第4章 橋梁設計

4.1 設計条件

4.1.1 設計基準

橋梁の設計基準は、構造設計等は基本的に道路橋示方書に準拠する。活荷重及び船舶衝突荷重については AASHTO LRFD に準拠し、気象条件等の自然条件に係る設計条件については、個別に検討し設定する。

4.1.1.1 設計地震動及び耐震設計

本橋は日本の道路橋示方書に準拠した設計を実施するが、耐震設計法については、日本と違 いレベル2相当の地震が橋梁の供用期間中に発生する確率が非常に低いため、そのまま適用す ることは過大設計となる。また供用期間中に発生する可能性がある地震の地表面水平加速度 (設計震度)が低く、レベル1相当の地震に対して耐震設計(従前の震度法による設計)を行 えば十分な耐震性能が確保できると考える。

一方で、供用期間中に発生する最大の地震より大きい地震動が発生した場合についても、その地震に対して要求性能を定義し、最低限落橋をさせないための方策を講じておくのがよいと 考えた。

以上より、バゴー橋の耐震設計は、要求性能を下記の2段階とする。

表 4.1.1 バゴー橋の地震に対する要求性能

耐震性能1	供用期間中に発生する可能性がある最大の地震動を対象として設計を
	行う。地震によって橋としての健全性を損なわない性能を確保する。
耐震性能2	供用期間中に発生する可能性は極めて小さいが、発生した場合にも橋
	梁が落橋することを防止するため、耐震設計上想定する。
	地震による損傷が橋として致命的にならない性能を確保する。

出典 JICA 調査団

(1) 設計水平加速度(震度)

「供用期間中に発生する可能性がある最大の地震動」として、ミャンマー地震工学会が作成 した地震加速度マップから、475年確率(50年以内に地震が起こる可能性が10%となる確率) による架橋地点付近の地表面加速度(300gal)を設計水平震度 kh=0.30 として採用した。

また、「供用期間中に発生する可能性は極めて小さい」地震としては、上記の地表面水平加速度を1.5倍した0.45を使用する。これは、建築物の基準である Myanmar Building Code 2012 においても、供用期間中に発生する可能性は極めて小さい地震動の水平加速度として、最大加速度の1.5倍を採用していることから、これを耐震性能2の設計震度とする。



出典:Seismic Hazards Assessment for Myanmar, Myo Thant et al. 2012 図 4.1.1 ミャンマー国 475 年確率地表面加速度

(2) 耐震性能と耐震設計

(1)で定義した要求性能を満足するために、具体的に下記の耐震設計を実施する。

	耐震性能 1	耐震性能 2
設計水平震度	kh1=0.30	kh2=1.5x kh1=1.5x0.3=0.45
上部工	壊れない	安全率・靱性を確保することで壊れない
		事を期待する
下部工	壊れない	安全率・靱性を確保することで壊れない
		事を期待する
支承	壊れない	他の落橋防止構造を設置する場合、耐震
		性能2を考慮した設計を行わない
落橋防止構造	(設計を行わない)	許容応力度割増を行った設計を行い、壊
		れない事を保証する
伸縮装置	地震による移動量を確保する	耐震性能2を考慮した設計を行わない

表 4.1.2 耐震性能と耐震設計の相関

出典 JICA 調査団

ハッチング部分が設計対象である。ここで「落橋防止構造」とは、上部工と下部工をつなぎ、 耐震性能2による地震において、上部工が下部工から外れ落橋することを防止する構造を想定 し、耐震性能2の設計水平震度を用いて設計を行う。具体的には、アンカーバーや耐震性能2 の設計水平震度で設計する支承を想定する。また、道路橋示方書 V 耐震設計編 16.1 に記載さ れる、橋軸方向に4基以上の下部構造において弾性支持又は固定支持される一連の上部構造を 有する橋梁については、耐震性能2による落橋防止構造の設計は行わない。

4.1.1.2 船舶の衝突荷重

船舶の衝突荷重は、AASHTO に規定される船舶衝突荷重を載荷する。

(1) 設計対象船舶

バゴー橋を曳航する最大の船舶サイズは、DWIR からのヒアリングにより以下の値を用いる。

大きさ:65.5m x 15.9m x 3.0m (バージ船)

Deadweight Tonnage (DWT, 載貨重量トン): 1,118 トン

最大速度:10knot (5.14m/s)

なお、満載時ドラフトは同様なバージ船の例から 2.2m と想定する。

(2) 衝突速度の算出は、AASHTO LRFD 3.14.6 による。



出典 AASHTO LRFD

図 4.1.2 設計衝突速度



出典 JICA 調査団

図 4.1.3 バゴー橋における設計衝突速度の設定

表 4.1.3 バゴー橋における設計衝突速度

橋脚	衝突時速度 (V)	備考
P10, P11, P12, P13	5.14 m/s	Maximum vessel speed
P6	1.34 m/s	
P7	2.95 m/s	
P14	1.84 m/s	
P15-P21	1.00 m/s	Mean current speed

出典 JICA 調査団

なお、P5.P22 は平均満潮位 HL EL+2.679 から河床までの水深がドラフトより小さいため、 バージ航行不可として衝突荷重対象外とした。

(3) 衝突荷重

衝突荷重は、AASHTO LRFD 3.14.11 による。

3.14.11-Barge Collision Force on Pier

For the purpose of Article 3.14, the standard hopper barge shall be taken as an inland river barge with:

width	=	35.0 ft
length	=	195.0 ft
depth	=	12.0 ft
empty draft	=	1.7 #
loaded draft	=	8.7 ft
DWT	=	1,700 tons

The collision impact force on a pier for a standard hopper barge shall be taken as:

٠	If $a_B < 0.34$ then:	
	$P_{\sigma} = 4,112a_{\sigma}$	(3.14.11-1)
•	If $a_B \ge 0.34$ then:	

 $P_{a} = 1,349 + 110a_{a}$ (3.14.11-2)

where

- $P_n =$ equivalent static barge impact force (kip)
- barge bow damage length specified in Eq. 3.14.12-1 (ft) = aa

There is less reported data on impact forces resulting from barge collisions than from ship collision. The barge collision impact forces determined by Eqs. 3.14.11-1 and 3.14.11-2 were developed from research conducted by Meir-Domberg (1983) in West Germany. Meir-Domberg's study included dynamic loading with a pendulum hammer on barge bottom models in scale 1:4.5, static loading on one bottom model in scale 1:6, and numerical analysis. The results for the standard European Barge, Type IIa, which has a similar bow to the standard hopper barge in the United States, are shown in Figure C3.14.11-1 for barge deformation and impact loading. No significant difference was found between the static and dynamic forces measured during the study. Typical barge tow impact forces using Eqs. 3.14.11-1 and 3.14.11-2 are shown in Figure C3.14.11-2.

where:

C3.14.11

 $E_B = deformation energy (kip-ft)$





出典 AASHTO LRFD

図 4.1.4 バージによる橋脚への衝突荷重

表 4.1.4 衝突荷重の算出

橋脚	衝突時速度	フィート換算	KE	a _B	PB	PB
	(m/s)	(ft/s)	(kip-ft)	(ft)	(kip)	(kN)
P9, P10, P11, P12	5.14	16.9	11,4333	7.51	2,175	9,658
P7	2.08	6.8	1,872	1.56	1,521	6,752
P8	3.60	11.8	5,608	4.18	1,809	8,032
P13	1.84	6.0	1,465	1.24	1,486	6,595
P6, P14-P21	1.00	3.3	433	0.38	1,391	6,175

出典 JICA 調査団

なお、AASHTO LRFD 3.14.14 より、橋軸直角方向に衝突荷重 PB の 100%、橋軸方向に 50% を作用させる。

(4) 衝突時水位と橋脚衝突高さ

AASHTO LRFD の下図より、平均満潮位 MHW (MSL から+3.18m) からバージの水面上 高さ (0.8m) の位置を衝突高さとする。



Figure 3.14.14.1-3-Barge Impact Force on Pier

出典 AASHTO LRFD

図 4.1.5 バージの衝突高さ

表 4.1.5 衝突荷重及び衝突高さ

Pi	Pier		$\mathbf{P7}$	P8	P9,P10, P11,P12	P13	P14,P15,P16,P17,P18, P19,P20,P21P22
Impact	Trans.	6,175	6,752	8,032	9,658	6,595	6,175
force (kN)	Long.	3,088	3,376	4,016	4,829	3,298	3,088
Impact (n	height 1)	3.98	3.98	3.98	3.98	3.98	3.98

出典 JICA 調査団

4.1.1.3 航空機航路との関係

架橋地点はヤンゴン国際空港からの距離が比較的近いことから、航空機に対する空頭制限の 要否について検討を行う。

(1) 検討条件

空頭制限を受ける可能性があるのは、斜張橋の主塔架設時のクレーンである。よって、ヤンゴ ン国際空港から近い側の主塔までの距離について下記のように算出した。

- ・ ヤンゴン国際空港の標点は、滑走路の中心付近と仮定
- ・ 主塔(P12)と空港標点との直線距離を地図上で計測
- 国際空港の制限表面については、ICAO (International Civil Aviation Organization、国 際民間航空機関) に準拠した制限表面を想定

(2) 検討結果



出典 JICA 調査団

図 4.1.6 ICAO による制限表面と架橋地点との関係

P12 橋脚はヤンゴン国際空港の標点から 17.1km に位置する。空頭制限としては、制限表面のうち「外側水平表面」として 295m の高さを確保する必要がある。また、空港標点は+33m MSL にあり、斜張橋主塔頂部は MSL から 86m の高さにあるため、295+33-86=242m となり、 主塔頂部から制限表面は 242m の余裕がある。主塔架設用のクレーンの到達高さは主塔頂部+ 数 10m 程度であることから、空頭制限には十分な余裕があると言える。

なお、ICAO では 200ft 以上 650ft 未満(60m 以上 200m 未満)の高さの構造物には航空障 害灯の設置を義務付けているため、主塔頂部に航空障害灯を設置する。

4.1.1.4 気象条件

(1) 気温

ヤンゴン市における月平均最高気温及び最低気温はそれぞれ 39.2℃及び 11.3℃となっている。設計用として、平均気温を 25℃として、上昇/下降を 15℃ずつ考慮することとする。



出典:気象水文局

図 4.1.7 Kaba-Aye 観測所(ヤンゴン市内)における月平均気温(1991-2015)



(2) 風

出典: 気象水文局

図 4.1.8 Kaba-Aye 観測所(ヤンゴン市内)における最大・平均風速(1991-2015)

図はヤンゴン市内における最大及び平均風速である。5月に極大となっているものは、サイ クロン・ナルギスによる風速 96.5mph (42.9m/s) である。設計用風速としては、MOC がヤ ンゴン地区の設計風速として設定している 100mph (44.4m/s) を用いることとする。

なお、サイクロンが到来する5月以外の月の最大風速は12.0mph (5.3m/s)、年間平均風速 は 2.5mph (1.1m/s) 程度である。

(3) 降雨量

降雨量についても、ヤンゴン市内における観測結果から作成された降雨強度により設定する。3 年確率 10 分降雨強度は 149mm/h である。

Retur	n Period	Dairy Rainfall:	Poinfall intensity each rainfall duration (mm/hr) , $h = P_{-}/(24^{h}/24)^{m}$ m=2/2											
(Pro	bability)	R ₂₄ (mm/day)												
(Ye	ear, %)	24 hour	24	12	8	6	3	2	1.5	1	0.75	0.5	0.333	0.167
Kal	ba Aye	1,440 min.	1,440	720	480	360	180	120	90	60	45	30	20	10
2	50.0%	112.9	4.7	7.5	9.8	11.9	18.8	24.7	29.9	39.1	47.4	62.1	81.4	129.2
3	33.3%	130.1	5.4	8.6	11.3	13.7	21.7	28.4	34.4	45.1	54.6	71.6	93.8	148.9
5	20.0%	152.1	6.3	10.1	13.2	16.0	25.4	33.2	40.2	52.7	63.9	83.7	109.7	174.1
10	10.0%	184.3	7.7	12.2	16.0	19.4	30.7	40.3	48.8	63.9	77.4	101.4	132.9	211.0
20	5.0%	220.4	9.2	14.6	19.1	23.1	36.7	48.1	58.3	76.4	92.6	121.3	158.9	252.3
25	4.0%	233.0	9.7	15.4	20.2	24.5	38.8	50.9	61.6	80.8	97.9	128.2	168.0	266.7
30	3.33%	243.7	10.2	16.1	21.1	25.6	40.6	53.2	64.5	84.5	102.3	134.1	175.7	279.0
50	2.0%	275.5	11.5	18.2	23.9	28.9	45.9	60.2	72.9	95.5	115.7	151.6	198.7	315.4
80	1.25%	307.3	12.8	20.3	26.6	32.3	51.2	67.1	81.3	106.5	129.1	169.1	221.6	351.8
100	1.0%	323.4	13.5	21.4	28.0	34.0	53.9	70.6	85.6	112.1	135.8	178.0	233.2	370.2
150	0.667%	354.1	14.8	23.4	30.7	37.2	59.0	77.3	93.7	122.8	148.7	194.9	255.4	405.3
200	0.5%	377.1	15.7	24.9	32.7	39.6	62.9	82.4	99.8	130.7	158.4	207.5	271.9	431.7
300	0.33%	411.4	17.1	27.2	35.7	43.2	68.6	89.8	108.8	142.6	172.8	226.4	296.7	470.9
400	0.25%	436.9	18.2	28.9	37.9	45.9	72.8	95.4	115.6	151.5	183.5	240.4	315.1	500.1
500	0.2%	457.5	19.1	30.3	39.7	48.0	76.3	99.9	121.0	158.6	192.1	251.8	329.9	523.7
		Calculation for	mula of Pro	a of Probable rainfall = Generalized extreme value distribution										

出典:気象水文局

図 4.1.9 Kaba-Aye 観測所(ヤンゴン市内)における降雨強度(1968-2015)

4.1.2 使用材料

使用材料は、バゴー橋の設計を道路橋示方書に準拠することや、主要な調達を本邦関連企業から 行う事を想定していることなどから、日本工業規格(JIS)に準拠した材料を想定する。但し技術 仕様書には「JISと等価な材料」と記述し、国際調達の可能性を排除しない。

4.1.3 設計荷重及び荷重組合せ

設計荷重は後述の設計条件表に記載したとおりである。活荷重については、橋梁については AASHTO HL-93 及び特殊荷重(735kN集中荷重)を用いた。

荷重組合せのうち、河川内橋梁の風荷重時については、本橋が感潮域にあること、サイクロン来 襲時には風荷重と水位が最大になることなどを考慮して組合せを考慮した。また地震時は河川水位 と洗掘深の影響を考慮した。

4.1.4 構造最適化のための比較設計項目

準備調査(F/S)及び追加調査で実施された構造形式は、事業概要や事業費の算出を目的として 橋梁形式等を選定し、橋梁計画を立案した。基本設計では橋梁計画細目について見直し、構造最適 化のための比較検討を行う。

項目	検討項目
鋼斜張橋	主塔高さ
	桁断面(桁高、ブラケット、リブ形状等)
	主塔形式(逆Y型、H型、1本柱)
	吊ケーブル配置
	ケーブル本数
	ケーブル形式
	支承支持条件
	橋脚形状
	基礎形状(鋼管矢板井筒の構成)
鋼箱桁橋	主桁断面検討(桁高、ブラケット、リブ等)
	下部工
	基礎工
	橋梁付属物の検討
PC 箱桁橋(スパンバイスパ	橋長の検討
レン工法)	径間長・径間配置の検討
	主桁形式の検討
	下部工の検討
	基礎工の検討
	橋梁付属物の検討

表 4.1.6 比較検討項目

オンランプ橋	径間長・径間配置の検討				
	上部工形式の検討				
	架設方法検討				
	主桁の検討				
	下部工の検討				
	基礎工の検討				
	橋梁付属物の検討				
高架橋	橋長の検討				
	径間長・径間配置の検討				
	上部工形式の検討				
	基礎工形式の検討				

