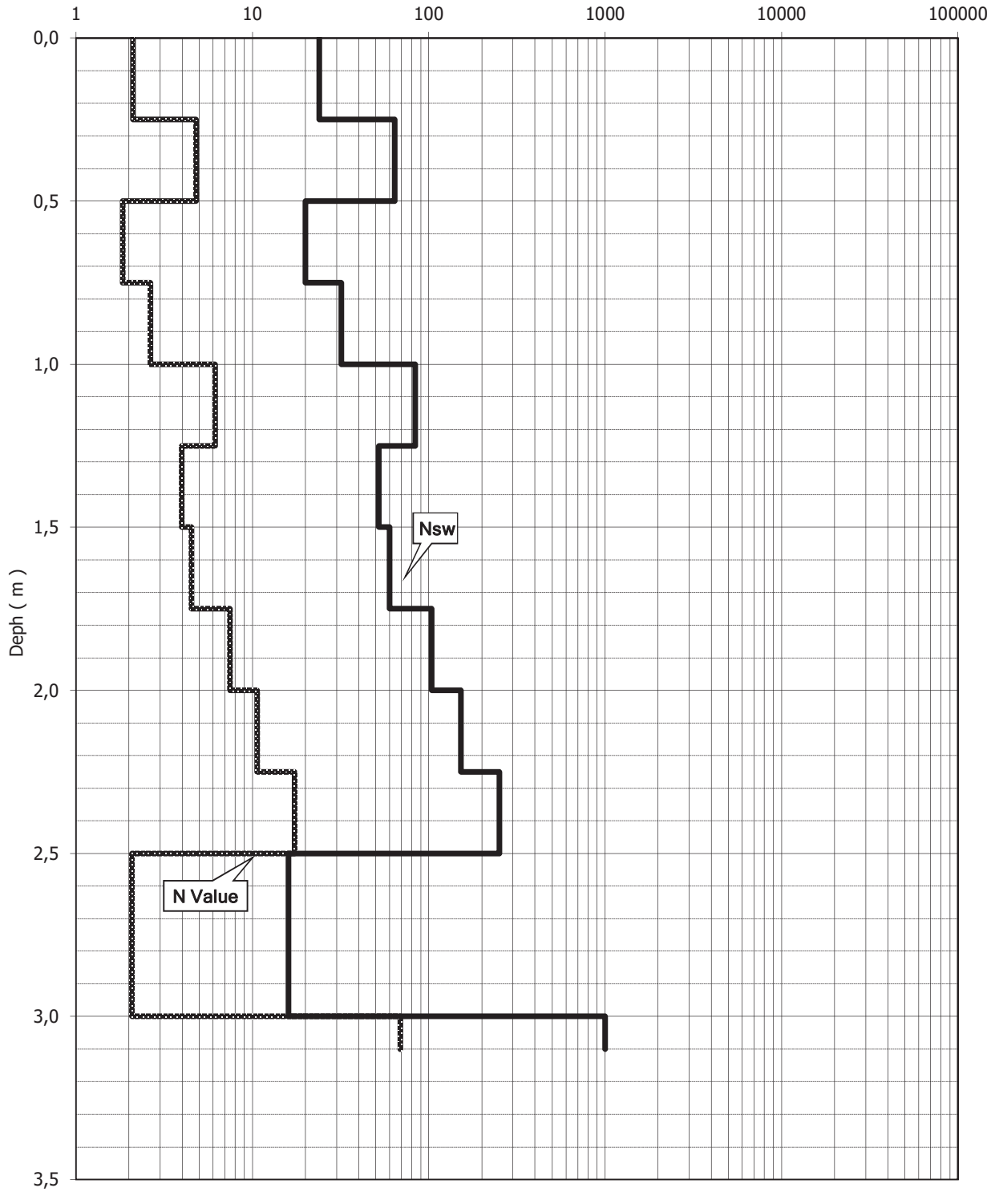
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 311788
ISO 14001 CQ96 - 311788
OHSAS 18001 CQ96 - 311788

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-7-1	DATE	December 4, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	3,10	TESTED BY	REDY ARIANTO
COORDINAT	x = 825320	y = 9895832	GWL (m)	-	ELEVATION	+80 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

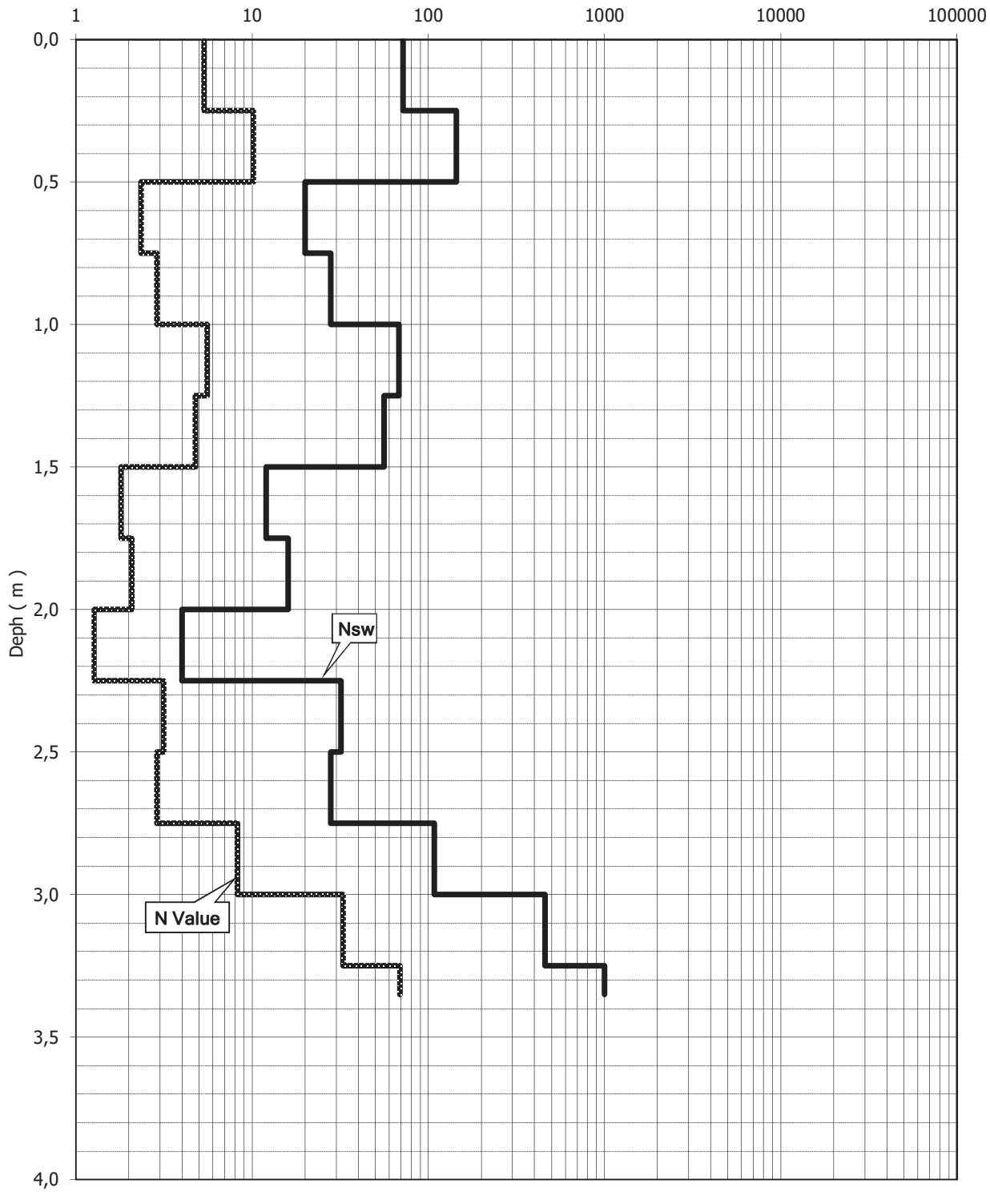
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 4, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-7-2		COORDINAT	x = 825320		y = 9895832	Elevation		+80 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
25	18	0,25	0,25	72	5						
25	36	0,50	0,25	144	10						
50	5	0,75	0,25	20	2						
50	7	1,00	0,25	28	3						
50	17	1,25	0,25	68	6						
50	14	1,50	0,25	56	5						
50	3	1,75	0,25	12	2						
50	4	2,00	0,25	16	2						
50	1	2,25	0,25	4	1						
50	8	2,50	0,25	32	3						
50	7	2,75	0,25	28	3						
50	27	3,00	0,25	108	8						
100	115	3,25	0,25	460	33						
100	100	3,35	0,10	1000	69						

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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-7-2	DATE	December 4, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	3,35	TESTED BY	REDY ARIANTO
COORDINAT	x = 825320	y = 9895832	GWL (m)	-	ELEVATION	+80 meter



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BUMN Hadir untuk negeri
ISO 9001 ISO 14001 OHSAS 18001

SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		December 4, 2018	
LOCATION		PETOBO						Tested by		REDY ARIANTO	
NO. OF TEST		P-S-7-3		COORDINAT	x = 825320		y = 9895832	Elevation		+80 meter	
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0	0	0						
50	5	0,25	0,25	20	2						
50	25	0,50	0,25	100	8						
50	11	0,75	0,25	44	4						
50	4	1,00	0,25	16	2						
50	10	1,25	0,25	40	4						
50	12	1,50	0,25	48	4						
50	17	1,75	0,25	68	6						
50	6	2,00	0,25	24	3						
50	6	2,25	0,25	24	3						
50	14	2,50	0,25	56	5						
50	11	2,75	0,25	44	4						
50	18	3,00	0,25	72	6						
100	150	3,18	0,18	833	58						

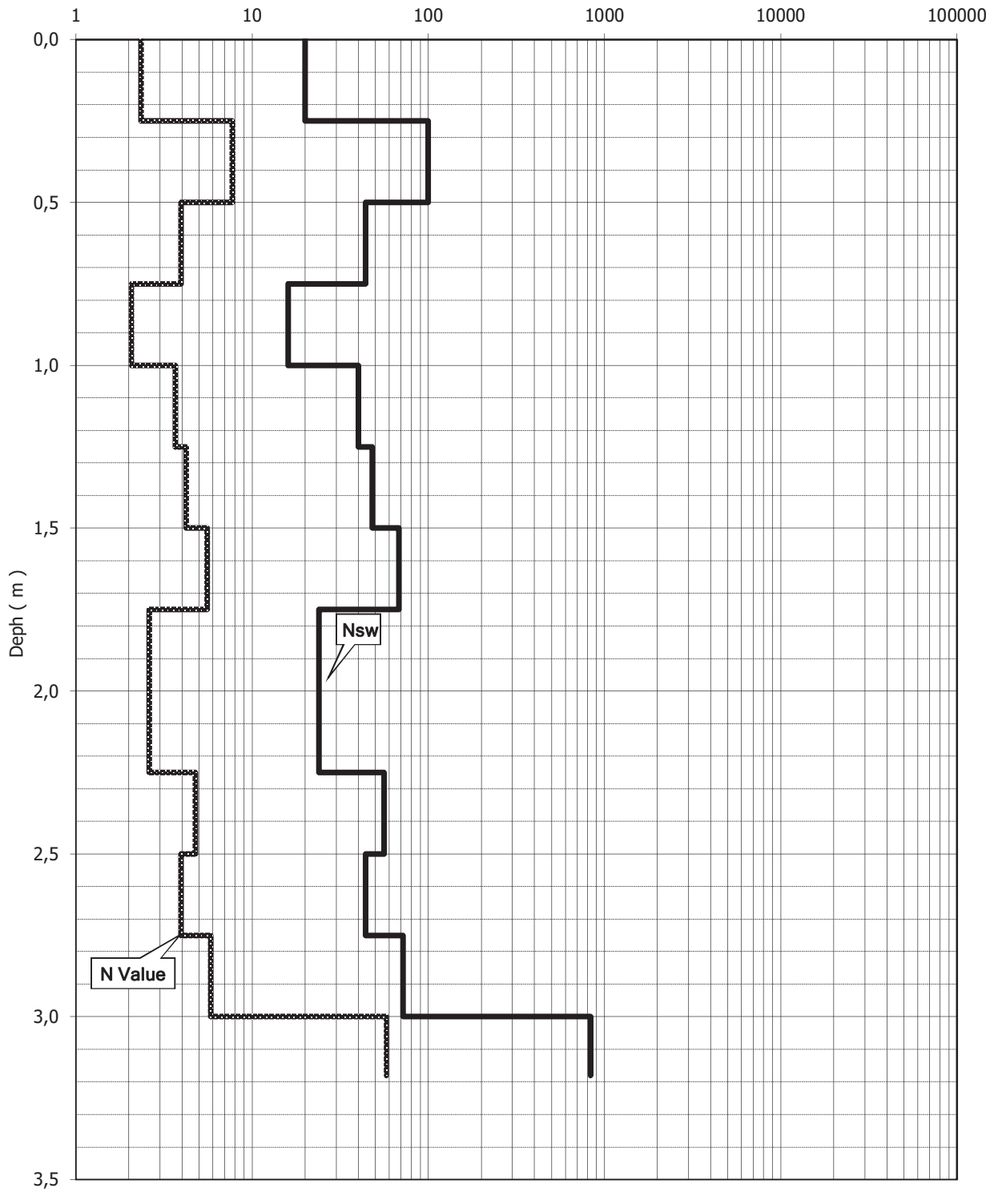
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BUMN
Hadir untuk negeri

ISO 9001 CQ96 - 201764
ISO 14001 CQ96 - 2400664
OHSAS 18001 CQ96 - 2401627

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY		NO. OF TEST	P-S-7-3	DATE	December 4, 2018
LOCATION	PETOBO		TOTAL DEPTH (m)	3,18	TESTED BY	REDY ARIANTO
COORDINAT	x = 825320	y = 9895832	GWL (m)	-	ELEVATION	+80 meter



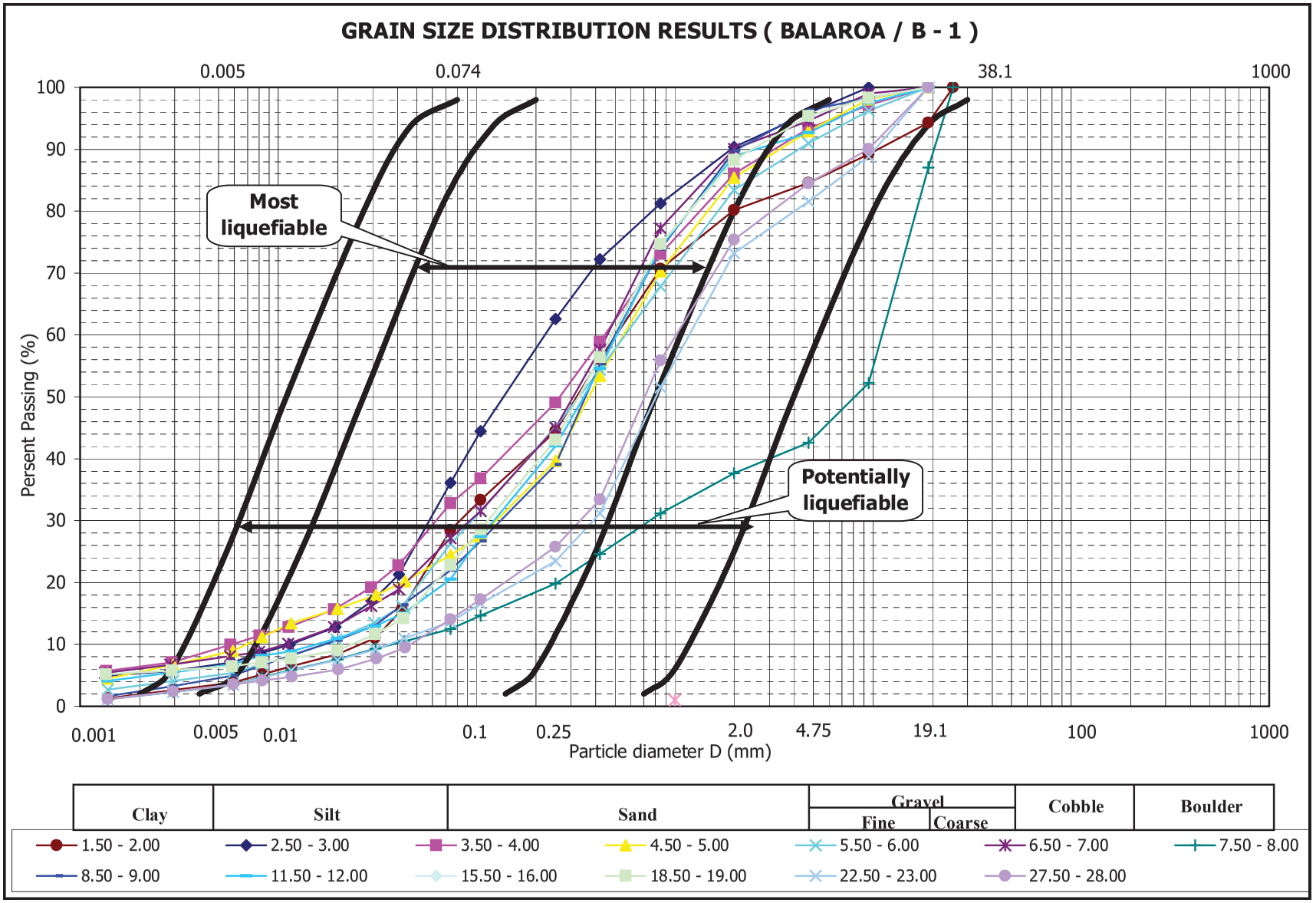
APPENDIX-5

LABORATORY TEST

Sample Name	B - 1		B - 1		B - 1		B - 1		B - 1		B - 1	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 1		B - 1		B - 1		B - 1		B - 1		B - 1	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	-		-		-		-		-		-	
D90	10.9814		1.9570		3.4783		3.6764		4.3844		1.9955	
D60	0.5351		0.2292		0.4549		0.5882		0.5986		0.4712	
D50	0.3308		0.1493		0.2656		0.3782		0.3389		0.3174	
D30	0.0838		0.0603		0.0647		0.1355		0.0961		0.0942	
D10	0.0265		0.0116		0.0058		0.0070		0.0172		0.0110	
ρs density of soil grain	2.707		2.710		2.692		2.689		2.698		2.749	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40	100.00	25.40		25.40		25.40		25.40		25.40	
	19.10	94.30	19.10		19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00
	9.52	89.23	9.52	100.00	9.52	97.14	9.52	98.09	9.52	96.24	9.52	98.96
	4.75	84.54	4.75	95.86	4.75	93.39	4.75	92.93	4.75	91.01	4.75	94.61
	2.00	80.20	2.00	90.34	2.00	86.06	2.00	85.43	2.00	83.42	2.00	90.05
	0.85	70.65	0.85	81.26	0.85	73.09	0.85	70.31	0.85	67.84	0.85	77.22
	0.42	56.11	0.42	72.25	0.42	58.85	0.42	53.38	0.42	54.43	0.42	57.67
	0.25	44.47	0.25	62.60	0.25	49.11	0.25	39.63	0.25	45.15	0.25	44.96
	0.11	33.37	0.11	44.46	0.11	36.77	0.11	27.43	0.11	31.52	0.11	31.53
	0.07	28.45	0.07	36.09	0.07	32.79	0.07	24.43	0.07	26.25	0.07	27.14
Hydrometer Analysis	0.0421	15.56	0.0407	21.33	0.0404	22.76	0.0436	20.19	0.0422	16.23	0.0407	18.87
	0.0308	11.02	0.0297	17.06	0.0294	19.21	0.0312	17.95	0.0305	13.53	0.0294	16.17
	0.0199	8.43	0.0194	12.80	0.0191	15.65	0.0199	15.71	0.0197	10.82	0.0191	12.80
	0.0116	6.48	0.0114	9.95	0.0113	12.80	0.0116	13.46	0.0116	8.12	0.0112	10.11
	0.0083	5.19	0.0082	8.53	0.0080	11.38	0.0083	11.22	0.0083	6.76	0.0080	8.76
	0.0059	3.89	0.0058	7.11	0.0057	9.96	0.0059	8.97	0.0059	5.41	0.0057	8.09
	0.0030	2.59	0.0029	5.69	0.0029	7.11	0.0029	6.73	0.0029	4.06	0.0028	6.74
	0.0014	1.30	0.0014	4.98	0.0014	5.69	0.0014	4.49	0.0014	2.71	0.0013	5.39

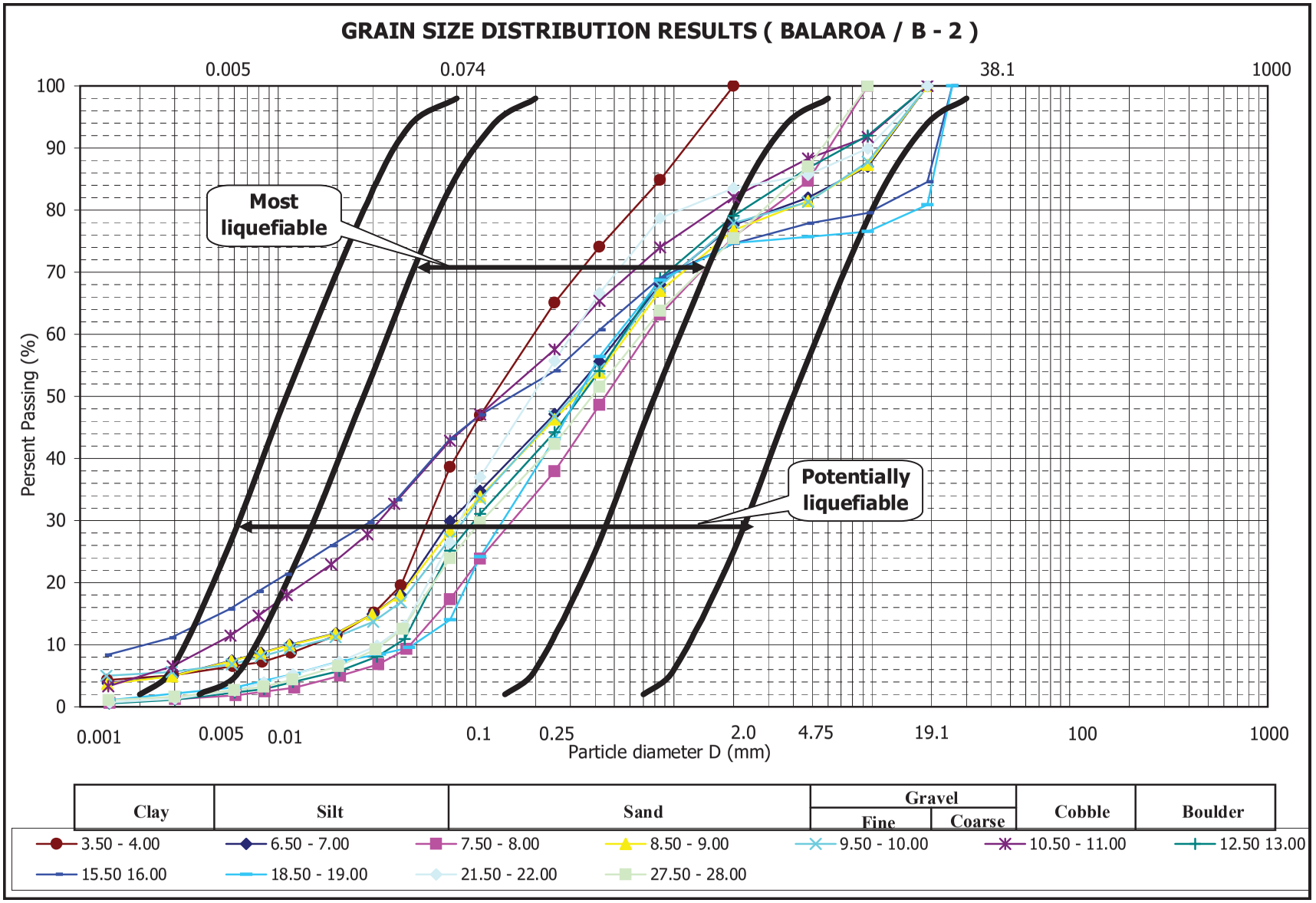
Sample Name	B - 1		B - 1		B - 1		B - 1		B - 1		B - 1	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019		January 11, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 1		B - 1		B - 1		B - 1		B - 1		B - 1	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	7.50		8.50		11.50		15.50		18.50		22.50	
Lower Depth(m)	8.00		9.00		12.00		16.00		19.00		23.00	
Soil classification	-		-		-		-		-		-	
D90	20.5432		2.1161		2.7964		2.6661		1.6407		10.5264	
D60	11.6609		0.5289		0.5386		0.5045		0.4850		1.2971	
D50	8.4187		0.3644		0.3580		0.3386		0.3383		0.8169	
D30	0.7752		0.1439		0.1307		0.1192		0.1035		0.3947	
D10	0.0378		0.0175		0.0161		0.0239		0.0064		0.0365	
ρs density of soil grain	2.715		2.757		2.674		2.697		2.691		2.712	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40	100.00	25.40		25.40		25.40	100.00	25.40		25.40	
	19.10	87.03	19.10	100.00	19.10	100.00	19.10	100.00	19.10		19.10	100.00
	9.52	52.22	9.52	98.33	9.52	97.42	9.52	98.29	9.52	100.00	9.52	88.83
	4.75	42.60	4.75	96.26	4.75	92.70	4.75	95.35	4.75	98.83	4.75	81.55
	2.00	37.68	2.00	89.72	2.00	88.90	2.00	88.29	2.00	95.85	2.00	73.25
	0.85	31.14	0.85	73.81	0.85	74.23	0.85	74.66	0.85	77.12	0.85	51.57
	0.42	24.60	0.42	55.31	0.42	54.58	0.42	56.41	0.42	56.95	0.42	31.15
	0.25	19.82	0.25	39.06	0.25	42.03	0.25	43.02	0.25	42.48	0.25	23.45
	0.11	14.70	0.11	26.68	0.11	27.41	0.11	28.59	0.11	30.26	0.11	16.58
	0.07	12.50	0.07	21.98	0.07	20.51	0.07	22.88	0.07	24.93	0.07	13.67
Hydrometer Analysis	0.0433	10.52	0.0424	16.34	0.0429	15.02	0.0427	14.21	0.0409	20.64	0.0431	10.95
	0.0309	9.35	0.0306	13.07	0.0308	12.97	0.0308	11.62	0.0296	17.89	0.0310	9.22
	0.0198	7.60	0.0196	10.62	0.0198	10.93	0.0199	9.04	0.0191	15.14	0.0199	7.49
	0.0116	5.85	0.0115	8.17	0.0116	8.88	0.0116	7.75	0.0113	12.38	0.0116	5.76
	0.0083	4.68	0.0082	6.54	0.0082	8.19	0.0082	7.10	0.0080	11.01	0.0083	4.61
	0.0059	3.51	0.0058	4.90	0.0059	6.83	0.0058	6.46	0.0057	9.63	0.0059	3.46
	0.0030	2.34	0.0029	3.27	0.0029	5.46	0.0029	5.81	0.0029	6.88	0.0030	2.30
	0.0014	1.17	0.0014	1.63	0.0014	4.10	0.0014	5.17	0.0014	5.50	0.0014	1.15

Sample Name	B - 1											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 11, 2019											
Tester	PT. INDRA KARYA											
Sample No	B - 1											
Location	BALAROA											
Upper Depth(m)	27.50											
Lower Depth(m)	28.00											
Soil classification	-											
D90	9.5103											
D60	1.0934											
D50	0.7376											
D30	0.3440											
D10	0.0471											
ρs density of soil grain	2.703											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10	100.00										
	9.52	90.01										
	4.75	84.52										
	2.00	75.36										
	0.85	55.88										
	0.42	33.39										
	0.25	25.80										
	0.11	17.31										
	0.07	14.05										
Hydrometer Analysis	0.0439	9.52										
	0.0315	7.74										
	0.0202	5.95										
	0.0118	4.76										
	0.0084	4.17										
	0.0059	3.57										
	0.0030	2.38										
	0.0014	1.19										


GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 1)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
11.50 - 12.00
15.50 - 16.00
18.50 - 19.00
22.50 - 23.00
27.50 - 28.00

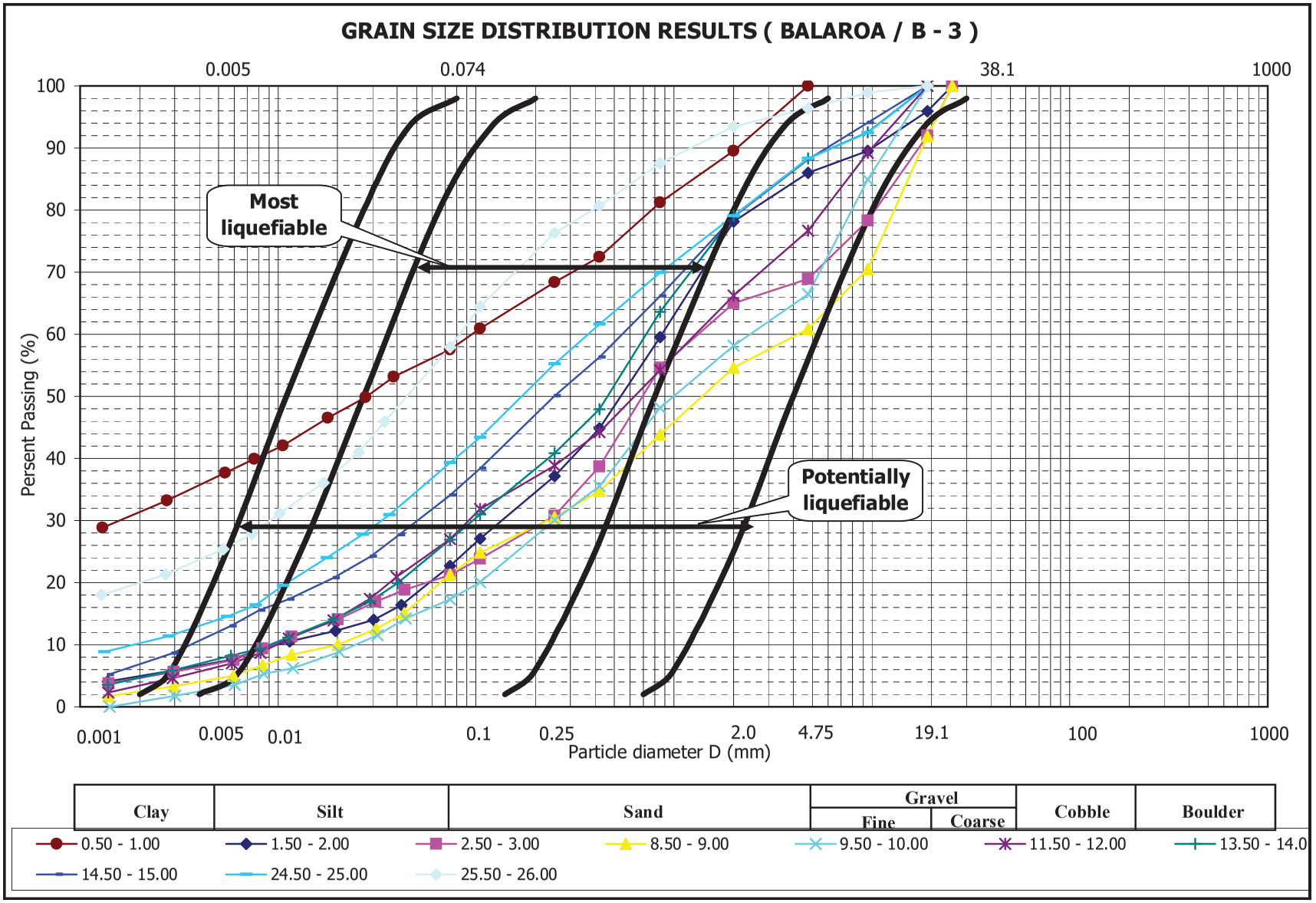
Sample Name	B - 2		B - 2		B - 2		B - 2		B - 2		B - 2	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 2		B - 2		B - 2		B - 2		B - 2		B - 2	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	3.50		6.50		7.50		8.50		9.50		10.50	
Lower Depth(m)	4.00		7.00		8.00		9.00		10.00		11.00	
Soil classification	-		-		-		-		-		-	
D90	1.2399		11.7248		10.4780		11.5330		11.2917		7.0750	
D60	0.2097		0.5725		0.7569		0.6205		0.5996		0.3037	
D50	0.1299		0.3077		0.4424		0.3331		0.3218		0.1458	
D30	0.0595		0.0745		0.1339		0.0835		0.0880		0.0330	
D10	0.0154		0.0116		0.0438		0.0119		0.0142		0.0049	
ρs density of soil grain	2.708		2.701		2.697		2.720		2.725		2.718	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10		19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52	87.01	9.52	100.00	9.52	87.34	9.52	87.73	9.52	91.74
	4.75		4.75	82.02	4.75	84.70	4.75	81.44	4.75	81.31	4.75	88.35
	2.00	100.00	2.00	77.60	2.00	75.71	2.00	76.80	2.00	77.92	2.00	82.08
	0.85	84.87	0.85	68.02	0.85	63.15	0.85	67.03	0.85	67.76	0.85	74.01
	0.42	74.10	0.42	55.59	0.42	48.59	0.42	53.86	0.42	54.43	0.42	65.39
	0.25	65.05	0.25	47.12	0.25	37.94	0.25	46.31	0.25	46.76	0.25	57.51
	0.11	46.88	0.11	34.73	0.11	23.88	0.11	33.84	0.11	33.54	0.11	47.06
	0.07	38.61	0.07	29.92	0.07	17.31	0.07	28.31	0.07	27.10	0.07	42.82
Hydrometer Analysis	0.0419	19.52	0.0415	18.06	0.0447	9.31	0.0412	17.92	0.0416	16.84	0.0386	32.70
	0.0306	15.18	0.0301	14.94	0.0322	6.83	0.0300	14.83	0.0303	13.72	0.0283	27.80
	0.0198	11.57	0.0196	11.83	0.0207	4.97	0.0195	11.74	0.0195	11.23	0.0186	22.89
	0.0117	8.68	0.0115	9.96	0.0121	3.10	0.0114	9.89	0.0114	9.36	0.0111	17.99
	0.0083	7.23	0.0082	8.72	0.0086	2.48	0.0081	8.65	0.0082	8.11	0.0080	14.72
	0.0059	6.51	0.0058	7.47	0.0061	1.86	0.0058	7.42	0.0058	6.86	0.0058	11.45
	0.0030	5.06	0.0029	4.98	0.0030	1.24	0.0029	4.94	0.0029	5.61	0.0029	6.54
	0.0014	4.34	0.0014	3.74	0.0014	0.62	0.0014	3.71	0.0014	4.99	0.0014	3.27

Sample Name	B - 2		B - 2		B - 2		B - 2		B - 2			
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018			
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA			
Sample No	B - 2		B - 2		B - 2		B - 2		B - 2			
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA			
Upper Depth(m)	12.50		15.50		18.50		21.50		27.50			
Lower Depth(m)	13.00		16.00		19.00		22.00		28.00			
Soil classification	-		CL - ML		-		-		-			
D90	7.7143		21.3306		22.1098		9.5624		5.8461			
D60	0.5910		0.4018		0.5463		0.3173		0.7175			
D50	0.3498		0.1665		0.3382		0.2060		0.3919			
D30	0.0995		0.0297		0.1498		0.0845		0.1088			
D10	0.0397		0.0023		0.0489		0.0322		0.0337			
ρs density of soil grain	2.715		2.734		2.695		2.702		2.718			
WL	NON PLASTIS		23.15		NON PLASTIS		NON PLASTIS		NON PLASTIS			
Wp			18.18									
Ip	-		4.97		-		-		-			
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)		
Sieve Analysis	38.10		38.10		38.10		38.10		38.10			
	25.40		25.40	100.00	25.40	100.00	25.40		25.40			
	19.10	100.00	19.10	84.52	19.10	80.85	19.10	100.00	19.10			
	9.52	91.97	9.52	79.56	9.52	76.57	9.52	89.96	9.52	100.00		
	4.75	86.77	4.75	77.86	4.75	75.66	4.75	85.68	4.75	87.02		
	2.00	79.11	2.00	74.61	2.00	74.71	2.00	83.53	2.00	75.50		
	0.85	69.00	0.85	69.09	0.85	68.72	0.85	78.71	0.85	63.78		
	0.42	54.06	0.42	60.71	0.42	56.37	0.42	66.62	0.42	51.52		
	0.25	44.22	0.25	54.08	0.25	43.14	0.25	55.66	0.25	42.30		
	0.11	31.04	0.11	46.99	0.11	24.14	0.11	36.99	0.11	29.67		
	0.07	25.18	0.07	43.17	0.07	13.97	0.07	26.43	0.07	23.92		
Hydrometer Analysis	0.0436	10.93	0.0394	33.30	0.0460	9.53	0.0435	13.11	0.0426	12.52		
	0.0316	8.05	0.0286	29.60	0.0327	8.48	0.0316	9.83	0.0311	9.26		
	0.0204	5.75	0.0185	25.90	0.0208	7.42	0.0203	7.21	0.0201	6.53		
	0.0119	4.03	0.0110	21.28	0.0121	5.30	0.0119	5.24	0.0119	4.36		
	0.0085	2.88	0.0079	18.50	0.0086	4.24	0.0085	3.93	0.0085	3.27		
	0.0060	2.30	0.0057	15.73	0.0061	3.18	0.0061	2.62	0.0060	2.72		
	0.0030	1.15	0.0029	11.10	0.0030	2.12	0.0030	1.31	0.0030	1.63		
	0.0014	0.58	0.0013	8.33	0.0014	1.06	0.0014	0.66	0.0014	1.09		


GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 2)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
3.50 - 4.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
12.50 13.00
15.50 16.00
18.50 - 19.00
21.50 - 22.00
27.50 - 28.00

Sample Name	B - 3		B - 3		B - 3		B - 3		B - 3		B - 3	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 10, 2019		January 10, 2019		January 10, 2019		January 10, 2019		January 10, 2019		January 10, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 3		B - 3		B - 3		B - 3		B - 3		B - 3	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	0.50		1.50		2.50		8.50		9.50		11.50	
Lower Depth(m)	1.00		2.00		3.00		9.00		10.00		12.00	
Soil classification	CL		-		-		-		-		-	
D90	2.1308		10.2140		17.7058		18.2506		12.7546		10.1936	
D60	0.0963		0.8787		1.4479		4.3734		2.6016		1.4036	
D50	0.0281		0.5713		0.7262		1.5051		1.0643		0.6679	
D30	0.0017		0.1469		0.2341		0.2361		0.2485		0.0931	
D10	-		0.0100		0.0094		0.0199		0.0252		0.0099	
ρs density of soil grain	2.567		2.674		2.694		2.737		2.714		2.701	
WL	42.54		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp	22.80											
Ip	19.73		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40	100.00	25.40	100.00	25.40	100.00	25.40		25.40	
	19.10		19.10	95.93	19.10	91.99	19.10	91.90	19.10	100.00	19.10	100.00
	9.52		9.52	89.54	9.52	78.32	9.52	70.47	9.52	84.90	9.52	89.24
	4.75	100.00	4.75	85.98	4.75	68.90	4.75	60.85	4.75	66.46	4.75	76.70
	2.00	89.50	2.00	78.18	2.00	65.00	2.00	54.64	2.00	58.19	2.00	66.22
	0.85	81.23	0.85	59.54	0.85	54.58	0.85	43.86	0.85	48.12	0.85	54.23
	0.42	72.44	0.42	44.82	0.42	38.67	0.42	34.77	0.42	35.52	0.42	44.25
	0.25	68.40	0.25	37.17	0.25	30.76	0.25	30.55	0.25	30.11	0.25	38.82
	0.11	60.96	0.11	27.09	0.11	23.87	0.11	24.82	0.11	20.09	0.11	31.87
	0.07	57.56	0.07	22.71	0.07	21.21	0.07	21.31	0.07	17.34	0.07	26.97
Hydrometer Analysis	0.0383	53.19	0.0420	16.35	0.0436	18.81	0.0435	15.05	0.0442	14.20	0.0398	20.90
	0.0277	49.86	0.0304	14.02	0.0312	16.93	0.0312	12.54	0.0317	11.54	0.0292	17.42
	0.0179	46.54	0.0195	12.26	0.0200	14.11	0.0200	10.03	0.0204	8.88	0.0191	13.94
	0.0106	42.11	0.0114	10.51	0.0117	11.29	0.0117	8.36	0.0119	6.21	0.0113	11.03
	0.0076	39.89	0.0082	9.34	0.0084	9.41	0.0083	6.69	0.0085	5.33	0.0081	8.71
	0.0054	37.67	0.0059	7.59	0.0060	7.53	0.0059	5.02	0.0060	3.55	0.0058	6.97
	0.0027	33.24	0.0029	5.84	0.0030	5.64	0.0030	3.34	0.0030	1.78	0.0029	4.65
	0.0013	28.81	0.0014	4.09	0.0014	3.76	0.0014	1.67	0.0014	0.00	0.0014	2.32

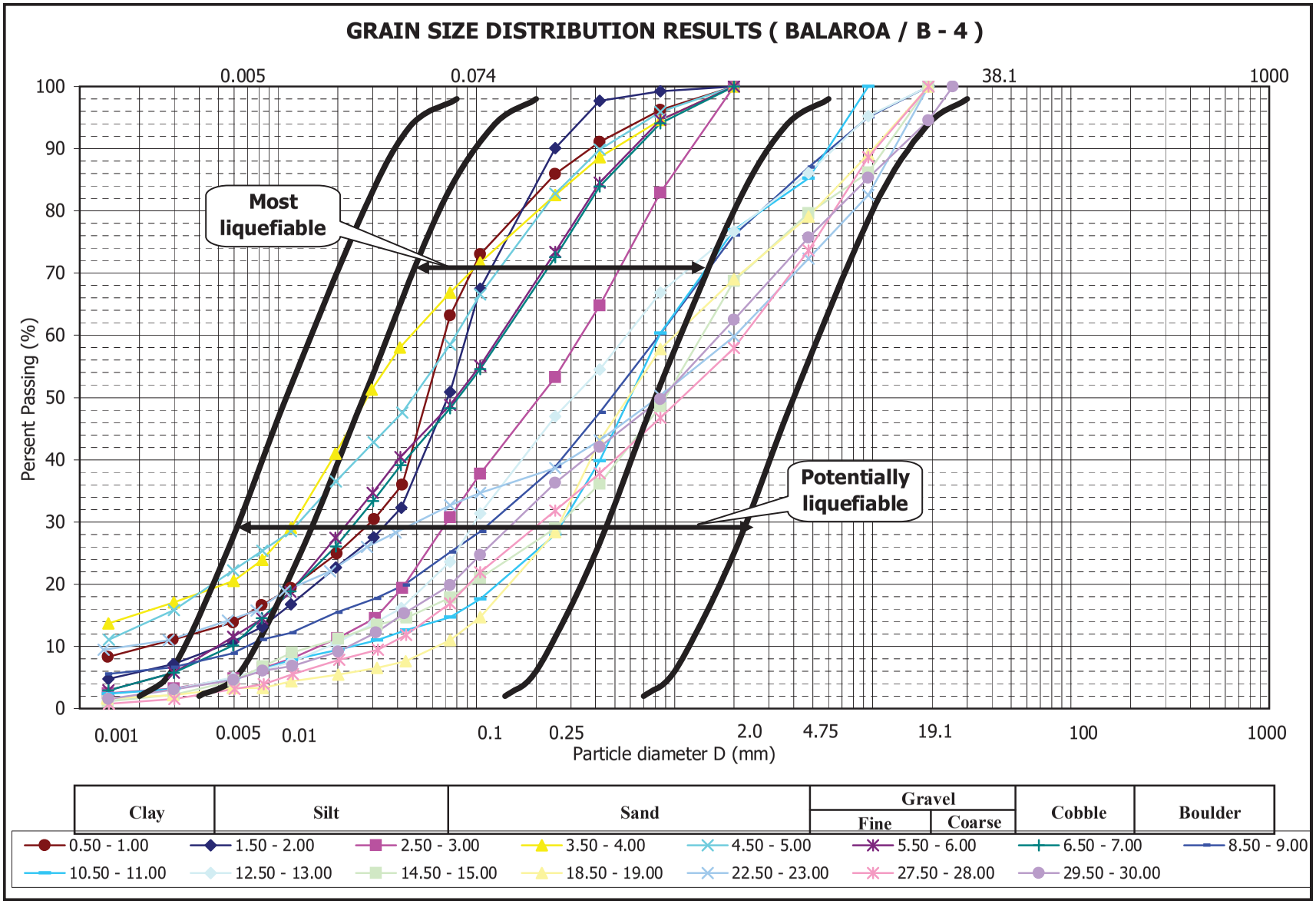
Sample Name	B - 3		B - 3		B - 3		B - 3					
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 10, 2019		January 10, 2019		January 10, 2019		January 10, 2019					
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA					
Sample No	B - 3		B - 3		B - 3		B - 3					
Location	BALAROA		BALAROA		BALAROA		BALAROA					
Upper Depth(m)	13.50		14.50		24.50		25.50					
Lower Depth(m)	14.00		15.00		25.00		26.00					
Soil classification	-		-		-		CL - ML					
D90	6.6762		6.2616		6.6696		1.3295					
D60	0.7503		0.5818		0.3771		0.0839					
D50	0.4764		0.2487		0.1861		0.0481					
D30	0.0975		0.0529		0.0337		0.0092					
D10	0.0092		0.0038		0.0020		-					
ρs density of soil grain	2.705		2.700		2.696		2.695					
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		25.43					
Wp							18.71					
Ip	-		-		-		6.72					
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)				
Sieve Analysis	38.10		38.10		38.10		38.10					
	25.40		25.40		25.40		25.40					
	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00				
	9.52	92.50	9.52	94.05	9.52	92.49	9.52	98.90				
	4.75	88.31	4.75	88.12	4.75	88.32	4.75	96.40				
	2.00	79.10	2.00	78.94	2.00	79.11	2.00	93.43				
	0.85	63.64	0.85	66.13	0.85	69.92	0.85	87.55				
	0.42	47.94	0.42	56.30	0.42	61.61	0.42	80.66				
	0.25	40.83	0.25	50.11	0.25	55.22	0.25	76.29				
	0.11	30.98	0.11	38.39	0.11	43.38	0.11	64.48				
	0.07	26.94	0.07	34.07	0.07	39.30	0.07	57.90				
Hydrometer Analysis	0.0402	19.96	0.0408	27.67	0.0366	30.93	0.0346	45.89				
	0.0293	17.02	0.0295	24.21	0.0268	27.77	0.0257	40.97				
	0.0190	14.09	0.0191	20.75	0.0176	23.98	0.0169	36.05				
	0.0113	11.15	0.0112	17.29	0.0106	19.57	0.0102	31.14				
	0.0081	9.39	0.0080	15.56	0.0077	16.41	0.0074	27.86				
	0.0058	8.22	0.0058	12.97	0.0055	14.52	0.0053	25.40				
	0.0029	5.87	0.0029	8.65	0.0028	11.36	0.0027	21.30				
	0.0014	3.52	0.0014	5.19	0.0013	8.84	0.0013	18.03				


GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 3)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
8.50 - 9.00
9.50 - 10.00
11.50 - 12.00
13.50 - 14.0
14.50 - 15.00
24.50 - 25.00
25.50 - 26.00

Sample Name	B - 4		B - 4		B - 4		B - 4		B - 4		B - 4	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 4		B - 4		B - 4		B - 4		B - 4		B - 4	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		-		-		CL		CL		SC	
D90	0.3832		0.2496		1.0175		0.5174		0.4311		0.6533	
D60	0.8078		0.7769		0.3491		0.7210		0.9569		0.1437	
D50	0.0587		0.0725		0.2195		0.0285		0.0493		0.0800	
D30	0.0297		0.0365		0.0719		0.0123		0.0131		0.0232	
D10	0.0023		0.0053		0.0166		-		-		0.0051	
ρs density of soil grain	2.685		2.696		2.719		2.634		2.619		2.714	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		44.54		42.32		29.02	
Wp							24.31		23.61		21.93	
Ip	-		-		-		20.23		18.71		7.09	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	
	4.75		4.75		4.75		4.75		4.75		4.75	
	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00
	0.85	96.25	0.85	99.22	0.85	82.94	0.85	94.64	0.85	95.92	0.85	94.62
	0.42	91.12	0.42	97.71	0.42	64.82	0.42	88.64	0.42	89.84	0.42	84.52
	0.25	85.94	0.25	90.06	0.25	53.26	0.25	82.52	0.25	82.79	0.25	73.41
	0.11	73.03	0.11	67.50	0.11	37.76	0.11	71.71	0.11	66.55	0.11	55.12
	0.07	63.16	0.07	50.86	0.07	30.75	0.07	66.90	0.07	58.51	0.07	48.77
Hydrometer Analysis	0.0424	35.99	0.0420	32.26	0.0424	19.40	0.0411	58.07	0.0423	47.58	0.0416	40.46
	0.0306	30.46	0.0303	27.48	0.0309	14.55	0.0298	51.24	0.0304	42.82	0.0300	34.68
	0.0198	24.92	0.0196	22.70	0.0200	11.32	0.0195	40.99	0.0196	36.47	0.0195	27.45
	0.0116	19.38	0.0116	16.73	0.0117	8.08	0.0116	29.03	0.0116	28.55	0.0116	18.78
	0.0083	16.61	0.0083	13.14	0.0084	6.47	0.0084	23.91	0.0083	25.37	0.0083	14.45
	0.0059	13.84	0.0059	10.75	0.0060	4.85	0.0060	20.49	0.0059	22.20	0.0059	11.56
	0.0030	11.07	0.0030	7.17	0.0030	3.23	0.0030	17.08	0.0030	15.86	0.0030	5.78
	0.0014	8.31	0.0014	4.78	0.0014	2.43	0.0014	13.66	0.0014	11.10	0.0014	2.89

Sample Name	B - 4		B - 4		B - 4		B - 4		B - 4		B - 4	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 4		B - 4		B - 4		B - 4		B - 4		B - 4	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	6.50		8.50		10.50		12.50		14.50		18.50	
Lower Depth(m)	7.00		9.00		11.00		13.00		15.00		19.00	
Soil classification	SC - SM		-		-		-		-		-	
D90	0.6781		6.5237		6.2843		6.8024		12.1752		10.3347	
D60	0.1488		0.8406		0.8429		0.6118		1.5014		1.0740	
D50	0.0825		0.5024		0.6333		0.3192		0.9306		0.6228	
D30	0.0253		0.1268		0.2786		0.0996		0.2741		0.2687	
D10	0.0059		0.0071		0.0243		0.0182		0.0155		0.0652	
ρs density of soil grain	2.718		2.762		2.715		2.715691165		2.744664		2.756	
WL	26.83		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp	19.89											
Ip	6.94		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10		19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52	95.07	9.52	100.00	9.52	95.23	9.52	86.17	9.52	89.07
	4.75		4.75	87.00	4.75	85.26	4.75	86.05	4.75	79.63	4.75	79.11
	2.00	100.00	2.00	76.09	2.00	76.93	2.00	76.74	2.00	68.74	2.00	69.00
	0.85	94.06	0.85	60.28	0.85	60.34	0.85	66.87	0.85	48.59	0.85	57.82
	0.42	83.90	0.42	47.56	0.42	39.83	0.42	54.47	0.42	36.15	0.42	43.02
	0.25	72.59	0.25	38.89	0.25	28.02	0.25	46.93	0.25	28.98	0.25	28.39
	0.11	54.55	0.11	28.43	0.11	17.61	0.11	31.33	0.11	20.98	0.11	14.69
	0.07	48.29	0.07	25.12	0.07	14.69	0.07	23.63	0.07	17.83	0.07	10.99
Hydrometer Analysis	0.0417	39.13	0.0432	19.86	0.0442	12.57	0.0420	16.15	0.0445	14.61	0.0441	7.63
	0.0302	33.33	0.0309	17.66	0.0316	11.00	0.0303	13.67	0.0316	13.49	0.0315	6.54
	0.0196	26.08	0.0197	15.45	0.0202	9.43	0.0197	10.56	0.0202	11.24	0.0201	5.45
	0.0116	18.84	0.0115	12.14	0.0118	7.85	0.0116	7.45	0.0118	8.99	0.0117	4.36
	0.0083	14.49	0.0082	11.03	0.0084	6.28	0.0083	6.21	0.0084	6.74	0.0084	3.27
	0.0060	10.14	0.0059	8.83	0.0060	4.71	0.0059	4.97	0.0060	4.50	0.0059	3.27
	0.0030	5.80	0.0029	6.62	0.0030	3.14	0.0030	3.11	0.0030	2.25	0.0030	2.18
	0.0014	2.90	0.0014	5.52	0.0014	2.36	0.0014	1.24	0.0014	1.12	0.0014	1.64

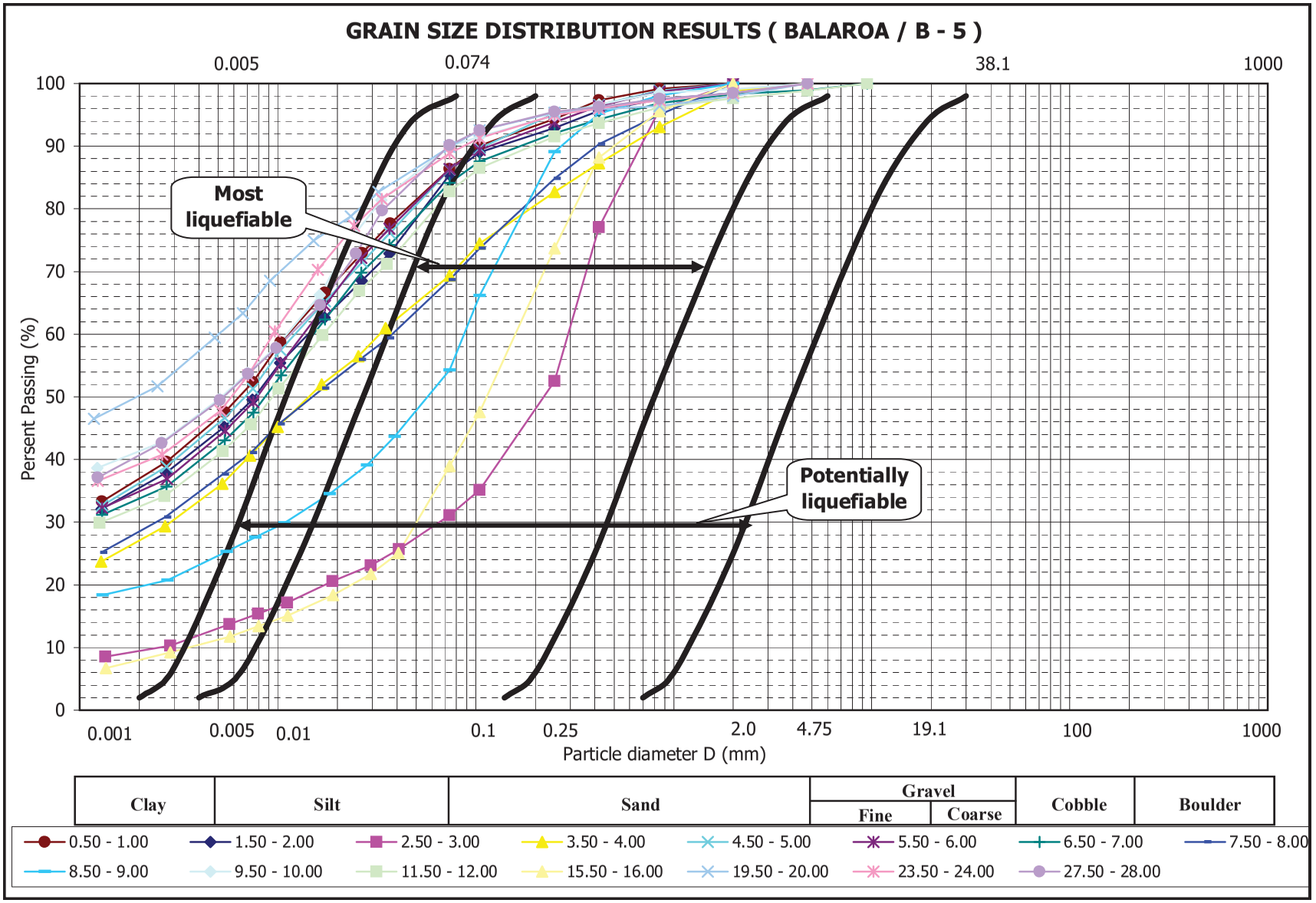
Sample Name	B - 4		B - 4		B - 4							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	B - 4		B - 4		B - 4							
Location	BALAROA		BALAROA		BALAROA							
Upper Depth(m)	22.50		27.50		29.50							
Lower Depth(m)	23.00		28.00		30.00							
Soil classification	-		-		-							
D90	13.6080		10.6802		14.3904							
D60	2.0371		2.3599		1.7737							
D50	0.8341		1.1823		0.8723							
D30	0.0526		0.2234		0.1719							
D10	0.0019		0.0348		0.0232							
ρs density of soil grain	2.759		2.719		2.72							
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS							
Wp												
Ip	-		-		-							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40	100.00						
	19.10	100.00	19.10	100.00	19.10	94.52						
	9.52	82.56	9.52	88.62	9.52	85.32						
	4.75	72.34	4.75	73.63	4.75	75.74						
	2.00	59.83	2.00	57.95	2.00	62.51						
	0.85	50.26	0.85	46.77	0.85	49.75						
	0.42	43.13	0.42	37.81	0.42	42.03						
	0.25	38.69	0.25	31.83	0.25	36.24						
	0.11	34.68	0.11	21.87	0.11	24.66						
	0.07	32.67	0.07	16.89	0.07	19.84						
Hydrometer Analysis	0.0391	28.31	0.0444	11.82	0.0433	15.26						
	0.0282	25.96	0.0318	9.45	0.0312	12.21						
	0.0183	22.02	0.0203	7.88	0.0201	9.16						
	0.0108	18.88	0.0119	5.51	0.0118	6.87						
	0.0078	15.73	0.0085	3.94	0.0084	6.10						
	0.0056	14.16	0.0060	3.15	0.0060	4.58						
	0.0028	11.01	0.0030	1.58	0.0030	3.05						
	0.0013	9.44	0.0014	0.79	0.0014	1.53						


GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 4)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
8.50 - 9.00
10.50 - 11.00
12.50 - 13.00
14.50 - 15.00
18.50 - 19.00
22.50 - 23.00
27.50 - 28.00
29.50 - 30.00

Sample Name	B - 5		B - 5		B - 5		B - 5		B - 5		B - 5	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 5		B - 5		B - 5		B - 5		B - 5		B - 5	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CL		CL		-		CL		CL		CL	
D90	8.6266		0.1416		0.7161		0.6240		0.1152		0.1249	
D60	0.0115		0.0147		0.3020		0.0331		0.0126		0.0139	
D50	0.0065		0.0077		0.2291		0.0148		0.0069		0.0079	
D30	-		-		0.0674		0.0029		-		-	
D10	-		-		0.0026		-		-		-	
ρs density of soil grain	2.616		2.618		2.721		2.698		2.621		2.623	
WL	46.95		44.90		NON PLASTIS		32.57		44.40		46.49	
Wp	23.46		22.08				20.42		20.28		22.86	
Ip	23.49		22.82		-		12.15		24.12		23.63	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	
	4.75		4.75	100.00	4.75		4.75	100.00	4.75		4.75	
	2.00	100.00	2.00	98.50	2.00	100.00	2.00	98.83	2.00	100.00	2.00	100.00
	0.85	99.16	0.85	97.49	0.85	95.86	0.85	93.04	0.85	98.85	0.85	98.71
	0.42	97.32	0.42	95.65	0.42	77.04	0.42	87.26	0.42	96.56	0.42	96.43
	0.25	94.34	0.25	92.90	0.25	52.50	0.25	82.68	0.25	95.29	0.25	93.82
	0.11	90.09	0.11	89.02	0.11	35.17	0.11	74.45	0.11	89.60	0.11	89.39
	0.07	86.33	0.07	85.44	0.07	31.08	0.07	69.39	0.07	86.26	0.07	86.39
Hydrometer Analysis	0.0370	77.70	0.0367	72.88	0.0410	25.69	0.0352	60.98	0.0370	76.15	0.0367	76.82
	0.0267	72.94	0.0265	68.51	0.0295	23.12	0.0256	56.46	0.0267	71.49	0.0265	72.21
	0.0174	66.60	0.0173	62.68	0.0190	20.55	0.0167	51.94	0.0174	65.27	0.0173	64.53
	0.0104	58.67	0.0103	55.39	0.0112	17.13	0.0100	45.17	0.0103	57.50	0.0104	55.31
	0.0075	52.33	0.0075	49.56	0.0080	15.41	0.0073	40.65	0.0075	51.28	0.0075	49.16
	0.0054	47.57	0.0054	45.19	0.0057	13.70	0.0053	36.14	0.0054	46.62	0.0054	44.56
	0.0027	39.64	0.0027	37.90	0.0029	10.28	0.0027	29.36	0.0027	38.85	0.0028	36.87
	0.0013	33.30	0.0013	32.07	0.0013	8.56	0.0013	23.71	0.0013	32.63	0.0013	32.26

Sample Name	B - 5		B - 5		B - 5		B - 5		B - 5		B - 5	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018		December 22, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 5		B - 5		B - 5		B - 5		B - 5		B - 5	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	6.50		7.50		8.50		9.50		11.50		15.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		12.00		16.00	
Soil classification	CL		CL		-		CL		CL		-	
D90	0.1833		0.4107		0.2755		0.0749		0.2055		0.5258	
D60	0.0155		0.0378		0.0511		0.0114		0.0170		0.1740	
D50	0.0087		0.0153		0.0202		0.0052		0.0095		0.1186	
D30	-		0.0024		0.0083		-		-		0.0526	
D10	-		-		-		-		-		0.0038	
ρs density of soil grain	2.626		2.672		2.729		2.691		2.711		2.732	
WL	44.53		32.23		NON PLASTIS		45.07		46.44		Non Plastic	
Wp	22.44		20.05				22.45		22.99			
Ip	22.09		12.18		-		22.62		23.45		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52	100.00	9.52		9.52		9.52		9.52	100.00	9.52	
	4.75	98.95	4.75		4.75		4.75	100.00	4.75	98.87	4.75	
	2.00	98.29	2.00	100.00	2.00	100.00	2.00	99.08	2.00	97.60	2.00	100.00
	0.85	96.91	0.85	95.01	0.85	98.06	0.85	98.57	0.85	96.20	0.85	95.59
	0.42	94.32	0.42	90.30	0.42	95.16	0.42	96.68	0.42	93.68	0.42	88.18
	0.25	92.06	0.25	84.81	0.25	89.09	0.25	94.91	0.25	91.53	0.25	73.73
	0.11	87.59	0.11	73.72	0.11	66.17	0.11	91.51	0.11	86.55	0.11	47.54
	0.07	84.15	0.07	68.65	0.07	54.27	0.07	89.95	0.07	82.81	0.07	38.94
Hydrometer Analysis	0.0366	74.25	0.0360	59.37	0.0390	43.69	0.0335	81.42	0.0357	71.21	0.0409	25.09
	0.0265	69.79	0.0260	55.94	0.0283	39.09	0.0245	75.90	0.0258	66.94	0.0296	21.74
	0.0173	62.37	0.0169	51.37	0.0183	34.49	0.0163	66.24	0.0169	59.82	0.0191	18.40
	0.0104	53.46	0.0101	45.67	0.0108	29.89	0.0098	57.96	0.0101	51.27	0.0113	15.05
	0.0075	47.52	0.0073	41.10	0.0077	27.59	0.0071	53.82	0.0073	45.58	0.0080	13.38
	0.0054	43.06	0.0053	37.67	0.0055	25.29	0.0051	49.68	0.0053	41.30	0.0057	11.71
	0.0028	35.64	0.0027	30.82	0.0028	20.69	0.0026	42.78	0.0027	34.18	0.0029	9.20
	0.0013	31.18	0.0013	25.12	0.0013	18.39	0.0012	38.64	0.0013	29.91	0.0014	6.69

Sample Name	B - 5		B - 5		B - 5							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 22, 2018		December 22, 2018		December 22, 2018							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	B - 5		B - 5		B - 5							
Location	BALAROA		BALAROA		BALAROA							
Upper Depth(m)	19.50		23.50		27.50							
Lower Depth(m)	20.00		24.00		28.00							
Soil classification	CH		CL		CL							
D90	0.0753		0.0885		0.0734							
D60	0.0051		0.0095		0.0120							
D50	0.0020		0.0059		0.0053							
D30	-		-		-							
D10	-		-		-							
ρs density of soil grain	2.701		2.706		2.689							
WL	51.27		46.58		47.05							
Wp	27.93		23.09		23.61							
Ip	23.34		23.49		23.43449724							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10		19.10		19.10							
	9.52		9.52		9.52							
	4.75	100.00	4.75	100.00	4.75	100.00						
	2.00	98.00	2.00	98.47	2.00	98.51						
	0.85	96.45	0.85	97.31	0.85	97.59						
	0.42	95.88	0.42	96.00	0.42	96.29						
	0.25	95.33	0.25	94.99	0.25	95.47						
	0.11	92.50	0.11	91.31	0.11	92.55						
	0.07	89.89	0.07	88.86	0.07	90.15						
Hydrometer Analysis	0.0323	82.71	0.0336	81.54	0.0338	79.76						
	0.0234	78.83	0.0243	77.32	0.0249	72.88						
	0.0152	74.95	0.0160	70.29	0.0164	64.63						
	0.0091	68.49	0.0097	60.45	0.0098	57.75						
	0.0067	63.32	0.0071	53.42	0.0071	53.63						
	0.0048	59.45	0.0051	47.80	0.0051	49.50						
	0.0025	51.69	0.0026	40.77	0.0026	42.63						
	0.0012	46.52	0.0012	36.55	0.0012	37.13						

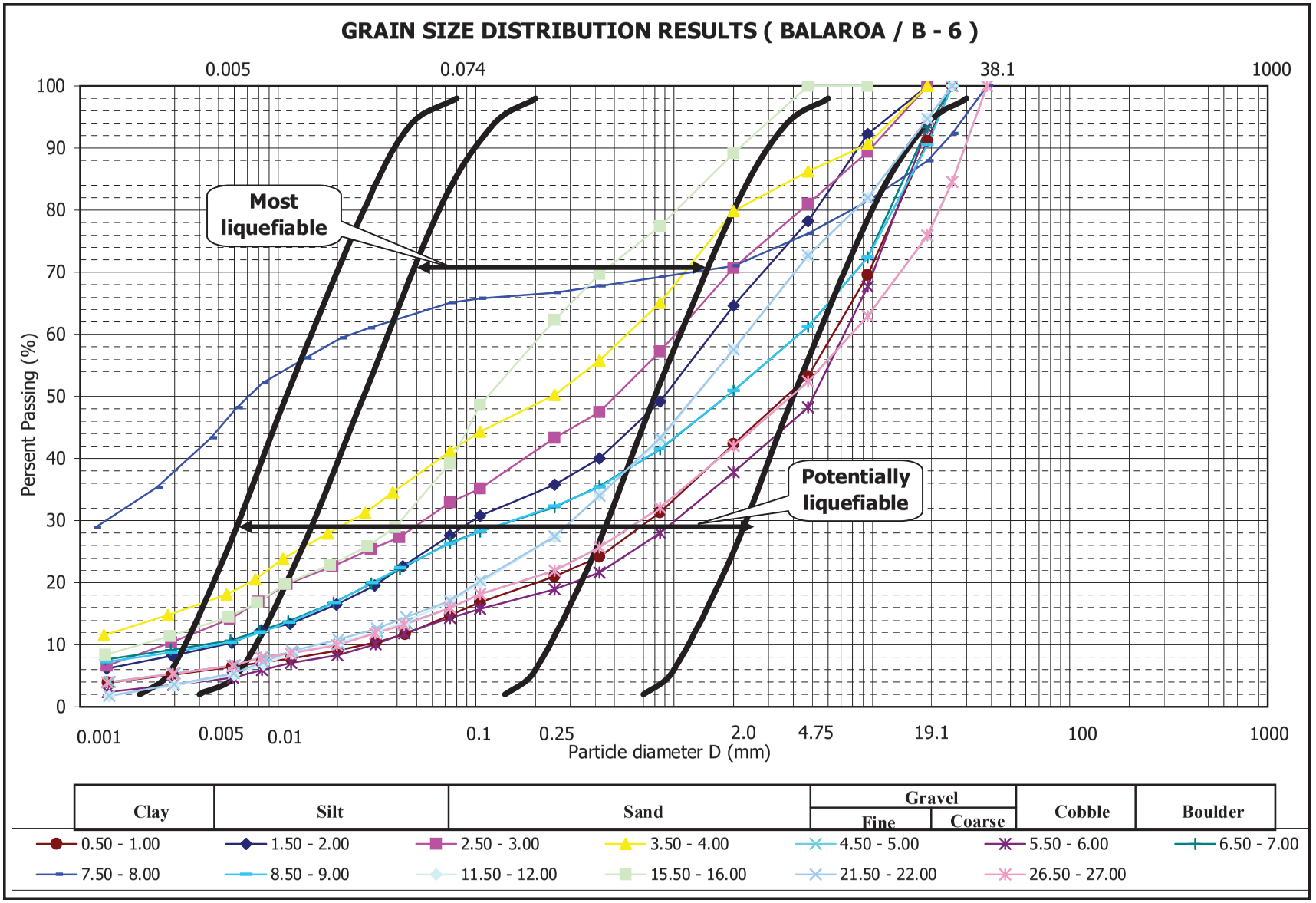

GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 5)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
11.50 - 12.00
15.50 - 16.00
19.50 - 20.00
23.50 - 24.00
27.50 - 28.00

Sample Name	B - 6		B - 6		B - 6		B - 6		B - 6		B - 6	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 6		B - 6		B - 6		B - 6		B - 6		B - 6	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		-		-		SC		-		-	
D90	18.5845		8.7574		10.0788		8.8470		29.8750		17.8835	
D60	6.7242		1.6560		1.0878		0.6142		8.2007		7.6320	
D50	3.9345		0.9113		0.5324		0.2452		4.1170		5.1792	
D30	0.7710		0.0975		0.0569		0.0239		0.7109		1.0854	
D10	0.0280		0.0054		0.0027		-		0.0198		0.0308	
ρs density of soil grain	2.707		2.729		2.728		2.732		2.627		2.719	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		25.25		NON PLASTIS		NON PLASTIS	
Wp							17.18					
Ip	-		-		-		8.06		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10	100.00	38.10	
	25.40	100.00	25.40		25.40		25.40		25.40	84.56	25.40	100.00
	19.10	91.16	19.10	100.00	19.10	100.00	19.10	100.00	19.10	75.87	19.10	93.24
	9.52	69.56	9.52	92.25	9.52	89.38	9.52	90.62	9.52	62.91	9.52	67.70
	4.75	53.25	4.75	78.20	4.75	81.01	4.75	86.21	4.75	52.39	4.75	48.25
	2.00	42.29	2.00	64.62	2.00	70.73	2.00	79.87	2.00	42.02	2.00	37.75
	0.85	31.31	0.85	49.18	0.85	57.20	0.85	65.10	0.85	32.08	0.85	28.01
	0.42	24.17	0.42	40.00	0.42	47.45	0.42	55.80	0.42	25.66	0.42	21.64
	0.25	21.02	0.25	35.79	0.25	43.29	0.25	50.19	0.25	21.93	0.25	18.89
	0.11	16.88	0.11	30.75	0.11	35.19	0.11	44.27	0.11	18.16	0.11	15.75
	0.07	14.79	0.07	27.65	0.07	32.94	0.07	41.12	0.07	15.92	0.07	14.33
Hydrometer Analysis	0.0439	11.68	0.0427	22.63	0.0412	27.30	0.0380	34.53	0.0445	13.46	0.0433	11.82
	0.0314	10.38	0.0307	19.54	0.0294	25.41	0.0275	31.24	0.0318	12.11	0.0311	10.05
	0.0200	9.09	0.0197	16.46	0.0189	22.59	0.0179	27.95	0.0204	10.09	0.0200	8.28
	0.0117	7.79	0.0115	13.37	0.0111	19.77	0.0106	23.84	0.0119	8.75	0.0116	7.09
	0.0083	7.14	0.0082	12.34	0.0080	16.94	0.0077	20.55	0.0085	8.07	0.0083	5.91
	0.0059	6.49	0.0059	10.28	0.0057	14.12	0.0055	18.09	0.0060	6.73	0.0059	4.73
	0.0029	5.19	0.0029	8.23	0.0029	10.35	0.0028	14.80	0.0030	5.38	0.0030	3.55
	0.0014	3.89	0.0014	6.17	0.0014	6.59	0.0013	11.51	0.0014	4.04	0.0014	2.36

Sample Name	B - 6		B - 6		B - 6		B - 6		B - 6		B - 6	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019		January 12, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	B - 6		B - 6		B - 6		B - 6		B - 6		B - 6	
Location	BALAROA		BALAROA		BALAROA		BALAROA		BALAROA		BALAROA	
Upper Depth(m)	6.50		7.50		8.50		11.50		15.50		21.50	
Lower Depth(m)	7.00		8.00		9.00		12.00		16.00		22.00	
Soil classification	-		CL		-		-		-		-	
D90	17.5854		22.1010		18.8154		15.5629		2.2231		15.5663	
D60	4.4183		0.0239		4.4181		2.4436		0.2255		2.4434	
D50	1.8907		0.0072		1.8897		1.4066		0.1196		1.3906	
D30	0.1704		0.0014		0.1684		0.3176		0.0428		0.3162	
D10	0.0045		-		0.0051		0.0187		0.0021		0.0163	
ρs density of soil grain	2.726		2.669		2.716		2.699		2.716		2.710	
WL	NON PLASTIS		41.94		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp			22.42									
Ip	-		19.52		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10	100.00	38.10		38.10		38.10		38.10	
	25.40	100.00	25.40	92.28	25.40	100.00	25.40	100.00	25.40		25.40	100.00
	19.10	93.31	19.10	87.93	19.10	90.54	19.10	94.69	19.10		19.10	94.69
	9.52	72.38	9.52	81.46	9.52	72.38	9.52	81.98	9.52	100.00	9.52	81.98
	4.75	61.25	4.75	76.20	4.75	61.25	4.75	72.72	4.75	100.00	4.75	72.71
	2.00	50.90	2.00	71.02	2.00	50.90	2.00	57.55	2.00	89.12	2.00	57.56
	0.85	41.46	0.85	69.20	0.85	41.54	0.85	42.91	0.85	77.38	0.85	43.30
	0.42	35.56	0.42	67.79	0.42	35.36	0.42	34.08	0.42	69.72	0.42	34.00
	0.25	32.14	0.25	66.68	0.25	32.29	0.25	27.31	0.25	62.31	0.25	27.45
	0.11	28.24	0.11	65.76	0.11	28.22	0.11	19.97	0.11	48.62	0.11	20.30
	0.07	26.44	0.07	65.06	0.07	26.34	0.07	16.93	0.07	39.24	0.07	17.10
Hydrometer Analysis	0.0412	22.13	0.0287	60.96	0.0415	22.39	0.0444	13.76	0.0391	28.91	0.0443	14.44
	0.0296	19.84	0.0208	59.36	0.0299	19.99	0.0317	12.04	0.0284	25.87	0.0316	12.64
	0.0191	16.79	0.0137	56.15	0.0193	16.80	0.0203	10.32	0.0184	22.83	0.0202	10.83
	0.0113	13.74	0.0083	52.14	0.0114	13.60	0.0118	8.60	0.0108	19.78	0.0118	9.03
	0.0080	12.21	0.0062	48.13	0.0081	12.00	0.0084	6.88	0.0078	16.74	0.0084	7.22
	0.0057	10.68	0.0046	43.32	0.0058	10.40	0.0060	5.16	0.0056	14.46	0.0060	5.42
	0.0029	9.16	0.0024	35.29	0.0029	8.80	0.0030	3.44	0.0028	11.41	0.0030	3.61
	0.0013	7.63	0.0012	28.88	0.0014	7.20	0.0014	1.72	0.0013	8.37	0.0014	1.81

Sample Name	B - 6											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 12, 2019											
Tester	PT. INDRA KARYA											
Sample No	B - 6											
Location	BALAROA											
Upper Depth(m)	26.50											
Lower Depth(m)	27.00											
Soil classification	-											
D90	29.8662											
D60	8.1972											
D50	4.1168											
D30	0.7110											
D10	0.0204											
ρs density of soil grain	2.719											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10	100.00										
	25.40	84.58										
	19.10	75.88										
	9.52	62.92										
	4.75	52.39										
	2.00	42.01										
	0.85	32.07										
	0.42	25.66										
	0.25	21.91										
	0.11	18.13										
	0.07	15.90										
Hydrometer Analysis	0.0433	13.20										
	0.0309	11.88										
	0.0199	9.90										
	0.0116	8.58										
	0.0082	7.92										
	0.0059	6.60										
	0.0029	5.28										
	0.0014	3.96										

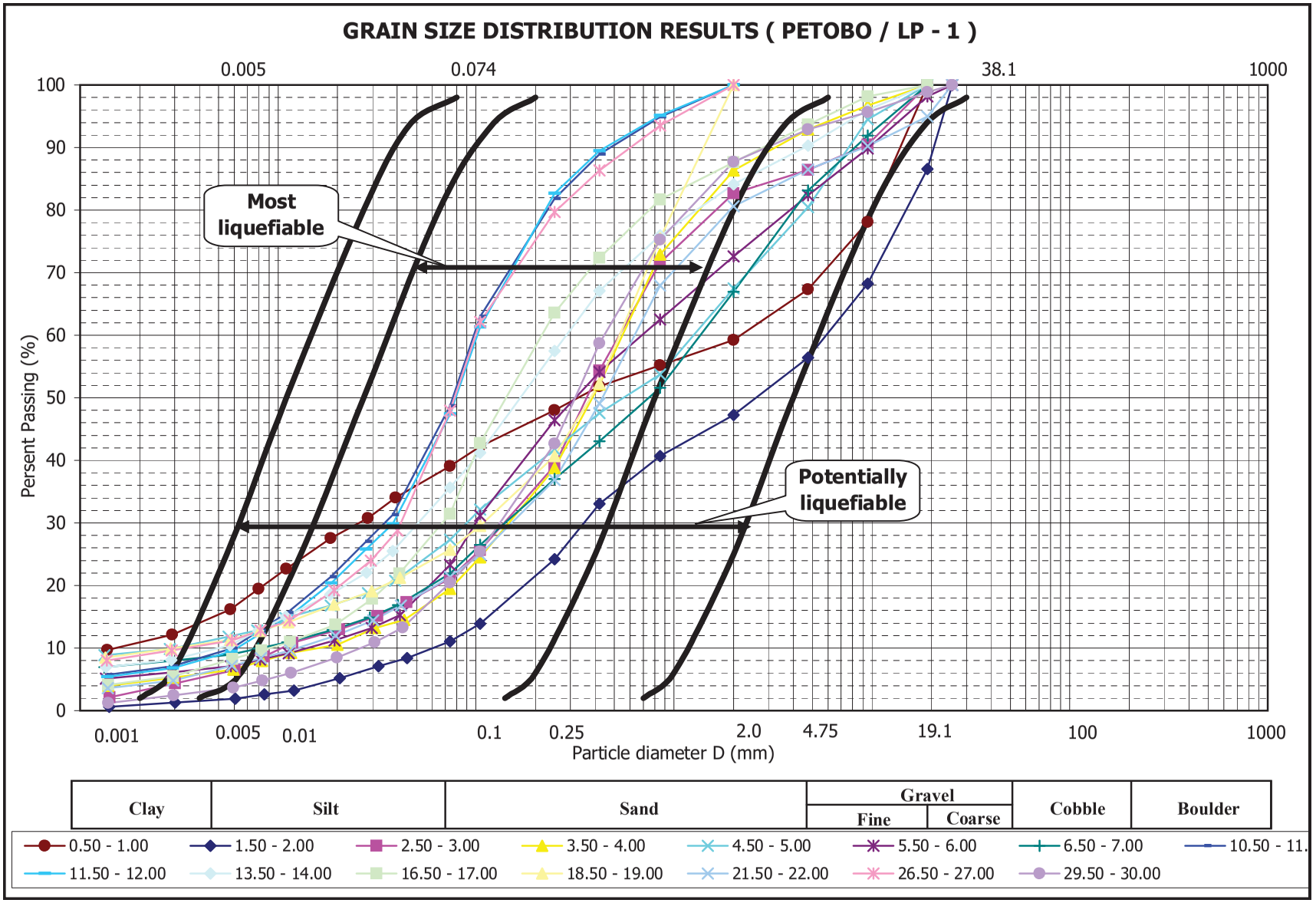
GRAIN SIZE DISTRIBUTION RESULTS (BALAROA / B - 6)



Sample Name	LP - 1		LP - 1		LP - 1		LP - 1		LP - 1		LP - 1	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 1		LP - 1		LP - 1		LP - 1		LP - 1		LP - 1	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CL		-		-		-		SC		-	
D90	14.7313		20.7071		9.0106		3.5315		7.9869		9.6712	
D60	2.4828		6.1951		0.5615		0.5832		1.3754		0.7223	
D50	0.3388		2.8176		0.3714		0.3757		0.5907		0.3296	
D30	0.0258		0.3613		0.1513		0.1608		0.0910		0.1006	
D10	0.0015		0.0623		0.0119		0.0164		0.0030		0.0146	
ρs density of soil grain	2.622		2.712		2.684		2.682		2.629		2.704	
WL	38.17		NON PLASTIS		NON PLASTIS		NON PLASTIS		34.75		NON PLASTIS	
Wp	22.44								21.39			
Ip	15.72		-		-		-		13.35		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40	100.00	25.40		25.40		25.40		25.40	100.00
	19.10	100.00	19.10	86.58	19.10	100.00	19.10	100.00	19.10	100.00	19.10	98.14
	9.52	78.07	9.52	68.26	9.52	90.43	9.52	96.72	9.52	94.53	9.52	89.87
	4.75	67.30	4.75	56.41	4.75	86.41	4.75	92.89	4.75	80.43	4.75	82.36
	2.00	59.22	2.00	47.29	2.00	82.69	2.00	86.36	2.00	67.45	2.00	72.58
	0.85	55.20	0.85	40.71	0.85	71.57	0.85	72.86	0.85	53.73	0.85	62.49
	0.42	51.83	0.42	33.05	0.42	54.33	0.42	52.13	0.42	47.55	0.42	54.12
	0.25	47.99	0.25	24.22	0.25	39.19	0.25	38.77	0.25	41.78	0.25	46.38
	0.11	42.18	0.11	13.91	0.11	25.68	0.11	24.51	0.11	32.17	0.11	31.11
	0.07	39.07	0.07	11.08	0.07	21.12	0.07	19.44	0.07	27.36	0.07	23.29
Hydrometer Analysis	0.0392	34.04	0.0449	8.39	0.0446	17.31	0.0433	14.53	0.0392	20.73	0.0412	15.28
	0.0285	30.80	0.0321	7.10	0.0319	15.15	0.0310	13.21	0.0284	18.76	0.0298	13.24
	0.0185	27.56	0.0206	5.16	0.0204	12.98	0.0200	10.56	0.0184	16.78	0.0193	11.21
	0.0110	22.70	0.0120	3.23	0.0119	10.82	0.0116	9.24	0.0109	14.81	0.0113	9.17
	0.0080	19.45	0.0085	2.58	0.0085	8.66	0.0083	7.92	0.0079	12.84	0.0081	8.15
	0.0058	16.21	0.0061	1.94	0.0060	6.49	0.0059	6.60	0.0056	11.85	0.0058	7.13
	0.0029	12.16	0.0030	1.29	0.0030	4.33	0.0030	5.28	0.0028	9.87	0.0029	6.11
	0.0014	9.73	0.0014	0.65	0.0014	2.16	0.0014	3.96	0.0013	8.89	0.0014	5.09

Sample Name	LP - 1		LP - 1		LP - 1		LP - 1		LP - 1		LP - 1	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 1		LP - 1		LP - 1		LP - 1		LP - 1		LP - 1	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	6.50		10.50		11.50		13.50		16.50		18.50	
Lower Depth(m)	7.00		11.00		12.00		14.00		17.00		19.00	
Soil classification	-		SC - SM		SC - SM		SC - SM		-		-	
D90	8.4970		0.4978		0.4618		4.6153		3.0747		1.5314	
D60	1.4803		0.0985		0.0999		0.2946		0.2252		0.5635	
D50	0.7702		0.0768		0.0794		0.1834		0.1555		0.3869	
D30	0.1535		0.0352		0.0316		0.0539		0.0690		0.1106	
D10	0.0081		0.0058		0.0062		0.0052		0.0092		0.0031	
ρs density of soil grain	2.701		2.691		2.688		2.678		2.685		2.689	
WL	NON PLASTIS		27.72		25.66		21.91		NON PLASTIS		NON PLASTIS	
Wp			21.38		20.70		16.25					
Ip	-		6.33		4.96		5.66		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10	100.00	19.10	100.00	19.10	
	9.52	91.88	9.52		9.52		9.52	95.99	9.52	98.20	9.52	
	4.75	83.10	4.75		4.75		4.75	90.30	4.75	93.68	4.75	
	2.00	66.94	2.00	100.00	2.00	100.00	2.00	84.13	2.00	87.64	2.00	100.00
	0.85	51.59	0.85	94.88	0.85	95.13	0.85	75.95	0.85	81.64	0.85	75.46
	0.42	43.05	0.42	88.92	0.42	89.45	0.42	67.10	0.42	72.34	0.42	52.25
	0.25	37.00	0.25	81.80	0.25	82.67	0.25	57.47	0.25	63.56	0.25	40.69
	0.11	26.48	0.11	62.98	0.11	61.33	0.11	41.21	0.11	42.76	0.11	29.57
	0.07	21.93	0.07	48.70	0.07	47.39	0.07	35.68	0.07	31.43	0.07	25.71
Hydrometer Analysis	0.0403	16.90	0.0379	31.31	0.0379	29.84	0.0381	25.51	0.0410	21.94	0.0414	21.23
	0.0292	14.91	0.0279	27.04	0.0279	25.77	0.0280	22.03	0.0300	17.83	0.0298	19.10
	0.0189	12.92	0.0185	21.35	0.0185	20.34	0.0184	18.55	0.0196	13.72	0.0191	16.98
	0.0111	10.94	0.0112	15.65	0.0112	14.92	0.0110	15.07	0.0115	10.97	0.0113	14.15
	0.0079	9.94	0.0081	12.81	0.0081	12.21	0.0079	12.76	0.0082	9.60	0.0081	12.74
	0.0057	8.95	0.0058	9.96	0.0058	9.49	0.0057	10.44	0.0059	8.23	0.0058	11.32
	0.0028	7.95	0.0029	7.12	0.0029	6.78	0.0029	8.12	0.0030	5.49	0.0029	9.91
	0.0013	6.96	0.0014	5.69	0.0014	5.43	0.0014	6.96	0.0014	4.11	0.0013	8.49

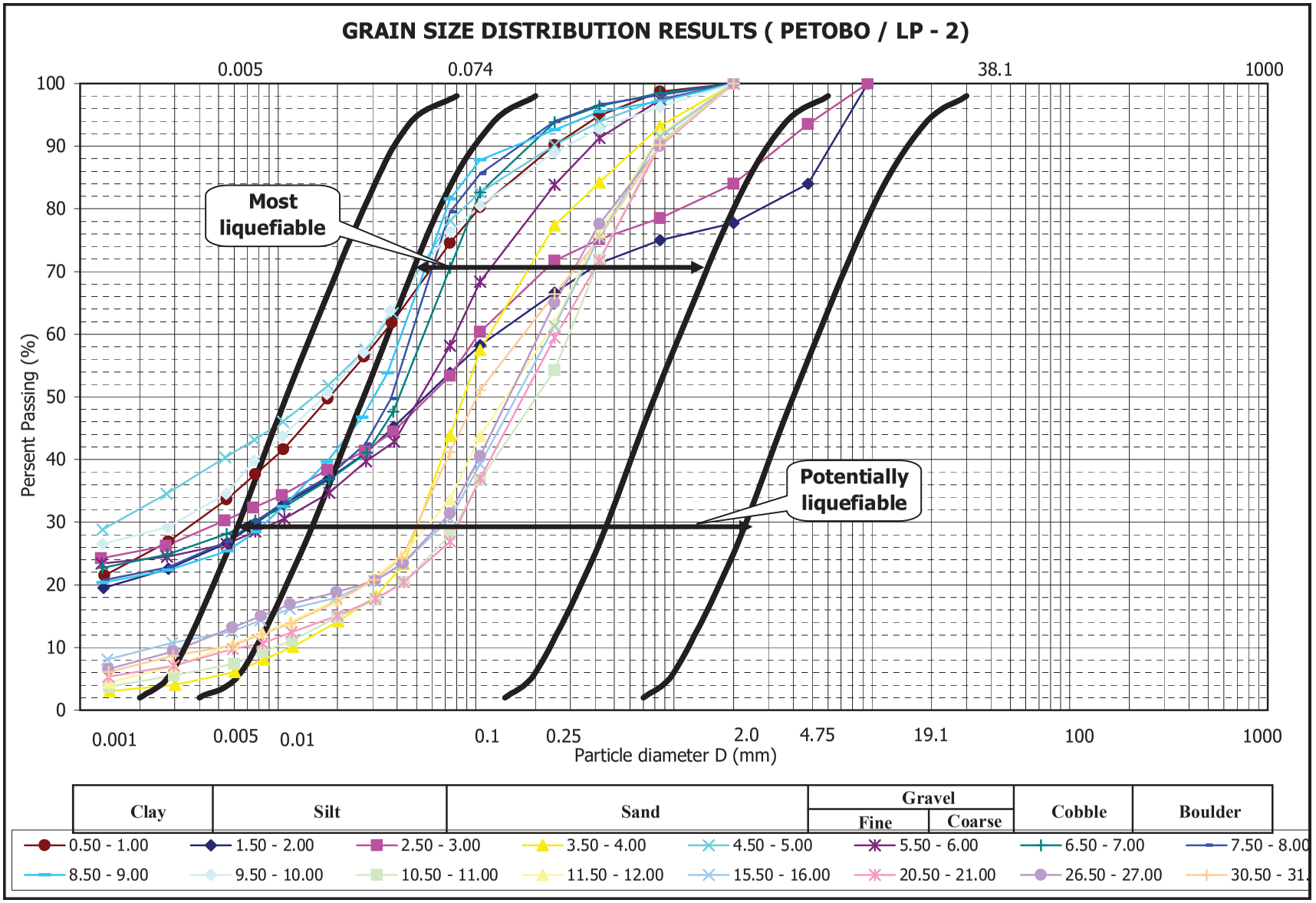
Sample Name	LP - 1		LP - 1		LP - 1		LP - 1					
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 20, 2018		December 20, 2018		December 20, 2018		December 20, 2018					
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA					
Sample No	LP - 1		LP - 1		LP - 1		LP - 1					
Location	PETOBO		PETOBO		PETOBO		PETOBO					
Upper Depth(m)	21.50		26.50		29.50		33.50					
Lower Depth(m)	22.00		27.00		30.00		34.00					
Soil classification	-		-		-		-					
D90	9.2572		0.6405		3.2103		3.7370					
D60	0.6686		0.1004		0.4340		0.2824					
D50	0.4409		0.0784		0.3280		0.1925					
D30	0.1494		0.0422		0.1434		0.0703					
D10	0.0128		0.0036		0.0268		0.0089					
ρs density of soil grain	2.697		2.677		2.741		2.682					
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS					
Wp												
Ip	-		-		-		-					
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)				
Sieve Analysis	38.10		38.10		38.10		38.10					
	25.40	100.00	25.40		25.40	100.00	25.40	100.00				
	19.10	94.97	19.10		19.10	98.84	19.10	98.52				
	9.52	90.20	9.52		9.52	95.68	9.52	95.50				
	4.75	86.51	4.75		4.75	92.88	4.75	92.17				
	2.00	80.57	2.00	100.00	2.00	87.74	2.00	86.28				
	0.85	67.97	0.85	93.48	0.85	75.26	0.85	79.26				
	0.42	49.08	0.42	86.33	0.42	58.68	0.42	69.68				
	0.25	36.83	0.25	79.70	0.25	42.64	0.25	57.72				
	0.11	24.94	0.11	62.12	0.11	25.45	0.11	38.25				
	0.07	21.40	0.07	47.97	0.07	20.46	0.07	31.32				
Hydrometer Analysis	0.0418	16.80	0.0401	28.81	0.0426	13.30	0.0410	19.45				
	0.0302	14.40	0.0294	24.01	0.0307	10.88	0.0300	15.80				
	0.0195	12.00	0.0192	19.21	0.0198	8.46	0.0194	13.37				
	0.0115	9.60	0.0114	14.40	0.0117	6.05	0.0114	10.94				
	0.0082	8.40	0.0082	12.80	0.0083	4.84	0.0082	9.72				
	0.0059	7.20	0.0058	11.20	0.0059	3.63	0.0058	8.51				
	0.0029	4.80	0.0029	9.60	0.0030	2.42	0.0029	7.29				
	0.0014	3.60	0.0014	8.00	0.0014	1.21	0.0014	6.08				


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 1)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
10.50 - 11.
11.50 - 12.00
13.50 - 14.00
16.50 - 17.00
18.50 - 19.00
21.50 - 22.00
26.50 - 27.00
29.50 - 30.00

Sample Name	LP - 2		LP - 2		LP - 2		LP - 2		LP - 2		LP - 2	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 2		LP - 2		LP - 2		LP - 2		LP - 2		LP - 2	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CL		CL		CL		SC		CL		CL	
D90	0.2470		6.5370		3.7352		0.6967		0.2468		0.3901	
D60	0.0341		0.1355		0.1033		0.1236		0.0320		0.0796	
D50	0.0182		0.0583		0.0606		0.0880		0.0156		0.0552	
D30	0.0041		0.0079		0.0052		0.0532		0.0016		0.0099	
D10	-		-		-		0.0130		-		-	
ρs density of soil grain	2.676		2.654		2.670		2.674		2.680		2.670	
WL	34.47		28.72		32.66		24.07		41.05		32.45	
Wp	21.38		19.97		21.31		17.06		25.42		20.71	
Ip	13.09		8.75		11.34		7.00		15.63		11.74	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52	100.00	9.52	100.00	9.52		9.52		9.52	
	4.75		4.75	84.01	4.75	93.49	4.75		4.75		4.75	
	2.00	100.00	2.00	77.74	2.00	84.03	2.00	100.00	2.00	100.00	2.00	100.00
	0.85	98.72	0.85	75.03	0.85	78.51	0.85	93.19	0.85	97.55	0.85	97.43
	0.42	94.92	0.42	71.32	0.42	75.17	0.42	84.23	0.42	93.92	0.42	91.31
	0.25	90.21	0.25	66.59	0.25	71.76	0.25	77.38	0.25	90.17	0.25	83.87
	0.11	80.28	0.11	58.24	0.11	60.39	0.11	57.44	0.11	82.64	0.11	68.36
	0.07	74.55	0.07	53.79	0.07	53.32	0.07	43.86	0.07	78.13	0.07	58.16
Hydrometer Analysis	0.0376	61.80	0.0383	45.17	0.0382	44.42	0.0432	23.32	0.0380	63.32	0.0387	42.80
	0.0273	56.43	0.0278	41.06	0.0275	41.39	0.0313	18.25	0.0276	57.57	0.0279	39.74
	0.0178	49.71	0.0181	36.96	0.0177	38.36	0.0202	14.20	0.0179	51.81	0.0182	34.65
	0.0107	41.65	0.0107	32.85	0.0105	34.32	0.0119	10.14	0.0106	46.05	0.0107	30.57
	0.0077	37.62	0.0077	29.77	0.0075	32.30	0.0085	8.11	0.0076	43.18	0.0077	28.53
	0.0055	33.59	0.0055	26.69	0.0054	30.29	0.0061	6.08	0.0054	40.30	0.0055	26.49
	0.0028	26.87	0.0028	22.58	0.0027	26.25	0.0030	4.06	0.0027	34.54	0.0027	24.46
	0.0013	21.50	0.0013	19.50	0.0013	24.23	0.0014	3.04	0.0013	28.78	0.0013	23.44

Sample Name	LP - 2		LP - 2		LP - 2		LP - 2		LP - 2		LP - 2	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 2		LP - 2		LP - 2		LP - 2		LP - 2		LP - 2	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	6.50		7.50		8.50		9.50		10.50		12.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		11.00		12.00	
Soil classification	CL		CL		CL		CL		-		-	
D90	0.2004		0.1814		0.1720		0.2921		0.8352		0.7944	
D60	0.0536		0.0498		0.0442		0.0314		0.3054		0.2361	
D50	0.0419		0.0375		0.0308		0.0172		0.2148		0.1552	
D30	0.0074		0.0076		0.0088		0.0032		0.0813		0.0612	
D10	-		-		-		-		0.0097		0.0054	
ρs density of soil grain	2.669		2.668		2.673		2.686		2.678		2.665	
WL	30.34		28.45		26.58		34.89		NON PLASTIS		NON PLASTIS	
Wp	20.12		19.40		18.69		21.45					
Ip	10.22		9.05		7.89		13.44		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	
	4.75		4.75		4.75		4.75		4.75		4.75	
	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00
	0.85	98.48	0.85	98.17	0.85	97.20	0.85	96.30	0.85	90.65	0.85	92.03
	0.42	96.46	0.42	96.67	0.42	95.52	0.42	92.87	0.42	71.84	0.42	76.33
	0.25	93.82	0.25	93.95	0.25	92.60	0.25	89.06	0.25	54.28	0.25	61.73
	0.11	82.65	0.11	85.60	0.11	87.77	0.11	80.48	0.11	36.63	0.11	43.79
	0.07	70.61	0.07	79.51	0.07	81.54	0.07	76.28	0.07	27.95	0.07	33.59
Hydrometer Analysis	0.0382	47.60	0.0371	49.73	0.0357	53.83	0.0369	63.69	0.0434	20.40	0.0422	24.63
	0.0281	41.11	0.0275	42.48	0.0266	46.72	0.0270	57.06	0.0311	17.61	0.0305	21.11
	0.0182	36.78	0.0180	37.30	0.0176	39.61	0.0177	50.42	0.0200	14.83	0.0197	17.59
	0.0108	32.45	0.0106	33.15	0.0106	32.50	0.0105	43.79	0.0118	11.12	0.0116	14.08
	0.0077	30.29	0.0076	30.04	0.0077	28.44	0.0076	39.81	0.0084	9.27	0.0083	12.32
	0.0055	28.13	0.0055	26.94	0.0055	25.39	0.0055	34.50	0.0060	7.42	0.0059	10.56
	0.0028	24.88	0.0028	22.79	0.0028	22.35	0.0028	29.19	0.0030	5.56	0.0030	7.04
	0.0013	22.72	0.0013	20.72	0.0013	20.31	0.0013	26.54	0.0014	3.71	0.0014	4.40

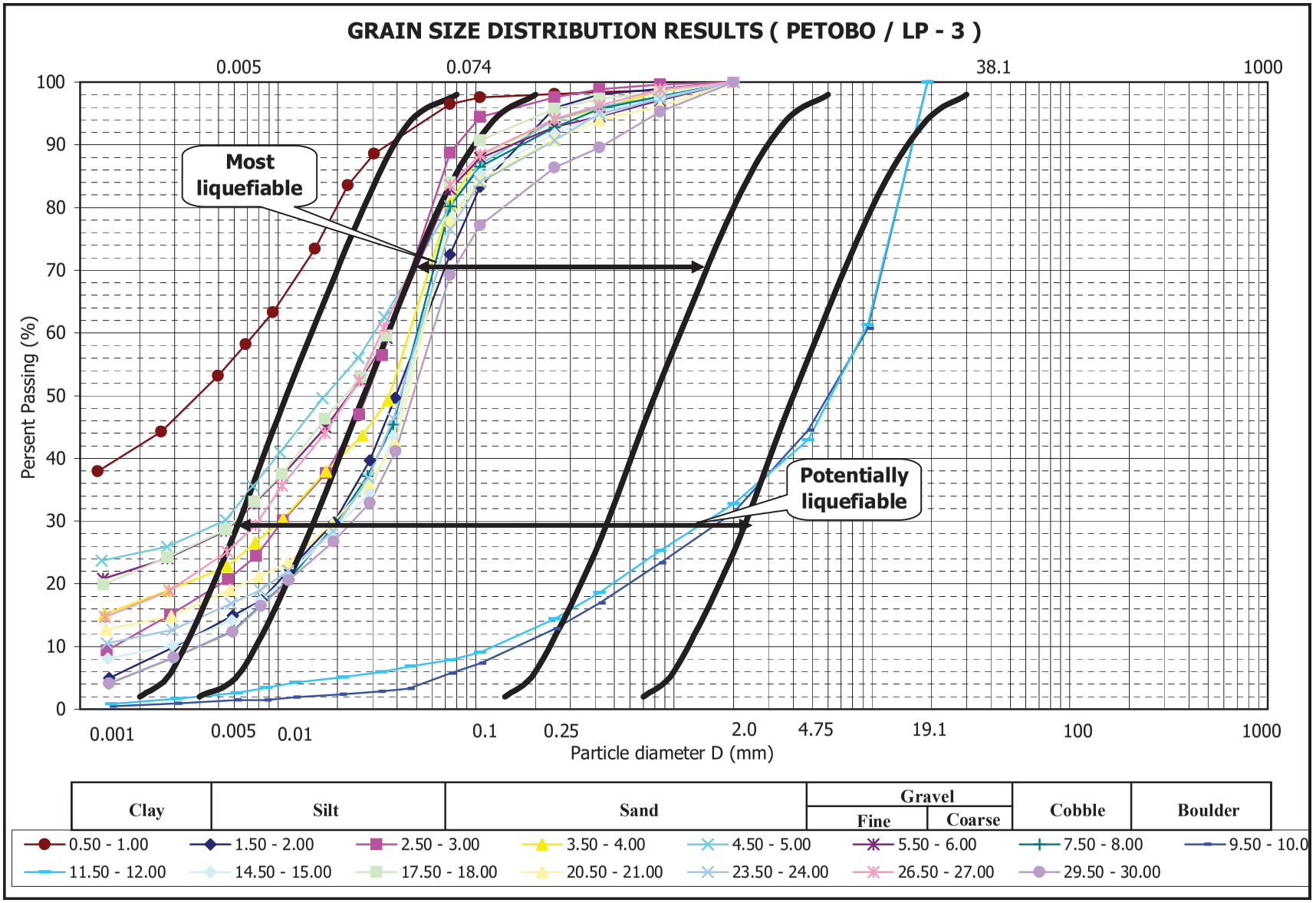
Sample Name	LP - 2		LP - 2		LP - 2		LP - 2					
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 19, 2018		December 19, 2018		December 19, 2018		December 19, 2018					
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA					
Sample No	LP - 2		LP - 2		LP - 2		LP - 2					
Location	PETOBO		PETOBO		PETOBO		PETOBO					
Upper Depth(m)	14.50		16.50		18.50		20.50					
Lower Depth(m)	16.00		21.00		27.00		31.00					
Soil classification	-		-		-		-					
D90	0.8081		0.8451		0.8496		0.8434					
D60	0.2416		0.2573		0.2202		0.1895					
D50	0.1660		0.1890		0.1610		0.1017					
D30	0.0715		0.0836		0.0685		0.0531					
D10	0.0025		0.0066		0.0034		0.0052					
ρs density of soil grain	2.674		2.672		2.658		2.653					
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS					
Wp												
Ip	-		-		-		-					
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)				
Sieve Analysis	38.10		38.10		38.10		38.10					
	25.40		25.40		25.40		25.40					
	19.10		19.10		19.10		19.10					
	9.52		9.52		9.52		9.52					
	4.75		4.75		4.75		4.75					
	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00				
	0.85	91.56	0.85	90.21	0.85	90.01	0.85	90.23				
	0.42	75.52	0.42	71.73	0.42	77.59	0.42	75.39				
	0.25	61.27	0.25	59.47	0.25	65.04	0.25	66.40				
	0.11	39.28	0.11	36.94	0.11	40.54	0.11	51.07				
	0.07	30.58	0.07	26.91	0.07	31.40	0.07	41.15				
Hydrometer Analysis	0.0425	23.30	0.0432	20.40	0.0429	23.49	0.0423	24.26				
	0.0305	20.61	0.0310	17.74	0.0309	20.67	0.0306	20.79				
	0.0196	17.92	0.0199	15.08	0.0197	18.79	0.0197	17.33				
	0.0114	16.13	0.0117	12.41	0.0115	16.91	0.0116	13.86				
	0.0082	14.34	0.0083	10.64	0.0082	15.04	0.0083	12.13				
	0.0058	12.55	0.0059	9.75	0.0059	13.16	0.0059	10.40				
	0.0029	10.75	0.0030	7.09	0.0030	9.40	0.0030	8.66				
	0.0014	8.07	0.0014	5.32	0.0014	6.58	0.0014	6.06				


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 2)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
11.50 - 12.00
15.50 - 16.00
20.50 - 21.00
26.50 - 27.00
30.50 - 31.