出典:JICA 調査団

4.1.5 河川内橋梁の支間割・航路高

河川内橋梁の支間割は、水理学的な影響および航行船舶の安全性を考慮して、既設タンリン橋の 橋脚の見通し線上にバゴー橋の橋脚を設置する。バゴー川は、水深は浅いものの澪筋に沿って中小 船舶の往来が盛んである。現在の航路は、図 4.1.10 に示すタンリン側の 4 径間が割り当てられて おり、既設タンリン橋で 100m 以上の支間が割当てられている主要支間について、同じ支間割とす ることにする。

また、航路高はバゴー橋の縦断が最も低い P20 橋脚位置の桁下高が、同位置のタンリン橋の桁下 高 GH=11.41 より高い位置になるように計画した。



図 4.1.10 タンリン橋及びバゴー橋の橋脚配置

出典: JICA 調査団

4.1.6 バゴー橋の設計条件

バゴー橋の設計条件を次頁以降に示す。

項目		摘要						
設計対象	新橋建設及びタ							
	路線延長	3,644.341	m					
	河川橋梁	橋長	2031.000m					
		上部工	鋼斜張橋 448.000m					
			鋼箱桁橋 1,033.000m (257m, 776m)					
			PC 箱桁橋 550.000m (250m, 300m)					
		下部工	壁式橋脚、張出式橋脚、逆T式橋台					
		基礎工	鋼管矢板井筒基礎、場所打ち杭					
	局架橋	橋長	602.000m					
		上船上	鋼箱桁橋 180.000m					
			判 频 桁 間 122.000m PC コンポ 桁					
			$300\ 000m\ (60m\ 180m\ 60m)$					
		下部工	張出式橋脚、逆 T 式橋台					
		基礎工	場所打ち杭					
	オンランプ橋	橋長	115.200m					
		上部工	PC コンポ桁 115.200m					
		下部工	張出式橋脚、逆 T 式橋台					
		基礎工	場所打ち杭					
	道路建設							
		タンリン	側 357m,タケタ側 430m					
		街路	834.341m					
	交差点改良	スターシ 差点、ヤ	ティ交差点(仮称)、シュキンタール交 ダナー交差点					
	料金徵収施設	タケタ側	1か所(北向き・南向き)					
橋梁名	バゴー橋(Bag	go River B	ridge)、高架橋は名称未定					
路線名	タンリン・ティ	・ンカット	道路					
道路適用基準	道路構造令(平	平成 27 年	6月)					
	AASHTO A I	Policy on	Geometric Design of Highways and					
	Streets, 6th E	dition (20 くらくま	11) ※建築限界鉛直局さ 5.0m を採用					
	Pood Design	「リエイ 奉 Critoria i	空 ※単廠幅貝に 3.5m を採用 n Muanmar Dopartment of Highway					
	Ministry of Co	onstructio	n (2015) ※参考					
構造物適用基準	AASHTO LRI	FD Bridg	e Design 7 th Edition (2014) ※活荷重					
	HL-93、盛土音	羽の Live l	oad surcharge、船舶衝突荷重を採用					
	道路橋示方書・	・同解説((I~V)(平成 24 年)※耐震設計は本調	許容応力度法によ				
	査で検討した力	与法を採用	し、設計水平震度はミャンマー地震工学	る設計を行う。				
	会の地表面加速	東度を地震	時応答加速度として採用する					
	追路土上安領 送欧土工成土¬	(半成 214		各道路土工指針の				
	1 2 哈工工公工」	L拍虾(平 F 指針 (亚	·成 22 年 4 月) 〔	耐震設計について				
	但町上上輝堂 道路十丁載弱#	しまし (十 1日2日(十	744 年 1 万) 治針(平成 24 年 8 月)	は、レベル1地震動				
	杭基礎設計便電	ら加入水上 第(H27.3		の静的照査を行う				
	鋼管矢板基礎記	- 、 <u>-</u> 0 2計施工便	· 覽(H9.12)	(Ⅲ種地盤の設計				
	新国へび 差 (m) 1 (m) 1 (c)							

表 4.1.7 一般項目設計条件

出典: JICA 調査団

項目				摘要			
道路規格	バゴー橋本	、橋		第24	重第1級相關	L L	道路構造令による
	高架橋区間	1		第4利	重第1級相当	4	
	オンランフ	p		C 規格	5相当		
	タンリン・	ティンカ、	、 ト 道 愍 改 ।	急 筆 4 乗	重筆 1 級相望	ч	
います	/ · / ·						
	ハコー個々	、惝、 向朱愉 。					
	オンフンノ						
	タンリン・	ティンカッ	ット道路改員	え 40km/h	1		
計画交通量	バゴー橋本	、橋					追加 F/S
	44,356台目	1(北向き	25,352 台目	1、南向き	19,004 台日)	YUTRA Master Plan
	大型車 6,1	73 台日(1	と向き 2,82	9台日、南	向き 3,344	台日)	Case 2035 年予測
	高架橋区間]					値、大型車は Bus
	21,723 台目	目 (北向き	12,061 台目	、南向き	9,662 台日))	及び Track を集計
	大型車 3,6	39 台日(1	と向き 1,54	9台日、南	向き 2,090	台日)	
亚面線形	バゴー橋木	橋 高架橋	承 区間		,		図参昭
	CD	1	り四回	2	4	5	
[印] 本八十五日	0+000000	1 0+024970	2 0+076 170	0+161513	4 0+212 713	0+521,900	
上段: 災化点番亏	R=∞	A=160	R=-500	A=160	R=∞	R=-2000	
中段:STA	6	7	8	9	10	11	
下段:パラメータ	0+857.522	2+627.420	2+680.992	2+724.080	2+777.651	2+782.486	
	R=∞	A=150	R=-420	A=150	R=∞	A=130	
	12	13	14	EP			
	2 + 835.298	2+961.571	3+014.383	3+644.341			
	R=320	A=130	R=∞	-			
	オンランフ						
	SP	1	2	3	4	5	
	0+000.000	0+004.472	0+058.045	0+105.007	0+148.111	0+367.483	
	R=∞	R=-140	R=∞	A=50	R=-58	A=50	
	6	7	EP				
	0+410.587	0+535.778	0+643.083				
40/14/C 200 77/	R=∞	K1000	- ≮ → 88				同会即
縦断線形	バゴー橋本	、橋、局架橋	哥区間		1		凶参照
	0+0.000	0+228.000	0+700.000	1+88.000	2+140.000	2+517.727	
上段:STA	5.695	5.467	17.267	18.431	15.275	5.832	
中段:標高(m)	-0.100 2±820.000	2.000	2+160.000	2+475 000	2.500	3.000	
下段:縦断勾配(%)	$\frac{2+850.000}{15,200}$	2+960.000 15.850	3+160.000 14 420	<u>3+475.000</u> 4 970	$\frac{3+300.000}{4.895}$		
	0.500	-0.715	-3.000	-0.300	-		
	オンランフ	0					
	0+0.000	0+150,000	0 320 942	0+490.000	0+540.000		
	4 470	4 470	5 010	13 780	14 878		
	level	0.300	5.479	2.197	-		
構新勾配	バゴー棒木	、橋 2% #	Eみ勾刷 (長		「西己)	1 1	
	直加 插 区 即	- Inj 2/0]-	モン 方面 (『	ネパョルローム 副十 60/ 日方	5日1)		
	同米間区間	j 270₫=		又八 0%/ ^少	9日ビノ コン		
	オンフンフ						

表 4.1.8 道路幾何構造条件



出典:JICA 調査団



ミャンター

-国バゴー橋建設事業詳細設計調査

項目					摘要					
河川名	バゴーノ	[
航路	竣工時に する。 将来的に する。	t、P10~ こは、澪	-P13 を# 筋の変化	航路とす 比を考慮	⁻ る。舟 して、	亢路標識も P7~P20 [;]	。P10~I を航路と	213 に設置 として確保	登 DWIR 民	との合意事項
航路限界	P7~P20 とともゆ	につい こ、既存	て、既存 タンリン	タンリン ン橋の桁	ン橋の 下高り	橋脚の見 、 上を確保	通し線を する。	を確保する	5 DWIR	との合意事項
計画洪水流量	16,169m	$1^{3}/s$ (100) 年洪水	、確率)						
計画高水位	荷重約	組合せ	想	定水位		高水位 (MSL十m)) (流速 m∕s)		
	常	時	大滇	明の満潮, 干潮	/	+3.18/	,	0		
	風	,時	最	 高 水位		+4.99		0		
	航路 衝突	上の 荷重	大	潮の満潮	J	+3.18		0		
	航路」 衝突	以外の 荷重	100 年	確率高力	水位	+2.53]	1.19		
	地象	震時	파	均水位		+0.29	(0.60		
	施	匚時	5 年福	確率高水	位	+4.34	(0.65		
設計河床直及び										
設計洗掘深				P6	P7	P8	P9	P10		
	Riverbe	d height		0.41	-3.59	-5.35	-4.82	-4.55		
	Foundat	tion heigh	t 	-2.48	-6.38	-6.34	-6.35	-9.10		
	Maximu	im scourir	ig depth	-3.41	-8.91	-9.42	-9.31	-11.27		
	P11	P12	P13	P14	P15	P16	P17	P18		
	-5.41	-7.96	-8.02	-6.28	-5.09	-5.26	-6.70	-6.99		
	-9.10	-9.10	-9.10	-8.06	-8.06	-8.06	-8.06	-8.06		
	-12.13	-13.67	-13.48	-11.43	-10.84	-10.36	-9.70	-10.00		
	P19	P20	P21	P22	P23	P24	P25	1		
	-6.88	-6.55	-6.15	-4.61	-0.05	4.11	4.04			
	-8.06	-7.28	-7.55	-7.59	-2.39	3.73	3.78			
	-9.78	-9.53	-8.56	-7.48	-2.07	3.98	3.92			
	地震時0	り洗掘深	は、最大	大洗掘深	の 1/2	を用いた	0			
基準高さ	モンキー	ーポイン	トにおけ	ナるベン	チマー	ーク調査結	ī果			
	MSL=CDL	+2.814m								
	全ての福	寄さは、	MSL から	の高さ	として	表す。				

表 4.1.9 河川条件

出典:JICA 調査団

項目					設計条	:件				摘要
調査概要	次頁	に示す。								
地質縦断図	次頁	に示す。								
設計用土質定	1. タ	ンリン地区陸	巨上部	(A1~]	P6、オ	ンラン	⁄プ橋)			
数	No.	Soil name	N-value	Unit	weight (kN	l∕m³)	Internal friction angle	Cohesive strength	Deformation Modulus	
				γt	γsat	γ'	φ (°)	c (kN/m²)	E ₅₀ (kN/m ²)	
	1	Filled Soil	1	18.0	18.0	8.0	-	6	700	
	2	CLAY-I	1	17.5	17.5	7.5	-	15	900	
	3	Sandy CLAY-I	3	17.5	17.5	7.5	-	15	2,000	
	4	Silty CLAY-I	15	16.5	17.5	7.5	33	-	6,000	
	5	Clayey SAND-A	3	17.0	18.0	8.0	28	-	1,200	
	6	CLAY-AII	5	17.5	17.5	7.5	-	30	3,200	
	7	Clayey SAND-B	17	17.0	18.0	8.0	33	-	11,900	
	8	CLAY-AIII	7	17.6	17.6	7.6	-	42	4,900	
	9	Clayey SAND-C	20	17.0	18.0	8.0	32	-	14,000	
	10	Clayey SAND-I	22	17.0	18.0	8.0	31	-	15,400	
	11	Clayey SAND-II	50	19.0	20.0	10.0	34	-	35,000	
	2. 泡	「川内(P7~Ⅰ	P22)							
	No.	Soil name	N-value	Unit	weight (kN	l∕m³)	Internal friction angle	Cohesive strength	Deformation Modulus	
				Υt	γ _{sat}	γ'	φ (°)	c (kN/m ²)	E ₅₀ (kN/m ²)	
	1	River sediments	3	17.0	18.0	8.0	29	-	1,200	
	2	CLAY-I	1	17.5	17.5	7.5	-	10	900	
	3	Clayey SAND-A	3	17.5	18.5	8.5	28	-	1,200	
	4	Silty SAND-I	13	17.0	18.0	8.0	33	-	5,200	
	5	Sandy CLAY-II	9	17.5	17.5	7.5	-	54	6,300	
	6	CLAY-AII	7	17.5	17.5	7.5	-	42	4,900	
	7	Clayey SAND-B	13	17.0	18.0	8.0	32	-	9,100	
	8	Silty SAND-A	25	17.0	18.0	8.0	33	-	17,500	
	9	CLAY-AIII	18	18.0	18.0	8.0	-	108	12,600	
	10	Clayey SAND-C	20	17.0	18.0	8.0	33	-	14,000	
	11	Silty SAND-II	30	17.0	18.0	8.0	34	-	21,000	
	12	Clayey SAND-I	35	19.0	20.0	10.0	34	-	24,500	
	13	Clayey SAND-II	50	19.0	20.0	10.0	35	-	35,000	
	3. タ	ケタ地区陸上	:部(P	23~A	2)					
	No.	Soil name	N-value	Unit	weight (kN	√m³)	Internal friction angle	Cohesive strength	Deformation Modulus	
				Yt	γsat	γ'	φ (°)	c (kN/m ²)	E ₅₀ (kN/m ²)	
	1	Filled Soil	3	19.0	20.0	10.0	-	18	2,100	
	2	CLAY-I	1	17.5	17.5	7.5	-	15	900	
	3	Silty SAND-I	13	17.0	18.0	8.0	33	-	6,500	
	4	Sandy SILT	5	17.0	17.0	7.0	-	30	3,500	
	5	Silty SAND-II	25	17.0	18.0	8.0	35	-	17,500	
	6	Clayey SAND-I	30	17.0	18.0	8.0	34	-	21,000	
	7	Clayey SAND-II	50	19.0	20.0	10.0	35	-	35,000	
	4. 高	深橋								

表 4.1.10 地形·地質条件

ファイナル・レポート

	No.	Soil name	N-value	Unit	weight (kl	√m³)	Internal friction angle	Cohesive strength	Deformation Modulus	
				γt	γsat	γ'	φ (°)	c (kN/m ²)	E ₅₀ (kN/m ²)	
	1	Filled Soil	4	18.0	18.0	8.0	-	24	1,300	
	2	CLAY-I	4	18.0	18.0	8.0	-	24	1,300	
	3	Silty SAND-I	10	18.0	18.0	8.0	32	-	5,000	
	4	Sandy SILT	8	17.0	17.0	7.0	-	48	5,600	
	5	Silty SAND-II	22	17.0	19.0	9.0	33	-	15,400	
	6	CLAY-II	21	18.0	18.0	8.0	-	126	14,700	
	7	Clayey SAND-I	35	17.0	19.0	9.0	33	-	24,500	
	8	CLAY-III	35	18.0	18.0	8.0	-	210	24,500	
	9	Clayey SAND-II	50	19.0	19.0	9.0	37	-	35,000	
	10	CLAY-IV	50	18.0	18.0	8.0	-	300	35,000	
支持層の設定	道路	橋示方書に準	拠する	0						
液状化判定	考慮	する。								
広域地盤沈下 の影響	本事	業では考慮し	ない。							

出典: JICA 調査団



出典: JICA 調査団

図 4.1.14 地質調査位置図



出典:JICA 調査団









BORE H	IOLE N	. BH	I-BD-01	11:2			BO	RING	LOC	ł						Job N	Vo. F. Sh	KYB-2 weet No.	16-02	25 OF 2
PROJECT	NAME	Geot	technical Su	rvey on th	e detailed d	esign for th	Bago River Bridge Construction Project	BORING EQ	JIPMEN	p -	: <u>TO</u>	IO "DI"	j.	-	DATE	: 15	.11.2016	5~19.1	1.201	6
LOCATIO)N	Besi	de Existing	Bago Rive	er Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulatio	CLI	INT					
COORDI	NATE	: <u>-4,40</u> : E 20	4573.197 ; 1	N 1859026	.672 DI	PTH :	49.00m	GROUND W.	ON ATER LE	VEL	: Ver	tical der River	Bed		NIPPO	N KO	EIC	ю.,	LT	D.
1				-						*	-		STANDARD	PENETRATI	ON TEST	PMT	SAN	IPLING		1
ŝ	2	(iii	1.1		ENSITY	1.4			(m) H1	PTH (m) \$	(H) (m)	2	Test w	CURVEOF	BLOW .	1 -	Ê			-
(III)	GL-IB	NESS (WV	H.	IVE DI	AME	SOIL DESCRIPTION		& DEP	G (DEI METER	R DEPT	GL - (n	alue / 30cm	NA	/alue	APLE & No.	GL - (r			()
SCALE ELEV/	DEPTH	THICK	DIAGE	COLOU	RELAT (or) C	SOIL			DATE	CASIN	WATE	DEPTH	(Blows	(Blows 10 20	(30cm) 30 40 50	SA	DEPTH	TCR (%	SCR (%	RQD (
-				E	1.00		and the most free first sector.	and the	1					TT						
1				brownish gray	Soft	Sandy CLAY	Soft, brownish gray, moist to medium plasticity, Sandy CLAY (F	wet, low to liver deposit)				1.00	2/30			P-1	1.00			
2	2 50	2 50			- · · ·	1.1.1						2.00	3/30			P-2	2.00			
3	2.30	2.30				1.5	100000					3.00	L I				3.00			tinih
4				gray	Very	CLAY	Very soft, gray, moist to wet, low plasticity, CLAY, with trace of	v to medium				4.00				D 11	3.80 4.00			and and
							sand	inte giunite					0/45			P-5	4.45			
2 1 1												5.00	0/45			P-4	5.45			
6 -10.40	6.00	3.50		-				-		6.00 Ø112		6.00	6/30			P-5	6.00			
7				gray	Loose	Clayey	Loose to medium dense, gray, mois	st to wet, fine	15,11,16		1.0	7,00	5/30			P-6	7.00			in the second
8					medium	SAND	to meaning grained, low plastic Cla	yey SAND	-00			8.00	13/30			P-7	8.00			and the second
9					Genac	1.6						9 00					8.45			and and
													14/30			P-8	9.45			dimite
101-14.40	10.00	4.00	x x x			1						10.00	19/30	1		P-9	10.00			
4			8 X 8	gray	Medium	Silty	Medium dense, gray, moist, fine	to medium				11.00	22/30	A		P-10	11.00			
12			* * *		dense	SAND	grained, Silty SAND					12.00	28/30			P-11	12.00			a line
3			× × ×									13.00	18/20	11		P 12	12.45			
												14.00	16/50	$ \Lambda $		1-12	13.45			
the second se			× × ×									14.00	12/30	K		P-13	14.00			
5			× × ×									15.00	21/30			P-14	15.00			
6-20.40	16.00	6.00	N & K		-							16.00	13/30	4		P-15	16.00			
7				grav	Medium	Clavey	Medium dense to dense, gray, m	noist, fine to				17.00	12/30	41		P-16	17.00			
8					dense to	SAND	medium grained, low plastic Claye	y SAND				18.00		N			17.45	1		
hum					dense								19/30	11		P-17	18.45			-
2 miles			222									19.00	15/30	11		P-18	19.00			
20												20.00	14/30			P-19	20.00			
1												21.00	19/30	I ¥		P-20	21.00			a final de
22												22.00	12/30			P-21	22.00	1		
23									16 11 16			23.00		N			22,45			
		1							23.00	1			31/30			P-22	23.45			
4												24.00	25/30	1		P-23	24.00			il
25 -29.40	25.00	9.00		-	-			-				25.00	20/30	1		P-24	25.00			in the second
26				gray	Medium dense	SAND	Medium dense to dense, gray, m medium grained Silty SAND	noist, fine to				26.00	24/30			P-25	26.00			- Contraction
27					to dense		and the second sec					27.00	34/30			P-26	26.45			and the second
28												28 00	34/30			-20	27,45			
- International Contraction of the International Contractional Contractionae Contractionae Contractionae Contractionae Contractionae Contractionae Contractionae Contractionae Contractionae Contractiona											11	20.00	23/30	1		P-27	28.45			al anata
9-33.40	29.00	4.00		gray	Medium	Clayey	Medium dense, gray, moist, fine	to medium				29,00	13/30	<		P-28	29.00 29.45			
0					dense	SAND	grained, low plastic Clayey SAND GL: (29.00 - 29.45)m; stiff, gray, fi	ne to medium				30.00	18/30			P-29	30.00			ulii.
31	TS.					11	grained, low to medium plasticity, Sandy observed as intercalated layer at that depth	CLAY layer is h				31.00					50.45			1
Re	elative dens	ity descr	iption	Consi	stency descrip	tion	P.1 Disturbed sample P.1 (SPT sample) PBT Permeable	ility Test	Term Vers the	amer str	Spacing	g (mm)	Var	Term widely proced	Spacing (mm)		FUKKE	NCO	L LTD.
Relati	ive density	SPT	N-Value (mas)	Consisten Vero ent	ey SP1	N-Value main	T-1 Undisturbed Sample VS Vane Shi (Piston sampler) PMT Pressure PMT Pressure	ear Test	Thick		600 -	2000	Wi	dely spaced	600 - 2	000	FG=X	(Yangor W 161-8	Branc	p=1867S 力) 9 - 42\009753
1	.oose		4 - 10	Soft		2 - 4	ROD (56) Rock core sample (Single core table)	Term Very poor	Thin Very this		60 -	200	Clo	sely spaced	60 - 2	00	Revision N	ta.	Rev	ulturit.com : 01
L	Dense ry dense	3	0 - 50 ver 50	Stiff Very stif	r i	9 - 15	Rock core sample (Double core tube) 25 - 50 50 - 75	Poor T Pair	hickly lami	nated	6 -	20	Extreme	ly closely space	red <2	0	Revision L	Date	17.0	1.2017
		1 0	L	Hard	1	ver 30	Rock core sample (Core Loss) 75 - 90 90 - 100	Good Excellent					Kemarks							

出典:JICA 調査団

図 4.1.19 ボーリング調査結果 BH-BD-01(1)

ORE HOL	LE No	BH-B	D-01	-			<u>B 0</u>	RING	LOG	5							Job N	o. Fl She	KYB-20 eet No.	2	5 OF
ROJECT N/ OCATION	AME	Geotech Beside I	nical Sur- Existing E	vey on the Bago River	detailed de Bridge (T	esign for the	Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region	BORING EQI BORING ME ORIENTATIC	JIPMENT THOD	2	: <u>TOH</u> : <u>Rota</u> : Ven	IO "D]" ary Direc	t Circulation		DATE NT		: 15	.11.2016	~ 19.1	1.2016	4
COORDINAT	TE	E 20457	3.197 ; N	1859026.	672 DE	ртн :	49.00m	GROUND W	TER LE	VEL	: <u>Un</u>	ler River	Bed	3	NIPI	PON	KO	EIC	0.,	LTI).
					**			1		a) &	U		STANDARD H TEST ME	ENETRATIC	N TEST M)			SAM	PLING	÷.,	
(III) (III) (III)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSIT (or) CONSISTENC	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (m	CASING (DEPTH (r DIAMETER (mm)	WATER DEPTH (m)	DEPTH GL- (m)	N-Value (Blows / 30cm)	CURVE OF N-V (Blows 10 20 3	BLOW alue / 30cm) 0 40	•	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
-35.40 31	1.00	3.00		gray	Medium dense	Clayey SAND	Medium dense, gray, moist, fine grained, Clayey SAND	to medium	17.11.16	1		31.00	2.1/20				P. 30	31.00			
-40.40 36	5.00	5.00		gray	Dense	Silty SAND	Dense, gray, moist, fine to med Silty SAND GL: (35,00 - 35,45)m, medium fine to medium grained, low pl SAND layer is observed as interca that depth	ium grained, dense, gray, lastic Clayey lated layer at	31.00			32.00 33.00 34.00 35.00	34/30 33/30 35/30 41/30 27/30	I	ł		P-31 P-32 P-33 P-34 P-35	31.45 32.00 32.45 33.00 33.45 34.00 34.45 35.00 35.45 36.00			
			y 	reddish brown To ellowish brown	Medium dense 10 dense	Clayey SAND	Medium dense to dense, reddis yellowish brown, moist, fine grained, low plastic Clayey SAND GL: (36.00 – 36.45)m, very sti gray, fine grained, low to mediu Sandy CLAY layer is observed as layer at that depth	sh brown to to medium iff, brownish am plasticity, s intercalated	18.11.16 42.00			37.00 38.00 39.00 40.00 41.00 42.00 43.00	29/30 24/30 36/30 33/30 29/30 33/30 33/30 45/30				P-35 P-36 P-37 P-38 P-39 P-40 P-41 P-42	36.00 36.45 37.00 37.45 38.00 38.45 39.00 39.45 40.00 40.45 41.00 41.45 42.00 42.45 43.00			
<u>48.40 44</u> 53.82 49	9.42	5.42		ellowish brown 10 reddish brown	Dense to very dense	Clayey SAND	Dense to very dense, yellowis reddish brown, moist, fine to co low plastic Clayey SAND	h brówn to arse grained,	<u>19.11.16</u> 49.00			44.00 45.00 46.00 47.00 48.00 49.00	50/28 50/28 50/16 50/30 50/26 50/27			* * * * *	P-43 P-44 P-45 P-46 P-47 P-48	44.00 44.43 45.00 45.43 46.00 46.31 47.00 47.45 48.00 48.41 49.00 49.42			
							This borehole is terminated according to the termination criteria	at 49.00m, a.				50.00 51.00 52.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 59.00 59.00									
NOTES Relative Relative d Very lo Loose Medium o Very de	ve densi lensity xose e dense ie mso	ty descriptio SPT N-V (total 0 - 4 4 - 10 - 30 - 30 -	n falue 4 10 30 30 30	Consist Consistency Very soft Soft Firm Stiff Very stiff Hard	ency descrip y SPT a 3 3 3 4 3 10	tion N-Value tomo 2 = 4 5 = 8 7 = 15 5 = 30 ver 30	Sample key P ¹ Douthal sample PBT Parmedol T Undiatival Sample VS Vaco SN T Distanti sampler) VS Vaco SN T Distanti sampler) VS Vaco SN Topication sampler) Rock core sample (Roc Vaco SN) (Roc Vaco SN) Brady core sample (SS ST) (SS ST) (SS ST) Ubbit core sample (SS ST) (SS ST) (SS ST) Ubbit core sample (SS ST) (SS ST) (SS ST) Ubbit core sample (SS ST) (SS ST) (SS ST) Ubbit core sample (SS ST) (SS ST) (SS ST) Ubbit core sample (SS ST) (SS ST) (SS ST)	ility Test as Test meter Test Very poor Poor Ti Fait Good	Pla Term Very thick Thick Medium Thin Very thin Nery thin Nickly famin hinly famin	anner str	spacing > 600 - 200 - 60 = 20 - 6 - <	61.00 (mm) 2000 2000 600 20 60 20 60 20 6.	Very w Wide Medii Close Very ch Extremely Remarks	Discontin Term idely spaced dy spaced ann spaced ely spaced osely spaced osely spaced y closely spaced	uities Spa 600 20 60 60 20 60 20 60 20 20 60 20 60 20 20 60 20 20 60 20 20 60 20 20 60 20 50 80 80 80 80 80 80 80 80 80 80 80 80 80	cing (man > 2000 0 - 2000 0 - 600 0 - 600 - 200 - 60 - 20	n) 0 0 7 7 7	evision D	UKKE Consulti Yangon W M an M	N CO. ng Engi Branch Rev 17.0.	LT(neers t) - tareen men com 0/ 1.201

出典: JICA 調査団

図 4.1.20 ボーリング調査結果 BH-BD-01(2)

B	ORE H	OLE N	o. Bl	H-BD-02				BO	RING	LOC	3						Job	No. F Sh	KYB-20	16-02	0F 2
PI	ROJECT	NAME	: <u>Geo</u>	ide Existing	arvey on the Bago Rive	e detailed d r Bridge (T	lesign for th hanlyin Bri	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQ BORING ME	UIPMEN THOD	r	: <u>TO</u> : <u>Rot</u>	HO "D1" ary Direc	et Circulati	on <u>CLI</u>	DATE <u>ENT</u>	<u>y R</u>	5.11.2016	5~19.1	1.201	6
C	DORDIN	ATE	: <u>E 2</u>	04600.791 ;	N 1858985	.918 DI	PTH :_	49.00m	GROUND W	ATER LE	VEL	: <u>Un</u>	der Rive	r Bed		NIPPO	ON KO	DEI C	<i>:</i> 0.,	LTI	D.
n	61			- 1	-	22					(m) &	â	1.23	STANDAR TEST	D PENETRAT	TION TEST STM)	PM	T SAM	IPLING		
	(m) NO	(m)	SS (m)	-	14	E DENSI	ME	SOIL DESCRIPTION		DEPTH (c	DEPTH TER (mr	EPTH (o	(m)	(mu)	CURVE O	FBLOW .	No.)	(m)			
SCALE (m	ELEVATI	DEPTH GI	THICKNE	DIAGRAM	COLOUR	RELATIV (or) CON	SOIL NA			DATE&I	CASING (DIAME	WATER D	DEPTRICI	N-Valu (Blows/3	(Blow 10 20	-Value vs / 30cm) 30 40 50	SAMP (Type &	DEPTH G	ICR (%)	SCR (%)	RQD (%) SCALE (#
and Thomas					brownish gray	Loose	SAND	Loose, brownish gray, wet, fine gr with clay (River deposit)	ained, SAND				1.00	4/30			P-1	1.00			multin
Almunalu	-7.45	2.00	2.00		gray	Soft	CLAY	Soft, gray, moist to wet, low	to medium				3.00	3/30			P-2	2.45 3.00			aluan alu
4 House								plasticity, CLAY					4.00	2/30			P-3	3.71 4.00 4.45			u104
5													5.00	4/30	31		P-4	5.00			miline Miline
6	-11.45	6.00	4.00		-	-	-	-					6.00	4/30			P-5	6.00 6.45			hullen
7					gray	Loose to	Clayey SAND	Loose to medium dense, gray, moi to medium grained, low plastic Cla	st to wet, fine vev SAND				7.00	12/30	X		P-6	7.00			7
Sim					-	medium dense	10000	is means granted to a passe of	, .,	15.11.16 8.00	8.00 Ø112	2	8.00	15/30			P-7	8.00			In Sha
9 miler	ų.										11		9.00	11/30	¥		P-8	9.00 9.45			19
10				0				110-					10.00	11/30			P-9	10.00			in the
111	-16.45	11.00	5.00		_		_						11.00	17/30			P-10	11.00			
12				**	arav	Medium	Silty	Medium dense grav moist find	to medium				12.00	15/30	4		P-11	12.00			duili
13					gray	dense	SAND	grained, Silty SAND	, to meature				13.00	19/30			P-12	13.00			unit.
14													14.00	22/30			P-13	14.00			1
151													15.00	17/30	4		P-14	15.00			and and
16				8.8									16.00	19/30			P-15	16.00			-
17				8 2									17.00	14/30	4		P-16	16.45			-
18	-23.45	18.00	7.00	1.0	_					16.11.16	-		18.00	14/30			P-17	17.45			
19				1999	areal/	Madium	Claser	Medium dense to dense grav motion	et to wet fine	10.00			19.00	17/30	11		P-18	18.45			1
201					gray	dense to	SAND	to medium grained, low plastic Cla	yey SAND				20.00	23/30			P-19	19.45 20.00			12
21						dense		GL: (22.00 ~ 25.45)m, sand percent	it is increased				21.00	13/30	1		P-20	20.45			2
22	ð.,							downward					22.00	23/30			P-21	21.45			2
23													23.00	44/30		N.	P-22	22.45 23.00			12
24													24.00	33/30		1	P-23	23.45			2
25													25.00	28/30		/	P-24	24.45			112
26	-31.45	26.00	8.00			1		14	-				26.00	33/30		$I \mid$	P-25	25.45 26.00			2
27					gray	Dense	Silty	Dense to medium dense, gray, n	noist, fine to				27.00	40/20		$ \mathbf{V} $	P-26	26,45			12
283						to medium dense	SAND	medium grained, Silty SAND		17.11.16	5		28.00	20/20		ИТ	P 27	27.45			12
29	-34.45	29.00	3.00							28.00	1		29.00	29/30	11	111	P-2/	28.45			1
301					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, n medium grained, Clayey SAND	noist, fine to				30.00	28/30			P-28	29.45 30.00			anta alla
31	NOT	es	-	1		dense	1.1	Continue to next sheet	<i></i>	p	anner er	ucture	31.00		Discor	tinuities	1	30.45			13
	Re	lative dens	sity desc	ription	Consis	tency descrip	ntion	P.J. Disturbed sample PBT Permeab (SPT sample) PBT Permeab Undisturbed Sample Ure turn on	ality Test	Term Very thic	k	Spacin	g (mm) - 2000	Very	Term widely spaces	Spacing	g (mm) 2000		FUKKE	N CO	, LTD.
	Relativ	e density y loose	ar	0 - 4	Very sof	t i	(mail) inder 2	It-1 (Piston sampler) It-1 (Piston sampler) It-1 (Denison sampler) Denison sampler) VS Vane Sh PMT Pressure PMT Pressure	meter Test	Thick Medium		600 - 200	2000	W	idely spaced dium spaced	600 - 200 -	2000	FG=X	(Yangon tal: 351 - at	Brand	h) 1-430089767 ufferd com:
	L. Media	oose im dense ense		4 - 10 10 - 30 30 - 50	Soft Firm Stiff		2 = 4 5 - 8 9 - 15	Rock core sample (Single core tabe) 0 - 25 Rock core sample 25 - 50	Very poor Poor T	Thin Very thi hickly land	n	60 - 20	200 - 60 - 20	Very	closely spaced closely spaced ely closely spaced	60 - d 20 - aced <	200 60 20	Revision N Revision L	No. Date	Rev. 17.0	01
	Ver	dense		over 50	Very stif Hard	r a	6 - 30 wer 30	(Double core tabe) Rock core sample (Core Loss) (Core Loss) (Core Loss)	Fair Good	hinly lami	nated	<	6	Remarko					-	-	=
								W41 Water sample 90 + 10	0 Excellent					11.1							