Sample Name	LP - 3		LP - 3		LP - 3		LP - 3		LP - 3		LP - 3	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 3		LP - 3		LP - 3		LP - 3		LP - 3		LP - 3	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CH		CL		CL		CL		CL		CL	
D90	0.0384		0.1822		0.0810		0.1480		0.1682		0.1677	
D60	0.0075		0.0549		0.0381		0.0489		0.0308		0.0368	
D50	0.0041		0.0397		0.0256		0.0368		0.0174		0.0232	
D30	-		0.0192		0.0107		0.0103		0.0053		0.0062	
D10	-		0.0030		0.0015		-		-		-	
ρs density of soil grain	2.674		2.672		2.680		2.677		2.675		2.679	
WL	58.23		34.45		35.17		42.51		40.16		38.15	
Wp	25.70		21.59		21.63		20.15		20.01		20.97	
Ip	32.53		12.86		13.54		22.36		20.15		17.18	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	
	4.75		4.75		4.75		4.75		4.75		4.75	
	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00	2.00	100.00
	0.85	98.73	0.85	98.96	0.85	99.63	0.85	98.53	0.85	97.62	0.85	97.09
	0.42	98.37	0.42	98.01	0.42	98.89	0.42	95.75	0.42	96.07	0.42	94.49
	0.25	98.07	0.25	95.85	0.25	97.54	0.25	94.01	0.25	94.02	0.25	92.81
	0.11	97.58	0.11	83.33	0.11	94.41	0.11	88.31	0.11	86.89	0.11	87.86
	0.07	96.51	0.07	72.49	0.07	88.72	0.07	80.74	0.07	80.24	0.07	82.93
Hydrometer Analysis	0.0306	88.57	0.0392	49.64	0.0337	56.42	0.0359	49.31	0.0343	62.53	0.0354	59.15
	0.0226	83.51	0.0291	39.71	0.0258	47.02	0.0266	43.62	0.0254	56.06	0.0262	52.57
	0.0153	73.39	0.0192	29.79	0.0175	37.62	0.0175	37.93	0.0168	49.59	0.0174	44.91
	0.0094	63.27	0.0115	22.34	0.0106	30.09	0.0106	30.34	0.0102	40.96	0.0105	37.24
	0.0069	58.21	0.0083	17.37	0.0077	24.45	0.0077	26.55	0.0075	35.57	0.0076	32.86
	0.0050	53.14	0.0059	14.89	0.0056	20.69	0.0055	22.76	0.0054	30.18	0.0055	28.48
	0.0026	44.29	0.0030	9.93	0.0029	15.05	0.0028	18.96	0.0027	25.87	0.0028	24.10
	0.0012	37.96	0.0014	4.96	0.0014	9.40	0.0013	15.17	0.0013	23.72	0.0013	20.81

Sample Name	LP - 3		LP - 3		LP - 3		LP - 3		LP - 3		LP - 3	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018		December 21, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 3		LP - 3		LP - 3		LP - 3		LP - 3		LP - 3	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	7.50		9.50		11.50		14.50		17.50		20.50	
Lower Depth(m)	8.00		10.00		12.00		15.00		18.00		21.00	
Soil classification	CL		-		-		CL		CL		CL	
D90	0.1855		16.6635		16.6248		0.2103		0.1018		0.2293	
D60	0.0532		9.3192		9.1831		0.0554		0.0361		0.0564	
D50	0.0428		6.3721		6.5825		0.0451		0.0222		0.0466	
D30	0.0201		1.8059		1.5766		0.0215		0.0061		0.0193	
D10	0.0042		0.1766		0.1306		0.0026		-		-	
ρs density of soil grain	2.675		2.648		2.647		2.672		2.683		2.674	
WL	31.98		NON PLASTIS		NON PLASTIS		33.77		38.14		33.88	
Wp	20.72						21.98		21.02		22.00	
Ip	11.26		-		-		11.79		17.12		11.88	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10	100.00	19.10		19.10		19.10	
	9.52		9.52	60.68	9.52	61.30	9.52		9.52		9.52	
	4.75		4.75	44.50	4.75	42.95	4.75		4.75		4.75	
	2.00	100.00	2.00	31.36	2.00	32.74	2.00	100.00	2.00	100.00	2.00	100.00
	0.85	97.72	0.85	23.32	0.85	25.30	0.85	97.45	0.85	98.41	0.85	96.10
	0.42	95.76	0.42	16.92	0.42	18.57	0.42	94.69	0.42	97.32	0.42	93.97
	0.25	92.80	0.25	12.76	0.25	14.38	0.25	91.76	0.25	95.73	0.25	90.93
	0.11	86.50	0.11	7.31	0.11	9.06	0.11	85.32	0.11	90.68	0.11	84.40
	0.07	80.20	0.07	5.68	0.07	7.86	0.07	77.97	0.07	84.00	0.07	77.92
Hydrometer Analysis	0.0381	45.42	0.0456	3.29	0.0469	6.82	0.0384	43.53	0.0353	59.53	0.0391	42.37
	0.0284	37.16	0.0325	2.82	0.0333	5.97	0.0287	34.42	0.0261	52.91	0.0287	36.01
	0.0188	28.90	0.0208	2.35	0.0212	5.11	0.0188	28.35	0.0172	46.30	0.0188	29.66
	0.0113	20.64	0.0121	1.88	0.0123	4.26	0.0113	21.26	0.0105	37.48	0.0112	23.30
	0.0082	16.52	0.0086	1.41	0.0087	3.41	0.0081	17.21	0.0076	33.07	0.0080	21.18
	0.0059	12.39	0.0061	1.41	0.0062	2.56	0.0058	14.17	0.0055	28.66	0.0057	19.06
	0.0030	8.26	0.0030	0.94	0.0031	1.70	0.0029	10.12	0.0028	24.25	0.0029	14.83
	0.0014	4.13	0.0014	0.47	0.0014	0.85	0.0014	8.10	0.0013	19.84	0.0014	12.71

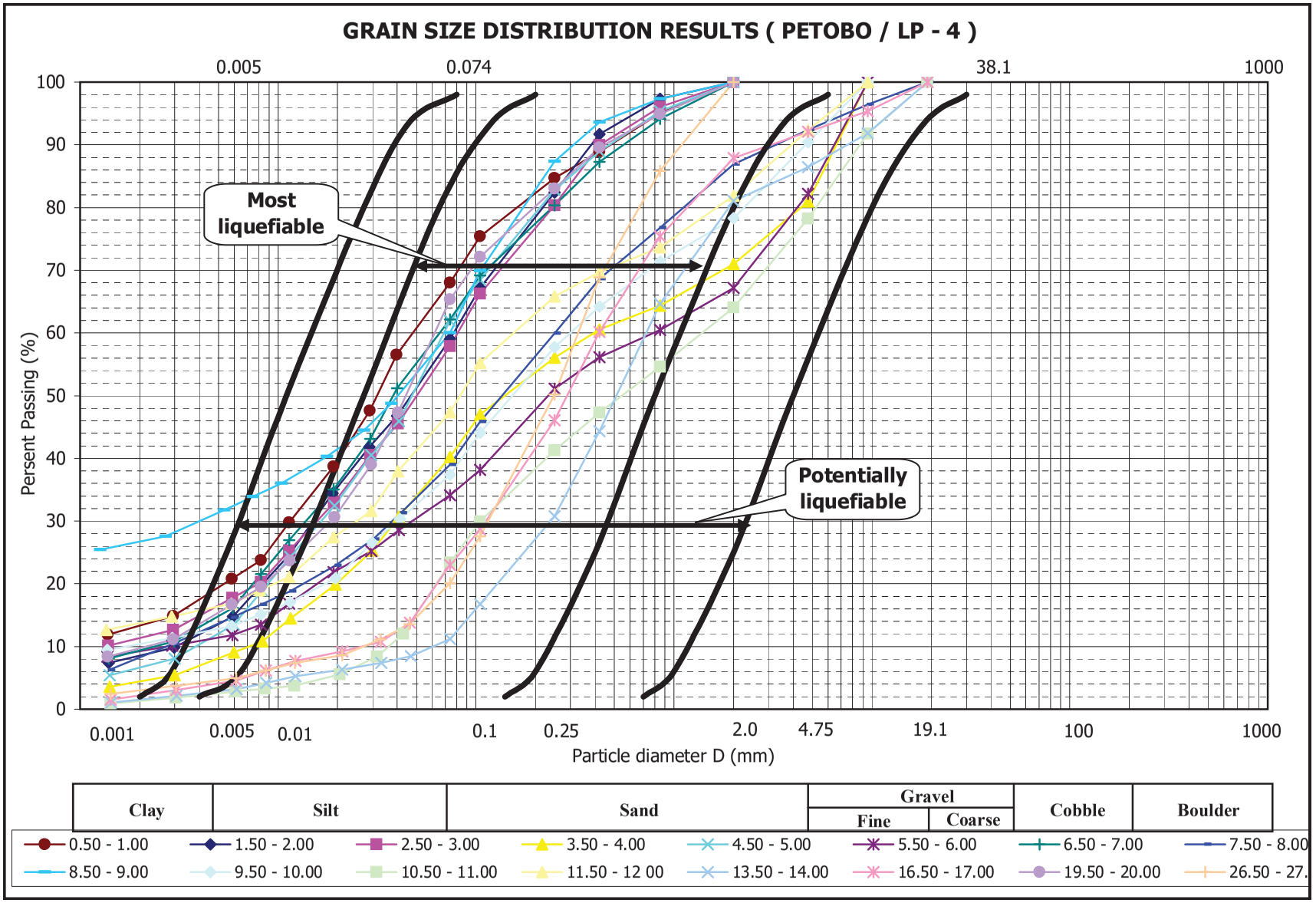
Sample Name	LP - 3		LP - 3		LP - 3							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 21, 2018		December 21, 2018		December 21, 2018							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	LP - 3		LP - 3		LP - 3							
Location	PETOBO		PETOBO		PETOBO							
Upper Depth(m)	23.50		26.50		29.50							
Lower Depth(m)	24.00		27.00		30.00							
Soil classification	CL		CL		CL							
D90	0.2346		0.1447		0.4527							
D60	0.0544		0.0335		0.0626							
D50	0.0425		0.0234		0.0502							
D30	0.0209		0.0080		0.0244							
D10	-		-		0.0042							
ρs density of soil grain	2.669		2.677		2.671							
WL	33.55		38.35		30.14							
Wp	22.01		21.07		19.98							
Ip	11.54		17.28		10.16							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10		19.10		19.10							
	9.52		9.52		9.52							
	4.75		4.75		4.75							
	2.00	100.00	2.00	100.00	2.00	100.00						
	0.85	97.30	0.85	98.86	0.85	95.27						
	0.42	94.95	0.42	96.23	0.42	89.57						
	0.25	90.71	0.25	94.11	0.25	86.35						
	0.11	84.02	0.11	88.45	0.11	77.15						
	0.07	76.55	0.07	83.65	0.07	69.23						
Hydrometer Analysis	0.0382	46.30	0.0343	60.75	0.0392	41.13						
	0.0286	36.83	0.0258	52.37	0.0291	32.90						
	0.0189	28.41	0.0173	43.99	0.0190	26.73						
	0.0113	22.10	0.0105	35.61	0.0113	20.56						
	0.0081	18.94	0.0077	29.33	0.0082	16.45						
	0.0058	16.84	0.0055	25.14	0.0059	12.34						
	0.0029	12.63	0.0028	18.85	0.0030	8.23						
	0.0014	10.52	0.0013	14.66	0.0014	4.11						


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 3)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
7.50 - 8.00
9.50 - 10.0
11.50 - 12.00
14.50 - 15.00
17.50 - 18.00
20.50 - 21.00
23.50 - 24.00
26.50 - 27.00
29.50 - 30.00

Sample Name	LP - 4		LP - 4		LP - 4		LP - 4		LP - 4		LP - 4	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 4		LP - 4		LP - 4		LP - 4		LP - 4		LP - 4	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CL		CL		CL		CL		CL		SC - SM	
D90	0.4987		0.3895		0.4221		7.0160		0.4881		6.8461	
D60	0.0501		0.0778		0.0818		0.3993		0.0700		0.8004	
D50	0.0320		0.0489		0.0525		0.1529		0.0555		0.2373	
D30	0.0116		0.0155		0.0162		0.0393		0.0170		0.0493	
D10	-		0.0031		-		0.0073		0.0040		0.0028	
ρs density of soil grain	2.665		2.657		2.653		2.662		2.658		2.659	
WL	32.03		31.49		31.63		31.31		30.68		22.99	
Wp	18.93		18.40		17.92		18.84		18.02		17.77	
Ip	13.10		13.09		13.71		12.47		12.66		5.22	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52	100.00	9.52		9.52	100.00
	4.75		4.75		4.75		4.75	80.95	4.75		4.75	82.16
	2.00	100.00	2.00	100.00	2.00	100.00	2.00	70.95	2.00	100.00	2.00	67.15
	0.85	95.06	0.85	97.33	0.85	96.01	0.85	64.38	0.85	95.38	0.85	60.50
	0.42	88.87	0.42	91.67	0.42	89.97	0.42	60.55	0.42	88.99	0.42	56.17
	0.25	84.72	0.25	82.39	0.25	80.33	0.25	56.04	0.25	82.82	0.25	51.14
	0.11	75.43	0.11	67.17	0.11	66.27	0.11	47.02	0.11	68.45	0.11	38.16
	0.07	68.00	0.07	59.00	0.07	57.88	0.07	40.25	0.07	61.94	0.07	34.08
Hydrometer Analysis	0.0397	56.52	0.0398	46.76	0.0404	45.56	0.0408	30.70	0.0408	45.96	0.0408	28.60
	0.0291	47.60	0.0289	41.84	0.0292	40.50	0.0298	25.29	0.0295	40.55	0.0295	25.23
	0.0191	38.67	0.0189	34.46	0.0191	32.90	0.0195	19.87	0.0193	32.44	0.0191	21.87
	0.0114	29.75	0.0114	24.61	0.0114	25.31	0.0116	14.45	0.0115	24.33	0.0114	16.82
	0.0082	23.80	0.0082	19.69	0.0082	20.25	0.0084	10.84	0.0083	18.92	0.0082	13.46
	0.0059	20.82	0.0059	14.77	0.0059	17.72	0.0060	9.03	0.0060	13.52	0.0059	11.77
	0.0029	14.87	0.0030	9.84	0.0030	12.66	0.0030	5.42	0.0030	8.11	0.0029	10.09
	0.0014	11.90	0.0014	7.38	0.0014	10.12	0.0014	3.61	0.0014	5.41	0.0014	8.41

Sample Name	LP - 4		LP - 4		LP - 4		LP - 4		LP - 4		LP - 4	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 4		LP - 4		LP - 4		LP - 4		LP - 4		LP - 4	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	6.50		7.50		8.50		9.50		10.50		11.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		11.00		12.00	
Soil classification	CL		SC - SM		MH		SC - SM		-		SC - SM	
D90	0.5919		3.5517		0.3218		4.6643		8.8909		4.1355	
D60	0.0673		0.2518		0.0740		0.3098		1.5064		0.1704	
D50	0.0382		0.1480		0.0415		0.1678		0.5782		0.0844	
D30	0.0143		0.0399		0.0042		0.0403		0.1058		0.0255	
D10	0.0025		0.0028		-		0.0018		0.0366		-	
ρs density of soil grain	2.657		2.662		2.692		2.660		2.651		2.660	
WL	30.60		23.50		62.03		22.66		NON PLASTIS		22.96	
Wp	17.99		16.71		33.02		18.15				17.83	
Ip	12.61		6.79		29.01		4.51		-		5.13	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10		19.10		19.10	100.00	19.10	
	9.52		9.52	96.39	9.52		9.52	100.00	9.52	91.79	9.52	100.00
	4.75		4.75	92.41	4.75		4.75	90.38	4.75	78.22	4.75	92.34
	2.00	100.00	2.00	86.88	2.00	100.00	2.00	78.30	2.00	64.06	2.00	81.85
	0.85	94.12	0.85	76.76	0.85	97.31	0.85	71.36	0.85	54.60	0.85	73.67
	0.42	87.26	0.42	68.62	0.42	93.58	0.42	64.18	0.42	47.32	0.42	69.72
	0.25	80.36	0.25	59.91	0.25	87.38	0.25	57.73	0.25	41.31	0.25	65.78
	0.11	69.14	0.11	45.83	0.11	69.91	0.11	44.09	0.11	29.94	0.11	55.25
	0.07	62.16	0.07	39.02	0.07	60.01	0.07	37.43	0.07	23.39	0.07	47.36
Hydrometer Analysis	0.0398	51.22	0.0417	31.29	0.0374	48.74	0.0413	30.34	0.0428	12.06	0.0403	37.95
	0.0292	43.13	0.0302	27.12	0.0272	44.50	0.0299	26.54	0.0316	8.35	0.0295	31.62
	0.0191	35.04	0.0195	22.95	0.0176	40.27	0.0195	20.86	0.0206	5.57	0.0191	27.41
	0.0114	26.96	0.0115	18.78	0.0104	36.03	0.0115	17.06	0.0121	3.71	0.0114	21.08
	0.0082	21.56	0.0082	16.69	0.0075	33.91	0.0082	15.17	0.0086	3.25	0.0081	18.97
	0.0059	16.17	0.0059	14.60	0.0053	31.79	0.0059	13.27	0.0061	2.78	0.0058	16.86
	0.0030	10.78	0.0030	10.43	0.0027	27.55	0.0029	11.38	0.0030	1.86	0.0029	14.76
	0.0014	8.09	0.0014	6.26	0.0013	25.43	0.0014	9.48	0.0014	0.93	0.0014	12.65

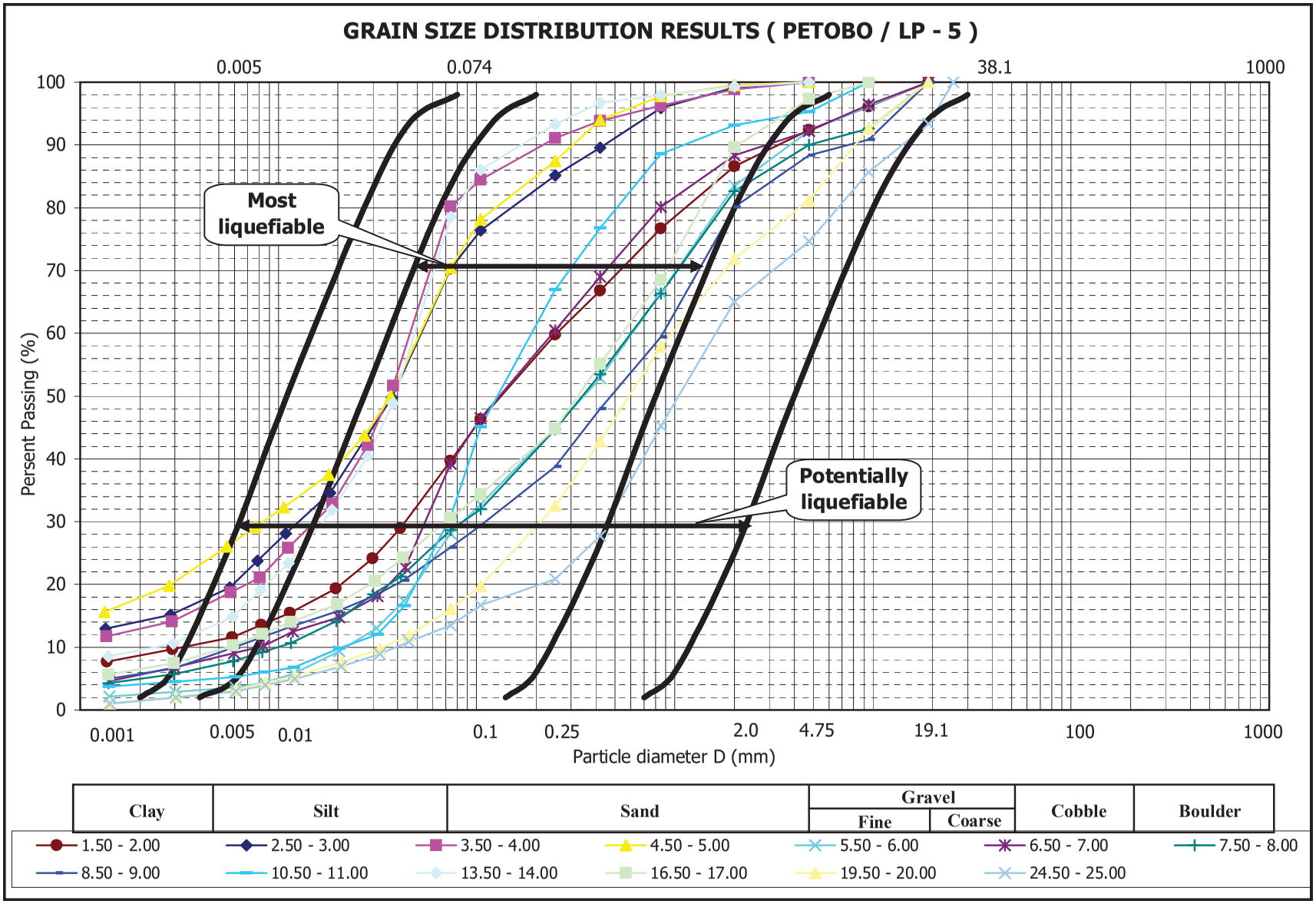
Sample Name	LP - 4		LP - 4		LP - 4		LP - 4					
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 26, 2018		December 26, 2018		December 26, 2018		December 26, 2018					
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA					
Sample No	LP - 4		LP - 4		LP - 4		LP - 4					
Location	PETOBO		PETOBO		PETOBO		PETOBO					
Upper Depth(m)	13.50		16.50		19.50		26.50					
Lower Depth(m)	14.00		17.00		20.00		27.00					
Soil classification	-		-		CL		-					
D90	7.8860		3.3846		0.4527		1.1878					
D60	0.6717		0.4178		0.0640		0.3393					
D50	0.4737		0.2971		0.0453		0.2486					
D30	0.2224		0.1161		0.0186		0.1203					
D10	0.0559		0.0273		0.0023		0.0277					
ρs density of soil grain	2.649		2.662		2.696		2.651					
WL	NON PLASTIS		NON PLASTIS		28.62		NON PLASTIS					
Wp					18.73							
Ip	-		-		9.89		-					
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)				
Sieve Analysis	38.10		38.10		38.10		38.10					
	25.40		25.40		25.40		25.40					
	19.10	100.00	19.10	100.00	19.10		19.10					
	9.52	91.84	9.52	95.38	9.52		9.52					
	4.75	86.48	4.75	92.06	4.75		4.75					
	2.00	81.05	2.00	87.91	2.00	100.00	2.00	100.00				
	0.85	64.67	0.85	75.41	0.85	94.90	0.85	85.84				
	0.42	44.32	0.42	60.18	0.42	89.60	0.42	68.84				
	0.25	30.78	0.25	46.09	0.25	83.04	0.25	50.22				
	0.11	16.79	0.11	28.66	0.11	72.12	0.11	27.61				
	0.07	11.21	0.07	22.97	0.07	65.32	0.07	20.13				
Hydrometer Analysis	0.0469	8.45	0.0465	13.81	0.0403	47.33	0.0462	13.55				
	0.0333	7.40	0.0331	10.74	0.0295	38.98	0.0330	11.08				
	0.0211	6.34	0.0211	9.21	0.0193	30.63	0.0210	8.62				
	0.0123	5.28	0.0122	7.67	0.0114	23.67	0.0122	7.39				
	0.0087	4.23	0.0087	6.14	0.0082	19.49	0.0087	6.16				
	0.0062	3.17	0.0062	4.60	0.0059	16.71	0.0062	4.93				
	0.0031	2.11	0.0031	3.07	0.0029	11.14	0.0031	3.69				
	0.0014	1.06	0.0014	1.53	0.0014	8.35	0.0014	2.46				


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 4)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
11.50 - 12 00
13.50 - 14.00
16.50 - 17.00
19.50 - 20.00
26.50 - 27.

Sample Name	LP - 5		LP - 5		LP - 5		LP - 5		LP - 5		LP - 5	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 5		LP - 5		LP - 5		LP - 5		LP - 5		LP - 5	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification			CL		CL		CL					
D90	3.6175		0.4495		0.2260		0.3165		4.0521		3.1825	
D60	0.2550		0.0556		0.0486		0.0551		0.6461		0.2453	
D50	0.1448		0.0377		0.0363		0.0370		0.3583		0.1417	
D30	0.0444		0.0130		0.0157		0.0085		0.0867		0.0571	
D10	0.0034		-		-		-		0.0221		0.0080	
ρs density of soil grain	2.665		2.663		2.648		2.642		2.648		2.646	
WL	NON PLASTIS		30.17		27.73		29.86		NON PLASTIS		NON PLASTIS	
Wp			20.85		20.30		20.67					
Ip	-		9.33		7.43		9.19		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10		19.10	100.00	19.10	100.00
	9.52	96.10	9.52		9.52		9.52		9.52	96.22	9.52	96.40
	4.75	92.37	4.75	100.00	4.75	100.00	4.75	100.00	4.75	92.22	4.75	92.22
	2.00	86.62	2.00	99.13	2.00	98.86	2.00	99.56	2.00	83.46	2.00	88.33
	0.85	76.69	0.85	95.89	0.85	96.23	0.85	97.76	0.85	66.41	0.85	80.11
	0.42	66.82	0.42	89.57	0.42	93.85	0.42	93.96	0.42	52.89	0.42	68.97
	0.25	59.79	0.25	85.18	0.25	91.09	0.25	87.46	0.25	44.93	0.25	60.45
	0.11	46.29	0.11	76.37	0.11	84.47	0.11	78.14	0.11	32.75	0.11	46.46
	0.07	39.68	0.07	70.26	0.07	80.19	0.07	70.45	0.07	28.10	0.07	39.19
Hydrometer Analysis	0.0412	28.97	0.0373	49.75	0.0380	51.60	0.0370	49.98	0.0428	17.36	0.0438	22.70
	0.0300	24.15	0.0274	43.26	0.0283	42.22	0.0273	43.73	0.0312	13.02	0.0316	18.16
	0.0195	19.32	0.0182	34.61	0.0187	32.84	0.0179	37.49	0.0202	9.40	0.0203	14.75
	0.0115	15.45	0.0109	28.12	0.0112	25.80	0.0107	32.28	0.0120	5.79	0.0118	12.48
	0.0082	13.52	0.0079	23.79	0.0081	21.11	0.0077	29.16	0.0085	4.34	0.0084	10.21
	0.0058	11.59	0.0057	19.47	0.0058	18.76	0.0055	26.03	0.0061	3.62	0.0060	9.08
	0.0029	9.66	0.0029	15.14	0.0029	14.07	0.0028	19.78	0.0030	2.89	0.0030	6.81
	0.0014	7.73	0.0013	12.98	0.0014	11.73	0.0013	15.62	0.0014	2.17	0.0014	4.54

Sample Name	LP - 5		LP - 5		LP - 5		LP - 5		LP - 5		LP - 5	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019		January 13, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 5		LP - 5		LP - 5		LP - 5		LP - 5		LP - 5	
Location	BALAROA		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	7.50		8.50		10.50		13.50		16.50		19.50	
Lower Depth(m)	8.00		9.00		11.00		14.00		17.00		20.00	
Soil classification							CL					
D90	4.7696		7.9205		1.2074		0.1845		2.1314		8.4383	
D60	0.6394		0.8821		0.2039		0.0514		0.5765		1.0245	
D50	0.3532		0.4958		0.1377		0.0392		0.3357		0.6249	
D30	0.0865		0.1145		0.0724		0.0171		0.0710		0.2210	
D10	0.0101		0.0060		0.0214		0.0025		0.0056		0.0341	
ρs density of soil grain	2.642		2.644		2.636		2.620		2.640		2.652	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		32.44		NON PLASTIS		NON PLASTIS	
Wp							22.61					
Ip	-		-		-		9.83		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10	100.00	19.10		19.10		19.10		19.10	100.00
	9.52	92.59	9.52	90.85	9.52	100.00	9.52		9.52	100.00	9.52	92.58
	4.75	89.99	4.75	88.31	4.75	95.26	4.75	100.00	4.75	97.36	4.75	81.22
	2.00	82.62	2.00	80.11	2.00	93.16	2.00	99.29	2.00	89.63	2.00	71.86
	0.85	66.30	0.85	59.42	0.85	88.57	0.85	97.95	0.85	68.46	0.85	57.88
	0.42	53.44	0.42	47.99	0.42	76.74	0.42	96.73	0.42	55.15	0.42	42.83
	0.25	44.68	0.25	38.74	0.25	66.97	0.25	93.26	0.25	44.76	0.25	32.55
	0.11	32.00	0.11	29.39	0.11	45.06	0.11	86.04	0.11	34.36	0.11	19.76
	0.07	28.65	0.07	25.88	0.07	30.75	0.07	78.54	0.07	30.61	0.07	16.03
Hydrometer Analysis	0.0415	21.28	0.0426	20.68	0.0434	16.57	0.0378	48.84	0.0425	24.28	0.0456	11.92
	0.0300	18.44	0.0306	18.19	0.0317	12.05	0.0282	40.35	0.0307	20.55	0.0326	9.75
	0.0196	14.19	0.0197	15.71	0.0203	9.79	0.0187	31.86	0.0198	16.81	0.0208	7.58
	0.0116	10.64	0.0115	13.23	0.0120	6.78	0.0113	23.36	0.0116	14.01	0.0121	5.42
	0.0083	9.22	0.0082	11.58	0.0085	6.03	0.0081	19.11	0.0083	12.14	0.0086	4.33
	0.0059	7.80	0.0059	9.92	0.0060	5.27	0.0059	14.87	0.0059	10.27	0.0061	3.25
	0.0030	5.67	0.0030	6.62	0.0030	4.52	0.0030	10.62	0.0030	7.47	0.0030	2.17
	0.0014	4.26	0.0014	4.96	0.0014	3.77	0.0014	8.49	0.0014	5.60	0.0014	1.08

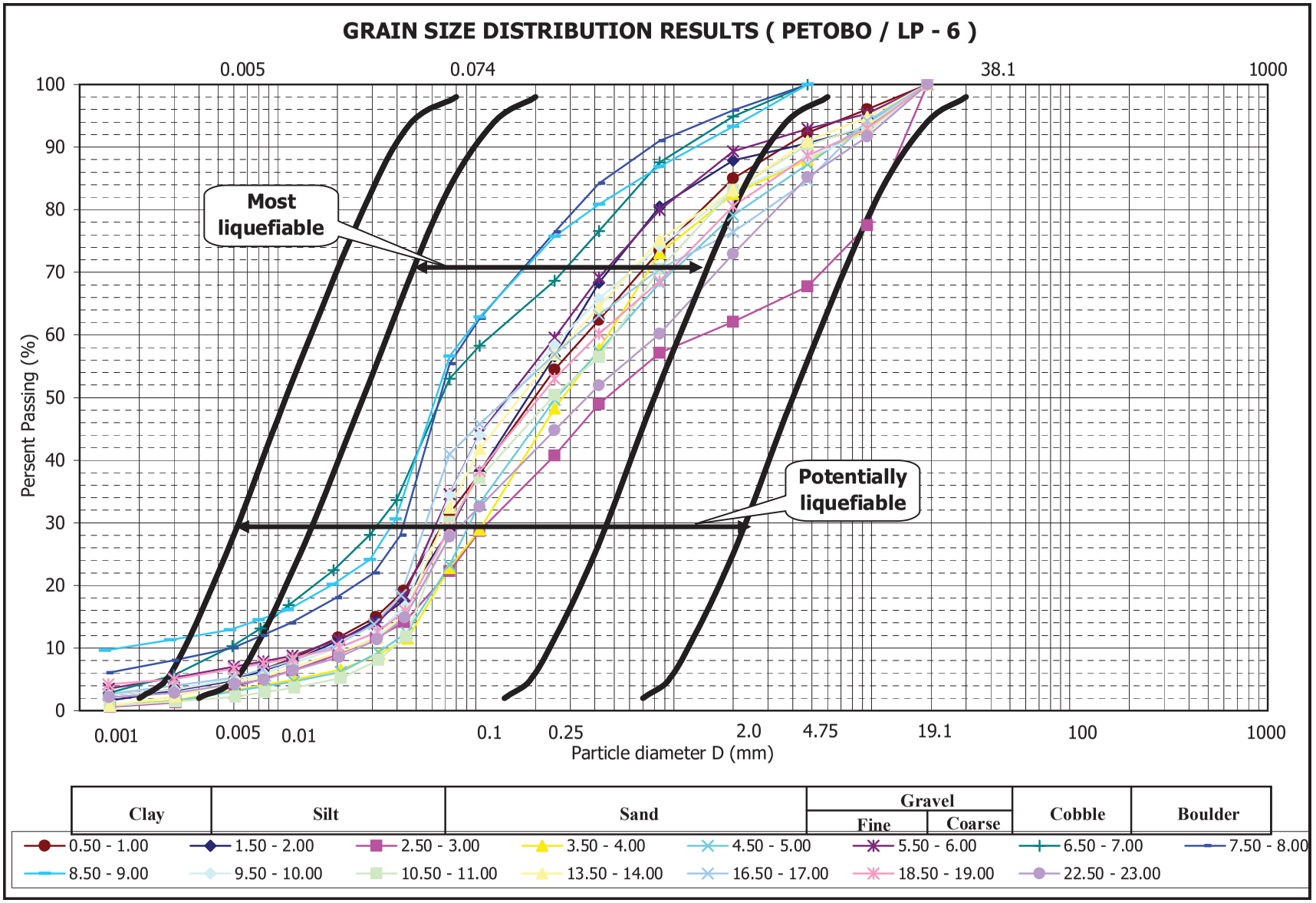
Sample Name	LP - 5											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 13, 2019											
Tester	PT. INDRA KARYA											
Sample No	LP - 5											
Location	BALAROA											
Upper Depth(m)	24.50											
Lower Depth(m)	25.00											
Soil classification												
D90	14.9044											
D60	1.7071											
D50	1.1250											
D30	0.4763											
D10	0.0396											
ρs density of soil grain	2.656											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40	100.00										
	19.10	93.36										
	9.52	85.68										
	4.75	74.67										
	2.00	65.03										
	0.85	45.28										
	0.42	27.70										
	0.25	20.89										
	0.11	16.65										
	0.07	13.50										
Hydrometer Analysis	0.0456	10.92										
	0.0325	8.93										
	0.0208	6.95										
	0.0121	4.96										
	0.0086	3.97										
	0.0061	2.98										
	0.0030	1.99										
	0.0014	0.99										


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 5)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
10.50 - 11.00
13.50 - 14.00
16.50 - 17.00
19.50 - 20.00
24.50 - 25.00

Sample Name	LP - 6		LP - 6		LP - 6		LP - 6		LP - 6		LP - 6	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 6		LP - 6		LP - 6		LP - 6		LP - 6		LP - 6	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		-		-		-		-		-	
D90	3.8936		4.1061		14.8464		6.7472		6.7130		2.5326	
D60	0.3686		0.2990		1.5176		0.4823		0.5240		0.2574	
D50	0.2112		0.1984		0.4753		0.2812		0.2582		0.1600	
D30	0.0703		0.0771		0.1210		0.1133		0.0952		0.0655	
D10	0.0161		0.0172		0.0246		0.0375		0.0350		0.0160	
ρs density of soil grain	2.670		2.682		2.669		2.667		2.673		2.673	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00
	9.52	96.00	9.52	93.15	9.52	77.48	9.52	92.86	9.52	93.89	9.52	95.33
	4.75	92.26	4.75	90.65	4.75	67.74	4.75	87.94	4.75	87.28	4.75	92.92
	2.00	85.00	2.00	87.87	2.00	62.08	2.00	82.56	2.00	79.06	2.00	89.30
	0.85	73.46	0.85	80.50	0.85	57.12	0.85	73.11	0.85	68.29	0.85	79.96
	0.42	62.41	0.42	68.36	0.42	48.95	0.42	57.78	0.42	57.35	0.42	69.22
	0.25	54.45	0.25	56.62	0.25	40.71	0.25	48.26	0.25	49.63	0.25	59.58
	0.11	37.82	0.11	38.03	0.11	28.67	0.11	28.90	0.11	33.14	0.11	44.13
	0.07	31.50	0.07	28.86	0.07	22.29	0.07	22.78	0.07	23.24	0.07	34.55
Hydrometer Analysis	0.0433	19.15	0.0433	17.52	0.0435	14.14	0.0453	11.49	0.0448	12.42	0.0437	18.35
	0.0314	14.98	0.0313	14.33	0.0314	11.57	0.0325	9.03	0.0323	9.32	0.0317	13.98
	0.0202	11.65	0.0202	11.15	0.0202	9.00	0.0208	6.57	0.0208	6.21	0.0203	11.36
	0.0119	8.32	0.0119	7.96	0.0119	6.43	0.0121	4.93	0.0121	4.66	0.0119	8.74
	0.0085	6.66	0.0085	6.37	0.0085	5.14	0.0086	4.10	0.0086	3.88	0.0085	7.86
	0.0061	4.99	0.0060	4.78	0.0061	3.86	0.0061	3.28	0.0061	3.11	0.0060	6.99
	0.0030	3.33	0.0030	3.19	0.0031	1.29	0.0031	1.64	0.0030	1.55	0.0030	5.24
	0.0014	2.50	0.0014	1.59	0.0014	0.64	0.0014	0.82	0.0014	0.78	0.0014	3.50

Sample Name	LP - 6		LP - 6		LP - 6		LP - 6		LP - 6		LP - 6	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018		December 30, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	LP - 6		LP - 6		LP - 6		LP - 6		LP - 6		LP - 6	
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO		PETOBO	
Upper Depth(m)	6.50		7.50		8.50		9.50		10.50		13.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		11.00		14.00	
Soil classification	-		CL - ML		-		-		-			
D90	1.2303		0.7861		1.4059		6.7394		4.6407		2.5583	
D60	0.1289		0.0937		0.0909		0.2866		0.5296		0.2427	
D50	0.0687		0.0677		0.0652		0.1653		0.2457		0.1528	
D30	0.0330		0.0441		0.0385		0.0666		0.0739		0.0628	
D10	0.0057		0.0059		0.0017		0.0203		0.0386		0.0085	
ρs density of soil grain	2.689		2.701		2.698		2.669		2.687		2.670	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52		9.52		9.52	92.29	9.52	93.43	9.52	94.82
	4.75	100.00	4.75	100.00	4.75	100.00	4.75	88.36	4.75	90.28	4.75	90.94
	2.00	94.93	2.00	95.89	2.00	93.31	2.00	82.90	2.00	83.16	2.00	83.11
	0.85	87.57	0.85	91.01	0.85	86.90	0.85	74.17	0.85	70.57	0.85	75.18
	0.42	76.59	0.42	84.24	0.42	80.82	0.42	65.78	0.42	56.41	0.42	64.44
	0.25	68.62	0.25	76.45	0.25	75.78	0.25	58.41	0.25	50.42	0.25	56.87
	0.11	58.30	0.11	62.65	0.11	62.83	0.11	44.01	0.11	37.12	0.11	41.78
	0.07	53.02	0.07	55.37	0.07	56.61	0.07	34.37	0.07	30.10	0.07	32.45
Hydrometer Analysis	0.0399	33.64	0.0417	27.98	0.0393	30.55	0.0439	16.74	0.0446	11.80	0.0439	15.47
	0.0293	28.04	0.0305	21.98	0.0292	24.12	0.0319	12.55	0.0323	8.11	0.0319	11.60
	0.0191	22.43	0.0197	17.99	0.0190	20.10	0.0204	10.04	0.0208	5.16	0.0204	9.28
	0.0114	16.82	0.0116	13.99	0.0112	16.08	0.0120	7.53	0.0121	3.69	0.0120	6.96
	0.0082	13.08	0.0083	11.99	0.0080	14.47	0.0085	5.86	0.0086	2.95	0.0085	5.41
	0.0059	10.28	0.0059	9.99	0.0057	12.86	0.0061	5.02	0.0061	2.21	0.0061	4.64
	0.0030	5.61	0.0029	7.99	0.0029	11.26	0.0030	3.35	0.0030	1.47	0.0030	2.32
	0.0014	2.80	0.0014	6.00	0.0013	9.65	0.0014	2.51	0.0014	0.74	0.0014	0.77

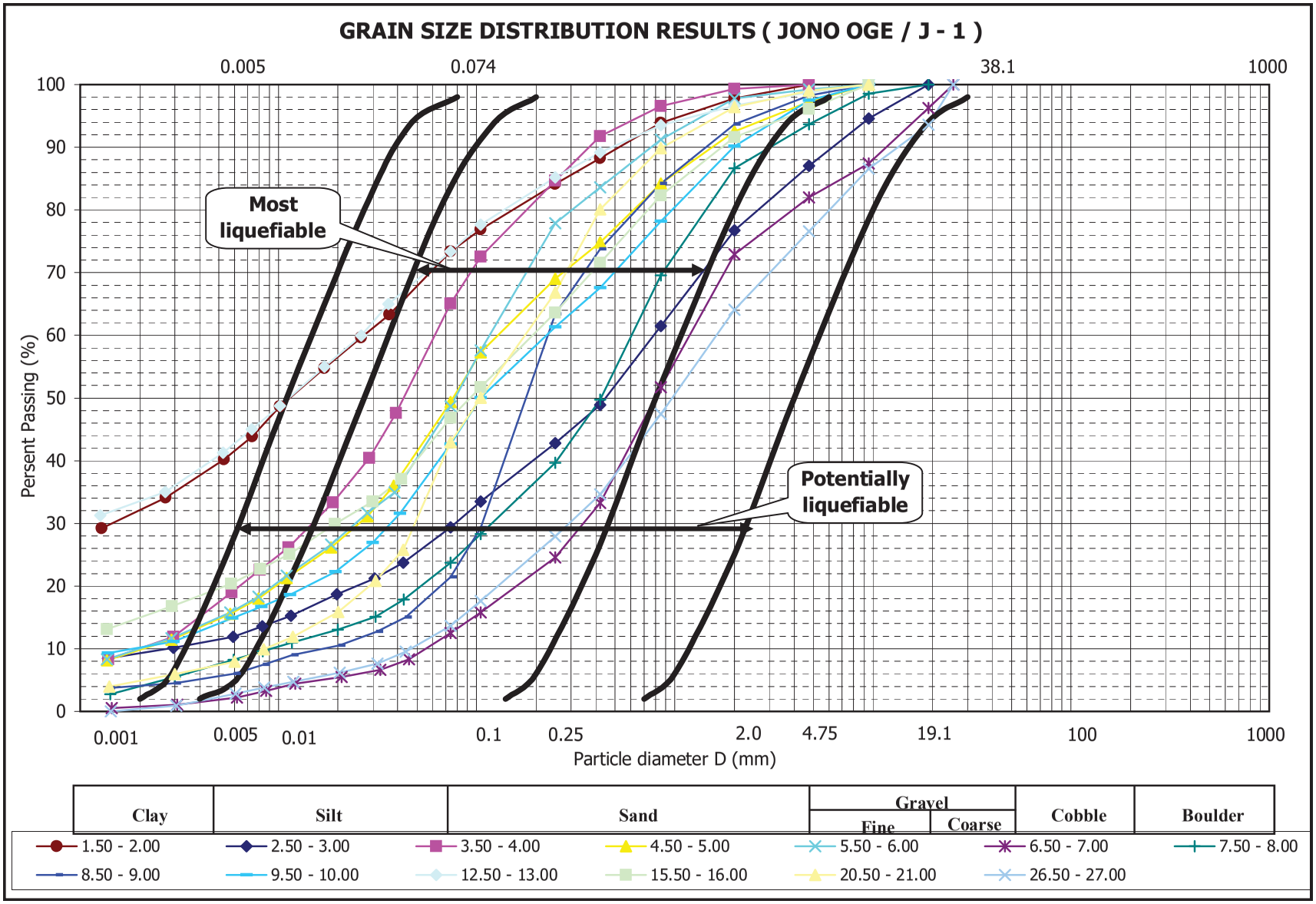
Sample Name	LP - 6		LP - 6		LP - 6							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 30, 2018		December 30, 2018		December 30, 2018							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	LP - 6		LP - 6		LP - 6							
Location	PETOBO		PETOBO		PETOBO							
Upper Depth(m)	16.50		18.50		22.50							
Lower Depth(m)	17.00		19.00		23.00							
Soil classification												
D90	3.7826		2.4115		3.4275							
D60	0.2259		0.2603		0.2408							
D50	0.0772		0.1717		0.1083							
D30	0.0580		0.0652		0.0579							
D10	0.0175		0.0065		0.0144							
ρs density of soil grain	2.684		2.670		2.669							
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS							
Wp												
Ip	-		-		-							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10	100.00	19.10	100.00	19.10	100.00						
	9.52	94.22	9.52	92.95	9.52	91.72						
	4.75	84.66	4.75	88.63	4.75	85.24						
	2.00	76.45	2.00	80.52	2.00	72.95						
	0.85	70.59	0.85	68.55	0.85	60.21						
	0.42	63.14	0.42	60.15	0.42	51.97						
	0.25	56.90	0.25	53.05	0.25	44.80						
	0.11	45.76	0.11	38.29	0.11	32.59						
	0.07	40.96	0.07	29.10	0.07	27.73						
Hydrometer Analysis	0.0419	18.42	0.0442	15.91	0.0437	14.90						
	0.0308	13.82	0.0319	12.56	0.0317	11.35						
	0.0200	10.53	0.0204	10.05	0.0204	8.51						
	0.0118	7.90	0.0119	8.37	0.0120	6.39						
	0.0084	6.58	0.0085	7.53	0.0085	4.97						
	0.0060	5.26	0.0060	6.70	0.0061	4.26						
	0.0030	3.95	0.0030	5.02	0.0030	2.84						
	0.0014	2.63	0.0014	4.19	0.0014	2.13						


GRAIN SIZE DISTRIBUTION RESULTS (PETOBO / LP - 6)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
13.50 - 14.00
16.50 - 17.00
18.50 - 19.00
22.50 - 23.00

Sample Name	J - 1		J - 1		J - 1		J - 1		J - 1		J - 1	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 1		J - 1		J - 1		J - 1		J - 1		J - 1	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	CL		-		CL - ML		CL - CM		SC - SM		-	
D90	0.5524		6.6176		0.3774		1.6485		0.7811		12.3166	
D60	0.0272		0.7998		0.0639		0.1386		0.1221		1.2995	
D50	0.0117		0.4585		0.0441		0.0766		0.0786		0.8107	
D30	0.0015		0.0786		0.0154		0.0259		0.0249		0.3567	
D10	-		0.0028		0.0021		0.0022		0.0021		0.0572	
ρs density of soil grain	2.644		2.632		2.662		2.666		2.668		2.631	
WL	46.27		NON PLASTIS		27.75		25.37		24.95		NON PLASTIS	
Wp	24.61				21.91		20.18		19.99			
Ip	21.66		-		5.84		5.19		4.96		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	100.00
	19.10		19.10	100.00	19.10		19.10		19.10		19.10	96.23
	9.52		9.52	94.61	9.52		9.52	100.00	9.52	100.00	9.52	87.43
	4.75	100.00	4.75	87.03	4.75	100.00	4.75	97.25	4.75	99.21	4.75	81.99
	2.00	97.79	2.00	76.75	2.00	99.35	2.00	92.56	2.00	97.81	2.00	72.96
	0.85	93.93	0.85	61.47	0.85	96.57	0.85	84.19	0.85	91.22	0.85	51.68
	0.42	88.25	0.42	48.87	0.42	91.78	0.42	74.80	0.42	83.59	0.42	33.25
	0.25	84.12	0.25	42.78	0.25	84.68	0.25	69.05	0.25	77.92	0.25	24.52
	0.11	76.85	0.11	33.49	0.11	72.50	0.11	57.27	0.11	57.61	0.11	15.79
	0.07	73.37	0.07	29.39	0.07	65.10	0.07	49.33	0.07	48.68	0.07	12.49
Hydrometer Analysis	0.0363	63.31	0.0426	23.75	0.0393	47.57	0.0382	36.00	0.0387	34.95	0.0456	8.28
	0.0263	59.66	0.0306	21.20	0.0288	40.43	0.0281	31.09	0.0281	31.62	0.0327	6.63
	0.0171	54.79	0.0197	18.66	0.0189	33.30	0.0184	26.18	0.0184	26.63	0.0209	5.52
	0.0102	48.70	0.0116	15.26	0.0113	26.16	0.0110	21.27	0.0110	21.63	0.0122	4.42
	0.0074	43.83	0.0083	13.57	0.0081	22.59	0.0079	18.00	0.0079	18.31	0.0087	3.31
	0.0053	40.18	0.0059	11.87	0.0058	19.03	0.0057	15.54	0.0057	15.81	0.0062	2.21
	0.0027	34.09	0.0030	10.18	0.0030	11.89	0.0029	11.45	0.0029	11.65	0.0031	1.10
	0.0013	29.22	0.0014	8.48	0.0014	8.32	0.0014	8.18	0.0014	8.32	0.0014	0.55

Sample Name	J - 1		J - 1		J - 1		J - 1		J - 1		J - 1	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 1		J - 1		J - 1		J - 1		J - 1		J - 1	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		12.50		15.50		20.50	
Lower Depth(m)	8.00		9.00		10.00		13.00		16.00		21.00	
Soil classification	-		-		-		CL		CL - ML		-	
D90	3.3126		1.5518		1.9846		0.5025		1.8027		0.8698	
D60	0.6429		0.2357		0.2327		0.0262		0.2059		0.1911	
D50	0.4265		0.1932		0.1048		0.0116		0.0943		0.1048	
D30	0.1271		0.1081		0.0372		-		0.0195		0.0503	
D10	0.0093		0.0173		0.0020		-		-		0.0086	
ρs density of soil grain	2.642		2.673		2.638		2.675		2.650		2.665	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		47.12		26.26		NON PLASTIS	
Wp							24.95		20.40			
Ip	-		-		-		22.17		5.86		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10		19.10		19.10	
	9.52	98.54	9.52	100.00	9.52	100.00	9.52	100.00	9.52	100.00	9.52	100.00
	4.75	93.65	4.75	98.23	4.75	97.52	4.75	98.78	4.75	96.11	4.75	99.02
	2.00	86.67	2.00	93.70	2.00	90.16	2.00	96.61	2.00	91.59	2.00	96.44
	0.85	69.57	0.85	84.21	0.85	78.20	0.85	93.52	0.85	82.34	0.85	89.89
	0.42	49.70	0.42	73.77	0.42	67.62	0.42	89.17	0.42	71.54	0.42	80.10
	0.25	39.63	0.25	63.36	0.25	61.35	0.25	85.21	0.25	63.63	0.25	66.83
	0.11	28.27	0.11	29.27	0.11	50.04	0.11	77.68	0.11	51.68	0.11	50.04
	0.07	23.72	0.07	21.42	0.07	42.64	0.07	73.37	0.07	46.80	0.07	42.93
Hydrometer Analysis	0.0429	17.83	0.0439	15.03	0.0411	31.60	0.0360	64.98	0.0416	37.08	0.0426	25.78
	0.0310	15.09	0.0315	12.77	0.0299	26.95	0.0262	59.98	0.0299	33.49	0.0310	20.83
	0.0199	13.03	0.0202	10.52	0.0194	22.31	0.0170	54.98	0.0193	29.90	0.0201	15.87
	0.0117	10.97	0.0118	9.02	0.0115	18.59	0.0102	48.74	0.0114	25.12	0.0118	11.90
	0.0083	9.60	0.0084	7.51	0.0082	16.73	0.0073	44.99	0.0081	22.73	0.0084	9.92
	0.0059	8.23	0.0060	6.01	0.0058	14.87	0.0053	41.24	0.0058	20.33	0.0060	7.93
	0.0030	5.49	0.0030	4.51	0.0029	11.15	0.0027	34.99	0.0029	16.74	0.0030	5.95
	0.0014	2.74	0.0014	3.76	0.0014	9.29	0.0013	31.24	0.0014	13.16	0.0014	3.97

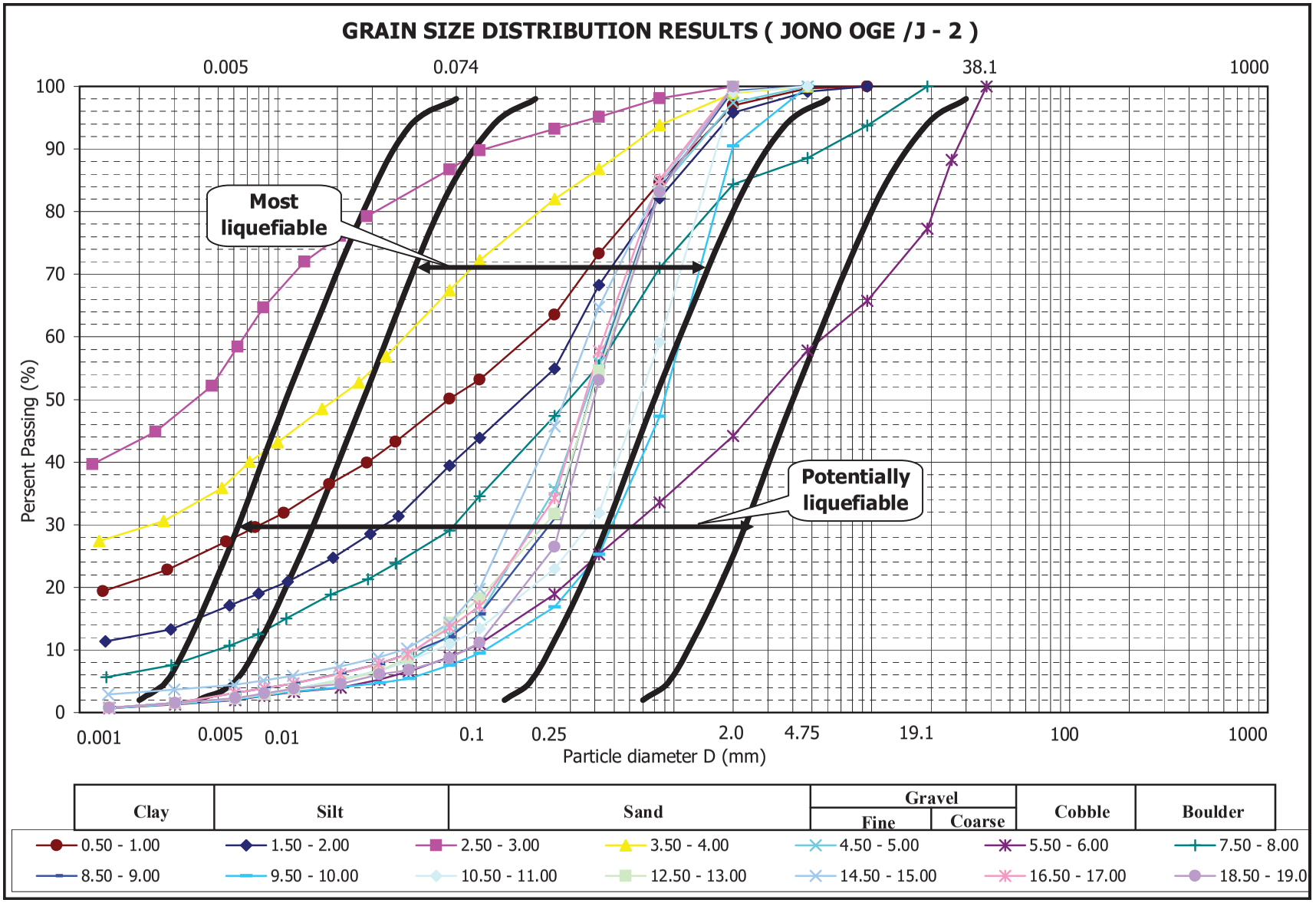
Sample Name	J - 1											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 1											
Location	JONO OGE											
Upper Depth(m)	26.50											
Lower Depth(m)	27.00											
Soil classification	-											
D90	14.2118											
D60	1.7172											
D50	1.0282											
D30	0.3032											
D10	0.0476											
ρs density of soil grain	2.669											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40	100.00										
	19.10	93.59										
	9.52	86.55										
	4.75	76.57										
	2.00	64.11										
	0.85	47.41										
	0.42	34.62										
	0.25	27.89										
	0.11	17.63										
	0.07	13.62										
Hydrometer Analysis	0.0439	9.50										
	0.0317	7.60										
	0.0203	6.17										
	0.0119	4.75										
	0.0085	3.80										
	0.0061	2.85										
	0.0031	0.95										
	0.0014	0.00										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 1)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
12.50 - 13.00
15.50 - 16.00
20.50 - 21.00
26.50 - 27.00

Sample Name	J - 2		J - 2		J - 2		J - 2		J - 2		J - 2	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 2		J - 2		J - 2		J - 2		J - 2		J - 2	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	CL - ML		SC - SM		CL		CL		-		-	
D90	1.3510		1.5136		0.1137		0.6159		1.3849		27.2993	
D60	0.2005		0.3151		0.0068		0.0466		0.4837		6.0610	
D50	0.0736		0.1856		0.0040		0.0200		0.3705		3.1710	
D30	0.0082		0.0354		-		0.0024		0.2091		0.6650	
D10	-		-		-		-		0.0578		0.0908	
ρs density of soil grain	2.661		2.635		2.676		2.651		2.646		2.661	
WL	25.25		24.57		52.98		36.90		NON PLASTIS		NON PLASTIS	
Wp	20.33		18.85		23.95		21.61					
Ip	4.93		5.73		29.03		15.29		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	100.00
	25.40		25.40		25.40		25.40		25.40		25.40	88.24
	19.10		19.10		19.10		19.10		19.10		19.10	77.27
	9.52	100.00	9.52	100.00	9.52		9.52		9.52		9.52	65.75
	4.75	99.68	4.75	99.19	4.75		4.75	100.00	4.75	100.00	4.75	57.82
	2.00	96.95	2.00	95.78	2.00	100.00	2.00	98.94	2.00	97.42	2.00	44.20
	0.85	84.64	0.85	82.11	0.85	98.09	0.85	93.81	0.85	83.54	0.85	33.58
	0.42	73.30	0.42	68.24	0.42	95.13	0.42	86.81	0.42	55.90	0.42	25.26
	0.25	63.55	0.25	54.89	0.25	93.24	0.25	82.00	0.25	35.64	0.25	18.92
	0.11	53.15	0.11	43.88	0.11	89.79	0.11	72.22	0.11	15.63	0.11	10.97
	0.07	50.08	0.07	39.42	0.07	86.72	0.07	67.47	0.07	12.39	0.07	8.86
Hydrometer Analysis	0.0393	43.28	0.0409	31.35	0.0283	79.29	0.0353	56.91	0.0457	8.21	0.0457	6.58
	0.0283	39.87	0.0294	28.50	0.0207	76.16	0.0257	52.69	0.0326	6.72	0.0326	5.27
	0.0182	36.45	0.0190	24.70	0.0137	71.99	0.0167	48.48	0.0208	5.23	0.0208	3.95
	0.0108	31.89	0.0112	20.90	0.0085	64.68	0.0100	43.21	0.0121	3.73	0.0121	3.29
	0.0077	29.61	0.0080	19.00	0.0063	58.42	0.0072	40.04	0.0086	2.99	0.0086	2.63
	0.0055	27.34	0.0057	17.10	0.0047	52.16	0.0052	35.83	0.0061	2.24	0.0061	1.98
	0.0028	22.78	0.0029	13.30	0.0024	44.86	0.0027	30.56	0.0030	1.49	0.0030	1.32
	0.0013	19.36	0.0014	11.40	0.0012	39.64	0.0013	27.40	0.0014	0.75	0.0014	0.66

Sample Name	J - 2		J - 2		J - 2		J - 2		J - 2		J - 2	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019		January 15, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 2		J - 2		J - 2		J - 2		J - 2		J - 2	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		10.50		12.50		14.50	
Lower Depth(m)	8.00		9.00		10.00		11.00		13.00		15.00	
Soil classification	-		-		-		-		-		-	
D90	6.0953		1.3178		1.9880		1.7380		1.3179		1.2614	
D60	0.5460		0.4938		1.1890		0.8735		0.5012		0.3773	
D50	0.3058		0.3840		0.9226		0.7052		0.3857		0.2883	
D30	0.0792		0.2410		0.5122		0.3836		0.2313		0.1623	
D10	0.0051		0.0522		0.1139		0.0642		0.0518		0.0428	
ρs density of soil grain	2.653		2.650		2.660		2.645		2.655		2.654	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10		19.10		19.10	
	9.52	93.75	9.52		9.52		9.52		9.52		9.52	
	4.75	88.53	4.75	100.00	4.75	100.00	4.75	100.00	4.75		4.75	
	2.00	84.37	2.00	99.35	2.00	90.45	2.00	99.09	2.00	100.00	2.00	100.00
	0.85	71.00	0.85	83.59	0.85	47.27	0.85	59.18	0.85	83.14	0.85	84.43
	0.42	55.44	0.42	55.12	0.42	25.29	0.42	31.91	0.42	54.61	0.42	64.80
	0.25	47.34	0.25	30.94	0.25	16.83	0.25	22.99	0.25	31.75	0.25	45.70
	0.11	34.58	0.11	15.69	0.11	9.45	0.11	13.46	0.11	18.23	0.11	19.74
	0.07	29.08	0.07	12.03	0.07	7.52	0.07	10.94	0.07	14.30	0.07	14.36
Hydrometer Analysis	0.0394	23.82	0.0455	9.38	0.0462	5.42	0.0457	8.22	0.0454	8.76	0.0450	10.25
	0.0286	21.31	0.0324	7.81	0.0328	4.74	0.0326	6.73	0.0325	6.57	0.0321	8.79
	0.0185	18.81	0.0207	6.25	0.0208	4.07	0.0208	5.23	0.0208	5.11	0.0205	7.32
	0.0110	15.04	0.0121	4.69	0.0121	3.39	0.0121	3.74	0.0121	3.65	0.0119	5.86
	0.0080	12.54	0.0086	3.91	0.0086	2.71	0.0086	2.99	0.0086	2.92	0.0085	5.13
	0.0057	10.66	0.0061	3.13	0.0061	2.03	0.0061	2.24	0.0061	2.19	0.0060	4.39
	0.0029	7.52	0.0030	1.56	0.0030	1.36	0.0030	1.49	0.0030	1.46	0.0030	3.66
	0.0014	5.64	0.0014	0.78	0.0014	0.68	0.0014	0.75	0.0014	0.73	0.0014	2.93

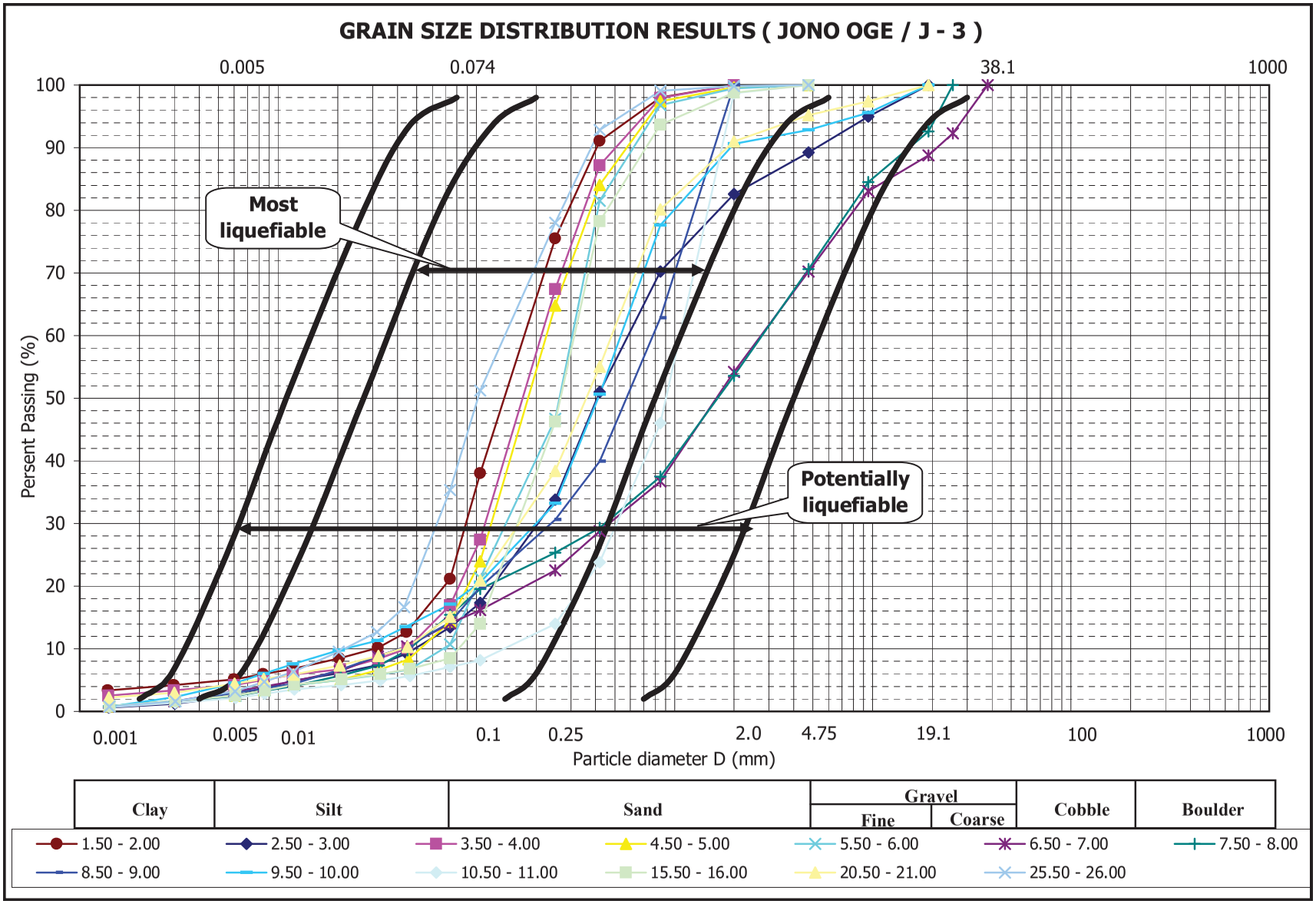
Sample Name	J - 2		J - 2									
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 15, 2019		January 15, 2019									
Tester	PT. INDRA KARYA		PT. INDRA KARYA									
Sample No	J - 2		J - 2									
Location	JONO OGE		JONO OGE									
Upper Depth(m)	16.50		18.50									
Lower Depth(m)	17.00		19.00									
Soil classification	-		-									
D90	1.2261		1.3179									
D60	0.4557		0.5189									
D50	0.3641		0.4003									
D30	0.2143		0.2727									
D10	0.0499		0.0908									
ρs density of soil grain	2.658		2.659									
WL	NON PLASTIS		NON PLASTIS									
Wp												
Ip	-		-									
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)								
Sieve Analysis	38.10		38.10									
	25.40		25.40									
	19.10		19.10									
	9.52		9.52									
	4.75		4.75									
	2.00	100.00	2.00	100.00								
	0.85	85.14	0.85	83.14								
	0.42	57.72	0.42	53.09								
	0.25	34.24	0.25	26.44								
	0.11	16.98	0.11	11.11								
	0.07	13.57	0.07	8.69								
Hydrometer Analysis	0.0454	9.32	0.0460	6.82								
	0.0324	7.77	0.0327	6.07								
	0.0207	6.22	0.0208	4.55								
	0.0120	4.66	0.0121	3.79								
	0.0085	3.88	0.0086	3.03								
	0.0061	3.11	0.0061	2.27								
	0.0030	1.55	0.0030	1.52								
	0.0014	0.78	0.0014	0.76								


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE /J - 2)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
12.50 - 13.00
14.50 - 15.00
16.50 - 17.00
18.50 - 19.0

Sample Name	J - 3		J - 3		J - 3		J - 3		J - 3		J - 3	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 3		J - 3		J - 3		J - 3		J - 3		J - 3	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	-		-		-		-		-		-	
D90	0.4084		5.3758		0.5339		0.6123		0.6583		21.3013	
D60	0.1900		0.6213		0.2233		0.2330		0.3149		2.9964	
D50	0.1514		0.4103		0.1870		0.1975		0.2661		1.7243	
D30	0.0903		0.2164		0.1144		0.1265		0.1546		0.4854	
D10	0.0309		0.0500		0.0447		0.0534		0.0693		0.0415	
ρs density of soil grain	2.668		2.675		2.676		2.678		2.658		2.681	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	100.00
	25.40		25.40		25.40		25.40		25.40		25.40	92.30
	19.10		19.10	100.00	19.10		19.10		19.10		19.10	88.77
	9.52		9.52	94.98	9.52		9.52		9.52		9.52	83.08
	4.75		4.75	89.25	4.75		4.75	100.00	4.75	100.00	4.75	70.24
	2.00	100.00	2.00	82.58	2.00	100.00	2.00	99.59	2.00	99.44	2.00	54.18
	0.85	98.05	0.85	70.25	0.85	97.90	0.85	97.39	0.85	96.82	0.85	36.75
	0.42	91.07	0.42	50.98	0.42	87.15	0.42	84.03	0.42	81.52	0.42	28.79
	0.25	75.51	0.25	33.81	0.25	67.37	0.25	64.79	0.25	46.71	0.25	22.51
	0.11	38.01	0.11	17.35	0.11	27.42	0.11	23.94	0.11	21.32	0.11	16.21
	0.07	21.17	0.07	13.40	0.07	16.97	0.07	14.35	0.07	10.66	0.07	14.08
Hydrometer Analysis	0.0446	12.70	0.0445	9.21	0.0451	10.06	0.0455	8.34	0.0462	6.75	0.0448	10.42
	0.0320	10.16	0.0319	7.37	0.0322	8.38	0.0325	6.67	0.0328	5.91	0.0320	8.81
	0.0204	8.47	0.0204	6.14	0.0206	6.70	0.0207	5.00	0.0208	5.06	0.0205	6.41
	0.0119	6.77	0.0119	4.91	0.0119	5.87	0.0120	4.17	0.0121	4.22	0.0120	4.81
	0.0084	5.93	0.0085	3.68	0.0085	5.03	0.0085	3.34	0.0086	3.38	0.0085	4.01
	0.0060	5.08	0.0060	2.46	0.0060	4.19	0.0061	2.50	0.0061	2.53	0.0060	3.20
	0.0030	4.23	0.0030	1.23	0.0030	3.35	0.0030	1.67	0.0030	1.69	0.0030	1.60
	0.0014	3.39	0.0014	0.61	0.0014	2.51	0.0014	0.83	0.0014	0.84	0.0014	0.80

Sample Name	J - 3		J - 3		J - 3		J - 3		J - 3		J - 3	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019		January 16, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 3		J - 3		J - 3		J - 3		J - 3		J - 3	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		10.50		15.50		20.50	
Lower Depth(m)	8.00		9.00		10.00		11.00		16.00		21.00	
Soil classification	-		-		-		-		-		-	
D90	16.0365		1.6909		1.9457		1.8098		0.7476		1.8972	
D60	3.0392		0.7973		0.5692		1.1549		0.3229		0.5052	
D50	1.7462		0.6090		0.4138		0.9366		0.2698		0.3686	
D30	0.4560		0.2422		0.2132		0.5397		0.1770		0.1805	
D10	0.0462		0.0418		0.0219		0.1505		0.0826		0.0423	
ρs density of soil grain	2.673		2.660		2.648		2.657		2.650		2.652	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40	100.00	25.40		25.40		25.40		25.40		25.40	
	19.10	92.60	19.10		19.10	100.00	19.10		19.10		19.10	100.00
	9.52	84.47	9.52		9.52	95.61	9.52		9.52		9.52	97.37
	4.75	70.61	4.75		4.75	92.84	4.75	100.00	4.75	100.00	4.75	95.21
	2.00	53.56	2.00	100.00	2.00	90.61	2.00	98.71	2.00	98.75	2.00	90.97
	0.85	37.44	0.85	62.80	0.85	77.61	0.85	46.03	0.85	93.67	0.85	80.13
	0.42	29.32	0.42	39.96	0.42	50.64	0.42	23.82	0.42	78.26	0.42	55.03
	0.25	25.38	0.25	30.58	0.25	33.20	0.25	13.99	0.25	46.27	0.25	38.39
	0.11	19.52	0.11	19.82	0.11	20.59	0.11	8.18	0.11	13.95	0.11	20.89
	0.07	15.40	0.07	14.17	0.07	17.06	0.07	7.13	0.07	8.47	0.07	15.13
Hydrometer Analysis	0.0451	9.79	0.0449	10.35	0.0442	13.54	0.0462	5.63	0.0463	6.79	0.0450	10.31
	0.0324	7.35	0.0320	8.87	0.0317	11.28	0.0328	4.93	0.0329	5.94	0.0321	8.84
	0.0207	5.71	0.0206	6.65	0.0202	9.78	0.0209	4.22	0.0209	5.09	0.0205	7.36
	0.0120	4.08	0.0120	4.44	0.0119	7.52	0.0121	3.52	0.0121	4.24	0.0120	5.89
	0.0085	3.26	0.0085	3.70	0.0085	6.02	0.0086	2.82	0.0086	3.39	0.0085	5.15
	0.0061	2.45	0.0061	2.96	0.0060	4.51	0.0061	2.11	0.0061	2.55	0.0060	4.42
	0.0030	1.63	0.0030	1.48	0.0030	2.26	0.0030	1.41	0.0030	1.70	0.0030	2.95
	0.0014	0.82	0.0014	0.74	0.0014	0.75	0.0014	0.70	0.0014	0.85	0.0014	2.21

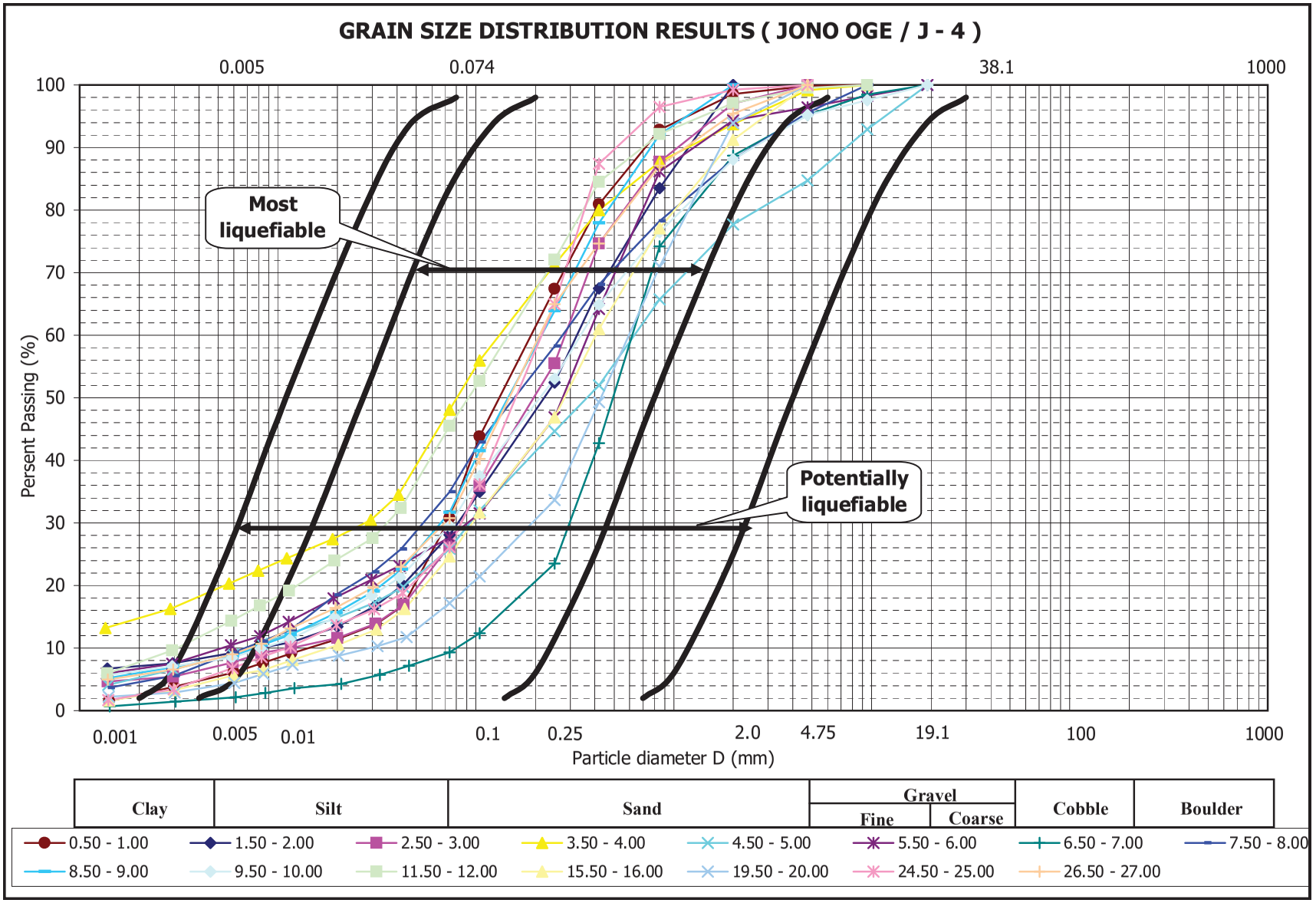
Sample Name	J - 3											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 16, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 3											
Location	JONO OGE											
Upper Depth(m)	25.50											
Lower Depth(m)	26.00											
Soil classification	-											
D90	0.3875											
D60	0.1525											
D50	0.1026											
D30	0.0652											
D10	0.0220											
ρs density of soil grain	2.654											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10											
	9.52											
	4.75	100.00										
	2.00	99.83										
	0.85	99.07										
	0.42	92.84										
	0.25	77.98										
	0.11	51.25										
	0.07	35.37										
Hydrometer Analysis	0.0434	16.65										
	0.0315	12.69										
	0.0203	9.52										
	0.0119	6.34										
	0.0085	4.76										
	0.0061	3.17										
	0.0030	1.59										
	0.0014	0.79										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 3)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
15.50 - 16.00
20.50 - 21.00
25.50 - 26.00

Sample Name	J - 4		J - 4		J - 4		J - 4		J - 4		J - 4	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 4		J - 4		J - 4		J - 4		J - 4		J - 4	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		-		-		SC - SM		-		-	
D90	0.7471		1.3030		1.1303		1.2835		7.8309		1.3871	
D60	0.2045		0.3353		0.2899		0.1432		0.6713		0.3787	
D50	0.1431		0.2297		0.2094		0.0816		0.3741		0.2805	
D30	0.0723		0.0825		0.0858		0.0279		0.0950		0.0925	
D10	0.0147		0.0082		0.0116		-		0.0073		0.0054	
ρs density of soil grain	2.638		2.639		2.647		2.628		2.631		2.643	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		26.06		NON PLASTIS		NON PLASTIS	
Wp							20.47					
Ip	-		-		-		5.59		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10	100.00	19.10	100.00
	9.52	100.00	9.52		9.52		9.52	100.00	9.52	92.87	9.52	98.23
	4.75	99.84	4.75		4.75	100.00	4.75	99.16	4.75	84.77	4.75	96.41
	2.00	98.55	2.00	100.00	2.00	97.01	2.00	93.73	2.00	77.72	2.00	94.37
	0.85	92.85	0.85	83.50	0.85	87.74	0.85	87.74	0.85	65.71	0.85	86.17
	0.42	80.95	0.42	67.49	0.42	74.69	0.42	80.00	0.42	51.98	0.42	64.21
	0.25	67.42	0.25	52.46	0.25	55.49	0.25	71.28	0.25	44.67	0.25	46.90
	0.11	43.79	0.11	34.96	0.11	35.87	0.11	55.97	0.11	31.96	0.11	31.54
	0.07	30.80	0.07	28.12	0.07	26.37	0.07	48.06	0.07	25.88	0.07	27.71
Hydrometer Analysis	0.0434	16.84	0.0429	20.10	0.0433	16.96	0.0407	34.52	0.0430	19.74	0.0413	23.14
	0.0313	13.78	0.0310	16.75	0.0312	13.88	0.0295	30.46	0.0309	17.27	0.0297	20.90
	0.0201	11.48	0.0200	13.40	0.0201	11.57	0.0190	27.41	0.0199	14.80	0.0192	17.91
	0.0118	9.19	0.0117	10.89	0.0117	10.02	0.0111	24.36	0.0116	12.33	0.0114	14.18
	0.0084	7.66	0.0083	10.05	0.0083	9.25	0.0080	22.33	0.0083	10.69	0.0082	11.94
	0.0060	6.13	0.0059	9.21	0.0059	7.71	0.0057	20.30	0.0059	9.05	0.0058	10.45
	0.0030	3.83	0.0030	7.54	0.0030	5.40	0.0029	16.24	0.0030	6.58	0.0029	7.46
	0.0014	1.53	0.0014	6.70	0.0014	4.63	0.0013	13.20	0.0014	4.11	0.0014	5.97

Sample Name	J - 4		J - 4		J - 4		J - 4		J - 4		J - 4	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019		January 17, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 4		J - 4		J - 4		J - 4		J - 4		J - 4	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	6.50		7.50		8.50		9.50		11.50		15.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		12.00		16.00	
Soil classification	-		-		-		-		-		-	
D90	2.5408		2.6952		0.7879		2.7444		0.7299		1.8992	
D60	0.6557		0.2804		0.2246		0.3498		0.1601		0.4083	
D50	0.5191		0.1720		0.1599		0.2214		0.0936		0.2880	
D30	0.3074		0.0566		0.0682		0.0758		0.0362		0.0975	
D10	0.0809		0.0069		0.0077		0.0084		0.0032		0.0184	
ρs density of soil grain	2.635		2.641		2.647		2.653		2.674		2.645	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10	100.00	19.10		19.10	
	9.52	98.50	9.52	100.00	9.52		9.52	97.57	9.52	100.00	9.52	
	4.75	95.20	4.75	95.54	4.75		4.75	95.21	4.75	99.55	4.75	100.00
	2.00	88.73	2.00	88.13	2.00	100.00	2.00	88.07	2.00	97.11	2.00	91.24
	0.85	74.23	0.85	78.25	0.85	92.04	0.85	76.49	0.85	92.13	0.85	77.13
	0.42	42.75	0.42	68.06	0.42	77.91	0.42	64.87	0.42	84.50	0.42	60.98
	0.25	23.50	0.25	58.24	0.25	63.92	0.25	53.07	0.25	72.03	0.25	46.84
	0.11	12.35	0.11	42.91	0.11	41.53	0.11	37.48	0.11	52.64	0.11	31.70
	0.07	9.33	0.07	34.95	0.07	31.66	0.07	29.54	0.07	45.47	0.07	24.64
Hydrometer Analysis	0.0461	7.14	0.0420	25.84	0.0424	22.59	0.0414	21.26	0.0418	32.33	0.0438	16.23
	0.0329	5.72	0.0303	22.15	0.0306	19.11	0.0299	18.43	0.0302	27.54	0.0316	12.98
	0.0210	4.29	0.0196	18.45	0.0198	15.64	0.0194	14.88	0.0194	23.95	0.0203	10.55
	0.0122	3.57	0.0117	12.92	0.0116	12.16	0.0115	11.34	0.0114	19.16	0.0119	8.12
	0.0086	2.86	0.0083	11.07	0.0083	10.43	0.0082	9.92	0.0082	16.77	0.0085	6.49
	0.0061	2.14	0.0059	9.23	0.0059	8.69	0.0059	8.50	0.0058	14.37	0.0060	5.68
	0.0031	1.43	0.0030	5.54	0.0030	6.95	0.0029	7.09	0.0029	9.58	0.0030	3.25
	0.0014	0.71	0.0014	3.69	0.0014	5.21	0.0014	5.67	0.0014	5.99	0.0014	1.62

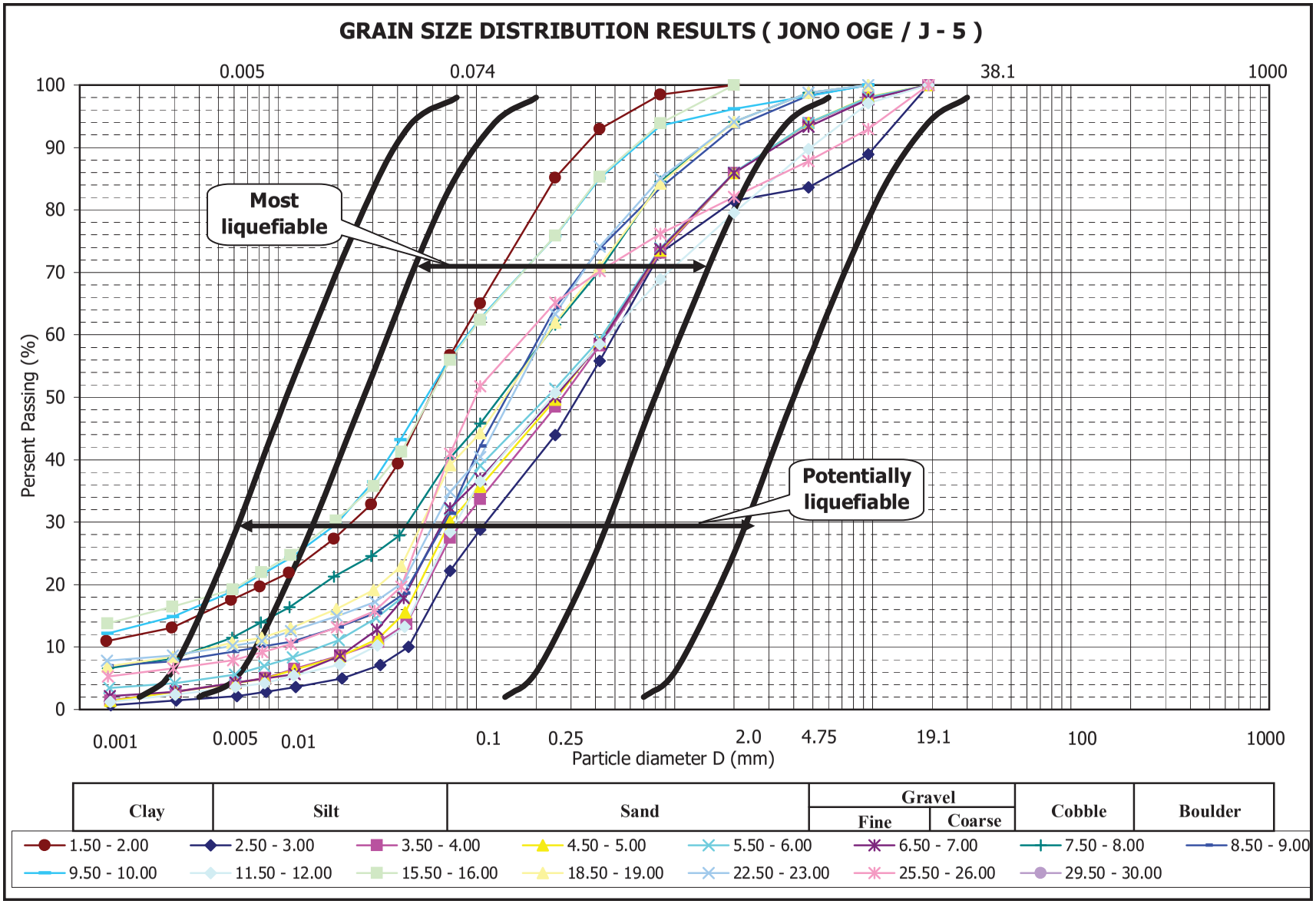
Sample Name	J - 4		J - 4		J - 4							
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 17, 2019		January 17, 2019		January 17, 2019							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	J - 4		J - 4		J - 4							
Location	JONO OGE		JONO OGE		JONO OGE							
Upper Depth(m)	19.50		24.50		26.50							
Lower Depth(m)	20.00		25.00		27.00							
Soil classification	-		-		-							
D90	1.8030		0.5417		1.2489							
D60	0.6316		0.2251		0.2209							
D50	0.4333		0.1747		0.1623							
D30	0.2064		0.0860		0.0710							
D10	0.0297		0.0112		0.0073							
ρs density of soil grain	2.642		2.681		2.641							
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS							
Wp												
Ip	-		-		-							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10		19.10		19.10							
	9.52		9.52		9.52							
	4.75	100.00	4.75	100.00	4.75	100.00						
	2.00	93.93	2.00	99.22	2.00	95.40						
	0.85	71.01	0.85	96.49	0.85	87.13						
	0.42	49.33	0.42	87.44	0.42	74.62						
	0.25	33.68	0.25	64.95	0.25	64.97						
	0.11	21.43	0.11	36.18	0.11	40.21						
	0.07	17.20	0.07	26.08	0.07	30.73						
Hydrometer Analysis	0.0447	11.75	0.0429	18.76	0.0420	22.98						
	0.0319	10.28	0.0308	16.20	0.0303	19.70						
	0.0204	8.81	0.0198	13.64	0.0196	16.42						
	0.0119	7.35	0.0116	10.23	0.0115	13.13						
	0.0085	5.88	0.0083	8.53	0.0083	10.67						
	0.0060	4.41	0.0059	6.82	0.0059	9.03						
	0.0030	2.94	0.0030	3.41	0.0030	6.57						
	0.0014	2.20	0.0014	1.71	0.0014	4.92						


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 4)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
11.50 - 12.00
15.50 - 16.00
19.50 - 20.00
24.50 - 25.00
26.50 - 27.00

Sample Name	J - 5		J - 5		J - 5		J - 5		J - 5		J - 5	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 5		J - 5		J - 5		J - 5		J - 5		J - 5	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	CL - ML		-		-		-		-		-	
D90	0.3555		12.9346		3.4122		3.3967		3.3847		3.5068	
D60	0.0862		0.5237		0.4711		0.4540		0.4410		0.4599	
D50	0.0608		0.3365		0.2772		0.2573		0.2106		0.2496	
D30	0.0242		0.1107		0.0866		0.0738		0.0657		0.0674	
D10	-		0.0204		0.0201		0.0186		0.0168		0.0175	
ρs density of soil grain	2.665		2.644		2.642		2.639		2.640		2.641	
WL	23.02		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp	18.15											
Ip	4.87		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52	88.90	9.52	97.91	9.52	98.09	9.52	98.04	9.52	97.68
	4.75		4.75	83.63	4.75	93.90	4.75	93.95	4.75	93.95	4.75	93.35
	2.00	100.00	2.00	81.49	2.00	85.88	2.00	85.92	2.00	85.99	2.00	85.95
	0.85	98.48	0.85	73.12	0.85	73.10	0.85	73.53	0.85	73.89	0.85	73.71
	0.42	92.97	0.42	55.83	0.42	58.23	0.42	58.84	0.42	59.29	0.42	58.60
	0.25	85.14	0.25	43.96	0.25	48.43	0.25	49.60	0.25	51.40	0.25	50.04
	0.11	64.99	0.11	28.78	0.11	33.67	0.11	35.65	0.11	39.02	0.11	36.99
	0.07	56.78	0.07	22.21	0.07	27.50	0.07	30.06	0.07	32.04	0.07	32.23
Hydrometer Analysis	0.0402	39.38	0.0456	10.01	0.0445	13.70	0.0439	15.54	0.0429	18.10	0.0432	17.80
	0.0295	32.82	0.0329	7.15	0.0321	10.81	0.0320	11.30	0.0312	14.62	0.0317	12.82
	0.0192	27.35	0.0211	5.01	0.0206	8.65	0.0206	8.48	0.0202	11.14	0.0206	8.55
	0.0114	21.88	0.0123	3.58	0.0121	6.49	0.0121	6.36	0.0119	8.35	0.0121	5.70
	0.0081	19.69	0.0087	2.86	0.0086	5.05	0.0086	4.94	0.0085	6.96	0.0086	4.99
	0.0058	17.50	0.0062	2.15	0.0061	4.32	0.0061	4.24	0.0061	5.57	0.0061	4.27
	0.0029	13.13	0.0031	1.43	0.0031	2.88	0.0031	2.83	0.0030	4.18	0.0031	2.85
	0.0014	10.94	0.0014	0.72	0.0014	1.44	0.0014	1.41	0.0014	3.48	0.0014	2.14

Sample Name	J - 5		J - 5		J - 5		J - 5		J - 5		J - 5	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018		December 29, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 5		J - 5		J - 5		J - 5		J - 5		J - 5	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		11.50		15.50		18.50	
Lower Depth(m)	8.00		9.00		10.00		12.00		16.00		19.00	
Soil classification	-		-		CL		-		CL - ML		-	
D90	1.5070		1.6166		0.6715		4.9086		0.6562		1.5220	
D60	0.2352		0.2215		0.0920		0.4810		0.0933		0.2343	
D50	0.1437		0.1560		0.0584		0.2430		0.0578		0.1521	
D30	0.0419		0.0694		0.0203		0.0802		0.0193		0.0431	
D10	0.0046		0.0070		-		0.0197		-		0.0045	
ρs density of soil grain	2.652		2.648		2.645		2.654		2.643		2.651	
WL	NON PLASTIS		NON PLASTIS		27.14		NON PLASTIS		26.69		NON PLASTIS	
Wp					20.13				20.15			
Ip	-		-		7.02		-		6.55		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10	100.00	19.10		19.10	
	9.52	100.00	9.52	100.00	9.52	100.00	9.52	97.09	9.52		9.52	100.00
	4.75	98.76	4.75	98.31	4.75	98.27	4.75	89.76	4.75		4.75	98.79
	2.00	94.08	2.00	93.24	2.00	96.16	2.00	79.54	2.00	100.00	2.00	94.09
	0.85	84.56	0.85	83.52	0.85	93.51	0.85	68.90	0.85	93.88	0.85	84.25
	0.42	70.30	0.42	73.82	0.42	85.06	0.42	58.53	0.42	85.27	0.42	70.96
	0.25	61.62	0.25	64.34	0.25	75.83	0.25	50.69	0.25	75.87	0.25	61.91
	0.11	45.78	0.11	42.23	0.11	62.65	0.11	36.49	0.11	62.44	0.11	44.27
	0.07	40.24	0.07	31.41	0.07	56.32	0.07	28.38	0.07	55.99	0.07	39.11
Hydrometer Analysis	0.0409	27.87	0.0433	18.60	0.0415	43.15	0.0437	13.23	0.0420	41.24	0.0419	22.94
	0.0296	24.59	0.0313	15.50	0.0302	36.41	0.0317	10.23	0.0303	35.74	0.0304	19.11
	0.0191	21.31	0.0201	13.17	0.0196	29.67	0.0205	7.22	0.0196	30.24	0.0197	16.06
	0.0114	16.39	0.0118	10.85	0.0115	24.27	0.0120	5.41	0.0116	24.74	0.0116	13.00
	0.0082	13.93	0.0084	10.07	0.0082	21.58	0.0086	4.21	0.0083	21.99	0.0083	11.47
	0.0059	11.47	0.0059	9.30	0.0059	18.88	0.0061	3.61	0.0059	19.24	0.0059	10.70
	0.0030	8.20	0.0030	7.75	0.0030	14.83	0.0030	2.41	0.0029	16.49	0.0029	8.41
	0.0014	6.56	0.0014	6.97	0.0014	12.14	0.0014	1.20	0.0014	13.75	0.0014	6.88