出典: JICA 調査団

図 4.1.21 ボーリング調査結果 BH-BD-02(1)

BORE HOL	E No.	BH-	BD-02	1			BO	RING	LOC	1					Job N	lo, F. Sh	KYB-201	1-025 2 OF
PROJECT N/ LOCATION GROUND LI	AME :	Geotec Beside -5,45n	chnical Su Existing	arvey on the Bago Rive	r detailed d r Bridge (T	esign for the	Bago River Bridge Construction Project	BORING EQI BORING ME ORIENTATIO	JIPMEN THOD	r	: <u>TOF</u> Rota	IO "D1" iry Direc	t Circulatio	DATE <u>CLIENT</u>	: 15	.11.2016	~ 19.11.	2016
COORDINA	TE :	E 2040	500.791 ;	N 1858985	.918 DE	ртн :_	49.00m	GROUND W.	ATER LE	VEL	: Und	ler River	Bed		N KO	EIC	'O., L	TD.
SCALE (m) ELEVATION (m)	DEPTIL GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (or) CONSISTENCY	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL - (m)	STANDARD TEST M (m:QE / swoll() 0	PENETRATION TEST ETHOD (ASTM.) CURVE OF BLOW N-Value (Blows / 30em) 10 20 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m) SS	PLING (%) NDI	RQD (%)
31 32 33 33 -38,45 33	3.00 4	.00		gray	Medium dense to dense	Clayey SAND	Medium dense to dense, gray, n medium grained, Clayey SAND	noist, fine to				31.00 32.00 33.00	33/30 28/30		P-30 P-31	31.00 31.45 32.00 32.45 33.00		
344 351 361 372 383 383 383 383 383 383 383 383 383 38	200 6			gray	Very dense	Silty SAND	Very dense, gray, moist, fine grained, Silty SAND GL: (34.00 - 34.45)m, medium fine to medium grained, low pl SAND layer is observed as interca that depth	to medium dense, gray, lastic Clayey lated layer at				34.00 35.00 36.00 37.00 38.00	50/25 26/30 50/29 50/29 50/29 50/27 50/28		P-32 P-33 P-34 P-35 P-36 P-37	33.40 34.00 34.45 35.00 35.44 36.00 36.44 37.00 37.42 38.00 38.43		
999-444.45 35 1999-440- 1999-40- 1999-40- 40- 1999-40- 40- 40- 40- 40- 40- 40- 40- 40- 40-	1.00 5	00		reddish brown to yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, redd yellowish brown, moist, fine grained, low plastic Clayey SAND GL: (39.00 ~ 39.45)m, the colo SAND layer is changed to light gra	dish brown to to medium or of Clayey y	18.11.16 39.00			40.00 41.00 42.00 43.00	50/20 42/30 50/25 50/28 26/30		P-38 P-39 P-40 P-41 P-42	39,00 39,35 40,00 40,45 41,00 41,40 42,00 42,43 43,00 43,45 44,00		
45 47 47 47 48 47 48 49				yellowish brown to reddish brown	Very dense	Clayey SAND	Very dense, yellowish brown to re moist, fine to coarse grained, low p SAND GL: (44.00 ~ 44.44)m, trace of 1 including at that depth	eddish brown, Jastie Clayey fine gravel is	{9.11.10			45.00 46.00 47.00 48.00 49.00	50/29 50/29 50/20 50/28 50/29 50/29		P-43 P-44 P-45 P-46 P-47 P-48	44,00 44,44 45,00 45,44 46,00 46,35 47,00 47,43 48,00 48,44 49,00		
11-54.891 45 500 500 510 510 510 510 510 510 510 51	9.44 5						This borehole is terminated according to the termination criterio	at 49.00m, a.	49.00			50.00 51.00 52.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00				49.44		
NOTES Relative d Very lo Loos Medium (Dens Very de	ve density lensity lose e dense e e mse	descript SPT N 0 4 10 30 ave	ion -Valne ====================================	Consis Consistent Very soft Soft Firm Suff Very stift Hard	tency descrip	tion N-Value pumol ndce 2 2 - 4 5 - 8 9 - 15 5 - 30 ver 30	Sample key P ⁺¹ Dimitrati wanjte PTT PBT Purmade PTT T Lobinituded Sample Dia (Unitatived Dia (Unitative)) PMT Pressure Dia (Unitative) Bit Rock core sample (Core Loop) Rock core Dia (Core Loop) Rock core Dia (Unitative) Rock core Dia (Unitative) W = Water sample S0 – 75 90 75 – 90 90 – 10	itiny Test tear Test meter Test Very poor Poor T Fair Good 0 Excellent	P Term Very thic Thick Medium Thin Very thi Nickly lami hinly lami	n. noted	acture Spacing 600 - 200 - 60 - 20 - 60 - 20 - 6 - < 0	61.00 (mm) 2000 2000 600 200 60 20 5	Very v Wid Med Clos Very c Extreme <u>Remarks</u>	Discontinuitie: Term Spacing if Term Spacing if obj spaced >20 obj spaced 600 - 21 insely spaced 60 - 24 losely spaced 200 - 6 vj spaced 200 - 6 vj spaced 200 - 6 vj spaced 200 - 6	mm)) 00 00 00 00	FGEX Revision D	FUKKEN Consulting Yangon Bi var ass asso var ass	CO., LTD. Engineers anch) resultation Rev. (1) [7.0].2017

出典: JICA 調査団

図 4.1.22 ボーリング調査結果 BH-BD-02(2)

BOR	E HO	DLE N	o. Bł	I-BD-03				BO	RING	100	i							Jub N	la. F. Sh	KYB-20 eet No.	1	15 OF 2
PRO LOC	JECT	NAME N	: <u>Geo</u> : <u>Besi</u>	technical S ide Existing	arvey on th Bago Rive	e detailed d er Bridge (T	esign for the	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQ BORING ME	UIPMEN' THOD	c .	: <u>TOI</u> : <u>Rot</u>	HO "D1" ary Direc	t Circulatio	m c	D	ATE	: 02	.01.2017	~ 06.0	1.201	7
GRC	OUND	LEVEL ATE	: <u>-6.2</u> : <u>E 20</u>	2m 94623.803 ;	N 1858937	.665 DE	ертн : _	46.00m	ORIENTATIO	ON ATER LE	VEL	: <u>Ver</u> : <u>Un</u>	tical der River	Bed	=[NI	PPON	N KO	EIC	<i>0.,</i>	LT	D.
		11	11			CY CY	1111			î	(m) & ((n	(u		STANDARE TEST N	PENETR/	ATION TE ASTM)	ST	PMT	SAM	PLING		
SCALE (m)	ELEVATION (m)	DEPTH GL-(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSI (or) CONSISTENC	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (mu	WATER DEPTH (p	DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE (B) 10 20	N-Value ows/30cn 30 4	n) 10 50	SAMPLE (Type & No.)	DEPTH GL - (m)	ICR (%)	SCR (%)	RQD (%) cr.ALF (m)
2 minutes and 2 minutes an	8.72	2.50	2.50		brownish gray	Very loose to loose	Silty SAND	Very loose to loose, brownish gra to medium grained, Silty SAND (River deposit)	y, moist, fine		1	ŀ	1.00	3/30 5/30				P-1 P-2	1.00 1.45 2.00 2.45			and a state of the
2 milium 4 milium 6	2.22	6.00	3.50		gray	Soft to firm	Sandy CLAY	Soft to firm, gray, moist, fine plasticity, Sandy CLAY	grained, low	02.01.17 5.00		0.000	3.00 4.00 5.00	5/30 2/30 5/30				РМТ-01 Р-3 Р-4 Р-5	3.00 3.30 - 3.95 4.00 4.45 5.00 5.45 6.00			1. Salarahan Salarah
7 10 10 10 10 10 10 10 10 10 10 10 10 10					gray	Very loose to medium dense	Silty SAND	Very loose to medium dense, gray to medium grained, Silty SAND GL: (6.00 ~ 9.45)m; Very loose, medium grained, Silty SAND w layer is intercalated at that depth Thin clay layer is intercalated in th	y, moist, fine gray, fine to ith thin clay is layer		<u>10.00</u> Ø112	-	7,00 8.00 9.00 10.00 11.00	3/30 2/30 2/30 2/30 2/30 2/30 27/30 14/30				Рм1-02 Р-6 Р-7 Р-8 Р-9 Рм1-03 Р-10 Р-11 Р-12	0.00 630-695 7.00 7.45 8.00 8.45 9.00 9.45 10.00 11.45 11.00 11.45			նատերեայաններություններուներություններ
13 14 15 16 -2	0.22 2.22	14.00 16.00	<u>8.00</u> 2.00		gray	Stiff	Sandy CLAY	Stiff, gray, moist, fine grained, la Sandy CLAY	ow plasticity,	03.01.17 13.00			13.00 14.00 15.00	18/30 10/30 13/30 21/30				P-13 P-14 P-15 P-16	12.45 13.00 13.45 14.00 14.45 15.00 15.45 16.00 16.45			աններուներուներին
171 181 191 201 191 201 201 201					gray	Medium dense	Clayey SAND	Medium dense, gray, moist, finn grained, low plastic Clayey SAND GL: (18.00 ~ 18.45)m and (23.0 medium dense, gray, fine to mec Silty SAND layer is observed ar layer at those depths	to medium 0 ~ 23.45)m; lium grained, s intercalated			The set of	17.00 18.00 19.00 20.00 21.00 22.00	18/30 11/30 11/30 11/30 12/30 17/30				P-17 P-18 P-19 P-20 P-21 P-22	17.00 17.45 18.00 18.45 19.00 19.45 20.00 20.45 21.00 21.45 22.00			illustration of the second
23 24 25-3 26	1.22	25.00	9.00		orav	Medium	Clavey	Medium dense to dense, eray, a	noist fine to	04.01.17 24.00			23.00 24.00 25.00 26.00	28/30 26/30 31/30				P-23 P-24 P-25 P-26	23.00 23.45 24.00 24.45 25.00 25.45 26.00			
27700000000000000000000000000000000000					Eray	dense to dense	SAND	medium grained, low plastic Claye	y SAND				27.00 28.00 29.00 30.00	23/30 18/30 24/30 21/30 19/30		*		P-27 P-27 P-28 P-29 P-30	26.45 27.00 27.45 28.00 28.45 29.00 29.45 30.00 30.45			1
	Relativ Relativ Very Le Mediu De Very	S ative dens e density loose m dense mse dense	SPT 1 3 0	ription N-Value 0 - 4 4 - 10 0 - 30 0 - 50 ver 50	Consisten Consisten Very sol Soft Firm Stiff Very stift Hard	stency descrip cy SPT IL u T I) o	tion N-Value (email mider 2 2 - 4 5 - 8 9 - 15 6 - 30 wer 30	Creatinue to next sheet Simple See	ality Tea car. Tist meter Test Very poor Poor Fair Goot 0 Excellent	PI Term Very thick Thick Medium Thin Very thi hickly lamit	nanner stra	spacing 5 600 - 200 - 60 - 200 - 60 - 20 - 60 - 20 - 60 - 20 - 60 - 20 - 60 - 20 - 60 - 20 - 8 20 - 8 20 - 20	31,00 2000 2000 2000 600 200 60 20 6	Very Wi Ole Very Extrema	Disca Term widely space dely space dium space sely space closely space closely space closely space	ced 1 d 1 ced spaced	Spacing (m > 200 600 - 200 200 - 60 60 - 200 20 - 60 < 20	m) 0 0 10 1 1 1 1	PGEX Revision N Revision D	FUKKE Consulti Yangon nd istriet	N CO ng Eng Branc Intelsi so recom Rev. 09.0	., LTD. process h) s -crosser/cz chint con 7.00 11.2017

出典: JICA 調査団

図 4.1.23 ボーリング調査結果 BH-BD-03(1)

BORE	HOLE N	lo. Bl	1-BD-03	19.0			BO	RING	LOC	E I					Job No.	FKYE	-2016-0 No. 2	125 OF 2
PROJE	CT NAME	: <u>Geo</u>	itechnical S ide Existin	urvey on th g Bago Rive	e detailed d r Bridge (T	esign for th hanlyin Bri	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQ BORING ME	UIPMEN' THOD	0	: TOF	IO "D1" ary Direc	t Circulation	DATE	: 02.01.	2017-0	6.01.20	17
COOR	ND LEVEL DINATE	: <u>-6.2</u> : <u>E 20</u>	2m 04623.803 :	N 1858937	.665 DE	PTH :_	46.00m	GROUND W	ON ATER LE	VEL	: <u>Vert</u> : <u>Unc</u>	ical ier River	Bed	NIPPO	N KOE	I CO.	, LT	D.
		2			ary acy				(11)	t (m) & m))	(n		TANDARD PE TEST MET	NETRATION TEST HOD (ASTM)		SAMPLI	NG	
SCALE (m) ELEVATION (m)	DEPTH (IL(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION	0	DATE & DEPTH	CASING (DEPT) DIAMETER (#	WATER DEPTH	DEPTH GL =(m)	(Blows / 30cm)	N-Value (Blows / 30cm) 7 20 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m) TCR (%)	SCR (%)	RQD (%) SCALE (m)
31 32 33				gray	Medium dense to dense	Clayey SAND	Medium dense to dense, gray, n medium grained, low plastic Claye	noist, fine to y SAND				31.00 32.00 33.00	31/30 36/30 34/30		P-31 31 31 P-32 32 P-33 33 33	.00 .45 2.00 2.45 3.00		
34 35 36 37 38 38 39 38 39 39 40	22 34.00	9.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine	05.01.17 37.00			34.00 35.00 36.00 37.00 38.00 39.00 40.00	26/30 50/29 22/30 33/30 50/26 34/30 50/29		P-34 34 34 P-35 35 35 P-36 36 36 P-37 37 37 P-38 38 38 P-39 39 39 P-40 40 40	1.00 1.45 1.00 1.44 1.00 1.45 1.00 1.45 1.00 1.45 1.00 1.45 1.00 1.45 1.00 1.45		เสียงหลังคริสายเสียงเป็นคริสายเสียงเสียงเสียงเสียงเสียงเสียงเสียงเสีย
411-47. 421-431-431-441-451-461-52	60 46 38	7.00		greenish gray to yellowish brown	Very dense	Clayey SAND	Very dense, greenish gray to yell moist, fine to medium grained, Clayey SAND GL: (45.00 ~ 46.38)m; Clayey SA to medium gravel is observed at the	owish brown, low plastic ND with fine at depth	06.01.13			41.00 42.00 43.00 44.00 44.00 44.00	50/28 50/28 50/29 50/25 50/25 50/23		P-41 41 P-42 42 P-43 43 P-44 44 P-45 45 P-46 46	00 .43 .00 2.43 3.00 3.44 4.00 1.40 5.00 5.00 2.8		141
933 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 -	00 40.38	5,38					This borehole is terminated according to the termination criteri	at 46.00m,				47.00 48.00 50.00 51.00 52.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00			40			ուս։ Գիստու Գիստու Գիստու Տիստու Տիստու Տիստու Տիստու Տիստու Տիստու Տիստու Տի
	DTES Relative der lative density Very loose Loose Loose Colium dense Dense Very dense	sity desc SP1	ription F N-Value 0 4 4 - 10 0 - 30 0 - 30 0 - 50 over 50	Consister Consister Very soft Soft Firm Stiff Very sill Hard	stency descrip cy SPT h u T h o	tion N-Value mder 2 2 - 4 5 - 8 9 - 15 5 - 30 ver 30	Sample key ▶1 Distanted sample per sample) PBT Pernent ■1 (Distanted Sample (Appen sample) VS Vace S3 ■2 (Distanted sample) PMT Person ■2 (Distanted sample) PMT Person ■2 (Sample can ample) Containued Sample) ROD (% 0-25 ■2 (Sample can ample) 0-25 ■2 (Sample can ample) 25 - 50 ■2 (Sample can ample) 25 - 75 ■2 (Sample can ample) 75 - 90 ■2 (Sample can ample) 75 - 90 ■2 (Sample can ample) 75 - 90	ility Test test Test meter Test Very poor Poor Tair Good Excellent	Pil Terra Very thic Thick Medium Thin Very thi hickly lamin Dunly lamin	nner stri c	acture Spacing 200 - 200 - 20 - 6 - < 1	59,00 60,00 61,00 2000 2000 600 200 60 20 6	To Very wid Widely Mediar Closely Very clos Extremely of Extremely	Discontinuities mi Spacing (n dy spaced >000 spaced 600 spaced 200 spaced 200 elsyspaced 20 spaced 20 for spaced 20 for spaced 20 spaced 20	m) 00 00 15 15 15 15 15 15 15 15 15 15	FUK Cons (Yan Xan Xan Xan Xan Xan Xan Xan Xan Xan X	KEN CC sulting En gon Bran 1- tortees a Re 09	55 66 0, LTD. iginoers ch) wilket.com %: 00 .01.2017

出典: JICA 調査団

図 4.1.24 ボーリング調査結果 BH-BD-03(2)

BOI	RE HO	DLE No	o. Bł	1-BD-04	1			<u>B 0</u>	RING	LOC	3							Job	Vo. F Sh	KYB-2 leet No	016-0.	25 OF 2
PRO	DJECT	NAME	: Geo	technical Su	rvey on the	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	τ	; <u>TO</u>	IO "D1"	č	_		DATE	: 2	2.11.2010	6~26.	1.201	6
LOC	CATIO	N	Besi	ide Existing	Bago Rive	r Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circula	tion	CLIE	NT					
GRO	OUND	LEVEL	: -6.8	7m	1950751	210 DE	DTU .	\$1.00m	ORIENTATI	ATERIC	avres	: Ver	tical	Dad	-		NIPP	ON KC	EIC	·O.,	LT	D.
T	UKDIN	T	: <u>E 2</u>	1	N 1828/21	1 DE	РІН :_	SLOOM	GROUND W	I	VEL		l cr River	STANDA	RD PEN	ETRATIC	IN TEST	01				-
	~			1.0		SITY				(ii)	H (m) 2	(m)		TEST	METH	OD (AST	M)	1	SAM	APLING	-	-
0	ON (III	(III)	m) SSS	5		E DEN	ME	SOIL DESCRIPTION		DEPTI	DEPT STER (HIAR	(m) + (m)	0cm0	CU	RVEOF	BLOW •	(No.)	E- (m)			
ALE (n	EVATI	PTH GI	ICKNE	AGRAD	LOUR	LATIV s) CON	IL NA			TE&I	SING	VTER	PTH G	N-Vah ows/3		N-V (Blows	(30em)	SAMP Type &	ED HLL	R (%)	R (%)	(%) ()
SC	Ш	DE	F	D	8	RE (o	SO		_	ŶQ	5	(M)	DE	e,	0 10	20 3	0 40 5	ŋ ~	DE	TC	sc	RQ
in the second					gray	Very	Clayey	Very loose, gray, moist to wet, fin	to medium				1.00	200				. P.1	1.00			
hund						loose	SAND	(River deposit)	layey SAND					2/30	1			1-1	1.45			
2	9.37	2:50	2.50										2.00	2/30				P-2	2.00			Ē
3				* * *						1		1.0	3.00	5/30	1			P-3	3.00			- mult
4				N N N	gray	Very	Silty	Very loose to loose, gray, moist, fu	ne to medium				4 00	00					3.45			
in the second				2 2 3		to		Brance, only of the						3/30	1			P-4	4.45			
5								and the second second					5.00	6/30	ł			P-5	5.00			-
6				* * *						1.1	6.00		6.00	8/30	1			P-6	6.00	1		
in the second	13 07	7.00	1 50	N. 18 . 18		1				-	Ø112		7.00	0120	Λ			1.007	6.45			
-	10.01	1.00	4.30				1 21	1	50.00°	1			1.00	2/30				P-7	7.45	1		alam
8					gray	Soft	Sandy CLAY	Soft, gray, moist, fine grained, lo Sandy CLAY	ow plasticity,			1.8	8.00	3/30	41			P-8	8.00			mila
9								100 100 100 100 100 100 100 100 100 100					9.00		1				9.00			and the second
THE R		10.00	2.00			1.1									1			D T-	(m) cm 9.80			in the second seco
10	16,87	10.00	3.00		-	-			_	·			10.00	7/30	4			P-9	10.00			-
4				4	grav	Loose	Clavev	Loose to medium dense, gray,	moist, fine	22.11.10	2		11.00	25/30		1		P-10	11.00			hundr
12				0 0 0 1	0.00	to	SAND	grained, low plastic Clayey SAND		11.00			12.00			Y			11.45			
hund						dense		CI. (12.00 12.45)						18/30		1		P-11	12.45			lum b
135								fine to medium grained, Silty SA	AND layer is			16	13.00	15/30	•	{		P-12	13.00			- Inter
4								observed as intercalated layer at the	at depth				14.00	16/30				P-13	14.00			- Annual
												1	15.00		Y				14.45			- induce
dimin				0. 0. 0. 									10.00	8/30	1			P-14	15.45			line
6-2	2.87	6.00	6.00										16.00	10/30	ł			P-15	16.00			
17						en let		Patter many social flag angles d has	er for montheme				17.00	15/30				P-16	17.00			alara d
Internet					gray	Sun	CLAY	plasticity, Sandy CLAY	w to medium					13139					17.45			-
0												1	18.00	11/30	Ť	4		P-17	18.00			
19													19.00	12/30	+			P-18	19.00			- under
20													20.00	11/20	1			P.10	20.00			
and the second														11/30	1			1.12	20.45			
1													21.00	11/30	ł			P-20	21.00			alum.
22 -	28.87	22.00	6.00	00000	-							112	22.00	17/30				P-21	22.00			
23					oray.	Medium	Claver	Medium dense, grav maist fine	grained low				23.00	22/20		X		0.22	22.45			al la l
and a					Pres	dense	SAND	plastic Clayey SAND	Burnes, 100					23/30		1T		1-44	23,45			
243						1						16	24.00	23/30		+		P-23	24.00			
25													25,00	21/30		4		P-24	25.00			
26	32.87	26.00	4.00										26.00						25.45			and and
Inn				· ··· ···					100	1				21/30		Ĩ		P-25	26.45			lunt
27					gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to				27.00	23/30		•		P-26	27.00			in the second seco
28						to	JANU	meaning granieu, iow plastic Claye	y annu				28.00	21/30		1		P-27	28.00	1		
200						uense							20.00			\backslash			28.45			
2 miles													29.00	27/30				P-28	29.00			il un
30										23.11.10	5		30.00	38/30				P-29	30.00			in the second seco
31								Continue to next sheet		CE 1			31.00			1			50.45	1		ului,
Г	NOTE	ative deps	ity desc	ription 1	Consis	stency descrin	tion	Sample key	ality Tost	Term	anner str	spacing	g (mm)	-	Tem	Discontin n	uities Spacin	g (mm)		FUKK	NCO	
t	Relativ	e density	SPI	N-Value	Consisten	cy SPT	N-Value	(Piston sample) VS Vane Str (Piston sampler)	our Text	Very thic Thick	k	> 600 -	2000	Ve	ry widely Widely e	y spaced	600	2000		Consult (Yango	ng Eng	gineers sh)
F	Very	loose		0 - 4	Very sof	t. u	nder 2	Data Undisturbed Sample PMT Pressure	meter Test	Medium		200	- 600	N	Aedium s	spaced	200	- 600	FG≘X	Tel GST - 8 www.mysen	UNUSA R	59 4200(976) Bart.com
þ	Mediu	m dense	1	0 - 30	Firm		5 - 8	Rock core sample (Single core table) D - 25	Very poor	Very thi	n	20 -	60	Ver	ry closel	y spaced	20	- 60	Revision N	Vo.	Res	: 01 11 2017
t	Very	dense	3	over 50	Stiff Very stif	r b	6 = 30	(Double core tabe) 25 - 50 (Double core tabe) 50 - 75	Fair 1	menty lami	nated	6 ~	20 6	Remar	ks	sety space	a	- 20	Midn I	.me	104	
				Ľ	Hard	0	ver 30	(Core Loss) 75 - 90 (90 - 10) (90 - 10)	Good 0 Excellent	der -				1								

出典: JICA 調査団

図 4.1.25 ボーリング調査結果 BH-BD-04(1)

BORE HO	DLE No	BH-	-BD-04				BC	RING	LOG						-	Job N	U. FI	KYB-2016	-025
PROJECT	NAME N	: Geote Besid	echnical Su le Existing	urvey on the Bago Rive	: detailed d r Bridge (T	lesign for th Thanlyin Bri	Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region	BORING EQ BORING ME	JIPMENT		: <u>TOF</u> : <u>Rota</u>	IO "D1" ary Direct	Circulation		DATE	: 22	.11.2016	-26.11.2	016
BROUND COORDIN	LEVEL	: <u>-6.87</u> : <u>E 204</u>	m 1732.060 ;	N 1858751	630 DE	эртн :_	51.00m	GROUND W	ON ATER LE	VEL	: Vert	ical ler River	Bed		IPPO	N KO	EI C	0., L	TD.
1.71		-0			SITY				(11)	1 (m) & m))	(m)	s	TANDARD F TEST ME	ENETRATION T THOD (ASTM)	IEST	1	SAM	PLING	_
ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DEN (or) CONSISTER	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPT) DIAMETER (I	WATER DEPTH	DEPTH GL (m)	N-Value (Blows/30cm)	CURVE OF BLC N-Value (Blows/30	ow • cm) 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%) SCR (%)	RQD (%)
				gray	Medium dense to dense	Clayey SAND	Medium dense to dense, gray, r medium grained, low plastic Claye	moist, fine to 2y SAND				31.00 32.00 33.00 34.00 35.00	21/30 20/30 27/30 34/30 50/30			P-30 P-31 P-32 P-33 P-34	31.00 31.45 32.00 32.45 33.00 33.45 34.00 34.45 35.00 35.45		
-43.87	37.00	11.00		gray	Dense to very dense	Silty SAND	Dense to very dense, gray, m medium grained, Silty SAND	noist, fine to	24.)1.16 40.00			37.00 38.00 39.00 40.00 41.00	40/30 44/30 33/30 50/20 50/30 31/30	×		P-35 P-36 P-37 P-38 P-39 P-40	35.43 36.00 36.45 37.00 37.45 38.00 38.45 39.00 39.35 40.00 40.45 41.00 41.45		
-48.87	46.00	4.00		greenish gray	Dense to very dense	Clayey SAND	Dense to very dense, greenish gra to medium grained, low plastic Cla	iy, moist, fine ayey SAND				42.00 43.00 44.00 45.00 46.00	41/30 50/28 50/29 42/30 50/30			P-41 P-42 P-43 P-44 P-45	42.00 42.45 43.00 43.43 44.00 44.44 45.00 45.45 46.00		
				yellowish brown	Dense to very dense	Clayey SAND	Dense to very dense, yellowish i fine to medium grained, low p SAND	brown, moist, lastic Clayey	25.11.16 49.00			47.00 48.00 49.00 50.00 51.00	50/30 50/30 50/27 50/27 50/23			P-46 P-47 P-48 P-49 P-50	46.45 47.00 47.45 48.00 48.45 49.00 49.42 50.00 50.42 51.00		
-38.23	31.36	0.06					This borehole is terminated according to the termination criteri	at 51.00m, ia.	2130			52.00 53.00 54.00 55.00 55.00 57.00 58.00 59.00					21.38		
NOTH Relativ Very Le Mediu Di Very	2 <u>S</u> ative density v loose pone m dense ense v dense	ity descrip SPT : 0 4 10 30 0 90	ption N-Value m=4 - 4 - 10 - 30 - 50 er 50	Consistence Very soft Soft Firm SuilT Very still Hard	tency descrip	tion N-Value umot 2 - 4 5 - 8 9 - 15 6 - 30 wer 30	Sample Ker Pr. [Distributions marks] (397 samples) PBT Permeal Problem Sample Pr. [Distributions Sample (Astionample) VS Vaces S (Vacuum Sample) Pr. [Distributions Sample] (Astionample) PMT Permeal Problem Sample (Astionample) Reck core sample (Reck core sample) 25 - 55 (30 - 73) S0 - 73 (30 - 73) Reck core sample (Problem Sample) 90 - 17	bility Test hear Test concer Test b) Term b) Term b) Term b) Very pool cond	Ph Term Very thick Thick Medium Thin Very thi nickly Jamin hinly Jamin	anner stra	spacing 500 - 200 - 20 - 60 - 20 - 6 - 6 - < (60.00 61.00 (mm) 2000 2000 600 200 60 20 55	Very wi Wide Media Close Very cli Extremely Remarks	Discontinuitie ferm dely spaced ly spaced m spaced ly spaced sely spaced closely spaced	25 Spacing (m > 200 600 - 20 200 - 60 60 - 20 20 - 60 < 20 < 20	im) 00 00 / / /	FOEX Révision D	UKKEN (Onsulting Yangon Bra Van enterna van enterna v	20., LT Engineer anchi s lav- axo tev: 01 (7.01.20)

出典: JICA 調査団

図 4.1.26 ボーリング調査結果 BH-BD-04(2)