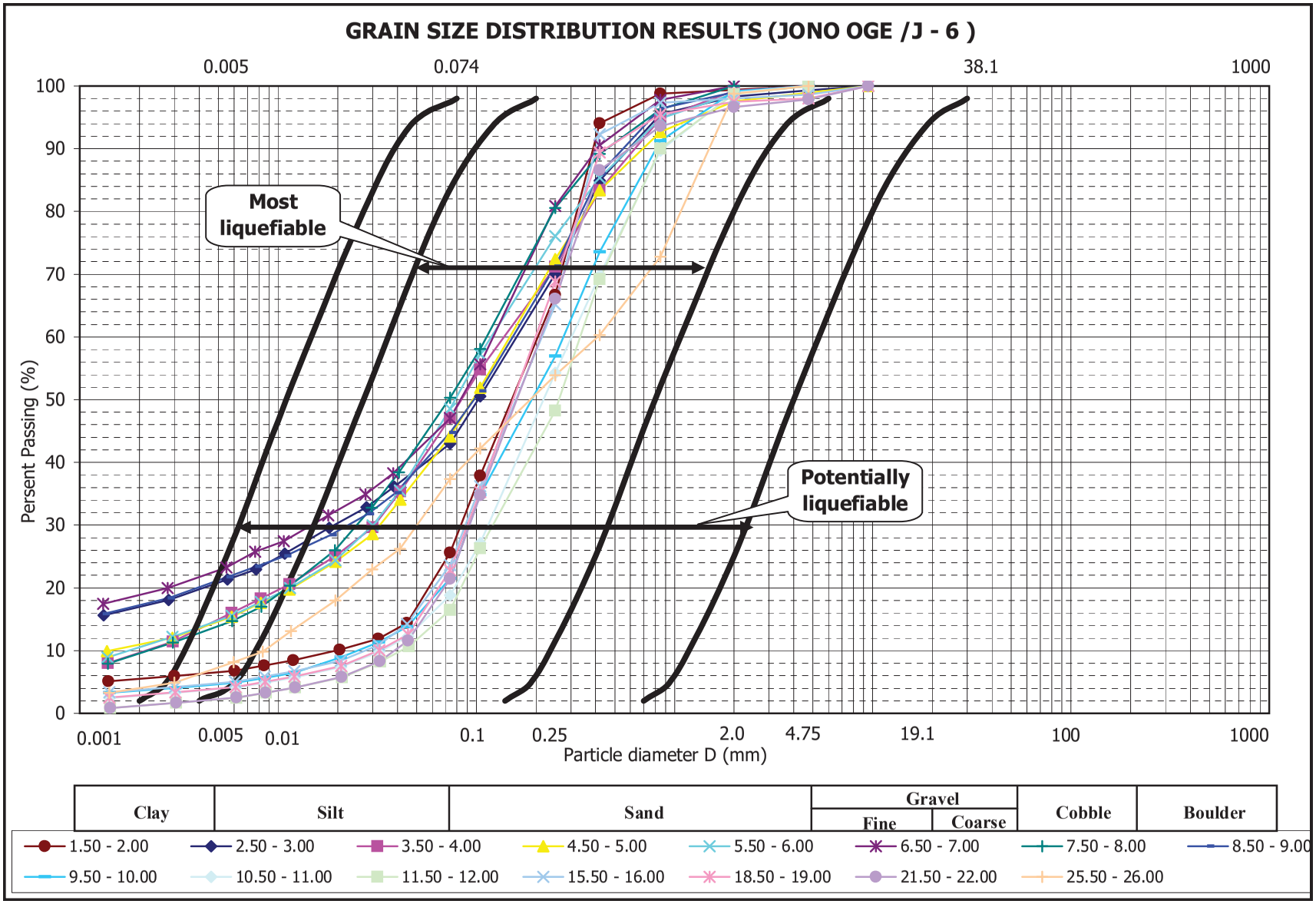
Sample Name	J - 5		J - 5									
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018									
Tester	PT. INDRA KARYA		PT. INDRA KARYA									
Sample No	J - 5		J - 5									
Location	JONO OGE		JONO OGE									
Upper Depth(m)	22.50		25.50									
Lower Depth(m)	23.00		26.00									
Soil classification	-		-									
D90	1.4779		6.7898									
D60	0.2291		0.1941									
D50	0.1657		0.1000									
D30	0.0494		0.0528									
D10	0.0047		0.0104									
ρs density of soil grain	2.655		2.647									
WL	NON PLASTIS		NON PLASTIS									
Wp												
Ip	-		-									
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)								
Sieve Analysis	38.10		38.10									
	25.40		25.40									
	19.10		19.10	100.00								
	9.52	100.00	9.52	92.92								
	4.75	98.79	4.75	87.82								
	2.00	94.11	2.00	82.07								
	0.85	85.06	0.85	76.20								
	0.42	74.09	0.42	70.24								
	0.25	63.30	0.25	65.17								
	0.11	40.43	0.11	51.74								
	0.07	34.82	0.07	40.94								
Hydrometer Analysis	0.0428	20.39	0.0419	19.70								
	0.0309	17.25	0.0306	15.76								
	0.0198	14.90	0.0198	13.13								
	0.0116	12.55	0.0117	10.51								
	0.0083	10.98	0.0083	9.19								
	0.0059	10.19	0.0059	7.88								
	0.0029	8.63	0.0030	6.57								
	0.0014	7.84	0.0014	5.25								


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 5)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
11.50 - 12.00
15.50 - 16.00
18.50 - 19.00
22.50 - 23.00
25.50 - 26.00
29.50 - 30.00

Sample Name	J - 6		J - 6		J - 6		J - 6		J - 6		J - 6	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 6		J - 6		J - 6		J - 6		J - 6		J - 6	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	-		SC		SC - SM		-		SC - SM		SC	
D90	0.3949		0.6273		0.6685		0.7269		0.6297		0.4110	
D60	0.2164		0.1755		0.1512		0.1624		0.1264		0.1301	
D50	0.1660		0.1029		0.0857		0.0974		0.0792		0.0847	
D30	0.0851		0.0195		0.0308		0.0331		0.0300		0.0152	
D10	0.0197		-		0.0023		0.0015		0.0019		-	
ρs density of soil grain	2.654		2.634		2.668		2.671		2.664		2.630	
WL	NON PLASTIS		30.57		23.58		NON PLASTIS		23.40		32.51	
Wp			20.06		16.65				16.94		20.95	
Ip	-		10.51		6.92		-		6.46		11.57	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52	100.00	9.52		9.52	100.00	9.52		9.52	
	4.75	100.00	4.75	99.30	4.75	100.00	4.75	98.93	4.75	100.00	4.75	
	2.00	99.36	2.00	98.34	2.00	99.27	2.00	97.57	2.00	98.75	2.00	100.00
	0.85	98.77	0.85	95.48	0.85	94.85	0.85	92.65	0.85	94.85	0.85	97.79
	0.42	94.05	0.42	84.90	0.42	83.36	0.42	83.40	0.42	85.38	0.42	90.51
	0.25	66.66	0.25	70.04	0.25	71.17	0.25	72.38	0.25	76.03	0.25	80.88
	0.11	37.89	0.11	50.50	0.11	54.77	0.11	51.88	0.11	57.22	0.11	55.62
	0.07	25.61	0.07	42.99	0.07	47.10	0.07	44.16	0.07	48.54	0.07	47.02
Hydrometer Analysis	0.0448	14.40	0.0386	36.11	0.0414	35.38	0.0414	34.04	0.0412	35.53	0.0381	38.23
	0.0322	11.86	0.0280	32.83	0.0301	29.68	0.0301	28.55	0.0300	29.98	0.0277	34.91
	0.0205	10.16	0.0182	29.54	0.0195	25.11	0.0194	24.16	0.0195	24.43	0.0180	31.58
	0.0120	8.47	0.0108	25.44	0.0115	20.55	0.0115	19.76	0.0115	19.98	0.0107	27.43
	0.0085	7.62	0.0078	22.98	0.0082	18.26	0.0082	17.57	0.0082	17.76	0.0076	25.76
	0.0060	6.78	0.0056	21.34	0.0058	15.98	0.0058	15.37	0.0059	15.54	0.0055	23.27
	0.0030	5.93	0.0028	18.05	0.0029	11.41	0.0029	12.08	0.0029	12.21	0.0028	19.95
	0.0014	5.08	0.0013	15.59	0.0014	7.99	0.0014	9.88	0.0014	8.88	0.0013	17.45

Sample Name	J - 6		J - 6		J - 6		J - 6		J - 6		J - 6	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019		January 8, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 6		J - 6		J - 6		J - 6		J - 6		J - 6	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		10.50		11.50		15.50	
Lower Depth(m)	8.00		9.00		10.00		11.00		12.00		16.00	
Soil classification	SC - SM		SC		-		-		-		-	
D90	0.4704		0.5869		0.8198		0.8570		0.8494		0.4055	
D60	0.1175		0.1679		0.2812		0.3126		0.3455		0.2243	
D50	0.0730		0.0986		0.1785		0.2033		0.2644		0.1742	
D30	0.0254		0.0231		0.0735		0.1205		0.1297		0.0897	
D10	0.0023		-		0.0258		0.0335		0.0422		0.0282	
ρs density of soil grain	2.662		2.633		2.650		2.652		2.654		2.656	
WL	22.61		30.54		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp	16.24		19.95									
Ip	6.37		10.59		-		-		-		-	
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	100.00
	4.75		4.75	100.00	4.75	100.00	4.75	100.00	4.75	100.00	4.75	98.62
	2.00	100.00	2.00	99.03	2.00	99.13	2.00	98.92	2.00	98.70	2.00	98.05
	0.85	96.24	0.85	96.38	0.85	91.25	0.85	89.68	0.85	90.03	0.85	97.31
	0.42	89.17	0.42	85.95	0.42	73.53	0.42	69.83	0.42	69.19	0.42	92.31
	0.25	80.53	0.25	71.25	0.25	56.96	0.25	54.27	0.25	48.23	0.25	65.14
	0.11	58.07	0.11	51.37	0.11	34.81	0.11	27.10	0.11	26.26	0.11	36.19
	0.07	50.34	0.07	44.77	0.07	21.48	0.07	18.81	0.07	16.46	0.07	23.63
Hydrometer Analysis	0.0408	38.44	0.0391	35.12	0.0449	13.78	0.0453	12.27	0.0457	10.68	0.0448	14.23
	0.0297	32.79	0.0284	31.78	0.0322	11.35	0.0325	9.81	0.0328	8.21	0.0323	10.88
	0.0194	26.01	0.0184	28.43	0.0207	8.92	0.0208	7.36	0.0210	5.75	0.0207	8.37
	0.0115	20.35	0.0109	25.09	0.0121	6.49	0.0121	5.72	0.0122	4.11	0.0121	6.69
	0.0082	16.96	0.0078	23.42	0.0086	5.67	0.0086	4.91	0.0087	3.28	0.0086	5.86
	0.0059	14.70	0.0056	21.74	0.0061	4.86	0.0061	4.09	0.0062	2.46	0.0061	5.02
	0.0030	11.31	0.0028	18.40	0.0030	4.05	0.0030	3.27	0.0031	1.64	0.0030	4.18
	0.0014	7.92	0.0013	15.89	0.0014	3.24	0.0014	2.45	0.0014	0.82	0.0014	3.35

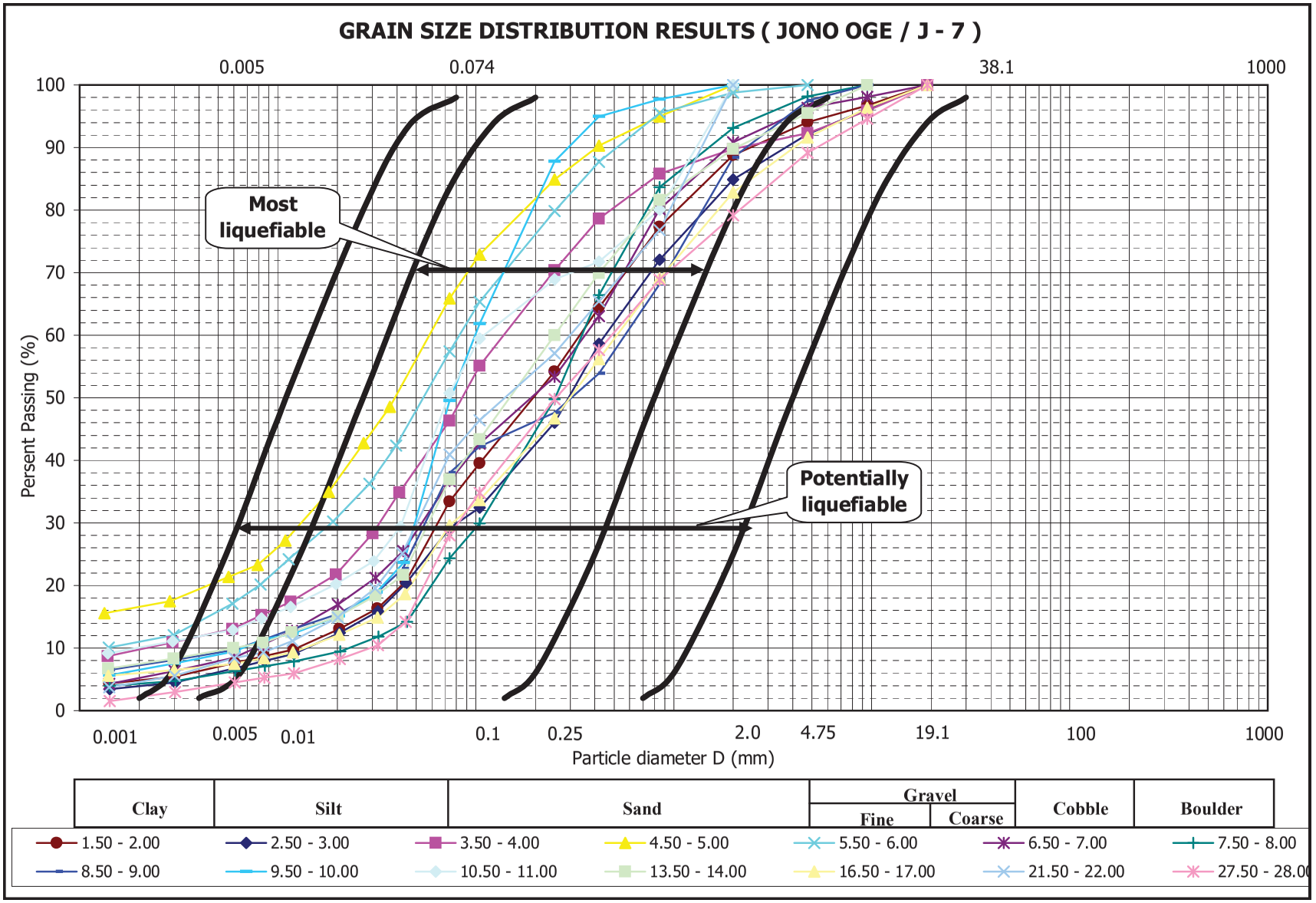
Sample Name	J - 6		J - 6		J - 6							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 8, 2019		January 8, 2019		January 8, 2019							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	J - 6		J - 6		J - 6							
Location	JONO OGE		JONO OGE		JONO OGE							
Upper Depth(m)	18.50		21.50		25.50							
Lower Depth(m)	19.00		22.00		26.00							
Soil classification	-		-		-							
D90	0.4625		0.6293		1.6112							
D60	0.2119		0.2217		0.4121							
D50	0.1686		0.1754		0.2017							
D30	0.0919		0.0939		0.0524							
D10	0.0323		0.0393		0.0085							
ρs density of soil grain	2.659		2.660		2.662							
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS							
Wp												
Ip	-		-		-							
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10		19.10		19.10							
	9.52	100.00	9.52	100.00	9.52							
	4.75	98.01	4.75	97.89	4.75	100.00						
	2.00	97.45	2.00	96.66	2.00	98.79						
	0.85	95.52	0.85	93.61	0.85	72.79						
	0.42	89.40	0.42	86.57	0.42	60.30						
	0.25	68.79	0.25	66.10	0.25	53.88						
	0.11	35.32	0.11	34.79	0.11	42.24						
	0.07	22.75	0.07	21.42	0.07	37.33						
Hydrometer Analysis	0.0452	12.54	0.0454	11.58	0.0412	26.19						
	0.0324	10.03	0.0327	8.27	0.0298	22.92						
	0.0208	7.53	0.0210	5.79	0.0195	18.01						
	0.0121	5.85	0.0122	4.14	0.0116	13.10						
	0.0086	5.02	0.0087	3.31	0.0084	9.82						
	0.0061	4.18	0.0062	2.48	0.0060	8.19						
	0.0030	3.34	0.0031	1.65	0.0030	4.91						
	0.0014	2.51	0.0014	0.83	0.0014	3.27						


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE /J - 6)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
11.50 - 12.00
15.50 - 16.00
18.50 - 19.00
21.50 - 22.00
25.50 - 26.00

Sample Name	J - 7		J - 7		J - 7		J - 7		J - 7		J - 7	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 7		J - 7		J - 7		J - 7		J - 7		J - 7	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	-		-		-		CL		CL		-	
D90	2.6370		3.9458		2.2327		0.4104		0.5478		1.9072	
D60	0.3463		0.4637		0.1517		0.0614		0.0841		0.3660	
D50	0.2084		0.3032		0.0870		0.0399		0.0571		0.2041	
D30	0.0661		0.0822		0.0331		0.0135		0.0188		0.0556	
D10	0.0126		0.0144		0.0023		-		-		0.0078	
ρs density of soil grain	2.655		2.652		2.657		2.648		2.591		2.656	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		30.42		29.42		NON PLASTIS	
Wp							21.51		21.85			
Ip	-		-		-		8.91		7.57		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10	100.00	19.10	100.00	19.10		19.10		19.10	100.00
	9.52	96.71	9.52	96.14	9.52	95.88	9.52		9.52		9.52	98.10
	4.75	94.08	4.75	92.11	4.75	92.31	4.75		4.75	100.00	4.75	96.33
	2.00	88.77	2.00	84.89	2.00	89.79	2.00	100.00	2.00	98.81	2.00	90.86
	0.85	77.35	0.85	72.03	0.85	85.78	0.85	94.95	0.85	95.49	0.85	80.16
	0.42	64.44	0.42	58.64	0.42	78.66	0.42	90.30	0.42	87.68	0.42	63.07
	0.25	54.19	0.25	46.07	0.25	70.38	0.25	84.91	0.25	79.87	0.25	53.39
	0.11	39.57	0.11	32.44	0.11	55.08	0.11	72.89	0.11	65.37	0.11	42.67
	0.07	33.42	0.07	29.13	0.07	46.36	0.07	65.86	0.07	57.39	0.07	36.69
Hydrometer Analysis	0.0444	20.64	0.0446	20.42	0.0413	34.85	0.0368	48.57	0.0396	42.33	0.0432	25.47
	0.0320	16.30	0.0322	15.88	0.0302	28.32	0.0272	42.74	0.0291	36.29	0.0312	21.23
	0.0205	13.04	0.0206	12.48	0.0197	21.78	0.0181	34.97	0.0191	30.24	0.0201	16.98
	0.0120	9.78	0.0121	9.08	0.0116	17.43	0.0109	27.20	0.0114	24.19	0.0118	12.74
	0.0085	8.69	0.0086	7.94	0.0083	15.25	0.0079	23.32	0.0082	20.16	0.0085	10.61
	0.0061	7.61	0.0061	6.81	0.0059	13.07	0.0057	21.37	0.0059	17.14	0.0060	8.49
	0.0030	5.43	0.0030	4.54	0.0030	10.89	0.0029	17.49	0.0030	12.10	0.0030	6.37
	0.0014	4.35	0.0014	3.40	0.0014	8.71	0.0013	15.54	0.0014	10.08	0.0014	4.25

Sample Name	J - 7		J - 7		J - 7		J - 7		J - 7		J - 7	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 7		J - 7		J - 7		J - 7		J - 7		J - 7	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		10.50		13.50		16.50	
Lower Depth(m)	8.00		9.00		10.00		11.00		14.00		17.00	
Soil classification	-		-		-		-		-		-	
D90	1.6177		2.4884		0.3025		1.4236		2.0955		4.2438	
D60	0.3545		0.6042		0.1004		0.1133		0.2497		0.5473	
D50	0.2520		0.3140		0.0751		0.0729		0.1626		0.3092	
D30	0.1054		0.0577		0.0509		0.0426		0.0599		0.0772	
D10	0.0234		0.0064		0.0067		0.0021		0.0059		0.0141	
ρs density of soil grain	2.618		2.620		2.625		2.623		2.627		2.653	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	100.00
	9.52	100.00	9.52	100.00	9.52		9.52		9.52	100.00	9.52	96.30
	4.75	98.19	4.75	97.44	4.75		4.75		4.75	95.48	4.75	91.61
	2.00	93.14	2.00	88.39	2.00	100.00	2.00	100.00	2.00	89.80	2.00	82.86
	0.85	83.70	0.85	68.18	0.85	97.72	0.85	80.05	0.85	81.58	0.85	69.11
	0.42	66.40	0.42	53.87	0.42	94.94	0.42	71.73	0.42	69.94	0.42	56.17
	0.25	49.81	0.25	47.66	0.25	87.79	0.25	68.91	0.25	60.03	0.25	46.71
	0.11	29.95	0.11	42.22	0.11	61.84	0.11	59.46	0.11	43.39	0.11	33.67
	0.07	24.37	0.07	37.99	0.07	49.57	0.07	50.73	0.07	36.95	0.07	29.59
Hydrometer Analysis	0.0451	14.18	0.0427	22.67	0.0434	23.64	0.0417	29.42	0.0431	21.72	0.0442	18.62
	0.0324	11.81	0.0311	18.62	0.0315	18.91	0.0305	23.90	0.0311	18.37	0.0319	14.89
	0.0208	9.45	0.0201	15.38	0.0203	15.13	0.0197	20.22	0.0201	15.03	0.0204	12.10
	0.0121	7.88	0.0118	12.95	0.0119	12.29	0.0116	16.55	0.0118	12.53	0.0120	9.31
	0.0086	7.09	0.0084	11.33	0.0085	11.35	0.0083	14.71	0.0084	10.86	0.0085	8.38
	0.0061	6.30	0.0060	9.72	0.0060	9.46	0.0059	12.87	0.0060	10.02	0.0060	7.45
	0.0030	4.73	0.0030	8.10	0.0030	7.56	0.0030	11.03	0.0030	8.35	0.0030	6.52
	0.0014	3.94	0.0014	6.48	0.0014	5.67	0.0014	9.19	0.0014	6.68	0.0014	5.58

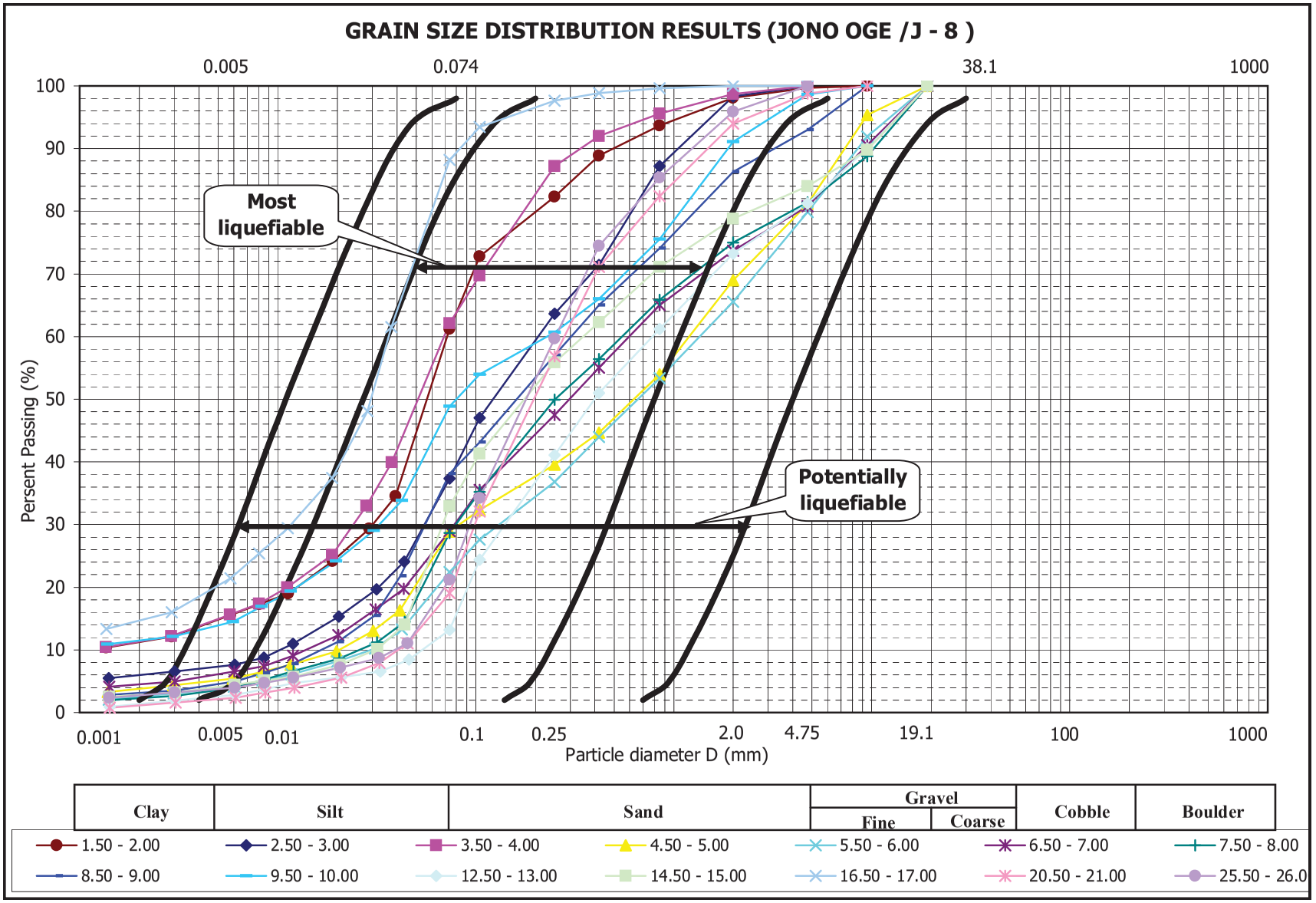
Sample Name	J - 7		J - 7									
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019		January 2, 2019									
Tester	PT. INDRA KARYA		PT. INDRA KARYA									
Sample No	J - 7		J - 7									
Location	JONO OGE		JONO OGE									
Upper Depth(m)	21.50		27.50									
Lower Depth(m)	22.00		28.00									
Soil classification	-		-									
D90	1.5045		5.4769									
D60	0.3096		0.5096									
D50	0.1539		0.2542									
D30	0.0523		0.0832									
D10	-		0.0297									
ρs density of soil grain	2.647		2.660									
WL	NON PLASTIS		NON PLASTIS									
Wp												
Ip	-		-									
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)								
Sieve Analysis	38.10		38.10									
	25.40		25.40									
	19.10		19.10	100.00								
	9.52		9.52	94.58								
	4.75		4.75	89.18								
	2.00	100.00	2.00	79.13								
	0.85	76.79	0.85	68.88								
	0.42	65.43	0.42	57.66								
	0.25	57.07	0.25	49.80								
	0.11	46.40	0.11	34.77								
	0.07	40.95	0.07	28.00								
Hydrometer Analysis	0.0426	25.10	0.0443	14.21								
	0.0311	19.53	0.0321	10.47								
	0.0202	14.88	0.0206	8.23								
	0.0119	11.16	0.0121	5.98								
	0.0085	9.30	0.0086	5.24								
	0.0060	8.37	0.0061	4.49								
	0.0030	5.58	0.0030	2.99								
	0.0014	3.72	0.0014	1.50								


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 7)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
10.50 - 11.00
13.50 - 14.00
16.50 - 17.00
21.50 - 22.00
27.50 - 28.00

Sample Name	J - 8		J - 8		J - 8		J - 8		J - 8		J - 8	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 8		J - 8		J - 8		J - 8		J - 8		J - 8	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	CL - ML		-		CL - ML		-		-		-	
D90	0.5207		1.1422		0.3489		7.7180		8.7511		9.2590	
D60	0.0724		0.2181		0.0706		1.3139		1.4750		0.6332	
D50	0.0595		0.1311		0.0542		0.6677		0.6951		0.3062	
D30	0.0303		0.0572		0.0246		0.0841		0.1429		0.0788	
D10	-		0.0105		-		0.0205		0.0298		0.0144	
ρs density of soil grain	2.643		2.654		2.657		2.681		2.679		2.645	
WL	23.92		NON PLASTIS		23.68		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp	17.47				17.42							
Ip	6.46		-		6.26		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10	100.00	19.10	100.00	19.10	100.00
	9.52	100.00	9.52		9.52		9.52	95.37	9.52	91.95	9.52	90.53
	4.75	99.67	4.75	100.00	4.75	100.00	4.75	81.15	4.75	79.86	4.75	80.80
	2.00	98.07	2.00	98.30	2.00	98.74	2.00	68.96	2.00	65.57	2.00	73.68
	0.85	93.67	0.85	87.17	0.85	95.57	0.85	53.94	0.85	53.37	0.85	65.04
	0.42	88.88	0.42	71.43	0.42	92.00	0.42	44.65	0.42	44.02	0.42	55.04
	0.25	82.31	0.25	63.67	0.25	87.22	0.25	39.59	0.25	36.82	0.25	47.51
	0.11	72.79	0.11	47.00	0.11	69.77	0.11	32.30	0.11	27.59	0.11	35.54
	0.07	61.24	0.07	37.33	0.07	62.09	0.07	28.89	0.07	22.38	0.07	28.99
Hydrometer Analysis	0.0395	34.55	0.0437	24.07	0.0378	39.95	0.0415	16.28	0.0424	13.28	0.0433	19.72
	0.0290	29.37	0.0315	19.69	0.0282	33.00	0.0303	13.03	0.0310	10.21	0.0313	16.44
	0.0190	24.18	0.0203	15.32	0.0188	25.19	0.0198	9.77	0.0200	8.17	0.0203	12.33
	0.0113	19.00	0.0120	10.94	0.0112	19.98	0.0116	7.60	0.0118	6.13	0.0119	9.04
	0.0081	17.27	0.0085	8.75	0.0081	17.37	0.0083	6.51	0.0084	5.11	0.0085	7.40
	0.0058	15.55	0.0061	7.66	0.0058	15.63	0.0059	5.43	0.0060	4.09	0.0061	6.57
	0.0029	12.09	0.0030	6.56	0.0029	12.16	0.0030	4.34	0.0030	3.06	0.0030	4.93
	0.0014	10.36	0.0014	5.47	0.0014	10.42	0.0014	3.26	0.0014	2.04	0.0014	4.11

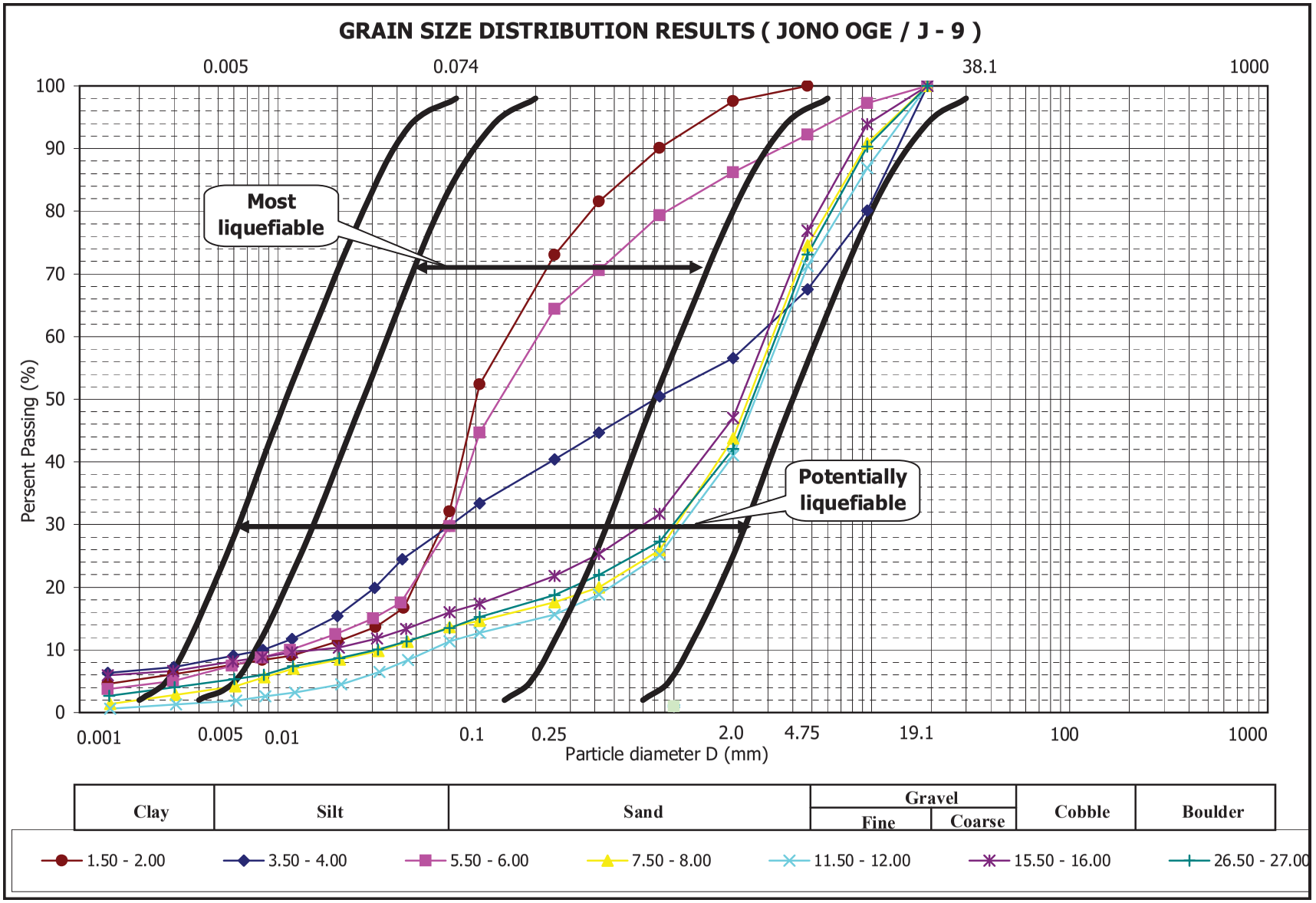
Sample Name	J - 8		J - 8		J - 8		J - 8		J - 8		J - 8	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 8		J - 8		J - 8		J - 8		J - 8		J - 8	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		12.50		14.50		16.50	
Lower Depth(m)	8.00		9.00		10.00		13.00		15.00		17.00	
Soil classification	-		-		CL - ML		-		-		CL	
D90	10.5560		3.5291		1.9187		9.5073		9.6855		0.0846	
D60	0.5828		0.3139		0.2355		0.7999		0.3593		0.0366	
D50	0.2521		0.1769		0.0810		0.4036		0.1915		0.0297	
D30	0.0802		0.0579		0.0327		0.1538		0.0693		0.0118	
D10	0.0266		0.0172		-		0.0552		0.0311		-	
ρs density of soil grain	2.648		2.653		2.654		2.683		2.647		2.672	
WL	NON PLASTIS		NON PLASTIS		23.75		NON PLASTIS		NON PLASTIS		32.61	
Wp					17.19						23.22	
Ip	-		-		6.56		-		-		9.39	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10	100.00	19.10		19.10		19.10	100.00	19.10	100.00	19.10	
	9.52	88.79	9.52	100.00	9.52	100.00	9.52	90.02	9.52	89.82	9.52	
	4.75	81.42	4.75	92.99	4.75	98.61	4.75	81.25	4.75	83.99	4.75	100.00
	2.00	74.98	2.00	86.26	2.00	91.10	2.00	73.25	2.00	78.83	2.00	99.99
	0.85	65.86	0.85	74.10	0.85	75.55	0.85	61.19	0.85	71.13	0.85	99.61
	0.42	56.43	0.42	65.00	0.42	66.03	0.42	50.96	0.42	62.29	0.42	98.86
	0.25	49.92	0.25	56.99	0.25	60.67	0.25	41.06	0.25	55.88	0.25	97.65
	0.11	35.18	0.11	43.11	0.11	53.99	0.11	24.39	0.11	41.31	0.11	93.45
	0.07	28.69	0.07	38.09	0.07	48.83	0.07	13.22	0.07	32.94	0.07	88.22
Hydrometer Analysis	0.0438	14.51	0.0416	21.84	0.0423	33.88	0.0462	8.44	0.0438	13.99	0.0376	61.50
	0.0317	11.21	0.0309	15.50	0.0306	29.04	0.0329	6.57	0.0319	10.17	0.0284	48.13
	0.0205	8.58	0.0201	11.27	0.0197	24.20	0.0209	5.63	0.0206	7.63	0.0188	37.43
	0.0120	6.60	0.0119	7.75	0.0116	19.36	0.0121	4.69	0.0120	5.72	0.0112	29.41
	0.0086	5.28	0.0085	6.34	0.0083	16.94	0.0086	3.75	0.0086	5.09	0.0081	25.40
	0.0061	3.96	0.0061	4.93	0.0059	14.52	0.0061	2.81	0.0061	4.45	0.0058	21.39
	0.0030	2.64	0.0030	3.52	0.0030	12.10	0.0030	1.88	0.0030	3.18	0.0029	16.04
	0.0014	1.98	0.0014	2.82	0.0014	10.89	0.0014	0.94	0.0014	2.54	0.0014	13.37

Sample Name	J - 8		J - 8									
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019		January 5, 2019									
Tester	PT. INDRA KARYA		PT. INDRA KARYA									
Sample No	J - 8		J - 8									
Location	JONO OGE		JONO OGE									
Upper Depth(m)	20.50		25.50									
Lower Depth(m)	21.00		26.00									
Soil classification	-		-									
D90	1.6031		1.3586									
D60	0.2876		0.2538									
D50	0.2099		0.1950									
D30	0.1000		0.0950									
D10	0.0409		0.0393									
ρs density of soil grain	2.673		2.676									
WL	NON PLASTIS		NON PLASTIS									
Wp												
Ip	-		-									
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)								
Sieve Analysis	38.10		38.10									
	25.40		25.40									
	19.10		19.10									
	9.52	100.00	9.52									
	4.75	98.79	4.75	100.00								
	2.00	94.00	2.00	95.86								
	0.85	82.41	0.85	85.35								
	0.42	71.13	0.42	74.43								
	0.25	56.84	0.25	59.67								
	0.11	32.11	0.11	34.19								
	0.07	19.05	0.07	21.21								
Hydrometer Analysis	0.0452	11.08	0.0452	11.09								
	0.0326	7.91	0.0324	8.71								
	0.0209	5.54	0.0207	7.13								
	0.0122	3.96	0.0121	5.54								
	0.0086	3.17	0.0086	4.75								
	0.0061	2.37	0.0061	3.96								
	0.0030	1.58	0.0030	3.17								
	0.0014	0.79	0.0014	2.38								


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE /J - 8)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
12.50 - 13.00
14.50 - 15.00
16.50 - 17.00
20.50 - 21.00
25.50 - 26.0

Sample Name	J - 9		J - 9		J - 9		J - 9		J - 9		J - 9	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 6, 2019		January 6, 2019		January 6, 2019		January 6, 2019		January 6, 2019		January 6, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 9		J - 9		J - 9		J - 9		J - 9		J - 9	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		3.50		5.50		7.50		11.50		15.50	
Lower Depth(m)	2.00		4.00		6.00		8.00		12.00		16.00	
Soil classification	-		-		-		-		-		-	
D90	0.8471		14.2863		3.7339		8.6522		11.7775		8.4224	
D60	0.1586		2.8606		0.2178		3.4526		3.7267		3.1950	
D50	0.1014		0.8141		0.1444		2.5603		2.8192		2.2745	
D30	0.0699		0.0757		0.0746		1.1120		1.2025		0.7367	
D10	0.0150		0.0085		0.0115		0.0337		0.0611		0.0162	
ρs density of soil grain	2.678		2.656		2.681		2.644		2.659		2.560	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52	80.10	9.52	97.28	9.52	90.83	9.52	86.92	9.52	93.92
	4.75	100.00	4.75	67.53	4.75	92.21	4.75	74.54	4.75	71.28	4.75	76.89
	2.00	97.58	2.00	56.57	2.00	86.22	2.00	43.72	2.00	40.97	2.00	47.02
	0.85	90.06	0.85	50.49	0.85	79.34	0.85	25.95	0.85	25.15	0.85	31.68
	0.42	81.55	0.42	44.65	0.42	70.55	0.42	20.00	0.42	18.86	0.42	25.31
	0.25	73.05	0.25	40.41	0.25	64.40	0.25	17.60	0.25	15.61	0.25	21.81
	0.11	52.34	0.11	33.40	0.11	44.63	0.11	14.64	0.11	12.72	0.11	17.39
	0.07	32.07	0.07	29.81	0.07	29.73	0.07	13.65	0.07	11.33	0.07	16.00
Hydrometer Analysis	0.0434	16.70	0.0425	24.44	0.0420	17.51	0.0452	11.25	0.0456	8.41	0.0446	13.32
	0.0313	13.66	0.0309	19.91	0.0303	15.01	0.0323	9.84	0.0327	6.47	0.0318	11.84
	0.0201	11.38	0.0200	15.39	0.0196	12.50	0.0206	8.43	0.0210	4.53	0.0203	10.36
	0.0118	9.11	0.0118	11.77	0.0115	10.00	0.0120	7.03	0.0122	3.24	0.0118	9.62
	0.0084	8.35	0.0084	9.96	0.0082	8.75	0.0086	5.62	0.0087	2.59	0.0084	8.88
	0.0059	7.59	0.0060	9.05	0.0059	7.50	0.0061	4.22	0.0062	1.94	0.0060	8.14
	0.0030	6.07	0.0030	7.24	0.0030	5.00	0.0030	2.81	0.0031	1.29	0.0030	6.66
	0.0014	4.55	0.0014	6.34	0.0014	3.75	0.0014	1.41	0.0014	0.65	0.0014	5.92

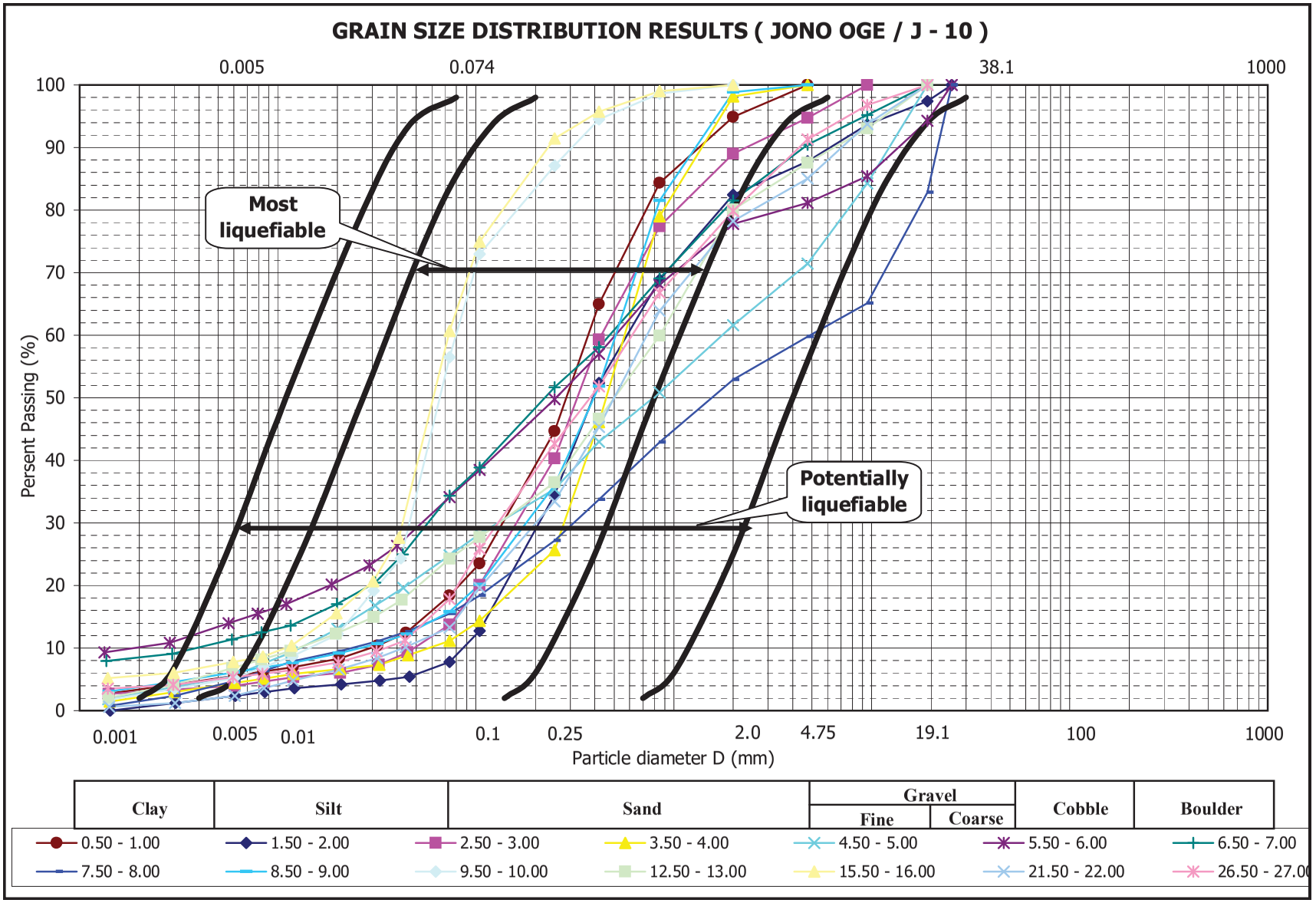
Sample Name	J - 9											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 6, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 9											
Location	JONO OGE											
Upper Depth(m)	26.50											
Lower Depth(m)	27.00											
Soil classification	-											
D90	9.1697											
D60	3.5873											
D50	2.7011											
D30	1.0586											
D10	0.0317											
ρs density of soil grain	2.647											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10	100.00										
	9.52	90.35										
	4.75	73.12										
	2.00	42.09										
	0.85	27.32										
	0.42	21.95										
	0.25	18.77										
	0.11	15.21										
	0.07	13.45										
Hydrometer Analysis	0.0449	11.38										
	0.0321	10.04										
	0.0205	8.70										
	0.0119	7.36										
	0.0085	6.02										
	0.0061	5.35										
	0.0030	4.02										
	0.0014	2.68										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 9)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
3.50 - 4.00
5.50 - 6.00
7.50 - 8.00
11.50 - 12.00
15.50 - 16.00
26.50 - 27.00

Sample Name	J - 10		J - 10		J - 10		J - 10		J - 10		J - 10	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 10		J - 10		J - 10		J - 10		J - 10		J - 10	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		-		-		SC - SM		-		-	
D90	1.4682		6.5672		2.4657		1.5096		13.0156		14.4722	
D60	0.3783		0.6194		0.4369		0.6017		1.8266		0.5356	
D50	0.2948		0.3974		0.3369		0.4710		0.8031		0.2552	
D30	0.1497		0.2200		0.1762		0.2863		0.1406		0.0561	
D10	0.0298		0.0878		0.0497		0.0603		0.0132		0.0020	
ρs density of soil grain	2.625		2.633		2.630		2.636		2.674		2.678	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40	100.00	25.40		25.40		25.40		25.40	100.00
	19.10		19.10	97.41	19.10		19.10		19.10	100.00	19.10	94.30
	9.52		9.52	93.65	9.52	100.00	9.52		9.52	84.25	9.52	85.40
	4.75	100.00	4.75	87.76	4.75	94.71	4.75	100.00	4.75	71.45	4.75	81.13
	2.00	94.85	2.00	82.45	2.00	89.04	2.00	98.19	2.00	61.62	2.00	77.77
	0.85	84.36	0.85	68.82	0.85	77.42	0.85	78.99	0.85	50.86	0.85	68.13
	0.42	65.00	0.42	52.37	0.42	59.29	0.42	46.10	0.42	42.95	0.42	57.01
	0.25	44.64	0.25	34.49	0.25	40.30	0.25	25.63	0.25	35.45	0.25	49.78
	0.11	23.48	0.11	12.78	0.11	20.08	0.11	14.37	0.11	28.22	0.11	38.49
	0.07	18.43	0.07	7.76	0.07	13.76	0.07	11.11	0.07	24.82	0.07	34.12
Hydrometer Analysis	0.0445	12.47	0.0463	5.40	0.0453	9.32	0.0457	8.82	0.0432	19.59	0.0401	26.34
	0.0319	10.39	0.0329	4.80	0.0325	7.33	0.0326	7.35	0.0310	16.79	0.0290	23.24
	0.0205	8.31	0.0209	4.20	0.0207	5.99	0.0207	6.62	0.0200	13.06	0.0188	20.14
	0.0119	6.93	0.0121	3.60	0.0120	5.33	0.0120	5.88	0.0118	9.33	0.0111	17.04
	0.0085	6.23	0.0086	3.00	0.0085	4.66	0.0085	5.15	0.0084	7.46	0.0079	15.49
	0.0060	5.54	0.0061	2.40	0.0061	4.00	0.0061	4.41	0.0060	5.60	0.0057	13.95
	0.0030	4.16	0.0031	1.20	0.0030	3.33	0.0030	2.94	0.0030	3.73	0.0029	10.85
	0.0014	2.77	0.0014	0.00	0.0014	2.66	0.0014	1.47	0.0014	1.87	0.0013	9.30

Sample Name	J - 10		J - 10		J - 10		J - 10		J - 10		J - 10	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019		January 14, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 10		J - 10		J - 10		J - 10		J - 10		J - 10	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	6.50		7.50		8.50		9.50		12.50		15.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		13.00		16.00	
Soil classification	-		-		-		-		-		-	
D90	4.6040		21.7243		1.4120		0.3166		6.8585		0.2370	
D60	0.4948		4.9338		0.5381		0.0806		0.8545		0.0733	
D50	0.2313		1.6643		0.4001		0.0675		0.5291		0.0634	
D30	0.0596		0.3224		0.1949		0.0475		0.1428		0.0435	
D10	0.0041		0.0242		0.0265		0.0150		0.0130		0.0111	
ρs density of soil grain	2.675		2.651		2.641		2.646		2.652		2.637	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp												
Ip	-		-		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40	100.00	25.40		25.40		25.40		25.40	
	19.10	100.00	19.10	82.86	19.10		19.10		19.10	100.00	19.10	
	9.52	95.19	9.52	65.13	9.52		9.52		9.52	93.05	9.52	
	4.75	90.48	4.75	59.79	4.75	100.00	4.75		4.75	87.58	4.75	
	2.00	81.53	2.00	52.93	2.00	98.88	2.00	100.00	2.00	80.10	2.00	100.00
	0.85	69.09	0.85	42.90	0.85	81.51	0.85	98.63	0.85	59.92	0.85	99.02
	0.42	58.09	0.42	33.77	0.42	51.85	0.42	94.49	0.42	46.63	0.42	95.75
	0.25	51.65	0.25	27.20	0.25	36.04	0.25	87.11	0.25	36.46	0.25	91.48
	0.11	38.87	0.11	18.41	0.11	20.15	0.11	72.97	0.11	27.73	0.11	74.95
	0.07	34.32	0.07	15.48	0.07	15.80	0.07	56.51	0.07	24.25	0.07	60.66
Hydrometer Analysis	0.0429	24.97	0.0446	12.63	0.0447	12.24	0.0419	24.36	0.0423	17.70	0.0411	27.62
	0.0310	20.43	0.0318	11.05	0.0319	10.71	0.0306	19.14	0.0306	14.98	0.0304	20.72
	0.0199	17.03	0.0203	9.47	0.0204	9.18	0.0202	12.18	0.0197	12.26	0.0198	15.54
	0.0116	13.62	0.0118	7.89	0.0119	7.65	0.0119	8.70	0.0116	9.53	0.0118	10.36
	0.0083	12.49	0.0085	6.32	0.0084	6.89	0.0085	6.96	0.0083	8.17	0.0084	8.63
	0.0059	11.35	0.0060	4.74	0.0060	6.12	0.0060	5.22	0.0059	6.81	0.0060	7.77
	0.0029	9.08	0.0030	2.37	0.0030	4.59	0.0030	3.48	0.0030	4.09	0.0030	6.04
	0.0014	7.95	0.0014	0.79	0.0014	3.06	0.0014	1.74	0.0014	2.04	0.0014	5.18

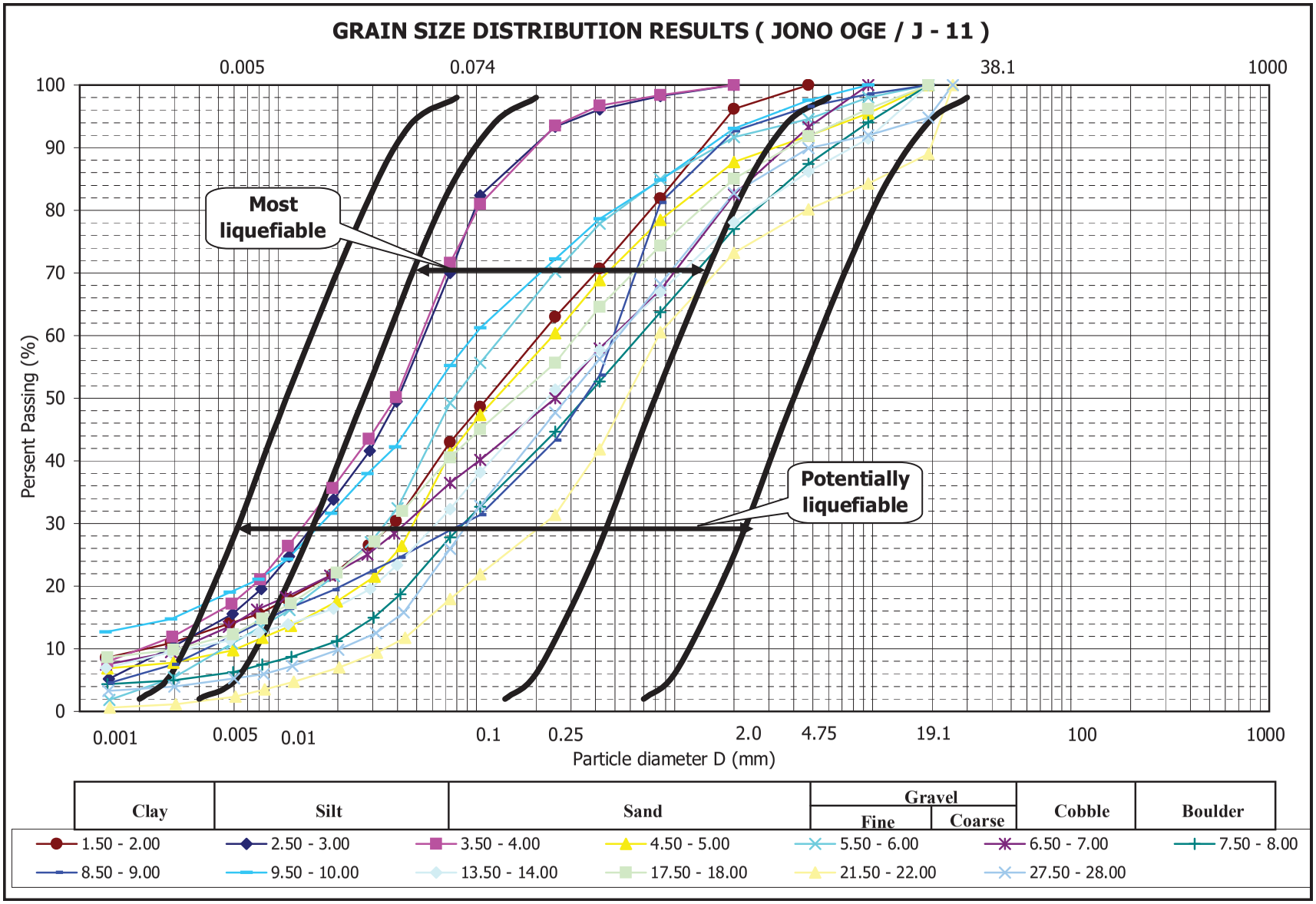
Sample Name	J - 10		J - 10									
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 14, 2019		January 14, 2019									
Tester	PT. INDRA KARYA		PT. INDRA KARYA									
Sample No	J - 10		J - 10									
Location	JONO OGE		JONO OGE									
Upper Depth(m)	21.50		26.50									
Lower Depth(m)	22.00		27.00									
Soil classification	-		-									
D90	7.4689		4.4328									
D60	0.7594		0.6545									
D50	0.5282		0.3858									
D30	0.2141		0.1406									
D10	0.0432		0.0354									
ρs density of soil grain	2.654		2.648									
WL	NON PLASTIS		NON PLASTIS									
Wp												
Ip	-		-									
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)								
Sieve Analysis	38.10		38.10									
	25.40		25.40									
	19.10	100.00	19.10	100.00								
	9.52	93.77	9.52	96.79								
	4.75	85.01	4.75	91.32								
	2.00	78.27	2.00	79.86								
	0.85	63.92	0.85	66.80								
	0.42	45.32	0.42	51.85								
	0.25	33.43	0.25	42.67								
	0.11	19.58	0.11	25.88								
	0.07	13.25	0.07	17.88								
Hydrometer Analysis	0.0443	10.16	0.0440	11.22								
	0.0318	8.37	0.0316	9.45								
	0.0204	6.57	0.0202	7.68								
	0.0119	4.78	0.0118	6.49								
	0.0085	3.59	0.0084	5.90								
	0.0061	2.39	0.0060	5.31								
	0.0030	1.20	0.0030	4.13								
	0.0014	0.60	0.0014	3.54								


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 10)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
12.50 - 13.00
15.50 - 16.00
21.50 - 22.00
26.50 - 27.00

Sample Name	J - 11		J - 11		J - 11		J - 11		J - 11		J - 11	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 11		J - 11		J - 11		J - 11		J - 11		J - 11	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	1.50		2.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	2.00		3.00		4.00		5.00		6.00		7.00	
Soil classification	-		CL - ML		CL - ML		-		-		-	
D90	1.5030		0.2059		0.2096		3.4871		1.7183		3.9169	
D60	0.2198		0.0573		0.0554		0.2456		0.1488		0.5142	
D50	0.1191		0.0406		0.0392		0.1346		0.0489		0.2504	
D30	0.0383		0.0158		0.0142		0.0500		0.0350		0.0456	
D10	0.0023		0.0029		-		0.0062		0.0055		0.0032	
ρs density of soil grain	2.635		2.633		2.652		2.641		2.643		2.637	
WL	NON PLASTIS		25.63		27.34		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp			20.04		20.76							
Ip	-		5.59		6.58		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10	100.00	19.10	100.00	19.10	
	9.52		9.52		9.52		9.52	95.52	9.52	98.05	9.52	100.00
	4.75	100.00	4.75		4.75		4.75	91.94	4.75	94.55	4.75	93.25
	2.00	96.15	2.00	100.00	2.00	100.00	2.00	87.72	2.00	91.64	2.00	82.51
	0.85	81.92	0.85	98.23	0.85	98.39	0.85	78.45	0.85	84.94	0.85	67.23
	0.42	70.65	0.42	96.08	0.42	96.70	0.42	68.88	0.42	77.83	0.42	57.97
	0.25	63.00	0.25	93.34	0.25	93.49	0.25	60.40	0.25	70.14	0.25	49.98
	0.11	48.60	0.11	82.36	0.11	80.97	0.11	47.33	0.11	55.62	0.11	40.15
	0.07	42.97	0.07	70.01	0.07	71.57	0.07	41.22	0.07	49.26	0.07	36.46
Hydrometer Analysis	0.0394	30.40	0.0397	49.43	0.0394	50.12	0.0422	26.39	0.0400	32.42	0.0386	28.42
	0.0287	26.50	0.0291	41.62	0.0288	43.53	0.0307	21.50	0.0293	27.01	0.0282	25.04
	0.0188	21.82	0.0190	33.82	0.0188	35.61	0.0198	17.59	0.0192	21.61	0.0184	21.65
	0.0112	17.93	0.0114	24.71	0.0113	26.38	0.0117	13.68	0.0114	16.21	0.0109	18.27
	0.0080	15.59	0.0082	19.51	0.0081	21.10	0.0083	11.73	0.0082	13.51	0.0078	16.24
	0.0057	14.03	0.0059	15.61	0.0058	17.15	0.0059	9.77	0.0059	10.81	0.0057	13.53
	0.0029	10.91	0.0030	10.41	0.0029	11.87	0.0030	7.82	0.0030	5.40	0.0029	9.47
	0.0014	8.57	0.0014	5.20	0.0014	7.91	0.0014	6.84	0.0014	1.80	0.0014	7.44

Sample Name	J - 11		J - 11		J - 11		J - 11		J - 11		J - 11	
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019		January 19, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 11		J - 11		J - 11		J - 11		J - 11		J - 11	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		13.50		17.50		21.50	
Lower Depth(m)	8.00		9.00		10.00		14.00		18.00		22.00	
Soil classification	-		-		CL		-		-		-	
D90	6.6063		1.7332		1.5753		8.2099		4.0107		19.6721	
D60	0.7046		0.5187		0.0987		0.5280		0.3328		0.8370	
D50	0.3632		0.3601		0.0600		0.2348		0.1732		0.6074	
D30	0.0881		0.0873		0.0169		0.0653		0.0376		0.2294	
D10	0.0159		0.0046		-		0.0037		0.0031		0.0347	
ρs density of soil grain	2.638		2.631		2.644		2.631		2.643		2.636	
WL	NON PLASTIS		NON PLASTIS		28.48		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp					21.31							
Ip	-		-		7.17		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	100.00
	19.10	100.00	19.10	100.00	19.10		19.10	100.00	19.10	100.00	19.10	89.00
	9.52	94.02	9.52	98.53	9.52	100.00	9.52	91.45	9.52	96.19	9.52	84.27
	4.75	87.44	4.75	96.54	4.75	97.53	4.75	86.18	4.75	91.83	4.75	80.16
	2.00	77.01	2.00	92.64	2.00	93.06	2.00	78.13	2.00	85.03	2.00	73.23
	0.85	63.73	0.85	81.26	0.85	84.77	0.85	66.92	0.85	74.33	0.85	60.57
	0.42	52.70	0.42	53.67	0.42	78.64	0.42	57.68	0.42	64.61	0.42	41.83
	0.25	44.63	0.25	43.26	0.25	72.20	0.25	51.39	0.25	55.62	0.25	31.35
	0.11	32.69	0.11	31.40	0.11	61.21	0.11	38.18	0.11	45.01	0.11	21.87
	0.07	27.77	0.07	28.94	0.07	55.22	0.07	32.29	0.07	40.51	0.07	17.96
Hydrometer Analysis	0.0416	18.68	0.0409	24.57	0.0390	42.18	0.0399	23.33	0.0424	32.02	0.0439	11.77
	0.0304	14.95	0.0294	22.34	0.0283	37.96	0.0293	19.55	0.0307	27.09	0.0317	9.41
	0.0198	11.21	0.0190	19.36	0.0186	31.63	0.0190	16.39	0.0198	22.17	0.0204	7.06
	0.0117	8.72	0.0112	16.38	0.0111	24.25	0.0112	13.87	0.0117	17.24	0.0120	4.71
	0.0083	7.47	0.0081	14.15	0.0080	21.09	0.0080	12.61	0.0083	14.78	0.0086	3.53
	0.0059	6.23	0.0058	11.91	0.0057	18.98	0.0057	11.35	0.0059	12.31	0.0061	2.35
	0.0030	4.98	0.0029	7.45	0.0029	14.76	0.0029	9.46	0.0030	9.85	0.0030	1.18
	0.0014	4.36	0.0014	4.47	0.0013	12.65	0.0014	6.94	0.0014	8.62	0.0014	0.59

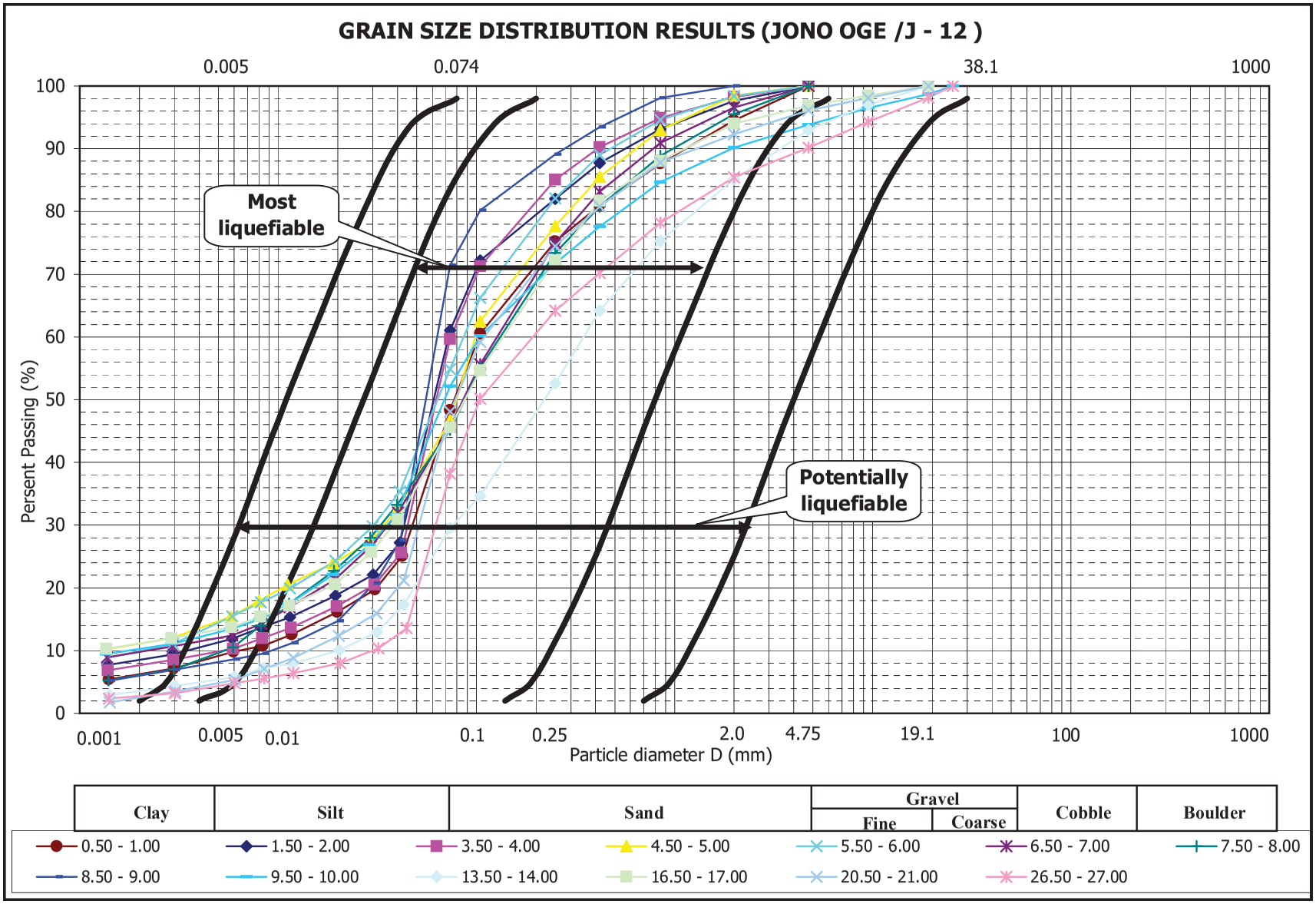
Sample Name	J - 11											
Project Name	BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE											
Date	January 19, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 11											
Location	JONO OGE											
Upper Depth(m)	27.50											
Lower Depth(m)	28.00											
Soil classification	-											
D90	4.9558											
D60	0.5545											
D50	0.1954											
D30	0.0923											
D10	0.0207											
ρs density of soil grain	2.634											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40	100.00										
	19.10	94.77										
	9.52	91.95										
	4.75	89.91										
	2.00	82.73										
	0.85	68.23										
	0.42	56.25										
	0.25	47.74										
	0.11	32.81										
	0.07	25.96										
Hydrometer Analysis	0.0430	15.79										
	0.0312	12.50										
	0.0201	9.87										
	0.0119	7.24										
	0.0085	5.92										
	0.0060	5.26										
	0.0030	3.95										
	0.0014	3.29										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE / J - 11)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
13.50 - 14.00
17.50 - 18.00
21.50 - 22.00
27.50 - 28.00

Sample Name	J - 12		J - 12		J - 12		J - 12		J - 12		J - 12	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 12		J - 12		J - 12		J - 12		J - 12		J - 12	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.50		3.50		4.50		5.50		6.50	
Lower Depth(m)	1.00		2.00		4.00		5.00		6.00		7.00	
Soil classification	-		-		-		CL - ML		CL - ML		-	
D90	1.2481		0.6000		0.4120		0.6769		0.4954		0.7984	
D60	0.1037		0.0729		0.0749		0.1001		0.0879		0.1377	
D50	0.0782		0.0633		0.0649		0.0805		0.0658		0.0875	
D30	0.0490		0.0440		0.0460		0.0348		0.0304		0.0363	
D10	0.0064		0.0037		0.0055		-		0.0022		0.0023	
ρs density of soil grain	2.650		2.656		2.646		2.651		2.660		2.652	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		24.75		23.65		NON PLASTIS	
Wp							18.49		17.81			
Ip	-		-		-		6.26		5.84		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52		9.52		9.52		9.52		9.52		9.52	
	4.75	100.00	4.75	100.00	4.75	100.00	4.75	100.00	4.75	100.00	4.75	100.00
	2.00	94.50	2.00	97.65	2.00	98.22	2.00	98.45	2.00	98.43	2.00	96.59
	0.85	87.62	0.85	93.15	0.85	94.92	0.85	93.02	0.85	94.63	0.85	90.94
	0.42	80.97	0.42	87.73	0.42	90.25	0.42	85.51	0.42	89.02	0.42	83.12
	0.25	75.24	0.25	82.02	0.25	85.07	0.25	77.69	0.25	82.06	0.25	74.98
	0.11	60.52	0.11	72.16	0.11	71.23	0.11	62.47	0.11	66.25	0.11	55.64
	0.07	48.34	0.07	61.09	0.07	59.65	0.07	46.70	0.07	54.90	0.07	45.67
Hydrometer Analysis	0.0423	25.08	0.0413	27.25	0.0419	25.64	0.0399	32.46	0.0413	35.34	0.0404	32.00
	0.0309	19.71	0.0302	22.14	0.0306	20.52	0.0293	27.33	0.0300	29.82	0.0296	26.66
	0.0200	16.12	0.0195	18.73	0.0198	17.10	0.0189	23.91	0.0195	24.30	0.0193	21.33
	0.0118	12.54	0.0115	15.33	0.0117	13.68	0.0112	20.50	0.0115	19.88	0.0115	16.89
	0.0084	10.75	0.0082	13.62	0.0083	11.97	0.0080	17.94	0.0082	17.67	0.0082	14.22
	0.0060	9.85	0.0059	11.92	0.0059	10.26	0.0058	15.37	0.0059	15.46	0.0059	12.44
	0.0030	7.17	0.0029	9.37	0.0030	8.55	0.0029	11.96	0.0030	11.04	0.0029	10.67
	0.0014	5.37	0.0014	7.66	0.0014	6.84	0.0014	10.25	0.0014	8.83	0.0014	8.89

Sample Name	J - 12		J - 12		J - 12		J - 12		J - 12		J - 12	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019		January 7, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 12		J - 12		J - 12		J - 12		J - 12		J - 12	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	7.50		8.50		9.50		13.50		16.50		20.50	
Lower Depth(m)	8.00		9.00		10.00		14.00		17.00		21.00	
Soil classification	-		-		CL - ML		-		CL - ML		-	
D90	1.0421		0.2846		1.9661		3.7015		1.2332		1.4142	
D60	0.1438		0.0655		0.1044		0.3588		0.1495		0.1125	
D50	0.0891		0.0581		0.0704		0.2288		0.0891		0.0792	
D30	0.0333		0.0432		0.0358		0.0772		0.0385		0.0532	
D10	0.0055		0.0094		0.0019		0.0200		-		0.0147	
ρs density of soil grain	2.656		2.647		2.654		2.656		2.651		2.666	
WL	NON PLASTIS		NON PLASTIS		22.65		NON PLASTIS		23.71		NON PLASTIS	
Wp					17.36				18.00			
Ip	-		-		5.29		-		5.71		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40	100.00	25.40		25.40		25.40	
	19.10		19.10		19.10	98.69	19.10	100.00	19.10	100.00	19.10	100.00
	9.52		9.52		9.52	96.49	9.52	97.00	9.52	98.44	9.52	98.08
	4.75	100.00	4.75		4.75	93.85	4.75	92.97	4.75	96.86	4.75	96.13
	2.00	95.52	2.00	100.00	2.00	90.16	2.00	85.17	2.00	94.00	2.00	92.32
	0.85	88.89	0.85	98.11	0.85	84.70	0.85	75.32	0.85	88.00	0.85	87.77
	0.42	80.79	0.42	93.45	0.42	77.60	0.42	64.15	0.42	81.68	0.42	80.80
	0.25	73.44	0.25	89.12	0.25	71.72	0.25	52.63	0.25	72.15	0.25	74.47
	0.11	55.09	0.11	80.19	0.11	60.16	0.11	34.67	0.11	54.62	0.11	59.21
	0.07	45.18	0.07	71.42	0.07	52.15	0.07	29.46	0.07	45.61	0.07	48.12
Hydrometer Analysis	0.0398	33.22	0.0414	27.62	0.0394	31.60	0.0432	17.31	0.0404	30.84	0.0431	21.19
	0.0292	27.97	0.0306	20.72	0.0289	26.86	0.0315	12.98	0.0296	25.70	0.0314	15.90
	0.0191	22.73	0.0201	14.67	0.0189	22.12	0.0203	10.10	0.0194	20.56	0.0203	12.36
	0.0114	17.48	0.0118	11.22	0.0113	17.38	0.0119	7.93	0.0114	17.13	0.0119	8.83
	0.0082	13.99	0.0084	9.49	0.0081	15.01	0.0085	7.21	0.0081	15.42	0.0085	7.06
	0.0059	10.49	0.0060	8.63	0.0058	13.43	0.0060	5.77	0.0058	13.71	0.0061	5.30
	0.0030	6.99	0.0030	6.91	0.0029	11.06	0.0030	4.33	0.0029	11.99	0.0030	3.53
	0.0014	5.24	0.0014	5.18	0.0014	9.48	0.0014	2.88	0.0014	10.28	0.0014	1.77

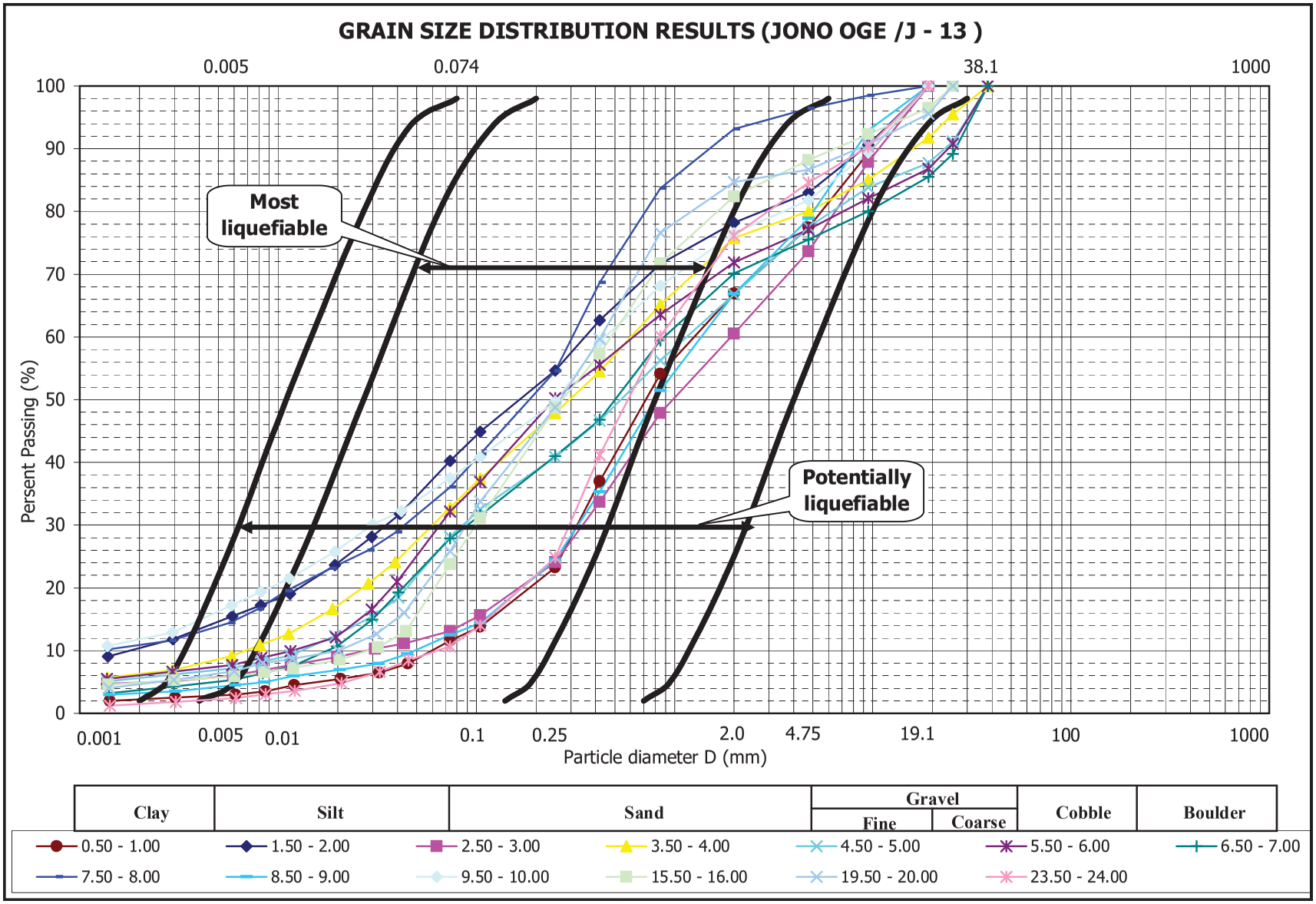
Sample Name	J - 12											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 7, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 12											
Location	JONO OGE											
Upper Depth(m)	26.50											
Lower Depth(m)	27.00											
Soil classification	-											
D90	4.6391											
D60	0.2066											
D50	0.0882											
D30	0.0642											
D10	0.0273											
ρs density of soil grain	2.680											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40	100.00										
	19.10	98.17										
	9.52	94.29										
	4.75	90.19										
	2.00	85.45										
	0.85	78.20										
	0.42	70.20										
	0.25	64.19										
	0.11	50.18										
	0.07	38.17										
Hydrometer Analysis	0.0445	13.57										
	0.0321	10.38										
	0.0206	7.98										
	0.0120	6.39										
	0.0085	5.59										
	0.0060	4.79										
	0.0030	3.19										
	0.0014	2.39										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE /J - 12)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
13.50 - 14.00
16.50 - 17.00
20.50 - 21.00
26.50 - 27.00

Sample Name	J - 13		J - 13		J - 13		J - 13		J - 13		J - 13	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 13		J - 13		J - 13		J - 13		J - 13		J - 13	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.50		2.50		3.50		4.50		5.50	
Lower Depth(m)	1.00		2.00		3.00		4.00		5.00		6.00	
Soil classification	-		CL - ML		-		-		-		-	
D90	10.0921		8.8493		11.1756		16.5645		23.2787		24.1810	
D60	1.3769		0.3638		1.8872		0.6410		1.2615		0.6577	
D50	0.7465		0.1807		1.0456		0.3047		0.5719		0.2475	
D30	0.3335		0.0355		0.3069		0.0627		0.0871		0.0675	
D10	0.0616		0.0019		0.0262		0.0069		0.0135		0.0118	
ρs density of soil grain	2.644		2.649		2.652		2.643		2.646		2.647	
WL	NON PLASTIS		23.57		NON PLASTIS		NON PLASTIS		NON PLASTIS		NON PLASTIS	
Wp			18.07									
Ip	-		5.50		-		-		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10	100.00	38.10	100.00	38.10	100.00
	25.40		25.40		25.40		25.40	95.53	25.40	91.15	25.40	90.76
	19.10	100.00	19.10	100.00	19.10	100.00	19.10	91.79	19.10	87.74	19.10	86.84
	9.52	89.36	9.52	90.65	9.52	87.91	9.52	85.03	9.52	83.85	9.52	82.06
	4.75	77.41	4.75	82.97	4.75	73.63	4.75	80.06	4.75	77.52	4.75	77.15
	2.00	66.95	2.00	78.21	2.00	60.54	2.00	75.80	2.00	66.80	2.00	71.90
	0.85	54.12	0.85	71.63	0.85	47.84	0.85	65.18	0.85	56.21	0.85	63.59
	0.42	36.99	0.42	62.62	0.42	33.72	0.42	54.53	0.42	46.61	0.42	55.57
	0.25	23.25	0.25	54.68	0.25	24.08	0.25	47.85	0.25	40.84	0.25	50.23
	0.11	13.81	0.11	44.89	0.11	15.60	0.11	37.42	0.11	32.54	0.11	36.93
	0.07	11.55	0.07	40.22	0.07	13.14	0.07	32.80	0.07	28.15	0.07	32.14
Hydrometer Analysis	0.0452	7.94	0.0411	31.80	0.0433	11.12	0.0390	24.10	0.0405	18.46	0.0400	20.98
	0.0324	6.45	0.0298	28.16	0.0309	10.26	0.0286	20.66	0.0296	15.39	0.0296	16.56
	0.0207	5.46	0.0194	23.62	0.0199	8.98	0.0189	16.64	0.0194	12.31	0.0196	12.14
	0.0121	4.47	0.0115	19.08	0.0116	7.70	0.0113	12.63	0.0115	9.23	0.0115	9.94
	0.0086	3.47	0.0082	17.26	0.0083	6.84	0.0081	10.90	0.0082	8.21	0.0082	8.83
	0.0061	2.98	0.0059	15.44	0.0059	5.99	0.0058	9.18	0.0059	7.18	0.0059	7.73
	0.0030	2.48	0.0030	11.81	0.0030	5.13	0.0029	6.89	0.0029	6.15	0.0029	6.62
	0.0014	1.99	0.0014	9.08	0.0014	4.70	0.0014	5.74	0.0014	5.13	0.0014	5.52

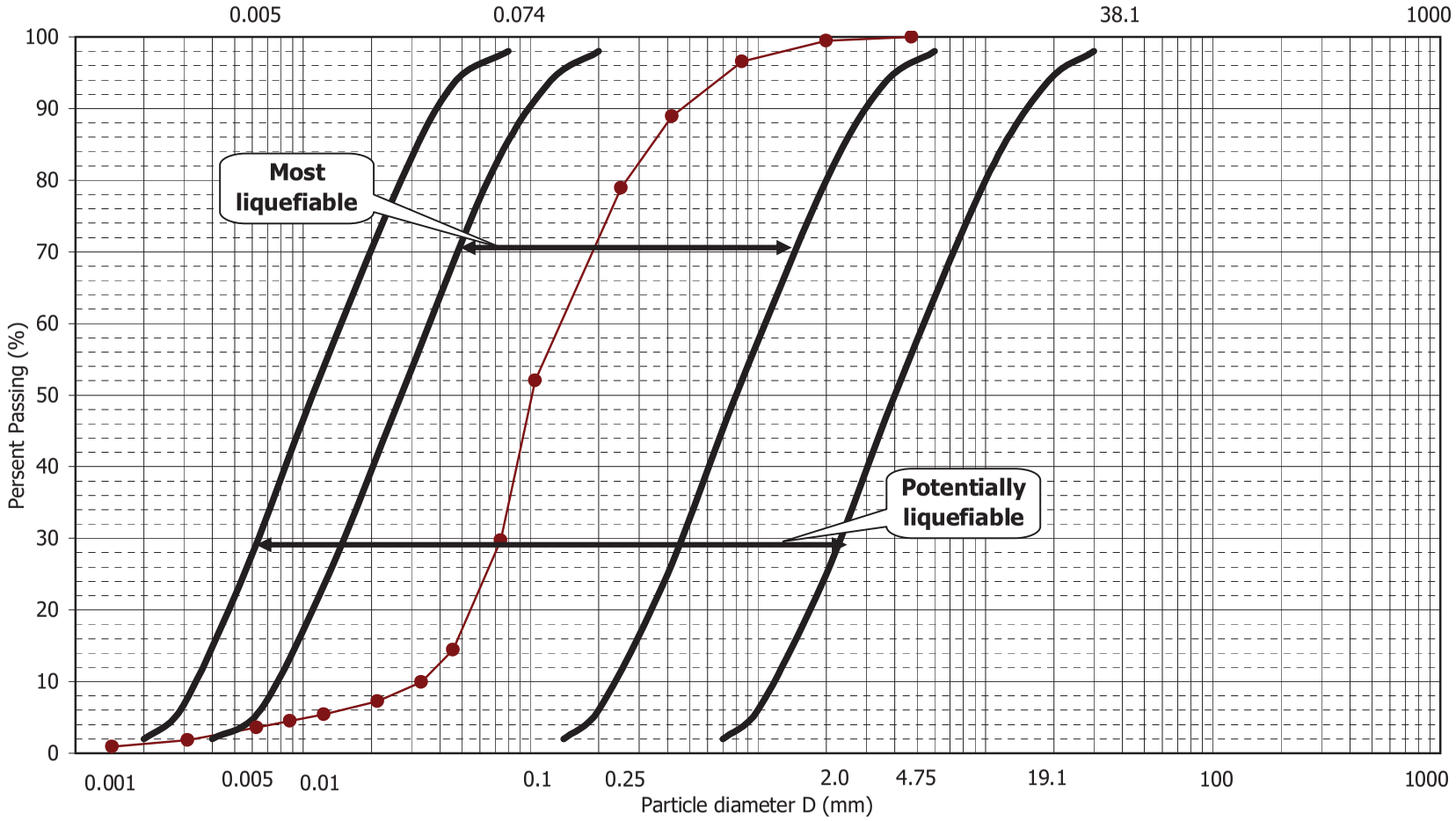
Sample Name	J - 13		J - 13		J - 13		J - 13		J - 13		J - 13	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019		January 5, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	J - 13		J - 13		J - 13		J - 13		J - 13		J - 13	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	6.50		7.50		8.50		9.50		15.50		19.50	
Lower Depth(m)	7.00		8.00		9.00		10.00		16.00		20.00	
Soil classification	-		-		-		CL - ML		-		-	
D90	26.3751		1.6195		8.5381		10.0430		6.8680		8.7066	
D60	0.9110		0.3153		1.4878		0.4572		0.5004		0.4274	
D50	0.5299		0.2001		0.8111		0.2553		0.2772		0.2621	
D30	0.0921		0.0448		0.3371		0.0298		0.1003		0.0871	
D10	0.0180		-		0.0504		-		0.0292		0.0202	
ρs density of soil grain	2.649		2.657		2.659		2.641		2.638		2.650	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		24.00		NON PLASTIS		NON PLASTIS	
Wp							18.21					
Ip	-		-		-		5.79		-		-	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10	100.00	38.10		38.10		38.10		38.10		38.10	
	25.40	89.17	25.40		25.40		25.40		25.40	100.00	25.40	100.00
	19.10	85.51	19.10	100.00	19.10	100.00	19.10	100.00	19.10	96.53	19.10	95.59
	9.52	80.01	9.52	98.47	9.52	92.88	9.52	89.42	9.52	92.30	9.52	90.69
	4.75	75.57	4.75	96.40	4.75	78.89	4.75	81.78	4.75	88.17	4.75	86.65
	2.00	70.14	2.00	93.13	2.00	66.85	2.00	76.51	2.00	82.37	2.00	84.68
	0.85	59.43	0.85	83.66	0.85	51.47	0.85	68.18	0.85	71.69	0.85	76.63
	0.42	46.76	0.42	68.71	0.42	35.27	0.42	59.23	0.42	57.31	0.42	59.71
	0.25	41.02	0.25	54.57	0.25	24.46	0.25	49.70	0.25	48.61	0.25	48.75
	0.11	31.53	0.11	41.29	0.11	14.42	0.11	40.82	0.11	31.10	0.11	33.73
	0.07	27.86	0.07	36.07	0.07	12.48	0.07	37.52	0.07	23.82	0.07	25.81
Hydrometer Analysis	0.0404	19.25	0.0393	28.87	0.0448	9.42	0.0420	32.25	0.0444	13.11	0.0433	16.01
	0.0300	14.97	0.0285	25.98	0.0322	7.93	0.0300	30.10	0.0320	10.49	0.0314	12.68
	0.0198	10.69	0.0185	23.10	0.0205	6.94	0.0194	25.80	0.0205	8.52	0.0203	10.01
	0.0118	7.49	0.0110	19.49	0.0120	5.95	0.0114	21.50	0.0120	7.21	0.0118	8.67
	0.0084	6.42	0.0079	16.60	0.0085	4.96	0.0082	19.35	0.0085	6.55	0.0084	8.01
	0.0060	5.35	0.0057	14.44	0.0061	4.46	0.0058	17.20	0.0060	5.90	0.0060	6.67
	0.0030	4.28	0.0029	11.55	0.0030	3.47	0.0029	12.90	0.0030	5.24	0.0030	5.34
	0.0014	3.21	0.0013	10.11	0.0014	2.97	0.0014	10.75	0.0014	4.59	0.0014	4.00

Sample Name	J - 13											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 5, 2019											
Tester	PT. INDRA KARYA											
Sample No	J - 13											
Location	JONO OGE											
Upper Depth(m)	23.50											
Lower Depth(m)	24.00											
Soil classification	-											
D90	9.1776											
D60	0.8463											
D50	0.6197											
D30	0.3035											
D10	0.0653											
ρs density of soil grain	2.657											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10	100.00										
	9.52	90.35										
	4.75	84.57										
	2.00	76.17										
	0.85	60.16										
	0.42	41.19										
	0.25	24.86										
	0.11	14.06										
	0.07	10.69										
Hydrometer Analysis	0.0454	8.45										
	0.0326	6.64										
	0.0209	4.83										
	0.0122	3.62										
	0.0086	3.02										
	0.0061	2.41										
	0.0031	1.81										
	0.0014	1.21										


GRAIN SIZE DISTRIBUTION RESULTS (JONO OGE /J - 13)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
0.50 - 1.00
1.50 - 2.00
2.50 - 3.00
3.50 - 4.00
4.50 - 5.00
5.50 - 6.00
6.50 - 7.00
7.50 - 8.00
8.50 - 9.00
9.50 - 10.00
15.50 - 16.00
19.50 - 20.00
23.50 - 24.00

Sample Name	LIK BALAROA											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 28, 2018											
Tester	PT. INDRA KARYA											
Sample No	LIK BALAROA											
Location	BALAROA											
Upper Depth(m)												
Lower Depth(m)												
Soil classification	-											
D90	0.4815											
D60	0.1480											
D50	0.1022											
D30	0.0744											
D10	0.0333											
ρs density of soil grain	2.605											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10											
	9.52											
	4.75	100.00										
	2.00	99.45										
	0.85	96.56										
	0.42	88.91										
	0.25	78.88										
	0.11	52.03										
	0.07	29.71										
Hydrometer Analysis	0.0459	8.86										
	0.0331	6.33										
	0.0212	4.43										
	0.0124	3.16										
	0.0088	2.53										
	0.0062	1.90										
	0.0031	1.27										
	0.0014	0.63										

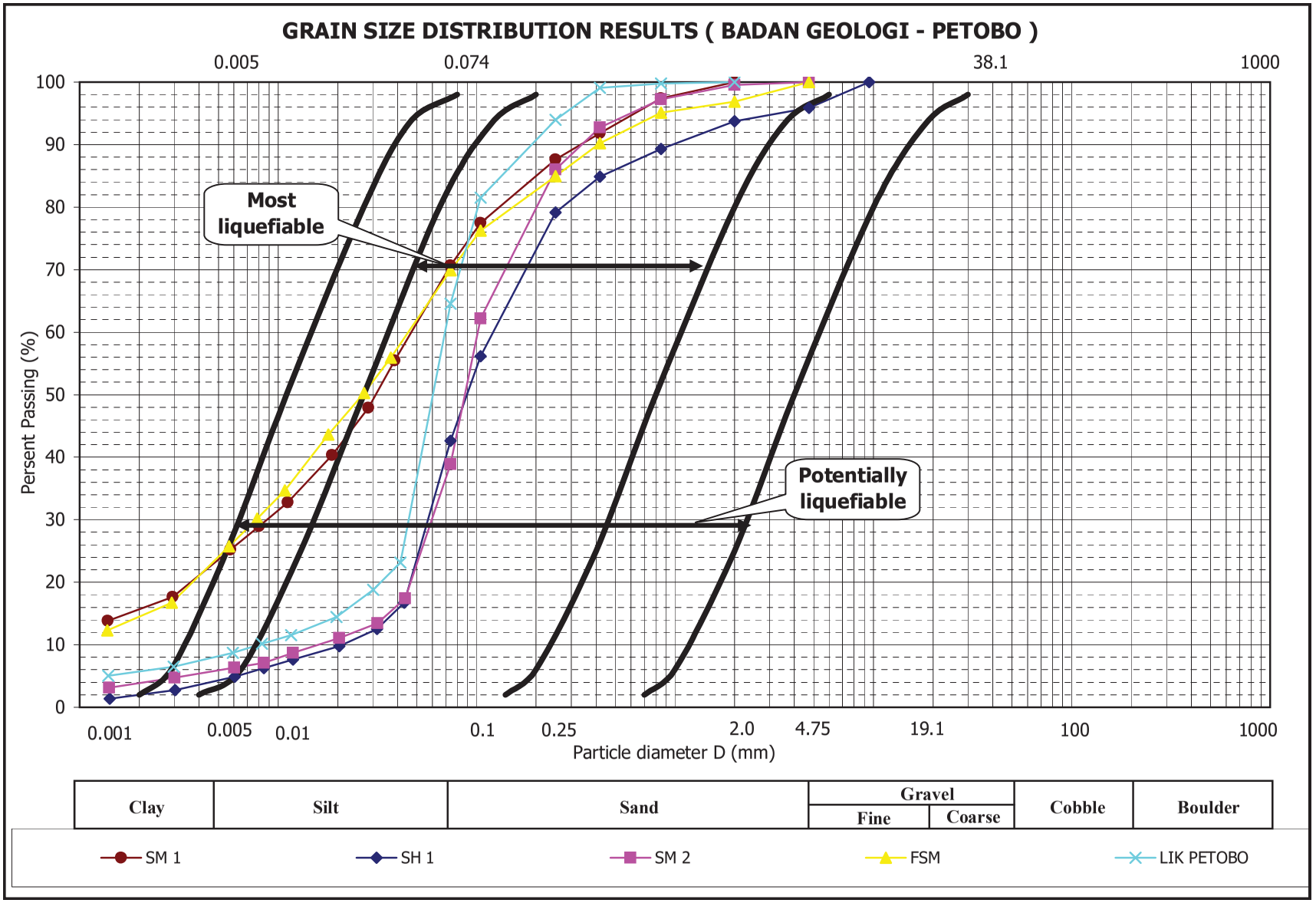
GRAIN SIZE DISTRIBUTION RESULTS (BADAN GEOLOGI - LIK BALAROA)



Clay	Silt	Sand	Gravel		Cobble	Boulder
			Fine	Coarse		

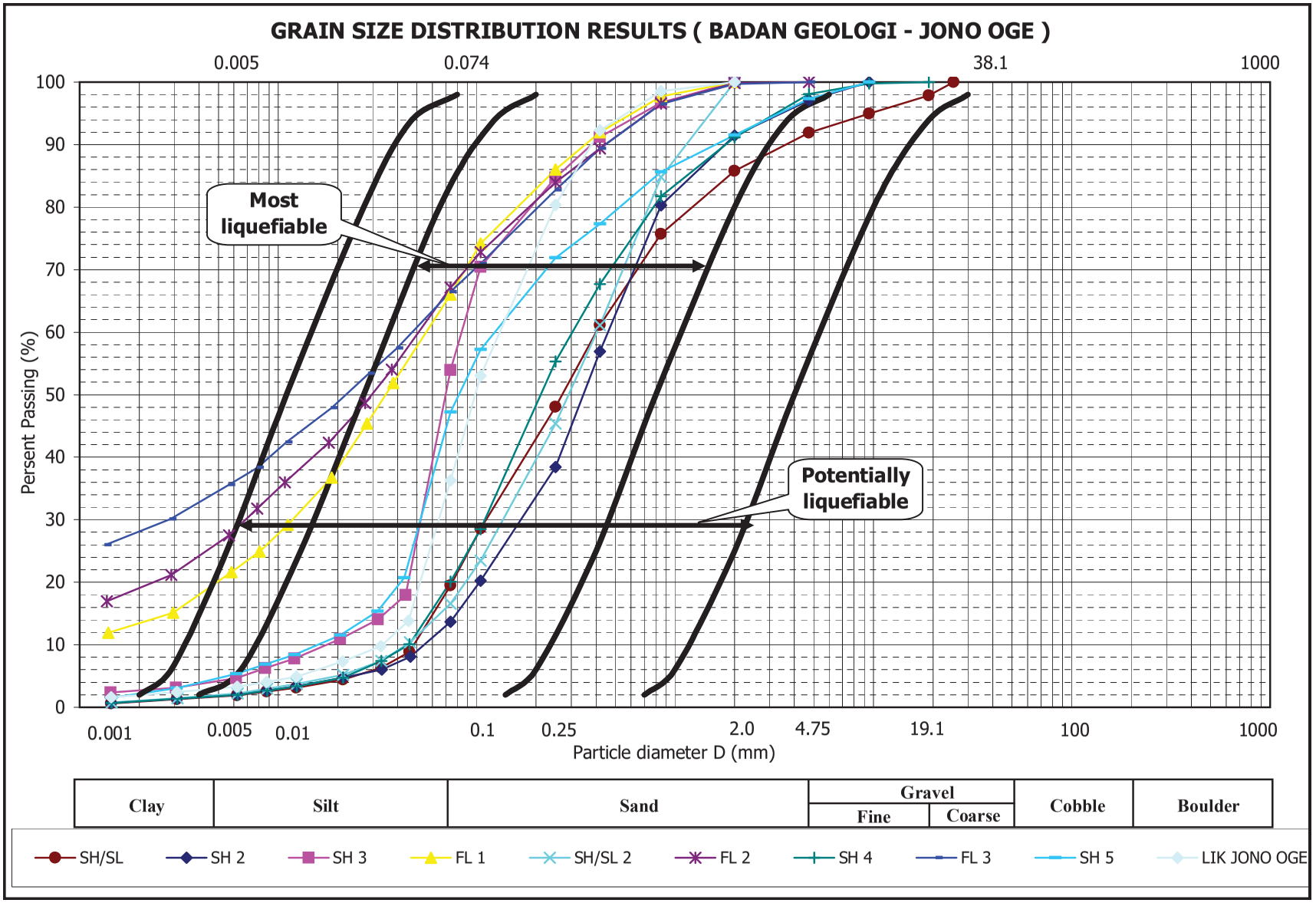
LIK BALAROA

Sample Name	SM 1		SH 1		SM 2		FSM		LIK PETOBO			
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018			
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA			
Sample No	SM 1		SH 1		SM 2		FSM		LIK PETOBO			
Location	PETOBO		PETOBO		PETOBO		PETOBO		PETOBO			
Upper Depth(m)	0.00		1.20		4.80		5.10					
Lower Depth(m)	1.20		1.80		5.10		5.30					
Soil classification	CL		-		-		CL		-			
D90	0.3459		1.0250		0.3509		0.4122		0.2038			
D60	0.0494		0.1293		0.1021		0.0479		0.0704			
D50	0.0314		0.0910		0.0888		0.0268		0.0625			
D30	0.0089		0.0590		0.0615		0.0078		0.0468			
D10	-		0.0213		0.0165		-		0.0081			
ρs density of soil grain	2.614		2.658		2.657		2.620		2.654			
WL	29.52		NON PLASTIS		NON PLASTIS		29.64		NON PLASTIS			
Wp	18.81						19.10					
Ip	10.71		-		-		10.55		-			
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)		
Sieve Analysis	38.10		38.10		38.10		38.10		38.10			
	25.40		25.40		25.40		25.40		25.40			
	19.10		19.10		19.10		19.10		19.10			
	9.52		9.52	100.00	9.52		9.52		9.52			
	4.75		4.75	95.90	4.75	100.00	4.75	100.00	4.75			
	2.00	100.00	2.00	93.73	2.00	99.55	2.00	96.84	2.00	100.00		
	0.85	97.40	0.85	89.33	0.85	97.24	0.85	95.11	0.85	99.78		
	0.42	91.82	0.42	84.86	0.42	92.72	0.42	90.24	0.42	99.06		
	0.25	87.65	0.25	79.18	0.25	86.04	0.25	84.96	0.25	93.96		
	0.11	77.44	0.11	56.13	0.11	62.18	0.11	76.23	0.11	81.53		
	0.07	70.64	0.07	42.59	0.07	38.88	0.07	69.91	0.07	64.54		
Hydrometer Analysis	0.0388	55.43	0.0432	16.71	0.0437	17.40	0.0371	55.89	0.0413	23.14		
	0.0285	47.87	0.0315	12.54	0.0317	13.44	0.0272	50.30	0.0302	18.80		
	0.0187	40.31	0.0203	9.75	0.0203	11.07	0.0179	43.59	0.0197	14.46		
	0.0112	32.76	0.0119	7.66	0.0119	8.70	0.0108	34.65	0.0116	11.57		
	0.0080	28.98	0.0085	6.27	0.0085	7.12	0.0078	30.18	0.0083	10.12		
	0.0058	25.20	0.0061	4.88	0.0060	6.33	0.0057	25.71	0.0059	8.68		
	0.0029	17.64	0.0030	2.79	0.0030	4.74	0.0029	16.77	0.0030	6.51		
	0.0014	13.86	0.0014	1.39	0.0014	3.16	0.0014	12.30	0.0014	5.06		

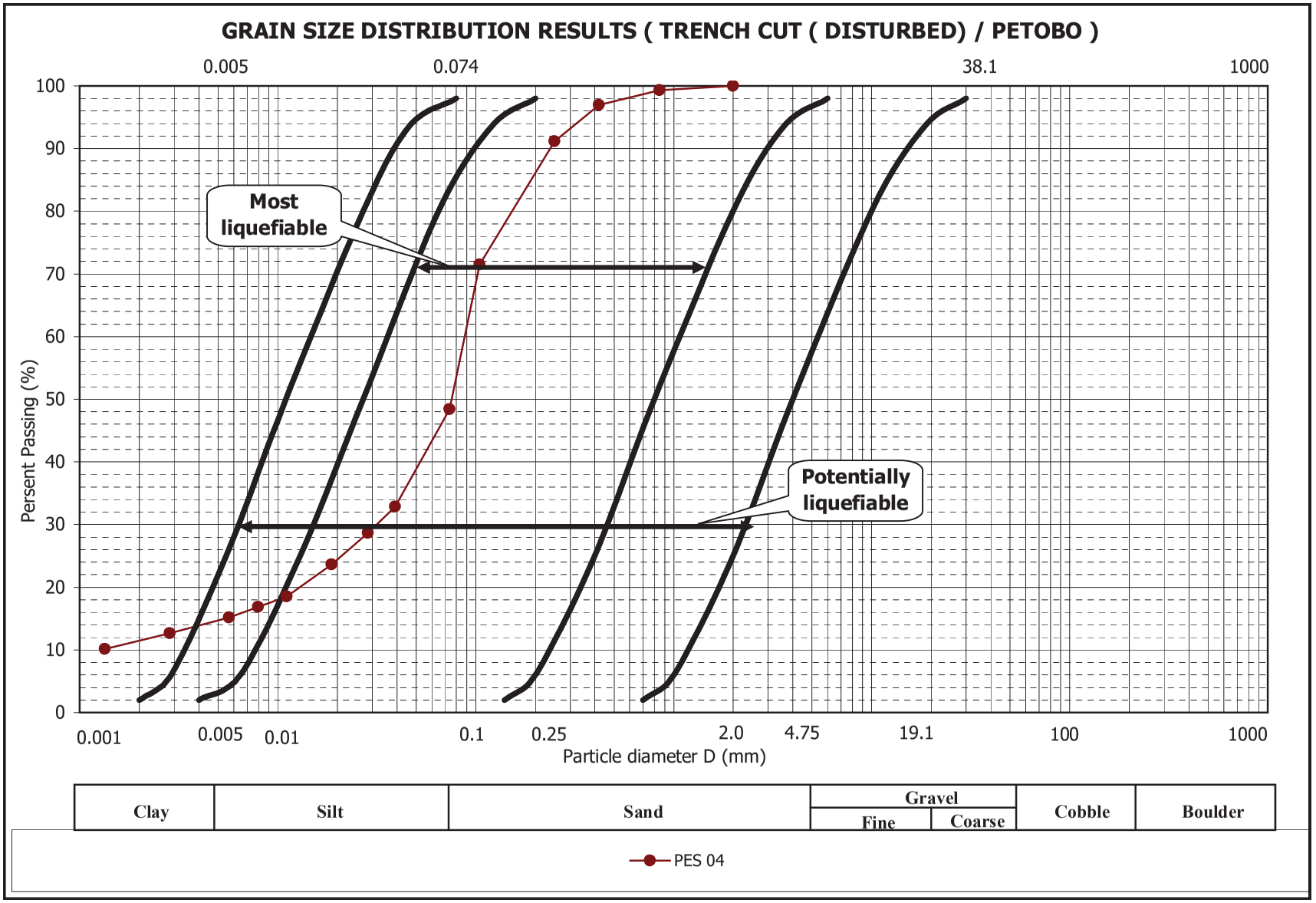

GRAIN SIZE DISTRIBUTION RESULTS (BADAN GEOLOGI - PETOBO)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
SM 1
SH 1
SM 2
FSM
LIK PETOBO

Sample Name	SH/SL		SH 2		SH 3		FL 1		SH/SL 2		FL 2	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	SH/SL		SH 2		SH 3		FL 1		SH/SL 2		FL 2	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	0.50		1.85		2.25		3.05		3.25		4.25	
Lower Depth(m)	1.85		2.25		3.05		3.25		4.25		4.40	
Soil classification	-		-		-		CL		-		CL	
D90	3.8816		1.8534		0.3881		0.3636		1.2454		0.4565	
D60	0.4060		0.4771		0.0854		0.0586		0.4082		0.0542	
D50	0.2757		0.3566		0.0707		0.0351		0.3002		0.0299	
D30	0.1155		0.1828		0.0540		0.0120		0.1482		0.0069	
D10	0.0489		0.0558		0.0180		-		0.0443		-	
ρs density of soil grain	2.622		2.621		2.623		2.593		2.609		2.570	
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS		27.80		NON PLASTIS		29.64	
Wp							18.27				19.10	
Ip	-		-		-		9.53		-		10.55	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40	100.00	25.40		25.40		25.40		25.40		25.40	
	19.10	97.85	19.10		19.10		19.10		19.10		19.10	
	9.52	94.97	9.52	100.00	9.52		9.52		9.52		9.52	
	4.75	91.94	4.75	97.08	4.75		4.75		4.75		4.75	100.00
	2.00	85.80	2.00	91.42	2.00	100.00	2.00	100.00	2.00	100.00	2.00	99.83
	0.85	75.70	0.85	80.28	0.85	96.75	0.85	97.74	0.85	84.76	0.85	96.53
	0.42	61.08	0.42	56.89	0.42	91.21	0.42	91.96	0.42	61.10	0.42	89.39
	0.25	48.03	0.25	38.42	0.25	84.74	0.25	86.05	0.25	45.35	0.25	83.95
	0.11	28.60	0.11	20.24	0.11	70.41	0.11	74.15	0.11	23.47	0.11	72.83
	0.07	19.47	0.07	13.71	0.07	53.92	0.07	66.03	0.07	16.59	0.07	67.11
Hydrometer Analysis	0.0459	8.86	0.0464	8.08	0.0439	17.94	0.0380	51.90	0.0461	10.41	0.0374	53.98
	0.0331	6.33	0.0333	6.06	0.0318	14.04	0.0280	45.41	0.0332	7.43	0.0274	48.69
	0.0212	4.43	0.0212	4.72	0.0205	10.92	0.0186	36.76	0.0213	5.20	0.0181	42.34
	0.0124	3.16	0.0124	3.37	0.0121	7.80	0.0112	29.19	0.0124	3.72	0.0108	35.99
	0.0088	2.53	0.0088	2.69	0.0086	6.24	0.0081	24.87	0.0088	2.97	0.0078	31.75
	0.0062	1.90	0.0062	2.02	0.0062	4.68	0.0058	21.62	0.0063	2.23	0.0057	27.52
	0.0031	1.27	0.0031	1.35	0.0031	3.12	0.0030	15.14	0.0031	1.49	0.0029	21.17
	0.0014	0.63	0.0014	0.67	0.0014	2.34	0.0014	11.89	0.0014	0.74	0.0014	16.93

Sample Name	SH 4		FL 3		SH 5		LIK JONO OGE					
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 28, 2018		December 28, 2018		December 28, 2018		December 28, 2018					
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA					
Sample No	SH 4		FL 3		SH 5		LIK JONO OGE					
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE					
Upper Depth(m)	4.40		5.30		5.70							
Lower Depth(m)	5.30		5.70		7.70							
Soil classification	-		CL		-		-					
D90	1.8608		0.4585		1.7069		0.3874					
D60	0.3147		0.0495		0.1326		0.1420					
D50	0.2214		0.0225		0.0827		0.0994					
D30	0.1130		0.0028		0.0540		0.0347					
D10	0.0454		-		0.0164		0.0337					
ρs density of soil grain	2.607		2.575		2.608		2.607					
WL	NON PLASTIS		36.85		NON PLASTIS		NON PLASTIS					
Wp			20.95									
Ip	-		15.90		-		-					
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)				
Sieve Analysis	38.10		38.10		38.10		38.10					
	25.40		25.40		25.40		25.40					
	19.10	100.00	19.10		19.10		19.10					
	9.52	99.76	9.52		9.52	100.00	9.52					
	4.75	98.08	4.75	100.00	4.75	97.31	4.75					
	2.00	91.14	2.00	99.71	2.00	91.49	2.00	100.00				
	0.85	81.71	0.85	96.46	0.85	85.65	0.85	98.54				
	0.42	67.70	0.42	89.37	0.42	77.31	0.42	92.28				
	0.25	55.27	0.25	82.77	0.25	71.90	0.25	80.40				
	0.11	28.52	0.11	70.95	0.11	57.20	0.11	53.02				
	0.07	20.12	0.07	66.43	0.07	47.19	0.07	36.30				
Hydrometer Analysis	0.0459	10.10	0.0398	57.47	0.0431	20.70	0.0455	13.83				
	0.0331	7.41	0.0287	53.37	0.0317	15.34	0.0329	9.76				
	0.0213	4.71	0.0186	47.90	0.0205	11.50	0.0211	7.32				
	0.0124	3.37	0.0110	42.42	0.0121	8.44	0.0124	4.88				
	0.0088	2.69	0.0079	38.32	0.0086	6.90	0.0088	4.07				
	0.0063	2.02	0.0057	35.58	0.0062	5.37	0.0062	3.25				
	0.0031	1.35	0.0029	30.11	0.0031	3.07	0.0031	2.44				
	0.0014	0.67	0.0013	26.00	0.0014	1.53	0.0014	1.63				

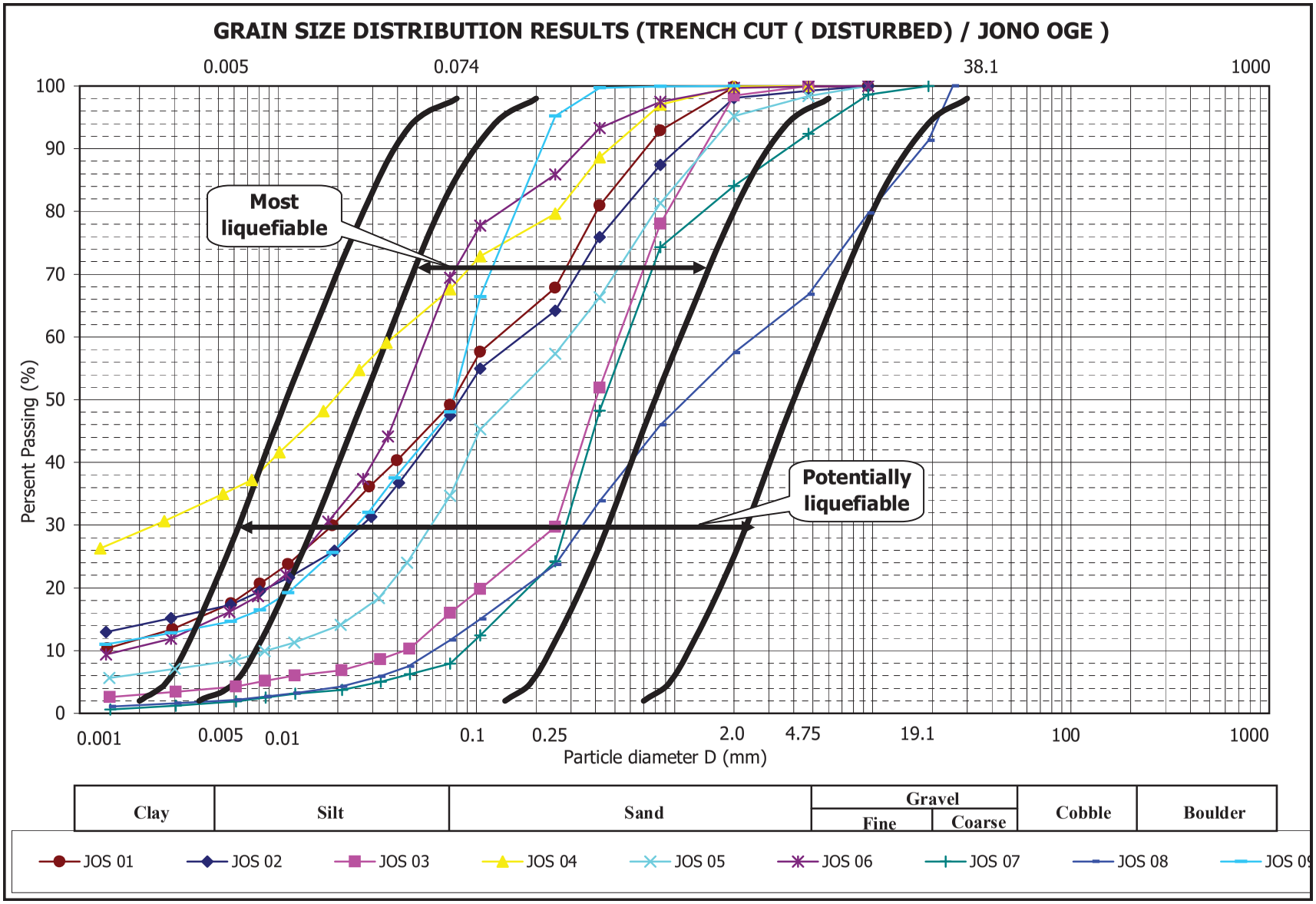

GRAIN SIZE DISTRIBUTION RESULTS (BADAN GEOLOGI - JONO OGE)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
SH/SL
SH 2
SH 3
FL 1
SH/SL 2
FL 2
SH 4
FL 3
SH 5
LIK JONO OGE

Sample Name	PES 04											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019											
Tester	PT. INDRA KARYA											
Sample No	PES 04											
Location	PETOBO											
Upper Depth(m)	-											
Lower Depth(m)	-											
Soil classification	-											
D90	0.2414											
D60	0.0896											
D50	0.0761											
D30	0.0320											
D10	-											
ρs density of soil grain	2.694											
WL	NON PLASTIS											
Wp												
Ip	-											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10											
	9.52											
	4.75											
	2.00	100.00										
	0.85	99.29										
	0.42	96.96										
	0.25	91.17										
	0.11	71.50										
	0.07	48.41										
Hydrometer Analysis	0.0391	32.86										
	0.0285	28.65										
	0.0187	23.59										
	0.0111	18.54										
	0.0080	16.85										
	0.0057	15.17										
	0.0029	12.64										
	0.0013	10.11										

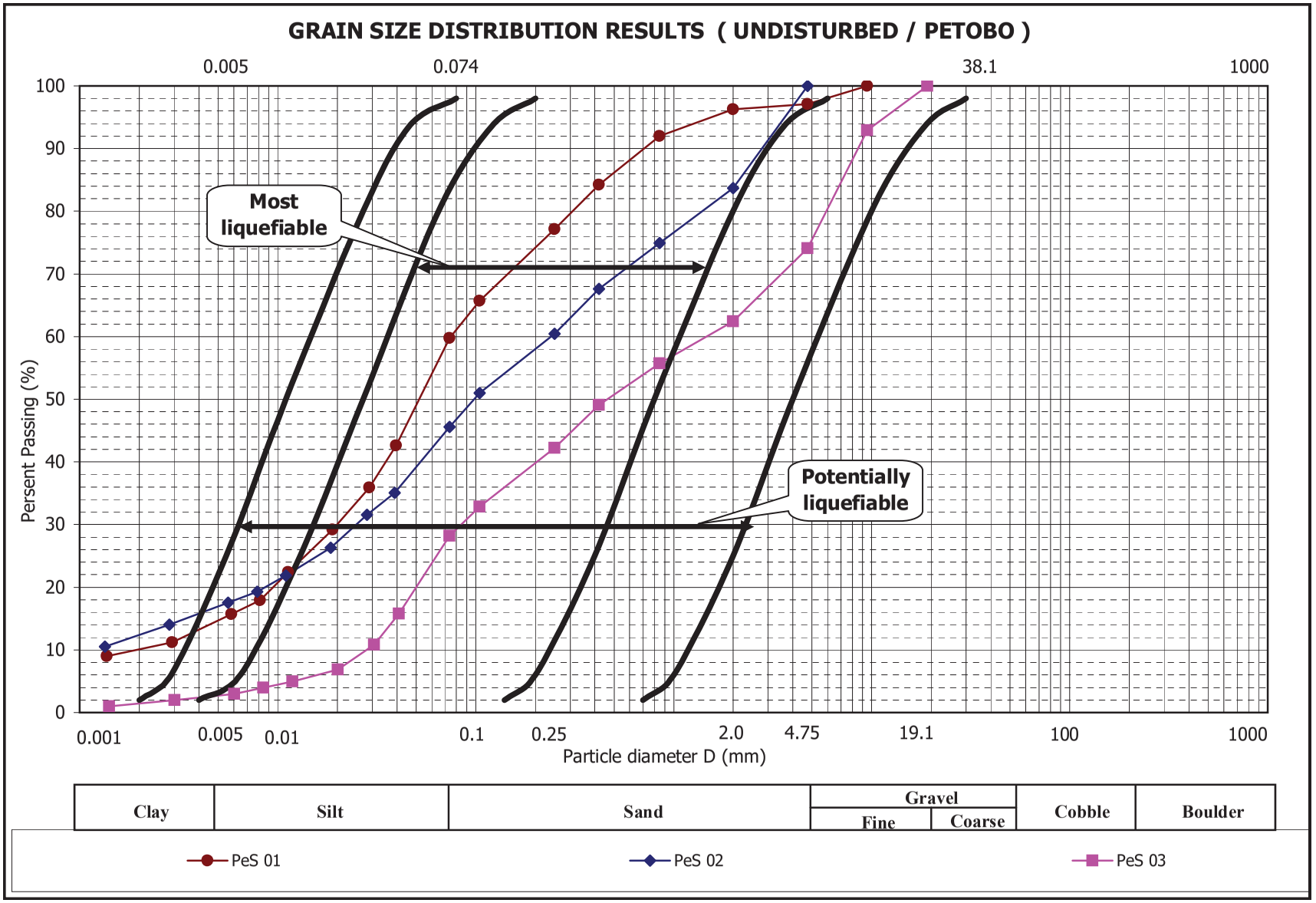

GRAIN SIZE DISTRIBUTION RESULTS (TRENCH CUT (DISTURBED) / PETOBO)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
PES 04

Sample Name	JOS 01		JOS 02		JOS 03		JOS 04		JOS 05		JOS 06	
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019		January 2, 2019	
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA	
Sample No	JOS 01		JOS 02		JOS 03		JOS 04		JOS 05		JOS 06	
Location	JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE		JONO OGE	
Upper Depth(m)	-		-		-		-		-		-	
Lower Depth(m)	-		-		-		-		-		-	
Soil classification	SC - SM		SC - SM				CL				CL	
D90	0.7451		1.1253		1.5215		0.4879		1.5694		0.3439	
D60	0.1390		0.1841		0.5528		0.0395		0.3010		0.0598	
D50	0.0771		0.0844		0.5472		0.0195		0.1622		0.0447	
D30	0.0190		0.0270		0.2543		0.0025		0.0601		0.0175	
D10	-		-		0.0437		-		0.0089		0.0018	
ρs density of soil grain	2.639		2.669		2.648		2.684		2.656		2.678	
WL	26.55		27.12		NON PLASTIS		38.06		NON PLASTIS		31.61	
Wp	20.25		20.17				22.30				21.72	
Ip	6.31		6.95		-		15.75		-		9.89	
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)
Sieve Analysis	38.10		38.10		38.10		38.10		38.10		38.10	
	25.40		25.40		25.40		25.40		25.40		25.40	
	19.10		19.10		19.10		19.10		19.10		19.10	
	9.52	100.00	9.52	100.00	9.52		9.52		9.52	100.00	9.52	100.00
	4.75	99.93	4.75	99.22	4.75	100.00	4.75	100.00	4.75	98.43	4.75	99.93
	2.00	99.84	2.00	98.08	2.00	98.49	2.00	99.92	2.00	95.18	2.00	99.71
	0.85	92.93	0.85	87.46	0.85	78.08	0.85	97.05	0.85	81.35	0.85	97.46
	0.42	80.91	0.42	75.89	0.42	51.92	0.42	88.68	0.42	66.29	0.42	93.33
	0.25	67.80	0.25	64.18	0.25	29.71	0.25	79.61	0.25	57.31	0.25	85.89
	0.11	57.61	0.11	54.97	0.11	19.81	0.11	72.86	0.11	45.24	0.11	77.75
	0.07	49.17	0.07	47.48	0.07	16.02	0.07	67.60	0.07	34.71	0.07	69.47
Hydrometer Analysis	0.0398	40.29	0.0407	36.76	0.0460	10.30	0.0353	59.09	0.0448	24.01	0.0359	44.15
	0.0288	36.16	0.0296	31.36	0.0328	8.58	0.0257	54.71	0.0323	18.36	0.0269	37.36
	0.0189	29.96	0.0192	25.95	0.0210	6.86	0.0170	48.15	0.0207	14.13	0.0179	30.57
	0.0113	23.76	0.0113	21.62	0.0122	6.01	0.0102	41.58	0.0121	11.30	0.0110	22.08
	0.0081	20.66	0.0081	19.46	0.0086	5.15	0.0074	37.21	0.0086	9.89	0.0079	18.68
	0.0058	17.56	0.0058	17.30	0.0061	4.29	0.0053	35.02	0.0061	8.48	0.0057	16.13
	0.0029	13.43	0.0029	15.14	0.0030	3.43	0.0027	30.64	0.0030	7.06	0.0029	11.89
	0.0014	10.33	0.0014	12.97	0.0014	2.57	0.0013	26.26	0.0014	5.65	0.0014	9.34

Sample Name	JOS 07		JOS 08		JOS 09							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	January 2, 2019		January 2, 2019		January 2, 2019							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	JOS 07		JOS 08		JOS 09							
Location	JONO OGE		JONO OGE		JONO OGE							
Upper Depth(m)	-		-		-							
Lower Depth(m)	-		-		-							
Soil classification												
D90	3.9672		18.0064		0.2240							
D60	0.6142		2.7399		0.0942							
D50	0.4491		1.2515		0.0773							
D30	0.2906		0.3551		0.0255							
D10	0.0885		0.0625		-							
ρs density of soil grain	2.665		2.673		2.674							
WL	NON PLASTIS		NON PLASTIS		NON PLASTIS							
Wp												
Ip	-		-		-							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40	100.00	25.40							
	19.10	100.00	19.10	91.33	19.10							
	9.52	98.64	9.52	79.69	9.52							
	4.75	92.35	4.75	66.78	4.75							
	2.00	84.10	2.00	57.50	2.00	100.00						
	0.85	74.28	0.85	45.97	0.85	99.91						
	0.42	48.24	0.42	33.87	0.42	99.67						
	0.25	24.27	0.25	23.73	0.25	95.17						
	0.11	12.41	0.11	14.99	0.11	66.39						
	0.07	7.89	0.07	11.67	0.07	48.03						
Hydrometer Analysis	0.0462	6.25	0.0452	7.50	0.0389	37.49						
	0.0330	5.00	0.0324	5.89	0.0285	32.00						
	0.0210	3.75	0.0208	4.29	0.0188	25.60						
	0.0122	3.12	0.0121	3.21	0.0113	19.20						
	0.0087	2.50	0.0086	2.68	0.0081	16.46						
	0.0062	1.87	0.0061	2.14	0.0058	14.63						
	0.0031	1.25	0.0030	1.61	0.0029	12.80						
	0.0014	0.62	0.0014	1.07	0.0014	10.97						

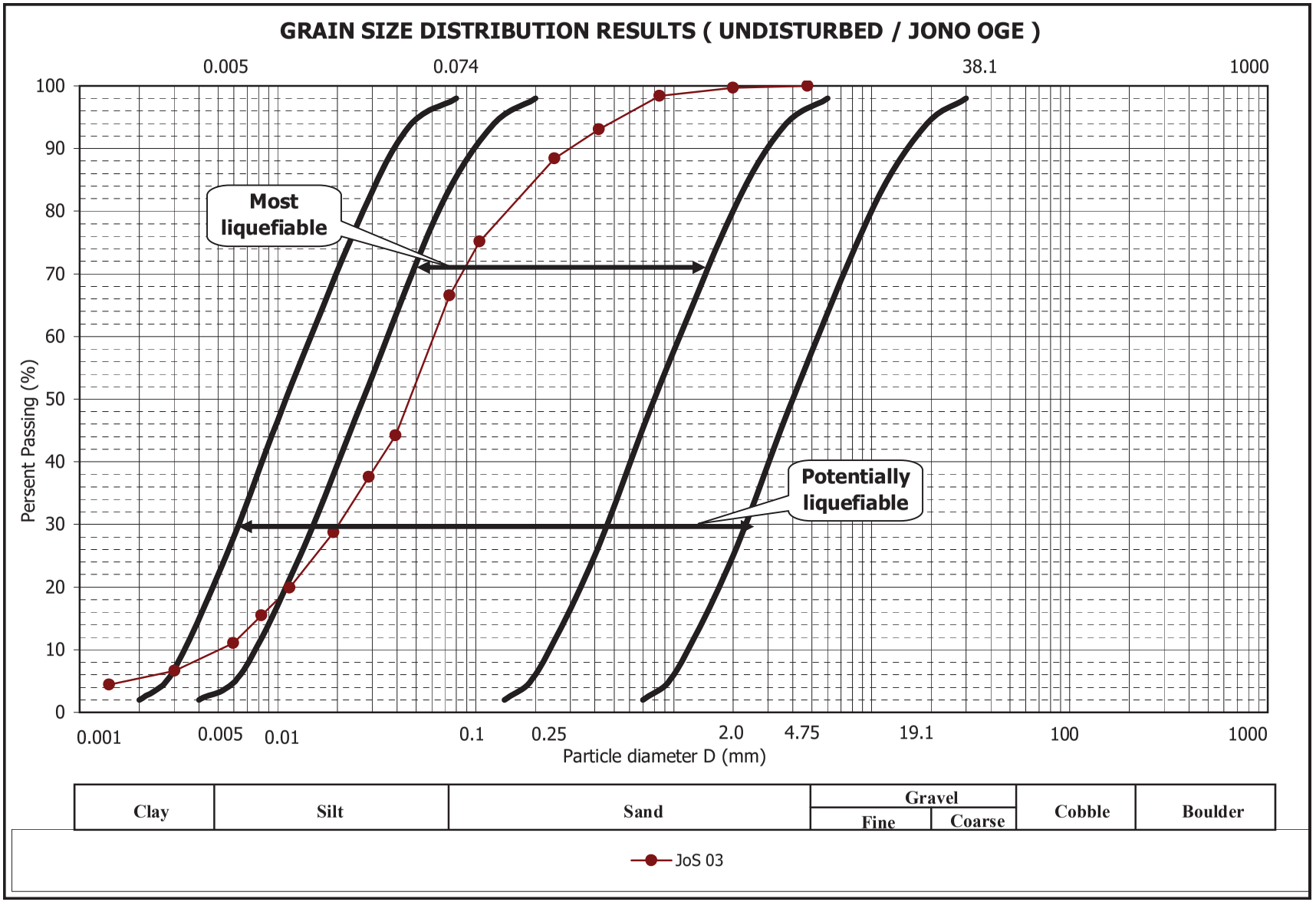

GRAIN SIZE DISTRIBUTION RESULTS (TRENCH CUT (DISTURBED) / JONO OGE)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Most liquefiable
Potentially liquefiable
Persent Passing (%)
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
JOS 01
JOS 02
JOS 03
JOS 04
JOS 05
JOS 06
JOS 07
JOS 08
JOS 09

Sample Name	PeS 01		PeS 02		PeS 03							
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018		December 29, 2018		December 29, 2018							
Tester	PT. INDRA KARYA		PT. INDRA KARYA		PT. INDRA KARYA							
Sample No	PeS 01		PeS 02		PeS 03							
Location	PETOBO		PETOBO		PETOBO							
Upper Depth(m)	-		-		-							
Lower Depth(m)	-		-		-							
Soil classification	CL		SC		-							
D90	0.7394		2.7520		8.7802							
D60	0.0755		0.2428		1.5855							
D50	0.0544		0.0993		0.4812							
D30	0.0202		0.0254		0.0860							
D10	0.0021		-		0.0285							
ρs density of soil grain	2.678		2.692		2.680							
WL	30.24		27.64		NON PLASTIS							
Wp	21.94		19.41									
Ip	8.30		8.23		-							
	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)	Grain size (mm)	Wt (%)						
Sieve Analysis	38.10		38.10		38.10							
	25.40		25.40		25.40							
	19.10		19.10		19.10	100.00						
	9.52	100.00	9.52		9.52	92.92						
	4.75	97.12	4.75	100.00	4.75	74.08						
	2.00	96.28	2.00	83.66	2.00	62.44						
	0.85	92.00	0.85	74.90	0.85	55.68						
	0.42	84.23	0.42	67.57	0.42	49.06						
	0.25	77.12	0.25	60.47	0.25	42.20						
	0.11	65.68	0.11	51.00	0.11	32.86						
	0.07	59.72	0.07	45.58	0.07	28.18						
Hydrometer Analysis	0.0396	42.62	0.0389	35.03	0.0410	15.75						
	0.0290	35.89	0.0282	31.53	0.0307	10.83						
	0.0190	29.16	0.0185	26.28	0.0202	6.89						
	0.0113	22.43	0.0110	21.90	0.0119	4.92						
	0.0082	17.94	0.0079	19.27	0.0085	3.94						
	0.0058	15.70	0.0056	17.52	0.0060	2.95						
	0.0029	11.21	0.0028	14.01	0.0030	1.97						
	0.0014	8.97	0.0013	10.51	0.0014	0.98						


GRAIN SIZE DISTRIBUTION RESULTS (UNDISTURBED / PETOBO)
0.005
0.074
38.1
1000
100
90
80
70
60
50
40
30
20
10
0
Persent Passing (%)
Most liquefiable
Potentially liquefiable
0.001
0.005
0.01
0.1
0.25
2.0
4.75
19.1
100
1000
Particle diameter D (mm)
Clay
Silt
Sand
Gravel
Fine
Coarse
Cobble
Boulder
PeS 01
PeS 02
PeS 03

Sample Name	JoS 03											
Project Name	**BORING SURVEY FOR BASIC RESPONSE PLAN FOR CENTRAL SULAWESI EARTHQUAKE**											
Date	December 29, 2018											
Tester	PT. INDRA KARYA											
Sample No	JoS 03											
Location	JONO OGE											
Upper Depth(m)	-											
Lower Depth(m)	-											
Soil classification	CL - ML											
D90	0.3078											
D60	0.0639											
D50	0.0484											
D30	0.0206											
D10	0.0053											
ρs density of soil grain	2.651											
WL	24.30											
Wp	18.72											
Ip	5.58											
	Grain size (mm)	Wt (%)										
Sieve Analysis	38.10											
	25.40											
	19.10											
	9.52											
	4.75	100.00										
	2.00	99.70										
	0.85	98.39										
	0.42	93.08										
	0.25	88.41										
	0.11	75.12										
	0.07	66.56										
Hydrometer Analysis	0.0394	44.18										
	0.0289	37.56										
	0.0191	28.72										
	0.0115	19.88										
	0.0083	15.46										
	0.0060	11.05										
	0.0030	6.63										
	0.0014	4.42										

GRAIN SIZE DISTRIBUTION RESULTS (UNDISTURBED / JONO OGE)



APPENDIX-6

PHOTO DOCUMENTATION

BORING

PHOTO OF BORING ACTIVITIES ON P-1 POINT



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling



Photo of Finishing Installation of PVC-Pipe in Borehole

PHOTO OF BORING ACTIVITIES ON PO-1 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON T-1 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON D-1 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON B-1 POINT



Photo of Preparing Core Boring Sampling



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth

PHOTO OF BORING ACTIVITIES ON B-2 POINT



Photo of Installation PVC-Pipe after completion Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON B-3 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON B-4 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON B-51 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON B-6 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON LP-1 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON LP-2 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON LP-3 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON LP-4 POINT



Photo of Preparing Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Finishing Installation of PVC-Pipe in Borehole

PHOTO OF BORING ACTIVITIES ON LP-5 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON LP-6 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-1 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-2 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-3 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-4 POINT



Photo of Core Boring Sampling

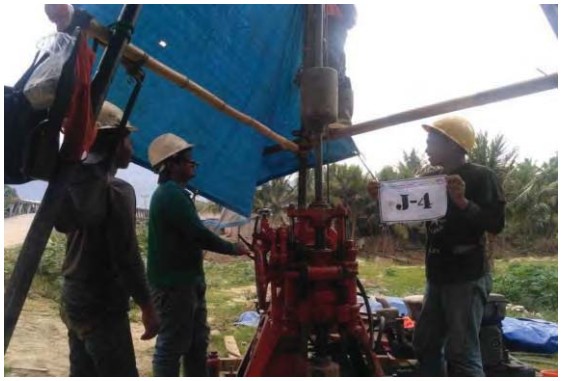


Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-5 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-6 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-7 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-8 POINT



Photo of Preparing Core Boring Sampling



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth

PHOTO OF BORING ACTIVITIES ON J-9 POINT



Photo of Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-10 POINT



Photo of Standard Penetration Test interval 1.0 m depth

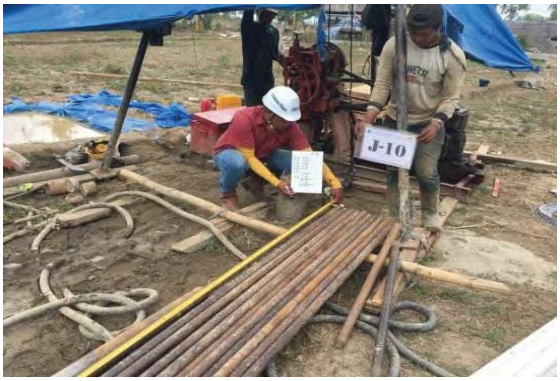


Photo of Installation PVC-Pipe after completion Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-11 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Standard Penetration Test Interval 1.0 m Depth

PHOTO OF BORING ACTIVITIES ON J-12 POINT



Photo of Standard Penetration Test interval 1.0 m depth



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Installation PVC-Pipe after completion Core Boring Sampling

PHOTO OF BORING ACTIVITIES ON J-13 POINT



Photo of Core Boring Sampling



Photo of Standard Penetration Test Interval 1.0 m Depth



Photo of Standard Penetration Test Interval 1.0 m Depth

PHOTO OF BORING ACTIVITIES ON J-14 POINT



Photo of Preparing Core Boring Sampling



Photo of Preparing Core Boring Sampling



Photo of Installation PVC-Pipe after completion Core Boring Sampling

SWEDISH

PHOTO OF SWEDISH ACTIVITIES ON E-S-1 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-2 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-3 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-4 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-5 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-6 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-7 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-8 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-9 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-10 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-11 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-12 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON E-S-13 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-1 POINT



Photo of Swedish Activity

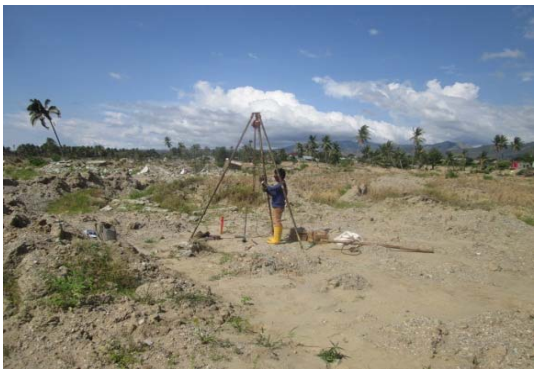


Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-2 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-3 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-4 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-5 POINT



Photo of Swedish Activity



Photo of Swedish Activity

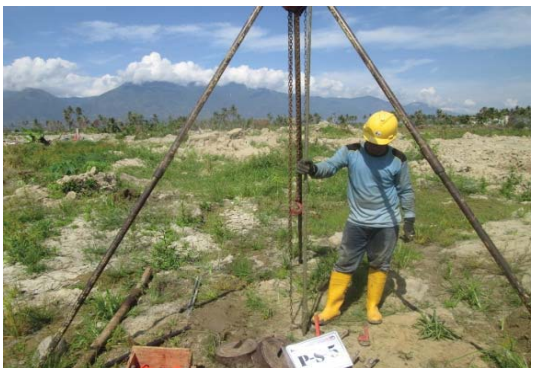


Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-6POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON P-S-7 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-1 POINT

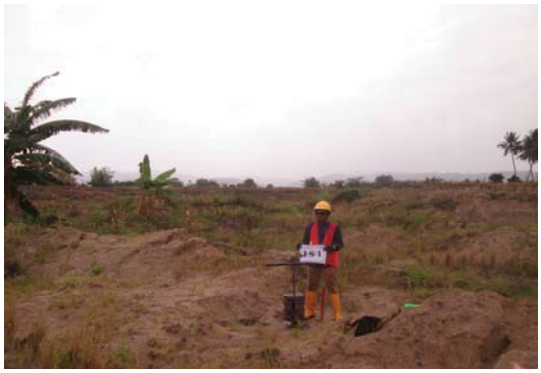


Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-2 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-3 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-4 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-5 POINT



Photo of Swedish Activity



Photo of Swedish Activity

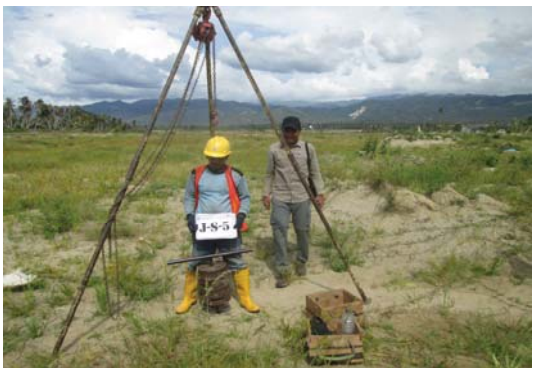


Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-6 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-7 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-8 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-9 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-10 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-11 POINT



Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-12 POINT



Photo of Swedish Activity



Photo of Swedish Activity

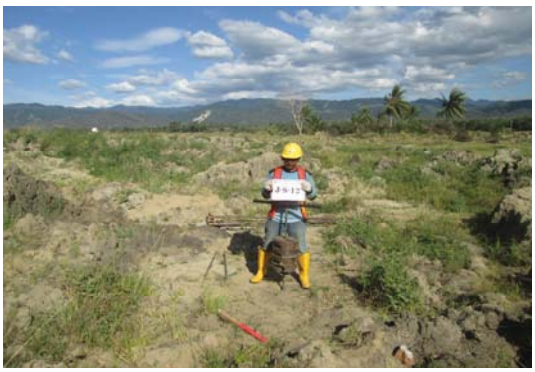


Photo of Swedish Activity

PHOTO OF SWEDISH ACTIVITIES ON J-S-13 POINT

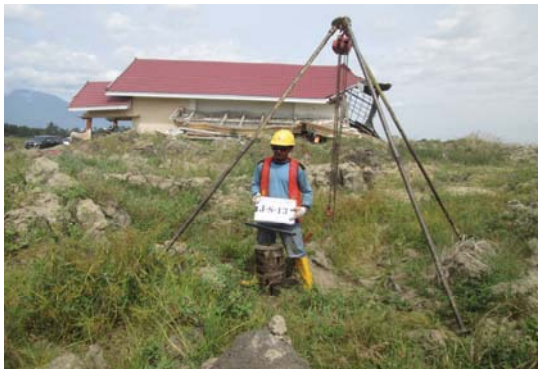


Photo of Swedish Activity



Photo of Swedish Activity



Photo of Swedish Activity

LABORATORY

PHOTO OF LABORATORIUM ACTIVITIES



Photo of Atterberg Limit



Photo of Grain Size Analysis

PHOTO OF LABORATORIUM ACTIVITIES



Photo of Natural Water Content



Photo of Specific Gravity

DATA SHEET

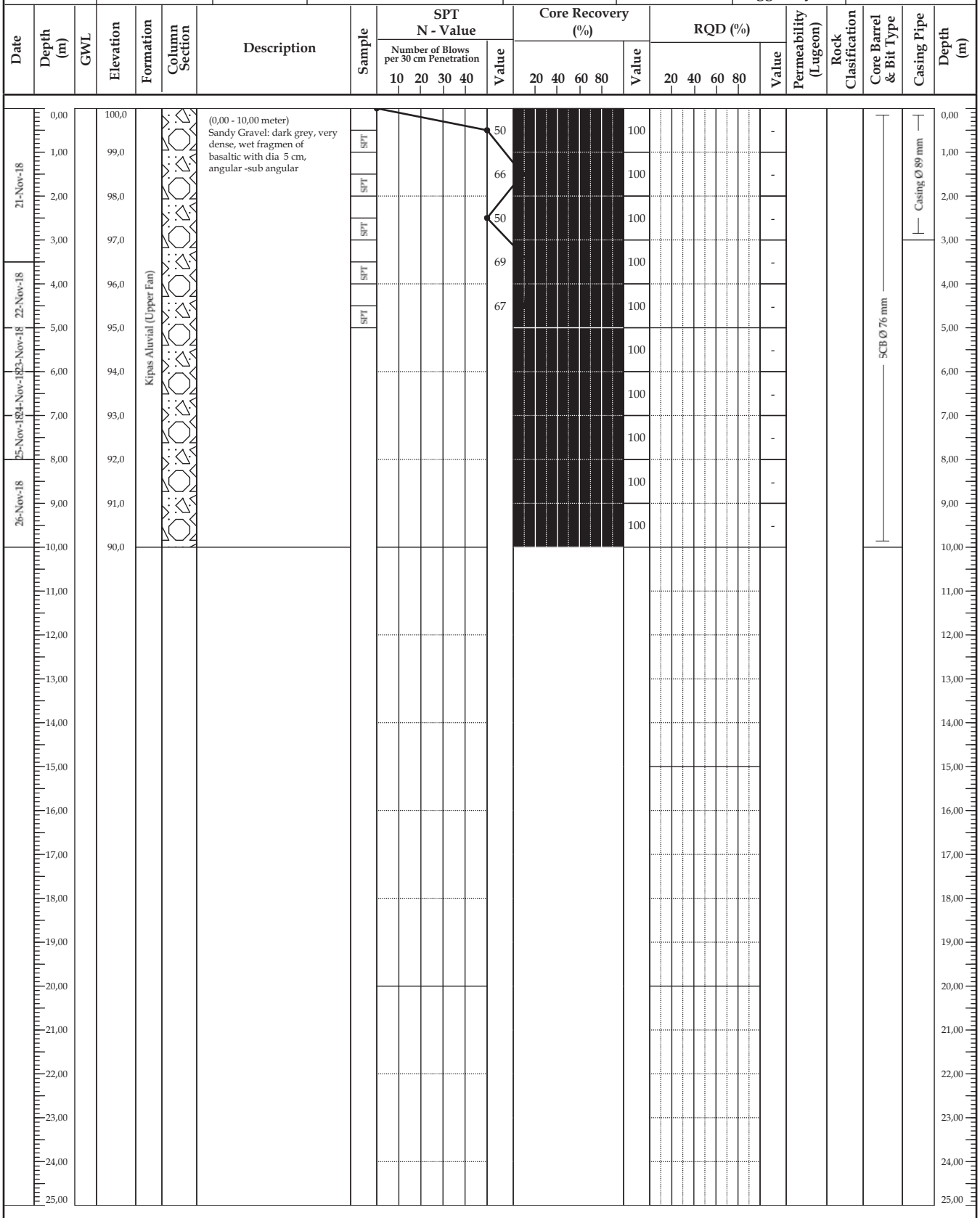
BORING LOG

DRILL LOG

Hole No : D - 1

Sheet No. : 1 of 1

Project	PALU RECOVERY			**Depth**	10,00 meter	**Drilling Rig**	YBM - 1
Site	DUYU	**Coordinate**	X : 815756 Y : 9897963	**Inclination**	Vertical	**Drilled By**	RUDI
Elevation	100.00 meter	**Date**	21-Nov-18 to 26-Nov-18	**GWL**	- meter	**Logged By**	Annaas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : P - 1

Sheet No. : 1 of 1

Project	P7 LU RECOVERY			Depth	11,00 meter	Drilling Rig	YBM - 1
Site	PETOBO	Coordinate	X : 826, , , Y : 9896500	Inclination	Vertical	Drilled By	7 GUS
Elevation	141,50 meter	Date	19-Nov-18 to 22-Nov-18	GWL	- meter	Logged By	7 nnaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
19-Nov-18	0,00		141,7	Alluvial Fan (Upper Fan)		(0,00 - 1,00 meter) Topsoil: grey, loose to medium dense, fine to medium grained	SPT	10 20 30 40	28	20 40 60 80	100	20 40 60 80	-			SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		140,7				SPT		27		100		-					1,00
	2,00		139,7			(1,00 - 6,00 meter) Gravely Sand: greyish browm, medium dense to dense, medium to coarse grained with max dia of gravels 2cm	SPT		21		100		-					2,00
	3,00		138,7				SPT		36		100		-					3,00
	4,00		137,7				SPT		37		100		-					4,00
	5,00		136,7				SPT		47		100		-					5,00
20-Nov-18	6,00		135,7			(6,00 - 11,00 meter) Sandy Gravel: greyish brown, very dense, wet fragmen of basaltic with dia 5 cm, angular -sub angular	SPT		54		100		-					6,00
	7,00		134,7				SPT		50		100		-					7,00
21-Nov-18	8,00		133,7				SPT		50		100		-					8,00
	9,00		132,7				SPT		37		100		-					9,00
22-Nov-18	10,00		131,7				SPT		39		100		-					10,00
	11,00		130,7															11,00
	12,00																	12,00
	13,00																	13,00
	14,00																	14,00
	15,00																	15,00
	16,00																	16,00
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	22,00																	22,00
	23,00																	23,00
	24,00																	24,00
	25,00																	25,00

Depth Scale : 1:12,

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : PO - 1

Sheet No. : 1 of 1

Project	P5 LU RECOVERY					Depth	10900 meter	Drilling Rig	YB, -1
Site	PO, BEWE	Coordinate	X : 827243		Y : 9884260	Inclination	Vertical	Drilled By	RUSLI
Elevation	14A00 meter	Date	1A-Nov-18 to 22-Nov-18			GWL	- meter	Logged By	5 NN5 5 S TRI P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value: Number of Blows per 30 cm Penetration (10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
19-Nov-18	0,00		149,0	Kipas Aluvial (Upper Fan)		(0,00 - 10,00 meter) Sandy Gravel: brown, very dense, wet fragmen of basaltic with dia 5 cm, angular -sub angular	SPT		114		100		-			SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		148,0				SPT		75		100		-					1,00
	2,00		147,0				SPT		50		100		-					2,00
20-Nov-18	3,00		146,0				SPT		50		100		-					3,00
	4,00		145,0				SPT		50		100		-					4,00
	5,00		144,0				SPT		75		100		-					5,00
	6,00		143,0								100		-					6,00
	7,00		142,0								100		-					7,00
21-Nov-18	8,00		141,0								100		-					8,00
	9,00		140,0								100		-					9,00
22-Nov-18	10,00		139,0								100		-					10,00
	11,00																	11,00
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Depth Scale : 1:12M

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : T - 1

Sheet No. : 1 of 1

Project	P7 LU RECOVERY			Depth	10,00 meter	Drilling Rig	YBM - 1
Site	T7 LISE	Coordinate	X : 822815 Y : 990, 416	Inclination	Vertical	Drilled By	RUDI
Elevation	103,80 meter	Date	19-Nov-18 to 25-Nov-18	GWL	- meter	Logged By	7 nnaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
19-Nov-18	0,00		103,8	Kipas Aluvial (Upper Fan)		(0,00 - 1,00 meter) Sandy Gravel: brown, very dense, wet fragmen of basaltic with dia 5 cm, angular -sub angular	SPT	10 20 30 40	51	20 40 60 80	100	20 40 60 80	-			SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		102,8				SPT		73		100		-					1,00
	2,00		101,8			(1,00 - 10,00 meter) Sandy Gravel: brownish grey, very dense, wet fragmen of basaltic with dia 5 cm, angular -sub angular	SPT		92		100		-					2,00
	3,00		100,8				SPT		75		100		-					3,00
20-Nov-18	4,00		99,8				SPT		75		100		-					4,00
	5,00		98,8								100		-					5,00
26-Nov-18	6,00		97,8								100		-					6,00
	7,00		96,8								100		-					7,00
	8,00		95,8								100		-					8,00
27-Nov-18	9,00		94,8								100		-					9,00
	10,00		93,8								100		-					10,00
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Depth Scale : 1:12,

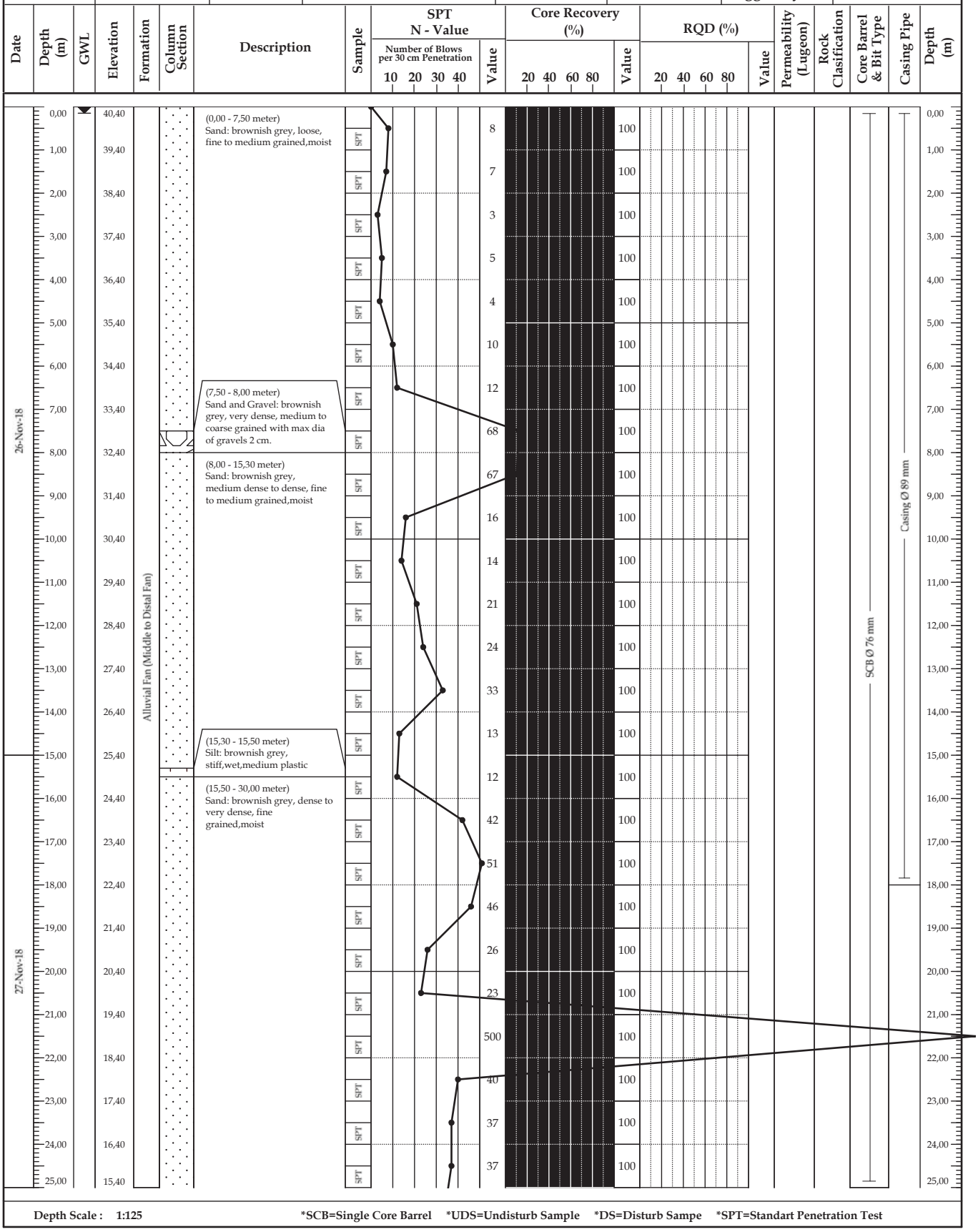
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 1

Sheet No. : 1 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	BARALOA	**Coordinate**	X : 816138 Y : 9899701	**Inclination**	Vertical	**Drilled By**	INDRA
Elevation	40.40 meter	**Date**	26-Nov-18 to 28-Nov-18	**GWL**	+1,95 meter	**Logged By**	Annaas Tri P



Depth Scale : 1:125

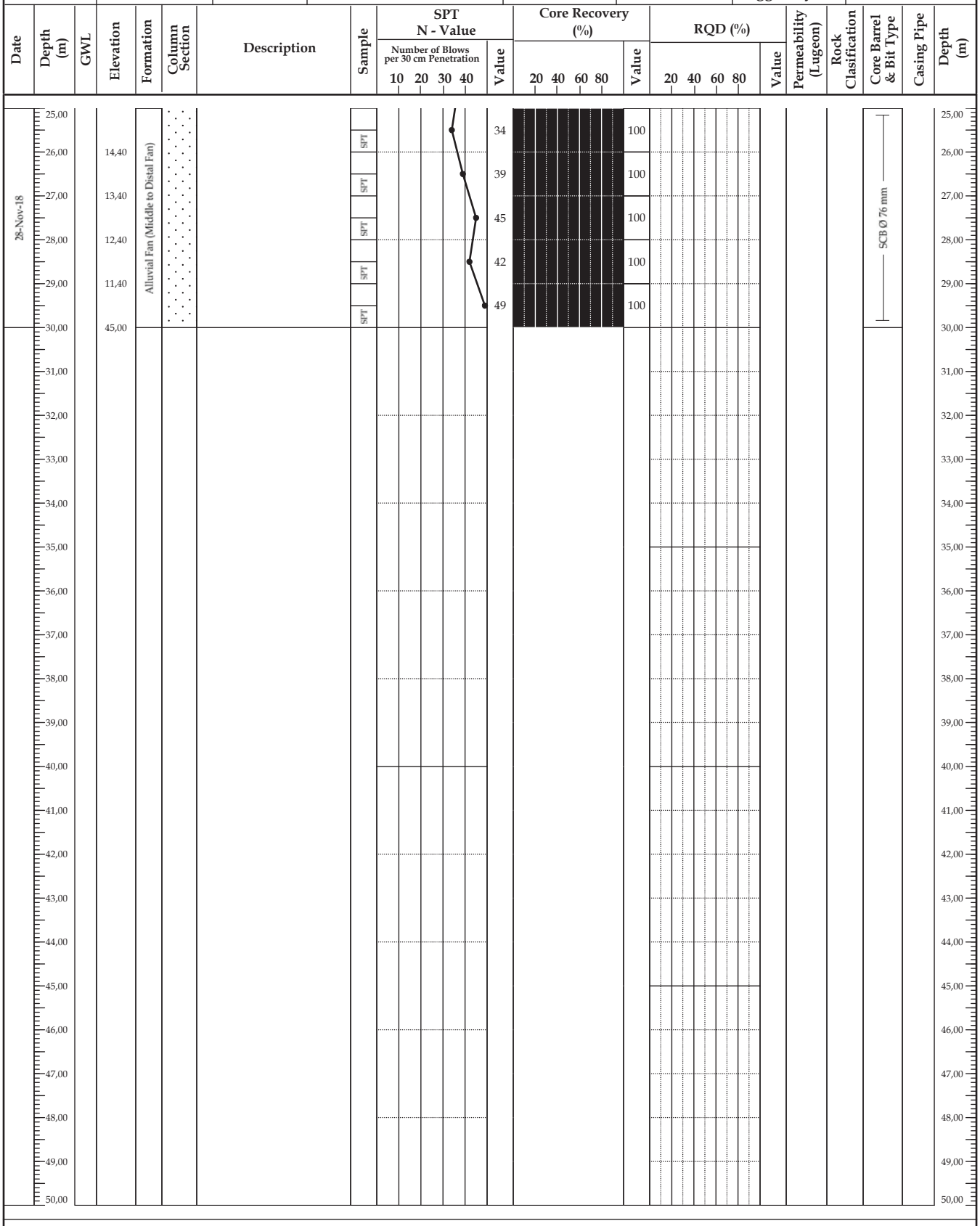
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 1

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	BARALOA	Coordinate	X : 816138 Y : 9899701	Inclination	Vertical	Drilled By	INDRA
Elevation	40.40 meter	Date	26-Nov-18 to 28-Nov-18	GWL	+1,95 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

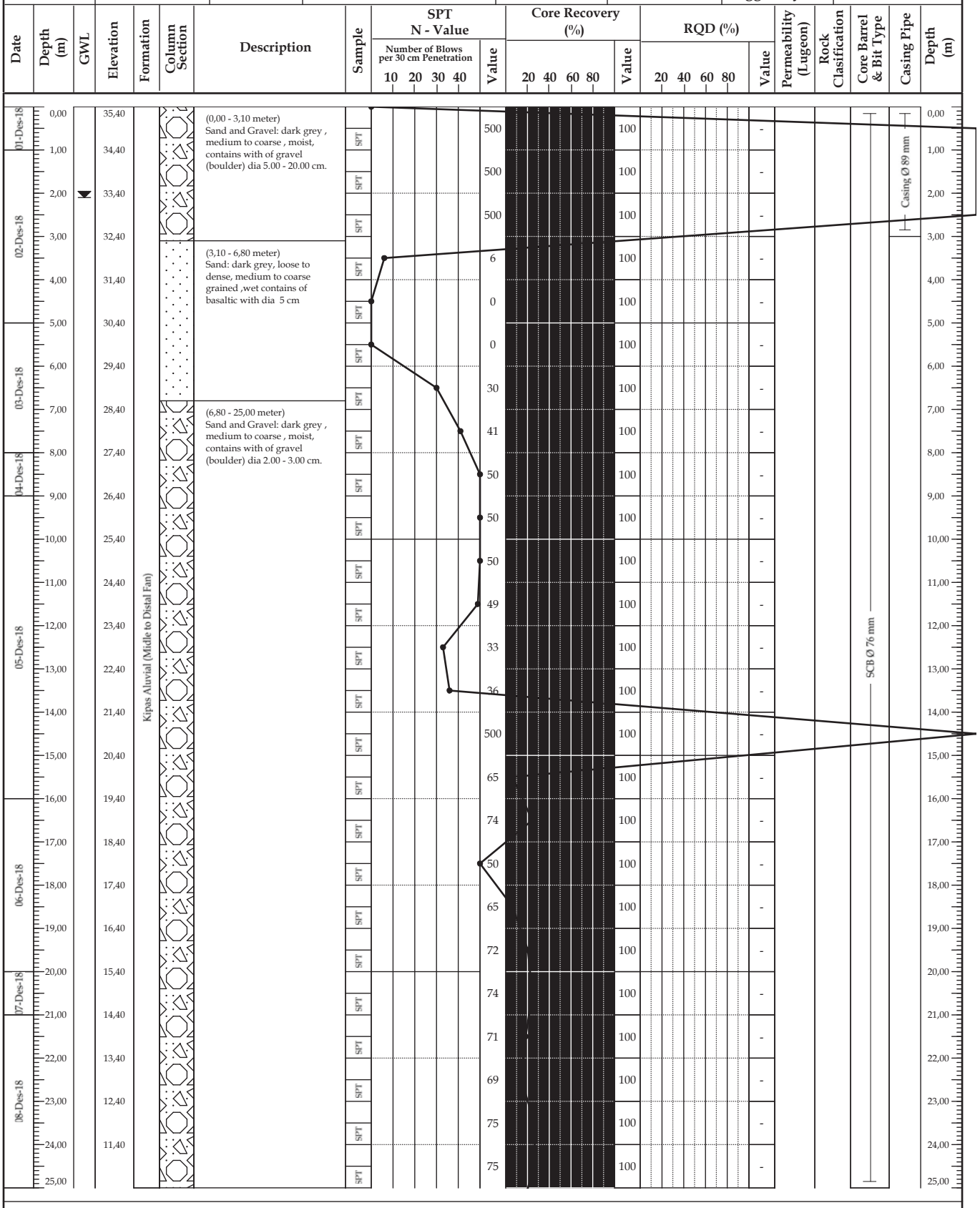
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 2

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	BARALOA	Coordinate	X : 816296 Y : 9899931	Inclination	Vertical	Drilled By	RUSLI
Elevation	35,40 meter	Date	01-Des-18 to 11-Des-18	GWL	-2.10 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 2

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	BARALOA	**Coordinate**	X : 816296 Y : 9899931	**Inclination**	Vertical	**Drilled By**	RUSLI
Elevation	35,40 meter	**Date**	01-Des-18 to 11-Des-18	**GWL**	-2.10 meter	**Logged By**	Annaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
09-Des-18	25,00							10 20 30 40		20 40 60 80		20 40 60 80						25,00
	26,00		10,40	Kipas Aluvial (Midle to Distal Fan)		(25,00 - 30,00 meter) Sand: brown, medium to dense, medium to coarse grained ,wet ,contains with of gravel 2,00 cm	SPT		69		100		-			SCB Ø 76 mm		26,00
10-Des-18	27,00		9,40				SPT		72		100		-					27,00
	28,00		8,40				SPT		69		100		-					28,00
11-Des-18	29,00		7,40				SPT		74		100		-					29,00
	30,00		6,40				SPT		75		100		-					30,00
	31,00																	31,00
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Depth Scale : 1:125

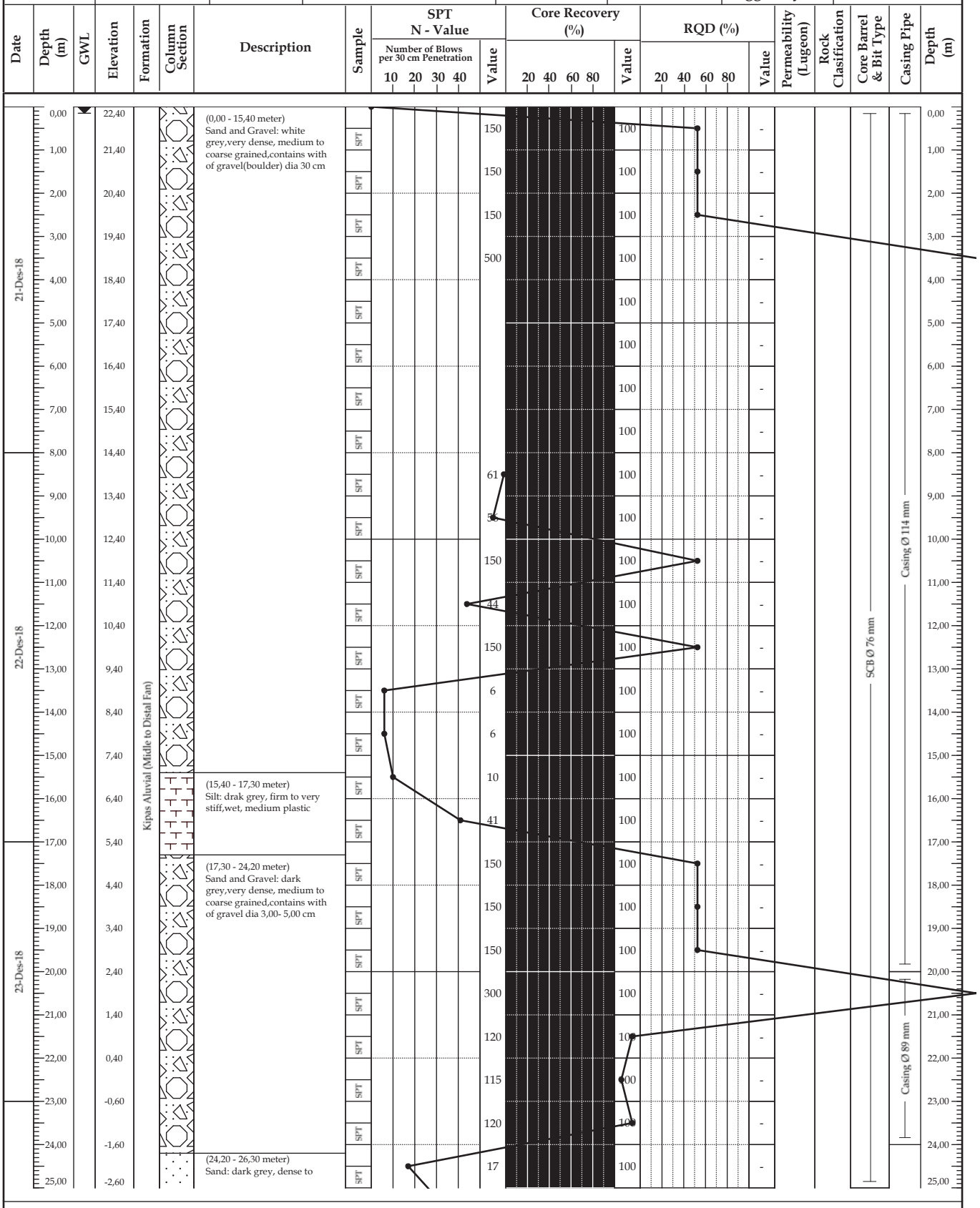
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 3

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	BARALOA	Coordinate	X : 816347 Y : 9900455	Inclination	Vertical	Drilled By	KUSTIONO
Elevation	22.40 meter	Date	21-Des-18 to 24-Des-18	GWL	-0.00 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 3

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	BARALOA	**Coordinate**	X : 816347 Y : 9900455	**Inclination**	Vertical	**Drilled By**	KUSTIONO
Elevation	22.40 meter	**Date**	21-Des-18 to 24-Des-18	**GWL**	-0.00 meter	**Logged By**	Annaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
24-Des-18	25,00					very dense, medium to coarse grained, moist	SPT	10 20 30 40	35	20 40 60 80	100	20 40 60 80	-			SCB Ø 76 mm		25,00
	26,00		-3,60				SPT		100		100		-					26,00
	27,00		-4,60			(26,30 - 30,00 meter) Sand and Gravel: dark grey, very dense, medium to coarse grained with max dia of gravels 3,00-5,00 cm	SPT		150		100		-					27,00
	28,00		-5,60				SPT		300		100		-					28,00
	29,00		-6,60				SPT		200		100		-					29,00
	30,00		-4,00				SPT											30,00
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Depth Scale : 1:125

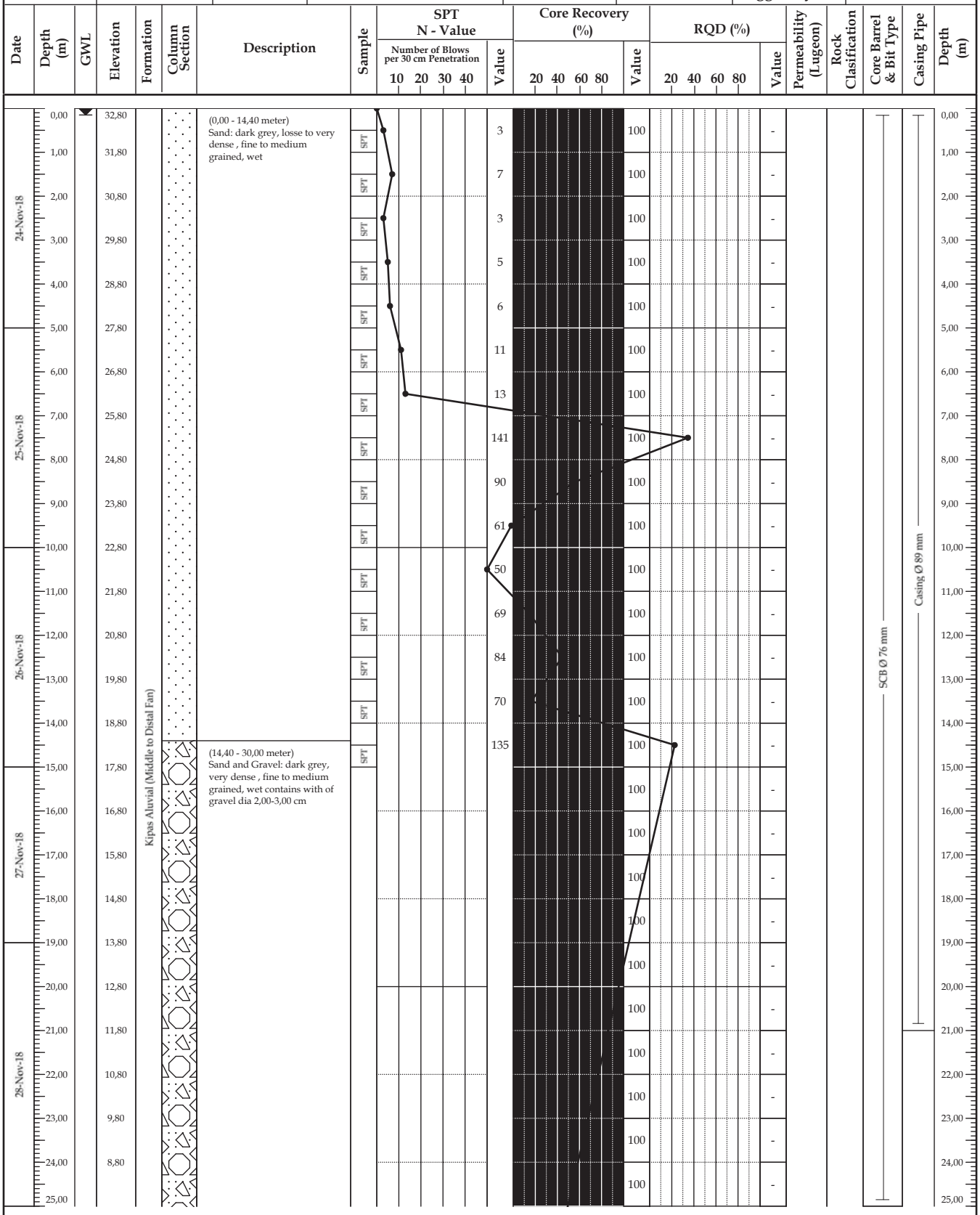
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 4

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	BARALOA	Coordinate	X : 816423 Y : 9899102	Inclination	Vertical	Drilled By	RUSLI
Elevation	32.80 meter	Date	24-Nov-18 to 30-Nov-18	GWL	+0.62 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

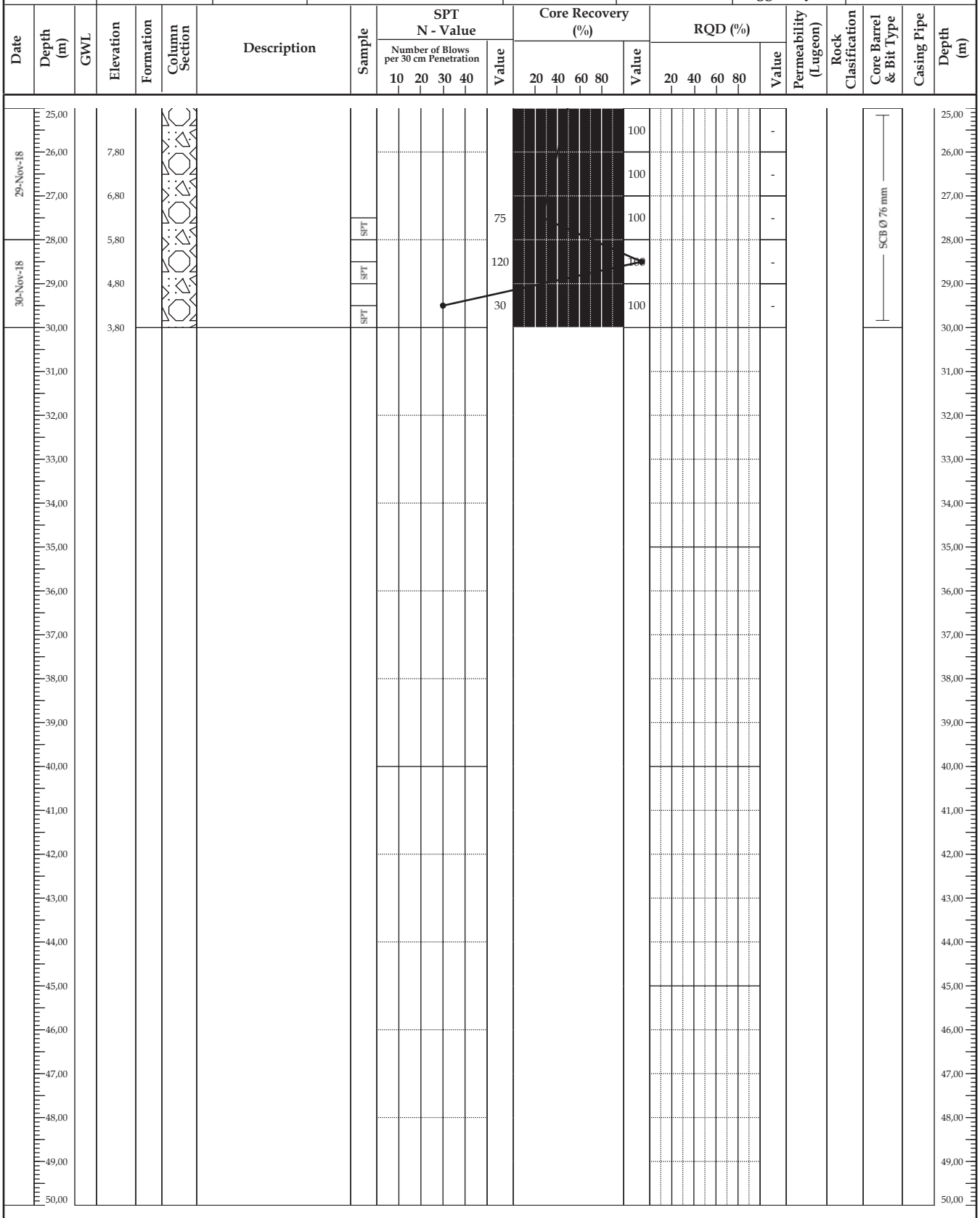
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 4

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	BARALOA	Coordinate	X : 816423 Y : 9899102	Inclination	Vertical	Drilled By	RUSLI
Elevation	32.80 meter	Date	24-Nov-18 to 30-Nov-18	GWL	+0.62 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

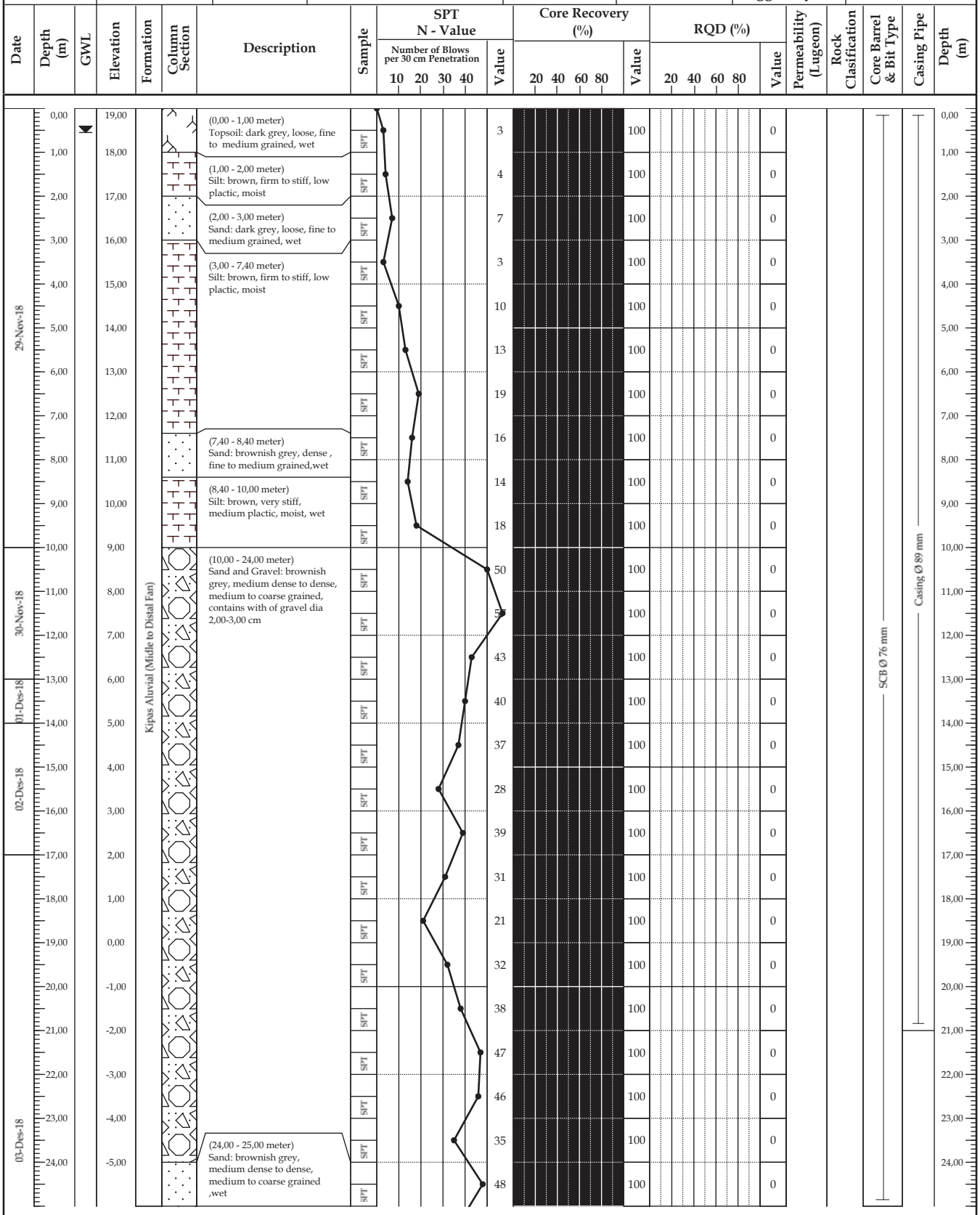
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 9

Sheet No. : 1 of 2

Project	P, LU RECOVERY			Depth	30.00 meter	Drilling Rig	YBM - 1
Site	B, R, LO,	Coordinate	X : 816512 Y : 5855518	Inclination	Vertical	Drilled By	B, H, RI
Elevation	15.00 meter	Date	25-Nov-18 to 03-Des-18	GWL	-0.99 meter	Logged By	, nnaas Tri P



Depth Scale : 1:129

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

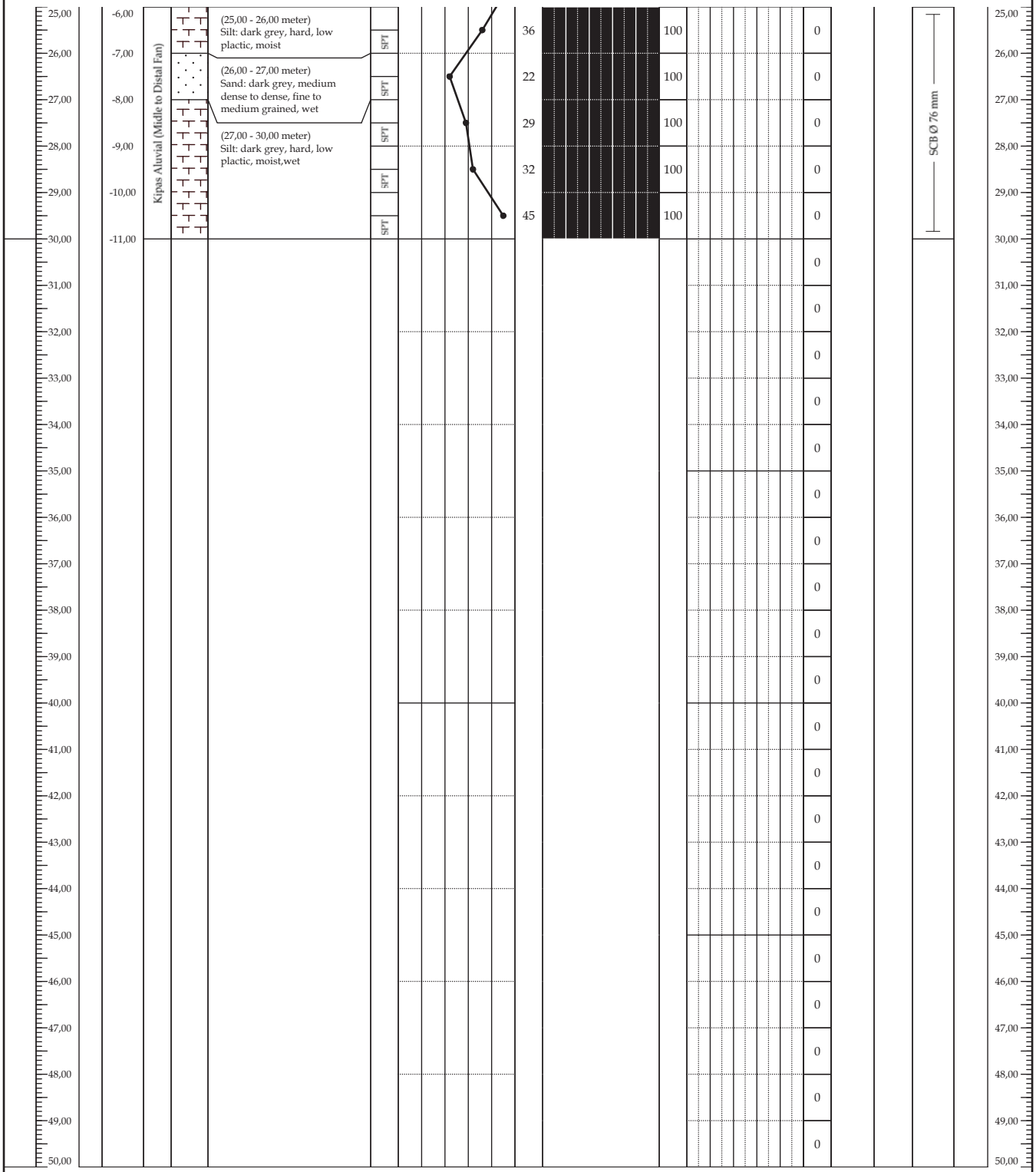
DRILL LOG

Hole No : B - 9

Sheet No. : 2 of 2

Project	P, LU RECOVERY			Depth	30.00 meter	Drilling Rig	YBM - 1
Site	B, R, LO,	Coordinate	X : 816512 Y : 5855518	Inclination	Vertical	Drilled By	B, H, RI
Elevation	15.00 meter	Date	25-Nov-18 to 03-Des-18	GWL	-0.99 meter	Logged By	, nnaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)



Depth Scale : 1:129

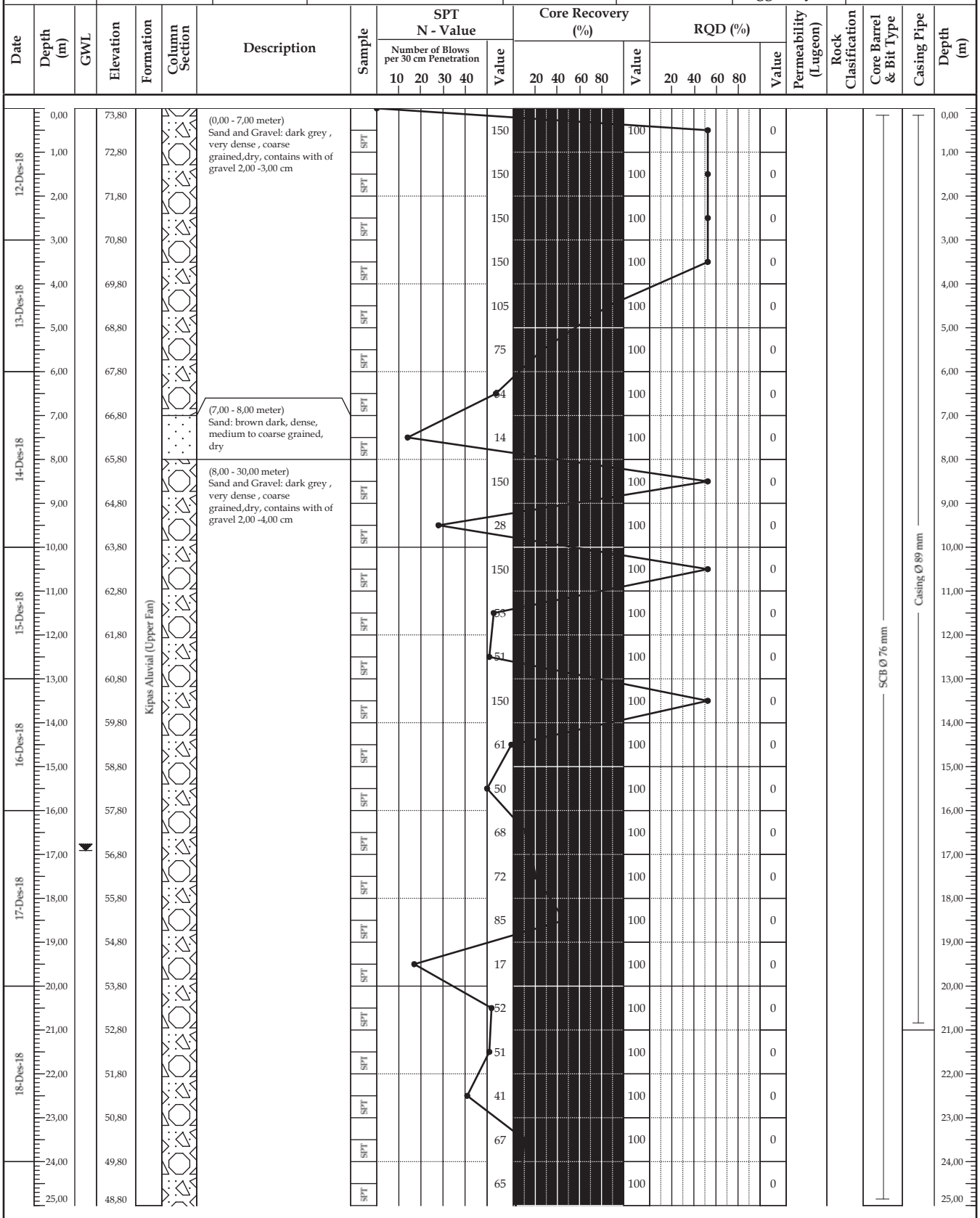
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 6

Sheet No. : 1 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	T.A.S
Site	BARALOA	**Coordinate**	X : 816235 Y : 9897507	**Inclination**	Vertical	**Drilled By**	KUSTIONO
Elevation	73,80 meter	**Date**	12-Des-18 to 20-Des-18	**GWL**	-16,91 meter	**Logged By**	Annaas Tri P



Depth Scale : 1:125

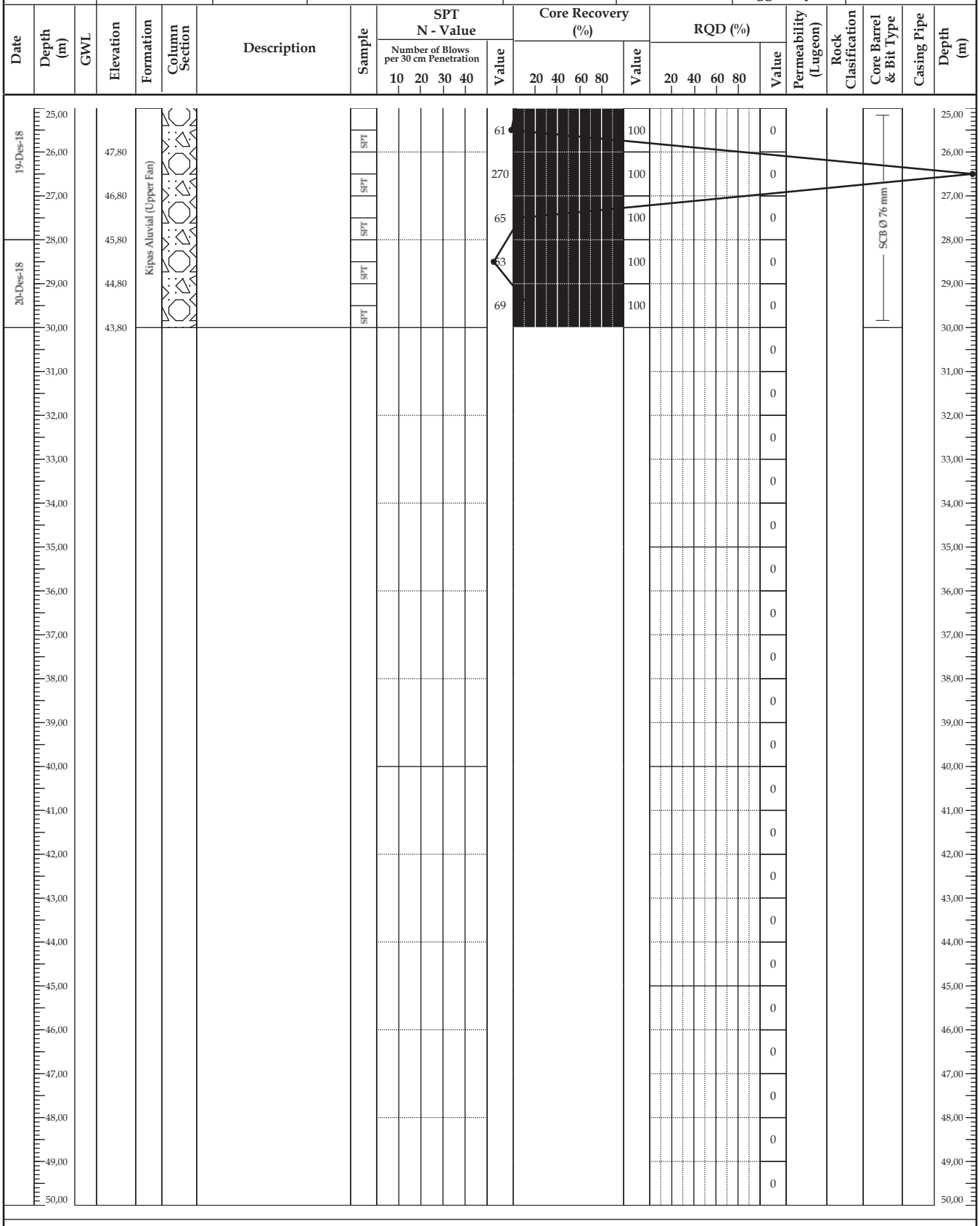
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : B - 6

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	T.A.S
Site	BARALOA	Coordinate	X : 816235 Y : 9897507	Inclination	Vertical	Drilled By	KUSTIONO
Elevation	73,80 meter	Date	12-Des-18 to 20-Des-18	GWL	-16,91 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

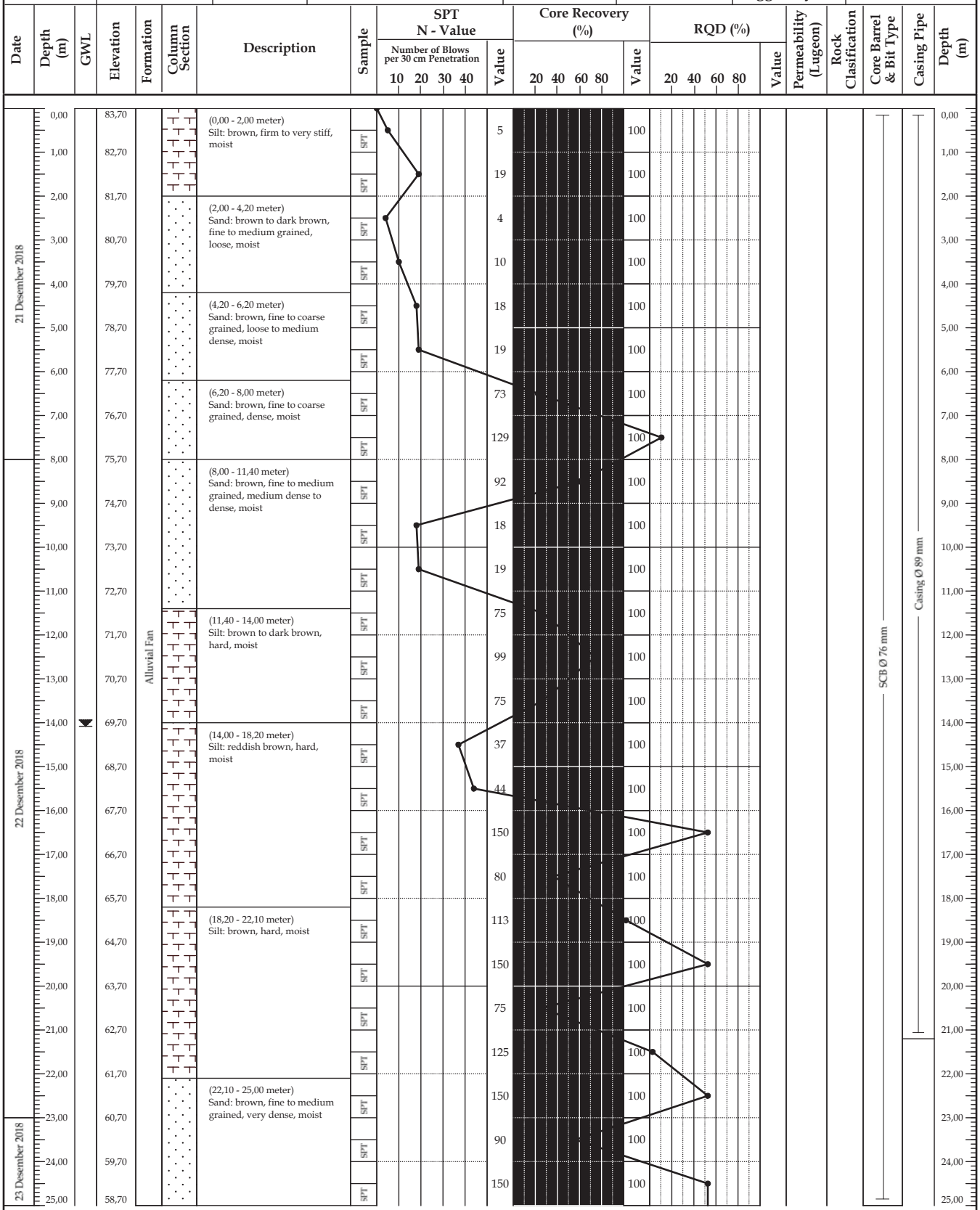
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 1

Sheet No. : 1 of 2

Project	PALU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-5 TONE
Site	JONO OGE	**Coordinate**	X : 825742 Y : 9891240	**Inclination**	Vertical	**Drilled By**	Irpa
Elevation	83,70 meter	**Date**	21 Dec 18 to 23 Dec 18	**GWL**	-14.08 meter	**Logged By**	Windi



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 1

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-5 TONE
Site	JONO OGE	**Coordinate**	X : 825742 Y : 9891240	**Inclination**	Vertical	**Drilled By**	Irpa
Elevation	83,70 meter	**Date**	21 Dec 18 to 23 Dec 18	**GWL**	-14.08 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%): 20 40 60 80	Value	RQD (%): 20 40 60 80	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
	26,00		57,70	Alluvial Fan		(25,00 - 30,00 meter) Sand: brown, fine to medium grained, very dense, moist	SPT		150		100					SCB Ø 76 mm		26,00
	27,00		56,70				SPT		150		100							27,00
	28,00		55,70				SPT		150		100							28,00
	29,00		54,70				SPT		150		100							29,00
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Depth Scale : 1:125

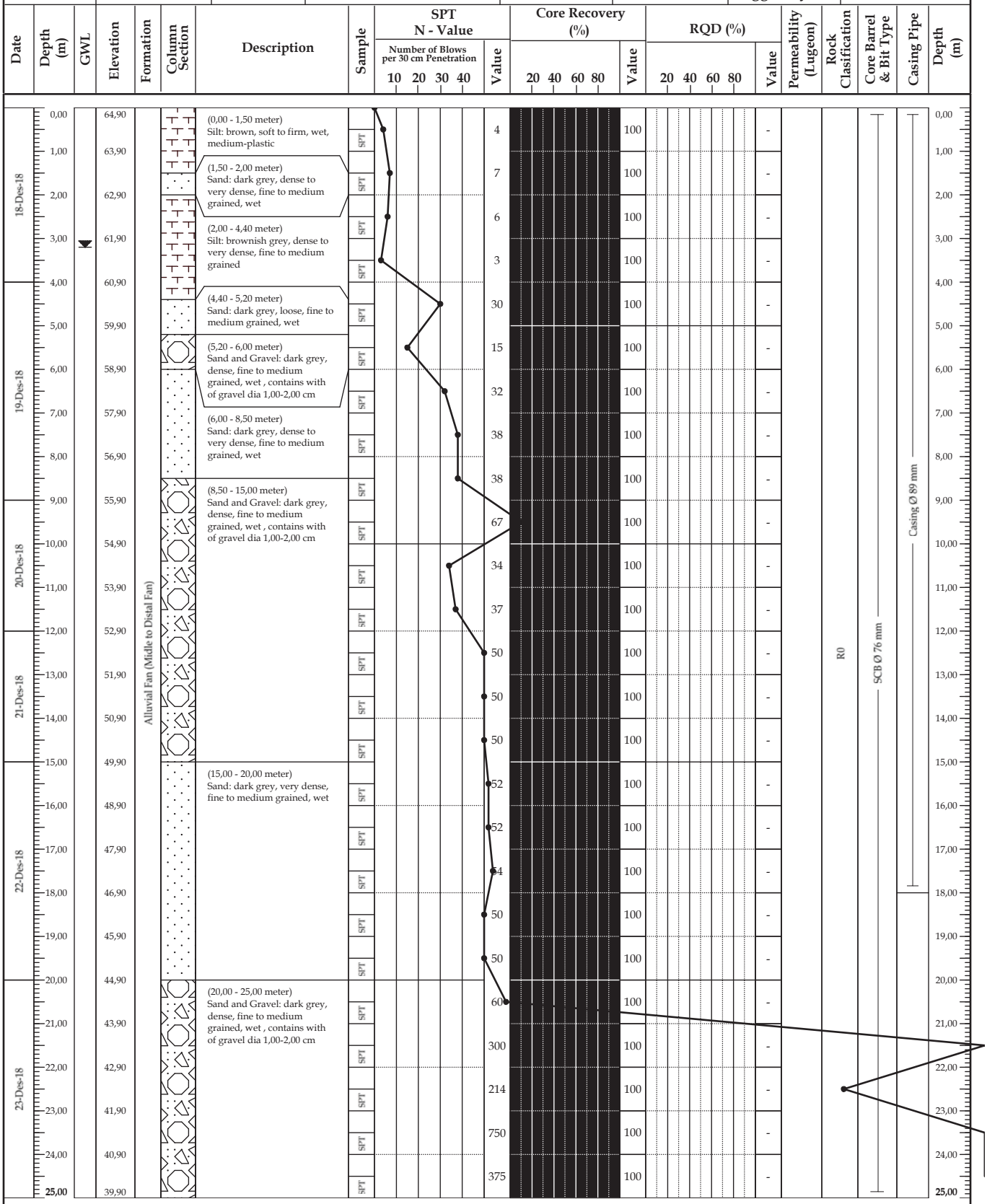
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 2