BC	ORE H	OLE N	o. Bl	I-BD-05				BO	RING	LOG	3							Jab N	o. F.	KYB-20 eet No	16-02	0F 2
PR	OJECT	NAME	: <u>Geo</u>	technical S ide Existing	arvey on the Bago Rive	r detailed d r Bridge (T	esign for the	Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region	BORING EQU BORING ME	JIPMEN THOD	Т	: TOI	IO "D1" ary Direc	t Circula	ation	CLIEN	DATE	: 22.	11.2016	~ 26.1	1.2016	
co	OORDR	NATE	: <u>-0.9</u> : <u>E 20</u>	0m)4790.571 ;	N 1858656	.661 DE	PTH :_	53,00m	GROUND W	ATER LI	EVEL	: <u>Une</u>	tical der River	Bed		Ν	VIPPO	N KO	EI C	0.,	LTI	D.
1						έð				(11	(m) &	(0		STANDA TES	RD PENE T METHO	TRATION D (ASTM	TEST)	РМТ	SAM	PLING	-	
6	(m) NOI	L (m)	ESS (m)	×		/E DENS	ME	SOIL DESCRIPTION		DEPTH ((DEPTH ETER (m	DEPTH (L-(m)	uc (Ocm)	CUI	VE OF BL	• wo.	PLE E No.)	L-(m)	U		1
SCALE (n	ELEVATI	DEPTH G	THICKN	DIAGRA	COLOUR	RELATIV (or) CON	SOIL NA			DATE&	CASING	WATER	DEPTH G	N-Val (Blows/3	0 10	N-Vah (Blows / 3 20 30	ue 0cm) 40 50	SAMF (Type &	DEPTH G	TCR (%)	SCR (%)	RQD (%) SCALE (n
unithinitian Shart	-9.40	2.50	2.50	* * *	brownish gray	Loose to medium dense	Silty SAND	Loose to medium dense, brownish fine to medium grained, Silty SAN (River deposit)	gray, moist, D				1.00	6/30 14/30	>			P-1 P-2	1.00 1.45 2.00 2.45			un 2 milion
3 4 mm				* * * * * * *	brownish gray	Loose to medium dense	Silty SAND	Loose to medium dense, brownish fine to medium grained, Silty SAN	gray, moist, D				3.00 4.00 5.00	630 6/30 5/30	Í			P-3 P-4 P-5	3.00 3.45 4.00 4.45 5.00			ոհանությ
- Chan				* * *									6.00	8/30	1			P-6	5.45 6.00			16
7				***									7.00	12/30	1			P-7	0.45 7.00 7.45			7
8 miles	-14.90	8.00	5.50	x x x x x x	-						8.00 Ø112		8.00	4/30				P-8	8.00			18
9 milen					gray	Loose	Clayey	Loose to medium dense, gray, n	noist, fine to			-	9.00		1			0 T-1	9.00			19
10						medium dense	mand	GL: (11.00 ~ 11.45)m, medium	dense, gray,				10.00	1130	ł			P-9	10.00 10.45			
1								observed as intercalated layer at the	it depth				11.00	16/30				P-10	11.00			-
120000	10.00	12.00	6.00										12.00	10/30	1			P-11	12.00			12
14	-19.90	13.00	5.00		gray	Soft	CLAY	Soft, gray, moist, low to mediu CLAY, with trace of fine grained s	m plasticity, and	13.00	<u>b</u>		14.00	4/30	•			P-12	13.50 (#) cm 14.15			dimundanta
15	-21.90	15.00	2.00	· · · · · · · ·			(1)	Maline dana ana mila Gar	andread Anna			1	15.00	19/30)		P-13	15.00 15.45			115
10					gtay	dense	SAND	plastic Clayey SAND	granieu, iow				17.00	17/30	1			P-14	16.00			
185	-24.90	18.00	3.00										18.00	13/30	I			P-15	17.45			
19					grav	Firm	Sandy	Firm to stiff, gray, moist, fine gra	ined, low to				19.00	6/30	I			P-10	18.45 19.00			1
20						to stiff	CLAY	medium plasticity, Sandy CLAY					20.00	10/30	I			P-18	19,45 20.00			20
21													21.00	9/30	1			P-19	20.45			21
22	-28.90	22.00	4.00	1010	_		_						22.00	20/30				P-20	22.00			122
23					gray	Medium	Clayey	Medium dense, gray, moist, fine	grained, low				23.00	19/30				P-21	23.00			23
24						dense	5.11.15	GL: (25.00 ~ 25.45)m, medium	dense, gray,				24.00	22/30		A I		P-22	24.00			24
25								observed as intercalated layer at that	it depth				25.00	28/30		X	0.	P-23	25.00 25.45			25
26	-32.90	26.00	4.00		-				-				26.00	40/30				P-24	26.00 26.45			120
27					gray	Medium dense	Clayey SAND	Medium dense to very dense, gra to medium grained, low plastic Cla	y, moist, fine yey SAND				27.00	37/30			4	P-25	27.00 27.45			27
28				100 100 100 100 100 100 100 100 100		to very dense							28.00	20/30				P-26	28.00 28.45			28
29										23.11.10	6		29.00	23/30				P-27	29.00			20
201mmilio		5		0 10 00 0 10 0 0				Continue to next sheet		10			31.00	18/30		-		P-28	30.00			
	NOT	ES lative den	sity desc	ription	Consis	tency descrip	tion	Sample key P-1 Disturbed sample (SPT sample): PBT Permeab	ility Test	P Term	lanner str	Spacing	2 (mm)		Term	Discontinuit	Spacing (mm)		UKKE	N CO.	, LTD,
	Relati	ve density y loose	SP	N-Value mail 0 - 4	Consistent Very sof	-y SPT	N-Value (mma) inder 2	T-i Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure p-1 (Denison sampler)	ear Test noter Test	Thick Medium	~ 	> 600 - 200 -	2000	Ve	widely Widely sp Medium sp	nced aced	> 20 600 - 2 200 - 0	000	GEX	Yangon	ng Eng Branci ross, us	inieérs h) i - czsołołcz wiatucom
	L. Medi	um dense Anse	1	4 = 10 0 = 30 0 = 50	Soft Firm Stiff		2 - 4 5 - 8 9 - 15	Rock core sample (Single core tabe) Rock core sample Single core tabe) Rock core sample Sock core sample S	Term Very poor Poor	Thin Very thi hickly larm	in	60 - 20 -	200 60 20	Ve	Closely sp ry closely emely close	aced spaced ely spaced	60 · 2 20 - 6 <30	00 50	Revision N Revision D	ane	Rev. 12.1	00
	Ver	y dense	1	iver 50	Very stift Hard	r in	6 - 30 wer 30	(Double core tube) 50 - 75 Reck core sample (Core Loss) 75 - 90 w.i. Water sample 90 - 10	Fair Good Excellent	hinly fami	nated	4	6	Rema	iks	A -Locali						

出典: JICA 調査団

図 4.1.27 ボーリング調査結果 BH-BD-05(1)

BORE I	HOLE N	o. BH	I-BD-05		-		BC	DRING	LOC	1		2.5			Jab N	Vo. F Sh	KYB-20 eet No.	16-025	0F 2
PROJEC	T NAME	Geor	technical Su de Existing	irvey on the Bago River	detailed d Bridge (T	lesign for th hanlyin Bri	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region	BORING EQ BORING ME	UIPMENT	6	: <u>TOF</u> : <u>Rota</u>	IO "D1" iry Direc	Circulation	DATE	: 22.	.11.2016	~ 26.11	2016	_
GROUN	D LEVEL INATE	: <u>-6.90</u> : <u>E 20</u>	0m 14790.571 :	N 1858656.	661 DI	epth :_	53.00m	ORIENTATI	ON ATER LE	VEL	: <u>Ven</u> : <u>Unc</u>	ical ler River	Bed	NIPPO	N KO	EI C	<i>O., I</i>	LTD).
				-	έx				î	.(m)&	î	1	TANDARD F TEST ME	PENETRATION TEST THOD (ASTM)	_	SAM	PLING		
SCALE (m) ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTH DIAMETER (m	WATER DEPTH(DEPTH GL - (m)	N-Value (Blows / 30cm) 0	CURVE OF BLOW • N-Value (Blows / 30em) 10 20 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
31 32 33 34 34				gray	Medium dense to very dense	Clayey SAND	Medium dense to very dense, gra to medium grained, low plastic Cla	ay, moist, fine ayey SAND				31.00 32.00 33.00 34.00	50/24 19/30 39/30 34/30		P-29 P-30 P-31 P-32	31.00 31.39 32.00 32.45 33.00 33.45 34.00 34.45 35.00			ung mug mug mug mug mug mug mug mug mug mu
305-42.90 365-42.90 375- 375- 385- 395- 405- 405- 415- 415-	0 36.00	10.00		gray	Very dense to dense	Silty SAND	Very dense to dense, gray, n medium grained, Silty SAND	aoist, fine to	24.11.16 37.00			33.00 36.00 37.00 38.00 39.00 40.00	26/30 50/29 50/27 50/29 50/29 37/30 43/30		P-33 P-34 P-35 P-36 P-37 P-38 P-39	35.00 35.45 36.00 36.44 37.00 37.42 38.00 38.44 39.00 39.44 40.00 40.45 41.00 41.45			Յուսնեսանեսանեսումեսումեսումեսո
42	0 42.00	6.00		greenish gray to yellowish brown	Dense to very dense	Clayey SAND	Dense to very dense, greenish gra brown, moist, fine to medium plastic Clayey SAND	y to yellowish grained, low				42.00 43.00 44.00 45.00 46.00 47.00	44/30 50/29 40/30 50/30 50/30 36/30		P-40 P-41 P-42 P-43 P-44 P-45	42.00 42.45 43.00 43.44 44.00 44.45 45.00 45.45 46.00 46.45 47.00 47.45			ունասներուներուներուներուներ
18	0 48.00	6.00		yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, r medium grained, low plastic Claye	noist, fine to ey SAND	25.11.16 49.00			48.00 49.00 50.00 51.00 52.00 53.00	50/29 50/29 50/28 50/27 50/29 50/25		P-46 P-47 P-48 P-49 P-50 P-51	48.00 48.44 49.00 49.44 50.00 50.43 51.00 51.42 52.00 52.44 53.00			100 Jonational Control
1-60.30 34-1-0-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	0 53.40	5.40					This borehole is terminated according to the termination criteri	at 53.00m, ia.	53.00			54.00 55.00 56.00 57.00 58.00 59.00 60.00	- 99 Mar			53,40			
NO P Rela V	TES Relative density trive density ery loose Loose dium dense Dense ery dense	SPT	ription N-Value (mm/ 0 = 4 4 = 10 0 = 30 0 = 50 Ver 50	Consist Consistence Very soft Soft Firm Stift Very stift Hard	iency descrit γ SP1 1	N-Value may ander 2 2 = 4 5 - 8 9 - 15 6 - 30 over 30	Sample key Pinerbol sample PBT Parmoni Pinerbol sample PST Parmoni Pinerbol sample VS Vane SS Pinerbol sampler PST Parmoni Part (Maintenbel Sampler) PST Parasen Part (Maintenbel Sampler) PST Parasen Rock core sample 0 0 23 55 Rock core sample S0 72 50 72 75 50 72 75 50 72 75 50 72 75 75 75 75 75 75<	hilliny Test hear Test rancter Test 0 Term 5 Very poor 0 Voor 1 5 Fair 0 Good 00 Excellent	Pi Term Very thick Thick Medium Thin Very thi hickly lamin Thinly lamin	anner str	acture Spacing > 600 - 200 - 60 - 20 - 6 - <	2000 2000 600 200 60 20 5	Very w Wide Medi Close Very ek Extremely <u>Remarks</u>	Discontinuities Term Spacing (r) idely spaced > 26 y spaced 600 - 21 am spaced 200 - 6 1/y spaced 60 - 21 socily spaced 200 - 6 c alosely spaced 200 - 8	300 000 000 00 00 00 00 00	FGEX Revision N Revision E	FUKKEN Consultin Yangon Mi istratin Yangon Mi istratin Yangon Y	Rev: 1 12.12	LTD. Neers) cooler/res without 2016

出典: JICA 調査団

図 4.1.28 ボーリング調査結果 BH-BD-05(2)

во	RE H	DLE N	o. Bl	1-BD-06				BO	RING	LOC	3						Job 1	No. F. Sh	KYB-20 eet No.	16-02.	5 OF 2	
PR	DJECT	NAME	: <u>G</u> co	technical St	urvey on th	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	r	: <u>TO</u>	HO "D1"		-	DATE	: 13	12.2016	~ 22.1	2.2016	_	
LO	CATIO	N	Bes	ide Existing	Bago Rive	r Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulatio	- CLI	ENT		1.1.1				
CO	ORDIN	ATE	: E 20	04845.093 :	N 1858556	.617 DE	РТН :	59.00m	GROUND W	ATER LE	VEL	: <u>ver</u> : Un	der River	Bed	-	NIPPO	V KO	EI C	O., 1	LTL).	
		1	-	1						1	8	-	1	STANDARD	PENETRATI	ON TEST	PMT	SAM	PLING	-	T	-
						NSITY ENCY		The second second		H (m)	TH (m))	H (m)		TEST M	THOD (AS	TM)	1.0	-			-	
Ê.	ION (E	3L - (m)	IESS (n	W	æ	VE DE	AME	SOIL DESCRIPTION		DEPT	IC DEP	DEPTI	GL - (m)	due 30cm)	CURVEOF	BLOW •	RI.E & No.)	m) - 70			-	(m)
CALE	LEVAT	EPTHO	HICKN	IAGR/	oron	ELATI (or) CO	OIL N			ATE&	DIAN	VATER	EPTH	N-Va Blows/	(Blows	/ 30cm)	SAM (Type	EPTH	CR (%	CR (%)	OD (%	THUR .
s	-	5	-	3.2.3	0	2	s				0	~	4	~ 0	10 20 3	30 40 30	-	0	-	40	× ×	9
I				* * *	brownish	Very	Silty	Very loose to loose, brownish gra-	y, moist, fine				1.00	3/30			P-1	1.00				ļ
2				* * *	gray	loose to	SAND	to medium grained, Silty SAND (River deposit)				11	2.00	NAS			P.2	2.00			all and	2
1				* * *		loose							2.00	I			-	2.45			and the	2
Shund								GL: (4.00 ~ 4.45)m and (9.00 ~ 9 fine to medium grained, low pl	9.45)m, gray, lastic Clayey				3.00	4/30			P-3	3.45			dum	2
4				* * *				SAND layer is observed as interca those depths	lated layer at				4.00	3/30			P-4	4.00	2.1		al la	4
5				121				1					5.00	4/30			P-5	5,00			unit	5
6				4.4.8									6.00	2/20			P.6	5.45 6.00	21			6
7					1								2.00	3/30			1.4	6.45	1		man	7
شسب					1						-			6/30			P-7	7.45			al and	1
8 min											8.00 Ø112		8.00	5/30			P-8	8.00			milu	8.
9													9.00	4/30			P-9	9.00			and a	9
10	14.41	10.00	10.00	* * *	-								10.00	13/30			P-10	9.45				10
					-	1		the loss from the second for						15/50	\mathbb{N}			10.45			-	11
- International Providence Provid				8 × 8	gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND	e to medium					21/30	1		P-11	11.45			hum	1.1
12				* * *				Thin clay layer is intercalated in the	is layer	17.12.16			12.00	13/30	1		P-12	12.00			il.	2
13					1							Ľ	13.00	15/30	}		P-13	13.00			in the second	13
14					1								14.00	13/30	1		P-14	14.00	2.1			14
15				***									15.00	10.00				14.45				15
Innin		15.00	c 00	* * *	1									13/30	V I		1-15	15.45			Inni	1
103-	20.41	16.00	6.00				-	The second sector has a solution	and and they	1			16.00	8/30			P-16	16.00			alum	.0
17				1999	gray	rum	CLAI	CLAY with silt and trace of fine gr	ained sand	1			17.00				D T-1	17.00 (m) cm			in the second	.7
18	22.41	18.00	2.00							1			18.00	18/30	1		P-17	17.80				18
19					gray	Medium	Clayey	Medium dense to loose, gray, n	noist, fine to				19.00	19/20			P.18	18.45			E	19
				0 - 0 - 0 - 0 - 0		to	SAND	medium grained, low plastic Claye	y SAND				20.00	16/30	И		1-10	19.45			mili	20
201														7/30	1		P-19	20.00			lum	10
213-	25.41	21.00	3.00				100.00	A CALCULAR AND A CALCULAR	5 J.S.C				21.00	5/30			P-20	21.00			12	21
22					gray	Firm	CLAY	Firm, gray, moist, low to mediu CLAY with silt and trace of fine gr	im plasticity, ained sand	1			22.00	5/30			P-21	22.00			12	22
23													23.00	8/30			P-22	23.00			1	23
24	28.41	24.00	3.00		_								24.00		N			23.45			and the second	24
Innin										1				33/30	1		P-23	24.45			hum	
25					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, n medium grained, low plastic Clave	noist, fine to y SAND				25.00	20/30	1		P-24	25.00			2	<u>1</u> 5
26						to dense		100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2.01				26.00	20/30	+		P-25	26.00			2	26
27										18.12.16			27.00	20/30			P-26	27.00			1	27
283										27.00			28.00	21/20			P 27	27.45			1	28
201													20.00	21/30			1-2/	28.45			hundred	20
alunt													29.00	26/30	1		P-28	29.00			alana	2
30													30.00	28/30			P-29	30.00			13	30
31	NOT						100	Continue to next sheet		Di	anner str	acture	31.00	2.01	Disconti	nuities					Ē	31
ſ	Rel	ative dens	ity desc	ription	Conse	stency descrip	tion	P.1 Dimethel sample PBT Permeab	ility Test	Term Very this		Spacing	g (mm) 2000	Vert	Term idely snaced	Spacing (n	im)		UKKE	CO.	LTD.	1
	Relativ	e density	SP	N-Value (most)	Consisten Verv eat	cy SPT	N-Value main	T-1 Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure	ear Test meter Test	Thick	-	600 -	2000	Wid	ely spaced	600 - 20	00	FGEX	Yangon	g chgi Branch sast, soe	1) 420089762	
	La	nose m dense		4 - 10	Soft		2 = 4	(Denison sampler) Rock core sample (Single core tabe) D = 25	Very poor	Thin Very thi		60 -	200	Clos	aly spaced	60 - 20	0	Revision N	0.	Rev:	DD	
	D	ense dense	3	30 - 50 over 50	Stiff Very still	r 1	9 - 15	Rock core sample (Double core tubo) 25 - 50 50 - 75	Poor 1 Fair	hickly lami	nated	6 -	20 6	Extreme	y closely space	red < 20		Revision E	late	26.1	2.2016]
				l	Hard		ver 30	(Core Loss) 75 - 90. ₩1 Water sample 90 - 100	Good Excellent					Actuarks								