Sheet No. : 1 of 1

Project	PALU RECOVERY			Depth	25.00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 825140 Y : 9890923	Inclination	Vertical	Drilled By	SUHARDI
Elevation	64,90 meter	Date	18-Des-18 to 23-Des-18	GWL	-3.20 meter	Logged By	Annas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 3

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 823812 Y : 9890557	Inclination	Vertical	Drilled By	IWAN
Elevation	53,30 meter	Date	12-Des-18 to 20-Des-18	GWL	-0.70 meter	Logged By	Annaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
18 Desember 2018	0,00	▼	53,30	Alluvial Fan (Midle to Distal Fan)		(0,00 - 1,40 meter) Silt: brown , soft, low plastic,moist contains of root	SPT	10 20 30 40	8	20 40 60 80	100	20 40 60 80	-			Kipas Aluvial (Midle to Distal Fan)	SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		52,30				SPT		13		100		-						1,00
	2,00		51,30			(1,40 - 30,00 meter) Sand: brownish grey, wet, dense to very dense, fine to medium grained.	SPT		16		100		-						2,00
	3,00		50,30				SPT		18		100		-						3,00
	4,00		49,30				SPT		20		100		-						4,00
	5,00		48,30				SPT		22		100		-						5,00
	6,00		47,30				SPT		135		100		-						6,00
	7,00		46,30				SPT		222		100		-						7,00
	8,00		45,30				SPT		175		100		-						8,00
19 Desember 2018	9,00		44,30				SPT		163		100		-						9,00
	10,00		43,30				SPT		93		100		-						10,00
	11,00		42,30				SPT		102		100		-						11,00
	12,00		41,30				SPT		96		100		-						12,00
	13,00		40,30				SPT		111		100		-						13,00
	14,00		39,30				SPT		17		100		-						14,00
	15,00		38,30				SPT		30		100		-						15,00
	16,00		37,30				SPT		31		100		-						16,00
	17,00		36,30				SPT		31		100		-						17,00
	18,00		35,30				SPT		32		100		-						18,00
	19,00		34,30				SPT		35		100		-						19,00
20 Desember 2018	20,00		33,30				SPT		33		100		-						20,00
	21,00		32,30				SPT		38		100		-						21,00
	22,00		31,30				SPT		40		100		-						22,00
	23,00		30,30				SPT		45		100		-						23,00
	24,00		29,30				SPT		81		100		-						24,00
	25,00		28,30				SPT												25,00

Depth Scale : 1:125

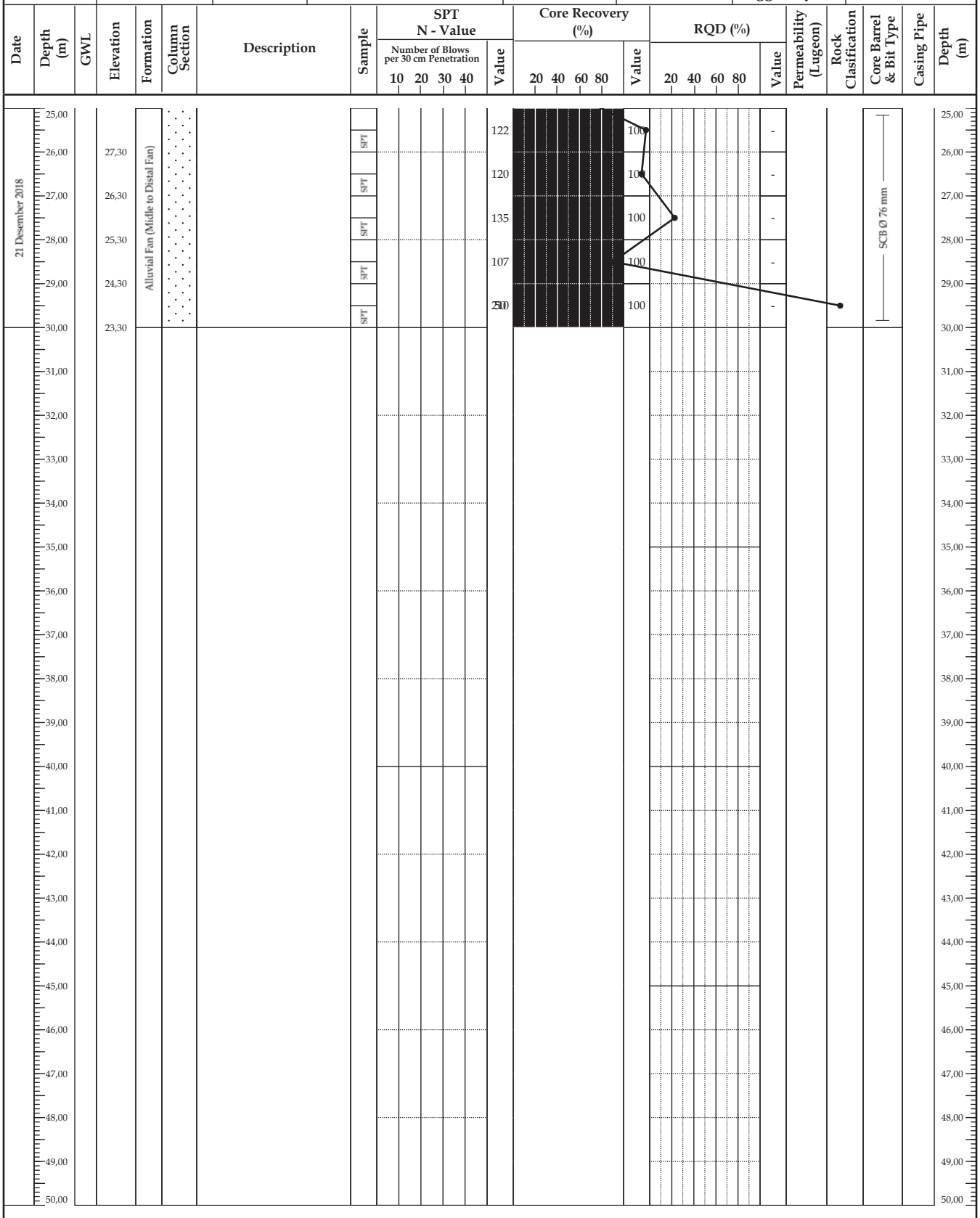
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 3

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 823812 Y : 9890557	Inclination	Vertical	Drilled By	IWAN
Elevation	53,30 meter	Date	12-Des-18 to 20-Des-18	GWL	-0.70 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

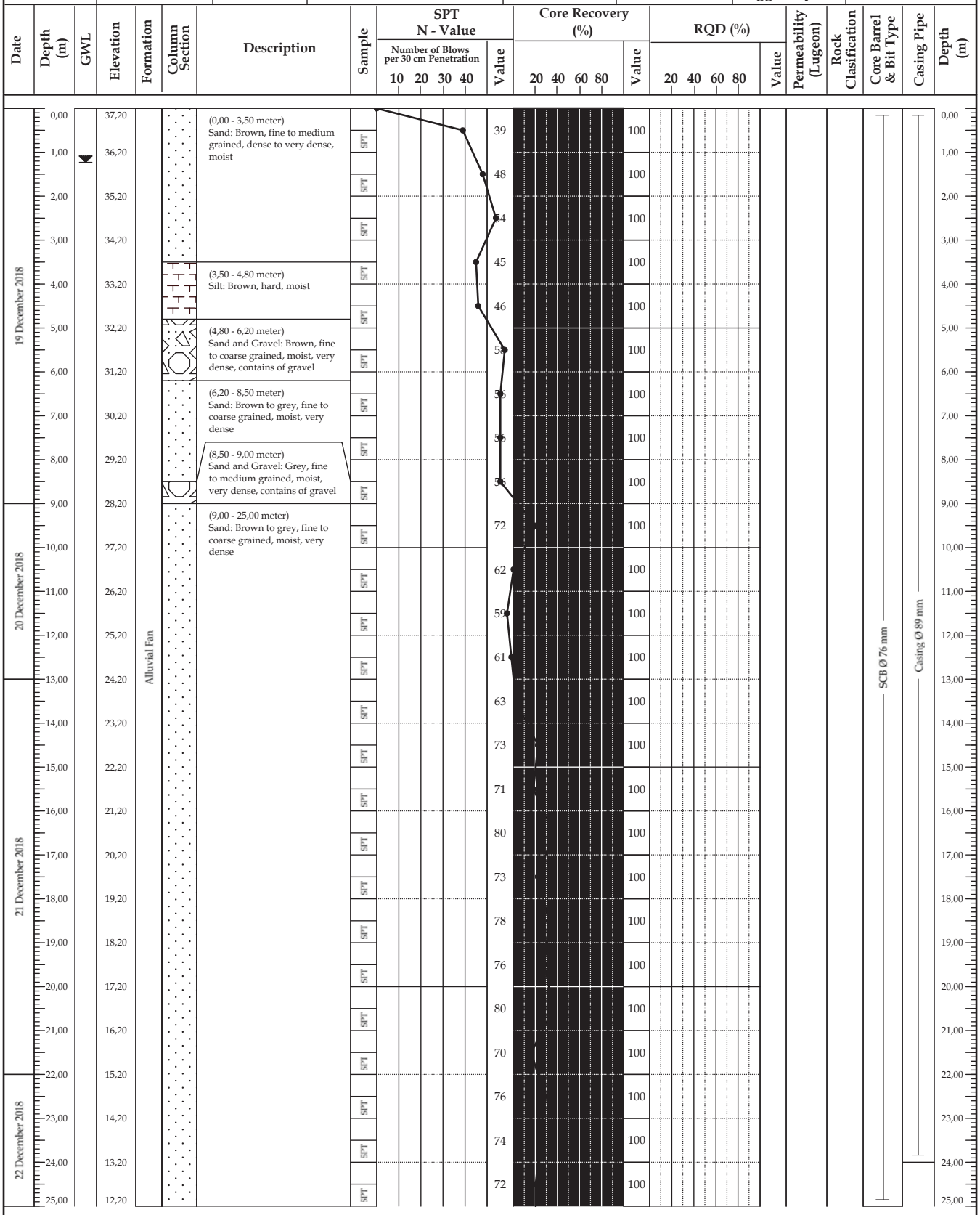
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-4

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 Tone
Site	JONO OGE	Coordinate	X : 822542 Y : 9891390	Inclination	Vertical	Drilled By	Priyo
Elevation	37,20 meter	Date	19 Dec 18 to 22 Dec 18	GWL	-1.23 meter	Logged By	Windi



Depth Scale : 1 : 250

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-4

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 Tone
Site	JONO OGE	Coordinate	X : 822542 Y : 9891390	Inclination	Vertical	Drilled By	Priyo
Elevation	37,20 meter	Date	19 Dec 18 to 22 Dec 18	GWL	-1.23 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%): 20 40 60 80	Value	RQD (%): 20 40 60 80	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
22 December 2018	26,00		11,20	Alluvial Fan		(25,00 - 30,00 meter) Sand: Brown to grey, fine to coarse grained, moist, very dense	SPT		72		100					SCB Ø 76 mm		26,00
	27,00		10,20				SPT		68		100							27,00
	28,00		9,20				SPT		67		100							28,00
	29,00		8,20				SPT		76		100							29,00
	30,00		7,20				SPT		70		100							30,00
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Depth Scale : 1 : 250

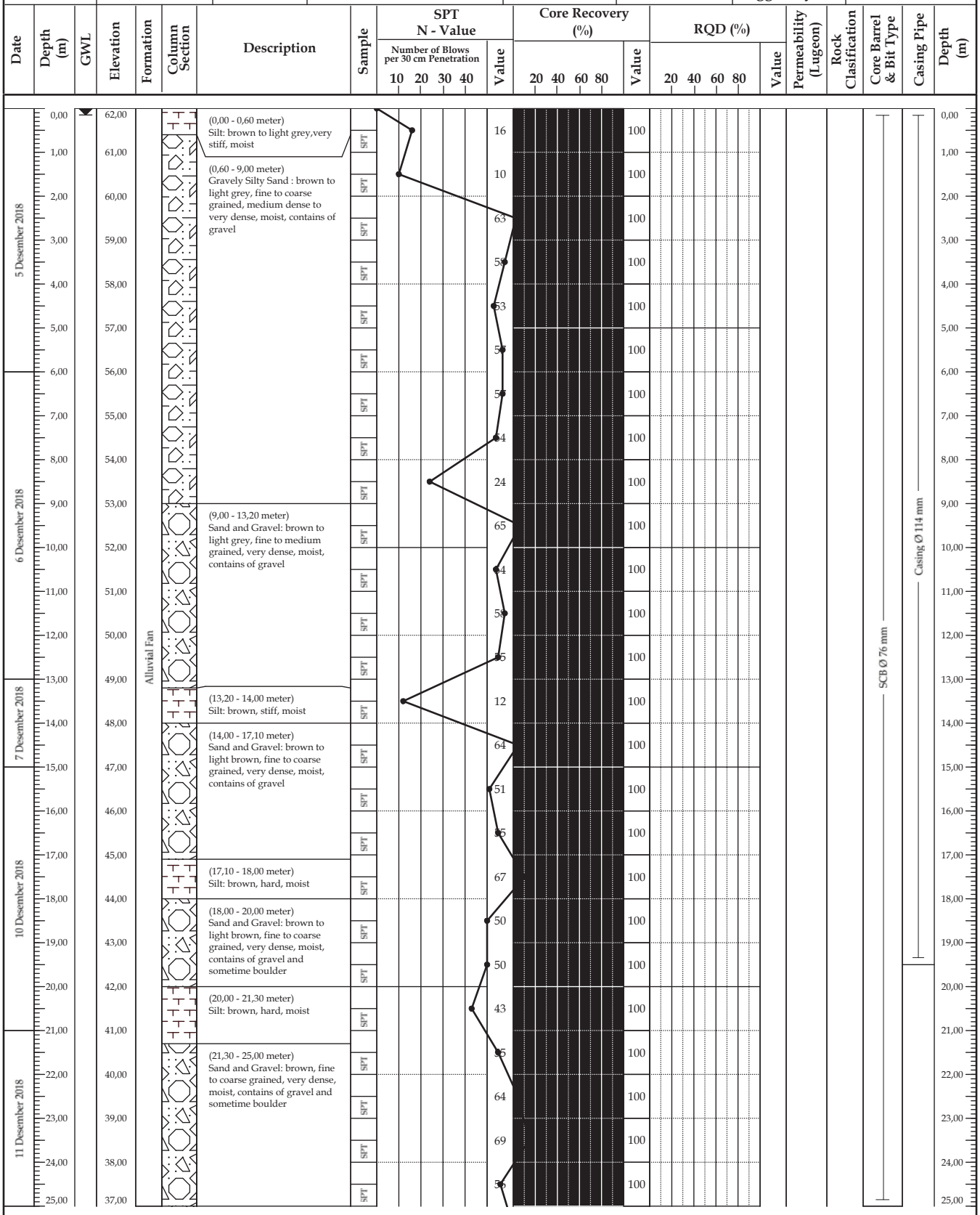
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 5

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 TONE
Site	JONO OGE	Coordinate	X : 824476 Y : 9894166	Inclination	Vertical	Drilled By	Jumadi
Elevation	62,00 meter	Date	5 Dec 18 to 12 Dec 18	GWL	+1.95 meter	Logged By	Windi



Depth Scale : 1:125

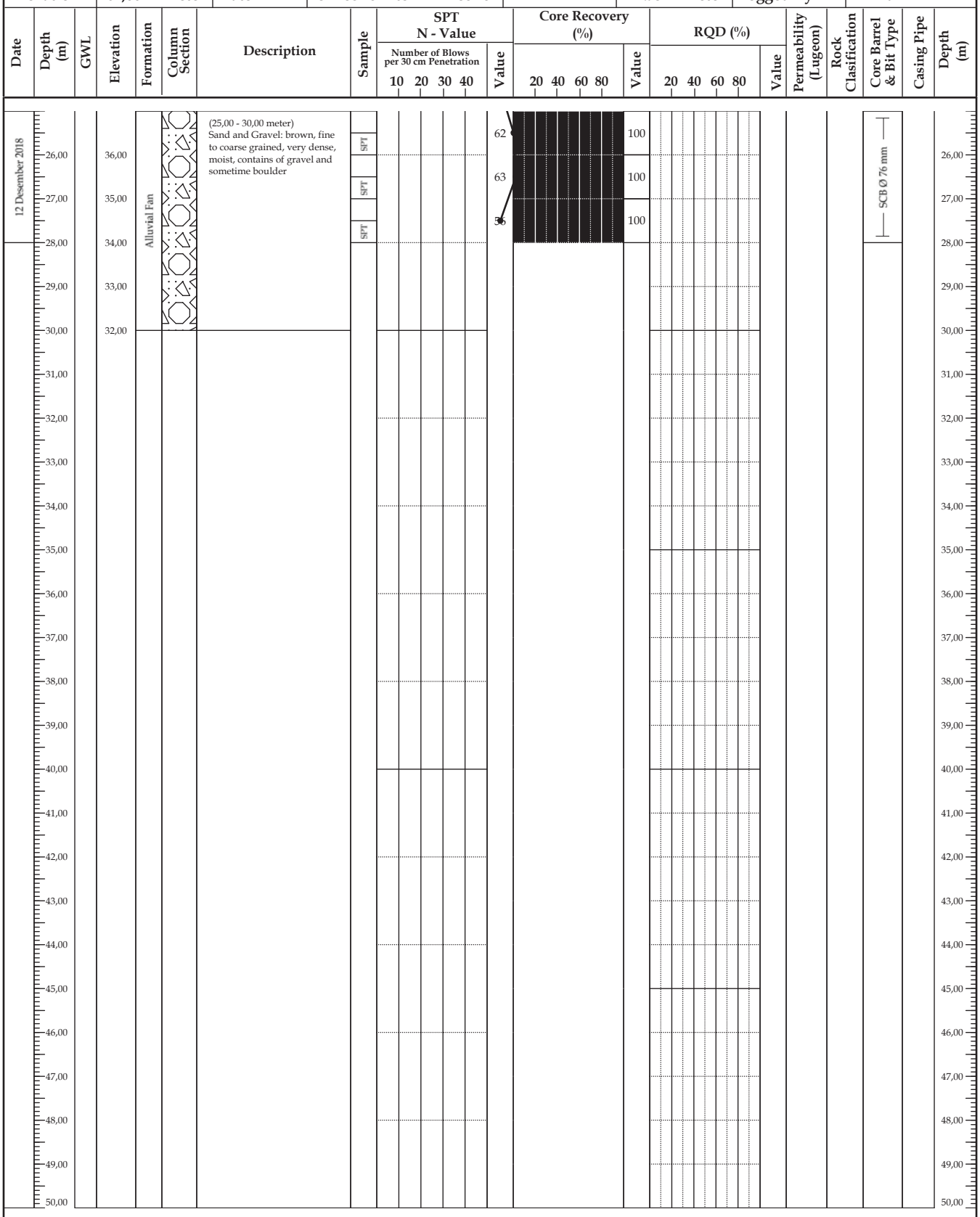
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 5

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 TONE
Site	JONO OGE	Coordinate	X : 824476 Y : 9894166	Inclination	Vertical	Drilled By	Jumadi
Elevation	62,00 meter	Date	5 Dec 18 to 12 Dec 18	GWL	+1.95 meter	Logged By	Windi



Depth Scale : 1:125

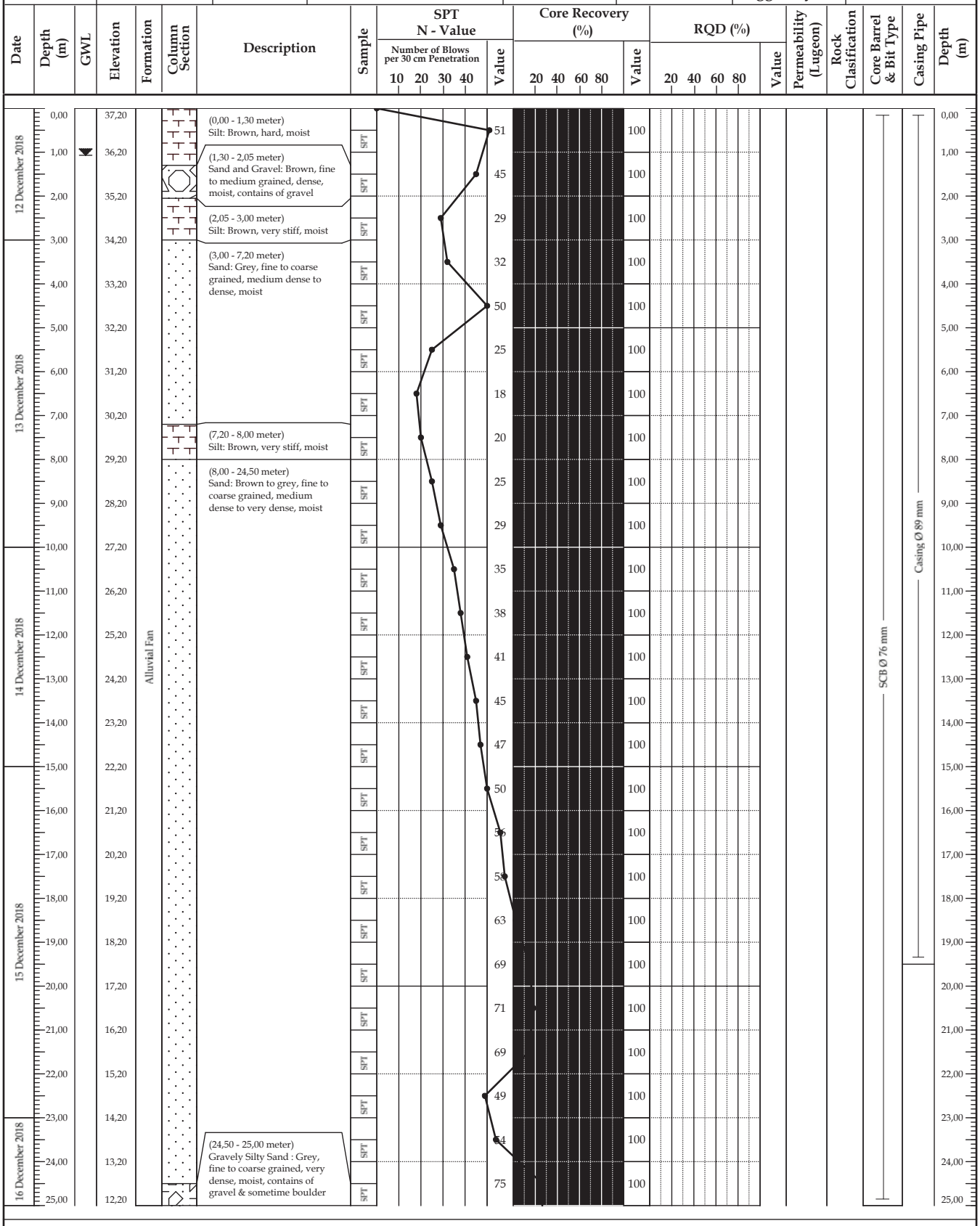
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-6

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 Tone
Site	JONO OGE	Coordinate	X : 822628 Y : 9894199	Inclination	Vertical	Drilled By	Sukani
Elevation	37,20 meter	Date	12 Dec 18 to 17 Dec 18	GWL	-1.07 meter	Logged By	Windi



Depth Scale : 1 : 250

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-6

Sheet No. : 1 of 2

Project	PALU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-5 Tone
Site	JONO OGE	**Coordinate**	X : 822628 Y : 9894199	**Inclination**	Vertical	**Drilled By**	Sukani
Elevation	37,20 meter	**Date**	12 Dec 18 to 17 Dec 18	**GWL**	-1.07 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
16 December 2018	26,00		11,20	Alluvial Fan		(25,00 - 30,00 meter) Gravely Silty Sand : Grey, fine to coarse grained, very dense, moist, contains of gravel & sometime boulder	SPT		75		100					SCB Ø 76 mm		26,00
	27,00		10,20				SPT		75		100							27,00
17 December 2018	28,00		9,20				SPT		78		100							28,00
	29,00		8,20				SPT		74		100							29,00
	30,00		7,20				SPT		81		100							30,00
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Depth Scale : 1 : 250

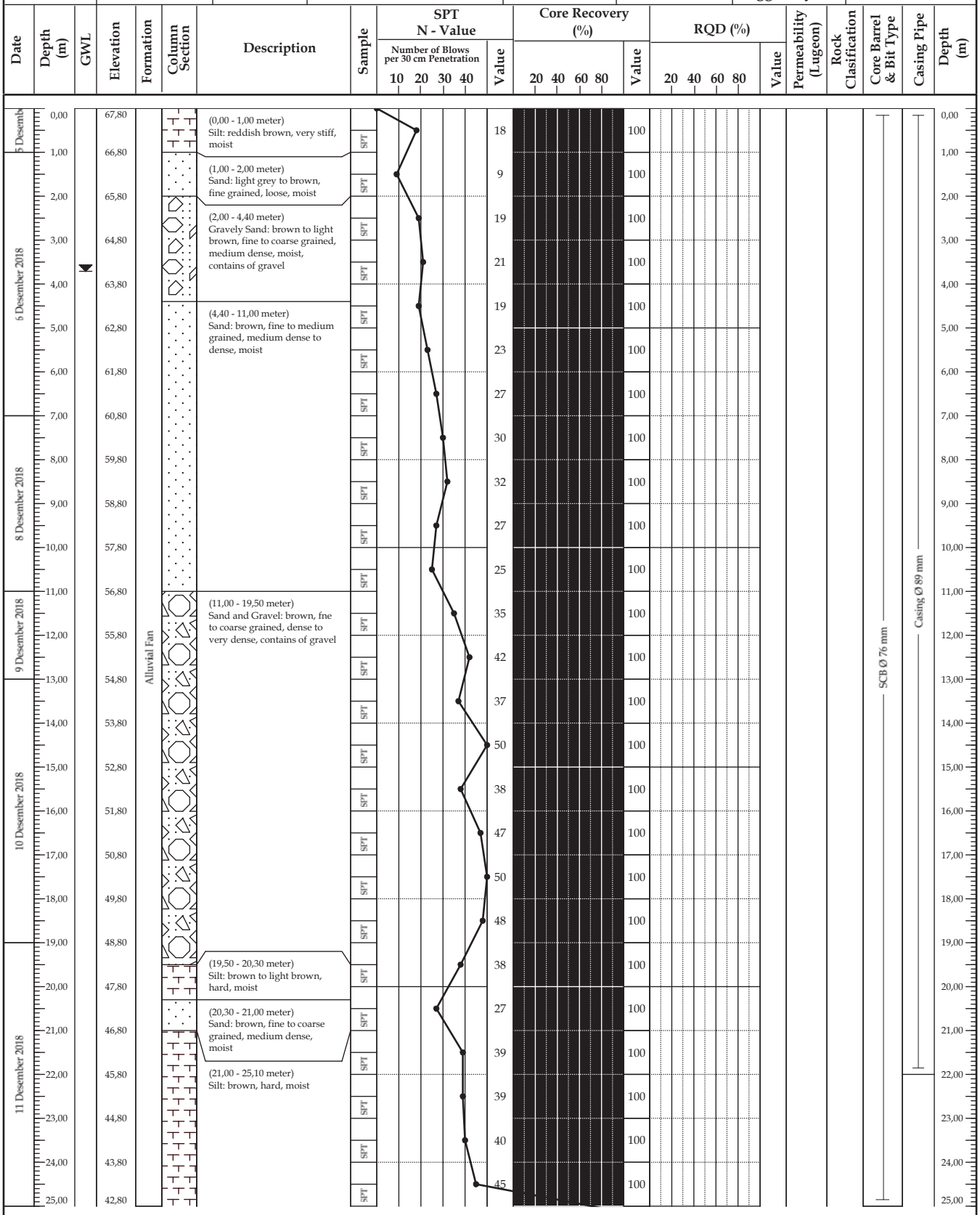
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 7

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 TONE
Site	JONO OGE	Coordinate	X : 824564 Y : 9892721	Inclination	Vertical	Drilled By	Irpa
Elevation	67,80 meter	Date	5 Dec 18 to 13 Dec 18	GWL	-3.71 meter	Logged By	Windi



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 7

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-5 TONE
Site	JONO OGE	**Coordinate**	X : 824564 Y : 9892721	**Inclination**	Vertical	**Drilled By**	Irpa
Elevation	67,80 meter	**Date**	5 Dec 18 to 13 Dec 18	**GWL**	-3.71 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
12 Desember 2018	26,00		41,80	Alluvial Fan		(25,10 - 30,00 meter) Sand and Gravel: brown to light brown, fine to coarse grained, dense to very dense, moist, contains of gravel	SPT		150		100					SCB Ø 76 mm		26,00
	27,00		40,80				SPT		87		100							27,00
13 Desember 2018	28,00		39,80				SPT		150		100							28,00
	29,00		38,80				SPT		50		100							29,00
	30,00		37,80				SPT		150		100							30,00
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Depth Scale : 1:125

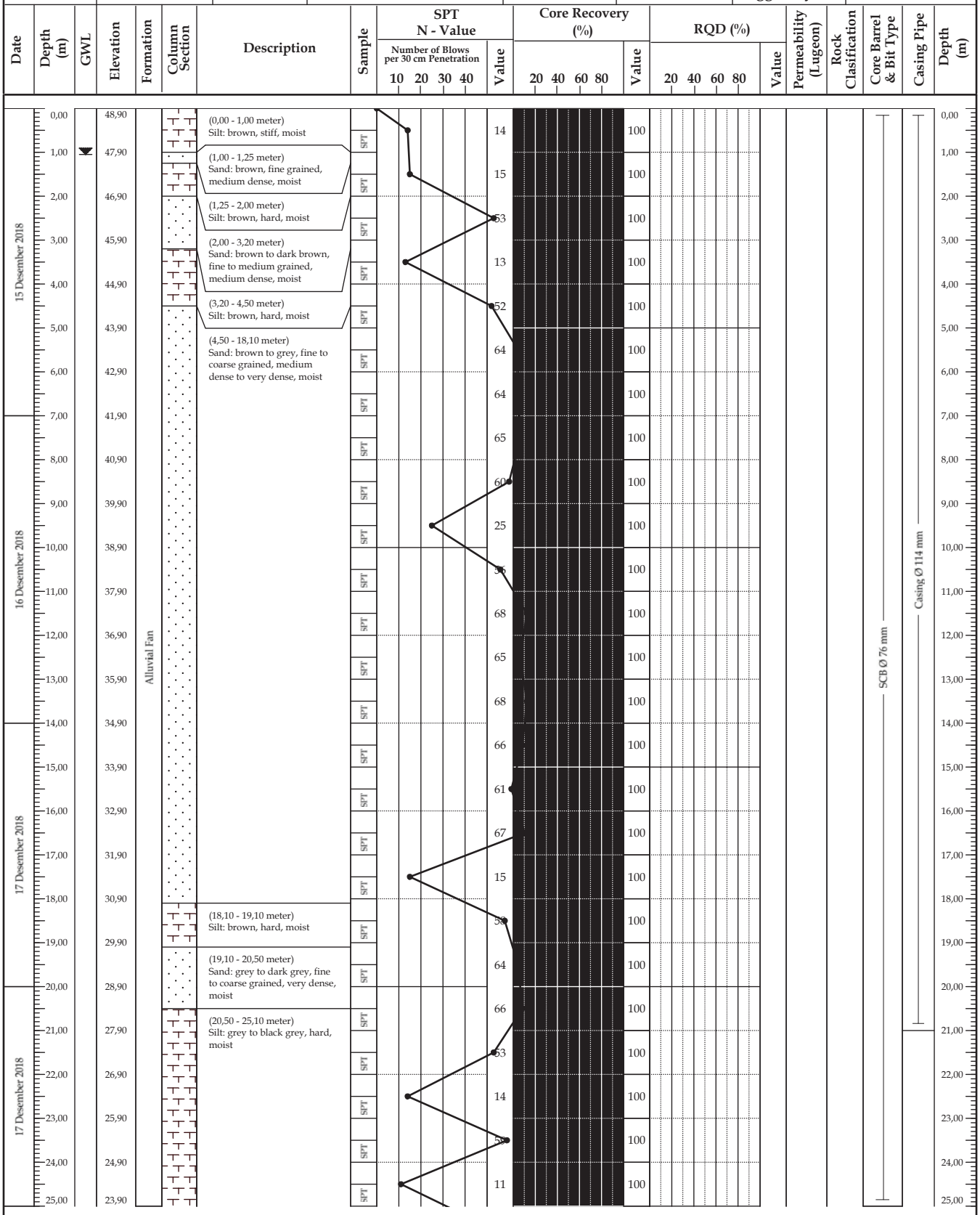
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 8

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 TONE
Site	JONO OGE	Coordinate	X : 823337 Y : 9892345	Inclination	Vertical	Drilled By	Jumadi
Elevation	48,90 meter	Date	15 Dec 18 to 19 Dec 18	GWL	-1.05 meter	Logged By	Windi



Depth Scale : 1:125

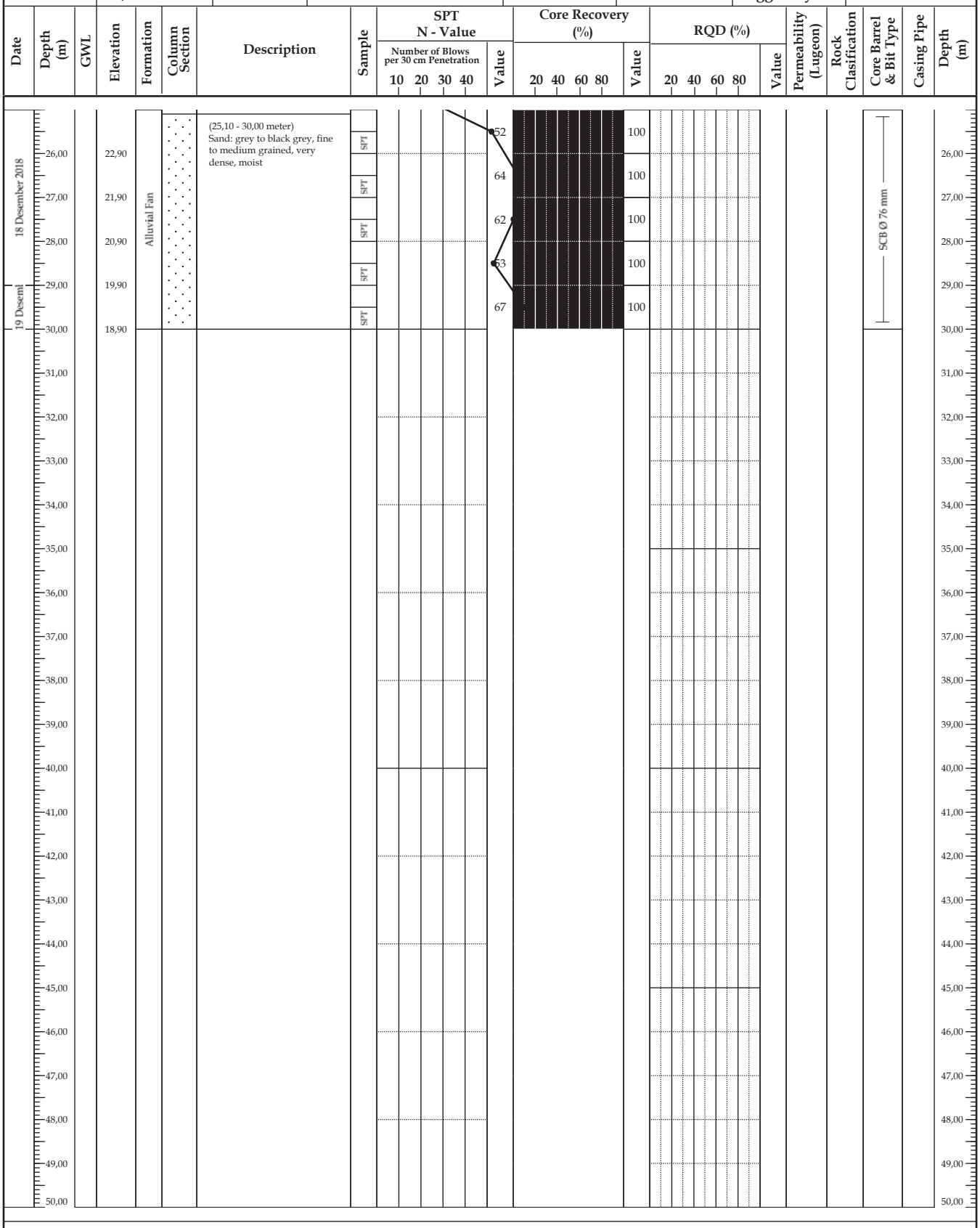
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 8

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 TONE
Site	JONO OGE	Coordinate	X : 823337 Y : 9892345	Inclination	Vertical	Drilled By	Jumadi
Elevation	48,90 meter	Date	15 Dec 18 to 19 Dec 18	GWL	-1.05 meter	Logged By	Windi



Depth Scale : 1:125

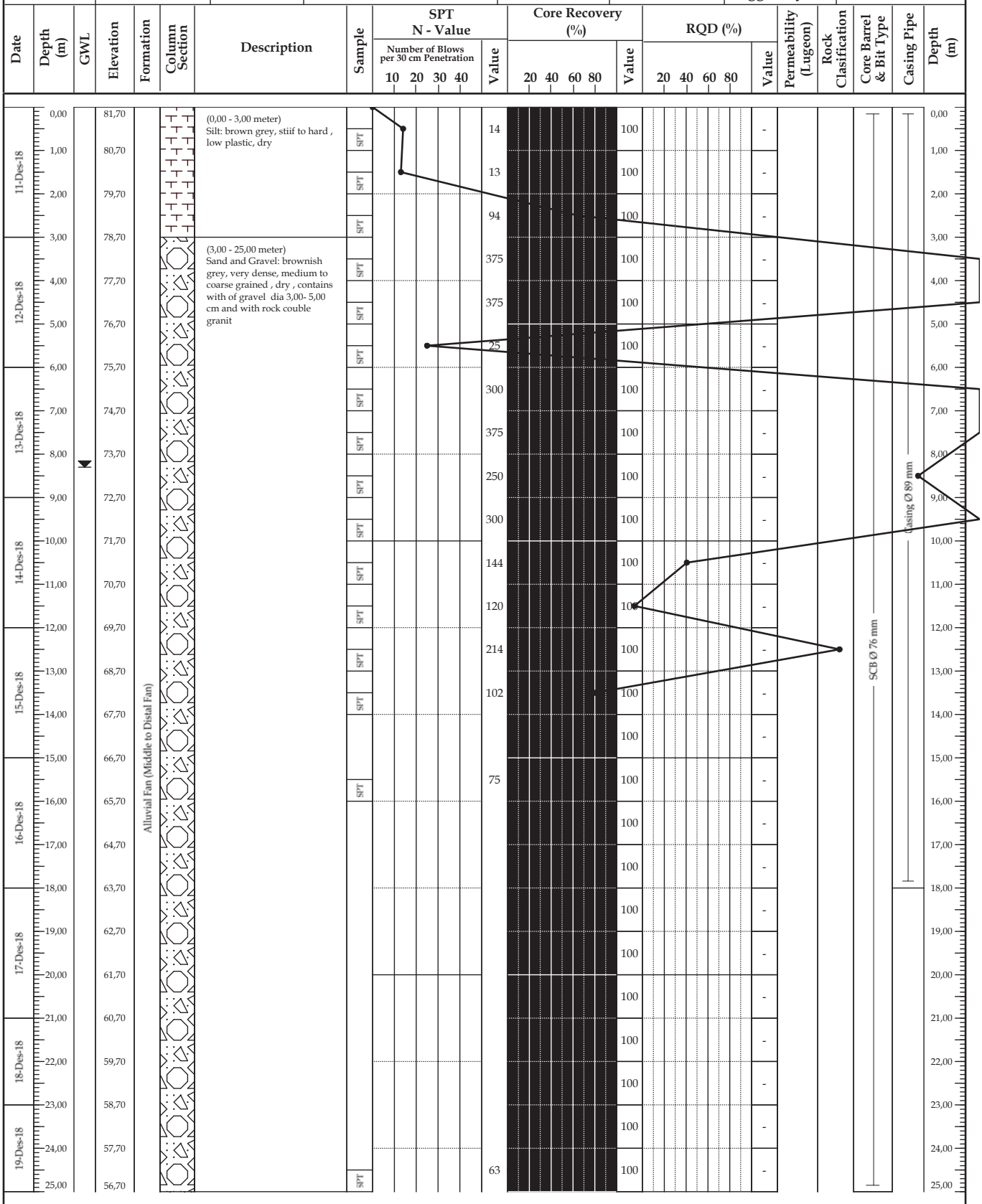
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 7

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30500 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 829484 Y : 7888633	Inclination	Vertical	Drilled By	AGUS
Elevation	815 0 meter	Date	11-Des-18 to 21-Des-18	GWL	-8.30 meter	Logged By	Annaas Tri P



Depth Scale : 1:129

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 7

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	JONO OGE	**Coordinate**	X : 829484 Y : 7888633	**Inclination**	Vertical	**Drilled By**	AGUS
Elevation	815,0 meter	**Date**	11-Des-18 to 21-Des-18	**GWL**	-8.30 meter	**Logged By**	Annaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
20-Des-18	25,00							10 20 30 40		20 40 60 80		20 40 60 80						25,00
	26,00		55,70			(25,00 - 30,00 meter) Sand and Gravel: brownish grey, very dense, medium to coarse grained , dry , contains with of gravel dia 3,00- 5,00 cm and with rock couble granit					100		-					26,00
	27,00		54,70				SPT		48		100		-					27,00
21-Des-18	28,00		53,70								100		-					28,00
	29,00		52,70				SPT		75		100		-			SCB Ø 76 mm		29,00
	30,00		51,70				SPT		75		100		-					30,00
	31,00																	31,00
	32,00																	32,00
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Depth Scale : 1:129

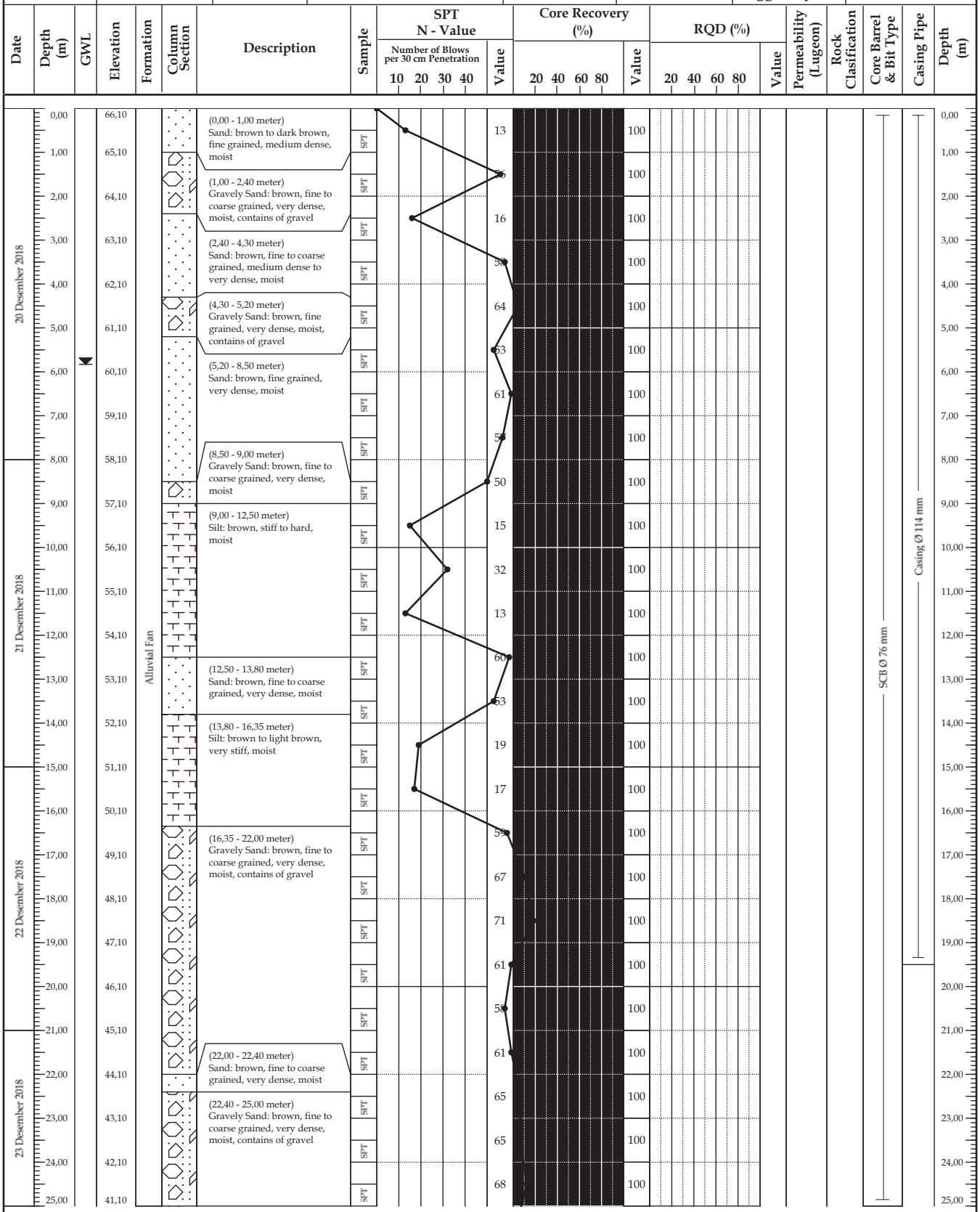
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-10

Sheet No. : 1 of 2

Project	P7 LU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-9 TONE
Site	JONO OGE	**Coordinate**	X : 823A48 Y : 588894A	**Inclination**	Vertical	**Drilled By**	Jumadi
Elevation	66,10 meter	**Date**	20 Dec 18 to 23 Dec 18	**GWL**	-9.83 meter	**Logged By**	Windi



Depth Scale : 1:129

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-10

Sheet No. : 2 of 2

Project	P7 LU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-9 TONE
Site	JONO OGE	**Coordinate**	X : 823A48 Y : 588894A	**Inclination**	Vertical	**Drilled By**	Jumadi
Elevation	66,10 meter	**Date**	20 Dec 18 to 23 Dec 18	**GWL**	-9.83 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%): 20 40 60 80	Value	RQD (%): 20 40 60 80	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
23 Desember 2018	26,00		40,10	Alluvial Fan		(25,00 - 30,00 meter) Gravely Sand: brown, fine to coarse grained, very dense, moist, contains of gravel	SPT		63		100					SCB Ø 76 mm		26,00
	27,00		39,10				SPT		60		100							27,00
	28,00		38,10				SPT		58		100							28,00
	29,00		37,10				SPT		62		100							29,00
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Depth Scale : 1:129

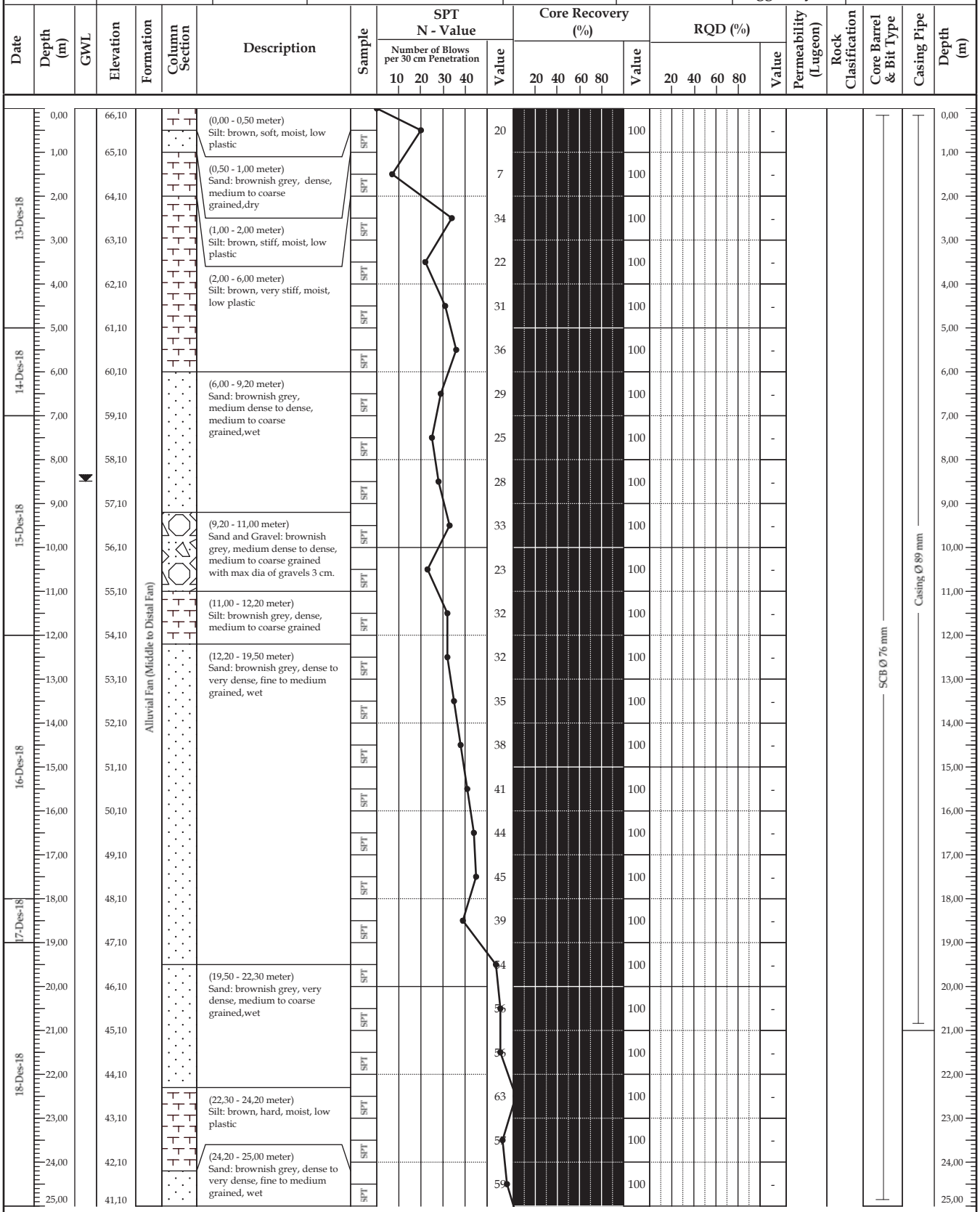
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 11

Sheet No. : 1 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	JONO OGE	**Coordinate**	X : 825351 Y : 9887130	**Inclination**	Vertical	**Drilled By**	RUSLI
Elevation	66,10 meter	**Date**	13-Des-18 to 20-Des-18	**GWL**	-8.49 meter	**Logged By**	Annaas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 11

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30,00 meter	**Drilling Rig**	YBM - 1
Site	JONO OGE	**Coordinate**	X : 825351 Y : 9887130	**Inclination**	Vertical	**Drilled By**	RUSLI
Elevation	66,10 meter	**Date**	13-Des-18 to 20-Des-18	**GWL**	-8.49 meter	**Logged By**	Annaas Tri P

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
19-Des-18	25,00							10 20 30 40		20 40 60 80		20 40 60 80						25,00
	26,00		40,10	Alluvial Fan (Middle to Distal Fan)		(25,00 - 30,00 meter) Sand: brownish grey, very dense, medium to coarse grained,wet	SPT		65		100		-			SCB Ø 76 mm		26,00
	27,00		39,10				SPT		68		100		-					27,00
20-Des-18	28,00		38,10				SPT		58		100		-					28,00
	29,00		37,10				SPT		52		100		-					29,00
	30,00		36,10				SPT		50		100		-					30,00
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	50,00										100							50,00

Depth Scale : 1:125

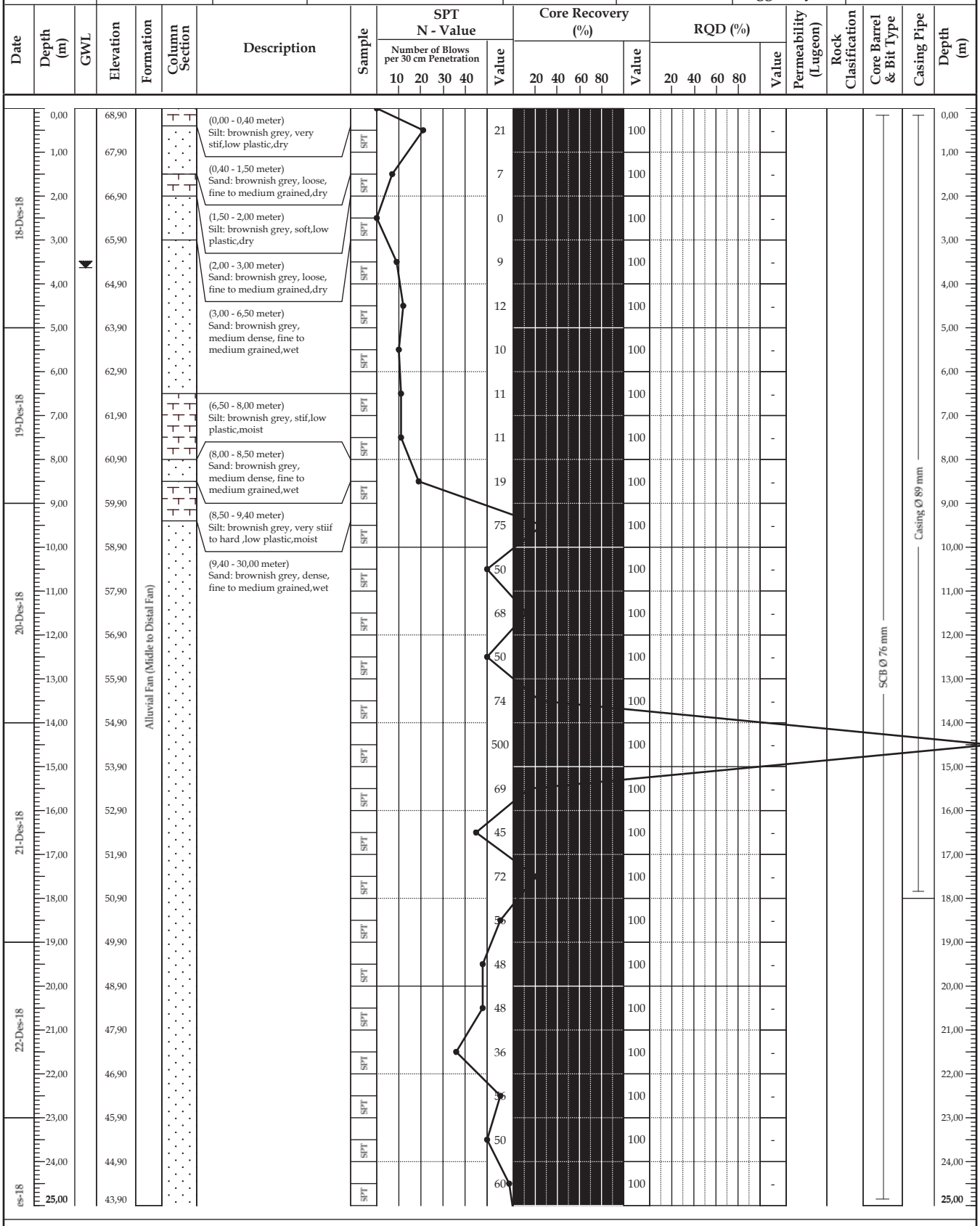
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 12

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 823649 Y : 9887090	Inclination	Vertical	Drilled By	BAHARI
Elevation	68,90 meter	Date	18-Des-18 to 24-Des-18	GWL	-3.63 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

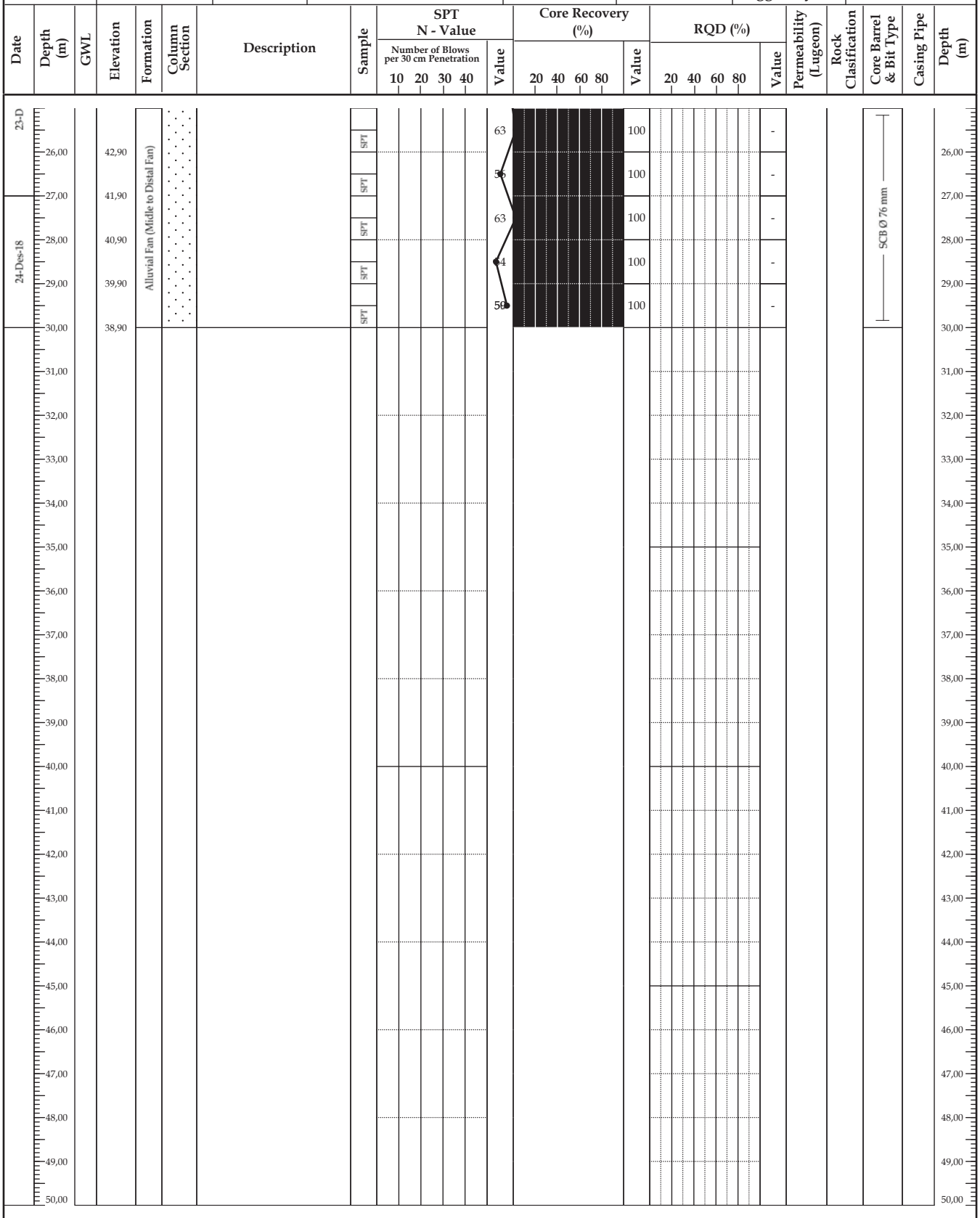
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 12

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	30,00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 823649 Y : 9887090	Inclination	Vertical	Drilled By	BAHARI
Elevation	68,90 meter	Date	18-Des-18 to 24-Des-18	GWL	-3.63 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

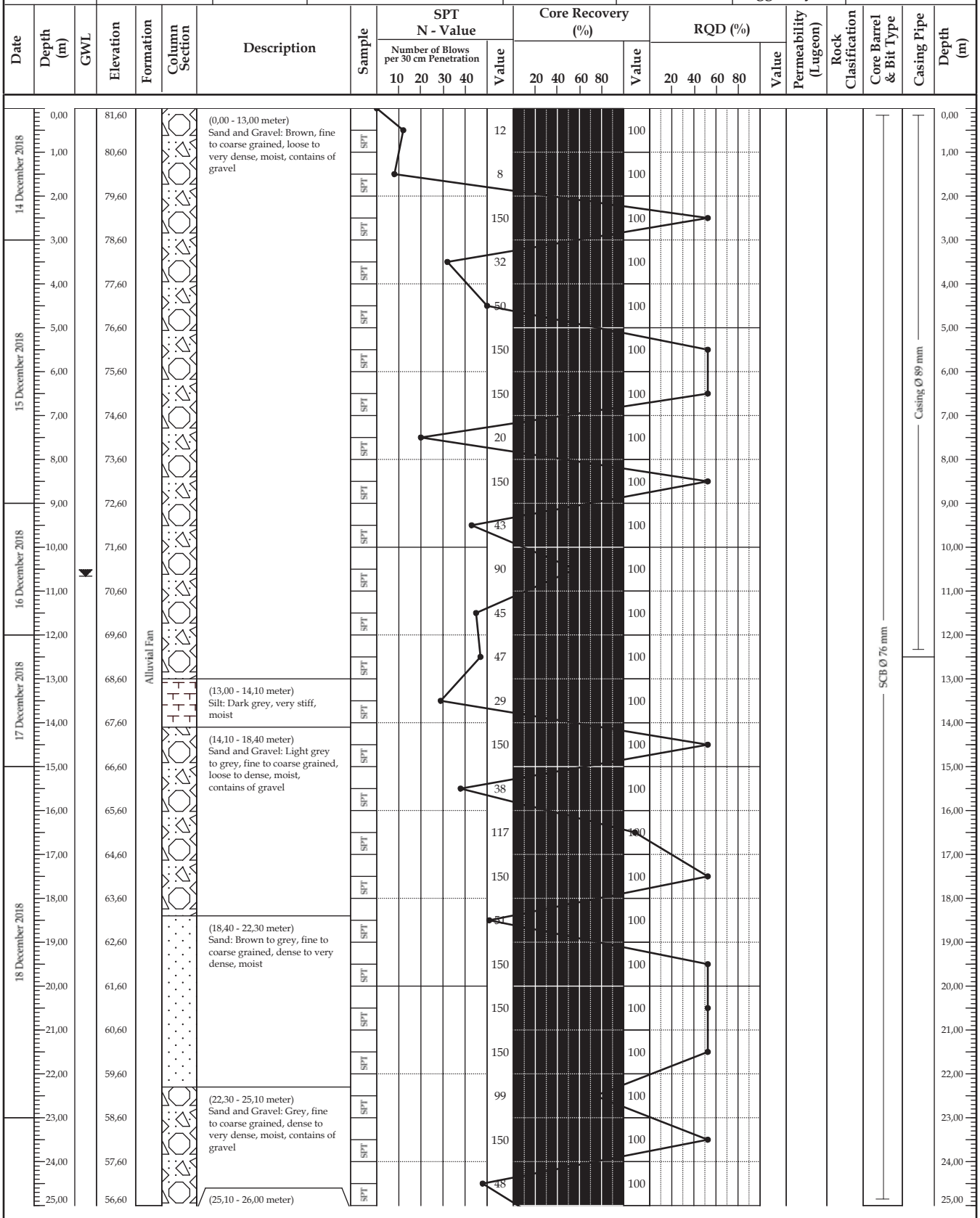
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-13

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-5 Tone
Site	JONO OGE	Coordinate	X : 825336 Y : 9892623	Inclination	Vertical	Drilled By	Irpa
Elevation	81,60 meter	Date	14 Dec 18 to 20 Dec 18	GWL	-10.66 meter	Logged By	Windi



Depth Scale : 1 : 250

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J-13

Sheet No. : 2 of 2

Project	PALU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-5 Tone
Site	JONO OGE	**Coordinate**	X : 825336 Y : 9892623	**Inclination**	Vertical	**Drilled By**	Irpa
Elevation	81,60 meter	**Date**	14 Dec 18 to 20 Dec 18	**GWL**	-10.66 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
19 December 2018	26,00		55,60	Alluvial Fan		Sand: Brown to grey, fine to coarse grained, very dense, moist	SPT		80		100					SCB Ø 76 mm		26,00
	27,00		54,60			(26,00 - 30,00 meter) Sand and Gravel: Grey, fine to coarse grained, medium dense to very dense, moist, contains of gravel	SPT		150		100							27,00
	28,00		53,60				SPT		64		100							28,00
	29,00		52,60				SPT		150		100							29,00
	30,00		51,60				SPT		99		100							30,00
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Depth Scale : 1 : 250

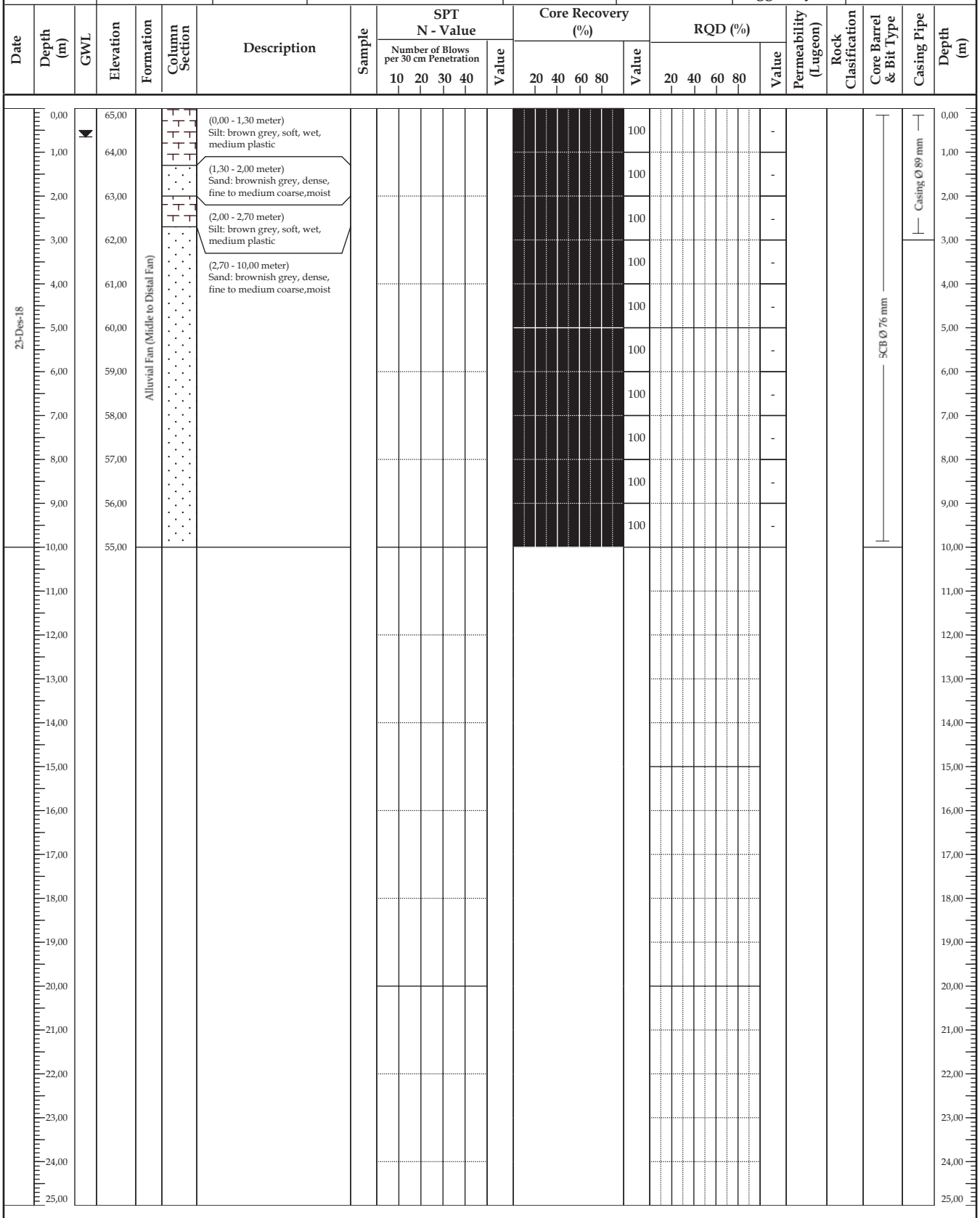
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : J - 14

Sheet No. : 1 of 1

Project	PALU RECOVERY			Depth	10,00 meter	Drilling Rig	YBM - 1
Site	JONO OGE	Coordinate	X : 824966 Y : 9890895	Inclination	Vertical	Drilled By	INDRA
Elevation	65,00 meter	Date	23-Des-18 to 23-Des-18	GWL	-0,65 meter	Logged By	Annaas Tri P



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 1

Sheet No. : 1 of 2

Project	P7 LU RECOVERY			Depth	30,00 meter	Drilling Rig	UD-ATONE
Site	PETOBO	Coordinate	X : 82356 Y : 989589	Inclination	Vertical	Drilled By	Jumadi
Elevation	81,40 meter	Date	26 Nov 18 to 4 Dec 18	GWL	-11.22 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
26 November 2018	0,00		81,40	Embankm		(0,00 - 2,50 meter) Sand and Gravel: brown, fine to medium grained, moist, dense, contains of gravel	SPT	10 20 30 40	4	20 40 60 80	100	20 40 60 80				SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		80,40				SPT		27		100							1,00
	2,00		79,40				SPT		52		100							2,00
	3,00		78,40			(2,50 - 12,20 meter) Sand: brown, fine grained, dense, moist	SPT		64		100							3,00
27 November 2018	4,00		77,40				SPT		58		100							4,00
	5,00		76,40				SPT		53		100							5,00
	6,00		75,40				SPT		95		100							6,00
	7,00		74,40				SPT				100							7,00
	8,00		73,40								100							8,00
	9,00		72,40								100							9,00
	10,00		71,40								100							10,00
	11,00	▼	70,40								100							11,00
28 November 2018	12,00		69,40	Alluvial Fan		(12,20 - 14,00 meter) Silt: brown, hard, moist					100							12,00
	13,00		68,40			(14,00 - 14,30 meter) Sand and Gravel: brown, fine to medium grained, moist, dense, contains of gravel					100							13,00
	14,00		67,40								100							14,00
	15,00		66,40			(14,30 - 15,50 meter) Silt: brown, hard, moist					100							15,00
	16,00		65,40			(15,50 - 26,30 meter) Sand and Gravel: brown, fine to medium grained, moist, dense, contains of gravel					100							16,00
29 November 2018	17,00		64,40				SPT		64		100							17,00
	18,00		63,40				SPT		52		100							18,00
	19,00		62,40				SPT		64		100							19,00
	20,00		61,40				SPT		56		100							20,00
30 November 2018	21,00		60,40				SPT		59		100							21,00
	22,00		59,40				SPT		55		100							22,00
	23,00		58,40				SPT		53		100							23,00
1 Desember 2018	24,00		57,40				SPT		51		100							24,00
	25,00		56,40				SPT		59		100							25,00

Depth Scale : 1:12A

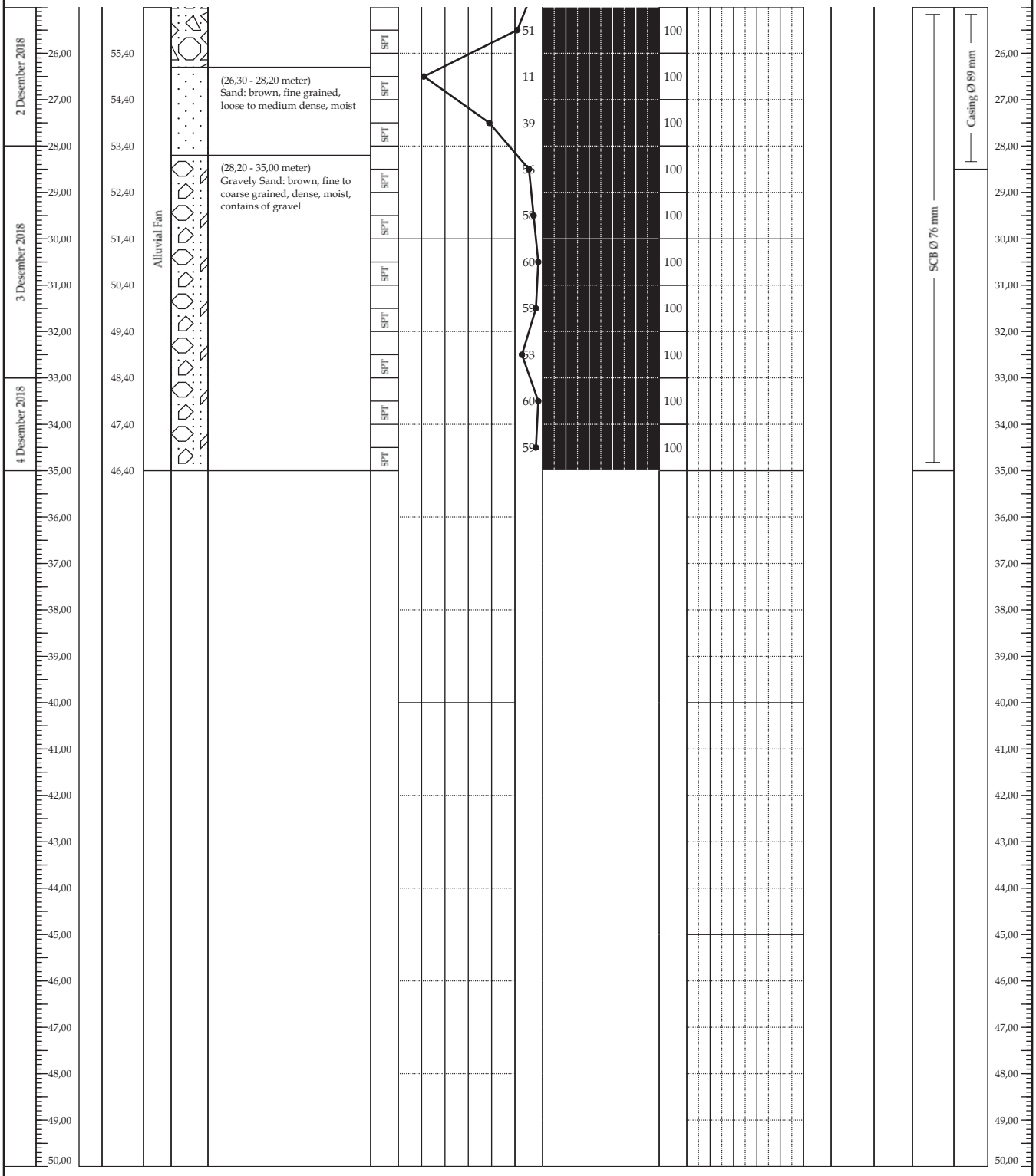
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 1

Sheet No. : 2 of 2

Project	P7 LU RECOVERY			Depth	30,00 meter	Drilling Rig	UD-ATONE
Site	PETOBO	Coordinate	X : 82356 Y : 989589	Inclination	Vertical	Drilled By	Jumadi
Elevation	81,40 meter	Date	26 Nov 18 to 4 Dec 18	GWL	-11.22 meter	Logged By	Windi



Depth Scale : 1:12A

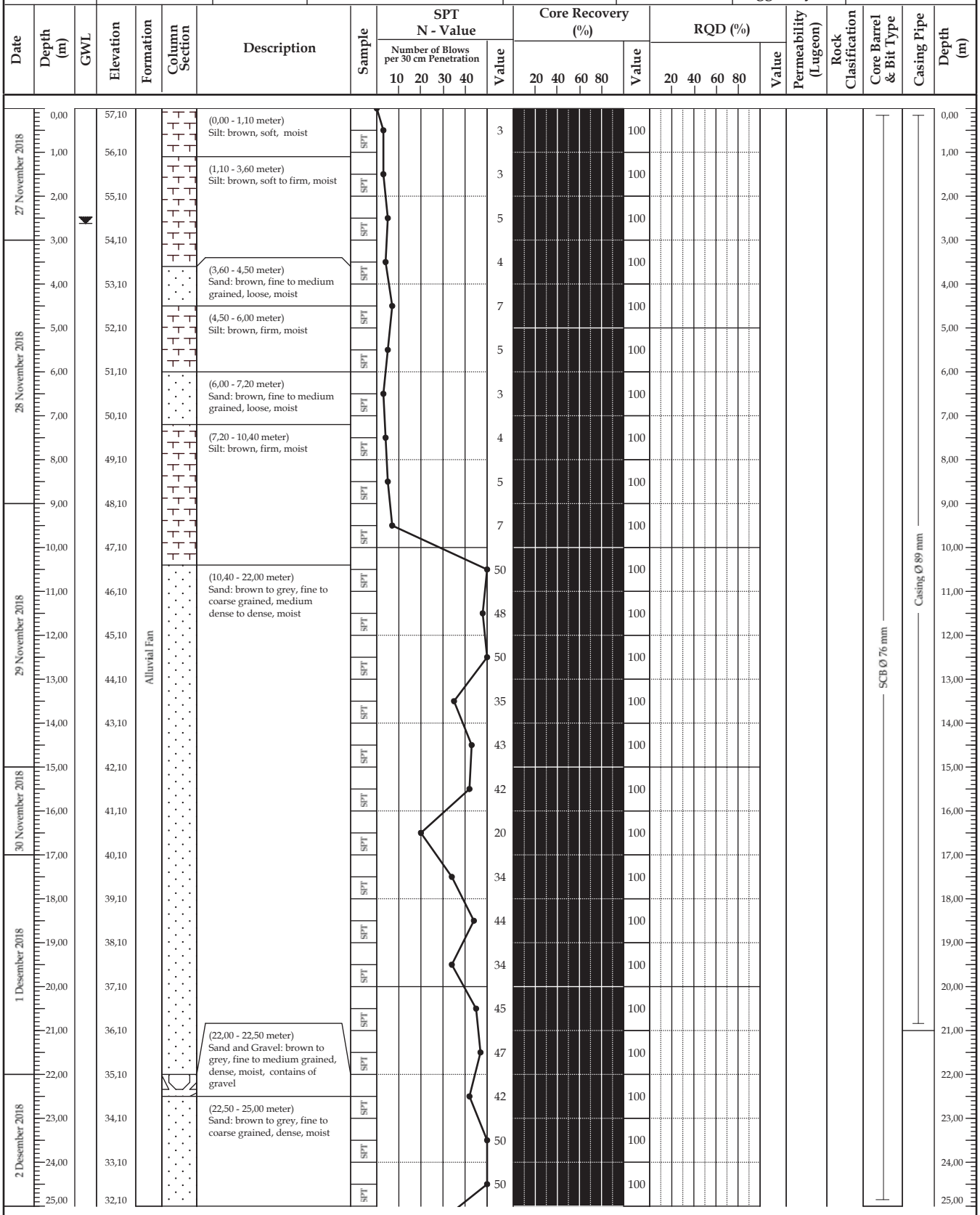
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 2

Sheet No. : 1 of 2

Project	PALU RECOVERY			Depth	32.00 meter	Drilling Rig	UD-5 TONE
Site	PETOBO	Coordinate	X : 824476 Y : 9895840	Inclination	Vertical	Drilled By	Irpa
Elevation	57,10 meter	Date	27 Nov 18 to 3 Dec 18	GWL	-2.62 meter	Logged By	Windi



Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 2

Sheet No. : 2 of 2

Project	PALU RECOVERY			Depth	32.00 meter	Drilling Rig	UD-5 TONE
Site	PETOBO	Coordinate	X : 824476 Y : 9895840	Inclination	Vertical	Drilled By	Irpa
Elevation	57,10 meter	Date	27 Nov 18 to 3 Dec 18	GWL	-2.62 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
2 Desember 2018	26,00		31,10	Alluvial Fan		(25,00 - 26,30 meter) Silt: brown, hard, moist	SPT	10 20 30 40	25	20 40 60 80	100	20 40 60 80				5CB Ø 76 mm		26,00
	27,00		30,10			(26,30 - 27,30 meter) Sand: grey, fine grained, dense, moist	SPT		50		100							27,00
	28,00		29,10			(27,30 - 29,10 meter) Silt: brown, hard, moist	SPT		50		100							28,00
	29,00		28,10				SPT		42		100							29,00
3 Desember 2018	30,00		27,10			(29,10 - 32,00 meter) Sand: grey, fine grained, dense, moist	SPT		81		100							30,00
	31,00		26,10				SPT		90		100							31,00
	32,00		25,10				SPT		98		100							32,00
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Depth Scale : 1:125

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 3

Sheet No. : 1 of 2

Project	P9 LU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-+ TONE
Site	PETOBO	Coordinate	X : 824476 Y : , 8, +840	Inclination	Vertical	Drilled By	Miswanto
Elevation	34.40 meter	Date	26 Nov 18 to 1 Dec 18	GWL	5.20 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
26 November 2018	0,00		34,40	Alluvial Fan		(0,00 - 0,20 meter) Topsoil: brown, find to coarse sand, contains of gravel and boulder	SPT	10 20 30 40	6	20 40 60 80	100	20 40 60 80	-			SCB Ø 76 mm	Casing Ø 89 mm	0,00
	1,00		33,40			(0,20 - 5,10 meter) Silt: brown, firm to hard, moist, contains of gravel	SPT		6		100		-					1,00
	2,00		32,40				SPT		15		100		-					2,00
	3,00		31,40				SPT		27		100		-					3,00
	4,00		30,40			(5,10 - 5,50 meter) Sand: brown, find to coarse sand, dense, moist, contains of gravel	SPT		34		100		-					4,00
27 November 2018	5,00		29,40				SPT		34		100		-					5,00
	6,00		28,40			(5,50 - 8,00 meter) Silt: brown, hard, moist	SPT		33		100		-					6,00
	7,00		27,40				SPT		36		100		-					7,00
	8,00		26,40			(8,00 - 16,50 meter) Sand: brown to light brown, find to coarse sand,dense to very dense, moist, contains of gravel	SPT		65		100		-					8,00
	9,00		25,40				SPT		64		100		-					9,00
	10,00		24,40				SPT		65		100		-					10,00
	11,00		23,40				SPT		66		100		-					11,00
	12,00		22,40				SPT		67		100		-					12,00
	13,00		21,40				SPT				100		-					13,00
	14,00		20,40								100		-					14,00
	15,00		19,40				SPT		34		100		-					15,00
	16,00		18,40				SPT		36		100		-					16,00
	17,00		17,40			(16,50 - 19,00 meter) Silt: brown, hard, moist	SPT		36		100		-					17,00
	18,00		16,40				SPT		34		100		-					18,00
	19,00		15,40			(19,00 - 19,50 meter) Sand: brown, find sand, dense, moist	SPT		35		100		-					19,00
	20,00		14,40			(19,50 - 20,00 meter) Silt: brown, hard, moist	SPT		40		100		-					20,00
	21,00		13,40			(20,00 - 25,00 meter) Sand: grey, find to medium sand, medium dense, moist, contains of gravel	SPT		33		100		-					21,00
	22,00		12,40				SPT		32		100		-					22,00
	23,00		11,40				SPT		35		100		-					23,00
30 November 2018	24,00		10,40				SPT		33		100		-					24,00
	25,00		9,40				SPT		34		100		-					25,00

Depth Scale : 1:12+

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 3

Sheet No. : 2 of 2

Project	P9 LU RECOVERY			**Depth**	30.00 meter	**Drilling Rig**	UD-+ TONE
Site	PETOBO	**Coordinate**	X : 824476 Y : , 8, +840	**Inclination**	Vertical	**Drilled By**	Miswanto
Elevation	34.40 meter	**Date**	26 Nov 18 to 1 Dec 18	**GWL**	50.20 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
30 November 2018	26,00		8,40	Alluvian Fan		(25,00 - 30,00 meter) Sand: grey, find to medium sand, medium dense, moist, contains of gravel	SPT		32		100		-				Casing Ø 89 mm	26,00
	27,00		7,40				SPT		34		100		-					27,00
1 Desember 2018	28,00		6,40				SPT		34		100		-			SCB Ø 76 mm		28,00
	29,00		5,40				SPT		37		100		-					29,00
	30,00		4,40				SPT		31		100		-					30,00
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Depth Scale : 1:12+

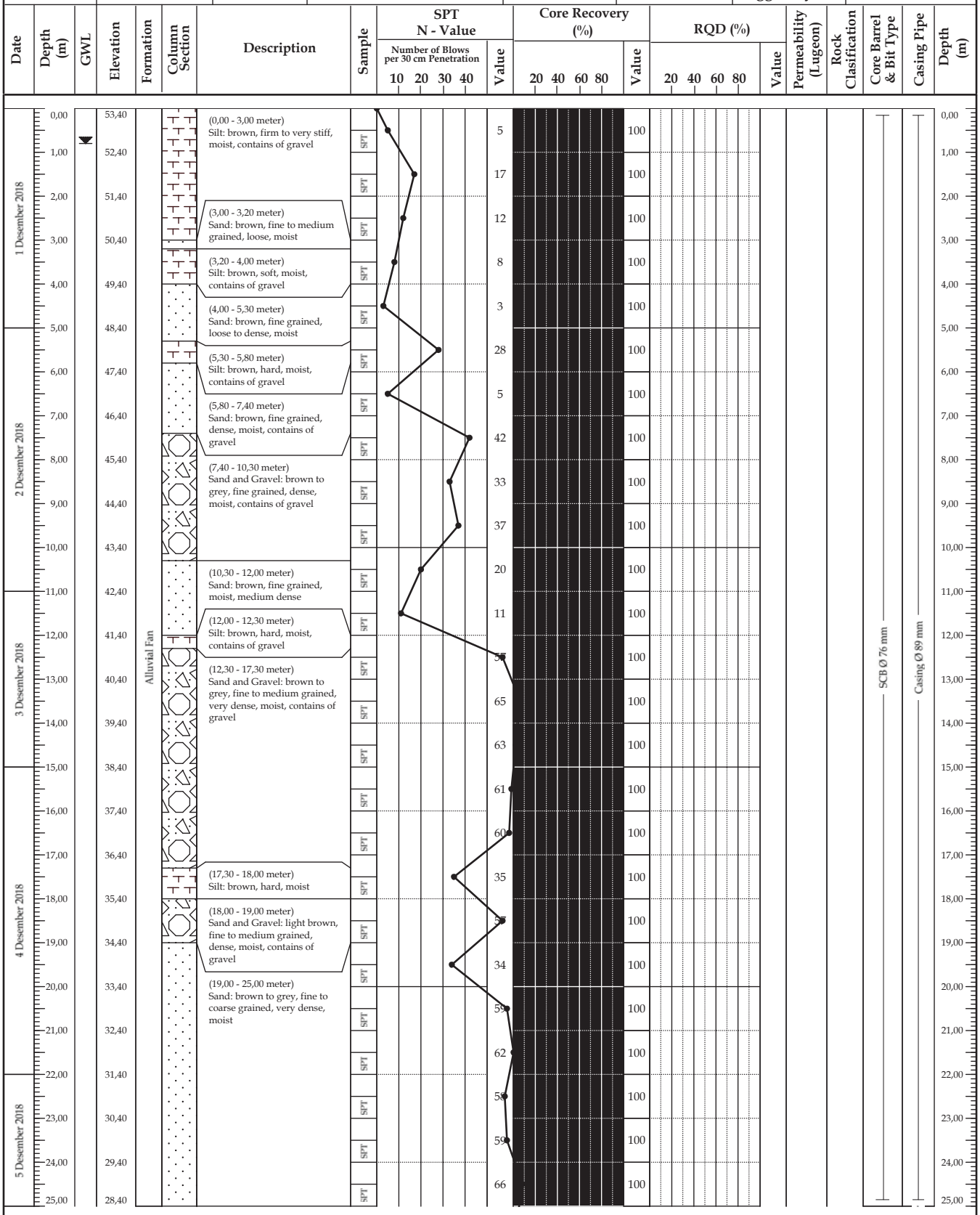
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 4

Sheet No. : 1 of 2

Project	P7 LU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-ATONE
Site	PETOBO	Coordinate	X : 824246 Y : 98963, 0	Inclination	Vertical	Drilled By	Miswanto
Elevation	53,40 meter	Date	1 Des 18 to ADes 18	GWL	-0.80 meter	Logged By	Windi



Depth Scale : 1:12A

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 4

Sheet No. : 2 of 2

Project	P7 LU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-ATONE
Site	PETOBO	Coordinate	X : 824246	Y : 98963, 0	Inclination	Vertical	Drilled By	Miswanto
Elevation	A3540 meter	Date	1 Des 18 to ADes 18		GWL	-0.80 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%): 20 40 60 80	Value	RQD (%): 20 40 60 80	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
5 Desember 2018	26,00		27,40	Alluvial Fan		(25,00 - 30,00 meter) Sand: brown to grey, fine to coarse grained, very dense, moist	SPT		63		100						26,00
	27,00		26,40				SPT		66		100						27,00
	28,00		25,40				SPT		66		100				SCB Ø 76 mm		28,00
	29,00		24,40				SPT		63		100						29,00
	30,00		23,40				SPT		64		100					Casir	30,00
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Depth Scale : 1:12A

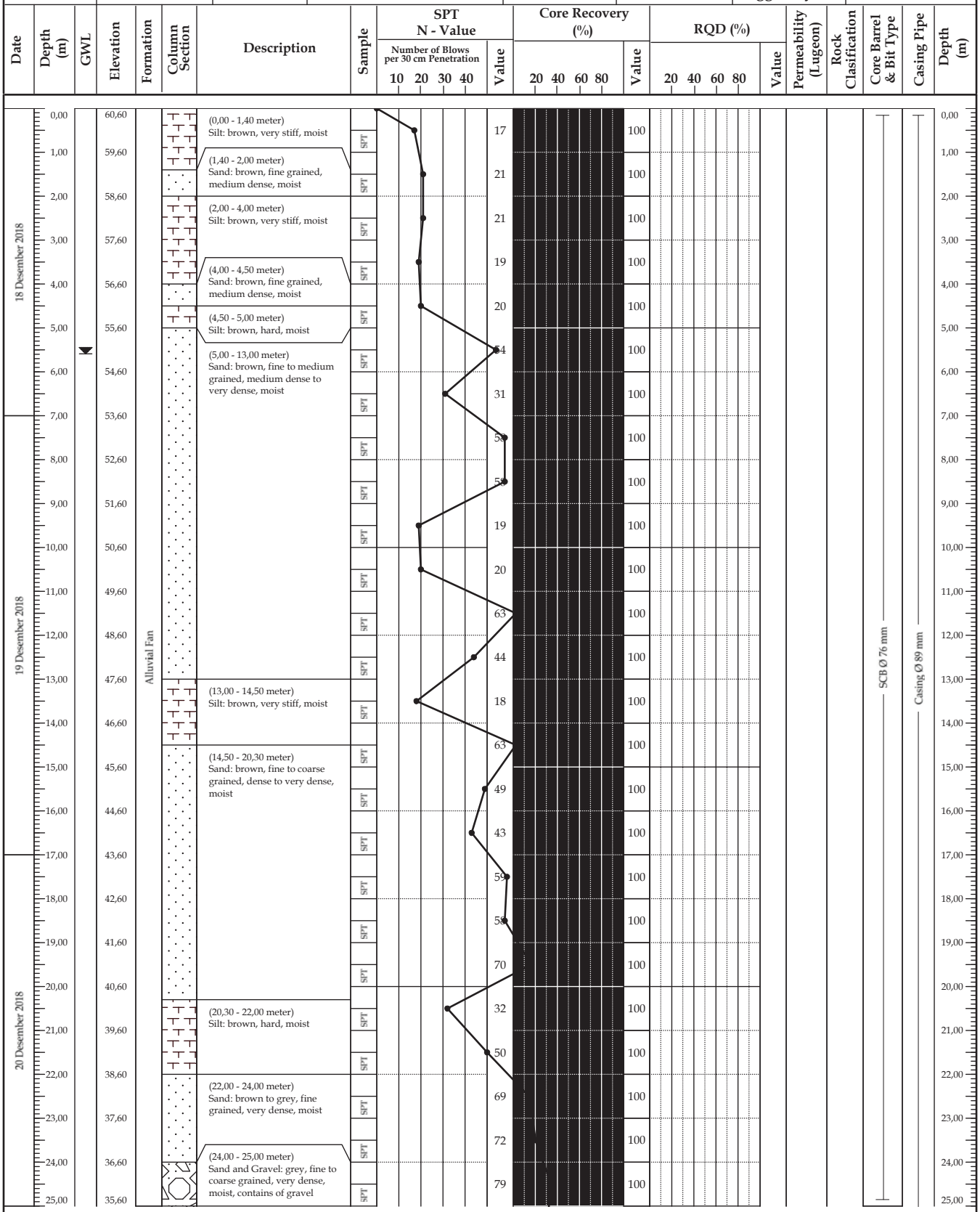
*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - ,

Sheet No. : 1 of 2

Project	P5 LU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-, TONE
Site	PETOBO	Coordinate	X : 823672 Y : 7879486	Inclination	Vertical	Drilled By	Miswanto
Elevation	60.60 meter	Date	18 Dec 18 to 21 Dec 18	GWL	-, ., 7 meter	Logged By	Windi



Depth Scale : 1:12,

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - ,

Sheet No. : 2 of 2

Project	P5 LU RECOVERY			Depth	30.00 meter	Drilling Rig	UD-, TONE
Site	PETOBO	Coordinate	X : 823672	Y : 7879486	Inclination	Vertical	Drilled By	Miswanto
Elevation	60.60 meter	Date	18 Dec 18 to 21 Dec 18		GWL	-, ., 7 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
21 Desember 2018	26,00		34,60	Alluvial Fan		(25,00 - 30,00 meter) Sand and Gravel: grey, fine to coarse grained, very dense, moist, contains of gravel	SPT	10 20 30 40	77	20 40 60 80	100	20 40 60 80				SCB Ø 76 mm		26,00
	27,00		33,60				SPT		60		100							27,00
	28,00		32,60				SPT		58		100							28,00
	29,00		31,60				SPT		67		100							29,00
	30,00		30,60				SPT		73		100							30,00
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Depth Scale : 1:12,

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 6

Sheet No. : 1 of 2

Project	P9 LU RECOVERY			Depth	2, .00 meter	Drilling Rig	UD-7 TONE
Site	PETOBO	Coordinate	X : 823A03 Y : A8AA203	Inclination	Vertical	Drilled By	Miswanto
Elevation	A6570 meter	Date	, -Des-18 to 16-Des-18	GWL	-1AA8 meter	Logged By	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration)	Value	Core Recovery (%)	Value	RQD (%)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
7 Desember 2018	0,00		96,50	Alluvial Fan		(0,00 - 6,30 meter) Sand: brown to light grey, fine to coarse grained, medium dense to very dense, moist	SPT		29		100							0,00
	1,00		95,50				SPT		36		100							1,00
	2,00		94,50				SPT		60		100							2,00
	3,00		93,50				SPT		62		100							3,00
8 Desember 2018	4,00		92,50				SPT		64		100							4,00
	5,00		91,50				SPT		60		100							5,00
	6,00		90,50				SPT				100							6,00
	7,00		89,50			(6,30 - 9,40 meter) Silt: brown to light grey, very stiff, moist	SPT		27		100							7,00
	8,00		88,50				SPT		24		100							8,00
	9,00		87,50				SPT		25		100							9,00
9 Desember 2018	10,00		86,50			(9,40 - 13,00 meter) Sand: brown to light grey, fine to coarse grained, very dense, moist	SPT		62		100							10,00
	11,00		85,50				SPT		60		100							11,00
	12,00		84,50				SPT		61		100							12,00
10 Desember 2018	13,00		83,50				SPT		64		100							13,00
	14,00		82,50			(13,00 - 16,00 meter) Sand and Gravel: brown to light grey, fine to coarse grained, very dense, moist, contains of gravel and boulder (13,0-13,45 m and 15,0-16,0 m)	SPT		59		100							14,00
	15,00		81,50				SPT		60		100							15,00
	16,00		80,50								100							16,00
13 Desember 2018	17,00		79,50			(16,00 - 25,00 meter) Sand: brown, fine to coarse grained, very dense, moist	SPT		63		100							17,00
	18,00		78,50				SPT		64		100							18,00
	19,00		77,50				SPT		60		100							19,00
	20,00	▼	76,50				SPT		65		100							20,00
14 Desember 2018	21,00		75,50				SPT		66		100							21,00
	22,00		74,50				SPT		66		100							22,00
15 Desember 2018	23,00		73,50				SPT		69		100							23,00
	24,00		72,50				SPT		67		100							24,00
	25,00		71,50				SPT		68		100							25,00

SCB Ø 76 mm

Casing Ø 89 mm

Depth Scale : 1:127

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DRILL LOG

Hole No : LP - 6

Sheet No. : 2 of 2

Project	P9 LU RECOVERY			**Depth**	2, .00 meter	**Drilling Rig**	UD-7 TONE
Site	PETOBO	**Coordinate**	X : 823A03 Y : A8AA203	**Inclination**	Vertical	**Drilled By**	Miswanto
Elevation	A6570 meter	**Date**	, -Des-18 to 16-Des-18	**GWL**	-1AA8 meter	**Logged By**	Windi

Date	Depth (m)	GWL	Elevation	Formation	Column Section	Description	Sample	SPT N - Value (Number of Blows per 30 cm Penetration: 10 20 30 40)	Value	Core Recovery (%) (20 40 60 80)	Value	RQD (%) (20 40 60 80)	Value	Permeability (Lugeon)	Rock Clasification	Core Barrel & Bit Type	Casing Pipe	Depth (m)
16 Desember 2018	26,00		70,50	Alluvial Fan		(25,00 - 27,00 meter) Sand: brown, fine to coarse grained, very dense, moist	SPT		69		100					SCB Ø 76 mm		26,00
	27,00		69,50				SPT		69		100							27,00
	28,00																	28,00
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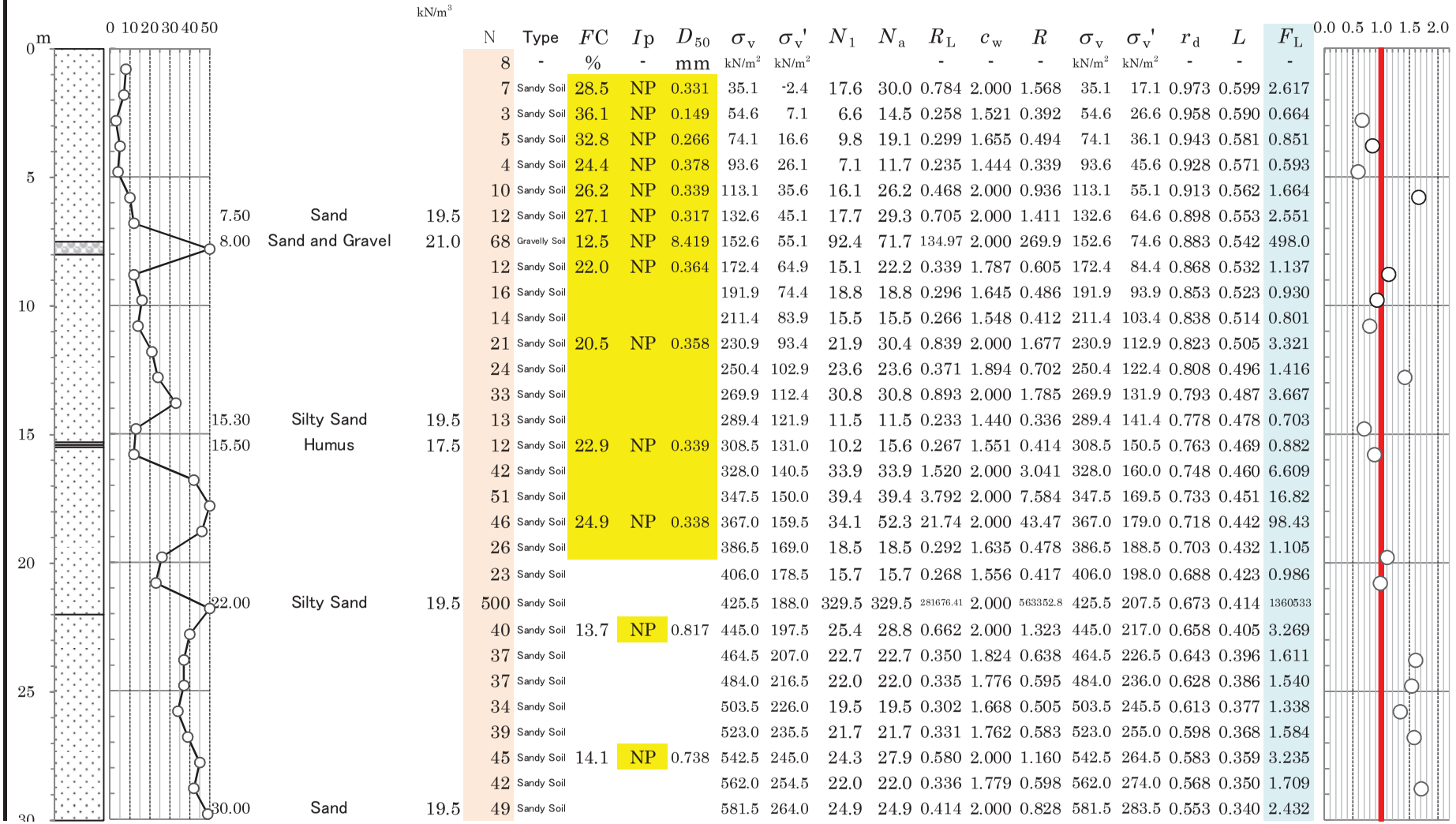
Depth Scale : 1:127

*SCB=Single Core Barrel *UDS=Undisturb Sample *DS=Disturb Sampe *SPT=Standart Penetration Test

DATA SHEET

FL CALCULATION SHEET

No.	1	Name	B-1	GWL inves		Location	Baraloa	LNG;	0816138 m E	LAT;	9899701 m S	Standard Depth for "sv"
Hight of Hole Mouth	40.40m	Total Advance	30.00m	Ground Water Level	-1.95m	Ground Hight	40.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2	0.00m

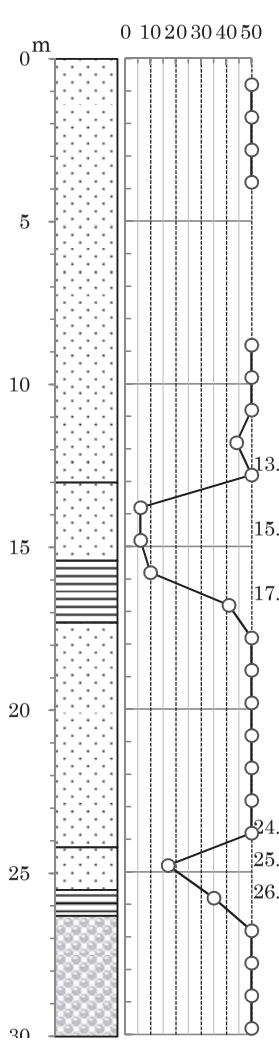


Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	9.48		
m					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	W	F_L	ΔP_L
0			8	-																9.60	1.000	0.000
			7	Sandy Soil	28.5	NP	0.331	35.1	-2.4	17.6	30.0	0.784	2.000	1.568	35.1	17.1	0.973	0.599	2.617	9.10	1.000	0.000
			3	Sandy Soil	36.1	NP	0.149	54.6	7.1	6.6	14.5	0.258	1.521	0.392	54.6	26.6	0.958	0.590	0.664	8.60	0.664	2.887
			5	Sandy Soil	32.8	NP	0.266	74.1	16.6	9.8	19.1	0.299	1.655	0.494	74.1	36.1	0.943	0.581	0.851	8.10	0.851	1.207
5			4	Sandy Soil	24.4	NP	0.378	93.6	26.1	7.1	11.7	0.235	1.444	0.339	93.6	45.6	0.928	0.571	0.593	7.60	0.593	3.097
			10	Sandy Soil	26.2	NP	0.339	113.1	35.6	16.1	26.2	0.468	2.000	0.936	113.1	55.1	0.913	0.562	1.664	7.10	1.000	0.000
	7.50 Sand	19.5	12	Sandy Soil	27.1	NP	0.317	132.6	45.1	17.7	29.3	0.705	2.000	1.411	132.6	64.6	0.898	0.553	2.551	6.60	1.000	0.000
	8.00 Sand and Gravel	21.0	68	Gravelly Soil	12.5	NP	8.419	152.6	55.1	92.4	71.7	134.97	2.000	269.9	152.6	74.6	0.883	0.542	498.0	6.10	1.000	0.000
			12	Sandy Soil	22.0	NP	0.364	172.4	64.9	15.1	22.2	0.339	1.787	0.605	172.4	84.4	0.868	0.532	1.137	5.60	1.000	0.000
10			16	Sandy Soil				191.9	74.4	18.8	18.8	0.296	1.645	0.486	191.9	93.9	0.853	0.523	0.930	5.10	0.930	0.358
			14	Sandy Soil				211.4	83.9	15.5	15.5	0.266	1.548	0.412	211.4	103.4	0.838	0.514	0.801	4.60	0.801	0.915
			21	Sandy Soil	20.5	NP	0.358	230.9	93.4	21.9	30.4	0.839	2.000	1.677	230.9	112.9	0.823	0.505	3.321	4.10	1.000	0.000
			24	Sandy Soil				250.4	102.9	23.6	23.6	0.371	1.894	0.702	250.4	122.4	0.808	0.496	1.416	3.60	1.000	0.000
			33	Sandy Soil				269.9	112.4	30.8	30.8	0.893	2.000	1.785	269.9	131.9	0.793	0.487	3.667	3.10	1.000	0.000
	15.30 Silty Sand	19.5	13	Sandy Soil				289.4	121.9	11.5	11.5	0.233	1.440	0.336	289.4	141.4	0.778	0.478	0.703	2.60	0.703	0.772
15	15.50 Humus	17.5	12	Sandy Soil	22.9	NP	0.339	308.5	131.0	10.2	15.6	0.267	1.551	0.414	308.5	150.5	0.763	0.469	0.882	2.10	0.882	0.248
			42	Sandy Soil				328.0	140.5	33.9	33.9	1.520	2.000	3.041	328.0	160.0	0.748	0.460	6.609	1.60	1.000	0.000
			51	Sandy Soil				347.5	150.0	39.4	39.4	3.792	2.000	7.584	347.5	169.5	0.733	0.451	16.82	1.10	1.000	0.000
			46	Sandy Soil	24.9	NP	0.338	367.0	159.5	34.1	52.3	21.74	2.000	43.47	367.0	179.0	0.718	0.442	98.43	0.60	1.000	0.000
			26	Sandy Soil				386.5	169.0	18.5	18.5	0.292	1.635	0.478	386.5	188.5	0.703	0.432	1.105	0.10	1.000	0.000
20			23	Sandy Soil				406.0	178.5	15.7	15.7	0.268	1.556	0.417	406.0	198.0	0.688	0.423	0.986		0.986	
	22.00 Silty Sand	19.5	500	Sandy Soil				425.5	188.0	329.5	329.5	281676.41	2.000	563352.8	425.5	207.5	0.673	0.414	1360533		1.000	
			40	Sandy Soil	13.7	NP	0.817	445.0	197.5	25.4	28.8	0.662	2.000	1.323	445.0	217.0	0.658	0.405	3.269		1.000	
			37	Sandy Soil				464.5	207.0	22.7	22.7	0.350	1.824	0.638	464.5	226.5	0.643	0.396	1.611		1.000	
25			37	Sandy Soil				484.0	216.5	22.0	22.0	0.335	1.776	0.595	484.0	236.0	0.628	0.386	1.540		1.000	
			34	Sandy Soil				503.5	226.0	19.5	19.5	0.302	1.668	0.505	503.5	245.5	0.613	0.377	1.338		1.000	
			39	Sandy Soil				523.0	235.5	21.7	21.7	0.331	1.762	0.583	523.0	255.0	0.598	0.368	1.584		1.000	
			45	Sandy Soil	14.1	NP	0.738	542.5	245.0	24.3	27.9	0.580	2.000	1.160	542.5	264.5	0.583	0.359	3.235		1.000	
			42	Sandy Soil				562.0	254.5	22.0	22.0	0.336	1.779	0.598	562.0	274.0	0.568	0.350	1.709		1.000	
30	30.00 Sand	19.5	49	Sandy Soil				581.5	264.0	24.9	24.9	0.414	2.000	0.828	581.5	283.5	0.553	0.340	2.432		1.000	

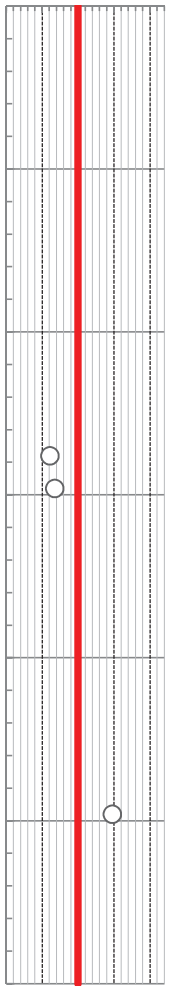
No.	1	Name	B-2			Location	Baraloa	LNG;	0816296 m E	LAT;	9899931 m S	Standard Depth for "sv"
Hight of Hole Mouth	35.40m	Total Advance	30.00m	Ground Water Level	2.10m	Ground Hight	35.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2	0.00m

Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)							P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	12.30		
m	0 10 20 30 40 50		500	-	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0			500	Gravelly Soil			2.000	37.8	19.8	946.5	946.5	369252186.57	2.000	73904373.1	37.8	19.8	0.973	-	-		9.60	1.000	0.000
	3.10 Dbris (Silty Gravel)	21.0	500	Gravelly Soil			2.000	58.8	30.8	843.3	843.3	21787832.85	2.000	4357665.7	58.8	30.8	0.958	0.549	79420142		9.10	1.000	0.000
			6	Sandy Soil	38.6	NP	0.130	78.8	40.8	9.2	20.3	0.312	1.699	0.529	78.8	40.8	0.943	0.547	0.969		8.60	1.000	0.000
5			0	Sandy Soil				98.3	50.3	0.0	0.0	0.098	1.000	0.098	98.3	50.3	0.928	0.544	0.180		8.10	0.969	0.255
			0	Sandy Soil				117.8	59.8	0.0	0.0	0.098	1.000	0.098	117.8	59.8	0.913	0.540	0.182		7.60	0.180	6.231
	6.80 Sand	19.5	30	Sandy Soil	29.9	NP	0.308	137.3	69.3	36.6	62.6	62.66	2.000	125.3	137.3	69.3	0.898	0.534	234.7		7.10	0.182	5.811
			41	Sandy Soil	17.3	NP	0.442	156.8	78.8	46.9	58.9	43.99	2.000	87.98	156.8	78.8	0.883	0.527	166.9		6.60	1.000	0.000
			50	Sandy Soil	28.3	NP	0.333	176.3	88.3	53.7	88.0	413.31	2.000	826.6	176.3	88.3	0.868	0.520	1589		6.10	1.000	0.000
10			50	Sandy Soil	27.1	NP	0.322	195.8	97.8	50.7	81.0	263.80	2.000	527.6	195.8	97.8	0.853	0.512	1030		5.60	1.000	0.000
			50	Sandy Soil	42.8	NP	0.146	215.3	107.3	48.0	110.2	1347.71	2.000	2695.4	215.3	107.3	0.838	0.505	5342		5.10	1.000	0.000
	12.00 Gravelly Sand	19.5	49	Sandy Soil			2.000	234.8	116.8	44.6	44.6	8.218	2.000	16.44	234.8	116.8	0.823	0.496	33.11		4.60	1.000	0.000
			33	Sandy Soil	25.2	NP	0.350	254.3	126.3	28.6	44.3	7.871	2.000	15.74	254.3	126.3	0.808	0.488	32.25		4.10	1.000	0.000
			36	Sandy Soil			2.000	273.8	135.8	29.7	29.7	0.759	2.000	1.518	273.8	135.8	0.793	0.480	3.165		3.60	1.000	0.000
			500	Sandy Soil			2.000	293.3	145.3	394.9	394.9	657229.75	2.000	1314459.5	293.3	145.3	0.778	0.471	2789488		3.10	1.000	0.000
15			65	Sandy Soil	43.2	5.0	0.167	312.8	154.8	49.2	114.4	1631.87	2.000	3263.7	312.8	154.8	0.763	0.463	7055		2.60	1.000	0.000
			74	Sandy Soil			2.000	332.3	164.3	53.7	53.7	25.55	2.000	51.10	332.3	164.3	0.748	0.454	112.6		2.10	1.000	0.000
			50	Sandy Soil			2.000	351.8	173.8	34.9	34.9	1.787	2.000	3.573	351.8	173.8	0.733	0.445	8.027		1.60	1.000	0.000
			65	Sandy Soil	14.0	NP	0.338	371.3	183.3	43.6	49.7	16.06	2.000	32.13	371.3	183.3	0.718	0.436	73.62		1.10	1.000	0.000
			72	Sandy Soil			2.000	390.8	192.8	46.6	46.6	10.76	2.000	21.51	390.8	192.8	0.703	0.428	50.32		0.60	1.000	0.000
20			74	Sandy Soil			2.000	410.3	202.3	46.2	46.2	10.23	2.000	20.46	410.3	202.3	0.688	0.419	48.87		0.10	1.000	0.000
			71	Sandy Soil	26.4	NP	0.206	429.8	211.8	42.8	67.7	97.68	2.000	195.4	429.8	211.8	0.673	0.410	476.8			1.000	
			69	Sandy Soil			2.000	449.3	221.3	40.3	40.3	4.338	2.000	8.676	449.3	221.3	0.658	0.401	21.65			1.000	
			75	Sandy Soil			2.000	468.8	230.8	42.4	42.4	5.982	2.000	11.96	468.8	230.8	0.643	0.392	30.53			1.000	
	25.00 Silty Gravelly Sand	19.5	75	Sandy Soil			2.000	488.3	240.3	41.1	41.1	4.923	2.000	9.846	488.3	240.3	0.628	0.383	25.72			1.000	
25			69	Sandy Soil			2.000	507.8	249.8	36.7	36.7	2.428	2.000	4.856	507.8	249.8	0.613	0.374	12.99			1.000	
			72	Sandy Soil				527.3	259.3	37.2	37.2	2.634	2.000	5.269	527.3	259.3	0.598	0.365	14.44			1.000	
			69	Sandy Soil	23.9	NP	0.392	546.8	268.8	34.6	51.8	20.66	2.000	41.33	546.8	268.8	0.583	0.356	116.1			1.000	
			74	Sandy Soil				566.3	278.3	36.1	36.1	2.209	2.000	4.419	566.3	278.3	0.568	0.347	12.74			1.000	
30	30.00 Gravelly Sand	19.5	75	Sandy Soil				585.8	287.8	35.6	35.6	2.036	2.000	4.072	585.8	287.8	0.553	0.338	12.06			1.000	

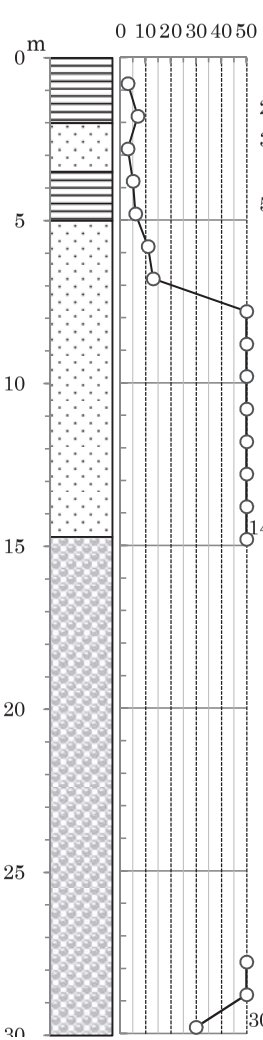
No.	1	Name	B-3			Location	Baraloa	LNG;	0816347 m E	LAT;	9900455 m S	Standard Depth for "sv"
Hight of Hole Mouth	22.40m	Total Advance	30.00m	Ground Water Level	-0.30m	Ground Hight	22.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2	0.00m



Depth	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)									P_L 2.06		
	kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
		150	-	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	9.60	1.000	0.000
		150	Sandy Soil	22.7	NP	0.571	35.1	14.1	303.2	432.7	1006285.05	2.000	2012570.1	35.1	17.1	0.973	0.599	3358968	9.10	1.000	0.000
		150	Sandy Soil	21.2	NP	0.726	54.6	23.6	272.4	375.1	517238.21	2.000	1034476.4	54.6	26.6	0.958	0.590	1753569	8.60	1.000	0.000
		500	Sandy Soil	21.3	NP	1.505	74.1	33.1	824.4	1136.1	84952968.25	2.000	169905936.5	74.1	36.1	0.943	0.581	292593450	8.10	1.000	0.000
			Sandy Soil	17.3	NP	1.064	93.6	42.6	-	-	-	-	-	93.6	45.6	0.928	-	-	7.60	1.000	0.000
			Sandy Soil				113.1	52.1	-	-	-	-	-	113.1	55.1	0.913	-	-	7.10	1.000	0.000
			Sandy Soil				132.6	61.6	-	-	-	-	-	132.6	64.6	0.898	-	-	6.60	1.000	0.000
			Sandy Soil				152.1	71.1	-	-	-	-	-	152.1	74.1	0.883	-	-	6.10	1.000	0.000
		61	Sandy Soil			2.000	171.6	80.6	68.9	68.9	107.89	2.000	215.8	171.6	83.6	0.868	0.535	403.7	5.60	1.000	0.000
		56	Sandy Soil			2.000	191.1	90.1	59.5	59.5	46.61	2.000	93.22	191.1	93.1	0.853	0.525	177.5	5.10	1.000	0.000
		150	Sandy Soil			2.000	210.6	99.6	150.4	150.4	6459.19	2.000	12918.4	210.6	102.6	0.838	0.516	25034	4.60	1.000	0.000
		44	Sandy Soil	27.0	NP	0.668	230.1	109.1	41.8	66.8	90.86	2.000	181.7	230.1	112.1	0.823	0.507	358.6	4.10	1.000	0.000
	19.5	150	Sandy Soil			2.000	249.6	118.6	135.2	135.2	3802.60	2.000	7605.2	249.6	121.6	0.808	0.498	15285	3.60	1.000	0.000
		6	Sandy Soil	26.9	NP	0.476	269.1	128.1	5.1	9.5	0.215	1.381	0.297	269.1	131.1	0.793	0.488	0.609	3.10	0.609	1.213
	19.5	6	Sandy Soil	34.1	NP	0.249	288.6	137.6	4.9	10.8	0.228	1.421	0.323	288.6	140.6	0.778	0.479	0.675	2.60	0.675	0.846
		10	-			2.000	307.3	146.3	7.9	-	-	-	-	307.3	149.3	0.763	0.471	-	2.10	1.000	0.000
	17.5	41	-				324.8	153.8	31.1	-	-	-	-	324.8	156.8	0.748	0.465	-	1.60	1.000	0.000
		150	Sandy Soil			2.000	343.3	162.3	109.8	109.8	1318.03	2.000	2636.1	343.3	165.3	0.733	0.457	5772	1.10	1.000	0.000
		150	Sandy Soil			2.000	362.8	171.8	105.5	105.5	1071.33	2.000	2142.7	362.8	174.8	0.718	0.447	4793	0.60	1.000	0.000
		150	Sandy Soil			2.000	382.3	181.3	101.5	101.5	876.75	2.000	1753.5	382.3	184.3	0.703	0.437	4008	0.10	1.000	0.000
		300	Sandy Soil			2.000	401.8	190.8	195.6	195.6	23423.07	2.000	46846.1	401.8	193.8	0.688	0.428	109473		1.000	
		120	Sandy Soil			2.000	421.3	200.3	75.5	75.5	179.71	2.000	359.4	421.3	203.3	0.673	0.418	859.1		1.000	
		115	Sandy Soil			2.000	440.8	209.8	69.9	69.9	117.10	2.000	234.2	440.8	212.8	0.658	0.409	572.8		1.000	
	19.5	120	Sandy Soil			2.000	460.3	219.3	70.5	70.5	123.27	2.000	246.5	460.3	222.3	0.643	0.399	617.2		1.000	
	19.5	17	Sandy Soil	39.3	NP	0.186	479.8	228.8	9.7	21.5	0.328	1.752	0.575	479.8	231.8	0.628	0.390	1.474		1.000	
	17.5	35	-	57.9	6.7	0.048	498.7	237.7	19.3	-	-	-	-	498.7	240.7	0.613	0.381	-		1.000	
		100	Gravelly Soil			2.000	516.2	245.2	53.9	53.9	26.21	2.000	52.42	516.2	248.2	0.598	0.373	140.5		1.000	
		150	Gravelly Soil			2.000	533.7	252.7	79.0	79.0	231.20	2.000	462.4	533.7	255.7	0.583	0.365	1267		1.000	
		300	Gravelly Soil			2.000	551.2	260.2	154.5	154.5	7379.77	2.000	14759.5	551.2	263.2	0.568	0.357	41360		1.000	
		200	Gravelly Soil			2.000	568.7	267.7	100.7	100.7	841.65	2.000	1683.3	568.7	270.7	0.553	0.349	4830		1.000	



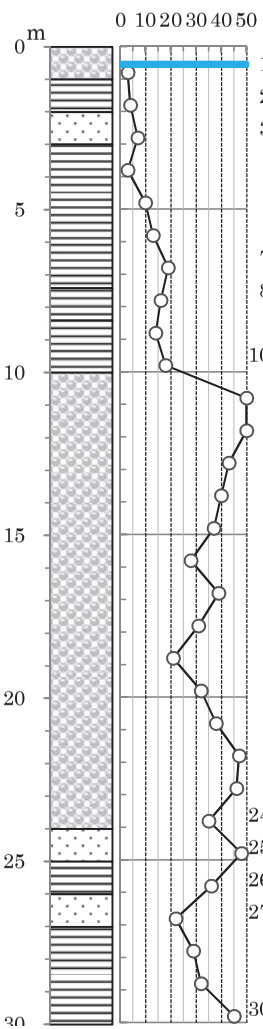
No.	1	Name	B-4			Location	Baraloa			LNG;	0816423 m E	LAT;	9899102 m S	Standard Depth for "sv"
Hight of Hole Mouth	32.80m	Total Advance	30.00m	Ground Water Level	-0.60m	Ground Hight	32.80m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

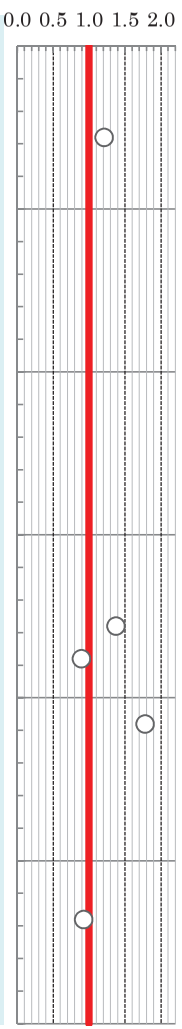


Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L		4.07	
						%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
				3	-																9.60	1.000	0.000
	2.00	Sandy Silt	17.5	7	-	50.9	NP	0.073	31.5	7.5	15.4	-	-	-	-	31.5	13.5	0.973	0.681	-	9.10	1.000	0.000
	3.50	Sand	19.5	3	Sandy Soil	30.8	NP	0.220	50.6	16.6	5.9	11.7	0.235	1.444	0.339	50.6	22.6	0.958	0.643	0.526	8.60	0.526	4.074
				5	-	66.9	20.2	0.029	69.5	25.5	8.9	-	-	-	-	69.5	31.5	0.943	0.624	-	8.10	1.000	0.000
	5.00	Sandy Silt	17.5	6	-	58.5	18.7	0.049	87.0	33.0	9.9	-	-	-	-	87.0	39.0	0.928	0.621	-	7.60	1.000	0.000
				11	Sandy Soil	48.8	7.1	0.080	106.1	42.1	16.7	49.8	16.27	2.000	32.53	106.1	48.1	0.913	0.604	53.84	7.10	1.000	0.000
				13	Sandy Soil	48.3	6.9	0.082	125.6	51.6	18.2	53.1	23.80	2.000	47.61	125.6	57.6	0.898	0.587	81.04	6.60	1.000	0.000
				141	Sandy Soil				145.1	61.1	182.8	182.8	16894.83	2.000	33789.7	145.1	67.1	0.883	0.573	58987	6.10	1.000	0.000
				90	Sandy Soil	25.1	NP	0.502	164.6	70.6	108.8	164.9	10196.36	2.000	20392.7	164.6	76.6	0.868	0.560	36445	5.60	1.000	0.000
				61	Sandy Soil				184.1	80.1	69.1	69.1	109.92	2.000	219.8	184.1	86.1	0.853	0.547	401.8	5.10	1.000	0.000
				50	Sandy Soil	14.7	NP	0.633	203.6	89.6	53.3	62.0	59.21	2.000	118.4	203.6	95.6	0.838	0.535	221.2	4.60	1.000	0.000
				69	Sandy Soil				223.1	99.1	69.4	69.4	112.44	2.000	224.9	223.1	105.1	0.823	0.524	429.1	4.10	1.000	0.000
				84	Sandy Soil	23.6	NP	0.319	242.6	108.6	80.0	117.4	1859.82	2.000	3719.6	242.6	114.6	0.808	0.513	7249	3.60	1.000	0.000
				70	Sandy Soil				262.1	118.1	63.3	63.3	66.69	2.000	133.4	262.1	124.1	0.793	0.502	265.4	3.10	1.000	0.000
	14.70	Gravelly Sand	19.5	135	Gravelly Soil	17.8	NP	0.931	281.8	127.8	116.1	129.9	3113.36	2.000	6226.7	281.8	133.8	0.778	0.492	12664	2.60	1.000	0.000
					Gravelly Soil			2.000	302.8	138.8	-	-	-	-	-	302.8	144.8	0.763	-	-	2.10	1.000	0.000
					Gravelly Soil				323.8	149.8	-	-	-	-	-	323.8	155.8	0.748	-	-	1.60	1.000	0.000
					Gravelly Soil				344.8	160.8	-	-	-	-	-	344.8	166.8	0.733	-	-	1.10	1.000	0.000
					Gravelly Soil	11.0	NP	0.623	365.8	171.8	-	-	-	-	-	365.8	177.8	0.718	-	-	0.60	1.000	0.000
					Gravelly Soil				386.8	182.8	-	-	-	-	-	386.8	188.8	0.703	-	-	0.10	1.000	0.000
					Gravelly Soil				407.8	193.8	-	-	-	-	-	407.8	199.8	0.688	-	-		1.000	
					Gravelly Soil				428.8	204.8	-	-	-	-	-	428.8	210.8	0.673	-	-		1.000	
					Gravelly Soil	32.7	NP	0.834	449.8	215.8	-	-	-	-	-	449.8	221.8	0.658	-	-		1.000	
					Gravelly Soil				470.8	226.8	-	-	-	-	-	470.8	232.8	0.643	-	-		1.000	
					Gravelly Soil				491.8	237.8	-	-	-	-	-	491.8	243.8	0.628	-	-		1.000	
					Gravelly Soil				512.8	248.8	-	-	-	-	-	512.8	254.8	0.613	-	-		1.000	
					Gravelly Soil				533.8	259.8	-	-	-	-	-	533.8	265.8	0.598	-	-		1.000	
				75	Gravelly Soil	16.9	NP	1.182	554.8	270.8	37.4	40.5	4.488	2.000	8.975	554.8	276.8	0.583	0.351	25.60		1.000	
				120	Gravelly Soil			2.000	575.8	281.8	58.0	58.0	40.28	2.000	80.55	575.8	287.8	0.568	0.341	236.3		1.000	
	30.00	Sandy Gravel	21.0	30	Gravelly Soil	19.8	NP	0.872	596.8	292.8	14.1	15.9	0.270	1.560	0.421	596.8	298.8	0.553	0.331	1.269		1.000	

No.	1	Name	B-5			Location	Baraloa	LNG;	0816912 m E	LAT;	9899918 m S	Standard Depth for "sv"
Hight of Hole Mouth	19.00m	Total Advance	30.00m	Ground Water Level	0.55m	Ground Hight	19.00m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2	0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1	Liquefaction Judgment (Value for Calcurate L)									P_L 0.06		
			kN/m³			FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50			N	Type	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-			
0		1.00 Top Soil or Back-fill	15.0	3	-																9.60	1.000	0.000
		2.00 Silt	17.5	4	-	85.4	22.8	0.008	29.0	16.5	7.9	-	-	-	-	29.0	16.5	0.973	0.513	-	9.10	1.000	0.000
		3.00 Sand	19.5	7	Sandy Soil	31.1	NP	0.229	48.1	25.6	12.4	22.9	0.354	1.839	0.652	48.1	25.6	0.958	0.540	1.207	8.60	1.000	0.000
				3	-	69.4	12.2	0.015	66.0	33.5	4.9	-	-	-	-	66.0	33.5	0.943	0.557	-	8.10	1.000	0.000
5				10	-	86.3	24.1	0.007	83.5	41.0	15.3	-	-	-	-	83.5	41.0	0.928	0.567	-	7.60	1.000	0.000
				13	-	86.4	23.6	0.008	101.0	48.5	18.6	-	-	-	-	101.0	48.5	0.913	0.570	-	7.10	1.000	0.000
		7.40 Sandy Silt	17.5	19	-	84.1	22.1	0.009	118.5	56.0	25.6	-	-	-	-	118.5	56.0	0.898	0.570	-	6.60	1.000	0.000
		8.40 Sandy Silt	17.5	16	-	68.7	12.2	0.015	136.0	63.5	20.4	-	-	-	-	136.0	63.5	0.883	0.567	-	6.10	1.000	0.000
				14	-	54.3	NP	0.020	153.5	71.0	16.9	-	-	-	-	153.5	71.0	0.868	0.563	-	5.60	1.000	0.000
		10.00 Sandy Silt	17.5	18	-	90.0	22.6	0.005	171.0	78.5	20.6	-	-	-	-	171.0	78.5	0.853	0.557	-	5.10	1.000	0.000
10				50	Gravelly Soil			2.000	191.3	88.8	53.5	53.5	25.05	2.000	50.10	191.3	88.8	0.838	0.542	92.50	4.60	1.000	0.000
				57	Gravelly Soil	82.8	23.5	0.010	212.3	99.8	57.1	104.8	1036.54	2.000	2073.1	212.3	99.8	0.823	0.525	3947	4.10	1.000	0.000
				43	Gravelly Soil			2.000	233.3	110.8	40.4	40.4	4.445	2.000	8.890	233.3	110.8	0.808	0.510	17.42	3.60	1.000	0.000
				40	Gravelly Soil			2.000	254.3	121.8	35.5	35.5	1.973	2.000	3.945	254.3	121.8	0.793	0.497	7.943	3.10	1.000	0.000
				37	Gravelly Soil			2.000	275.3	132.8	31.0	31.0	0.930	2.000	1.860	275.3	132.8	0.778	0.484	3.844	2.60	1.000	0.000
15				28	Gravelly Soil	38.9	NP	0.119	296.3	143.8	22.3	32.1	1.113	2.000	2.227	296.3	143.8	0.763	0.472	4.721	2.10	1.000	0.000
				39	Gravelly Soil			2.000	317.3	154.8	29.5	29.5	0.730	2.000	1.460	317.3	154.8	0.748	0.460	3.175	1.60	1.000	0.000
				31	Gravelly Soil			2.000	338.3	165.8	22.3	22.3	0.342	1.799	0.616	338.3	165.8	0.733	0.449	1.373	1.10	1.000	0.000
				21	Gravelly Soil			2.000	359.3	176.8	14.5	14.5	0.257	1.519	0.391	359.3	176.8	0.718	0.438	0.893	0.60	0.893	0.064
				32	Gravelly Soil	89.9	23.3	0.002	380.3	187.8	21.1	43.9	7.488	2.000	14.98	380.3	187.8	0.703	0.427	35.07	0.10	1.000	0.000
20				38	Gravelly Soil			2.000	401.3	198.8	24.0	24.0	0.383	1.934	0.741	401.3	198.8	0.688	0.417	1.778		1.000	
				47	Gravelly Soil			2.000	422.3	209.8	28.6	28.6	0.636	2.000	1.271	422.3	209.8	0.673	0.406	3.128		1.000	
				46	Gravelly Soil			2.000	443.3	220.8	26.9	26.9	0.509	2.000	1.019	443.3	220.8	0.658	0.396	2.571		1.000	
		24.00 Granule and Silt	21.0	35	Gravelly Soil	88.9	23.5	0.006	464.3	231.8	19.7	37.7	2.860	2.000	5.720	464.3	231.8	0.643	0.386	14.80		1.000	
		25.00 Sand	19.5	48	Sandy Soil				484.1	241.6	26.2	26.2	0.469	2.000	0.939	484.1	241.6	0.628	0.378	2.487		1.000	
25		26.00 Silt	17.5	36	-				502.0	249.5	19.2	-	-	-	-	502.0	249.5	0.613	0.370	-		1.000	
		27.00 Sand	19.5	22	Sandy Soil				521.1	258.6	11.4	11.4	0.232	1.436	0.333	521.1	258.6	0.598	0.362	0.922		0.922	
				29	-	90.1	23.4	0.005	539.0	266.5	14.7	-	-	-	-	539.0	266.5	0.583	0.354	-		1.000	
				32	-				556.5	274.0	15.8	-	-	-	-	556.5	274.0	0.568	0.346	-		1.000	
30		30.00 Silt	17.5	45	-				574.0	281.5	21.8	-	-	-	-	574.0	281.5	0.553	0.338	-		1.000	



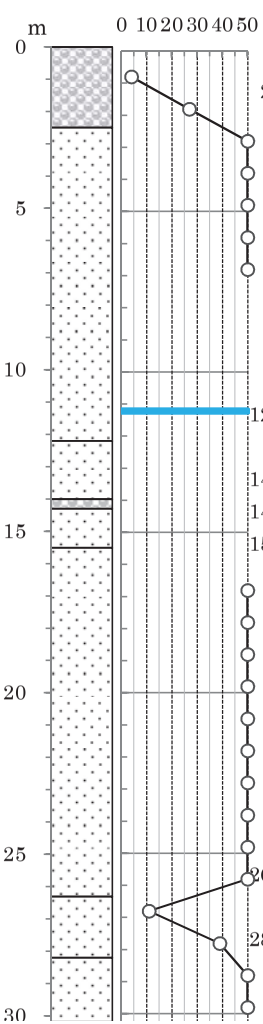


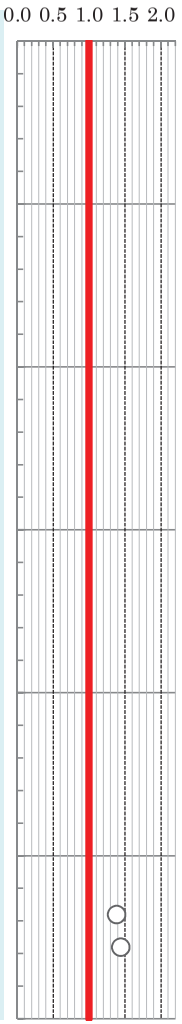
No.	1	Name	B-6			Location	Baraloa			LNG;	0816235 m E	LAT;	9897507 m S	Standard Depth for "sv"
Hight of Hole Mouth	73.80m	Total Advance	30.00m	Ground Water Level	16.91m	Ground Hight	73.80m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00		
m	0 10 20 30 40 50				%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0	1.50 Sand and Gravel	19.0	150	-																9.60	1.000	0.000
			150	Sandy Soil	27.6	NP	0.911	33.8	33.8	245.8	391.8	633727.81	2.000	1267455.6	33.8	33.8	0.973	-	-		9.10	1.000	0.000
			150	Sandy Soil	32.9	NP	0.532	51.3	51.3	210.3	373.0	503578.59	2.000	1007157.2	51.3	51.3	0.958	-	-		8.60	1.000	0.000
	4.50 Gravelly Sand	17.5	150	Sandy Soil	41.1	8.1	0.245	68.8	68.8	183.8	387.4	600710.20	2.000	1201420.4	68.8	68.8	0.943	-	-		8.10	1.000	0.000
			105	Gravelly Soil	15.9	NP	4.117	86.7	86.7	113.9	101.1	858.05	2.000	1716.1	86.7	86.7	0.928	-	-		7.60	1.000	0.000
5			75	Gravelly Soil	14.3	NP	5.179	105.7	105.7	72.6	61.8	58.13	2.000	116.3	105.7	105.7	0.913	-	-		7.10	1.000	0.000
	7.50 Sand and Gravel	19.0	54	Gravelly Soil	26.4	NP	1.891	124.7	124.7	47.1	47.6	12.23	2.000	24.46	124.7	124.7	0.898	-	-		6.60	1.000	0.000
	8.00 Sandy Silt	15.5	14	-	65.1	19.5	0.007	142.7	142.7	11.2	-	-	-	-	142.7	142.7	0.883	-	-		6.10	1.000	0.000
			150	Gravelly Soil	26.3	NP	1.890	161.0	161.0	110.4	111.4	1421.36	2.000	2842.7	161.0	161.0	0.868	-	-		5.60	1.000	0.000
			28	Gravelly Soil			2.000	180.0	180.0	19.0	19.0	0.298	1.652	0.491	180.0	180.0	0.853	-	-		5.10	1.000	0.000
10	11.50 Sand and Gravel	19.0	150	Gravelly Soil			2.000	199.0	199.0	94.8	94.8	614.12	2.000	1228.2	199.0	199.0	0.838	-	-		4.60	1.000	0.000
			53	Sandy Soil	16.9	NP	1.407	217.5	217.5	31.3	39.1	3.630	2.000	7.260	217.5	217.5	0.823	-	-		4.10	1.000	0.000
			51	Sandy Soil			2.000	235.0	235.0	28.4	28.4	0.624	2.000	1.248	235.0	235.0	0.808	-	-		3.60	1.000	0.000
			150	Sandy Soil			2.000	252.5	252.5	79.1	79.1	231.98	2.000	464.0	252.5	252.5	0.793	-	-		3.10	1.000	0.000
			61	Sandy Soil			2.000	270.0	270.0	30.5	30.5	0.855	2.000	1.711	270.0	270.0	0.778	-	-		2.60	1.000	0.000
15			50	Sandy Soil	39.2	NP	0.120	287.5	287.5	23.8	49.4	15.34	2.000	30.68	287.5	287.5	0.763	-	-		2.10	1.000	0.000
			68	Sandy Soil			2.000	305.0	305.0	30.8	30.8	0.902	2.000	1.803	305.0	305.0	0.748	-	-		1.60	1.000	0.000
			72	Sandy Soil			2.000	322.5	313.6	31.9	31.9	1.079	2.000	2.157	322.5	313.6	0.733	0.226	9.538		1.10	1.000	0.000
			85	Sandy Soil			2.000	340.0	321.1	36.9	36.9	2.536	2.000	5.073	340.0	321.1	0.718	0.228	22.24		0.60	1.000	0.000
			17	Sandy Soil			2.000	357.5	328.6	7.3	7.3	0.194	1.312	0.255	357.5	328.6	0.703	0.229	1.112		0.10	1.000	0.000
20			52	Sandy Soil			2.000	375.0	336.1	21.8	21.8	0.332	1.765	0.586	375.0	336.1	0.688	0.230	2.544			1.000	
			51	Sandy Soil	17.1	NP	1.391	392.5	343.6	21.0	26.5	0.487	2.000	0.973	392.5	343.6	0.673	0.231	4.219			1.000	
			41	Sandy Soil			2.000	410.0	351.1	16.6	16.6	0.275	1.579	0.435	410.0	351.1	0.658	0.231	1.885			1.000	
			67	Sandy Soil			2.000	427.5	358.6	26.6	26.6	0.491	2.000	0.981	427.5	358.6	0.643	0.230	4.267			1.000	
			65	Sandy Soil			2.000	445.0	366.1	25.3	25.3	0.430	2.000	0.859	445.0	366.1	0.628	0.229	3.751			1.000	
25	26.50 Gravelly Sand	17.5	61	Sandy Soil			2.000	462.5	373.6	23.4	23.4	0.365	1.874	0.684	462.5	373.6	0.613	0.228	3.005			1.000	
			270	Gravelly Soil	15.9	NP	4.117	481.1	382.2	101.5	90.1	467.57	2.000	935.1	481.1	382.2	0.598	0.226	4141			1.000	
			65	Gravelly Soil			2.000	502.1	393.2	23.9	23.9	0.378	1.917	0.724	502.1	393.2	0.583	0.223	3.243			1.000	
			53	Gravelly Soil			2.000	523.1	404.2	19.0	19.0	0.297	1.651	0.490	523.1	404.2	0.568	0.221	2.224			1.000	
30	30.00 Sand and Gravel	21.0	69	Gravelly Soil			2.000	544.1	415.2	24.2	24.2	0.387	1.948	0.755	544.1	415.2	0.553	0.217	3.472			1.000	

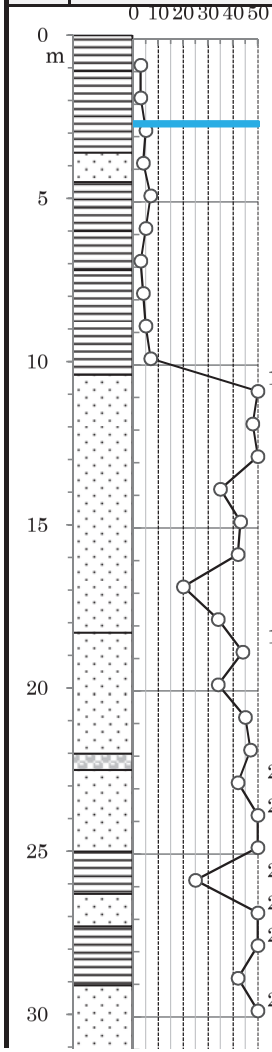
No.	1	Name	LP-1			Location	Petobo			LNG;	0825376 m E	LAT;	9895789 m S	Standard Depth for "sv"
Hight of Hole Mouth	81.40m	Total Advance	35.00m	Ground Water Level	11.22m	Ground Hight	81.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00		
m	0 10 20 30 40 50																			W	F_L	ΔP_L
			4	-	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	9.60	1.000	0.000
0			27	Gravelly Soil	11.1	NP	2.818	34.2	26.2	47.7	45.2	8.870	2.000	17.74	34.2	26.2	0.973	-	-	9.10	1.000	0.000
	2.50 Sand and Gravel	19.0	52	Sandy Soil	21.1	NP	0.371	53.4	35.4	83.9	115.9	1744.47	2.000	3488.9	53.4	35.4	0.958	-	-	8.60	1.000	0.000
			54	Sandy Soil	19.4	NP	0.376	72.9	44.9	79.9	105.8	1092.02	2.000	2184.0	72.9	44.9	0.943	-	-	8.10	1.000	0.000
			58	Sandy Soil	27.4	13.4	0.591	92.4	54.4	79.3	126.6	2729.54	2.000	5459.1	92.4	54.4	0.928	-	-	7.60	1.000	0.000
5			53	Sandy Soil	23.3	NP	0.330	111.9	63.9	67.3	98.2	739.72	2.000	1479.4	111.9	63.9	0.913	-	-	7.10	1.000	0.000
			55	Sandy Soil	21.9	NP	0.770	131.4	73.4	65.2	92.1	527.92	2.000	1055.8	131.4	73.4	0.898	-	-	6.60	1.000	0.000
				Sandy Soil				150.9	82.9	-	-	-	-	-	150.9	82.9	0.883	-	-	6.10	1.000	0.000
				Sandy Soil				170.4	92.4	-	-	-	-	-	170.4	92.4	0.868	-	-	5.60	1.000	0.000
				Sandy Soil				189.9	101.9	-	-	-	-	-	189.9	101.9	0.853	-	-	5.10	1.000	0.000
10				Sandy Soil	48.7	6.3	0.077	209.4	111.4	-	-	-	-	-	209.4	111.4	0.838	-	-	4.60	1.000	0.000
	12.20 Sand	19.5		Sandy Soil	47.4	5.0	0.079	228.9	120.9	-	-	-	-	-	228.9	120.9	0.823	-	-	4.10	1.000	0.000
				Sandy Soil				248.4	130.4	-	-	-	-	-	248.4	130.4	0.808	-	-	3.60	1.000	0.000
	14.00 Silty Sand	19.5		Sandy Soil	35.7	5.7	0.183	267.9	139.9	-	-	-	-	-	267.9	139.9	0.793	-	-	3.10	1.000	0.000
	14.30 Sand and Gravel	21.0		Sandy Soil				287.8	149.8	-	-	-	-	-	287.8	149.8	0.778	-	-	2.60	1.000	0.000
15	15.50 Silty Sand	19.5		Sandy Soil				307.3	159.3	-	-	-	-	-	307.3	159.3	0.763	-	-	2.10	1.000	0.000
			64	Sandy Soil	31.4	NP	0.155	326.8	168.8	45.6	79.9	245.02	2.000	490.0	326.8	168.8	0.748	0.434	1128	1.60	1.000	0.000
			52	Sandy Soil			2.000	346.3	178.3	35.6	35.6	2.023	2.000	4.046	346.3	178.3	0.733	0.427	9.473	1.10	1.000	0.000
			54	Sandy Soil	25.7	NP	0.387	365.8	187.8	35.6	55.5	31.22	2.000	62.44	365.8	187.8	0.718	0.420	148.8	0.60	1.000	0.000
			57	Sandy Soil			2.000	385.3	197.3	36.3	36.3	2.258	2.000	4.515	385.3	197.3	0.703	0.412	10.96	0.10	1.000	0.000
20			59	Sandy Soil			2.000	404.8	206.8	36.2	36.2	2.252	2.000	4.503	404.8	206.8	0.688	0.404	11.15		1.000	
			55	Sandy Soil	21.4	NP	0.441	424.3	216.3	32.7	46.0	9.966	2.000	19.93	424.3	216.3	0.673	0.396	50.33		1.000	
			53	Sandy Soil			2.000	443.8	225.8	30.5	30.5	0.850	2.000	1.700	443.8	225.8	0.658	0.388	4.381		1.000	
			51	Sandy Soil			2.000	463.3	235.3	28.4	28.4	0.621	2.000	1.243	463.3	235.3	0.643	0.380	3.272		1.000	
			59	Sandy Soil			2.000	482.8	244.8	31.9	31.9	1.070	2.000	2.140	482.8	244.8	0.628	0.372	5.760		1.000	
25	26.30 Gravelly Sand	19.5	51	Sandy Soil			2.000	502.3	254.3	26.7	26.7	0.500	2.000	1.000	502.3	254.3	0.613	0.363	2.753		1.000	
			11	Sandy Soil	48.0	NP	0.078	521.8	263.8	5.6	19.0	0.297	1.652	0.491	521.8	263.8	0.598	0.355	1.385		1.000	
	28.20 Silty Sand	19.5	39	Sandy Soil				541.3	273.3	19.3	19.3	0.300	1.661	0.499	541.3	273.3	0.583	0.346	1.439		1.000	
			56	Sandy Soil			2.000	560.8	282.8	27.0	27.0	0.515	2.000	1.031	560.8	282.8	0.568	0.338	3.050		1.000	
30			58	Sandy Soil	20.5	NP	0.328	580.3	292.3	27.2	37.6	2.812	2.000	5.623	580.3	292.3	0.553	0.329	17.07		1.000	





No.	1	Name	LP-2			Location	Petobo			LNG;	0824472 m E	LAT;	9895841 m S	Standard Depth for "sv"
Hight of Hole Mouth	57.10m	Total Advance	32.00m	Ground Water Level	2.60m	Ground Hight	57.10m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



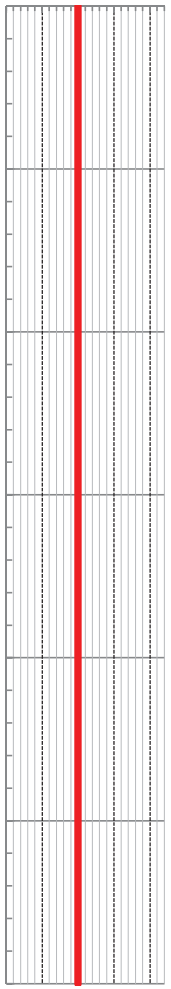
Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1	Liquefaction Judgment (Value for Calcurate L)										P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	1.49		
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
	1.10 Landslide Dep.	15.5	3	-																9.60	1.000	0.000
			3	-	53.8	8.7	0.058	29.3	16.3	5.9	-	-	-	-	29.3	16.3	0.973	-	-		9.10	1.000	0.000
	3.60 Sandy Silt	17.5	5	-	53.3	11.3	0.061	46.8	23.8	9.1	-	-	-	-	46.8	23.8	0.958	0.565	-		8.60	1.000	0.000
	4.50 Silty Sand	19.5	4	Sandy Soil	43.9	7.0	0.088	64.7	31.7	6.7	18.8	0.295	1.644	0.485	64.7	31.7	0.943	0.577	0.840		8.10	0.840	1.298
			7	-	78.1	15.6	0.016	83.6	40.6	10.8	-	-	-	-	83.6	40.6	0.928	0.573	-		7.60	1.000	0.000
	6.00 Sandy Silt	17.5	5	-	58.2	11.7	0.055	101.1	48.1	7.2	-	-	-	-	101.1	48.1	0.913	0.576	-		7.10	1.000	0.000
	7.20 Sandy Silt	17.5	3	-	70.6	10.2	0.042	118.6	55.6	4.1	-	-	-	-	118.6	55.6	0.898	0.575	-		6.60	1.000	0.000
			4	-	79.5	9.1	0.037	136.1	63.1	5.1	-	-	-	-	136.1	63.1	0.883	0.571	-		6.10	1.000	0.000
			5	-	81.5	7.9	0.031	153.6	70.6	6.0	-	-	-	-	153.6	70.6	0.868	0.567	-		5.60	1.000	0.000
	10.40 Sandy Silt	17.5	7	-	76.3	13.4	0.017	171.1	78.1	8.0	-	-	-	-	171.1	78.1	0.853	0.561	-		5.10	1.000	0.000
			50	Sandy Soil	27.9	NP	0.215	189.4	86.4	54.3	88.3	421.90	2.000	843.8	189.4	86.4	0.838	0.551	1531		4.60	1.000	0.000
			48	Sandy Soil	33.6	NP	0.155	208.9	95.9	49.2	89.8	460.46	2.000	920.9	208.9	95.9	0.823	0.538	1712		4.10	1.000	0.000
			50	Sandy Soil				228.4	105.4	48.5	48.5	13.72	2.000	27.43	228.4	105.4	0.808	0.525	52.23		3.60	1.000	0.000
			35	Sandy Soil				247.9	114.9	32.2	32.2	1.129	2.000	2.258	247.9	114.9	0.793	0.513	4.399		3.10	1.000	0.000
			43	Sandy Soil				267.4	124.4	37.6	37.6	2.827	2.000	5.655	267.4	124.4	0.778	0.502	11.27		2.60	1.000	0.000
			42	Sandy Soil	30.6	NP	0.166	286.9	133.9	35.0	60.7	52.71	2.000	105.4	286.9	133.9	0.763	0.490	214.9		2.10	1.000	0.000
			20	Sandy Soil				306.4	143.4	15.9	15.9	0.270	1.561	0.422	306.4	143.4	0.748	0.479	0.879		1.60	0.879	0.193
	18.30 Fine Sand	19.5	34	Sandy Soil				325.9	152.9	25.9	25.9	0.456	2.000	0.913	325.9	152.9	0.733	0.469	1.948		1.10	1.000	0.000
			44	Sandy Soil				345.4	162.4	32.2	32.2	1.130	2.000	2.260	345.4	162.4	0.718	0.458	4.934		0.60	1.000	0.000
			34	Sandy Soil				364.9	171.9	23.9	23.9	0.379	1.920	0.728	364.9	171.9	0.703	0.448	1.625		0.10	1.000	0.000
			45	Sandy Soil	26.9	NP	0.189	384.4	181.4	30.4	49.0	14.63	2.000	29.26	384.4	181.4	0.688	0.437	66.89			1.000	
	22.00 Sand	19.5	47	Sandy Soil				403.9	190.9	30.6	30.6	0.873	2.000	1.745	403.9	190.9	0.673	0.427	4.086			1.000	
	22.50 Sand and Gravel	21.0	42	Sandy Soil				424.2	201.2	26.3	26.3	0.477	2.000	0.954	424.2	201.2	0.658	0.416	2.292			1.000	
			50	Sandy Soil				443.7	210.7	30.3	30.3	0.827	2.000	1.653	443.7	210.7	0.643	0.406	4.069			1.000	
	25.00 Sand	19.5	50	Sandy Soil				463.2	220.2	29.3	29.3	0.709	2.000	1.417	463.2	220.2	0.628	0.396	3.576			1.000	
	26.30 Silt	17.5	25	-				481.1	228.1	14.3	-	-	-	-	481.1	228.1	0.613	0.388	-			1.000	
	27.30 Sand	19.5	50	Sandy Soil	31.4	NP	0.161	499.6	236.6	27.7	49.3	15.17	2.000	30.34	499.6	236.6	0.598	0.379	80.07			1.000	
			50	-				518.1	245.1	27.0	-	-	-	-	518.1	245.1	0.583	0.370	-			1.000	
	29.10 Silt	17.5	42	-				535.6	252.6	22.1	-	-	-	-	535.6	252.6	0.568	0.361	-			1.000	
			81	Sandy Soil				554.5	261.5	41.5	41.5	5.270	2.000	10.54	554.5	261.5	0.553	0.352	29.96			1.000	

No.	1	Name	LP-3			Location	Petobo			LNG;	0822721 m E	LAT;	9896233 m S	Standard Depth for "sv"
Hight of Hole Mouth	34.40m	Total Advance	30.00m	Ground Water Level	0.13m	Ground Hight	34.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1	Liquefaction Judgment (Value for Calcurate L)									P_L		
			kN/m³																0.00		
m	0 10 20 30 40 50			N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
						%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		9.60	1.000	0.000
0		0.20 Top Soil or Back-fill	15.0	6	-				31.0	14.3	12.1					31.0	14.3	0.973	0.633		9.10	1.000	0.000
				6	-	72.5	12.9	0.040	31.0	14.3	12.1	-	-	-	-	31.0	14.3	0.973	0.633	-	9.10	1.000	0.000
				15	-	88.7	13.5	0.026	48.5	21.8	27.8	-	-	-	-	48.5	21.8	0.958	0.639	-	8.60	1.000	0.000
				27	-	80.7	22.4	0.037	66.0	29.3	46.2	-	-	-	-	66.0	29.3	0.943	0.637	-	8.10	1.000	0.000
		5.10 Silt	17.5	34	-	80.2	20.2	0.017	83.5	36.8	54.1	-	-	-	-	83.5	36.8	0.928	0.632	-	7.60	1.000	0.000
5		5.50 Sand	19.5	34	-	82.9	17.2	0.023	101.8	45.1	50.2	-	-	-	-	101.8	45.1	0.913	0.618	-	7.10	1.000	0.000
				33	-				119.3	52.6	45.8	-	-	-	-	119.3	52.6	0.898	0.611	-	6.60	1.000	0.000
		8.00 Silt	17.5	36	-	80.2	11.3	0.043	136.8	60.1	47.0	-	-	-	-	136.8	60.1	0.883	0.603	-	6.10	1.000	0.000
				55	Sandy Soil				155.9	69.2	67.2	67.2	93.79	2.000	187.6	155.9	69.2	0.868	0.587	319.8	5.60	1.000	0.000
				64	Sandy Soil	5.7	NP	6.372	175.4	78.7	73.2	73.2	151.41	2.000	302.8	175.4	78.7	0.853	0.570	531.0	5.10	1.000	0.000
10				65	Sandy Soil				194.9	88.2	69.8	69.8	116.89	2.000	233.8	194.9	88.2	0.838	0.556	420.8	4.60	1.000	0.000
				99	Sandy Soil	7.9	NP	6.583	214.4	97.7	100.4	100.4	827.62	2.000	1655.2	214.4	97.7	0.823	0.542	3055	4.10	1.000	0.000
				67	Sandy Soil				233.9	107.2	64.3	64.3	73.04	2.000	146.1	233.9	107.2	0.808	0.529	276.2	3.60	1.000	0.000
		14.50 Sand	19.5		Sandy Soil				253.4	116.7	-	-	-	-	-	253.4	116.7	0.793	-	-	3.10	1.000	0.000
				34	-	78.0	11.8	0.045	272.3	125.6	29.6	-	-	-	-	272.3	125.6	0.778	0.506	-	2.60	1.000	0.000
15		16.50 Silt	17.5	36	-				289.8	133.1	30.1	-	-	-	-	289.8	133.1	0.763	0.498	-	2.10	1.000	0.000
				36	-				307.3	140.6	29.1	-	-	-	-	307.3	140.6	0.748	0.490	-	1.60	1.000	0.000
				34	-	84.0	17.1	0.022	324.8	148.1	26.5	-	-	-	-	324.8	148.1	0.733	0.482	-	1.10	1.000	0.000
		19.00 Silt	17.5	35	-				342.3	155.6	26.4	-	-	-	-	342.3	155.6	0.718	0.474	-	0.60	1.000	0.000
		19.50 Sand	19.5	40	-				360.8	164.1	29.0	-	-	-	-	360.8	164.1	0.703	0.464	-	0.10	1.000	0.000
20				33	-	77.9	11.9	0.047	378.3	171.6	23.2	-	-	-	-	378.3	171.6	0.688	0.455	-		1.000	
				32	-				395.8	179.1	21.8	-	-	-	-	395.8	179.1	0.673	0.446	-		1.000	
				35	-				413.3	186.6	23.2	-	-	-	-	413.3	186.6	0.658	0.437	-		1.000	
		24.00 Silt	17.5	33	-	76.5	11.5	0.043	430.8	194.1	21.2	-	-	-	-	430.8	194.1	0.643	0.428	-		1.000	
				34	Sandy Soil				449.9	203.2	21.2	21.2	0.322	1.734	0.559	449.9	203.2	0.628	0.417	1.340		1.000	
25		26.50 Sand	19.5	32	Sandy Soil				469.4	212.7	19.2	19.2	0.300	1.658	0.497	469.4	212.7	0.613	0.406	1.224		1.000	
		27.00 Silt	17.5	34	-	83.6	17.3	0.023	488.3	221.6	19.8	-	-	-	-	488.3	221.6	0.598	0.395	-		1.000	
				34	Sandy Soil				507.4	230.7	19.2	19.2	0.299	1.658	0.496	507.4	230.7	0.583	0.385	1.290		1.000	
		29.50 Sand	19.5	37	Sandy Soil				526.9	240.2	20.3	20.3	0.311	1.696	0.527	526.9	240.2	0.568	0.374	1.410		1.000	
30		30.00 Silt	17.5	31	-	69.2	10.2	0.050	545.8	249.1	16.5	-	-	-	-	545.8	249.1	0.553	0.364	-		1.000	

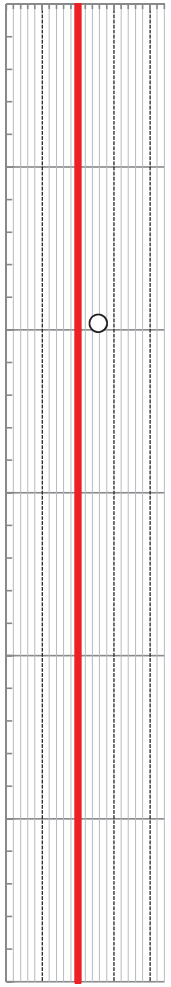
No.	1	Name	LP-4			Location	Petobo			LNG;	0824246 m E	LAT;	9896370 m S	Standard Depth for "sv"
Hight of Hole Mouth	53.40m	Total Advance	30.00m	Ground Water Level	0.80m	Ground Hight	53.40m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50			5	-	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	9.60	1.000	0.000
				17	-	59.0	13.1	0.049	27.9	17.9	32.9	-	-	-	-	27.9	17.9	0.973	0.455	-	9.10	1.000	0.000
		3.00	Silt	12	-	57.9	13.7	0.052	43.4	23.4	21.8	-	-	-	-	43.4	23.4	0.958	0.533	-	8.60	1.000	0.000
		4.50	Sand	8	Sandy Soil	40.3	12.5	0.153	62.1	32.1	13.3	29.4	0.724	2.000	1.449	62.1	32.1	0.943	0.547	2.647	8.10	1.000	0.000
		5.00	Silt	3	-	61.9	12.7	0.055	81.0	41.0	4.6	-	-	-	-	81.0	41.0	0.928	0.550	-	7.60	1.000	0.000
5		5.30	Sand	28	Sandy Soil	34.1	5.2	0.237	99.1	49.1	40.0	74.0	161.62	2.000	323.2	99.1	49.1	0.913	0.553	584.7	7.10	1.000	0.000
		5.80	Silt	5	-	62.2	12.6	0.038	118.0	58.0	6.6	-	-	-	-	118.0	58.0	0.898	0.548	-	6.60	1.000	0.000
		6.50	Sand	42	Sandy Soil	39.0	6.8	0.148	137.1	67.1	52.1	104.8	1038.99	2.000	2078.0	137.1	67.1	0.883	0.541	3839	6.10	1.000	0.000
		7.00	Silt	33	-	60.0	29.0	0.041	156.0	76.0	38.4	-	-	-	-	156.0	76.0	0.868	0.535	-	5.60	1.000	0.000
		8.50	Sand	37	Sandy Soil	37.4	4.5	0.168	175.1	85.1	40.6	79.9	245.40	2.000	490.8	175.1	85.1	0.853	0.527	932.1	5.10	1.000	0.000
10		9.00	Silt	20	Sandy Soil	23.4	NP	0.578	194.6	94.6	20.7	31.0	0.924	2.000	1.849	194.6	94.6	0.838	0.517	3.575	4.60	1.000	0.000
		12.00	Sand	11	Sandy Soil	47.4	5.1	0.084	214.1	104.1	10.7	32.1	1.105	2.000	2.210	214.1	104.1	0.823	0.508	4.353	4.10	1.000	0.000
		12.30	Silt	57	Sandy Soil			2.000	233.0	113.0	53.0	53.0	23.48	2.000	46.95	233.0	113.0	0.808	0.500	93.94	3.60	1.000	0.000
				65	Sandy Soil	11.2	NP	0.474	252.5	122.5	57.4	59.8	48.24	2.000	96.47	252.5	122.5	0.793	0.490	196.7	3.10	1.000	0.000
				63	Sandy Soil			2.000	272.0	132.0	53.0	53.0	23.66	2.000	47.32	272.0	132.0	0.778	0.481	98.40	2.60	1.000	0.000
15				61	Sandy Soil			2.000	291.5	141.5	49.0	49.0	14.73	2.000	29.47	291.5	141.5	0.763	0.472	62.49	2.10	1.000	0.000
		17.30	Sand	60	Sandy Soil	23.0	NP	0.297	311.0	151.0	46.2	67.2	93.79	2.000	187.6	311.0	151.0	0.748	0.462	405.9	1.60	1.000	0.000
		18.00	Silt	35	-				329.5	159.5	25.9	-	-	-	-	329.5	159.5	0.733	0.454	-	1.10	1.000	0.000
		19.00	Sand and Gravel	57	Gravelly Soil			2.000	349.8	169.8	40.4	40.4	4.429	2.000	8.859	349.8	169.8	0.718	0.444	19.96	0.60	1.000	0.000
		20.00	Silt	34	-	65.3	9.9	0.045	368.0	178.0	23.3	-	-	-	-	368.0	178.0	0.703	0.436	-	0.10	1.000	0.000
20				59	Sandy Soil				387.1	187.1	39.0	39.0	3.554	2.000	7.109	387.1	187.1	0.688	0.427	16.65		1.000	
				62	Sandy Soil				406.6	196.6	39.5	39.5	3.863	2.000	7.725	406.6	196.6	0.673	0.418	18.50		1.000	
				58	Sandy Soil				426.1	206.1	35.7	35.7	2.061	2.000	4.122	426.1	206.1	0.658	0.408	10.10		1.000	
				59	Sandy Soil				445.6	215.6	35.1	35.1	1.864	2.000	3.727	445.6	215.6	0.643	0.399	9.349		1.000	
		25.00	Sand	66	Sandy Soil				465.1	225.1	38.0	38.0	3.028	2.000	6.056	465.1	225.1	0.628	0.389	15.56		1.000	
25				63	Sandy Soil				484.6	234.6	35.2	35.2	1.877	2.000	3.754	484.6	234.6	0.613	0.380	9.882		1.000	
				66	Sandy Soil	20.1	NP	0.249	504.1	244.1	35.7	48.6	14.00	2.000	28.00	504.1	244.1	0.598	0.370	75.58		1.000	
				66	Sandy Soil				523.6	253.6	34.7	34.7	1.727	2.000	3.454	523.6	253.6	0.583	0.361	9.564		1.000	
				63	Sandy Soil				543.1	263.1	32.2	32.2	1.124	2.000	2.248	543.1	263.1	0.568	0.352	6.390		1.000	
30		30.00	Sand	64	Sandy Soil				562.6	272.6	31.8	31.8	1.052	2.000	2.103	562.6	272.6	0.553	0.342	6.142		1.000	



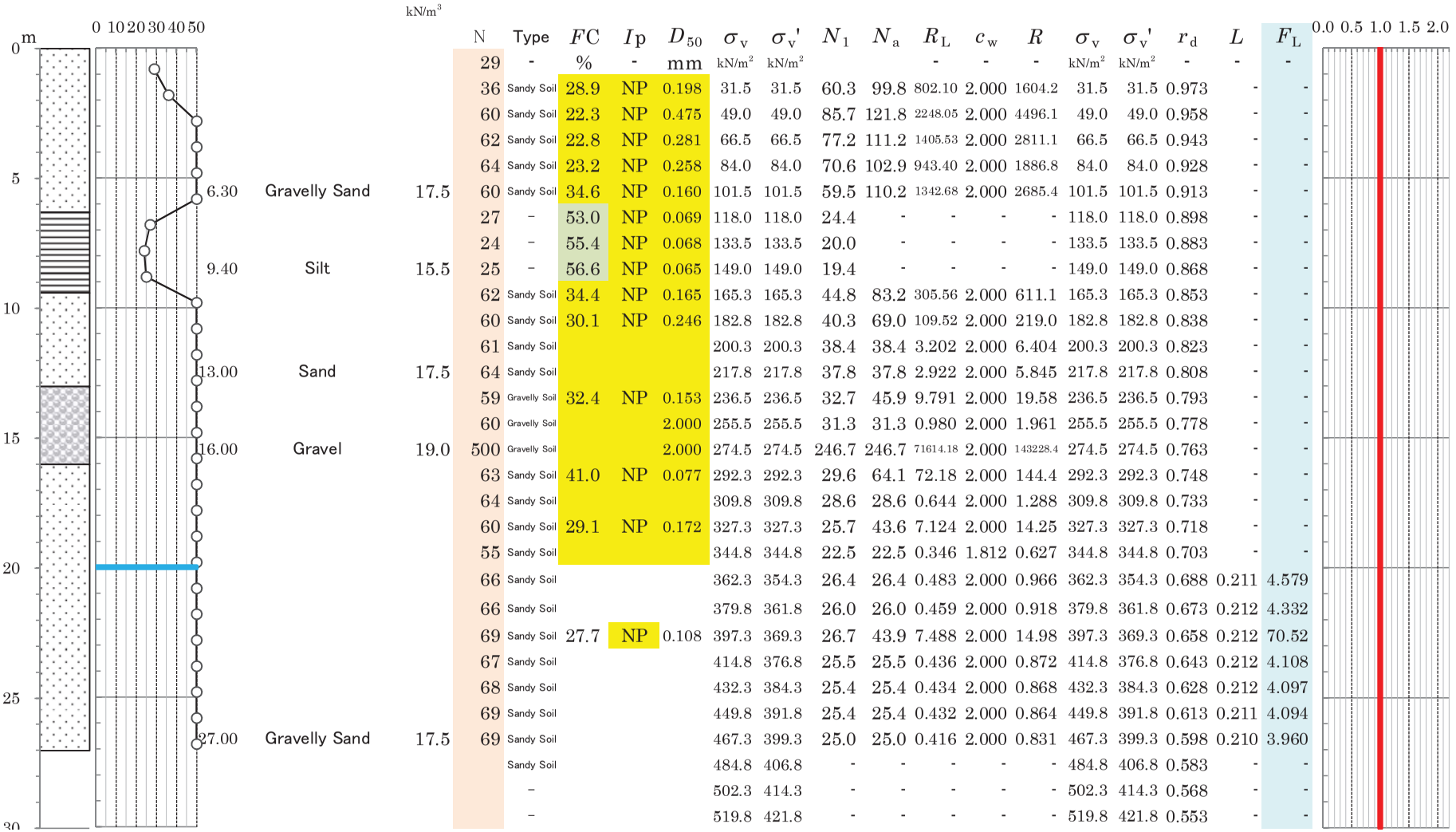
No.	1	Name	LP-5			Location	Petobo			LNG;	0823692 m E	LAT;	9897486 m S	Standard Depth for "sv"
Hight of Hole Mouth	60.60m	Total Advance	30.00m	Ground Water Level	5.59m	Ground Hight	60.60m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		0.00	
0		1.40	Silt	15.5	17	-															9.60	1.000	0.000
		2.00	Sand	17.5	21	Sandy Soil	39.7	NP	0.145	28.7	28.7	36.2	74.4	165.98	2.000	332.0	28.7	28.7	0.973	-	-	9.10	1.000	0.000
					21	-	70.3	9.3	0.038	44.6	44.6	31.2	-	-	-	-	44.6	44.6	0.958	-	-	8.60	1.000	0.000
		4.00	Silt	15.5	19	-	80.2	7.4	0.036	60.1	60.1	24.8	-	-	-	-	60.1	60.1	0.943	-	-	8.10	1.000	0.000
		4.50	Sand	17.5	20	-	70.5	9.2	0.037	76.6	76.6	23.2	-	-	-	-	76.6	76.6	0.928	-	-	7.60	1.000	0.000
5		5.00	Silt	15.5	54	Sandy Soil	28.1	NP	0.358	93.7	91.6	56.8	92.6	541.07	2.000	1082.1	93.7	91.6	0.913	0.280	3862	7.10	1.000	0.000
					31	Sandy Soil	39.2	NP	0.142	111.2	99.1	31.2	63.9	70.56	2.000	141.1	111.2	99.1	0.898	0.302	466.8	6.60	1.000	0.000
					58	Sandy Soil	28.6	NP	0.353	128.7	106.6	55.8	92.1	525.85	2.000	1051.7	128.7	106.6	0.883	0.320	3288	6.10	1.000	0.000
					58	Sandy Soil	25.9	NP	0.496	146.2	114.1	53.6	83.2	306.26	2.000	612.5	146.2	114.1	0.868	0.334	1836	5.60	1.000	0.000
					19	Sandy Soil				163.7	121.6	16.9	16.9	0.278	1.587	0.441	163.7	121.6	0.853	0.344	1.280	5.10	1.000	0.000
10					20	Sandy Soil	30.8	NP	0.138	181.2	129.1	17.1	30.6	0.869	2.000	1.738	181.2	129.1	0.838	0.353	4.924	4.60	1.000	0.000
					63	Sandy Soil				198.7	136.6	51.8	51.8	20.66	2.000	41.33	198.7	136.6	0.823	0.359	115.1	4.10	1.000	0.000
		13.00	Sand	17.5	44	Sandy Soil				216.2	144.1	34.9	34.9	1.807	2.000	3.613	216.2	144.1	0.808	0.364	9.935	3.60	1.000	0.000
		14.50	Silt	17.5	18	-	78.5	9.8	0.039	233.7	151.6	13.8	-	-	-	-	233.7	151.6	0.793	0.367	-	3.10	1.000	0.000
					63	Sandy Soil				251.8	159.7	46.6	46.6	10.82	2.000	21.63	251.8	159.7	0.778	0.368	58.79	2.60	1.000	0.000
15					57	Sandy Soil				271.3	169.2	40.5	40.5	4.499	2.000	8.999	271.3	169.2	0.763	0.367	24.52	2.10	1.000	0.000
					43	Sandy Soil	30.6	NP	0.336	290.8	178.7	29.4	51.3	19.36	2.000	38.73	290.8	178.7	0.748	0.365	106.1	1.60	1.000	0.000
					59	Sandy Soil				310.3	188.2	38.8	38.8	3.461	2.000	6.922	310.3	188.2	0.733	0.363	19.09	1.10	1.000	0.000
					58	Sandy Soil				329.8	197.7	36.8	36.8	2.488	2.000	4.977	329.8	197.7	0.718	0.359	13.85	0.60	1.000	0.000
		20.30	Sand	19.5	70	Sandy Soil	16.0	NP	0.625	349.3	207.2	42.9	52.1	21.20	2.000	42.40	349.3	207.2	0.703	0.356	119.2	0.10	1.000	0.000
20					32	-				367.8	215.7	19.0	-	-	-	-	367.8	215.7	0.688	0.352	-		1.000	
		22.00	Silt	17.5	84	-				385.3	223.2	48.7	-	-	-	-	385.3	223.2	0.673	0.349	-		1.000	
					69	Sandy Soil				404.4	232.3	38.8	38.8	3.437	2.000	6.874	404.4	232.3	0.658	0.344	20.00		1.000	
		24.00	Sand	19.5	72	Sandy Soil				423.9	241.8	39.3	39.3	3.695	2.000	7.391	423.9	241.8	0.643	0.338	21.86		1.000	
25					79	Gravelly Soil	13.5	NP	1.125	444.6	252.5	41.6	45.4	9.158	2.000	18.32	444.6	252.5	0.628	0.332	55.22		1.000	
					77	Gravelly Soil			2.000	465.6	263.5	39.3	39.3	3.692	2.000	7.384	465.6	263.5	0.613	0.325	22.72		1.000	
					90	Gravelly Soil			2.000	486.6	274.5	44.4	44.4	7.999	2.000	16.00	486.6	274.5	0.598	0.318	50.30		1.000	
					87	Gravelly Soil			2.000	507.6	285.5	41.6	41.6	5.317	2.000	10.63	507.6	285.5	0.583	0.311	34.20		1.000	
					67	Gravelly Soil			2.000	528.6	296.5	31.1	31.1	0.940	2.000	1.879	528.6	296.5	0.568	0.304	6.185		1.000	
30		30.00	Sand and Gravel	21.0	73	Gravelly Soil			2.000	549.6	307.5	32.9	32.9	1.270	2.000	2.540	549.6	307.5	0.553	0.297	8.566		1.000	



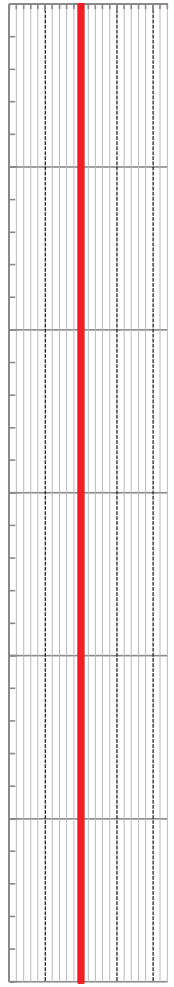
No.	1	Name	LP-6			Location	Petobo	LNG;	0823903 m E	LAT;	9899203 m S	Standard Depth for "sv"
Hight of Hole Mouth	96.50m	Total Advance	27.00m	Ground Water Level	20.00m	Ground Hight	96.50m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2	0.00m

Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L 0.00		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50				%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-			
0			29	-																9.60	1.000	0.000
			36	Sandy Soil	28.9	NP	0.198	31.5	31.5	60.3	99.8	802.10	2.000	1604.2	31.5	31.5	0.973	-	-	9.10	1.000	0.000
			60	Sandy Soil	22.3	NP	0.475	49.0	49.0	85.7	121.8	2248.05	2.000	4496.1	49.0	49.0	0.958	-	-	8.60	1.000	0.000
			62	Sandy Soil	22.8	NP	0.281	66.5	66.5	77.2	111.2	1405.53	2.000	2811.1	66.5	66.5	0.943	-	-	8.10	1.000	0.000
			64	Sandy Soil	23.2	NP	0.258	84.0	84.0	70.6	102.9	943.40	2.000	1886.8	84.0	84.0	0.928	-	-	7.60	1.000	0.000
5			60	Sandy Soil	34.6	NP	0.160	101.5	101.5	59.5	110.2	1342.68	2.000	2685.4	101.5	101.5	0.913	-	-	7.10	1.000	0.000
	6.30 Gravelly Sand	17.5	27	-	53.0	NP	0.069	118.0	118.0	24.4	-	-	-	-	118.0	118.0	0.898	-	-	6.60	1.000	0.000
			24	-	55.4	NP	0.068	133.5	133.5	20.0	-	-	-	-	133.5	133.5	0.883	-	-	6.10	1.000	0.000
	9.40 Silt	15.5	25	-	56.6	NP	0.065	149.0	149.0	19.4	-	-	-	-	149.0	149.0	0.868	-	-	5.60	1.000	0.000
			62	Sandy Soil	34.4	NP	0.165	165.3	165.3	44.8	83.2	305.56	2.000	611.1	165.3	165.3	0.853	-	-	5.10	1.000	0.000
10			60	Sandy Soil	30.1	NP	0.246	182.8	182.8	40.3	69.0	109.52	2.000	219.0	182.8	182.8	0.838	-	-	4.60	1.000	0.000
			61	Sandy Soil				200.3	200.3	38.4	38.4	3.202	2.000	6.404	200.3	200.3	0.823	-	-	4.10	1.000	0.000
	13.00 Sand	17.5	64	Sandy Soil				217.8	217.8	37.8	37.8	2.922	2.000	5.845	217.8	217.8	0.808	-	-	3.60	1.000	0.000
			59	Gravelly Soil	32.4	NP	0.153	236.5	236.5	32.7	45.9	9.791	2.000	19.58	236.5	236.5	0.793	-	-	3.10	1.000	0.000
			60	Gravelly Soil			2.000	255.5	255.5	31.3	31.3	0.980	2.000	1.961	255.5	255.5	0.778	-	-	2.60	1.000	0.000
15	16.00 Gravel	19.0	500	Gravelly Soil			2.000	274.5	274.5	246.7	246.7	71614.18	2.000	143228.4	274.5	274.5	0.763	-	-	2.10	1.000	0.000
			63	Sandy Soil	41.0	NP	0.077	292.3	292.3	29.6	64.1	72.18	2.000	144.4	292.3	292.3	0.748	-	-	1.60	1.000	0.000
			64	Sandy Soil				309.8	309.8	28.6	28.6	0.644	2.000	1.288	309.8	309.8	0.733	-	-	1.10	1.000	0.000
			60	Sandy Soil	29.1	NP	0.172	327.3	327.3	25.7	43.6	7.124	2.000	14.25	327.3	327.3	0.718	-	-	0.60	1.000	0.000
			55	Sandy Soil				344.8	344.8	22.5	22.5	0.346	1.812	0.627	344.8	344.8	0.703	-	-	0.10	1.000	0.000
20			66	Sandy Soil				362.3	354.3	26.4	26.4	0.483	2.000	0.966	362.3	354.3	0.688	0.211	4.579		1.000	
			66	Sandy Soil				379.8	361.8	26.0	26.0	0.459	2.000	0.918	379.8	361.8	0.673	0.212	4.332		1.000	
			69	Sandy Soil	27.7	NP	0.108	397.3	369.3	26.7	43.9	7.488	2.000	14.98	397.3	369.3	0.658	0.212	70.52		1.000	
			67	Sandy Soil				414.8	376.8	25.5	25.5	0.436	2.000	0.872	414.8	376.8	0.643	0.212	4.108		1.000	
			68	Sandy Soil				432.3	384.3	25.4	25.4	0.434	2.000	0.868	432.3	384.3	0.628	0.212	4.097		1.000	
25			69	Sandy Soil				449.8	391.8	25.4	25.4	0.432	2.000	0.864	449.8	391.8	0.613	0.211	4.094		1.000	
	27.00 Gravelly Sand	17.5	69	Sandy Soil				467.3	399.3	25.0	25.0	0.416	2.000	0.831	467.3	399.3	0.598	0.210	3.960		1.000	
				Sandy Soil				484.8	406.8	-	-	-	-	-	484.8	406.8	0.583	-	-		1.000	
				-				502.3	414.3	-	-	-	-	-	502.3	414.3	0.568	-	-		1.000	
30				-				519.8	421.8	-	-	-	-	-	519.8	421.8	0.553	-	-		1.000	



No.	1	Name	J-1			Location	Jono Oge			LNG;	825742.00 m E	LAT;	9891240.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	83.70m	Total Advance	30.00m	Ground Water Level	14.08m	Ground Hight	83.70m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

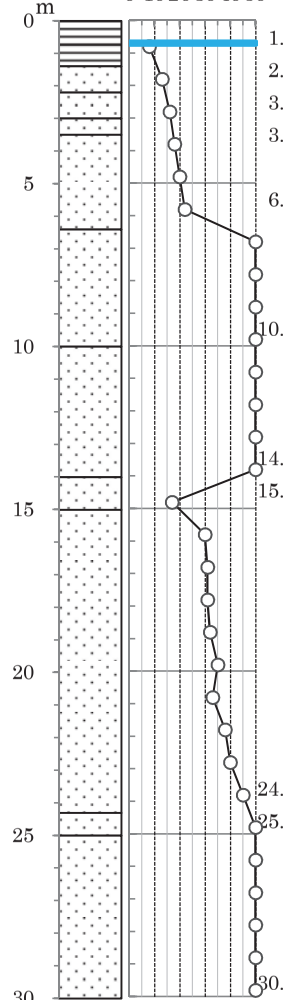
Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50			5	-	%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		0.00	
0																					9.60	1.000	0.000
		2.00 Silt	15.5	19	-	73.4	21.7	0.012	27.9	19.9	35.9	-	-	-	-	27.9	19.9	0.973	-	-	9.10	1.000	0.000
		3.50 Silty Sand	19.5	4	Sandy Soil	29.4	NP	0.459	46.6	28.6	6.9	13.0	0.245	1.478	0.362	46.6	28.6	0.958	-	-	8.60	1.000	0.000
		4.20 Silt	17.5	10	-	65.1	5.8	0.044	65.5	37.5	15.8	-	-	-	-	65.5	37.5	0.943	-	-	8.10	1.000	0.000
				18	Sandy Soil	49.3	5.2	0.077	84.2	46.2	26.3	77.5	208.34	2.000	416.7	84.2	46.2	0.928	-	-	7.60	1.000	0.000
5		6.20 Silty Sand	19.5	19	Sandy Soil	48.7	5.0	0.079	103.7	55.7	25.7	74.2	164.06	2.000	328.1	103.7	55.7	0.913	-	-	7.10	1.000	0.000
				73	Sandy Soil	12.5	NP	0.811	123.2	65.2	91.8	99.6	795.65	2.000	1591.3	123.2	65.2	0.898	-	-	6.60	1.000	0.000
		8.00 Coarse Sand	19.5	129	Sandy Soil	23.7	NP	0.426	142.7	74.7	151.6	222.0	43197.34	2.000	86394.7	142.7	74.7	0.883	-	-	6.10	1.000	0.000
				92	Sandy Soil	21.4	NP	0.193	162.2	84.2	101.4	141.0	4689.62	2.000	9379.2	162.2	84.2	0.868	-	-	5.60	1.000	0.000
				18	Sandy Soil	42.6	NP	0.105	181.7	93.7	18.7	44.5	8.118	2.000	16.24	181.7	93.7	0.853	-	-	5.10	1.000	0.000
10		11.40 Sand	19.5	19	Sandy Soil				201.2	103.2	18.6	18.6	0.294	1.639	0.482	201.2	103.2	0.838	-	-	4.60	1.000	0.000
				75	-				219.9	111.9	70.1	-	-	-	-	219.9	111.9	0.823	-	-	4.10	1.000	0.000
				99	-	73.4	22.2	0.012	237.4	119.4	88.9	-	-	-	-	237.4	119.4	0.808	-	-	3.60	1.000	0.000
		14.00 Silt	17.5	75	-				254.9	126.9	64.8	-	-	-	-	254.9	126.9	0.793	-	-	3.10	1.000	0.000
				37	Sandy Soil				274.0	136.0	30.5	30.5	0.860	2.000	1.720	274.0	136.0	0.778	0.470	3.658	2.60	1.000	0.000
15				44	Sandy Soil	46.8	5.9	0.094	293.5	145.5	34.7	93.0	553.22	2.000	1106.4	293.5	145.5	0.763	0.462	2396	2.10	1.000	0.000
				150	Sandy Soil				313.0	155.0	113.3	113.3	1553.28	2.000	3106.6	313.0	155.0	0.748	0.453	6856	1.60	1.000	0.000
		18.20 Red Silty Sand	19.5	80	Sandy Soil				332.5	164.5	58.0	58.0	40.28	2.000	80.55	332.5	164.5	0.733	0.444	181.2	1.10	1.000	0.000
				113	Sandy Soil				352.0	174.0	78.7	78.7	226.59	2.000	453.2	352.0	174.0	0.718	0.436	1040	0.60	1.000	0.000
				150	Sandy Soil				371.5	183.5	100.6	100.6	837.75	2.000	1675.5	371.5	183.5	0.703	0.427	3924	0.10	1.000	0.000
20				75	Sandy Soil	42.9	NP	0.105	391.0	193.0	48.5	111.9	1454.20	2.000	2908.4	391.0	193.0	0.688	0.418	6955		1.000	
		22.10 Silty Sand	19.5	125	Sandy Soil				410.5	202.5	78.0	78.0	215.07	2.000	430.1	410.5	202.5	0.673	0.409	1051		1.000	
				150	Sandy Soil				430.0	212.0	90.4	90.4	477.84	2.000	955.7	430.0	212.0	0.658	0.400	2387		1.000	
				90	Sandy Soil				449.5	221.5	52.5	52.5	22.27	2.000	44.54	449.5	221.5	0.643	0.391	113.8		1.000	
				150	Sandy Soil				469.0	231.0	84.7	84.7	337.13	2.000	674.3	469.0	231.0	0.628	0.383	1763		1.000	
25				150	Sandy Soil				488.5	240.5	82.1	82.1	285.07	2.000	570.1	488.5	240.5	0.613	0.374	1526		1.000	
				150	Sandy Soil	13.6	NP	1.028	508.0	250.0	79.7	89.6	454.97	2.000	909.9	508.0	250.0	0.598	0.365	2496		1.000	
				150	Sandy Soil				527.5	259.5	77.4	77.4	206.28	2.000	412.6	527.5	259.5	0.583	0.356	1160		1.000	
				150	Sandy Soil				547.0	269.0	75.2	75.2	176.45	2.000	352.9	547.0	269.0	0.568	0.347	1018		1.000	
30		30.00 Gravelly Sand	19.5	150	Sandy Soil				566.5	278.5	73.2	73.2	151.45	2.000	302.9	566.5	278.5	0.553	0.337	897.6		1.000	



No.	1	Name	J-2			Location	Jono Oge			LNG;	825140.52 m E	LAT;	9890923.74 m S	Standard Depth for "sv"
Hight of Hole Mouth	64.90m	Total Advance	25.00m	Ground Water Level	3.20m	Ground Hight	64.90m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

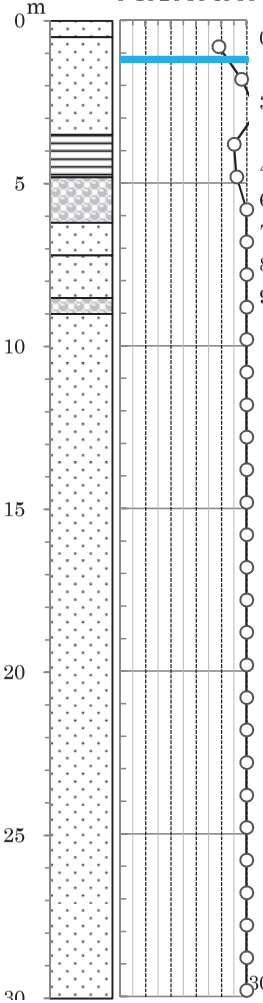
Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L		0.99	
m	0 10 20 30 40 50					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0		1.50	17.5	4	-																9.60	1.000	0.000
		2.00 Silt	19.5	7	Sandy Soil	39.4	5.7	0.186	32.1	14.1	14.1	30.5	0.849	2.000	1.697	32.1	14.1	0.973	-	-		9.10	1.000	0.000
		Sand		6	-	86.7	29.0	0.004	50.0	22.0	11.1	-	-	-	-	50.0	22.0	0.958	-	-		8.60	1.000	0.000
		4.40 Silt	17.5	3	-	67.5	15.3	0.020	67.5	29.5	5.1	-	-	-	-	67.5	29.5	0.943	0.647	-		8.10	1.000	0.000
		5.20 Sand	19.5	30	Sandy Soil	12.4	NP	0.370	85.8	37.8	47.3	51.3	19.35	2.000	38.70	85.8	37.8	0.928	0.632	61.25		7.60	1.000	0.000
5		6.00 Sand and Gravel	21.0	15	Gravelly Soil	8.9	NP	3.171	106.2	48.2	21.6	20.0	0.308	1.686	0.519	106.2	48.2	0.913	0.603	0.860		7.10	0.860	0.995
				32	Sandy Soil	29.1	NP	0.306	126.0	58.0	42.5	71.1	129.05	2.000	258.1	126.0	58.0	0.898	0.585	441.0		6.60	1.000	0.000
		8.50 Silty Sand	19.5	38	Sandy Soil	12.0	NP	0.384	145.5	67.5	47.0	50.3	17.27	2.000	34.54	145.5	67.5	0.883	0.571	60.49		6.10	1.000	0.000
				38	Sandy Soil	7.5	NP	0.923	165.0	77.0	43.9	43.9	7.489	2.000	14.98	165.0	77.0	0.868	0.558	26.84		5.60	1.000	0.000
				67	Sandy Soil	10.9	NP	0.705	184.5	86.5	72.8	75.1	175.30	2.000	350.6	184.5	86.5	0.853	0.546	642.3		5.10	1.000	0.000
10				34	Sandy Soil			2.000	204.0	96.0	34.8	34.8	1.771	2.000	3.541	204.0	96.0	0.838	0.534	6.629		4.60	1.000	0.000
				37	Sandy Soil			2.000	223.5	105.5	35.8	35.8	2.106	2.000	4.213	223.5	105.5	0.823	0.523	8.054		4.10	1.000	0.000
				50	Sandy Soil	14.3	NP	0.386	243.0	115.0	45.9	52.9	23.32	2.000	46.65	243.0	115.0	0.808	0.512	91.07		3.60	1.000	0.000
				50	Sandy Soil			2.000	262.5	124.5	43.7	43.7	7.234	2.000	14.47	262.5	124.5	0.793	0.502	28.84		3.10	1.000	0.000
		15.00 Gravelly Sand	19.5	50	Sandy Soil	14.4	NP	0.288	282.0	134.0	41.7	48.1	13.07	2.000	26.14	282.0	134.0	0.778	0.491	53.22		2.60	1.000	0.000
15				52	Sandy Soil			2.000	301.5	143.5	41.4	41.4	5.160	2.000	10.32	301.5	143.5	0.763	0.481	21.46		2.10	1.000	0.000
				52	Sandy Soil	13.6	NP	0.364	321.0	153.0	39.6	44.7	8.273	2.000	16.55	321.0	153.0	0.748	0.471	35.14		1.60	1.000	0.000
				54	Sandy Soil				340.5	162.5	39.5	39.5	3.832	2.000	7.663	340.5	162.5	0.733	0.461	16.63		1.10	1.000	0.000
				50	Sandy Soil	8.7	NP	0.400	360.0	172.0	35.1	35.1	1.865	2.000	3.730	360.0	172.0	0.718	0.451	8.274		0.60	1.000	0.000
		20.00 Sand	19.5	50	Sandy Soil				379.5	181.5	33.8	33.8	1.487	2.000	2.974	379.5	181.5	0.703	0.441	6.743		0.10	1.000	0.000
20				60	Gravelly Soil			2.000	400.2	192.2	38.9	38.9	3.492	2.000	6.984	400.2	192.2	0.688	0.430	16.25			1.000	
				300	Gravelly Soil			2.000	421.2	203.2	186.7	186.7	18693.48	2.000	37387.0	421.2	203.2	0.673	0.419	89335			1.000	
				214	Gravelly Soil			2.000	442.2	214.2	128.0	128.0	2887.03	2.000	5774.1	442.2	214.2	0.658	0.408	14169			1.000	
				750	Gravelly Soil			2.000	463.2	225.2	431.9	431.9	997690.16	2.000	1995380.3	463.2	225.2	0.643	0.397	5029135			1.000	
		25.00 Sand and Gravel	21.0	375	Gravelly Soil			2.000	484.2	236.2	208.2	208.2	31712.26	2.000	63424.5	484.2	236.2	0.628	0.386	164222			1.000	
25					Sandy Soil				504.0	246.0	-	-	-	-	-	504.0	246.0	0.613	-	-			1.000	
					Sandy Soil				523.5	255.5	-	-	-	-	-	523.5	255.5	0.598	-	-			1.000	
					Sandy Soil				543.0	265.0	-	-	-	-	-	543.0	265.0	0.583	-	-			1.000	
					Sandy Soil				562.5	274.5	-	-	-	-	-	562.5	274.5	0.568	-	-			1.000	
30		30.00 Sand	19.5		Sandy Soil				582.0	284.0	-	-	-	-	-	582.0	284.0	0.553	-	-			1.000	

No.	1	Name	J-3			Location	Jono Oge			LNG;	823812.00 m E	LAT;	9890557.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	53.30m	Total Advance	30.00m	Ground Water Level	0.70m	Ground Hight	53.30m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L = 0.51		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-				
0	1.40 Silt	15.5	8	-																9.60	1.000	0.000
	2.20 Coarse Sand	19.5	13	Sandy Soil	21.2	NP	0.151	29.5	18.5	25.0	35.2	1.886	2.000	3.772	29.5	18.5	0.973	0.465	8.103		9.10	1.000	0.000
	3.00 Gavelly Sand	19.5	16	Sandy Soil	13.4	NP	0.410	49.0	28.0	27.8	31.2	0.955	2.000	1.910	49.0	28.0	0.958	0.503	3.798		8.60	1.000	0.000
	3.50 Silty Sand	19.5	18	Sandy Soil	17.0	NP	0.187	68.5	37.5	28.5	35.6	2.039	2.000	4.077	68.5	37.5	0.943	0.517	7.890		8.10	1.000	0.000
			20	Sandy Soil	14.3	NP	0.198	88.0	47.0	29.1	33.6	1.444	2.000	2.888	88.0	47.0	0.928	0.521	5.540		7.60	1.000	0.000
5	6.40 Coarse Sand	19.5	22	Sandy Soil	10.7	NP	0.266	107.5	56.5	29.6	30.3	0.825	2.000	1.649	107.5	56.5	0.913	0.521	3.165		7.10	1.000	0.000
			135	Sandy Soil	14.1	NP	1.724	127.0	66.0	168.8	192.0	21450.76	2.000	42901.5	127.0	66.0	0.898	0.518	82759		6.60	1.000	0.000
			222	Sandy Soil	15.4	NP	1.746	146.5	75.5	259.4	306.6	200461.01	2.000	400922.0	146.5	75.5	0.883	0.514	779987		6.10	1.000	0.000
			175	Sandy Soil	14.2	NP	0.609	166.0	85.0	191.9	218.9	40406.22	2.000	80812.4	166.0	85.0	0.868	0.509	158909		5.60	1.000	0.000
	10.00 Gravelly Coarse Sand	19.5	163	Sandy Soil	17.1	NP	0.414	185.5	94.5	168.4	208.7	32072.12	2.000	64144.2	185.5	94.5	0.853	0.502	127695		5.10	1.000	0.000
10			93	Sandy Soil	7.1	NP	0.937	205.0	104.0	90.9	90.9	490.23	2.000	980.5	205.0	104.0	0.838	0.496	1979		4.60	1.000	0.000
			102	Sandy Soil				224.5	113.5	94.5	94.5	603.36	2.000	1206.7	224.5	113.5	0.823	0.488	2471		4.10	1.000	0.000
			96	Sandy Soil				244.0	123.0	84.6	84.6	333.76	2.000	667.5	244.0	123.0	0.808	0.481	1388		3.60	1.000	0.000
	14.00 Coarse Sand	19.5	111	Sandy Soil				263.5	132.5	93.2	93.2	560.43	2.000	1120.9	263.5	132.5	0.793	0.473	2369		3.10	1.000	0.000
	15.00 Medium Sand	19.5	17	Sandy Soil				283.0	142.0	13.6	13.6	0.250	1.496	0.374	283.0	142.0	0.778	0.465	0.805		2.60	0.805	0.507
15			30	Sandy Soil	8.5	NP	0.270	302.5	151.5	23.0	23.0	0.356	1.846	0.658	302.5	151.5	0.763	0.457	1.440		2.10	1.000	0.000
			31	Sandy Soil				322.0	161.0	22.8	22.8	0.352	1.831	0.644	322.0	161.0	0.748	0.449	1.435		1.60	1.000	0.000
			31	Sandy Soil				341.5	170.5	21.9	21.9	0.334	1.773	0.593	341.5	170.5	0.733	0.440	1.346		1.10	1.000	0.000
			32	Sandy Soil				361.0	180.0	21.8	21.8	0.332	1.765	0.585	361.0	180.0	0.718	0.432	1.355		0.60	1.000	0.000
			35	Sandy Soil				380.5	189.5	22.9	22.9	0.354	1.839	0.652	380.5	189.5	0.703	0.423	1.539		0.10	1.000	0.000
20			33	Sandy Soil	15.1	NP	0.369	400.0	199.0	20.9	24.8	0.410	2.000	0.820	400.0	199.0	0.688	0.415	1.976			1.000	
			38	Sandy Soil				419.5	208.5	23.2	23.2	0.360	1.860	0.670	419.5	208.5	0.673	0.406	1.650			1.000	
			40	Sandy Soil				439.0	218.0	23.6	23.6	0.371	1.894	0.703	439.0	218.0	0.658	0.398	1.768			1.000	
	24.30 Medium～Coarse Sand	19.5	45	Sandy Soil				458.5	227.5	25.7	25.7	0.446	2.000	0.892	458.5	227.5	0.643	0.389	2.295			1.000	
	25.00 Sand	19.5	81	Sandy Soil				478.0	237.0	44.9	44.9	8.507	2.000	17.01	478.0	237.0	0.628	0.380	44.77			1.000	
25			122	Sandy Soil	35.4	NP	0.103	497.5	246.5	65.5	123.0	2362.08	2.000	4724.2	497.5	246.5	0.613	0.371	12728			1.000	
			120	Sandy Soil				517.0	256.0	62.6	62.6	62.63	2.000	125.3	517.0	256.0	0.598	0.362	345.7			1.000	
			135	Sandy Soil				536.5	265.5	68.4	68.4	103.96	2.000	207.9	536.5	265.5	0.583	0.353	588.3			1.000	
			107	Sandy Soil				556.0	275.0	52.7	52.7	22.88	2.000	45.76	556.0	275.0	0.568	0.345	132.8			1.000	
30	30.00 Fine Sand	19.5	210	Sandy Soil				575.5	284.5	100.7	100.7	842.70	2.000	1685.4	575.5	284.5	0.553	0.336	5022			1.000	