出典: JICA 調査団

図 4.1.29 ボーリング調査結果 BH-BD-06(1)

BC	ORE H	OLE No	BI	I-BD-06				BC	RING	LOC	1					-	Job N	o. Fi Sh	KYB-20 eet No.	2	OF 2
PR	OJECT	NAME	Geo	technical Su	arvey on the	detailed d	esign for the	e Bago River Bridge Construction Project	BORING EQ	JIPMEN	0	: <u>TO</u>	10 "D1"	· · · · ·	3. 	DATE	: 17	12.2016	~ 22.12	2016	
LC	CATIC	N	Besi	ide Existing	Bago River	Bridge (I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	t Circulatio	CLIE/	<u>VT</u>	1.1				
C	OUND	ATE	: -4.4	4845.093 ;	N 1858556.	617 DE	PTH :	59.00m	GROUND W.	NATER LE	VEL	: Unc	lical fer River	Bed	21	NIPPO	N KO	EIC	0.,1	LTL).
	-					1					*		1	STANDARD	PENETRATIO	N TEST	_	SAM	PLING		Т
	(m)	e .	(iii			ENSITY				(m) 11	PTH (m) S (mm)	TH (m)		-	CURVE OF 1	BLOW •	1.2	Ê	T	T	-
E (m)	VULL	1 GL - (t	CNESS	KAM	UR	TIVE D	NAME	SOIL DESCRIPTION		& DEP	AG (DB	R DEP	1.GL - (r	Value v / 30cm	N-Vi	ulue	MPLE c & No	i GL - (i	(%	2	%) E (m)
SCALI	ELEV	HI430	THICH	DIAG	coto	RELA (or) (SOIL			DATE	CASID	WATE	DEPTI	(Blow	(Blows / 10 20 3)	30cm) 0 40 50	SA (Typ	DEPTH	TCR (SCR (RQD (
. In the second s							11.5		1.6.5	1.71		11			11/						-
21					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, r medium grained, low plastic Claye	noist, fine to y SAND				31.00	24/30			P-30	31.00			alum
32				*** ** ***		to dense		and the second se					32.00	40/30			P-31	32.00			132
33													33.00	31/30			P-32	33.00			33
34													34.00	26/30	11		P-33	34.00			34
35													35.00					34.45			35
Innin				1927										21/30			P-34	35,45	12		
202												12	36.00	21/30			P-35	36.00			120
37	41.41	37.00	3.00	-	-	-				19.12.16 37.00			37.00	36/30			P-36	37.00	1		37
38					Prav	Medium	Silty	Medium dense to dense, grav, r	noist. fine to				38.00	26/30			P-37	38.00			38
39	h			2 4 S	2.4	dense to	SAND	medium grained, Silty SAND					39.00	18/30	11		P-38	39.00			39
40						dense		GL: (39.00 ~ 39.45)m, (43.00 ~	43.45)m and				40.00	10/20			D 20	39.45 40.00			40
11								(46.00 ~ 46.45)m, medium dens gray, fine to medium grained,	e and dense, low plastic				11.00	19/30	N		F-39	40.45			
+1				* * *				Clayey SAND layer is observed a layer at those depths	is intercalated			15	+1.00	32/30			P-40	41.45			themas a
421				M R R				The state of the s				19	42.00	25/30			P-41	42.00			42
43								i hin clay layer is intercalated in th	is layer				43.00	31/30			P-42	43.00	έn.		43
44													44.00	26/30	14		P-43	44.00			44
45													45.00	28/30	11		P-44	44.45			45
46				9 4 4 = - 8									46.00					45.45			46
- International Provide Provid				***									17.00	28/30	11		P-45	46.45			hund
4 Junt										47.00			47.00	45/30		2	P-46	47.45			thum
48	-52.41	48.00 1	1.00				1.						48.00	28/30	1		P-47	48.00 48.45			E48
49					gray	Very	Sandy	Very stiff to hard, gray, moist, find plasticity, Sandy CLAY	e grained, low	h.,			49.00	31/30			P-48	49.00			49
50						to hard		hand do not					50.00	31/30			P-49	50.00			50
51													51.00	30/30			P-50	51.00			51
52													52.00					51.45	0		52
1													62.00	32/30			1-51	52.45	81		
Solution													33.00	31/30			P-52	53.45			alunt
541	-58.41	54.00	6.00		-		-						54.00	50/25			P-53	54.00 54.40			154
55					greenish	Very	Clayey	Very dense, greenish gray to ye	llowish gray,				55.00	50/21		+	P-54	55.00 55.36			55
56					to vellowish	dense	SAND	Clayey SAND	low plastic	21.12.16		16	56.00	50/20			P-55	56.00			56
57					gray								57.00	50/20			P-56	57.00			57
58													58.00					57.35			58
50 mm													50.00	50/25		I	r-3/	58.40			Interior
2 Alumbra	-63.83	59.42	5.42		-		1			59.00	1		39.00	50/27		1	P-58	59.42			E29
60								This borehole is terminated according to the termination criteri	at 59.00m, a.				60.00								60
61	NOT	ES	_			_		Sample key		Pl	anner str	ucture	61.00		Discontin	uities					E61
	Re	lative densi	ty descri	N-Value	Consis	ency descrip	ntion N-Value	P-1 Distanbed sample (SPT ample) PBT Permeat T_1 Undisturbed Sample VS View 05	ality Test	Term Very thic		Spacing >	2000	Very	Term widely spaced	Spacing (1 > 20	mm))00		UKKEN	d CO., g Engin	LTD.
	Vet	y loose		0 - 4	Very soft		under 2	PMT Pressure (Piston sampler) PMT Pressure (Denison sampler)	meter Test	Thick Medium	-	600 - 200 -	2000	Me	dely spaced lium spaced	600 - 20 200 - 6	500	GEX	Yangon	Branch 1896, 969) - 420069762 lant.com
	L. Media	oose am dense	1	4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tabe)	Very poor	Thin Very thi		60 - 20 -	200 60	Very	sely spaced	60 - 20	00	levision N	o.	Rev: 1	00
8	Ver	v dense	0	ver 50	Stiff Very stiff	1	6 - 30	Kock core sample (Double core tube) Rock core sample (Double core tube) So - 75	Fair J	nickly lami hinly lami	nated	6 - <	20 6	Remarks	ny closely space	u] <20	<u> </u>	- renom D	-10	-0.12	
				L.	Uno		101.00	8 w-1 Water sample 90 - 10	0 Excellent				-3	1							

出典: JICA 調査団

図 4.1.30 ボーリング調査結果 BH-BD-06(2)

BC	ORE H	OLE N	o. Bl	1-BD-07	1			BO	RING	LOC	2						Job N	o. F. Sh	KYB-20 eet No.	16-02:	5 OF 2
PF	OJECT	NAME	: <u>Geo</u> : <u>Bes</u>	dechnical S ide Existing	arvey on the g Bago Rive	: detailed d r Bridge (T	esign for the	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ BORING ME	UIPMEN THOD	r	: <u>TO</u> : <u>Rot</u>	HO "D1" ary Direct	Circulatio		DATE	<u>: 17</u>	.12.2016	~ 20.12	2.2016	_
GI	OUND	LEVEL	: <u>-6,3</u> : <u>E 20</u>	5m 04958.214 ;	N 1858360	. <u>117</u> DI	ртн :_	51.00m	ORIENTATI	ON ATER LE	VEL	: <u>Ver</u> : <u>Un</u>	tical der River	Bed	-	NIPPO	N KO	EI C	0., 1	LTL).
1						25				1	(m) &	î	s	TANDARD TEST M	PENETRATIO ETHOD (AST	N TEST M)	РМТ	SAM	PLING		
SCALE (m)	ELEVATION (m)	DEPTH GL-+(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSI (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (m	WATER DEPTH (#	DEPTH GL - (m)	N-Value (Blows/30cm)	CURVE OF 1 N-V: (Blows / 10 20 30	BLOW • Hoe 30cm) 0 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
	-12 35	6.00	6.00		brownish gray	Very loose to loose	Silty SAND	Very loose to loose, brownish gra to medium grained, Silty SAND (River deposit)	y, moist, fine				1.00 2.00 3.00 4.00 5.00	5/30 3/30 8/30 9/30 10/30			P-1 P-2 P-3 P-4 P-5	1.00 1.45 2.00 2.45 3.00 3.45 4.00 4.45 5.00 5.45 6.00			undung lung lung 4
June 2 June	THE	0.00			brownish gray	Loose	SAND	Loose, brownish gray, moist, fin grained, SAND	e to medium				7.00	8/30 6/30			P-6 P-7	6.45 7.00 7.45			lun 7
8 101 01 101 101 101 101 101 101 101 101	-19.35	8.00	2.00		gray	Very loose to medium dense	Silty SAND	Very loose to medium dense, gra to medium grained, Silty SAND GL:(10.00~10.45)m, thin clay intercelated at that depth	y, moist, fine	17.12.16 10.00	8.00 Ø112		8.00 9.00 10.00 11.00 12.00	3/30 13/30 11/30 14/30 17/30			P-8 P-9 P-10 P-11 P-12	8.00 8.45 9,00 9,45 10.00 10.45 11.00 11.45 12.00 12.45 13.00			"dumphanining and
141 151 161 171 181					gray	Loose to medium dense	Clayey SAND	Loose to medium dense, gray, n medium grained, low plastic Claye	noist, fine to y SAND				14.00 15.00 16.00 17.00 18.00	9/30 9/30 13/30 14/30			P-13 P-14 P-15 P-16 P-17 P-18	13.45 14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45 18.00			المستوسية والمستوسية
19 20	-25.35	<u>19.00</u> 21.00	6.00		gray	Firm	CLAY	Firm, gray, moist, low to mediu CLAY with silt and trace of fine gr	im plasticity, ained sand				19.00 20.00	7/30			P-19	18.45 19.00 19.45 20.00 (m) cm 20.70 21.00			unithunin2
22	-28.35	22.00	1.00		gray	Loose	Clayey SAND	Loose, gray, moist, fine to medium plastic Clayey SAND	grained, low				22.00	5/30			P-21	21.45 22.00			2
23	-30.35	24.00	2.00		gray	Firm to very stiff	CLAY	Firm to very stiff, gray, moist, lo plasticity, CLAY with silt and grained sand	w to medium trace of fine				23.00	18/30			P-22	22.45 23.00 23.45 24.00			un 2 1 1 1 2
25 26 27 28 29		20.00	6.60		gray.	Medium dense	Clayey SAND	Medium dense, gray, moist, fin grained, low plastic Clayey SAND	to medium	18,12,16			25.00 26.00 27.00 28.00 29.00	25/30 13/30 14/30 18/30 23/30	J.		P-24 P-25 P-26 P-27 P-28	24.45 25.00 25.45 26.00 26.45 27.00 27.45 28.00 28.45 29.00 29.45			ในแม้มีและมีในแม้มีและมีในและมี
31	-30.33	20.00	0.00	* * ×				Continue to next sheet					31.00	30/30			P-29	30.00			dana
	NOT Relativ Ver L Medic D Very	ES lative density ve density y loose oose am dense kense y dense	SP1	ription F N-Value 0 - 4 4 - 10 0 - 30 0 - 30 0 - 50 sver 50	Consis Consistenc Very soft Soft Firm Stiff Very stiff Hard	tency descrip	tion N-Value (max) moder 2 2 = 4 5 = 8 9 = 15 6 = 30 ver 30	Sample Scy Pr Dimuted sample (SP2 maple) PBT Permately provide sample Provide Sample VS Vac SN Provide Sample PMT Permately Provide Sample Provide Sample PMT Permately Provide Sample Rock core sample (Rock core sample) Rock core sample Sample Sample Rock core sample Sample Sample Sample Rock core sample (Rock core sample) Rock core sample Sample Sample Sample Sample Sa	ility Test ear Test meter Test Very poor Poor Fait Good 0 Excellent	P Term Very thic Thick Mediann Thin Very thi hickly lami Thinly lami	k n nated	spacing 500 - 200 - 60 - 20 - 60 - 20 - 6 - 3 - 6 - 3 - 4 - 5 - 5 - 5 - 6 - 6 - 6 - 5 - 5 - 6 - 6 - 6 - 7 - 7 - 8 - 7 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8	2 (mm) 2000 2000 - 600 200 - 60 20 6	Very w Wid Med Clos Very e Extremel	Discontinu Term idely spaced ely spaced ann spaced ely spaced losely spaced y closely space	Spacing (r > 20 600 - 20 200 - 6 60 - 20 20 - 6 4 < 20	11m) 100 100 100 100 100 100 100 10	TGEX Revision D	FUKKE/ Consultin Yangon Willion - action willion - action	N CO., g Engi Branch sess se percenta Rev: 26.12	E-3 LTD, neers)

出典: JICA 調査団

図 4.1.31 ボーリング調査結果 BH-BD-07(1)