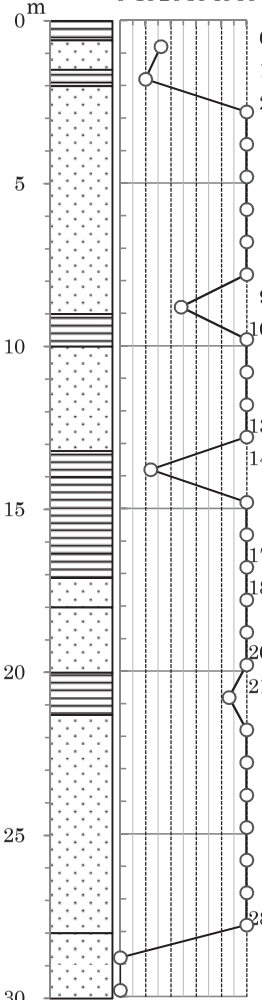
No.	1	Name	J-4			Location	Jono Oge			LNG;	822542.00 m E	LAT;	9891390.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	37.20m	Total Advance	30.00m	Ground Water Level	1.20m	Ground Hight	37.20m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
		kN/m³	N	Type	Fc	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0
0	0.50 Silty Sand	17.5	39	-																
			48	Sandy Soil	28.1	NP	0.230	31.5	25.5	85.4	138.5	4297.62	2.000	8595.2	31.5	25.5	0.973	0.361	23837	
	3.50 Fine Sand	17.5	54	Sandy Soil	26.4	NP	0.209	49.0	33.0	89.1	139.1	4385.52	2.000	8771.0	49.0	33.0	0.958	0.427	20553	
			45	-	48.1	5.6	0.082	66.5	40.5	69.2	-	-	-	-	66.5	40.5	0.943	0.465	-	
	4.80 Silt	17.5	46	Gravelly Soil	25.9	NP	0.374	84.0	48.0	66.3	83.6	314.69	2.000	629.4	84.0	48.0	0.928	0.487	1292	
5	6.20 Sand and Gravel	21.0	58	Gravelly Soil	27.7	NP	0.280	105.0	59.0	76.4	99.9	808.49	2.000	1617.0	105.0	59.0	0.913	0.487	3317	
	7.20 Coarse Sand	19.5	56	Sandy Soil	9.3	NP	0.519	125.1	69.1	68.4	68.4	104.25	2.000	208.5	125.1	69.1	0.898	0.488	427.5	
	8.50 Silty Sand	19.5	56	Sandy Soil	35.0	NP	0.172	144.6	78.6	64.1	119.4	2028.73	2.000	4057.5	144.6	78.6	0.883	0.487	8326	
	9.00 Sand and Gravel	21.0	56	Gravelly Soil	31.7	NP	0.160	164.6	88.6	60.0	83.8	317.16	2.000	634.3	164.6	88.6	0.868	0.484	1311	
			72	Sandy Soil	29.5	NP	0.221	184.4	98.4	72.7	121.7	2231.27	2.000	4462.5	184.4	98.4	0.853	0.480	9303	
10			62	Sandy Soil				203.9	107.9	59.3	59.3	45.70	2.000	91.41	203.9	107.9	0.838	0.475	192.4	
			59	Sandy Soil	45.5	NP	0.094	223.4	117.4	53.5	135.1	3783.61	2.000	7567.2	223.4	117.4	0.823	0.470	16103	
			61	Sandy Soil				242.9	126.9	52.7	52.7	22.76	2.000	45.53	242.9	126.9	0.808	0.464	98.11	
			63	Sandy Soil				262.4	136.4	51.9	51.9	20.82	2.000	41.63	262.4	136.4	0.793	0.458	90.95	
			73	Sandy Soil				281.9	145.9	57.5	57.5	38.27	2.000	76.55	281.9	145.9	0.778	0.451	169.7	
15			71	Sandy Soil	24.6	NP	0.288	301.4	155.4	53.6	80.9	262.73	2.000	525.5	301.4	155.4	0.763	0.444	1183	
			80	Sandy Soil				320.9	164.9	57.9	57.9	39.93	2.000	79.85	320.9	164.9	0.748	0.437	182.8	
			73	Sandy Soil				340.4	174.4	50.8	50.8	18.26	2.000	36.51	340.4	174.4	0.733	0.429	85.06	
			78	Sandy Soil				359.9	183.9	52.2	52.2	21.63	2.000	43.27	359.9	183.9	0.718	0.422	102.6	
			76	Sandy Soil	17.2	NP	0.433	379.4	193.4	49.1	61.4	56.28	2.000	112.6	379.4	193.4	0.703	0.414	272.0	
20			80	Sandy Soil				398.9	202.9	49.8	49.8	16.29	2.000	32.58	398.9	202.9	0.688	0.406	80.28	
			70	Sandy Soil				418.4	212.4	42.1	42.1	5.767	2.000	11.53	418.4	212.4	0.673	0.398	28.99	
			76	Sandy Soil				437.9	221.9	44.3	44.3	7.840	2.000	15.68	437.9	221.9	0.658	0.390	40.25	
			74	Sandy Soil				457.4	231.4	41.7	41.7	5.431	2.000	10.86	457.4	231.4	0.643	0.381	28.49	
			72	Sandy Soil	26.1	NP	0.175	476.9	240.9	39.4	61.8	58.33	2.000	116.7	476.9	240.9	0.628	0.373	312.7	
25			72	Sandy Soil				496.4	250.4	38.2	38.2	3.122	2.000	6.244	496.4	250.4	0.613	0.365	17.12	
			68	Sandy Soil	30.7	NP	0.162	515.9	259.9	35.0	61.0	53.91	2.000	107.8	515.9	259.9	0.598	0.356	302.7	
			67	Sandy Soil				535.4	269.4	33.6	33.6	1.429	2.000	2.857	535.4	269.4	0.583	0.348	8.220	
			76	Sandy Soil				554.9	278.9	37.0	37.0	2.574	2.000	5.148	554.9	278.9	0.568	0.339	15.18	
30	30.00 Coarse Sand	19.5	70	Sandy Soil				574.4	288.4	33.2	33.2	1.344	2.000	2.689	574.4	288.4	0.553	0.330	8.136	

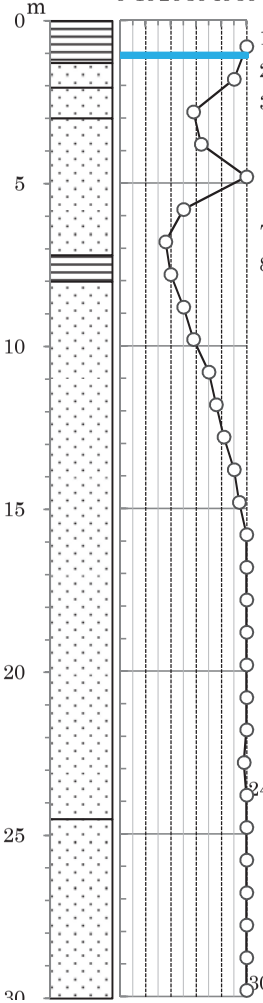
W	F_L	ΔP_L
9.60	1.000	0.000
9.10	1.000	0.000
8.60	1.000	0.000
8.10	1.000	0.000
7.60	1.000	0.000
7.10	1.000	0.000
6.60	1.000	0.000
6.10	1.000	0.000
5.60	1.000	0.000
5.10	1.000	0.000
4.60	1.000	0.000
4.10	1.000	0.000
3.60	1.000	0.000
3.10	1.000	0.000
2.60	1.000	0.000
2.10	1.000	0.000
1.60	1.000	0.000
1.10	1.000	0.000
0.60	1.000	0.000
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No.	1	Name	J-5			Location	Jono Oge			LNG;	824476.00 m E	LAT;	9894166.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	62.00m	Total Advance	28.00m	Ground Water Level	-1.95m	Ground Hight	62.00m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00		
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0.60	Silt	17.5	16	-																9.60	1.000	0.000
1.50	Gravelly silty sand	19.5	10	-	56.0	4.9	0.061	33.3	-4.2	25.8	-	-	-	-	33.3	15.3	0.973	0.635	-	9.10	1.000	0.000
2.00	Sandy Silt	17.5	63	Sandy Soil	22.2	NP	0.337	52.4	4.9	143.0	202.2	27530.39	2.000	55060.8	52.4	24.4	0.958	0.617	89210	8.60	1.000	0.000
			58	Sandy Soil	27.5	NP	0.277	71.9	14.4	116.8	186.4	18569.79	2.000	37139.6	71.9	33.9	0.943	0.600	61898	8.10	1.000	0.000
			53	Sandy Soil	30.1	NP	0.257	91.4	23.9	96.0	161.8	9275.79	2.000	18551.6	91.4	43.4	0.928	0.586	31641	7.60	1.000	0.000
			57	Sandy Soil	32.0	NP	0.211	110.9	33.4	93.7	164.4	10038.08	2.000	20076.2	110.9	52.9	0.913	0.574	34963	7.10	1.000	0.000
			57	Sandy Soil	32.2	NP	0.250	130.4	42.9	85.8	151.3	6656.40	2.000	13312.8	130.4	62.4	0.898	0.563	23647	6.60	1.000	0.000
			54	Sandy Soil	40.2	NP	0.144	149.9	52.4	75.0	154.0	7279.30	2.000	14558.6	149.9	71.9	0.883	0.552	26361	6.10	1.000	0.000
9.00	Gravelly Sand	19.5	24	Sandy Soil	31.4	NP	0.156	169.4	61.9	30.9	54.8	28.75	2.000	57.49	169.4	81.4	0.868	0.542	106.1	5.60	1.000	0.000
10.00	Gravelly silt	17.5	65	-	56.3	7.0	0.058	187.3	69.8	79.0	-	-	-	-	187.3	89.3	0.853	0.537	-	5.10	1.000	0.000
			59	Sandy Soil			2.000	206.4	78.9	67.4	67.4	95.31	2.000	190.6	206.4	98.4	0.838	0.527	361.5	4.60	1.000	0.000
			58	Sandy Soil	28.4	NP	0.243	225.9	88.4	62.2	101.9	896.18	2.000	1792.4	225.9	107.9	0.823	0.517	3467	4.10	1.000	0.000
13.20	Gravelly Sand	19.5	55	Sandy Soil			2.000	245.4	97.9	55.7	55.7	31.71	2.000	63.41	245.4	117.4	0.808	0.507	125.1	3.60	1.000	0.000
14.00	Gravelly Sandy Silt	17.5	12	-				263.7	106.2	11.6	-	-	-	-	263.7	125.7	0.793	0.499	-	3.10	1.000	0.000
			64	-			2.000	281.2	113.7	59.2	-	-	-	-	281.2	133.2	0.778	0.493	-	2.60	1.000	0.000
			51	-	56.0	6.5	0.058	298.7	121.2	45.3	-	-	-	-	298.7	140.7	0.763	0.486	-	2.10	1.000	0.000
17.10	Sandy Silt	17.5	55	-			2.000	316.2	128.7	47.1	-	-	-	-	316.2	148.2	0.748	0.479	-	1.60	1.000	0.000
18.00	Gravelly silty sand	19.5	67	Sandy Soil				335.1	137.6	54.9	54.9	29.02	2.000	58.05	335.1	157.1	0.733	0.469	123.8	1.10	1.000	0.000
			74	Sandy Soil	39.1	NP	0.152	354.6	147.1	57.9	116.6	1794.26	2.000	3588.5	354.6	166.6	0.718	0.458	7827	0.60	1.000	0.000
20.00	Silty Sand	19.5	50	Sandy Soil			2.000	374.1	156.6	37.5	37.5	2.785	2.000	5.570	374.1	176.1	0.703	0.448	12.43	0.10	1.000	0.000
21.30	Gravelly silt	17.5	43	-				392.0	164.5	31.2	-	-	-	-	392.0	184.0	0.688	0.440	-		1.000	
			55	Sandy Soil			2.000	410.5	173.0	38.5	38.5	3.261	2.000	6.522	410.5	192.5	0.673	0.431	15.15		1.000	
			64	Sandy Soil	34.8	NP	0.166	430.0	182.5	43.1	80.8	260.68	2.000	521.4	430.0	202.0	0.658	0.420	1241		1.000	
			69	Sandy Soil			2.000	449.5	192.0	44.8	44.8	8.410	2.000	16.82	449.5	211.5	0.643	0.410	41.03		1.000	
			56	Sandy Soil			2.000	469.0	201.5	35.1	35.1	1.846	2.000	3.693	469.0	221.0	0.628	0.400	9.236		1.000	
			62	Sandy Soil	40.9	NP	0.100	488.5	211.0	37.5	80.6	257.79	2.000	515.6	488.5	230.5	0.613	0.390	1323		1.000	
			58	Sandy Soil			2.000	508.0	220.5	33.9	33.9	1.524	2.000	3.048	508.0	240.0	0.598	0.380	8.027		1.000	
28.00	Silty Sand	19.5	56	Sandy Soil			2.000	527.5	230.0	31.7	31.7	1.047	2.000	2.095	527.5	249.5	0.583	0.370	5.665		1.000	
				Sandy Soil			2.000	547.0	239.5	-	-	-	-	-	547.0	259.0	0.568	-	-		1.000	
				Sandy Soil			2.000	566.5	249.0	-	-	-	-	-	566.5	268.5	0.553	-	-		1.000	

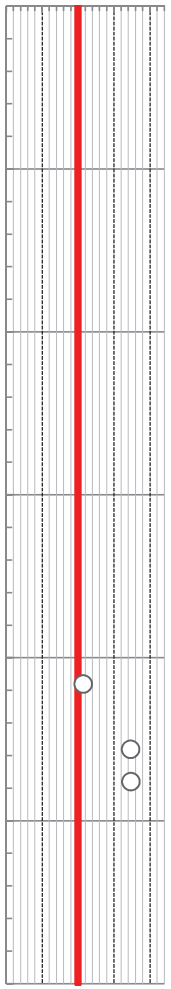
No.	1	Name	J-6			Location	Jono Oge			LNG;	822628.00 m E	LAT;	9894199.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	37.20m	Total Advance	30.00m	Ground Water Level	1.07m	Ground Hight	37.20m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)									P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00		
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0	1.30 Silt	15.5	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		9.60	1.000	0.000
	2.05 Gravelly Sand	19.5	45	Sandy Soil	25.6	NP	0.166	29.9	22.6	82.6	126.9	2762.47	2.000	5524.9	29.9	22.6	0.973	0.386	14306		9.10	1.000	0.000
	3.00 Silty Sand	19.5	29	Sandy Soil	43.0	10.5	0.103	49.4	32.1	48.3	111.7	1441.89	2.000	2883.8	49.4	32.1	0.958	0.442	6520		8.60	1.000	0.000
			32	Sandy Soil	47.1	6.9	0.086	68.9	41.6	48.7	130.2	3150.64	2.000	6301.3	68.9	41.6	0.943	0.469	13448		8.10	1.000	0.000
			50	Sandy Soil	44.2	NP	0.097	88.4	51.1	70.2	168.1	11187.11	2.000	22374.2	88.4	51.1	0.928	0.482	46457		7.60	1.000	0.000
5			25	Sandy Soil	48.5	6.5	0.079	107.9	60.6	32.5	92.5	538.20	2.000	1076.4	107.9	60.6	0.913	0.488	2207		7.10	1.000	0.000
	7.20 Silty Sand	19.5	18	Sandy Soil	47.0	11.6	0.085	127.4	70.1	21.8	60.4	50.90	2.000	101.8	127.4	70.1	0.898	0.490	207.9		6.60	1.000	0.000
	8.00 Sandy Silt	17.5	20	-	50.3	6.4	0.073	145.7	78.4	22.9	-	-	-	-	145.7	78.4	0.883	0.492	-		6.10	1.000	0.000
			25	Sandy Soil	44.8	10.6	0.099	164.8	87.5	27.0	68.1	101.69	2.000	203.4	164.8	87.5	0.868	0.490	414.7		5.60	1.000	0.000
			29	Sandy Soil	21.5	NP	0.179	184.3	97.0	29.5	41.8	5.444	2.000	10.89	184.3	97.0	0.853	0.486	22.39		5.10	1.000	0.000
10			35	Sandy Soil	18.8	NP	0.203	203.8	106.5	33.7	44.3	7.921	2.000	15.84	203.8	106.5	0.838	0.481	32.93		4.60	1.000	0.000
			38	Sandy Soil	16.5	NP	0.264	223.3	116.0	34.7	42.7	6.293	2.000	12.59	223.3	116.0	0.823	0.475	26.48		4.10	1.000	0.000
			41	Sandy Soil				242.8	125.5	35.7	35.7	2.040	2.000	4.081	242.8	125.5	0.808	0.469	8.701		3.60	1.000	0.000
			45	Sandy Soil				262.3	135.0	37.3	37.3	2.697	2.000	5.394	262.3	135.0	0.793	0.462	11.67		3.10	1.000	0.000
			47	Sandy Soil				281.8	144.5	37.2	37.2	2.667	2.000	5.334	281.8	144.5	0.778	0.455	11.72		2.60	1.000	0.000
15			50	Sandy Soil	23.6	NP	0.174	301.3	154.0	37.9	56.3	33.87	2.000	67.74	301.3	154.0	0.763	0.448	151.3		2.10	1.000	0.000
			56	Sandy Soil				320.8	163.5	40.8	40.8	4.684	2.000	9.368	320.8	163.5	0.748	0.440	21.28		1.60	1.000	0.000
			58	Sandy Soil				340.3	173.0	40.6	40.6	4.546	2.000	9.091	340.3	173.0	0.733	0.433	21.02		1.10	1.000	0.000
			63	Sandy Soil	22.8	NP	0.169	359.8	182.5	42.4	61.5	56.66	2.000	113.3	359.8	182.5	0.718	0.425	266.8		0.60	1.000	0.000
			69	Sandy Soil				379.3	192.0	44.8	44.8	8.410	2.000	16.82	379.3	192.0	0.703	0.417	40.37		0.10	1.000	0.000
20			71	Sandy Soil				398.8	201.5	44.5	44.5	8.049	2.000	16.10	398.8	201.5	0.688	0.408	39.41			1.000	
			69	Sandy Soil	21.4	NP	0.175	418.3	211.0	41.7	58.6	42.71	2.000	85.42	418.3	211.0	0.673	0.400	213.4			1.000	
			49	Sandy Soil				437.8	220.5	28.7	28.7	0.646	2.000	1.293	437.8	220.5	0.658	0.392	3.299			1.000	
	24.50 Silty Sand	19.5	54	Sandy Soil				457.3	230.0	30.6	30.6	0.869	2.000	1.738	457.3	230.0	0.643	0.384	4.533			1.000	
			75	Sandy Soil				476.8	239.5	41.2	41.2	4.998	2.000	9.997	476.8	239.5	0.628	0.375	26.65			1.000	
25			75	Sandy Soil	37.3	NP	0.202	496.3	249.0	40.0	78.6	225.02	2.000	450.0	496.3	249.0	0.613	0.367	1228			1.000	
			75	Sandy Soil				515.8	258.5	38.8	38.8	3.442	2.000	6.885	515.8	258.5	0.598	0.358	19.23			1.000	
			78	Sandy Soil				535.3	268.0	39.2	39.2	3.681	2.000	7.361	535.3	268.0	0.583	0.349	21.07			1.000	
			74	Sandy Soil				554.8	277.5	36.2	36.2	2.239	2.000	4.477	554.8	277.5	0.568	0.341	13.14			1.000	
30	30.00 Gravelly silty sand	19.5	81	Sandy Soil				574.3	287.0	38.6	38.6	3.311	2.000	6.622	574.3	287.0	0.553	0.332	19.95			1.000	

No.	1	Name	J-7			Location	Jono Oge			LNG;	824564.00 m E	LAT;	9892721.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	67.80m	Total Advance	30.00m	Ground Water Level	3.71m	Ground Hight	67.80m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

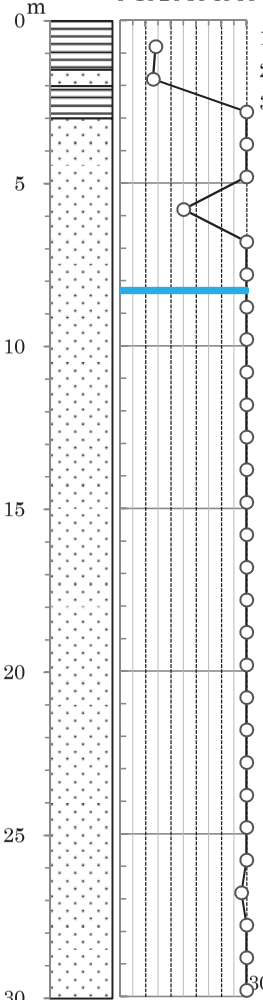
Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
m	0 10 20 30 40 50					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		0.00	
0		1.00	Silt	15.5	18	-															9.60	1.000	0.000
		2.00	Sand	19.5	9	Sandy Soil	33.4	NP	0.208	31.1	18.1	17.4	32.9	1.265	2.000	2.531	31.1	18.1	0.973	-	-	9.10	1.000	0.000
					19	Sandy Soil	29.1	NP	0.303	50.6	27.6	33.1	55.8	32.01	2.000	64.01	50.6	27.6	0.958	-	-	8.60	1.000	0.000
		4.40	Gravelly sand	19.5	21	Sandy Soil	46.4	NP	0.087	70.1	37.1	33.3	88.1	416.10	2.000	832.2	70.1	37.1	0.943	0.535	1557	8.10	1.000	0.000
5					19	-	65.9	8.9	0.040	88.8	45.8	27.9	-	-	-	-	88.8	45.8	0.928	0.540	-	7.60	1.000	0.000
		6.00	Sandy Silt	17.5	23	-	57.4	7.6	0.057	106.3	53.3	31.7	-	-	-	-	106.3	53.3	0.913	0.546	-	7.10	1.000	0.000
					27	Sandy Soil	36.7	NP	0.204	125.4	62.4	34.7	67.7	98.14	2.000	196.3	125.4	62.4	0.898	0.541	362.5	6.60	1.000	0.000
					30	Sandy Soil	24.4	NP	0.252	144.9	71.9	35.9	54.3	27.39	2.000	54.78	144.9	71.9	0.883	0.534	102.6	6.10	1.000	0.000
					32	Sandy Soil	38.0	NP	0.314	164.4	81.4	35.9	71.8	135.93	2.000	271.9	164.4	81.4	0.868	0.526	516.9	5.60	1.000	0.000
		10.00	Silty Sand	19.5	27	Sandy Soil	49.6	NP	0.075	183.9	90.9	28.5	84.2	327.01	2.000	654.0	183.9	90.9	0.853	0.518	1263	5.10	1.000	0.000
10		11.00	Sandy Silt	17.5	25	-	50.7	NP	0.073	201.8	98.8	25.2	-	-	-	-	201.8	98.8	0.838	0.513	-	4.60	1.000	0.000
					35	Sandy Soil			2.000	220.9	107.9	33.4	33.4	1.400	2.000	2.800	220.9	107.9	0.823	0.505	5.540	4.10	1.000	0.000
					42	Sandy Soil			2.000	240.4	117.4	38.1	38.1	3.067	2.000	6.135	240.4	117.4	0.808	0.496	12.36	3.60	1.000	0.000
					37	Sandy Soil	37.0	NP	0.163	259.9	126.9	31.9	62.9	64.32	2.000	128.6	259.9	126.9	0.793	0.487	264.0	3.10	1.000	0.000
					150	Sandy Soil			2.000	279.4	136.4	123.5	123.5	2412.40	2.000	4824.8	279.4	136.4	0.778	0.478	10092	2.60	1.000	0.000
15					38	Sandy Soil			2.000	298.9	145.9	29.9	29.9	0.780	2.000	1.560	298.9	145.9	0.763	0.469	3.328	2.10	1.000	0.000
					47	Sandy Soil	29.6	NP	0.309	318.4	155.4	35.4	60.2	50.10	2.000	100.2	318.4	155.4	0.748	0.460	217.9	1.60	1.000	0.000
					150	Sandy Soil			2.000	337.9	164.9	108.6	108.6	1244.47	2.000	2488.9	337.9	164.9	0.733	0.451	5524	1.10	1.000	0.000
		19.50	Grvelly Sand	19.5	48	Sandy Soil			2.000	357.4	174.4	33.4	33.4	1.386	2.000	2.773	357.4	174.4	0.718	0.441	6.281	0.60	1.000	0.000
		20.30	Silt	17.5	38	-				376.3	183.3	25.5	-	-	-	-	376.3	183.3	0.703	0.433	-	0.10	1.000	0.000
20		21.00	Sand	19.5	27	Sandy Soil				394.8	191.8	17.5	17.5	0.284	1.606	0.456	394.8	191.8	0.688	0.425	1.073		1.000	
					39	Sandy Soil	41.0	NP	0.154	414.3	201.3	24.4	53.5	24.93	2.000	49.86	414.3	201.3	0.673	0.416	120.0		1.000	
					39	Sandy Soil				433.8	210.8	23.6	23.6	0.371	1.894	0.703	433.8	210.8	0.658	0.406	1.730		1.000	
					40	Sandy Soil				453.3	220.3	23.4	23.4	0.366	1.878	0.688	453.3	220.3	0.643	0.397	1.733		1.000	
		25.10	Silty Sand	19.5	45	Sandy Soil				472.8	229.8	25.5	25.5	0.437	2.000	0.874	472.8	229.8	0.628	0.388	2.256		1.000	
25					150	Sandy Soil			2.000	492.3	239.3	82.4	82.4	291.11	2.000	582.2	492.3	239.3	0.613	0.378	1539		1.000	
					87	Sandy Soil			2.000	511.8	248.8	46.4	46.4	10.49	2.000	20.97	511.8	248.8	0.598	0.369	56.83		1.000	
					150	Sandy Soil	28.0	NP	0.254	531.3	258.3	77.7	125.8	2638.58	2.000	5277.2	531.3	258.3	0.583	0.360	14669		1.000	
					50	Sandy Soil			2.000	550.8	267.8	25.2	25.2	0.422	2.000	0.845	550.8	267.8	0.568	0.350	2.410		1.000	
30		30.00	Gravelly Sand	19.5	150	Sandy Soil			2.000	570.3	277.3	73.4	73.4	154.37	2.000	308.7	570.3	277.3	0.553	0.341	904.9		1.000	



No.	1	Name	J-8			Location	Jono Oge			LNG;	823337.00 m E	LAT;	9892345.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	48.90m	Total Advance	30.00m	Ground Water Level	1.05m	Ground Hight	48.90m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

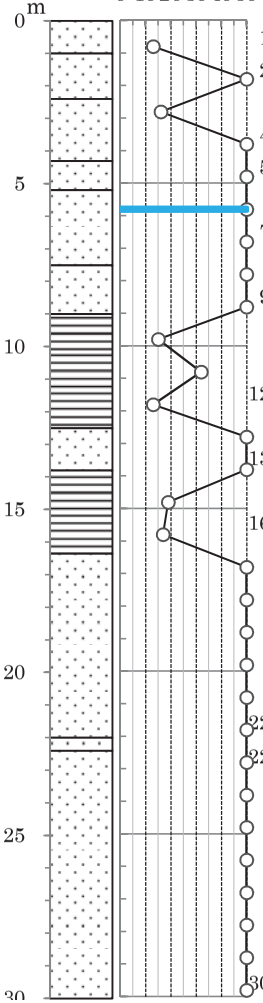
Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)									P_L 0.30		
m			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
						%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-			
0		1.00	Silt	15.5	14	-														-	9.60	1.000	0.000
		1.25	Sand	17.5	15	-	61.2	6.5	0.059	29.5	22.0	27.7	-	-	-	-	29.5	22.0	0.973	0.391	-	9.10	1.000	0.000
		2.00	Sandy Silt	17.5	53	Sandy Soil	37.3	NP	0.131	48.6	31.1	89.1	172.5	12730.27	2.000	25460.5	48.6	31.1	0.958	0.449	56690	8.60	1.000	0.000
		3.20	Silty Sand	19.5	13	-	62.1	6.3	0.054	66.9	39.4	20.2	-	-	-	-	66.9	39.4	0.943	0.480	-	8.10	1.000	0.000
		4.50	Sandy Silt	17.5	52	Sandy Soil	28.9	NP	0.668	85.0	47.5	75.2	124.2	2472.85	2.000	4945.7	85.0	47.5	0.928	0.498	9927	7.60	1.000	0.000
5					64	Sandy Soil	22.4	NP	0.695	104.5	57.0	85.7	122.0	2266.83	2.000	4533.7	104.5	57.0	0.913	0.502	9029	7.10	1.000	0.000
					64	Sandy Soil	29.0	NP	0.306	124.0	66.5	79.7	131.7	3334.50	2.000	6669.0	124.0	66.5	0.898	0.502	13276	6.60	1.000	0.000
					65	Sandy Soil	28.7	NP	0.252	143.5	76.0	75.7	124.4	2496.81	2.000	4993.6	143.5	76.0	0.883	0.500	9984	6.10	1.000	0.000
					59	Sandy Soil	38.1	NP	0.177	163.0	85.5	64.5	127.2	2798.13	2.000	5596.3	163.0	85.5	0.868	0.496	11273	5.60	1.000	0.000
					25	Sandy Soil	48.8	6.6	0.081	182.5	95.0	25.8	74.7	170.44	2.000	340.9	182.5	95.0	0.853	0.492	693.4	5.10	1.000	0.000
10					56	Sandy Soil				202.0	104.5	54.6	54.6	28.06	2.000	56.13	202.0	104.5	0.838	0.486	115.5	4.60	1.000	0.000
					68	Sandy Soil				221.5	114.0	62.8	62.8	64.08	2.000	128.2	221.5	114.0	0.823	0.480	267.1	4.10	1.000	0.000
					65	Sandy Soil	13.2	NP	0.404	241.0	123.5	57.1	63.5	68.13	2.000	136.3	241.0	123.5	0.808	0.473	288.1	3.60	1.000	0.000
					68	Sandy Soil				260.5	133.0	56.9	56.9	36.18	2.000	72.35	260.5	133.0	0.793	0.466	155.3	3.10	1.000	0.000
					62	Sandy Soil	32.9	NP	0.191	280.0	142.5	49.6	89.4	449.94	2.000	899.9	280.0	142.5	0.778	0.459	1962	2.60	1.000	0.000
15					61	Sandy Soil				299.5	152.0	46.7	46.7	10.94	2.000	21.88	299.5	152.0	0.763	0.451	48.51	2.10	1.000	0.000
					67	Sandy Soil	88.2	9.4	0.030	319.0	161.5	49.2	308.5	206483.58	2.000	412967.2	319.0	161.5	0.748	0.443	931697	1.60	1.000	0.000
		18.10	Silty Gravelly Sand	19.5	15	Sandy Soil				338.5	171.0	10.6	10.6	0.225	1.414	0.318	338.5	171.0	0.733	0.435	0.732	1.10	0.732	0.295
		19.10	Silt	17.5	58	-				356.6	179.1	39.6	-	-	-	-	356.6	179.1	0.718	0.429	-	0.60	1.000	0.000
		20.50	Sand	19.5	64	Sandy Soil				375.5	188.0	42.2	42.2	5.787	2.000	11.57	375.5	188.0	0.703	0.421	27.48	0.10	1.000	0.000
20					66	Sandy Soil	19.1	NP	0.210	395.0	197.5	41.9	55.3	30.56	2.000	61.12	395.0	197.5	0.688	0.413	148.1		1.000	
					53	Sandy Soil				414.5	207.0	32.5	32.5	1.197	2.000	2.394	414.5	207.0	0.673	0.404	5.923		1.000	
					14	Sandy Soil				434.0	216.5	8.3	8.3	0.205	1.346	0.276	434.0	216.5	0.658	0.396	0.696		0.696	
					59	Sandy Soil				453.5	226.0	33.9	33.9	1.509	2.000	3.019	453.5	226.0	0.643	0.387	7.799		1.000	
		25.10	Silty Sand	19.5	11	Sandy Soil				473.0	235.5	6.1	6.1	0.183	1.273	0.233	473.0	235.5	0.628	0.378	0.615		0.615	
25					52	Sandy Soil	21.2	NP	0.195	492.5	245.0	28.1	39.5	3.822	2.000	7.644	492.5	245.0	0.613	0.370	20.68		1.000	
					64	Sandy Soil				512.0	254.5	33.5	33.5	1.420	2.000	2.840	512.0	254.5	0.598	0.361	7.869		1.000	
					62	Sandy Soil				531.5	264.0	31.6	31.6	1.017	2.000	2.034	531.5	264.0	0.583	0.352	5.776		1.000	
					53	Sandy Soil				551.0	273.5	26.2	26.2	0.472	2.000	0.943	551.0	273.5	0.568	0.343	2.748		1.000	
30		30.00	Sand	19.5	67	Sandy Soil				570.5	283.0	32.3	32.3	1.146	2.000	2.291	570.5	283.0	0.553	0.334	6.851		1.000	

No.	1	Name	J-9			Location	Jono Oge			LNG;	825484.00 m E	LAT;	9888633.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	81.70m	Total Advance	30.00m	Ground Water Level	8.30m	Ground Hight	81.70m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



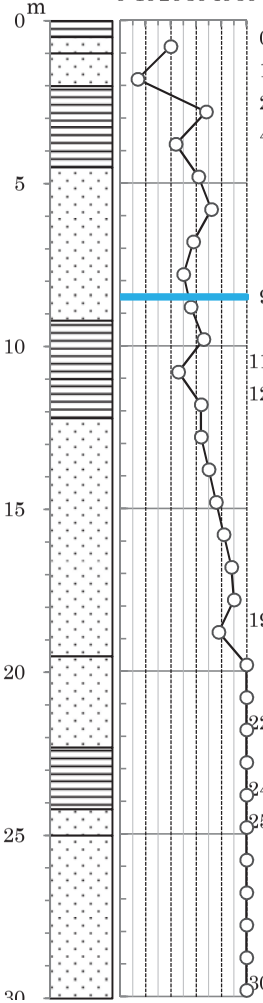
Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1					Liquefaction Judgment (Value for Calcurate L)					P_L		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00
								kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	W	F_L	ΔP_L
1.50	Silt	15.5	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.60	1.000	0.000
2.00	Silty Sand	19.5	13	Sandy Soil	32.1	NP	0.101	29.1	16.1	25.7	46.4	10.45	2.000	20.90	29.1	16.1	0.973	-	-	9.10	1.000	0.000
3.00	Silt	17.5	94	-				47.0	24.0	170.0	-	-	-	-	47.0	24.0	0.958	-	-	8.60	1.000	0.000
			375	Sandy Soil	29.8	NP	0.814	66.1	33.1	618.3	1028.2	53915838.28	2.000	107831676.6	66.1	33.1	0.943	-	-	8.10	1.000	0.000
			375	Sandy Soil			2.000	85.6	42.6	566.2	566.2	3494817.42	2.000	6989634.8	85.6	42.6	0.928	-	-	7.60	1.000	0.000
			25	Sandy Soil	29.7	NP	0.144	105.1	52.1	34.8	59.3	46.00	2.000	91.99	105.1	52.1	0.913	-	-	7.10	1.000	0.000
			300	Sandy Soil			2.000	124.6	61.6	387.5	387.5	602042.93	2.000	1204085.9	124.6	61.6	0.898	-	-	6.60	1.000	0.000
			375	Sandy Soil	13.7	NP	2.560	144.1	71.1	451.8	507.1	2101223.65	2.000	4202447.3	144.1	71.1	0.883	-	-	6.10	1.000	0.000
			250	Sandy Soil			2.000	163.6	80.6	282.2	282.2	135587.92	2.000	271175.8	163.6	80.6	0.868	0.529	513052	5.60	1.000	0.000
			300	Sandy Soil			2.000	183.1	90.1	318.6	318.6	240210.34	2.000	480420.7	183.1	90.1	0.853	0.520	923821	5.10	1.000	0.000
			144	Sandy Soil			2.000	202.6	99.6	144.3	144.3	5272.67	2.000	10545.3	202.6	99.6	0.838	0.511	20621	4.60	1.000	0.000
			120	Sandy Soil	11.3	NP	2.819	222.1	109.1	113.9	119.1	1999.29	2.000	3998.6	222.1	109.1	0.823	0.503	7955	4.10	1.000	0.000
			214	Sandy Soil			2.000	241.6	118.6	192.9	192.9	21919.50	2.000	43839.0	241.6	118.6	0.808	0.494	88780	3.60	1.000	0.000
			102	Sandy Soil			2.000	261.1	128.1	87.5	87.5	401.73	2.000	803.5	261.1	128.1	0.793	0.485	1657	3.10	1.000	0.000
			500	Sandy Soil			2.000	280.6	137.6	409.4	409.4	778017.79	2.000	1556035.6	280.6	137.6	0.778	0.476	3269260	2.60	1.000	0.000
			75	Sandy Soil	16.0	NP	2.274	300.1	147.1	58.7	71.0	127.81	2.000	255.6	300.1	147.1	0.763	0.467	547.4	2.10	1.000	0.000
			500	Sandy Soil			2.000	319.6	156.6	375.1	375.1	517012.05	2.000	1034024.1	319.6	156.6	0.748	0.458	2257838	1.60	1.000	0.000
			500	Sandy Soil			2.000	339.1	166.1	360.0	360.0	426637.89	2.000	853275.8	339.1	166.1	0.733	0.449	1900667	1.10	1.000	0.000
			500	Sandy Soil			2.000	358.6	175.6	346.1	346.1	354633.46	2.000	709266.9	358.6	175.6	0.718	0.440	1612420	0.60	1.000	0.000
			500	Sandy Soil			2.000	378.1	185.1	333.2	333.2	296770.74	2.000	593541.5	378.1	185.1	0.703	0.431	1377762	0.10	1.000	0.000
			500	Sandy Soil			2.000	397.6	194.6	321.2	321.2	249901.86	2.000	499803.7	397.6	194.6	0.688	0.422	1185185		1.000	
			500	Sandy Soil			2.000	417.1	204.1	310.1	310.1	211657.44	2.000	423314.9	417.1	204.1	0.673	0.413	1025959		1.000	
			500	Sandy Soil			2.000	436.6	213.6	299.7	299.7	180235.95	2.000	360471.9	436.6	213.6	0.658	0.403	893391		1.000	
			500	Sandy Soil			2.000	456.1	223.1	290.0	290.0	154254.65	2.000	308509.3	456.1	223.1	0.643	0.394	782304		1.000	
			63	Sandy Soil			2.000	475.6	232.6	35.4	35.4	1.953	2.000	3.905	475.6	232.6	0.628	0.385	10.14		1.000	
			500	Sandy Soil			2.000	495.1	242.1	272.3	272.3	114564.95	2.000	229129.9	495.1	242.1	0.613	0.376	609259		1.000	
			48	Sandy Soil	13.5	NP	2.701	514.6	251.6	25.4	28.6	0.638	2.000	1.275	514.6	251.6	0.598	0.367	3.475		1.000	
			500	Sandy Soil			2.000	534.1	261.1	256.7	256.7	86516.84	2.000	173033.7	534.1	261.1	0.583	0.358	483643		1.000	
			75	Sandy Soil			2.000	553.6	270.6	37.4	37.4	2.750	2.000	5.499	553.6	270.6	0.568	0.349	15.77		1.000	
30.00	Silty Gravelly Sand	19.5	75	Sandy Soil			2.000	573.1	280.1	36.4	36.4	2.322	2.000	4.643	573.1	280.1	0.553	0.339	13.68		1.000	

No.	1	Name	J-10			Location	Jono Oge			LNG;	823748.00 m E	LAT;	9888547.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	66.10m	Total Advance	30.00m	Ground Water Level	5.80m	Ground Hight	66.10m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

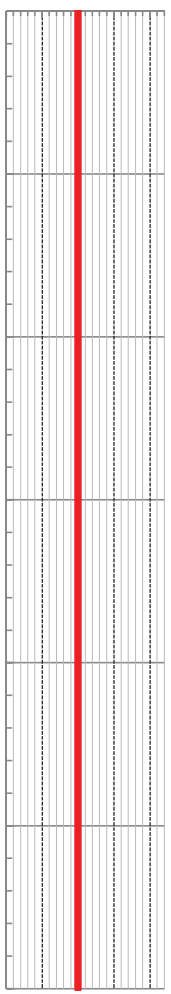


Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L 0.00		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		9.60	1.000	0.000
1.00	Sand	17.5	13	-																		
2.40	Gravelly sand	19.5	56	Sandy Soil	7.8	NP	0.397	33.1	25.1	100.1	100.1	816.79	2.000	1633.6	33.1	25.1	0.973	-	-		9.10	1.000	0.000
			16	Sandy Soil	13.8	NP	0.337	52.6	34.6	26.0	29.6	0.739	2.000	1.477	52.6	34.6	0.958	-	-		8.60	1.000	0.000
4.30	Sand	19.5	58	Sandy Soil	11.1	NP	0.471	72.1	44.1	86.4	89.7	457.88	2.000	915.8	72.1	44.1	0.943	-	-		8.10	1.000	0.000
5.20	Gravelly sand	19.5	64	Sandy Soil	24.8	NP	0.803	91.6	53.6	88.0	132.7	3466.88	2.000	6933.8	91.6	53.6	0.928	-	-		7.60	1.000	0.000
			53	Sandy Soil	34.1	NP	0.255	111.1	63.1	67.7	124.1	2467.85	2.000	4935.7	111.1	63.1	0.913	-	-		7.10	1.000	0.000
7.50	Sand	19.5	61	Sandy Soil	34.3	NP	0.231	130.6	72.6	72.7	133.7	3590.07	2.000	7180.1	130.6	72.6	0.898	0.485	14816		6.60	1.000	0.000
			57	Sandy Soil	15.5	NP	1.664	150.1	82.1	63.7	75.8	184.05	2.000	368.1	150.1	82.1	0.883	0.484	760.1		6.10	1.000	0.000
9.00	Gravelly sand	19.5	50	Sandy Soil	15.8	NP	0.400	169.6	91.6	52.6	63.2	66.53	2.000	133.1	169.6	91.6	0.868	0.482	276.0		5.60	1.000	0.000
			15	-	56.5	NP	0.068	187.5	99.5	15.0	-	-	-	-	187.5	99.5	0.853	0.482	-		5.10	1.000	0.000
			32	-				205.0	107.0	30.7	-	-	-	-	205.0	107.0	0.838	0.482	-		4.60	1.000	0.000
12.50	Sandy Silt	17.5	13	-				222.5	114.5	12.0	-	-	-	-	222.5	114.5	0.823	0.480	-		4.10	1.000	0.000
			60	Sandy Soil	24.2	NP	0.529	240.6	122.6	53.0	79.3	235.46	2.000	470.9	240.6	122.6	0.808	0.476	989.9		3.60	1.000	0.000
13.80	Gravelly Sand	19.5	53	-				260.1	132.1	44.6	-	-	-	-	260.1	132.1	0.793	0.468	-		3.10	1.000	0.000
			19	-				277.6	139.6	15.4	-	-	-	-	277.6	139.6	0.778	0.464	-		2.60	1.000	0.000
16.35	Sandy Silt	17.5	17	-	60.7	NP	0.063	295.1	147.1	13.3	-	-	-	-	295.1	147.1	0.763	0.459	-		2.10	1.000	0.000
			59	Sandy Soil				313.5	155.5	44.5	44.5	8.074	2.000	16.15	313.5	155.5	0.748	0.452	35.69		1.60	1.000	0.000
			67	Sandy Soil				333.0	165.0	48.5	48.5	13.73	2.000	27.46	333.0	165.0	0.733	0.444	61.87		1.10	1.000	0.000
			71	Sandy Soil				352.5	174.5	49.4	49.4	15.36	2.000	30.72	352.5	174.5	0.718	0.435	70.60		0.60	1.000	0.000
			61	Sandy Soil				372.0	184.0	40.8	40.8	4.724	2.000	9.449	372.0	184.0	0.703	0.426	22.16		0.10	1.000	0.000
			58	Sandy Soil				391.5	193.5	37.4	37.4	2.743	2.000	5.486	391.5	193.5	0.688	0.418	13.14			1.000	
22.00	Gravelly sand	19.5	63	Sandy Soil	13.2	NP	0.528	411.0	203.0	39.2	43.7	7.282	2.000	14.56	411.0	203.0	0.673	0.409	35.63			1.000	
22.40	Sand	19.5	65	Sandy Soil				430.5	212.5	39.1	39.1	3.613	2.000	7.227	430.5	212.5	0.658	0.400	18.07			1.000	
			65	Sandy Soil				450.0	222.0	37.8	37.8	2.941	2.000	5.882	450.0	222.0	0.643	0.391	15.04			1.000	
			68	Sandy Soil				469.5	231.5	38.3	38.3	3.190	2.000	6.380	469.5	231.5	0.628	0.382	16.70			1.000	
			63	Sandy Soil				489.0	241.0	34.4	34.4	1.659	2.000	3.318	489.0	241.0	0.613	0.373	8.891			1.000	
			60	Sandy Soil	17.9	NP	0.386	508.5	250.5	31.8	40.8	4.729	2.000	9.458	508.5	250.5	0.598	0.364	25.97			1.000	
			58	Sandy Soil				528.0	260.0	29.9	29.9	0.775	2.000	1.550	528.0	260.0	0.583	0.355	4.364			1.000	
			62	Sandy Soil				547.5	269.5	31.0	31.0	0.935	2.000	1.869	547.5	269.5	0.568	0.346	5.400			1.000	
30.00	Gravelly sand	19.5	67	Sandy Soil				567.0	279.0	32.6	32.6	1.220	2.000	2.439	567.0	279.0	0.553	0.337	7.235			1.000	

No.	1	Name	J-11			Location	Jono Oge			LNG;	825351.00 m E	LAT;	9887130.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	66.10m	Total Advance	30.00m	Ground Water Level	8.50m	Ground Hight	66.10m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Drilling Log	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)									P_L 0.00		
		kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-			
0.50	Silt	15.5	20	-																9.60	1.000	0.000
1.00	Sand	17.5	7	Sandy Soil	43.0	NP	0.119	32.1	24.1	12.6	31.5	1.008	2.000	2.017	32.1	24.1	0.973	-	-	9.10	1.000	0.000
2.00	Silty Sand	19.5	34	-	70.0	5.6	0.041	50.0	32.0	56.7	-	-	-	-	50.0	32.0	0.958	-	-	8.60	1.000	0.000
4.50	Gravelly silt	17.5	22	-	71.6	6.6	0.039	67.5	39.5	34.2	-	-	-	-	67.5	39.5	0.943	-	-	8.10	1.000	0.000
			31	Sandy Soil	41.2	NP	0.135	85.6	47.6	44.8	96.9	689.01	2.000	1378.0	85.6	47.6	0.928	-	-	7.60	1.000	0.000
			36	Sandy Soil	49.3	NP	0.049	105.1	57.1	48.2	137.8	4186.28	2.000	8372.6	105.1	57.1	0.913	-	-	7.10	1.000	0.000
			29	Sandy Soil	36.5	NP	0.250	124.6	66.6	36.1	70.1	119.23	2.000	238.5	124.6	66.6	0.898	-	-	6.60	1.000	0.000
			25	Sandy Soil	27.8	NP	0.363	144.1	76.1	29.1	47.8	12.58	2.000	25.15	144.1	76.1	0.883	-	-	6.10	1.000	0.000
9.20	Sand	19.5	28	Sandy Soil	28.9	NP	0.360	163.6	85.6	30.6	51.5	19.78	2.000	39.55	163.6	85.6	0.868	0.498	79.47	5.60	1.000	0.000
			33	-	55.2	7.2	0.060	181.9	93.9	34.2	-	-	-	-	181.9	93.9	0.853	0.496	-	5.10	1.000	0.000
11.00	Gravelly Silt	17.5	23	-			2.000	199.4	101.4	22.8	-	-	-	-	199.4	101.4	0.838	0.494	-	4.60	1.000	0.000
12.20	Silt	17.5	32	-				216.9	108.9	30.4	-	-	-	-	216.9	108.9	0.823	0.492	-	4.10	1.000	0.000
			32	Sandy Soil				235.6	117.6	29.0	29.0	0.678	2.000	1.356	235.6	117.6	0.808	0.486	2.791	3.60	1.000	0.000
			35	Sandy Soil	32.3	NP	0.235	255.1	127.1	30.2	54.5	27.75	2.000	55.49	255.1	127.1	0.793	0.477	116.2	3.10	1.000	0.000
			38	Sandy Soil				274.6	136.6	31.3	31.3	0.969	2.000	1.939	274.6	136.6	0.778	0.469	4.132	2.60	1.000	0.000
			41	Sandy Soil				294.1	146.1	32.3	32.3	1.143	2.000	2.286	294.1	146.1	0.763	0.461	4.962	2.10	1.000	0.000
			44	Sandy Soil				313.6	155.6	33.2	33.2	1.332	2.000	2.665	313.6	155.6	0.748	0.452	5.893	1.60	1.000	0.000
			45	Sandy Soil	40.5	NP	0.173	333.1	165.1	32.5	69.0	109.43	2.000	218.9	333.1	165.1	0.733	0.444	493.3	1.10	1.000	0.000
19.50	Fine sand	19.5	39	Sandy Soil				352.6	174.6	27.1	27.1	0.523	2.000	1.046	352.6	174.6	0.718	0.435	2.405	0.60	1.000	0.000
			54	Sandy Soil				372.1	184.1	36.1	36.1	2.211	2.000	4.422	372.1	184.1	0.703	0.426	10.37	0.10	1.000	0.000
			56	Sandy Soil				391.6	193.6	36.1	36.1	2.206	2.000	4.413	391.6	193.6	0.688	0.417	10.57		1.000	
22.30	Coarse sand	19.5	56	Sandy Soil	18.0	NP	0.607	411.1	203.1	34.9	44.8	8.398	2.000	16.80	411.1	203.1	0.673	0.409	41.10		1.000	
			63	-				429.6	211.6	38.0	-	-	-	-	429.6	211.6	0.658	0.401	-		1.000	
24.20	Silt	17.5	57	-				447.1	219.1	33.5	-	-	-	-	447.1	219.1	0.643	0.394	-		1.000	
25.00	Coarse sand	19.5	59	Sandy Soil				465.8	227.8	33.7	33.7	1.457	2.000	2.915	465.8	227.8	0.628	0.385	7.566		1.000	
			65	Sandy Soil				485.3	237.3	36.0	36.0	2.149	2.000	4.297	485.3	237.3	0.613	0.376	11.43		1.000	
			68	Sandy Soil				504.8	246.8	36.5	36.5	2.350	2.000	4.700	504.8	246.8	0.598	0.367	12.81		1.000	
			58	Sandy Soil	26.0	NP	0.195	524.3	256.3	30.2	47.6	12.29	2.000	24.59	524.3	256.3	0.583	0.358	68.72		1.000	
			52	Sandy Soil				543.8	265.8	26.3	26.3	0.477	2.000	0.953	543.8	265.8	0.568	0.349	2.735		1.000	
30.00	Fine sand	19.5	50	Sandy Soil				563.3	275.3	24.6	24.6	0.402	2.000	0.804	563.3	275.3	0.553	0.339	2.368		1.000	



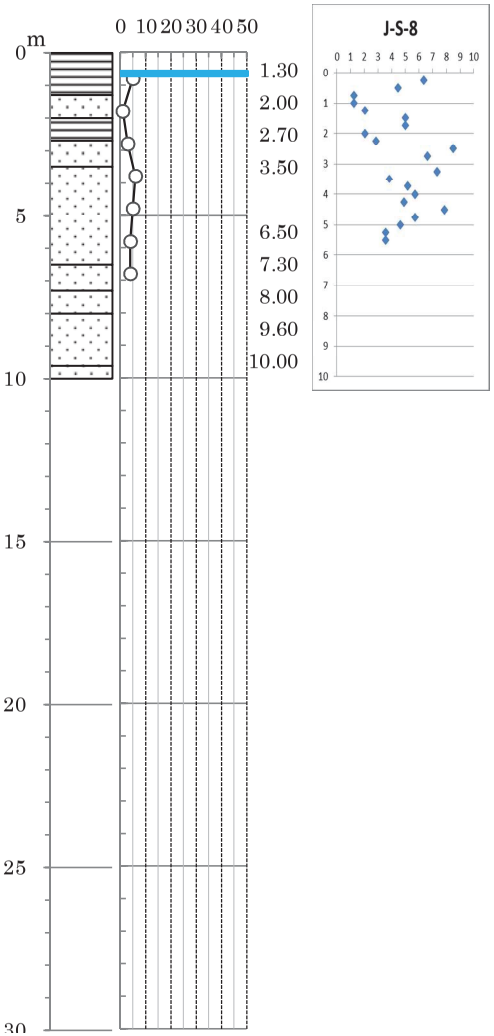
No.	1	Name	J-12			Location	Jono Oge			LNG;	823649.00 m E	LAT;	9887090.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	68.90m	Total Advance	30.00m	Ground Water Level	3.60m	Ground Hight	68.90m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1	Liquefaction Judgment (Value for Calcurate L)									P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	W	F_L	ΔP_L
						%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-		0.00	
m	0 10 20 30 40 50																			0.0 0.5 1.0 1.5 2.0			
0		0.40	Silt	15.5	21	-															9.60	1.000	0.000
		1.50	Sand	17.5	7	-	61.1	NP	0.063	30.7	22.7	12.8	-	-	-	-	30.7	22.7	0.973	-	-	9.10	1.000	0.000
		2.00	Silt	17.5	0	Sandy Soil				49.8	31.8	0.0	0.0	0.098	1.000	0.098	49.8	31.8	0.958	-	-	8.60	1.000	0.000
		3.00	Sand	19.5	9	-	59.6	NP	0.065	67.7	39.7	13.9	-	-	-	-	67.7	39.7	0.943	0.482	-	8.10	1.000	0.000
		4.00	Sandy Silt	17.5	12	Sandy Soil	46.7	6.3	0.080	86.8	48.8	17.2	47.8	12.59	2.000	25.18	86.8	48.8	0.928	0.495	50.84	7.60	1.000	0.000
5		5.50	Silty Sand	19.5	10	-	54.9	5.8	0.066	105.7	57.7	13.3	-	-	-	-	105.7	57.7	0.913	0.502	-	7.10	1.000	0.000
		6.50	Sandy Silt	17.5	11	Sandy Soil	45.7	NP	0.087	123.8	65.8	13.8	37.7	2.866	2.000	5.732	123.8	65.8	0.898	0.507	11.31	6.60	1.000	0.000
		8.00	Silty Sand	19.5	11	Sandy Soil	45.2	NP	0.089	143.3	75.3	12.9	34.8	1.775	2.000	3.550	143.3	75.3	0.883	0.504	7.042	6.10	1.000	0.000
		8.50	Silty Sand	19.5	19	-	71.4	NP	0.058	162.2	84.2	20.9	-	-	-	-	162.2	84.2	0.868	0.502	-	5.60	1.000	0.000
		10.00	Sandy Silt	17.5	75	-	52.2	5.3	0.070	179.7	91.7	78.8	-	-	-	-	179.7	91.7	0.853	0.501	-	5.10	1.000	0.000
10					50	Sandy Soil				198.8	100.8	49.8	49.8	16.13	2.000	32.27	198.8	100.8	0.838	0.496	65.08	4.60	1.000	0.000
					68	Sandy Soil				218.3	110.3	64.1	64.1	71.99	2.000	144.0	218.3	110.3	0.823	0.489	294.6	4.10	1.000	0.000
					50	Sandy Soil				237.8	119.8	44.8	44.8	8.425	2.000	16.85	237.8	119.8	0.808	0.481	35.02	3.60	1.000	0.000
					74	Sandy Soil	29.5	NP	0.229	257.3	129.3	63.1	105.7	1082.63	2.000	2165.3	257.3	129.3	0.793	0.473	4574	3.10	1.000	0.000
					500	Sandy Soil				276.8	138.8	407.1	407.1	757400.19	2.000	1514800.4	276.8	138.8	0.778	0.465	3254452	2.60	1.000	0.000
15					69	Sandy Soil				296.3	148.3	53.7	53.7	25.63	2.000	51.27	296.3	148.3	0.763	0.457	112.1	2.10	1.000	0.000
					45	Sandy Soil	45.6	5.7	0.089	315.8	157.8	33.6	86.5	376.73	2.000	753.5	315.8	157.8	0.748	0.449	1678	1.60	1.000	0.000
					72	Sandy Soil				335.3	167.3	51.6	51.6	20.05	2.000	40.10	335.3	167.3	0.733	0.441	90.98	1.10	1.000	0.000
					56	Sandy Soil				354.8	176.8	38.6	38.6	3.312	2.000	6.625	354.8	176.8	0.718	0.432	15.33	0.60	1.000	0.000
					48	Sandy Soil				374.3	186.3	31.8	31.8	1.066	2.000	2.132	374.3	186.3	0.703	0.424	5.031	0.10	1.000	0.000
20					48	Sandy Soil	48.1	NP	0.079	393.8	195.8	30.7	86.3	372.82	2.000	745.6	393.8	195.8	0.688	0.415	1796		1.000	
					36	Sandy Soil				413.3	205.3	22.2	22.2	0.340	1.792	0.609	413.3	205.3	0.673	0.406	1.499		1.000	
					56	Sandy Soil				432.8	214.8	33.4	33.4	1.396	2.000	2.791	432.8	214.8	0.658	0.398	7.018		1.000	
					50	Sandy Soil				452.3	224.3	28.9	28.9	0.666	2.000	1.333	452.3	224.3	0.643	0.389	3.426		1.000	
					60	Sandy Soil				471.8	233.8	33.6	33.6	1.431	2.000	2.863	471.8	233.8	0.628	0.380	7.529		1.000	
25					63	Sandy Soil				491.3	243.3	34.2	34.2	1.589	2.000	3.177	491.3	243.3	0.613	0.371	8.556		1.000	
					56	Sandy Soil	38.2	NP	0.088	510.8	252.8	29.5	59.5	46.81	2.000	93.62	510.8	252.8	0.598	0.362	258.3		1.000	
					63	Sandy Soil				530.3	262.3	32.2	32.2	1.139	2.000	2.277	530.3	262.3	0.583	0.354	6.440		1.000	
					54	Sandy Soil				549.8	271.8	26.9	26.9	0.507	2.000	1.015	549.8	271.8	0.568	0.345	2.944		1.000	
30		30.00	Silty Sand	19.5	59	Sandy Soil				569.3	281.3	28.6	28.6	0.635	2.000	1.270	569.3	281.3	0.553	0.336	3.783		1.000	

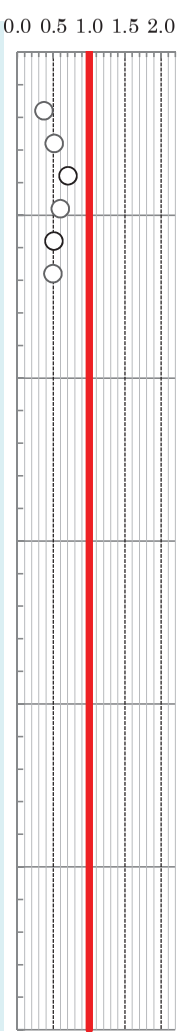
No.	1	Name	J-13			Location	Jono Oge			LNG;	825336.96 m E	LAT;	9892623.66 m S	Standard Depth for "sv"
Hight of Hole Mouth	81.60m	Total Advance	30.00m	Ground Water Level	10.66m	Ground Hight	81.60m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m

Depth	Drilling Log		Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
			kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	0.00		
m	0 10 20 30 40 50					%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	0.0 0.5 1.0 1.5 2.0	W	F_L	ΔP_L
0		1.50	Gravelly Sand	17.5	12	-															9.60	1.000	0.000
		2.00	Silty Gravelly Sand	19.5	8	Sandy Soil	40.2	5.5	0.181	32.1	24.1	14.5	31.7	1.039	2.000	2.077	32.1	24.1	0.973	-	-	9.10	1.000	0.000
					150	Sandy Soil	13.1	NP	1.046	51.6	33.6	246.1	272.1	114157.16	2.000	228314.3	51.6	33.6	0.958	-	-	8.60	1.000	0.000
					32	Sandy Soil	32.8	NP	0.305	71.1	43.1	48.1	86.5	377.67	2.000	755.3	71.1	43.1	0.943	-	-	8.10	1.000	0.000
5					50	Sandy Soil	28.1	NP	0.572	90.6	52.6	69.3	112.8	1513.69	2.000	3027.4	90.6	52.6	0.928	-	-	7.60	1.000	0.000
					150	Sandy Soil	32.1	NP	0.247	110.1	62.1	193.0	337.3	314515.03	2.000	629030.1	110.1	62.1	0.913	-	-	7.10	1.000	0.000
					150	Sandy Soil	27.9	NP	0.530	129.6	71.6	180.1	288.8	151199.72	2.000	302399.4	129.6	71.6	0.898	-	-	6.60	1.000	0.000
					20	Sandy Soil	36.1	NP	0.200	149.1	81.1	22.5	44.2	7.762	2.000	15.52	149.1	81.1	0.883	-	-	6.10	1.000	0.000
					150	Sandy Soil	12.5	NP	0.811	168.6	90.6	158.8	172.1	12567.96	2.000	25135.9	168.6	90.6	0.868	-	-	5.60	1.000	0.000
					43	Sandy Soil	37.5	5.8	0.255	188.1	100.1	43.0	84.7	335.92	2.000	671.8	188.1	100.1	0.853	-	-	5.10	1.000	0.000
10					90	Sandy Soil			2.000	207.6	109.6	85.2	85.2	347.35	2.000	694.7	207.6	109.6	0.838	0.476	1459	4.60	1.000	0.000
					45	Sandy Soil			2.000	227.1	119.1	40.5	40.5	4.461	2.000	8.922	227.1	119.1	0.823	0.471	18.95	4.10	1.000	0.000
		13.00	Gravelly Sand	19.5	47	Sandy Soil			2.000	246.6	128.6	40.2	40.2	4.309	2.000	8.618	246.6	128.6	0.808	0.465	18.54	3.60	1.000	0.000
		14.10	Silt	17.5	29	-				264.5	136.5	23.9	-	-	-	-	264.5	136.5	0.793	0.461	-	3.10	1.000	0.000
					150	Sandy Soil			2.000	283.4	145.4	118.4	118.4	1941.53	2.000	3883.1	283.4	145.4	0.778	0.455	8536	2.60	1.000	0.000
15					38	Sandy Soil	23.8	NP	0.277	302.9	154.9	28.7	43.1	6.624	2.000	13.25	302.9	154.9	0.763	0.448	29.60	2.10	1.000	0.000
					117	Sandy Soil			2.000	322.4	164.4	84.9	84.9	340.08	2.000	680.2	322.4	164.4	0.748	0.440	1546	1.60	1.000	0.000
		18.40	Gravelly Sand	19.5	150	Sandy Soil			2.000	341.9	173.9	104.6	104.6	1024.32	2.000	2048.6	341.9	173.9	0.733	0.432	4738	1.10	1.000	0.000
					51	Sandy Soil				361.4	183.4	34.2	34.2	1.597	2.000	3.194	361.4	183.4	0.718	0.424	7.524	0.60	1.000	0.000
					150	Sandy Soil	25.8	NP	0.262	380.9	192.9	97.0	149.4	6262.86	2.000	12525.7	380.9	192.9	0.703	0.416	30078	0.10	1.000	0.000
20					150	Sandy Soil				400.4	202.4	93.6	93.6	574.15	2.000	1148.3	400.4	202.4	0.688	0.408	2812		1.000	
		22.30	Sand	19.5	150	Sandy Soil				419.9	211.9	90.5	90.5	478.74	2.000	957.5	419.9	211.9	0.673	0.400	2393		1.000	
					99	Sandy Soil			2.000	439.4	221.4	57.8	57.8	39.31	2.000	78.62	439.4	221.4	0.658	0.392	200.7		1.000	
					150	Sandy Soil	10.7	NP	0.620	458.9	230.9	84.7	86.7	382.67	2.000	765.3	458.9	230.9	0.643	0.383	1996		1.000	
		25.10	Gravelly Sand	19.5	48	Sandy Soil			2.000	478.4	240.4	26.3	26.3	0.475	2.000	0.949	478.4	240.4	0.628	0.375	2.533		1.000	
25		26.00	Sand	19.5	80	Sandy Soil				497.9	249.9	42.5	42.5	6.088	2.000	12.18	497.9	249.9	0.613	0.366	33.23		1.000	
					150	Sandy Soil			2.000	517.4	259.4	77.4	77.4	206.63	2.000	413.3	517.4	259.4	0.598	0.358	1155		1.000	
					64	Sandy Soil			2.000	536.9	268.9	32.1	32.1	1.115	2.000	2.229	536.9	268.9	0.583	0.349	6.383		1.000	
					150	Sandy Soil			2.000	556.4	278.4	73.2	73.2	151.69	2.000	303.4	556.4	278.4	0.568	0.341	890.8		1.000	
30		30.00	Gravelly Sand	19.5	99	Sandy Soil			2.000	575.9	287.9	47.0	47.0	11.40	2.000	22.80	575.9	287.9	0.553	0.332	68.71		1.000	

No.	1	Name	J-14			Location	Jono Oge			LNG;	824966.00 m E	LAT;	9890895.00 m S	Standard Depth for "sv"
Hight of Hole Mouth	63.00m	Total Advance	10.00m	Ground Water Level	0.65m	Ground Hight	63.00m	Lateral Seismic Facter of Ground Surface	0.300	Type of Seismic Motion	Type2			0.00m



Depth	Unit Weight	N Value	Type of Soil	Physical Test			Value for Calcurate N_1		Liquefaction Judgment (Value for Calcurate L)								P_L		
	kN/m³	N	Type	FC	Ip	D_{50}	σ_v	σ_v'	N_1	N_a	R_L	c_w	R	σ_v	σ_v'	r_d	L	F_L	22.12
				%	-	mm	kN/m²	kN/m²			-	-	-	kN/m²	kN/m²	-	-	-	W	F_L	ΔP_L
1.30	15.5	5	-																9.60	1.000	0.000
2.00	19.5	1	Sandy Soil	20.0		0.200	29.9	18.4	1.9	3.4	0.151	1.168	0.176	29.9	18.4	0.973	0.474	0.372	9.10	0.372	5.717
2.70	17.5	3	Sandy Soil	20.0		0.200	48.0	26.5	5.3	7.9	0.201	1.332	0.267	48.0	26.5	0.958	0.521	0.513	8.60	0.513	4.187
3.50	19.5	6	Sandy Soil	20.0		0.200	67.5	36.0	9.6	13.7	0.250	1.496	0.375	67.5	36.0	0.943	0.530	0.707	8.10	0.707	2.377
6.50		5	Sandy Soil	20.0		0.200	87.0	45.5	7.4	10.6	0.226	1.415	0.320	87.0	45.5	0.928	0.532	0.600	7.60	0.600	3.038
7.30	19.5	4	Sandy Soil	20.0		0.200	106.5	55.0	5.4	8.1	0.203	1.338	0.271	106.5	55.0	0.913	0.530	0.511	7.10	0.511	3.471
8.00	19.5	4	Sandy Soil	20.0		0.200	126.0	64.5	5.1	7.6	0.198	1.322	0.261	126.0	64.5	0.898	0.526	0.496	6.60	0.496	3.325
9.60	19.5		Sandy Soil	20.0		0.200	145.5	74.0	-	-	-	-	-	145.5	74.0	0.883	-	-	6.10	1.000	0.000
10.00	19.5		Sandy Soil	20.0		0.200	165.0	83.5	-	-	-	-	-	165.0	83.5	0.868	-	-	5.60	1.000	0.000
	19.5		Sandy Soil	20.0		0.200	184.5	93.0	-	-	-	-	-	184.5	93.0	0.853	-	-	5.10	1.000	0.000
			-				204.0	102.5	-	-	-	-	-	204.0	102.5	0.838	-	-	4.60	1.000	0.000
			-				223.5	112.0	-	-	-	-	-	223.5	112.0	0.823	-	-	4.10	1.000	0.000
			-				243.0	121.5	-	-	-	-	-	243.0	121.5	0.808	-	-	3.60	1.000	0.000
			-				262.5	131.0	-	-	-	-	-	262.5	131.0	0.793	-	-	3.10	1.000	0.000
			-				282.0	140.5	-	-	-	-	-	282.0	140.5	0.778	-	-	2.60	1.000	0.000
			-				301.5	150.0	-	-	-	-	-	301.5	150.0	0.763	-	-	2.10	1.000	0.000
			-				321.0	159.5	-	-	-	-	-	321.0	159.5	0.748	-	-	1.60	1.000	0.000
			-				340.5	169.0	-	-	-	-	-	340.5	169.0	0.733	-	-	1.10	1.000	0.000
			-				360.0	178.5	-	-	-	-	-	360.0	178.5	0.718	-	-	0.60	1.000	0.000
			-				379.5	188.0	-	-	-	-	-	379.5	188.0	0.703	-	-	0.10	1.000	0.000
			-				399.0	197.5	-	-	-	-	-	399.0	197.5	0.688	-	-		1.000	
			-				418.5	207.0	-	-	-	-	-	418.5	207.0	0.673	-	-		1.000	
			-				438.0	216.5	-	-	-	-	-	438.0	216.5	0.658	-	-		1.000	
			-				457.5	226.0	-	-	-	-	-	457.5	226.0	0.643	-	-		1.000	
			-				477.0	235.5	-	-	-	-	-	477.0	235.5	0.628	-	-		1.000	
			-				496.5	245.0	-	-	-	-	-	496.5	245.0	0.613	-	-		1.000	
			-				516.0	254.5	-	-	-	-	-	516.0	254.5	0.598	-	-		1.000	
			-				535.5	264.0	-	-	-	-	-	535.5	264.0	0.583	-	-		1.000	
			-				555.0	273.5	-	-	-	-	-	555.0	273.5	0.568	-	-		1.000	
			-				574.5	283.0	-	-	-	-	-	574.5	283.0	0.553	-	-		1.000	



DATA SHEET

SPT RESULT

SUMMARY OF N - SPT

Hole Number : B - 1
Location : Baraloa

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	14	5	2	1	1	8	26-Nov-18
2	1.50 - 2.00	11	2	2	3	2	7	27-Nov-18
3	2.50 - 3.00	2	1	1	1	1	3	29-Nov-18
4	3.50 - 4.00	4	2	2	1	1	5	
5	4.50 - 5.00	3	2	1	1	1	4	
6	5.50 - 6.00	10	4	3	3	1	10	
7	6.50 - 7.00	11	7	3	2	1	12	
8	7.50 - 8.00	19	21	24	7		52	
9	8.50 - 9.00	21	25	27	15	3	67	14-Dec-18
10	9.50 - 10.00	7	4	5	7	5	16	
11	10.50 - 11.00	3	5	4	5	4	14	
12	11.50 - 12.00	5	6	7	8	5	21	
13	12.50 - 13.00	10	11	6	7	2	24	15-Dec-18
14	13.50 - 14.00	15	12	13	8	4	33	
15	14.50 - 15.00	7	4	5	4	1	13	
16	15.50 - 16.00	5	3	4	5	3	12	16-Dec-18
17	16.50 - 17.00	7	5	14	23	13	42	
18	17.50 - 18.00		16	22	13	3	51	
19	18.50 - 19.00	17	22	14	10	5	46	17-Dec-18
20	19.50 - 20.00	9	9	10	7	4	26	
21	20.50 - 21.00	18	9	7	7	4	23	
22	21.50 - 22.00	ROCK						20-Dec-18
23	22.50 - 23.00	19	23	10	7	6	40	
24	23.50 - 24.00	15	19	8	10	3	37	
25	24.50 - 25.00	13	17	12	8	4	37	
26	25.50 - 26.00	16	21	7	6	2	34	
27	26.50 - 27.00	11	19	10	10	7	39	
28	27.50 - 28.00	14	22	16	7	6	45	
29	28.50 - 29.00	21	19	13	10	6	42	
30	29.50 - 30.00	18	24	12	13	4	49	

SUMMARY OF N - SPT

Hole Number : B - 2
Location : Baraloa

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00							Rock
2	1.50 - 2.00							Rock
3	2.50 - 3.00							Rock
4	3.50 - 4.00	3	3	2	1	1		
5	4.50 - 5.00							Loose
6	5.50 - 6.00							Loose
7	6.50 - 7.00	2	3	10	17	11	30	
8	7.50 - 8.00	7	10	12	19	14	41	
9	8.50 - 9.00	9	13	15	22		50	
10	9.50 - 10.00	12	16	20	14		50	
11	10.50 - 11.00	11	13	18	19		50	
12	11.50 - 12.00	17	14	20	15	5	49	
13	12.50 - 13.00	8	9	13	11	5	33	
14	13.50 - 14.00	13	12	13	11	5	36	
15	14.50 - 15.00							Rock
16	15.50 - 16.00	15	20	23	7		50	
17	16.50 - 17.00	11	23	26	1		50	
18	17.50 - 18.00		15	20	15		50	
19	18.50 - 19.00	15	20	23	7		50	
20	19.50 - 20.00	17	23	25	2		50	
21	20.50 - 21.00	18	24	25	1		50	
22	21.50 - 22.00	19	23	24	3		50	
23	22.50 - 23.00	10	22	24	4		50	
24	23.50 - 24.00	20	24	26	6		56	
25	24.50 - 25.00	18	26	24			50	
26	25.50 - 26.00	18	22	24	4		50	
27	26.50 - 27.00	19	23	25	2		50	
28	27.50 - 28.00	20	20	26	4		50	
29	28.50 - 29.00	18	24	25	1		50	
30	29.50 - 30.00	19	24	26			50	

SUMMARY OF N - SPT

Hole Number : B - 3
Location : Baraloa

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00							
2	1.50 - 2.00							
3	2.50 - 3.00							
4	3.50 - 4.00	ROCK						
5	4.50 - 5.00							
6	5.50 - 6.00							
7	6.50 - 7.00							
8	7.50 - 8.00							
9	8.50 - 9.00	27	21	20	20		61	
10	9.50 - 10.00	38	16	19	21		56	
11	10.50 - 11.00	41	50				50	
12	11.50 - 12.00	17	13	16	15		44	
13	12.50 - 13.00	38	50				50	22-Dec-18
14	13.50 - 14.00	1	2	2	2	1	6	
15	14.50 - 15.00	1	2	2	2	2	6	
16	15.50 - 16.00	4	3	3	4	3	10	
17	16.50 - 17.00	10	12	14	15	8	41	
18	17.50 - 18.00	34	50				50	
19	18.50 - 19.00	37	50				50	
20	19.50 - 20.00	39	50				50	23-Dec-18
21	20.50 - 21.00	50					50	
22	21.50 - 22.00	33	40	11			51	
23	22.50 - 23.00	35	43	12			55	
24	23.50 - 24.00	31	39	16			55	
25	24.50 - 25.00	4	5	5	7	3	17	
26	25.50 - 26.00	8	10	12	13	9	35	
27	26.50 - 27.00	41	39	17			56	24-Dec-18
28	27.50 - 28.00	43	50				50	
29	28.50 - 29.00	50					50	
30	29.50 - 30.00							

SUMMARY OF N - SPT

Hole Number :B-4
Location :BARALOA

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	1	1	1	1	3	
2	1.50 - 2.00	4	3	2	2	1	7	
3	2.50 - 3.00	11	1	1	1	1	3	
4	3.50 - 4.00	2	2	2	1	1	5	
5	4.50 - 5.00	3	3	2	1	1	6	
6	5.50 - 6.00	3	3	3	5	3	11	
7	6.50 - 7.00	5	4	4	5	3	13	
8	7.50 - 8.00	50					50	
9	8.50 - 9.00	25	30	20			50	
10	9.50 - 10.00	27	21	20	9		50	
11	10.50 - 11.00	15	13	20	17		50	
12	11.50 - 12.00	25	23	22	5		50	
13	12.50 - 13.00	30	28	22			50	
14	13.50 - 14.00	32	34	16			50	
15	14.50 - 15.00	43	48	2			50	
16	15.50 - 16.00							
17	16.50 - 17.00							
18	17.50 - 18.00							
19	18.50 - 19.00							
20	19.50 - 20.00							
21	20.50 - 21.00							
22	21.50 - 22.00							
23	22.50 - 23.00							
24	23.50 - 24.00							
25	24.50 - 25.00							
26	25.50 - 26.00							
27	26.50 - 27.00							
28	27.50 - 28.00	27	50				50	
29	28.50 - 29.00	40	50				50	
30	29.50 - 30.00	15	10	10	10	15	30	

SUMMARY OF N - SPT

Hole Number : B - 5
Location : Baraloa

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	2	1	1	1	1	3	
2	1.50 - 2.00	3	2	1	1	1	4	
3	2.50 - 3.00	4	3	2	2	2	7	
4	3.50 - 4.00	2	1	1	1	1	3	
5	4.50 - 5.00	3	4	3	3	2	10	
6	5.50 - 6.00	5	5	4	4	2	13	29-Nov-18
7	6.50 - 7.00	6	7	6	6	4	19	
8	7.50 - 8.00	5	6	5	5	3	16	
9	8.50 - 9.00	6	5	4	5	2	14	
10	9.50 - 10.00	7	5	6	7	5	18	
11	10.50 - 11.00	17	16	17	17		50	
12	11.50 - 12.00	19	20	18	12		50	30-Nov-18
13	12.50 - 13.00	12	11	17	15		43	
14	13.50 - 14.00	10	13	15	12	16	40	1-Des-2018
15	14.50 - 15.00	12	13	12	12	7	37	
16	15.50 - 16.00	9	8	8	12	8	28	2-Des-2018
17	16.50 - 17.00	13	12	12	15	10	39	
18	17.50 - 18.00		11	10	10	4	31	
19	18.50 - 19.00	10	6	8	7	4	21	
20	19.50 - 20.00	12	12	10	10	5	32	3-Des-2018
21	20.50 - 21.00	13	13	11	14	8	38	
22	21.50 - 22.00	13	10	15	22	13	47	
23	22.50 - 23.00	11	14	15	17	8	46	
24	23.50 - 24.00	9	12	12	11	4	35	
25	24.50 - 25.00	15	14	16	18	10	48	
26	25.50 - 26.00	11	10	12	14	6	36	
27	26.50 - 27.00	9	7	7	8	3	22	
28	27.50 - 28.00	8	8	10	11	4	29	
29	28.50 - 29.00	10	9	12	11	7	32	
30	29.50 - 30.00	14	11	13	21	10	45	

SUMMARY OF N - SPT

Hole Number : B - 6
Location : Baraloa

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	33	50				50	12-Dec-18
2	1.50 - 2.00	41	50				50	
3	2.50 - 3.00	46	50				50	13-Dec-18
4	3.50 - 4.00	37	50				50	
5	4.50 - 5.00	24	31	39			70	
6	5.50 - 6.00	43	50				50	14-Dec-18
7	6.50 - 7.00	41	50				50	
8	7.50 - 8.00	3	4	5	5	2	14	
9	8.50 - 9.00	34	50				50	15-Dec-18
10	9.50 - 10.00	14	9	9	10	4	28	
11	10.50 - 11.00	43	50				50	
12	11.50 - 12.00	19	18	16	19	2	53	
13	12.50 - 13.00	21	16	16	19	9	51	16-Dec-18
14	13.50 - 14.00	45	50				50	
15	14.50 - 15.00	31	19	21	21		61	
16	15.50 - 16.00	13	16	16	18		50	17-Dec-18
17	16.50 - 17.00	27	22	22	24		68	
18	17.50 - 18.00		21	27	24		72	
19	18.50 - 19.00	37	28	28	29		85	18-Dec-18
20	19.50 - 20.00	7	5	6	6	4	17	
21	20.50 - 21.00	21	16	17	19		52	
22	21.50 - 22.00	20	16	18	17		51	
23	22.50 - 23.00	17	13	14	14	5	41	19-Dec-18
24	23.50 - 24.00	29	22	21	24		67	
25	24.50 - 25.00	21	21	23	21		65	
26	25.50 - 26.00	26	18	21	22		61	
27	26.50 - 27.00	37	50				50	
28	27.50 - 28.00	33	19	23	23		65	20-Dec-18
29	28.50 - 29.00	29	17	17	19		53	
30	29.50 - 30.00	31	23	22	24		69	

SUMMARY OF N - SPT

Hole Number : LP - 1
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	1	1	1	2	1	4	26-Nov-18
2	1.50 - 2.00	14	8	9	10	6	27	
3	2.50 - 3.00	17	16	18	18		52	
4	3.50 - 4.00	17	16	18	20		54	
5	4.50 - 5.00	16	18	19	21		58	27-Nov-18
6	5.50 - 6.00	18	17	17	19		53	
7	6.50 - 7.00	14	16	18	21		55	
8	7.50 - 8.00							
9	8.50 - 9.00							
10	9.50 - 10.00							
11	10.50 - 11.00							28-Nov-18
12	11.50 - 12.00							
13	12.50 - 13.00							
14	13.50 - 14.00							
15	14.50 - 15.00							
16	15.50 - 16.00							
17	16.50 - 17.00	15	20	19	25		64	29-Nov-18
18	17.50 - 18.00		15	17	20		52	
19	18.50 - 19.00	16	16	18	20		54	
20	19.50 - 20.00	19	17	19	21		57	30-Nov-18
21	20.50 - 21.00	19	18	21	20		59	
22	21.50 - 22.00	17	17	18	20		55	
23	22.50 - 23.00	15	12	15	26		53	
24	23.50 - 24.00	12	13	19	19		51	1-Des-2018
25	24.50 - 25.00	20	19	19	21		59	
26	25.50 - 26.00	12	11	18	22		51	2-Dec-18
27	26.50 - 27.00	4	3	3	5	4	11	
28	27.50 - 28.00	12	11	14	14	6	39	
29	28.50 - 29.00	18	16	17	23		56	3-Des-2018
30	29.50 - 30.00	20	18	18	22		58	
31	30.50 - 31.00	19	17	20	23		60	
32	31.50 - 32.00	17	16	21	22		59	
33	32.50 - 33.00	20	15	18	20		53	
34	33.50 - 34.00	20	20	19	21		60	4-Des-2018
35	34.50 - 35.00	20	19	19	21		59	

SUMMARY OF N - SPT

Hole Number : LP - 2
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	2	1	1	1	2	3	27-Nov-18
2	1.50 - 2.00	2	1	1	1	2	3	
3	2.50 - 3.00	2	1	2	2	1	5	
4	3.50 - 4.00	1	1	2	1	1	4	28-Nov-18
5	4.50 - 5.00	2	3	2	2	2	7	
6	5.50 - 6.00	1	1	2	2	2	5	
7	6.50 - 7.00	1	1	1	1	1	3	
8	7.50 - 8.00	2	1	2	1	1	4	
9	8.50 - 9.00	2	2	2	1	1	5	
10	9.50 - 10.00	2	2	2	3	2	7	29-Nov-18
11	10.50 - 11.00	10	15	15	20		50	
12	11.50 - 12.00	12	12	13	23	50	48	
13	12.50 - 13.00	15	12	14	24		50	
14	13.50 - 14.00	15	11	11	13	8	35	
15	14.50 - 15.00	10	13	15	15	10	43	
16	15.50 - 16.00	10	12	14	16	7	42	30-Nov-18
17	16.50 - 17.00	5	6	6	8	3	20	
18	17.50 - 18.00		10	12	12	8	34	1-Des-2018
19	18.50 - 19.00	10	12	15	17	9	44	
20	19.50 - 20.00	10	10	12	12	10	34	
21	20.50 - 21.00	12	13	15	17	9	45	
22	21.50 - 22.00	10	12	15	20	10	47	
23	22.50 - 23.00	13	12	14	16	10	42	2-Dec-18
24	23.50 - 24.00	13	15	15	20	10	50	
25	24.50 - 25.00	12	12	18	20	13	50	
26	25.50 - 26.00	5	6	9	10	3	25	
27	26.50 - 27.00	10	15	18	17	10	50	
28	27.50 - 28.00	12	15	17	18	10	50	
29	28.50 - 29.00	10	11	14	17	8	42	
30	29.50 - 30.00	21	26	28			54	3-Des-2018
31	30.50 31.00	22	28	32			60	
32	31.50 32.00	25	30	35			65	

SUMMARY OF N - SPT

Hole Number : LP - 3
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	2	1	3	2	2	6	
2	1.50 - 2.00	3	2	2	2	1	6	26-Nov-18
3	2.50 - 3.00	10	6	5	4	2	15	
4	3.50 - 4.00	12	10	9	8	5	27	
5	4.50 - 5.00	15	13	11	10	6	34	
6	5.50 - 6.00	14	12	12	10	5	34	27-Nov-18
7	6.50 - 7.00	8	10	11	12	6	33	
8	7.50 - 8.00	10	11	12	13	6	36	
9	8.50 - 9.00	6	15	18	22		55	
10	9.50 - 10.00	13	19	22	23		64	
11	10.50 - 11.00	17	20	22	23		65	
12	11.50 - 12.00	27	36	30			66	
13	12.50 - 13.00	17	19	23	25		67	28-Nov-18
14	13.50 - 14.00							
15	14.50 - 15.00	13	12	11	11	5	34	
16	15.50 - 16.00	14	13	11	12	6	36	
17	16.50 - 17.00	12	12	11	13	5	36	
18	17.50 - 18.00		12	12	10	4	34	
19	18.50 - 19.00	16	12	12	11	4	35	
20	19.50 - 20.00	12	13	14	13	7	40	29-Nov-18
21	20.50 - 21.00	11	11	12	10	4	33	
22	21.50 - 22.00	13	12	11	9	4	32	
23	22.50 - 23.00	12	12	13	10	5	35	
24	23.50 - 24.00	13	12	11	10	5	33	
25	24.50 - 25.00	15	13	11	10	5	34	30-Nov-18
26	25.50 - 26.00	12	11	11	10	5	32	
27	26.50 - 27.00	12	13	10	11	5	34	
28	27.50 - 28.00	14	12	11	11	6	34	
29	28.50 - 29.00	13	12	12	13	6	37	1-Des-2018
30	29.50 - 30.00	12	11	10	10	4	31	

SUMMARY OF N - SPT

Hole Number : LP - 4
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	2	2	1	2	1	5	
2	1.50 - 2.00	3	6	5	6	4	17	
3	2.50 - 3.00	1	5	4	3	3	12	1-Des-2018
4	3.50 - 4.00	2	2	3	3	1	8	
5	4.50 - 5.00	1	1	1	1	1	3	
6	5.50 - 6.00	7	10	9	9	6	28	
7	6.50 - 7.00	3	2	2	1	1	5	
8	7.50 - 8.00	6	11	13	18	8	42	
9	8.50 - 9.00	10	10	11	12	5	33	2-Dec-18
10	9.50 - 10.00	15	13	12	12	6	37	
11	10.50 - 11.00	3	4	8	8	5	20	
12	11.50 - 12.00	5	4	4	3	2	11	
13	12.50 - 13.00	20	19	18	20		57	
14	13.50 - 14.00	24	22	21	22		65	3-Dec-18
15	14.50 - 15.00	23	21	22	20		63	
16	15.50 - 16.00	19	20	20	21		61	
17	16.50 - 17.00	18	20	19	21		60	
18	17.50 - 18.00		12	10	13	5	35	
19	18.50 - 19.00	19	19	20	18		57	4-Des-2018
20	19.50 - 20.00	7	11	10	13	6	34	
21	20.50 - 21.00	17	18	20	21		59	
22	21.50 - 22.00	18	17	23	22		62	
23	22.50 - 23.00	16	19	20	19		58	
24	23.50 - 24.00	14	18	20	21		59	
25	24.50 - 25.00	18	22	21	23		66	
26	25.50 - 26.00	20	22	21	20		63	5-Des-2018
27	26.50 - 27.00	18	23	22	21		66	
28	27.50 - 28.00	20	21	22	23		66	
29	28.50 - 29.00	21	21	22	20		63	
30	29.50 - 30.00	20	21	21	22		64	

SUMMARY OF N - SPT

Hole Number : LP - 5
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	5	5	5	7	4	17	
2	1.50 - 2.00	6	6	7	8	5	21	
3	2.50 - 3.00	5	6	8	7	5	21	
4	3.50 - 4.00	5	6	6	7	5	19	18-Dec-18
5	4.50 - 5.00	6	6	7	7	5	20	
6	5.50 - 6.00	15	17	18	19		54	
7	6.50 - 7.00	9	9	10	12	6	31	
8	7.50 - 8.00	18	19	19	20		58	
9	8.50 - 9.00	17	18	20	20		58	
10	9.50 - 10.00	6	6	6	7	4	19	
11	10.50 - 11.00	7	6	7	7	5	20	
12	11.50 - 12.00	18	20	20	23		63	19-Dec-18
13	12.50 - 13.00	15	15	15	14	8	44	
14	13.50 - 14.00	3	5	6	7	4	18	
15	14.50 - 15.00	20	21	20	22		63	
16	15.50 - 16.00	19	20	19	10		49	
17	16.50 - 17.00	13	14	14	15	7	43	
18	17.50 - 18.00		19	20	20		59	
19	18.50 - 19.00	18	18	19	21		58	
20	19.50 - 20.00	22	23	24	23		70	
21	20.50 - 21.00	8	10	11	11	5	32	20-Dec-18
22	21.50 - 22.00	42	50				50	
23	22.50 - 23.00	23	22	24	23		69	
24	23.50 - 24.00	26	25	24	23		72	
25	24.50 - 25.00	27	28	26	25		79	
26	25.50 - 26.00	25	23	26	28		77	
27	26.50 - 27.00	30	29	31			60	
28	27.50 - 28.00	29	30	28			58	21-Dec-18
29	28.50 - 29.00	21	22	23	22		67	
30	29.50 - 30.00	27	25	28	20		73	

SUMMARY OF N - SPT

Hole Number : LP - 6
Location : Petobo

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	6	8	10	11	6	29	
2	1.50 - 2.00	8	11	13	12	7	36	7-Des-2018
3	2.50 - 3.00	17	19	20	21		60	
4	3.50 - 4.00	20	21	21	20		62	
5	4.50 - 5.00	19	20	21	23		64	
6	5.50 - 6.00	21	21	20	19		60	
7	6.50 - 7.00	10	9	9	9	5	27	8-Des-2018
8	7.50 - 8.00	10	7	9	8	5	24	
9	8.50 - 9.00	7	8	9	8	6	25	
10	9.50 - 10.00	19	19	21	22		62	
11	10.50 - 11.00	20	19	20	21		60	9-Des-2018
12	11.50 - 12.00	21	20	20	21		61	
13	12.50 - 13.00	18	21	21	22		64	
14	13.50 - 14.00	17	18	20	21		59	10-Des-2018
15	14.50 - 15.00	20	20	19	21		60	
16	15.50 - 16.00	rock						
17	16.50 - 17.00	23	22	20	21		63	
18	17.50 - 18.00		21	22	21		64	13-Dec-18
19	18.50 - 19.00	17	21	19	20		60	
20	19.50 - 20.00	20	18	17	20		55	
21	20.50 - 21.00	24	22	23	21		66	14-Dec-18
22	21.50 - 22.00	20	22	21	23		66	
23	22.50 - 23.00	21	23	24	22		69	
24	23.50 - 24.00	20	22	22	23		67	15-Dec-18
25	24.50 - 25.00	24	22	23	23		68	
26	25.50 - 26.00	24	23	24	22		69	16-Dec-18
27	26.50 - 27.00	25	23	24	22		69	
28	27.50 - 28.00							
29	28.50 - 29.00							
30	29.50 - 30.00							

SUMMARY OF N - SPT

Hole Number : J - 1
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	2	1	2	1	5	
2	1.50 - 2.00	5	6	9	4	9	12	
3	2.50 - 3.00	4	2	1	1	3	4	
4	3.50 - 4.00	5	3	4	3	2	10	
5	4.50 - 5.00	5	4	8	6	4	18	21-Dec-18
6	5.50 - 6.00	8	4	7	8	4	19	
7	6.50 - 7.00	18	20	23	30	15	60	
8	7.50 - 8.00	23	38	48			86	
9	8.50 - 9.00	20	23	38			61	
10	9.50 - 10.00	4	2	6	10	11	18	
11	10.50 - 11.00	6	9	6	4	4	19	
12	11.50 - 12.00	20	20	30			50	
13	12.50 - 13.00	25	28	38			66	
14	13.50 - 14.00	38	20	30			50	
15	14.50 - 15.00	7	10	12	15	8	37	
16	15.50 - 16.00	6	10	14	20	9	44	22-Dec-18
17	16.50 - 17.00	38	50				50	
18	17.50 - 18.00		23	30			53	
19	18.50 - 19.00	20	35	40			75	
20	19.50 - 20.00	48	50					
21	20.50 - 21.00	16	20	25	35			
22	21.50 - 22.00	20	35	48				
23	22.50 - 23.00	38	50					
24	23.50 - 24.00	23	30	39				
25	24.50 - 25.00	38	50					
26	25.50 - 26.00	48	50					
27	26.50 - 27.00	39	50					23-Dec-18
28	27.50 - 28.00	40	50					
29	28.50 - 29.00	45	50					
30	29.50 - 30.00	47	50					

SUMMARY OF N - SPT

Hole Number : J - 2
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	1	1	1	2	1	4	
2	1.50 - 2.00	1	2	2	3	1	7	18-Dec-18
3	2.50 - 3.00	1	2	2	2	1	6	
4	3.50 - 4.00	1	1	1	1	1	3	
5	4.50 - 5.00	2	5	10	15	15	30	
6	5.50 - 6.00	2	2	3	10	8	15	
7	6.50 - 7.00	3	5	12	15	10	32	19-Dec-18
8	7.50 - 8.00	4	6	14	18	15	38	
9	8.50 - 9.00	4	7	12	19	10	38	
10	9.50 - 10.00	8	15	25	27	12	67	
11	10.50 - 11.00	12	18	10	6	6	34	20-Dec-18
12	11.50 - 12.00	5	5	14	18	8	37	
13	12.50 - 13.00	16	17	18	15		50	
14	13.50 - 14.00	12	16	20	14		50	
15	14.50 - 15.00	14	18	17	15		50	
16	15.50 - 16.00	15	17	20	13		50	22-Dec-18
17	16.50 - 17.00	17	18	19	13		50	
18	17.50 - 18.00	14	16	19	15		50	
19	18.50 - 19.00	13	15	22	13		50	
20	19.50 - 20.00	19	16	18	16		50	
21	20.50 - 21.00							
22	21.50 - 22.00							
23	22.50 - 23.00							
24	23.50 - 24.00							
25	24.50 - 25.00							
26	25.50 - 26.00							
27	26.50 - 27.00							
28	27.50 - 28.00							
29	28.50 - 29.00							
30	29.50 - 30.00							

SUMMARY OF N - SPT

Hole Number : J - 3
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	2	2	3	3	1	8	
2	1.50 - 2.00	3	4	4	5	3	13	
3	2.50 - 3.00	4	4	5	7	5	16	
4	3.50 - 4.00	4	4	6	8	6	18	18-Dec-18
5	4.50 - 5.00	5	5	7	8	6	20	
6	5.50 - 6.00	5	7	7	8	5	22	
7	6.50 - 7.00	30	50				50	
8	7.50 - 8.00	31	50				50	
9	8.50 - 9.00	30	50				50	
10	9.50 - 10.00	31	50				50	
11	10.50 - 11.00	30	31	22			53	19-Dec-18
12	11.50 - 12.00	31	34	20			54	
13	12.50 - 13.00	30	32	22			54	
14	13.50 - 14.00	32	37	22			59	
15	14.50 - 15.00	5	4	5	8	5	17	
16	15.50 - 16.00	5	6	9	15	6	30	
17	16.50 - 17.00	6	8	9	14	5	31	
18	17.50 - 18.00		9	10	12	5	31	
19	18.50 - 19.00	8	9	10	13	6	32	
20	19.50 - 20.00	9	10	10	15	6	35	20-Dec-18
21	20.50 - 21.00	8	9	10	14	5	33	
22	21.50 - 22.00	9	11	13	14	5	38	
23	22.50 - 23.00	8	12	14	14	6	40	
24	23.50 - 24.00	11	15	15	15	6	45	
25	24.50 - 25.00	20	23	27			50	
26	25.50 - 26.00	19	21	30			51	
27	26.50 - 27.00	18	20	30			50	
28	27.50 - 28.00	21	30	20			50	21-Dec-18
29	28.50 - 29.00	23	31	20			51	
30	29.50 - 30.00	25	40	10			50	

SUMMARY OF N - SPT

Hole Number : J - 4
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	14	9	13	17	8	39	
2	1.50 - 2.00	5	11	16	21	10	48	
3	2.50 - 3.00	10	13	18	23	14	54	
4	3.50 - 4.00	8	11	16	18	9	45	
5	4.50 - 5.00	9	12	15	19	10	46	19-Dec-18
6	5.50 - 6.00	11	15	19	24		58	
7	6.50 - 7.00	11	13	17	26	24	56	
8	7.50 - 8.00	10	14	17	25		56	
9	8.50 - 9.00	11	14	18	24		56	
10	9.50 - 10.00	20	19	24	29		72	
11	10.50 - 11.00	12	16	19	27		62	
12	11.50 - 12.00	13	15	18	26		59	20-Dec-18
13	12.50 - 13.00	14	17	19	25		61	
14	13.50 - 14.00	16	19	20	24		63	
15	14.50 - 15.00	18	21	23	29		73	
16	15.50 - 16.00	17	20	23	28		71	
17	16.50 - 17.00	19	24	26	30		80	
18	17.50 - 18.00		22	24	27		73	21-Dec-18
19	18.50 - 19.00	20	20	27	31		78	
20	19.50 - 20.00	19	22	25	29		76	
21	20.50 - 21.00	16	25	26	29		80	
22	21.50 - 22.00	15	21	23	26		70	
23	22.50 - 23.00	16	23	25	28		76	
24	23.50 - 24.00	20	23	24	27		74	
25	24.50 - 25.00	19	21	24	27		72	
26	25.50 - 26.00	20	22	24	26		72	22-Dec-18
27	26.50 - 27.00	18	20	23	25		68	
28	27.50 - 28.00	19	21	22	24		67	
29	28.50 - 29.00	20	23	25	28		76	
30	29.50 - 30.00	20	21	23	26		70	

SUMMARY OF N - SPT

Hole Number : J - 5
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	6	4	5	7	5	16	
2	1.50 - 2.00	3	2	3	5	3	10	
3	2.50 - 3.00	21	18	21	24		63	5-Des-2018
4	3.50 - 4.00	21	18	19	21		58	
5	4.50 - 5.00	19	17	17	19		53	
6	5.50 - 6.00	22	19	18	20		57	
7	6.50 - 7.00	23	18	18	21		57	
8	7.50 - 8.00	10	16	19	19		54	
9	8.50 - 9.00	11	6	8	10	4	24	
10	9.50 - 10.00	23	19	23	23		65	6-des-2018
11	10.50 - 11.00	18	14	19	21		54	
12	11.50 - 12.00	19	17	17	24		58	
13	12.50 - 13.00	20	16	17	22		55	
14	13.50 - 14.00	6	3	4	5	3	12	7-Dec-18
15	14.50 - 15.00	22	19	19	26		64	
16	15.50 - 16.00	19	14	17	20		51	
17	16.50 - 17.00	21	17	19	19		55	
18	17.50 - 18.00		21	23	23		67	10-des-2018
19	18.50 - 19.00	29	24	24	2		50	
20	19.50 - 20.00	17	16	16	18		50	
21	20.50 - 21.00	17	13	15	15	9	43	
22	21.50 - 22.00	21	18	18	19		55	
23	22.50 - 23.00	23	21	21	22		64	11-Dec-18
24	23.50 - 24.00	24	23	22	24		69	
25	24.50 - 25.00	20	18	18	20		56	
26	25.50 - 26.00	18	19	21	22		62	
27	26.50 - 27.00	20	18	21	24		63	12-Dec-18
28	27.50 - 28.00	19	17	19	20		56	

SUMMARY OF N - SPT

Hole Number : J - 6
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	17	15	18	18	9	51	
2	1.50 - 2.00	16	13	15	17	8	45	12-Dec-18
3	2.50 - 3.00	11	8	10	11	6	29	
4	3.50 - 4.00	13	8	10	14	8	32	
5	4.50 - 5.00	18	19	14	17	4	50	
6	5.50 - 6.00	4	7	8	10	6	25	
7	6.50 - 7.00	7	4	7	7	6	18	13-Dec-18
8	7.50 - 8.00	4	5	7	8	4	20	
9	8.50 - 9.00	5	8	9	8	7	25	
10	9.50 - 10.00	7	8	9	12	5	29	
11	10.50 - 11.00	9	10	12	13	6	35	
12	11.50 - 12.00	10	11	12	15	8	38	
13	12.50 - 13.00	11	13	13	15	8	41	14-Dec-18
14	13.50 - 14.00	13	13	15	17	10	45	
15	14.50 - 15.00	13	13	16	18	10	47	
16	15.50 - 16.00	14	15	17	18	10	50	
17	16.50 - 17.00	15	17	19	20	11	56	
18	17.50 - 18.00		17	20	21	13	58	
19	18.50 - 19.00	17	19	21	23	15	63	15-Dec-18
20	19.50 - 20.00	19	22	22	25	17	69	
21	20.50 - 21.00	19	22	23	26	16	71	
22	21.50 - 22.00	19	21	23	25	18	69	
23	22.50 - 23.00	17	16	16	17	10	49	
24	23.50 - 24.00	15	19	18	13		50	
25	24.50 - 25.00	17	24	26			50	16-Dec-18
26	25.50 - 26.00	18	25	25			50	
27	26.50 - 27.00	17	24	26			50	
28	27.50 - 28.00	36	21	31			52	
29	28.50 - 29.00	18	21	24	29		74	17-Dec-18
30	29.50 - 30.00	21	17	34	30		81	

SUMMARY OF N - SPT

Hole Number : J - 7
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	5	7	6	6	18	5-Des-2018
2	1.50 - 2.00	11	4	3	2	2	9	
3	2.50 - 3.00	13	8	6	5	3	19	
4	3.50 - 4.00	14	8	6	7	4	21	6-Des-2018
5	4.50 - 5.00	11	9	6	4	2	19	
6	5.50 - 6.00	12	9	8	6	3	23	
7	6.50 - 7.00	13	9	11	7	4	27	
8	7.50 - 8.00	11	9	10	11	4	30	
9	8.50 - 9.00	11	12	11	9	5	32	8-Dec-18
10	9.50 - 10.00	11	9	11	7	3	27	
11	10.50 - 11.00	12	10	9	6	4	25	
12	11.50 - 12.00	16	12	10	13	6	35	9-Dec-18
13	12.50 - 13.00	14	12	15	15	7	42	
14	13.50 - 14.00	11	10	12	15	8	37	
15	14.50 - 15.00	30	50				50	
16	15.50 - 16.00	12	11	12	15	7	38	10-Des-2018
17	16.50 - 17.00	13	12	15	20	9	47	
18	17.50 - 18.00		50				50	
19	18.50 - 19.00	17	20	15	13	9	48	
20	19.50 - 20.00	16	12	15	11	7	38	
21	20.50 - 21.00	9	7	9	11	6	27	
22	21.50 - 22.00	14	13	15	11	6	39	11-Des-2018
23	22.50 - 23.00	14	10	15	14	8	39	
24	23.50 - 24.00	13	15	10	15	10	40	
25	24.50 - 25.00	14	13	15	17	8	45	
26	25.50 - 26.00	10	50				50	12-Dec-18
27	26.50 - 27.00	29	28	30			58	
28	27.50 - 28.00	38	50					13-Dec-18
29	28.50 - 29.00	14	20	15	15	8		
30	29.50 - 30.00	30	50					

SUMMARY OF N - SPT

Hole Number : J -8
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	4	4	6	3	14	
2	1.50 - 2.00	6	6	4	5	3	15	
3	2.50 - 3.00	5	10	21	22		53	
4	3.50 - 4.00	4	3	4	6	3	13	15-Dec-18
5	4.50 - 5.00	16	14	19	19		52	
6	5.50 - 6.00	21	20	21	23		64	
7	6.50 - 7.00	24	21	21	22		64	
8	7.50 - 8.00	19	20	21	24		65	
9	8.50 - 9.00	17	19	19	22		60	
10	9.50 - 10.00	6	8	8	9	5	25	
11	10.50 - 11.00	20	17	19	20		56	16-Dec-18
12	11.50 - 12.00	26	22	22	24		68	
13	12.50 - 13.00	21	19	23	23		65	
14	13.50 - 14.00	19	21	22	25		68	
15	14.50 - 15.00	17	19	23	24		66	
16	15.50 - 16.00	21	19	19	23		61	
17	16.50 - 17.00	24	21	23	23		67	
18	17.50 - 18.00		3	4	8	4	15	17-Dec-18
19	18.50 - 19.00	14	17	19	22		58	
20	19.50 - 20.00	19	19	22	23		64	
21	20.50 - 21.00	24	19	23	24		66	
22	21.50 - 22.00	12	16	18	19		53	
23	22.50 - 23.00	3	4	5	5	3	14	
24	23.50 - 24.00	16	19	19	21		59	
25	24.50 - 25.00	2	3	3	5	2	11	18-Dec-18
26	25.50 - 26.00	14	14	19	19		52	
27	26.50 - 27.00	17	21	21	22		64	
28	27.50 - 28.00	19	19	20	23		62	
29	28.50 - 29.00	12	17	17	19		53	
30	29.50 - 30.00	21	19	23	25		67	19-Dec-18

SUMMARY OF N - SPT

Hole Number : J - 9
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	6	4	5	5	3	14	11-Des-2018
2	1.50 - 2.00	5	4	4	5	3	13	
3	2.50 - 3.00	35	50				50	12-Des-2018
4	3.50 - 4.00	40	50				50	
5	4.50 - 5.00	42	50				50	
6	5.50 - 6.00	15	8	7	10	4	25	
7	6.50 - 7.00	41	50				50	13-Dec-18
8	7.50 - 8.00	43	50				50	
9	8.50 - 9.00	42	50				50	14-Dec-18
10	9.50 - 10.00	43	50				50	
11	10.50 - 11.00	34	48	2			50	15-Dec-18
12	11.50 - 12.00	30	40	10			50	
13	12.50 - 13.00	50	50				50	16-Dec-18
14	13.50 - 14.00	37	34	16			50	
15	14.50 - 15.00	ROCK						
16	15.50 - 16.00	30	28	22			50	17-Dec-18
17	16.50 - 17.00	ROCK						
18	17.50 - 18.00							
19	18.50 - 19.00	ROCK						19-Dec-18
20	19.50 - 20.00	ROCK						
21	20.50 - 21.00	ROCK						
22	21.50 - 22.00	ROCK						
23	22.50 - 23.00	ROCK						20-Dec-18
24	23.50 - 24.00	ROCK						
25	24.50 - 25.00	28	20	22	8		50	
26	25.50 - 26.00	ROCK						
27	26.50 - 27.00	20	18	15	15	9	48	
28	27.50 - 28.00	ROCK						21-Dec-18
29	28.50 - 29.00	36	31	19			50	
30	29.50 - 30.00	38	30	20			50	

SUMMARY OF N - SPT

Hole Number : J -10
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	6	3	4	6	4	13	20-Dec-18
2	1.50 - 2.00	15	16	16	24		56	
3	2.50 - 3.00	5	4	6	6	4	16	
4	3.50 - 4.00	14	17	19	22		58	
5	4.50 - 5.00	19	19	21	24		64	
6	5.50 - 6.00	13	16	18	19		53	
7	6.50 - 7.00	17	20	20	21		61	
8	7.50 - 8.00	12	15	19	23		57	
9	8.50 - 9.00	7	15	16	19		50	21-Dec-18
10	9.50 - 10.00	2	3	5	7	4	15	
11	10.50 - 11.00	7	9	11	12	7	32	
12	11.50 - 12.00	3	4	4	5	3	13	
13	12.50 - 13.00	17	19	20	21		60	
14	13.50 - 14.00	14	16	18	19		53	
15	14.50 - 15.00	3	3	7	9	4	19	
16	15.50 - 16.00	2	5	5	7	4	17	22-Dec-18
17	16.50 - 17.00	17	19	20	20		59	
18	17.50 - 18.00		21	23	23		67	
19	18.50 - 19.00	21	23	23	25		71	
20	19.50 - 20.00	12	17	21	23		61	
21	20.50 - 21.00	16	15	21	22		58	
22	21.50 - 22.00	13	17	21	23		61	23-Dec-18
23	22.50 - 23.00	18	21	20	24		65	
24	23.50 - 24.00	21	19	23	23		65	
25	24.50 - 25.00	14	18	24	26		68	
26	25.50 - 26.00	15	16	22	25		63	
27	26.50 - 27.00	13	17	19	24		60	
28	27.50 - 28.00	11	16	19	23		58	
29	28.50 - 29.00	21	17	20	25		62	
30	29.50 - 30.00	21	20	23	24		67	

SUMMARY OF N - SPT

Hole Number : J -11
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	2	7	11	5	20	
2	1.50 - 2.00	2	2	2	3	3	7	
3	2.50 - 3.00	35	16	11	7	4	34	13-Dec-18
4	3.50 - 4.00	12	8	8	6	2	22	
5	4.50 - 5.00	16	11	11	9	4	31	
6	5.50 - 6.00	17	10	12	14	7	36	14-Dec-18
7	6.50 - 7.00	2	9	10	10	6	29	
8	7.50 - 8.00	10	8	8	9	4	25	
9	8.50 - 9.00	13	9	9	10	6	28	
10	9.50 - 10.00	16	9	11	13	7	33	15-Dec-18
11	10.50 - 11.00	11	7	8	8	4	23	
12	11.50 - 12.00	15	9	11	12	6	32	
13	12.50 - 13.00	14	10	10	12	5	32	
14	13.50 - 14.00	16	10	11	14	8	35	
15	14.50 - 15.00	18	12	13	13	8	38	
16	15.50 - 16.00	20	13	14	14	9	41	16-Dec-18
17	16.50 - 17.00	19	12	14	18	10	44	
18	17.50 - 18.00		13	15	17	11	45	
19	18.50 - 19.00	17	10	11	18	7	39	17-Dec-18
20	19.50 - 20.00	23	17	19	14		50	
21	20.50 - 21.00	20	18	19	13		50	
22	21.50 - 22.00	25	19	18	13		50	
23	22.50 - 23.00	23	20	22	8		50	19-Dec-18
24	23.50 - 24.00	20	18	20	12		50	
25	24.50 - 25.00	21	17	22	11		50	
26	25.50 - 26.00	25	20	23	7		50	20-Dec-18
27	26.50 - 27.00	27	22	23	5		50	
28	27.50 - 28.00	19	17	28	13		58	
29	28.50 - 29.00	20	18	19	15		52	21-Dec-18
30	29.50 - 30.00	20	14	20	16		50	

SUMMARY OF N - SPT

Hole Number : J -12
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	6	7	6	8	3	21	
2	1.50 - 2.00	2	1	1	5	2	7	
3	2.50 - 3.00	LOOSE						15-Dec-18
4	3.50 - 4.00	3	2	3	4	9	9	
5	4.50 - 5.00	3	3	4	5	3	12	
6	5.50 - 6.00	6	3	3	4	2	10	
7	6.50 - 7.00	4	4	3	4	1	11	16-Dec-18
8	7.50 - 8.00	4	5	3	3	2	11	
9	8.50 - 9.00	5	5	6	8	4	19	
10	9.50 - 10.00	30	22	28			50	
11	10.50 - 11.00	16	17	12	21		50	
12	11.50 - 12.00	18	20	25	5		50	18-Dec-18
13	12.50 - 13.00	15	12	14	24	5	50	
14	13.50 - 14.00	20	22	27	3		52	
15	14.50 - 15.00	ROCK						
16	15.50 - 16.00	19	21	25	4		50	
17	16.50 - 17.00	15	13	15	17	7	45	19-Dec-18
18	17.50 - 18.00		21	27	2		50	
19	18.50 - 19.00	22	17	20	13		50	
20	19.50 - 20.00	17	15	17	16	6	48	
21	20.50 - 21.00	14	16	18	14		48	20-Dec-18
22	21.50 - 22.00	12	10	12	14	7	36	
23	22.50 - 23.00	15	17	20	13		50	
24	23.50 - 24.00	18	15	17	18		50	
25	24.50 - 25.00	20	21	19	10		50	21-Dec-18
26	25.50 - 26.00	18	20	22	8		50	
27	26.50 - 27.00	18	17	20	13		50	
28	27.50 - 28.00	15	20	22	8		50	
29	28.50 - 29.00	17	16	20	14		50	22-Dec-18
30	29.50 - 30.00	19	18	21	11		50	

SUMMARY OF N - SPT

Hole Number : J -13
Location : Jono Oge

No.	Depth (m)	Total of blow					N - Value	Remarks
		15 cm	10 cm	10 cm	10 cm	5 cm		
1	0.50 - 1.00	3	6	4	2	3	12	
2	1.50 - 2.00	4	3	2	3	2	8	14-Dec-18
3	2.50 - 3.00	28	50				50	
4	3.50 - 4.00	13	10	9	13	8	32	
5	4.50 - 5.00	13	14	16	20	13	50	
6	5.50 - 6.00	30	50				50	15-Dec-18
7	6.50 - 7.00	40	50				50	
8	7.50 - 8.00	4	7	5	8	3	20	
9	8.50 - 9.00	30	50				50	
10	9.50 - 10.00	20	15	12	16	10	43	
11	10.50 - 11.00	20	30	20			50	16-Dec-18
12	11.50 - 12.00	10	13	15	17	10	45	
13	12.50 - 13.00	12	15	17	15	7	47	
14	13.50 - 14.00	10	9	7	13	7	29	17-Dec-18
15	14.50 - 15.00	20	50				50	
16	15.50 - 16.00	14	9	13	16	10	38	
17	16.50 - 17.00	28	38	40			78	
18	17.50 - 18.00		50				50	
19	18.50 - 19.00	8	10	18	23	15	51	18-Dec-18
20	19.50 - 20.00	20	50				50	
21	20.50 - 21.00	38	50				50	
22	21.50 - 22.00	48	50				50	
23	22.50 - 23.00	20	28	38			66	
24	23.50 - 24.00	48	50				50	
25	24.50 - 25.00	11	16	12	20		48	
26	25.50 - 26.00	17	23	30			53	
27	26.50 - 27.00	20	50				50	19-Dec-18
28	27.50 - 28.00	8	14	20	30		64	
29	28.50 - 29.00	48	50				50	
30	29.50 - 30.00	38	28	38			66	

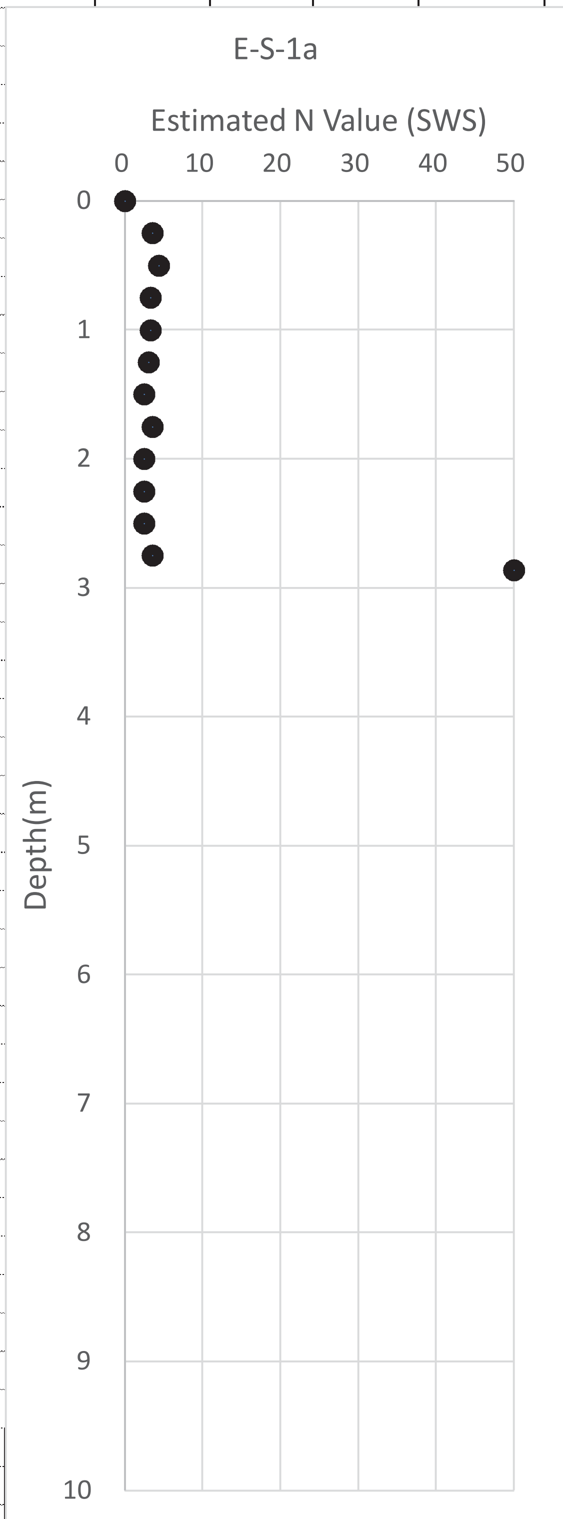
DATA SHEET

Swedish Sounding Test

SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	14.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-1a	COORDINAT		Elevation	

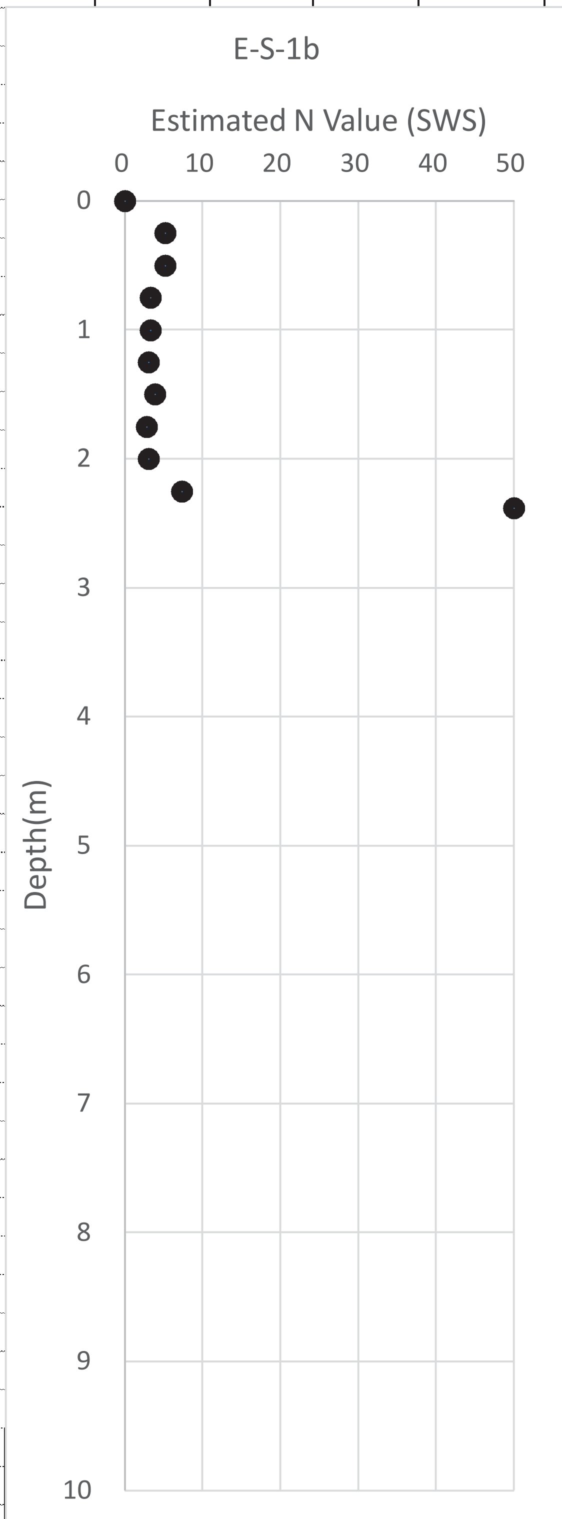
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	6	0.25	0.25	24	4						
100	9	0.50	0.25	36	4						
100	5	0.75	0.25	20	3						
100	5	1.00	0.25	20	3						
100	4	1.25	0.25	16	3						
100	2	1.50	0.25	8	2						
100	6	1.75	0.25	24	4						
100	2	2.00	0.25	8	2						
100	2	2.25	0.25	8	2						
100	2	2.50	0.25	8	2						
100	6	2.75	0.25	24	4						
100	80	2.86	0.11	727	51						
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					0						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	14.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-1b	COORDINAT		Elevation	

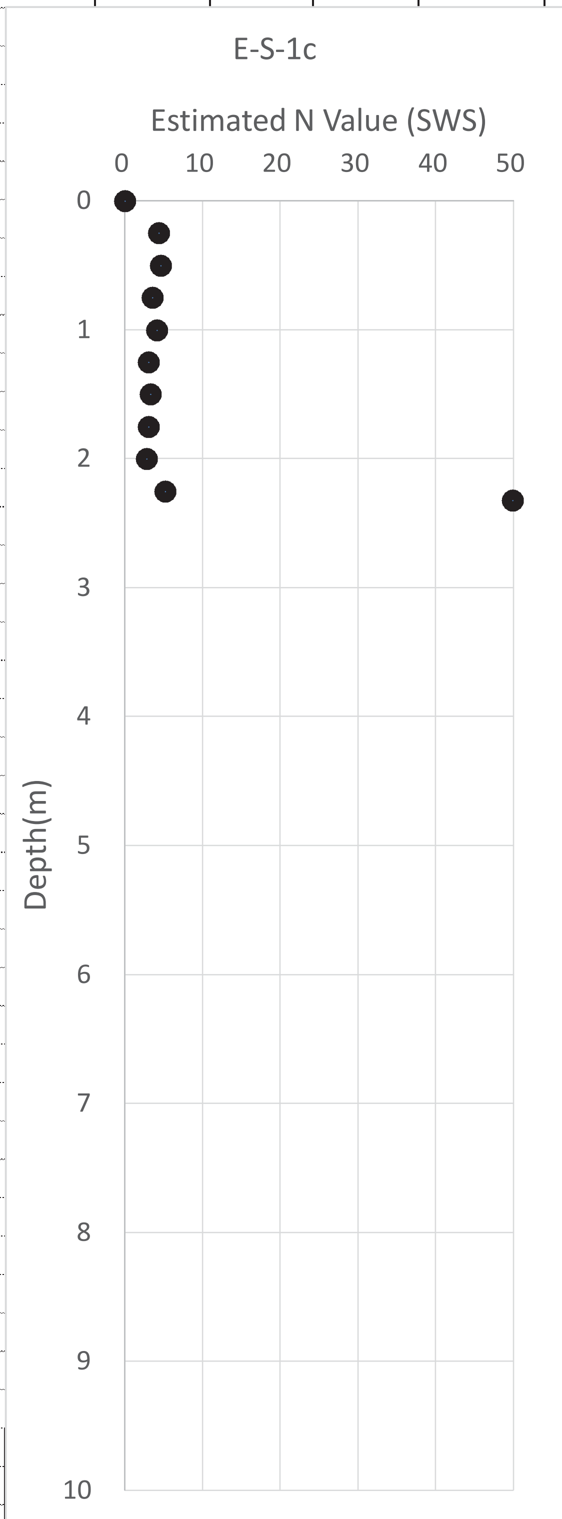
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	12	0.25	0.25	48	5						
100	12	0.50	0.25	48	5						
100	5	0.75	0.25	20	3						
100	5	1.00	0.25	20	3						
100	4	1.25	0.25	16	3						
100	7	1.50	0.25	28	4						
100	3	1.75	0.25	12	3						
100	4	2.00	0.25	16	3						
100	20	2.25	0.25	80	7						
100	95	2.38	0.13	731	51						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	14.12.2018
LOCATION	JONO OGE	GWL	0 M	Tested by	REDI ARIANTO
NO. OF TEST	E-S-1c	COORDINAT		Elevation	

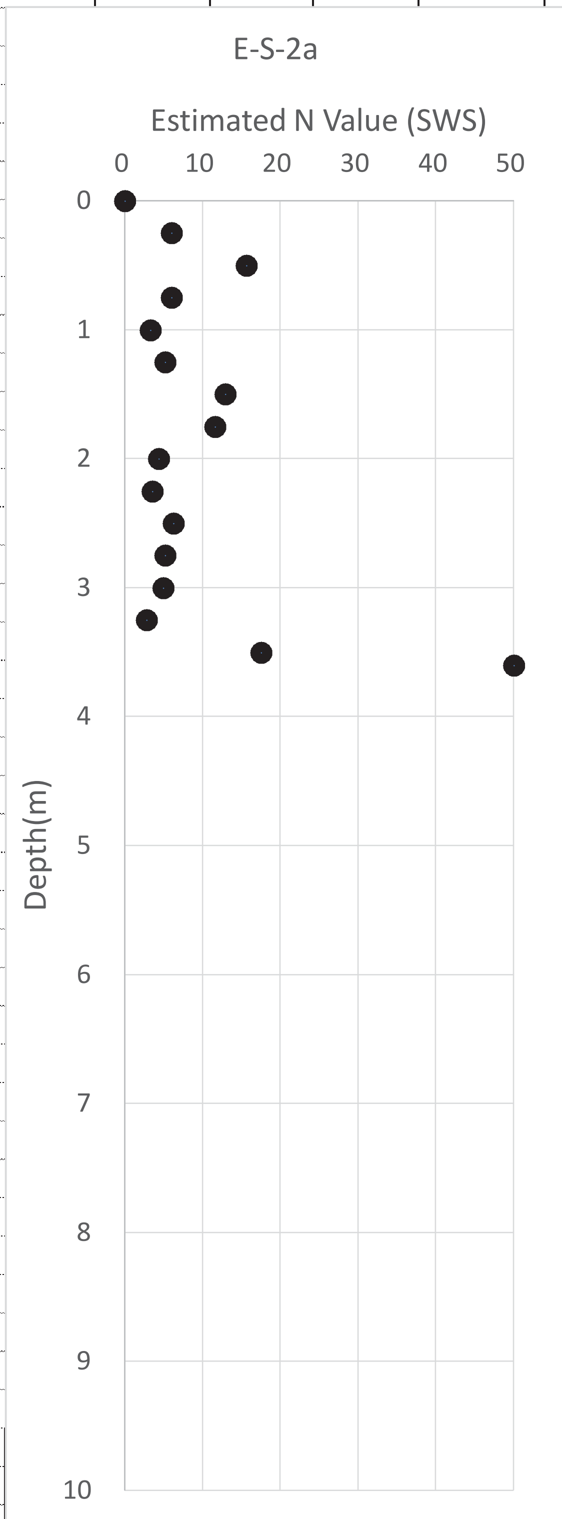
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	9	0.25	0.25	36	4						
100	10	0.50	0.25	40	5						
100	6	0.75	0.25	24	4						
100	8	1.00	0.25	32	4						
100	4	1.25	0.25	16	3						
100	5	1.50	0.25	20	3						
100	4	1.75	0.25	16	3						
100	3	2.00	0.25	12	3						
100	12	2.25	0.25	48	5						
100	50	2.32	0.07	714	50						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-2a	COORDINAT		Elevation	

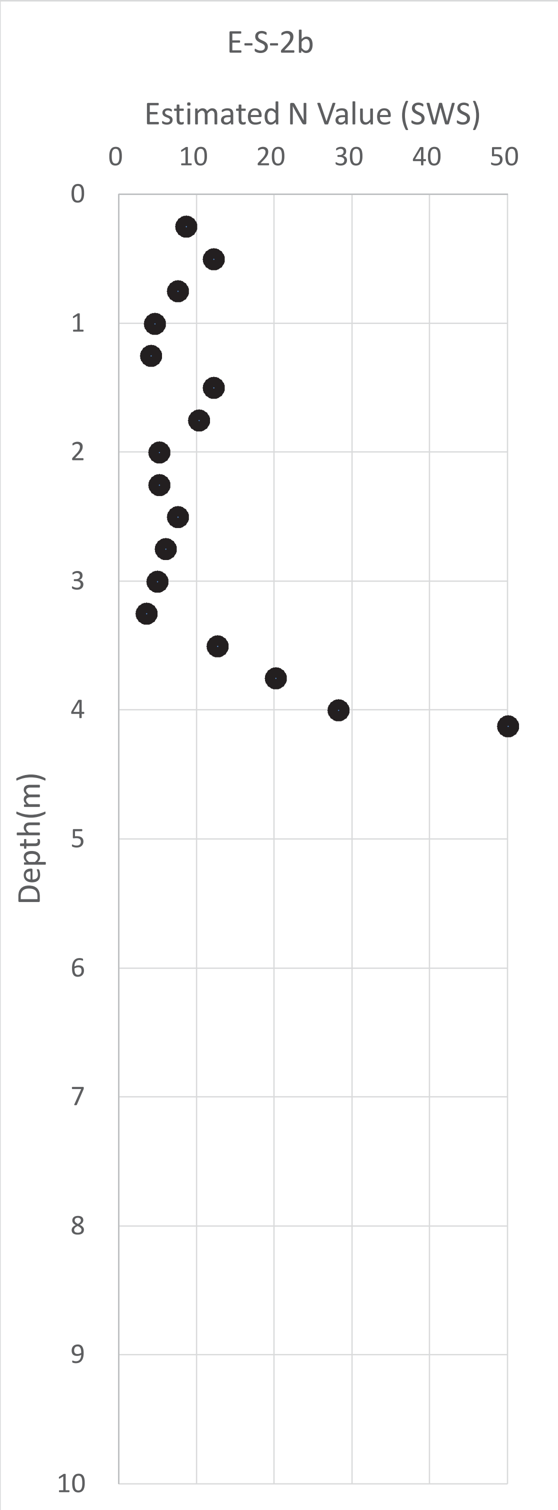
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	15	0.25	0.25	60	6						
100	51	0.50	0.25	204	16						
100	15	0.75	0.25	60	6						
100	5	1.00	0.25	20	3						
100	12	1.25	0.25	48	5						
100	41	1.50	0.25	164	13						
100	36	1.75	0.25	144	12						
100	9	2.00	0.25	36	4						
100	6	2.25	0.25	24	4						
100	16	2.50	0.25	64	6						
100	12	2.75	0.25	48	5						
100	11	3.00	0.25	44	5						
100	3	3.25	0.25	12	3						
100	58	3.50	0.25	232	18						
100	100	3.60	0.10	1000	69						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-2b	COORDINAT		Elevation	

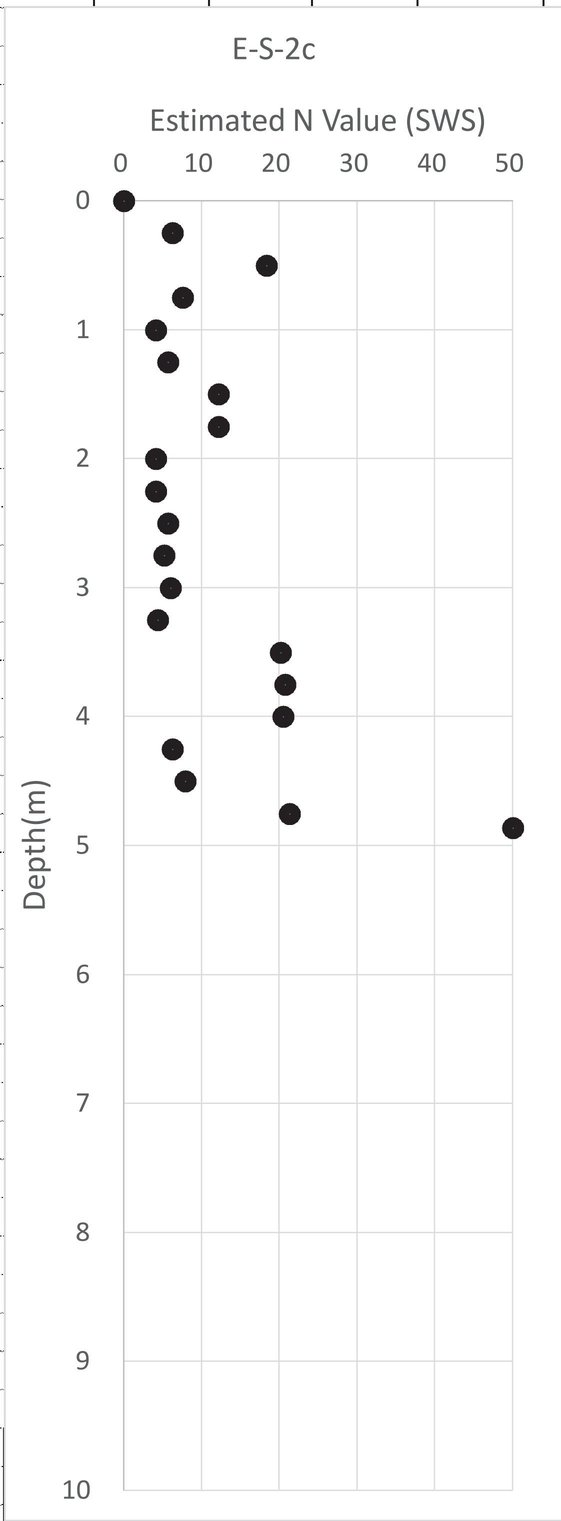
Weight Wsw (kg)	No of Half Rotation No.	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Rotation	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	25	0.25	0.25	100	9						
100	38	0.50	0.25	152	12						
100	21	0.75	0.25	84	8						
100	10	1.00	0.25	40	5						
100	8	1.25	0.25	32	4						
100	38	1.50	0.25	152	12						
100	31	1.75	0.25	124	10						
100	12	2.00	0.25	48	5						
100	12	2.25	0.25	48	5						
100	21	2.50	0.25	84	8						
100	15	2.75	0.25	60	6						
100	11	3.00	0.25	44	5						
100	6	3.25	0.25	24	4						
100	40	3.50	0.25	160	13						
100	68	3.75	0.25	272	20						
100	98	4.00	0.25	392	28						
100	100	4.12	0.12	833	58						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-2c	COORDINAT		Elevation	

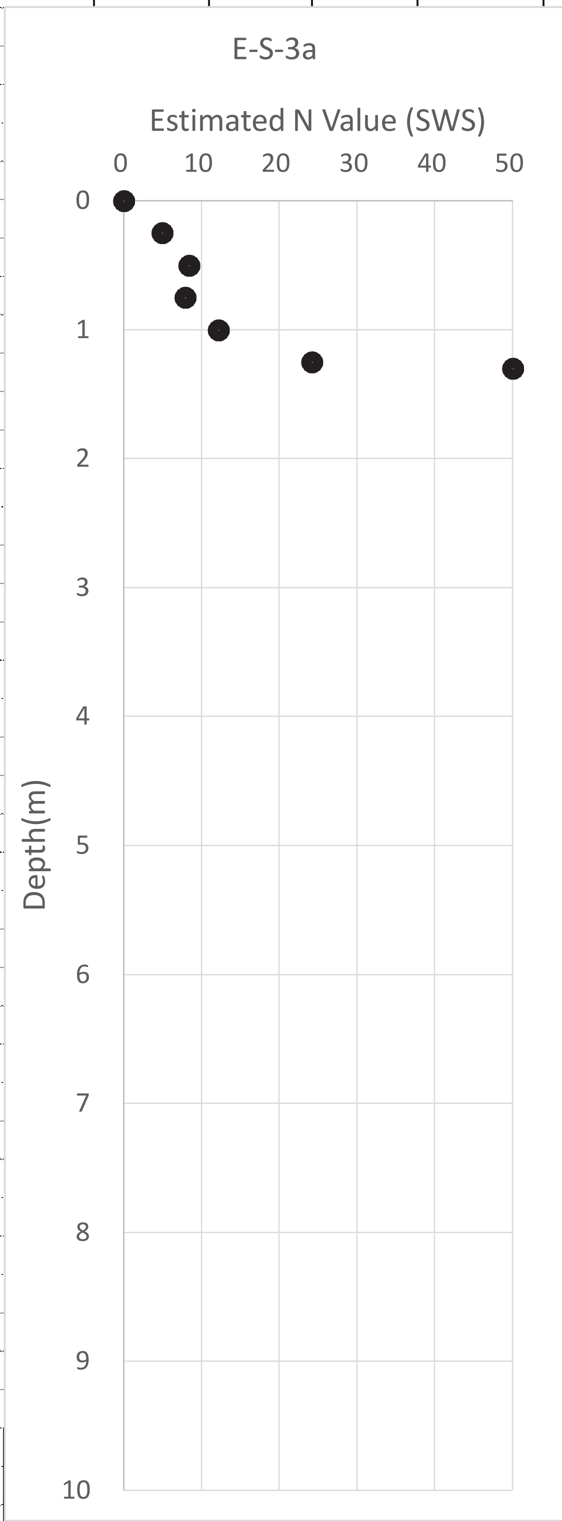
Weight Wsw (kg)	No of Half Rotation No.	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Rotation	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	16	0.25	0.25	64	6						
100	61	0.50	0.25	244	18						
100	21	0.75	0.25	84	8						
100	8	1.00	0.25	32	4						
100	14	1.25	0.25	56	6						
100	38	1.50	0.25	152	12						
100	38	1.75	0.25	152	12						
100	8	2.00	0.25	32	4						
100	8	2.25	0.25	32	4						
100	14	2.50	0.25	56	6						
100	12	2.75	0.25	48	5						
100	15	3.00	0.25	60	6						
100	9	3.25	0.25	36	4						
100	68	3.50	0.25	272	20						
100	70	3.75	0.25	280	21						
100	69	4.00	0.25	276	20						
100	16	4.25	0.25	64	6						
100	22	4.50	0.25	88	8						
100	72	4.75	0.25	288	21						
100	80	4.86	0.11	727	51						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-3a	COORDINAT		Elevation	

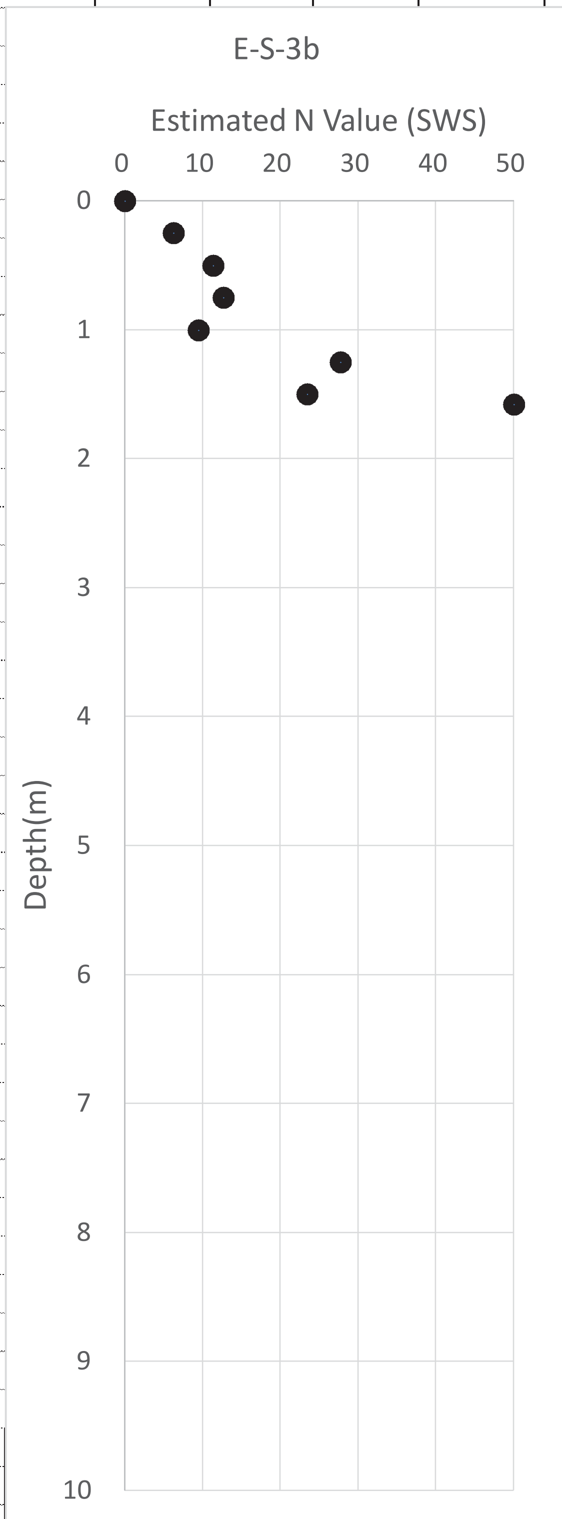
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	11	0.25	0.25	44	5						
100	24	0.50	0.25	96	8						
100	22	0.75	0.25	88	8						
100	38	1.00	0.25	152	12						
100	83	1.25	0.25	332	24						
100	50	1.30	0.05	1000	69						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-3b	COORDINAT		Elevation	

Weight Wsw (kg)	No of Half Ro tation No.	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetration Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	16	0.25	0.25	64	6						
100	35	0.50	0.25	140	11						
100	40	0.75	0.25	160	13						
100	28	1.00	0.25	112	9						
100	96	1.25	0.25	384	28						
100	80	1.50	0.25	320	23						
100	60	1.58	0.08	750	52						
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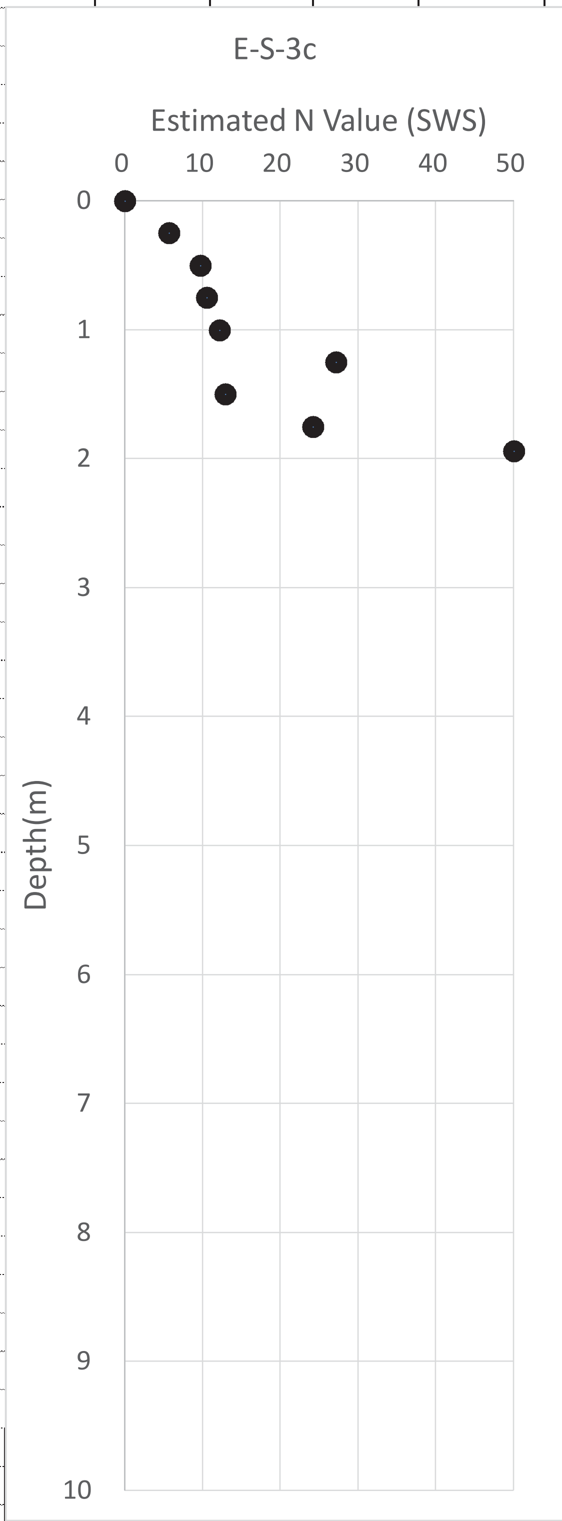


SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-3c	COORDINAT		Elevation	

Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0		
100	14	0.25	0.25	56	6
100	29	0.50	0.25	116	10
100	32	0.75	0.25	128	11
100	38	1.00	0.25	152	12
100	94	1.25	0.25	376	27
100	41	1.50	0.25	164	13
100	83	1.75	0.25	332	24
100	140	1.94	0.19	737	51
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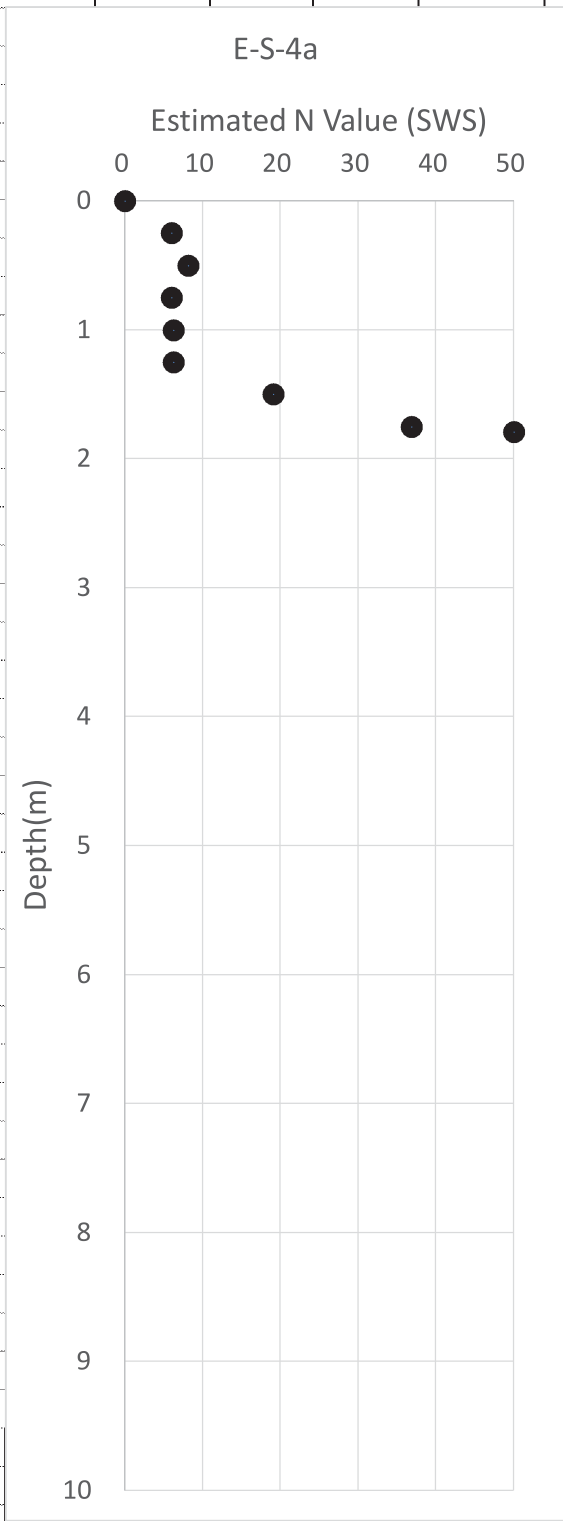
Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value



SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-4a	COORDINAT		Elevation	

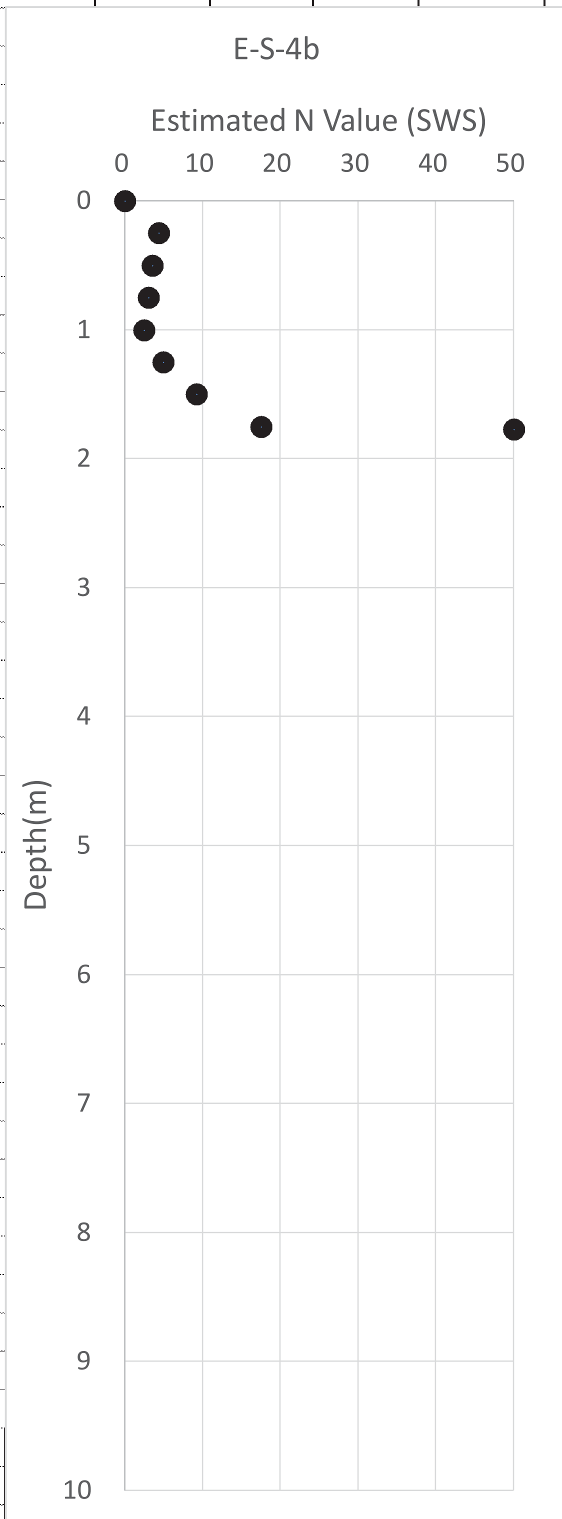
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	15	0.25	0.25	60	6						
100	23	0.50	0.25	92	8						
100	15	0.75	0.25	60	6						
100	16	1.00	0.25	64	6						
100	16	1.25	0.25	64	6						
100	64	1.50	0.25	256	19						
100	130	1.75	0.25	520	37						
100	30	1.79	0.04	750	52						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-4b	COORDINAT		Elevation	

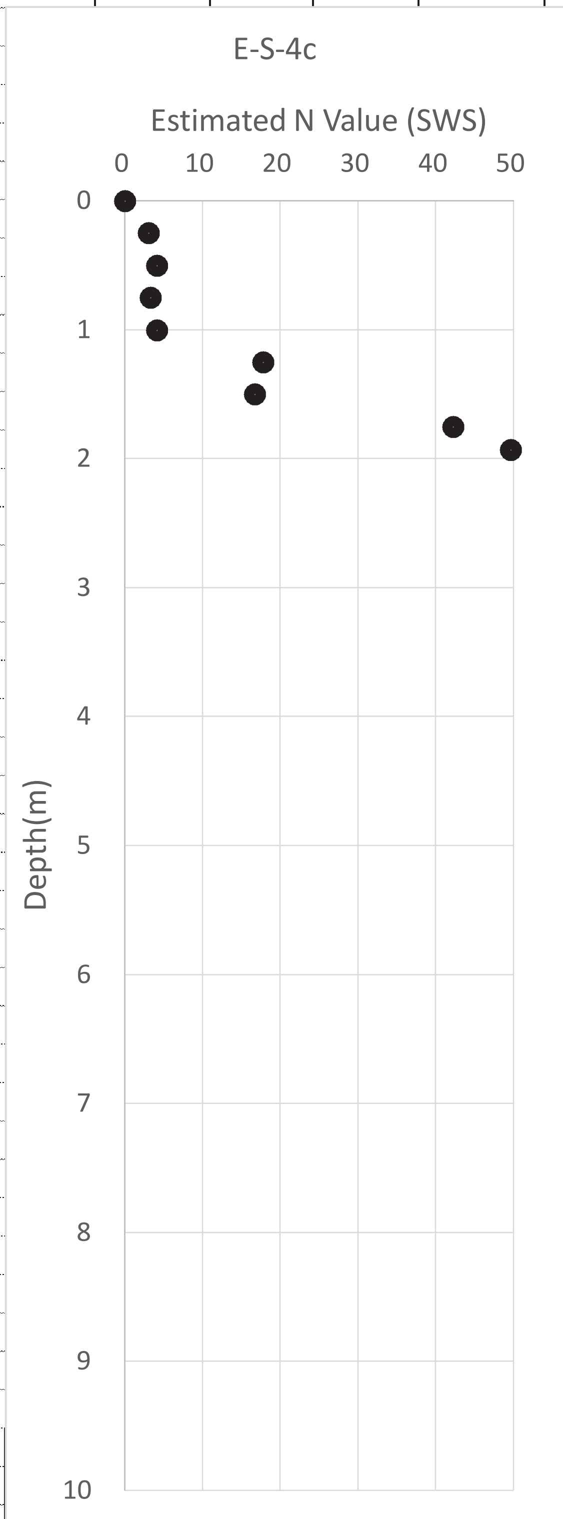
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	9	0.25	0.25	36	4						
100	6	0.50	0.25	24	4						
100	4	0.75	0.25	16	3						
100	2	1.00	0.25	8	2						
100	11	1.25	0.25	44	5						
100	27	1.50	0.25	108	9						
100	58	1.75	0.25	232	18						
100	15	1.77	0.02	750	52						
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SWEDISH SOUNDING TEST

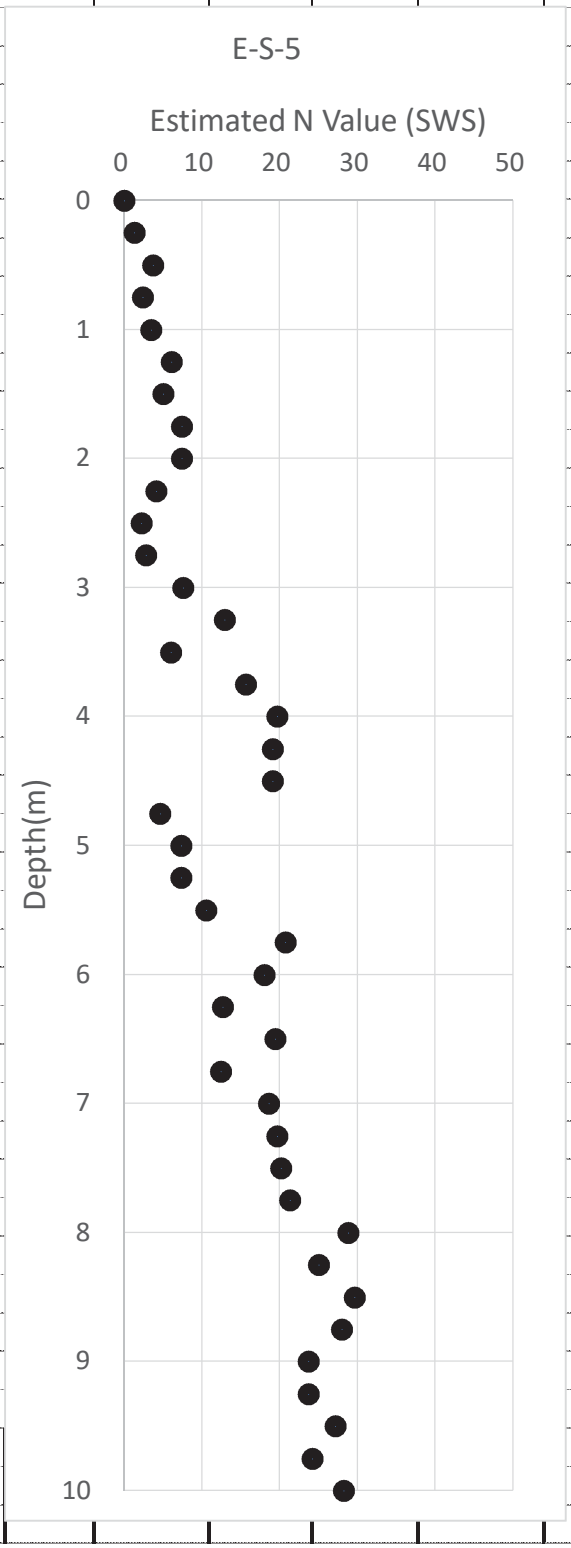
PROJECT	PALU RECOVERY			D a t e	12.12.2018
LOCATION	JONO OGE	GWL	0	Tested by	REDI ARIANTO
NO. OF TEST	E-S-4c	COORDINAT		Elevation	

Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	4	0.25	0.25	16	3						
100	8	0.50	0.25	32	4						
100	5	0.75	0.25	20	3						
100	8	1.00	0.25	32	4						
100	59	1.25	0.25	236	18						
100	55	1.50	0.25	220	17						
100	150	1.75	0.25	600	42						
100	128	1.93	0.18	711	50						
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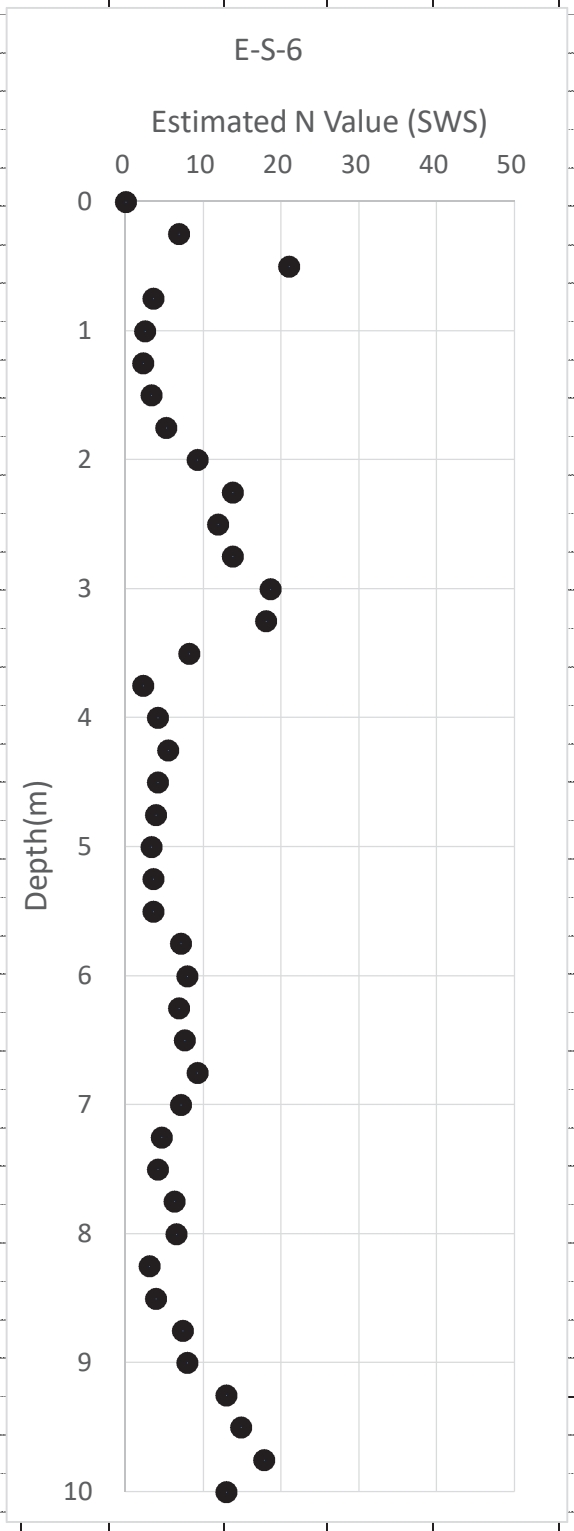
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		11.12.2018	
LOCATION		JONO OGE		GWL	0,35 Cm			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-5		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
25	3	0.25	0.25	12	1						
25	12	0.50	0.25	48	4						
25	7	0.75	0.25	28	2						
25	11	1.00	0.25	44	3						
25	21	1.25	0.25	84	6						
50	15	1.50	0.25	60	5						
50	24	1.75	0.25	96	7						
50	24	2.00	0.25	96	7						
100	8	2.25	0.25	32	4						
100	1	2.50	0.25	4	2						
100	3	2.75	0.25	12	3						
100	21	3.00	0.25	84	8						
100	41	3.25	0.25	164	13						
100	15	3.50	0.25	60	6						
100	51	3.75	0.25	204	16						
100	66	4.00	0.25	264	20						
100	64	4.25	0.25	256	19						
100	64	4.50	0.25	256	19						
100	10	4.75	0.25	40	5						
100	20	5.00	0.25	80	7						
100	20	5.25	0.25	80	7						
100	32	5.50	0.25	128	11						
100	70	5.75	0.25	280	21						
100	60	6.00	0.25	240	18						
100	40	6.25	0.25	160	13						
100	65	6.50	0.25	260	19						
100	39	6.75	0.25	156	12						
100	62	7.00	0.25	248	19						
100	66	7.25	0.25	264	20						
100	68	7.50	0.25	272	20						
100	72	7.75	0.25	288	21						
100	100	8.00	0.25	400	29						
100	86	8.25	0.25	344	25						
100	103	8.50	0.25	412	30						
100	97	8.75	0.25	388	28						
100	81	9.00	0.25	324	24						
100	81	9.25	0.25	324	24						
100	94	9.50	0.25	376	27						
100	83	9.75	0.25	332	24						
100	98	10.00	0.25	392	28						



SWEDISH SOUNDING TEST

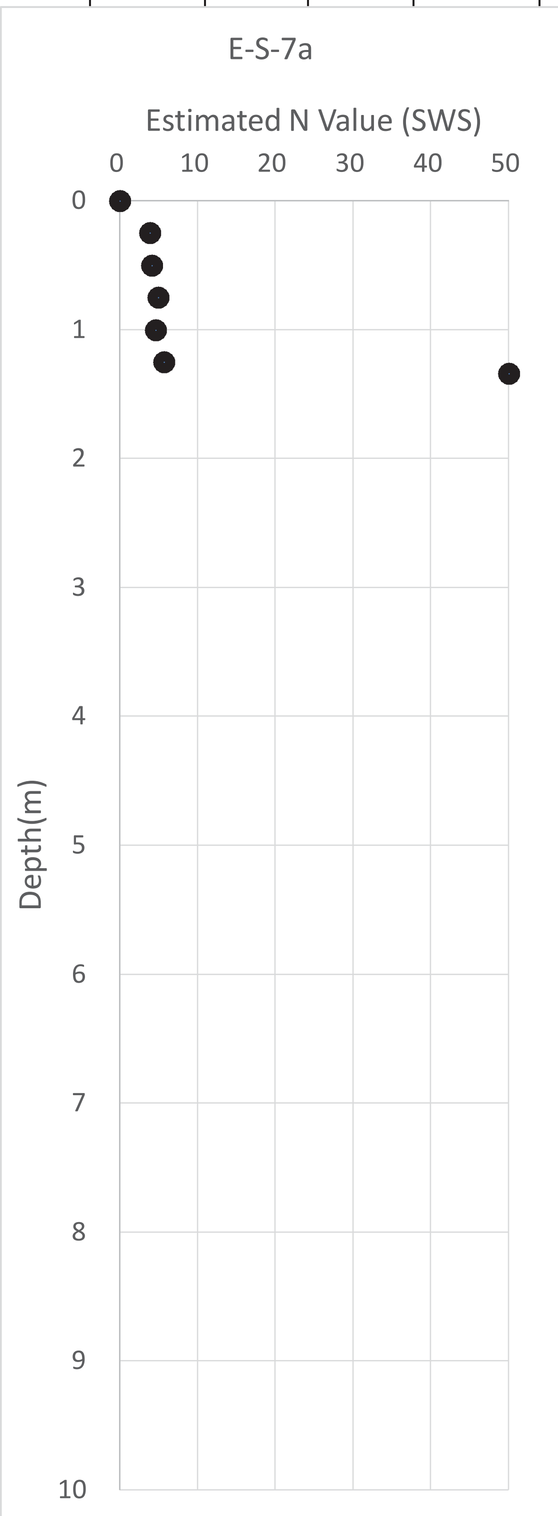
PROJECT		PALU RECOVERY						D a t e		14.12.2018	
LOCATION		JONO OGE		GWL	0 m			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-6		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	18	0.25	0.25	72	7						
100	71	0.50	0.25	284	21						
100	6	0.75	0.25	24	4						
100	2	1.00	0.25	8	2						
100	1	1.25	0.25	4	2						
100	5	1.50	0.25	20	3						
100	12	1.75	0.25	48	5						
100	27	2.00	0.25	108	9						
100	44	2.25	0.25	176	14						
100	37	2.50	0.25	148	12						
100	44	2.75	0.25	176	14						
100	62	3.00	0.25	248	19						
100	60	3.25	0.25	240	18						
100	23	3.50	0.25	92	8						
100	1	3.75	0.25	4	2						
100	8	4.00	0.25	32	4						
100	13	4.25	0.25	52	5						
100	8	4.50	0.25	32	4						
100	7	4.75	0.25	28	4						
100	5	5.00	0.25	20	3						
100	6	5.25	0.25	24	4						
100	6	5.50	0.25	24	4						
100	19	5.75	0.25	76	7						
100	22	6.00	0.25	88	8						
100	18	6.25	0.25	72	7						
100	21	6.50	0.25	84	8						
100	27	6.75	0.25	108	9						
100	19	7.00	0.25	76	7						
100	10	7.25	0.25	40	5						
100	8	7.50	0.25	32	4						
100	16	7.75	0.25	64	6						
100	17	8.00	0.25	68	7						
100	4	8.25	0.25	16	3						
100	7	8.50	0.25	28	4						
100	20	8.75	0.25	80	7						
100	22	9.00	0.25	88	8						
100	41	9.25	0.25	164	13						
100	48	9.50	0.25	192	15						
100	59	9.75	0.25	236	18						
100	41	10.00	0.25	164	13						



SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-7a	COORDINAT		Elevation	

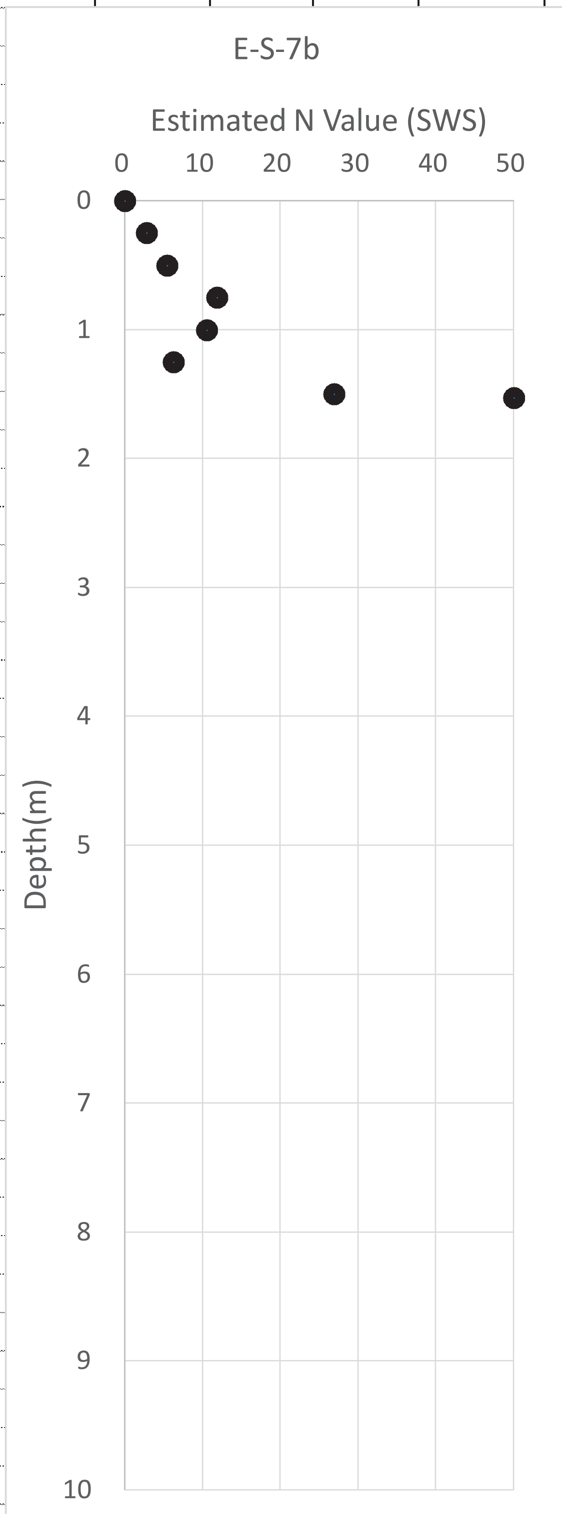
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	7	0.25	0.25	28	4						
100	8	0.50	0.25	32	4						
100	11	0.75	0.25	44	5						
100	10	1.00	0.25	40	5						
100	14	1.25	0.25	56	6						
100	65	1.34	0.09	722	50						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-7b	COORDINAT		Elevation	

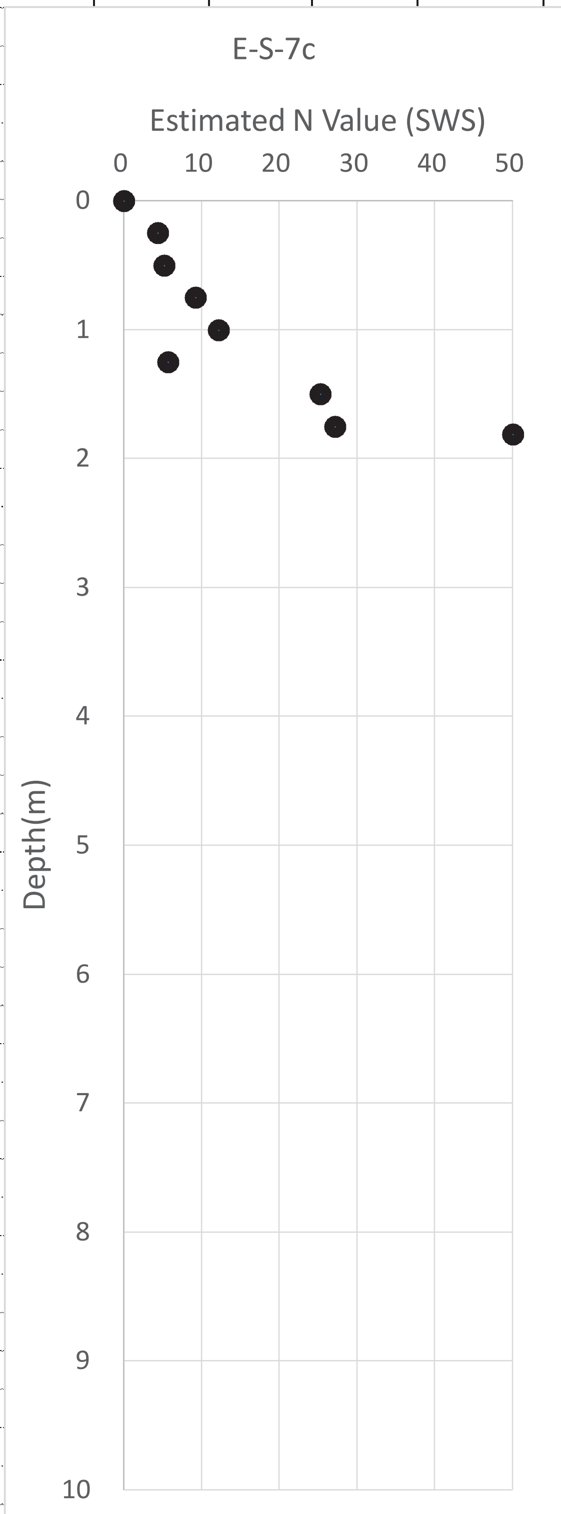
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	3	0.25	0.25	12	3						
100	13	0.50	0.25	52	5						
100	37	0.75	0.25	148	12						
100	32	1.00	0.25	128	11						
100	16	1.25	0.25	64	6						
100	93	1.50	0.25	372	27						
100	25	1.53	0.03	833	58						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY				D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m		Tested by	REDI ARIANTO
NO. OF TEST	E-S-7c	COORDINAT			Elevation	

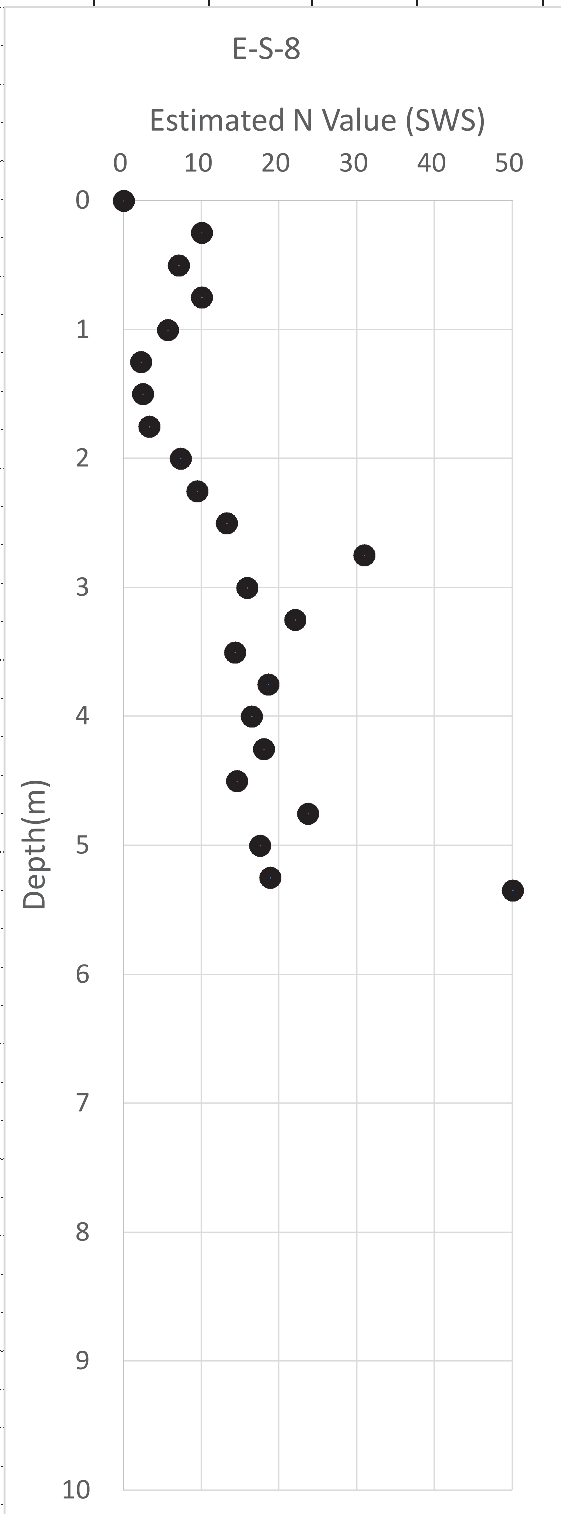
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	9	0.25	0.25	36	4						
100	12	0.50	0.25	48	5						
100	27	0.75	0.25	108	9						
100	38	1.00	0.25	152	12						
100	14	1.25	0.25	56	6						
100	87	1.50	0.25	348	25						
100	94	1.75	0.25	376	27						
100	45	1.81	0.06	750	52						
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SWEDISH SOUNDING TEST

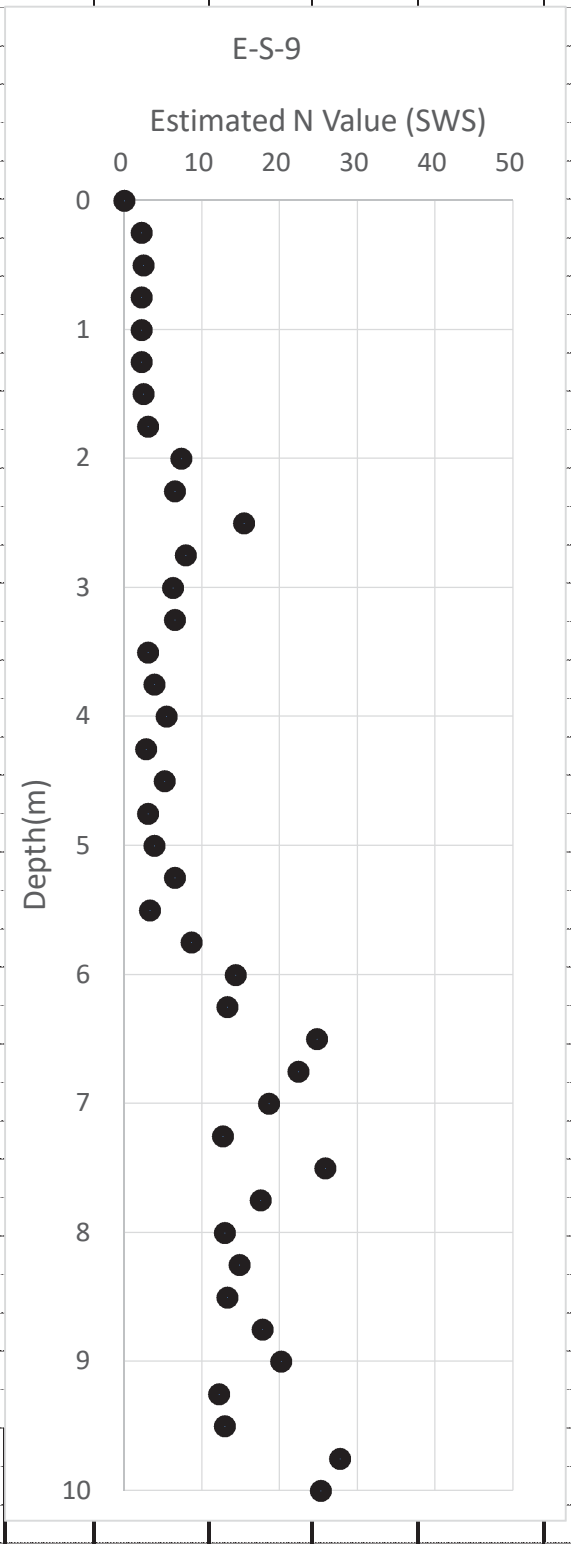
PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-8	COORDINAT		Elevation	

Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	30	0.25	0.25	120	10						
100	19	0.50	0.25	76	7						
100	30	0.75	0.25	120	10						
100	14	1.00	0.25	56	6						
100	1	1.25	0.25	4	2						
100	2	1.50	0.25	8	2						
100	5	1.75	0.25	20	3						
100	20	2.00	0.25	80	7						
100	28	2.25	0.25	112	9						
100	42	2.50	0.25	168	13						
100	108	2.75	0.25	432	31						
100	52	3.00	0.25	208	16						
100	75	3.25	0.25	300	22						
100	46	3.50	0.25	184	14						
100	62	3.75	0.25	248	19						
100	54	4.00	0.25	216	16						
100	60	4.25	0.25	240	18						
100	47	4.50	0.25	188	15						
100	81	4.75	0.25	324	24						
100	58	5.00	0.25	232	18						
100	63	5.25	0.25	252	19						
100	75	5.35	0.10	750	52						
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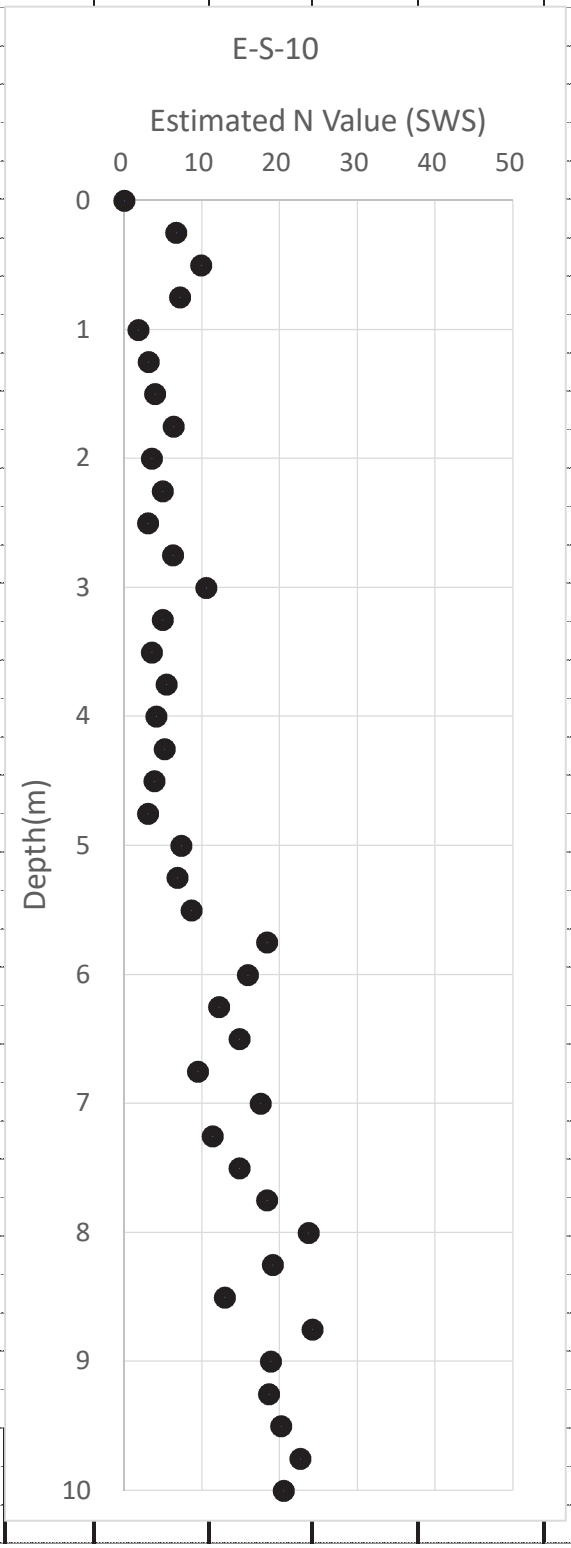
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		13.12.2018	
LOCATION		JONO OGE		GWL	1,50 M			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-9		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	1	0.25	0.25	4	2						
100	2	0.50	0.25	8	2						
100	1	0.75	0.25	4	2						
100	1	1.00	0.25	4	2						
100	1	1.25	0.25	4	2						
100	2	1.50	0.25	8	2						
100	4	1.75	0.25	16	3						
100	20	2.00	0.25	80	7						
100	17	2.25	0.25	68	7						
100	50	2.50	0.25	200	15						
100	22	2.75	0.25	88	8						
100	16	3.00	0.25	64	6						
100	17	3.25	0.25	68	7						
100	4	3.50	0.25	16	3						
100	7	3.75	0.25	28	4						
100	13	4.00	0.25	52	5						
100	3	4.25	0.25	12	3						
100	12	4.50	0.25	48	5						
100	4	4.75	0.25	16	3						
100	7	5.00	0.25	28	4						
100	17	5.25	0.25	68	7						
100	5	5.50	0.25	20	3						
100	25	5.75	0.25	100	9						
100	46	6.00	0.25	184	14						
100	42	6.25	0.25	168	13						
100	85	6.50	0.25	340	25						
100	76	6.75	0.25	304	22						
100	62	7.00	0.25	248	19						
100	40	7.25	0.25	160	13						
100	89	7.50	0.25	356	26						
100	58	7.75	0.25	232	18						
100	41	8.00	0.25	164	13						
100	48	8.25	0.25	192	15						
100	42	8.50	0.25	168	13						
100	59	8.75	0.25	236	18						
100	68	9.00	0.25	272	20						
100	38	9.25	0.25	152	12						
100	41	9.50	0.25	164	13						
100	96	9.75	0.25	384	28						
100	87	10.00	0.25	348	25						



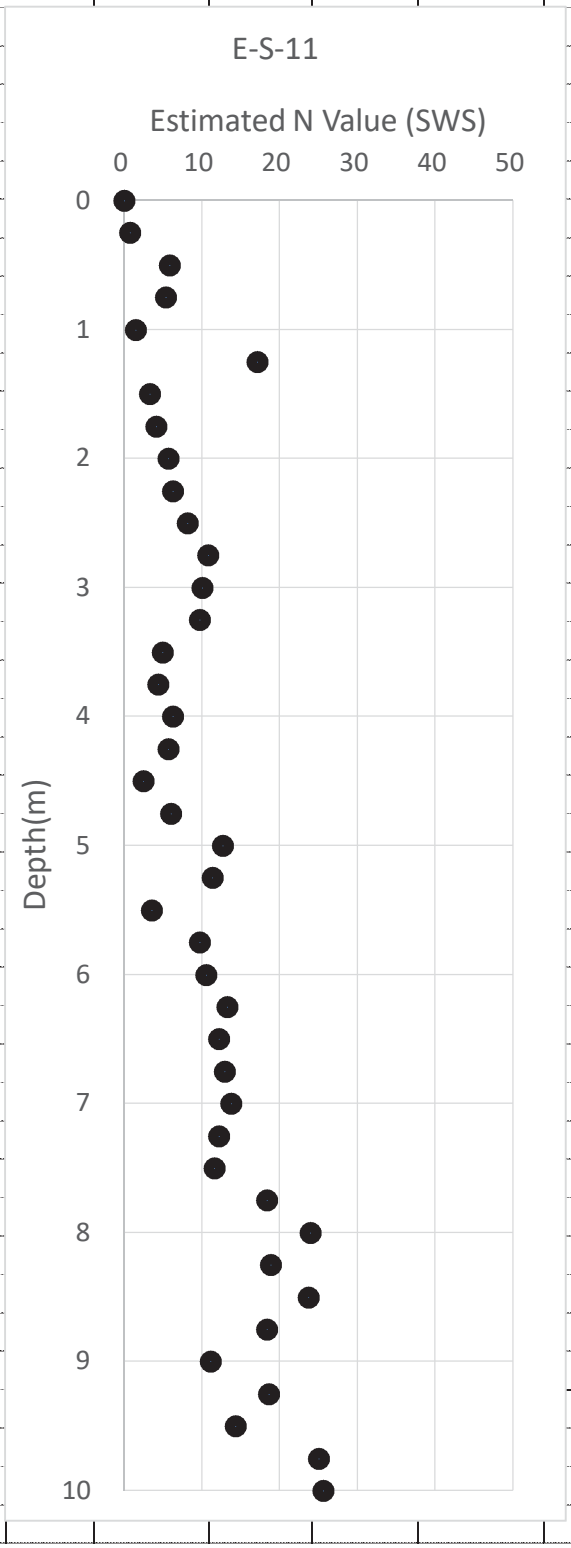
SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		13.12.2018	
LOCATION		JONO OGE		GWL	2,25 M			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-10		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
25	23	0.25	0.25	92	7						
25	35	0.50	0.25	140	10						
25	25	0.75	0.25	100	7						
50	3	1.00	0.25	12	2						
50	8	1.25	0.25	32	3						
50	11	1.50	0.25	44	4						
50	20	1.75	0.25	80	6						
100	6	2.00	0.25	24	4						
100	11	2.25	0.25	44	5						
100	4	2.50	0.25	16	3						
100	16	2.75	0.25	64	6						
100	32	3.00	0.25	128	11						
100	11	3.25	0.25	44	5						
100	6	3.50	0.25	24	4						
100	13	3.75	0.25	52	5						
100	8	4.00	0.25	32	4						
100	12	4.25	0.25	48	5						
100	7	4.50	0.25	28	4						
100	4	4.75	0.25	16	3						
100	20	5.00	0.25	80	7						
100	18	5.25	0.25	72	7						
100	25	5.50	0.25	100	9						
100	61	5.75	0.25	244	18						
100	52	6.00	0.25	208	16						
100	38	6.25	0.25	152	12						
100	48	6.50	0.25	192	15						
100	28	6.75	0.25	112	9						
100	58	7.00	0.25	232	18						
100	35	7.25	0.25	140	11						
100	48	7.50	0.25	192	15						
100	61	7.75	0.25	244	18						
100	81	8.00	0.25	324	24						
100	64	8.25	0.25	256	19						
100	41	8.50	0.25	164	13						
100	83	8.75	0.25	332	24						
100	63	9.00	0.25	252	19						
100	62	9.25	0.25	248	19						
100	68	9.50	0.25	272	20						
100	77	9.75	0.25	308	23						
100	69	10.00	0.25	276	20						



SWEDISH SOUNDING TEST

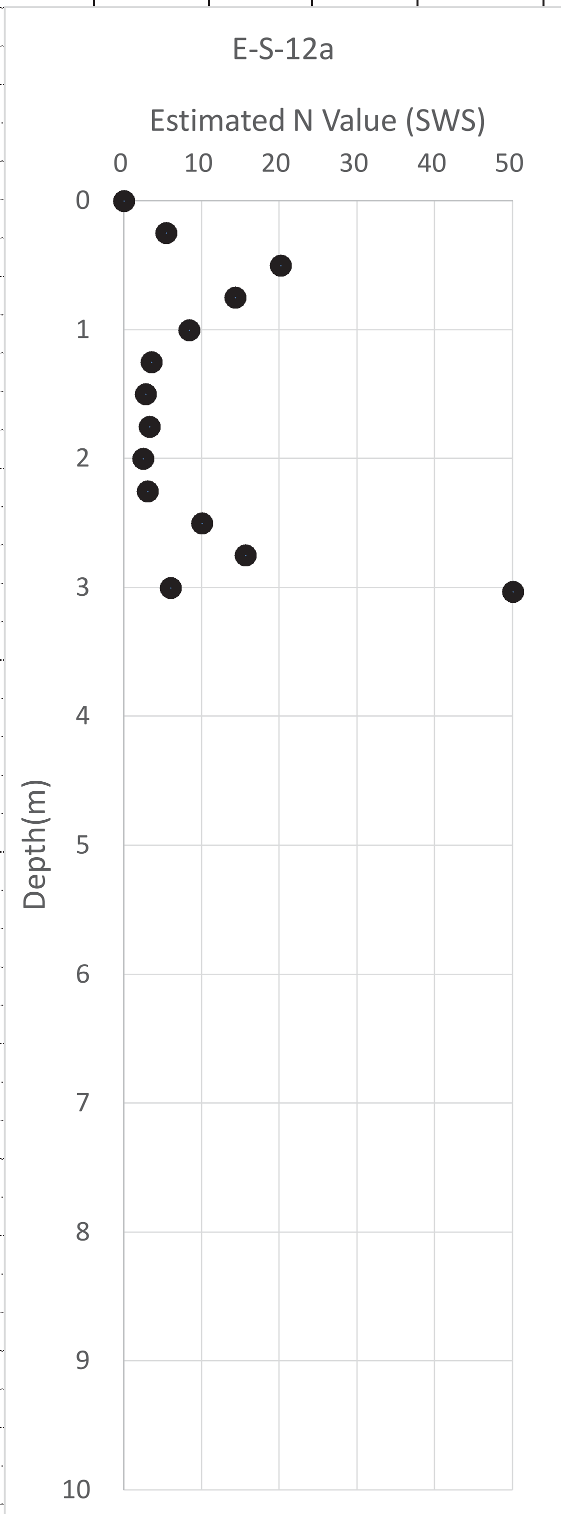
PROJECT		PALU RECOVERY						D a t e		14.12.2018	
LOCATION		JONO OGE		GWL	1,85 M			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-11		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
25	1	0.25	0.25	4	1						
25	20	0.50	0.25	80	6						
25	18	0.75	0.25	72	5						
50	2	1.00	0.25	8	2						
50	60	1.25	0.25	240	17						
100	5	1.50	0.25	20	3						
100	8	1.75	0.25	32	4						
100	14	2.00	0.25	56	6						
100	16	2.25	0.25	64	6						
100	23	2.50	0.25	92	8						
100	33	2.75	0.25	132	11						
100	30	3.00	0.25	120	10						
100	29	3.25	0.25	116	10						
100	11	3.50	0.25	44	5						
100	9	3.75	0.25	36	4						
100	16	4.00	0.25	64	6						
100	14	4.25	0.25	56	6						
100	2	4.50	0.25	8	2						
100	15	4.75	0.25	60	6						
100	40	5.00	0.25	160	13						
100	35	5.25	0.25	140	11						
100	6	5.50	0.25	24	4						
100	29	5.75	0.25	116	10						
100	32	6.00	0.25	128	11						
100	42	6.25	0.25	168	13						
100	38	6.50	0.25	152	12						
100	41	6.75	0.25	164	13						
100	44	7.00	0.25	176	14						
100	38	7.25	0.25	152	12						
100	36	7.50	0.25	144	12						
100	61	7.75	0.25	244	18						
100	82	8.00	0.25	328	24						
100	63	8.25	0.25	252	19						
100	81	8.50	0.25	324	24						
100	61	8.75	0.25	244	18						
100	34	9.00	0.25	136	11						
100	62	9.25	0.25	248	19						
100	46	9.50	0.25	184	14						
100	86	9.75	0.25	344	25						
100	88	10.00	0.25	352	26						



SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-12a	COORDINAT		Elevation	

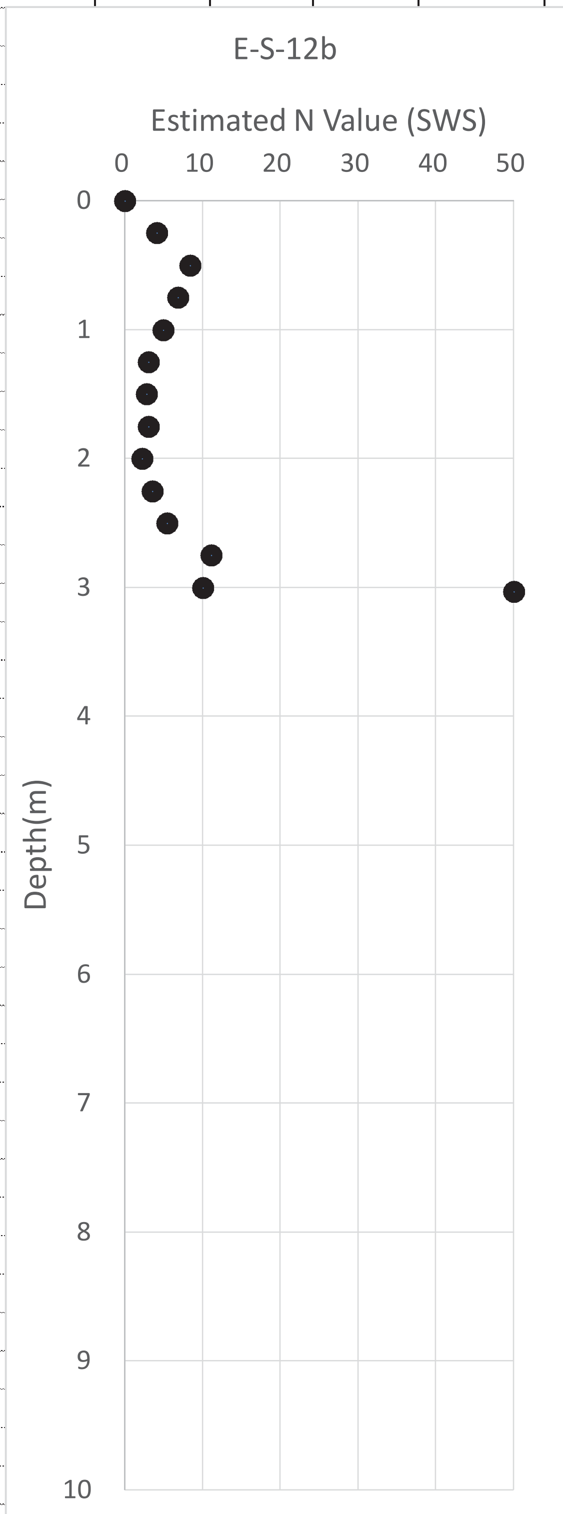
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	13	0.25	0.25	52	5						
100	68	0.50	0.25	272	20						
100	46	0.75	0.25	184	14						
100	24	1.00	0.25	96	8						
100	6	1.25	0.25	24	4						
100	3	1.50	0.25	12	3						
100	5	1.75	0.25	20	3						
100	2	2.00	0.25	8	2						
100	4	2.25	0.25	16	3						
100	30	2.50	0.25	120	10						
100	51	2.75	0.25	204	16						
100	15	3.00	0.25	60	6						
100	25	3.03	0.03	833	58						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-12b	COORDINAT		Elevation	

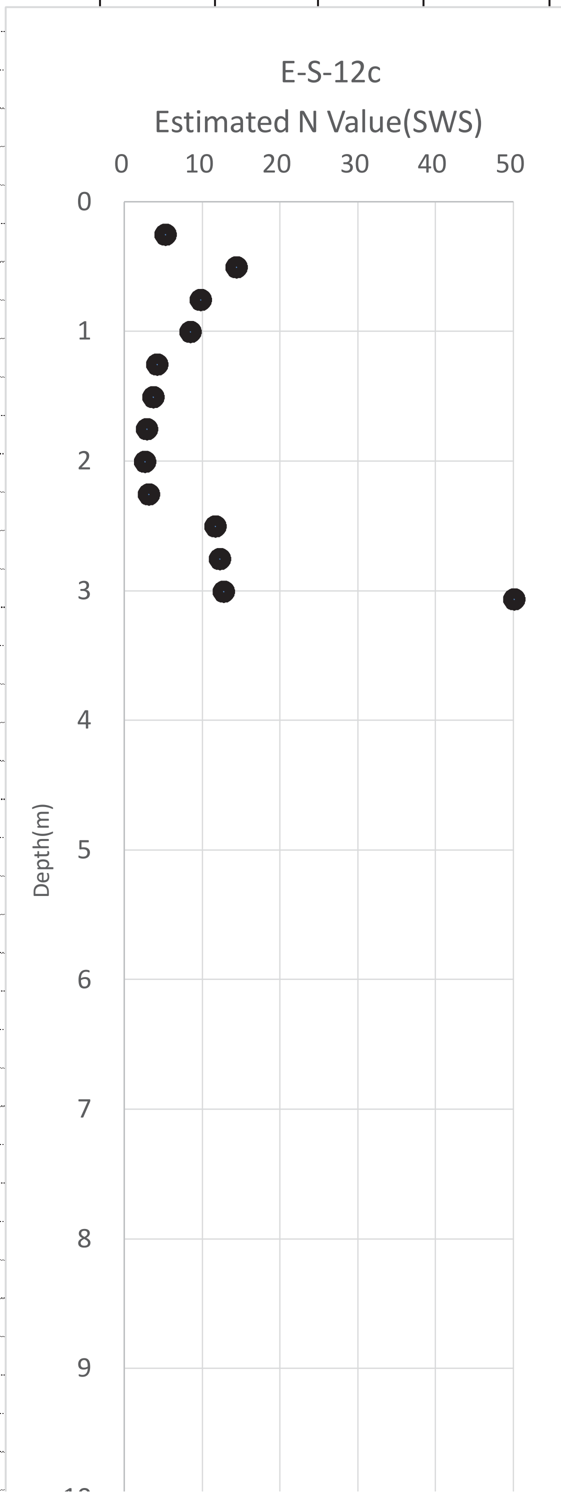
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	8	0.25	0.25	32	4						
100	24	0.50	0.25	96	8						
100	18	0.75	0.25	72	7						
100	11	1.00	0.25	44	5						
100	4	1.25	0.25	16	3						
100	3	1.50	0.25	12	3						
100	4	1.75	0.25	16	3						
100	1	2.00	0.25	4	2						
100	6	2.25	0.25	24	4						
100	13	2.50	0.25	52	5						
100	34	2.75	0.25	136	11						
100	30	3.00	0.25	120	10						
100	90	3.12	0.12	750	52						
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SWEDISH SOUNDING TEST

PROJECT	PALU RECOVERY			D a t e	15.12.2018
LOCATION	JONO OGE	GWL	0 m	Tested by	REDI ARIANTO
NO. OF TEST	E-S-12c	COORDINAT		Elevation	

Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
100	12	0.25	0.25	48	5						
100	46	0.50	0.25	184	14						
100	29	0.75	0.25	116	10						
100	24	1.00	0.25	96	8						
100	8	1.25	0.25	32	4						
100	6	1.50	0.25	24	4						
100	3	1.75	0.25	12	3						
100	2	2.00	0.25	8	2						
100	4	2.25	0.25	16	3						
100	36	2.50	0.25	144	12						
100	38	2.75	0.25	152	12						
100	40	3.00	0.25	160	13						
100	45	3.06	0.06	750	52						
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SWEDISH SOUNDING TEST

PROJECT		PALU RECOVERY						D a t e		13.12.2018	
LOCATION		JONO OGE		GWL	1,00 M			Tested by		REDI ARIANTO	
NO. OF TEST		E-S-13		COORDINAT				Elevation			
Weight Wsw (kg)	No of Half Ro tation No.	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value	Weight Wsw (kg)	No of Half Ro tation	Penetrati on Depth D (m)	Increase of depth L (m)	N. Swedish sounding Nsw	Estimated N Value
0	0	0	0								
50	3	0.25	0.25	12	2						
50	4	0.50	0.25	16	2						
50	1	0.75	0.25	4	1						
50	1	1.00	0.25	4	1						
50	10	1.25	0.25	40	4						
50	38	1.50	0.25	152	11						
100	18	1.75	0.25	72	7						
100	15	2.00	0.25	60	6						
100	13	2.25	0.25	52	5						
100	9	2.50	0.25	36	4						
100	36	2.75	0.25	144	12						
100	40	3.00	0.25	160	13						
100	43	3.25	0.25	172	13						
100	48	3.50	0.25	192	15						
100	43	3.75	0.25	172	13						
100	52	4.00	0.25	208	16						
100	40	4.25	0.25	160	13						
100	39	4.50	0.25	156	12						
100	58	4.75	0.25	232	18						
100	60	5.00	0.25	240	18						
100	40	5.25	0.25	160	13						
100	52	5.50	0.25	208	16						
100	59	5.75	0.25	236	18						
100	62	6.00	0.25	248	19						
100	39	6.25	0.25	156	12						
100	28	6.50	0.25	112	9						
100	51	6.75	0.25	204	16						
100	48	7.00	0.25	192	15						
100	59	7.25	0.25	236	18						
100	61	7.50	0.25	244	18						
100	70	7.75	0.25	280	21						
100	63	8.00	0.25	252	19						
100	20	8.25	0.25	80	7						
100	32	8.50	0.25	128	11						
100	51	8.75	0.25	204	16						
100	66	9.00	0.25	264	20						
100	64	9.25	0.25	256	19						
100	86	9.50	0.25	344	25						
100	63	9.75	0.25	252	19						
100	94	10.00	0.25	376	27						