BOR	E HO	LE No	o. Bl	I-BD-07				<u>B O</u>	RING	LOC	ł					-	Job 1	lo. Fi Sh	KYB-201 eet No.	5-025 2 O	F 2
PROJ	ECT N	AME	: <u>Geo</u>	technical Si ide Existing	urvey on the Bago Rive	e detailed d r Bridge (T	esign for the	Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ BORING ME	UIPMENT		: <u>TOF</u> : <u>Rota</u>	IO "D1" ary Direc	Circulatio		DATE	<u>: 1</u> 5	.12.2016	~ 20.12.	2016	201
GRO	UND L RDINA	EVEL	: <u>-6.3</u> : <u>E 20</u>	5m)4958.214 ;	N 1858360	<u>.117</u> DE	ртн :_	51.00m	ORIENTATIO GROUND W	ON ATER LE	VEL	· Vert	ical ler Rīver	Bed		NIPPO	ON KO	EI C	0., L	TD.	
T						53			-	Ê	(in) &	î	5	TANDARD TEST M	PENETRATION ETHOD (ASTN	(TEST ()		SAM	PLING		Γ
(m)	(III) NOIT	(IL-(III)	VESS (m)	W	æ	IVE DENSI	AME	SOIL DESCRIPTION		DEPTH	J (DEPTH	DEPTH (GL - (m)	30cm)	CURVE OF B	LOW •	(PLE & No.)	(m) - 10	-		(11)
SCALE	ELEVA	DEPTH	THICK	DIAGR	COLOU	RELAT (or) CC	SOIL N			DATE	CASING	WATER	DEPTH	(Blows	(Blows/) 10 20 30	30cm) 40 50	SAA	DEPTH	TCR (%	ROD (6)	SCALE
31 32 33 33 34 35 36 36 37 38 39 40 41 42 43 30 44 44 44 44 44 44 44 44 44 44 44 44 44).35 4	4.00	14.00		gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, n medium grained, Silty SAND GL: (36.00 ~ 36.45)m and (38.0 dense, gray, fine to medium graine Clayey SAND layer is observed a layer at those depths Thin clay layer is intercalated in th	ooist, fine to) ~ 38,45)m, d, low plastic s intercalated is layer ow plasticity,	19.12.16 41.00			31,00 32,00 33,00 33,00 33,00 33,00 33,00 33,00 33,00 33,00 33,00 40,000 40,00000000	23/30 24/30 25/30 30/30 38/30 31/30 31/30 29/30 35/30 30/30 29/30 31/30		\rightarrow	P-30 P-31 P-32 P-33 P-34 P-35 P-36 P-37 P-38 P-39 P-40 P-41 P-42 P-43 P-42 P-43 P-44	31.00 31.45 32.00 32.45 33.00 33.45 35.00 35.45 35.00 35.45 37.00 37.45 37.00 39.45 38.00 39.45 40.00 40.45 41.00 41.45 42.00 43.45 44.00			31 32 33 33 34 36 36 37 38 39 40 40 41 41 41 41 41 41 41 41 41 41 41 41 41
46 <u>111111111111111111111111111111111111</u>	2.35 4	6.00	2.00		greenish gray to yellowish gray	Very dense	Clayey SAND	Very dense, greenish gray to ye moist, fine to medium grained, Clayey SAND	llowish gray, low plastic	20.12.16 51.00			46.00 47.00 48.00 49.00 50.00	50/29 50/29 50/26 50/28 50/25 50/25		•	P-45 P-46 P-47 P-48 P-49 P-50	45.45 46.00 46.44 47.00 47.44 48.00 48.41 49.00 49.43 50.00 50.40 51.40			40 47 48 49 50 51
								This borehole is terminated according to the termination criteri	at 51.00m, a.				52.00 53.00 54.00 55.000								52 53 54 55 56 57 58 59 50 50 50 50 50 50 50 50 50 50 50 50 50
	Relati Relative of Very li Loos Medium Den Very d	ive dens density oose se dense se iense	ity descr SPI t 3 0	ription F N-Value 2005 0 - 4 4 - 10 0 - 30 0 - 30 0 - 50 wer 50	Consistent Consistent Very soft Soft Firm Stiff Very stiff Hard	I denicy descrip	tion N-Value more ander 2 2 = 4 5 - 15 5 - 30 ver 30	Sample key ▶ P. Donted sample. port angle: PBT Permade ■ A. Donted sample. VS Vac. SN ■ A. Donted Sample. PMT Permade ■ A. Dontend Sample. PMT Permade ■ A. Dontend Sample. PMT Permade ■ A. Dontend Sample. PMT Permade ■ Collection sample. 0.252 SS Book core cample. SS - 50 SS - 50 ■ Core Loss 75 - 75 TS - 50 ■ W Watt angle 50 - 101 50 - 101	slity Ten cer Tist meter Test Very post Poor T Fair Gioad D Excellent	Term Very thiel Thick Medium Thin Very thi Itickly lami Thinly lamin	nmer stra	spacing Spacing 600 - 200 - 60 - 20 - 60 - 60 - < 1 6 - < 1	(mm) 2000 2000 600 200 60 200 5	Very v Wid Med Clo Very c Extreme <u>Remarks</u>	Discontinui Term videly spaced iely spaced iely spaced iely spaced losely spaced losely spaced losely spaced	ities Spacing >2 600 - 200 - 60 - 200 - 20 - 20 - 20 - 20 -	(num) 2000 2000 600 200 60 80	FGEX Revision D	EUKKEN Consulting Yangon B W 1957- Note W 1957- Note Market Spectral	CO., L Engine ranch) es ser-a constant Rev: 00 26.12.2	E61

出典: JICA 調査団

図 4.1.32 ボーリング調査結果 BH-BD-07(2)

BC	RE H	OLE N	o. Bl	1-BD-08				BC	RING	LOC	3						Job N	o. F. Sh	KYB-20 eet No.	16-02.	5 OF 3
PR LC	OJECT CATIC	NAME	: <u>Geo</u>	technical S	urvey on the g Bago Rive	e detailed d r Bridge (1	lesign for the	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQU BORING MET	IPMEN	т	: <u>TOI</u> : <u>Rot</u>	HO "D1" ary Direc	t Circulatio	n CLIENT	DATE	: 24	.12.2016	~ 29.1	2.2016	5
GR	OUND	LEVEL NATE	: <u>-6.5</u> : <u>E 2</u>	6m 05013.754 ;	N 1858268	627 DI	EPTH :_	61.00m	GROUND WA	IN ATER LI	EVEL	: <u>Ver</u> : <u>Un</u>	tical der River	Bed		IPPON	KO	EI C	0.,	LTI) .
			-			YTT Y				(m)	((m) &	â		STANDARD TEST N	PENETRATION ETHOD (ASTM	TEST)	РМТ	SAM	PLING	-	
SCALE (m)	ELEVATION (m)	DEPTH GL-(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTI) DIAMETER (m	WATER DEPTH (DEPTH GL + (m)	N-Value (Blows / 30cm)	CURVE OF BLA N-Valua (Blows / 30 10 20 30	bw • 5 6 6 6 70 70	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
antimportation alout alout alout alout alout alout a	14.56		\$ 00		brownish gray	Very loose to loose	Silty SAND	Very loose to loose, brownish gra to medium grained, Silty SAND (River deposit)	y, moist, fine				1.00 2.00 3.00 4.00 5.00 6.00 7.00	2/30 2/30 2/30 3/30 5/30 4/30			P-1 P-2 P-3 P-4 P-5 P-6 P-7	1.00 1.45 2.00 2.45 3.00 3.45 4.00 4.45 5.00 5.45 6.00 6.45 7.00 7.45 * 00			
8 9 10 11 12 12 13	-14.56	8.00	5.00		gray.	Medium dense to dense	Silty SAND	Medium dense to dense, gray, n medium grained, Silty SAND Thin clay layer is intercalated in th	noist, fine to is layer		<u>10.00</u> Ø112	<u>)</u>	8.00 9.00 10.00 11.00 12.00	19/30 16/30 18/30 15/30 34/30			P-8 P-9 P-10 P-11 P-12	8.00 8.45 9.00 9.45 10.00 10.45 11.00 11.45 12.00 12.45 13.00			ويستوالي والمسالية والمسالية
14/000000000000000000000000000000000000					gray	Loose to medium dense	Clayey SAND	Loose to medium dense, gray, n medium grained, low plastic Claye	noist, fine to y SAND				14.00 15.00 15.00 16.00	6/30 9/30 12/30 13/30 13/30			P-13 P-14 P-15 P-16 P-17	13.45 14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45			
18 19 19 19 19 19 19 19 19 19 19 19 19 19	24.56	18.00	5.00		gray	Suff to firm	CLAY	Stiff to firm, gray, moist, low plasticity, CLAY with silt and grained sand	to medium trace of fine	<u>24,12,1</u> 4 19.00	5		19.00 19.00 20.00 21.00 22.00 23.00	14/30 6/30 6/30 6/30 9/30			P-18 P-19 P-20 P-21 P-22	18.00 18.45 19.00 19.45 20.00 (**) em 20.80 21.45 22.00 21.45 22.00 22.45 23.00 23.45			21 21 21 21 21 22 21 22
24 25 26 27 28 29 29	30.56	24.00	6.00		gray	Very stiff to firm	Sandy CLAY	Very stiff to firm, gray, moist, fin plasticity, Sandy CLAY	e grained, low				24.00 25.00 26.00 27.00 28.00 29.00	24/30 25/30 7/30 9/30 6/30 14/30			P-23 P-24 P-25 P-26 P-27 P-28	24.00 24.45 25.00 25.45 26.00 26.45 27.00 27.45 28.00 28.45 29.00 29.45			22 22 21 22 21 22 21 22 22 22 22 22 22 2
301	36.56 NOT Re Relativ Ver L Media D Ver	30.00 ES hative density y loose oose um dense Nense y dense	6.00	ription F N-Value rest 0 - 4 4 - 10 0 - 30 10 - 50 tver 50	gray Consistence Very soft Soft Firm Stiff Very stiff Hard	Stiff tency descripty y SPI	CLAY tion 7 N-Value moder 2 - 4 5 - 8 9 - 15 6 - 30 over 30	Stiff, gray, moist, low to media CLAY with silt and trace of fine gray Continue to need sheet Sample kee Photometrad work Pist Personal P Dimetrad work Pist Personal In Dimetrad work Pist Personal In Lindword sharph Pist Personal In Lindword Sample Pist Personal In Lindword Sample Pist Personal Reck core sample ROD (% Rock core sample 23 - 23 Rock core sample 23 - 33 Wit Ware metric 75 - 99 Wit Ware metric 75 - 99	im plasticity, rained sand	P Term Very thic Thick Medium Thin Very thi tickly larm hinly larm	k. k. in inated nated	spacing > 500 - 200 - 200 - 6 - <	30.00 31,00 2000 2000 2000 2000 200 60 20 60 20 60	11/30 Very Win Mee Clo Very o Extreme Remarks	Discontinuiti Term widely spaced fely spaced fely spaced fosely spaced losely spaced ly closely spaced	Spacing (mr > 2000 600 - 2000 200 - 600 60 - 200 200 - 60 < 20	P-29	30,00 30,45	UKKE Consultar Yangon w asr ao an anti	N CO. g Engi Branch tesa se Rev: 06.01	LTD. noers)

出典: JICA 調査団

図 4.1.33 ボーリング調査結果 BH-BD-08(1)

BC	RE H	OLE N	o. Bł	I-BD-08	11			BO	RING	LOG	5							Job N	lo. Fl Sh	YB-201 ret No	6-025	DF 3
PE	OJECT	NAME	: <u>Geo</u>	itechnical S ide Existing	Bago Rive	e detailed d T Bridge (T	esign for the	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQU BORING ME	JIPMENT THOD	1 P	: <u>TOI</u> : <u>Rot</u>	IO "D1" ary Direc	t Circulatio	<u>m</u> <u>CL</u>	DA IENT	TE	: 24	.12.2016	~ 29.12	2016	_
C	ORDIN	LEVEL	: <u>-6.5</u> : <u>E 20</u>	6m 05013.754 ;	N 1858268	.627 DE	ртн :	61.00m	GROUND W.	ON ATER LE	VEL	: <u>Ven</u> : <u>Une</u>	tical der River	Bed		NL	PPO	N KO	EI C	0., L	TD	•
			-			λΈλ	-			Ê	(m)&	â		STANDARD TEST N	PENETRA IETHOD (/	TION TES ASTM)	я		SAM	PLING		
SCALE (m)	ELEVATION (m)	DEPTH GL-(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTH DIAMETER (m	WATER DEPTH ([JEPTH (GL. + (m)	N-Value (Blows / 30cm)	CURVE () (Blo 10 20	OF BLOW 4-Value ws / 30cm 30 4	•	SAMPLE (Type & No.)	(iii) - TO FLL-(iii)	TCR (%)	34.K (78)	KQU(7%) SCALE (m)
31	-38.56	32.00	2.00		gray	Stiff	CLAY	Stiff, gray, moist, low to mediu CLAY with silt and trace of fine gr	um plasticity, ained sand				31.00	14/30	ł			P-30	31.00 31.45 32.00		1	31
33	-40.56	34.00	2.00		gray	Very stiff to stiff	Sandy CLAY	Very stiff to stiff, gray, moist, fine plasticity, Sandy CLAY	e grained, low				33.00	11/30	K			P-32	32.45 33.00 33.45 34.00			huunaa 33
35	-43.56	37.00	3.00	****	gray.	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND Thin clay layer is intercalated in th	e to medium is layer	25.12.16 35.00			35.00 36.00 37.00	23/30 23/30 23/30				P-35 P-34 P-35	34.45 35.00 35.45 36.00 36.45 37.00			10035 10035 10035 10035
38 39 40 m					gray	Very stiff	Sandy CLAY	very stiff, gray, moist, fine p plasticity, Sandy CLAY	grained, low				38.00 39.00 40.00	25/30 16/30 25/30 26/30	K			P-30 P-37 P-38 P-39	37.45 38.00 38.45 39.00 39.45 40.00 40.45			101138 101139 101139 101139
41 42 43 44 45 46 47	-47.56	41.00	4.00		gray	Medium dense to very dense	Silty SAND	Médium dense to very dense, gra to médium grained, Silty SAND Thin clay layer is intercalated in th	y, moist, fine is layer	26.12.16 41.00			41.00 42.00 43.00 44.00 45.00 46.00 47.00	34/30 30/30 27/30 44/30 32/30 50/30 37/30		N N	>	P-40 P-41 P-42 P-43 P-44 P-45 P-46	41.00 41.45 42.00 42.45 43.00 43.45 44.00 44.45 45.00 45.45 46.00 46.45 47.00 47.45			41 42 43 44 44 45 46 47
48 49 50 51 52 53 54	-56.56	50.00	9.00		greenish gray to yellowish brown	Very dense	Clayey SAND	Very dense, greenish gray to yell moist, fine to medium grained, Clayey SAND	owish brown, low plastic	27.12.16 49.00			48.00 49.00 50.00 51.00 52.00 53.00 53.00	39/30 50/27 50/26 50/28 50/15 50/28 50/28				P-47 P-48 P-49 P-50 P-51 P-52 P-53	48.00 48.45 49.00 49.42 50.00 50.41 51.00 51.43 52.00 52.30 53.43 53.00 53.43 54.00 54.43			48 49 50 51 51 51 51 51 51 51 51 51 51 51 51 51
55	-61.56	55.00	3.00		yellowish brown	Hard	CLAY	Hard, yellowish brown, moist, lov plasticity, CLAY Thin fine sand layer is intercalated	w to medium in this layer	28.12.16 55.00			55.00 56.00 57,00	45/30 44/30 44/30			Į	P-54 P-55 P-56	55.00 55.45 56.00 56.45 57.00 57.45			55 56 57
59 60 minute	-04.30	30.00	3.00		yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, n medium grained, low plastic Claye Continue to and shoet	noist, fine to y SAND				59.00 60.00	50/23 50/18 50/10				P-57 P-58 P-59	59.00 59.00 59.33 60.00 60.25			100059 100059 100059 100059
	NOT Relativ Ver L Media D Ver	ES lative density y loose oose am dense tense y dense	SPI	ription FN-Value triad 0 - 4 4 - 10 0 - 30 0 - 50 over 50	Consistent Consistent Very soft Soft Firm Stiff Very stiff Hard	tency descrip cy SPT L u T h	tion N-Value iman inder 2 2 - 4 5 - 8 9 - 15 3 - 30 ver 30	Sample kcr ▶ [-1] Dimendel sample PBT Permedia ▶ [-1] (dimined Sample VSArs SR Vanz SR ▶ [-1] (dimined Sample VS Vanz SR ■ [-1] (dimined Sample VS Vanz SR ■ [-1] (dimined Sample VS Parenaeit ■ [-1] (dimined Sample VS Parenaeit ■ [-1] (dimine sample) Rock core sample [-2] S2 [-2] (dise Loss) [-3] S- 55 [-3] S- 75 [-2] (dise Loss) [-2] S0 - 10 [-3] S0 - 10	ility Test car Test meter Test Very poor Poor Fair Good 0 Excellent	Pla Term Very thick Thick Medium Thin Very thir hickly lamin hinly lamin	namer stru	acture Spacing 200 - 200 - 20 - 60 - 20 - 6 - <	2 (mm) 2000 2000 600 200 60 20 6	Very Wi Me Cle Very Extremu Remarks	Discon Term widely spaced dely spaced dium spaced sely spaced closely space ely closely sp	stinuities ad ad aced	Spacing (n > 20 600 - 20 200 - 60 60 - 20 20 - 60 < 20	nm) 00 00 00 10 7	Revision D	VKKEN Consulting Yangon E User 4010 www.mysenang 2, 2, 2, 2,	CO., Engin ranch) se, seg - reconstitute Rev: 0 06.01.	LTD. 9975 (20059762) (6.00m) 0 2017

出典: JICA 調査団

図 4.1.34 ボーリング調査結果 BH-BD-08(2)
BOR	E H	DLE N	o. BH	I-BD-08				BO	RING	LOG	l.								Job N	u. F. Sh	KYB-20 eet No.	3	25 OF
PRO.	ECT	NAME	: Geot	technical S	urvey on the	detailed d	lesign for th	e Bago River Bridge Construction Project	BORING EQ	JIPMEN'I	7	: <u>TO</u>	HO "D1"	-	-		DAT	E	2.24	12,2016	~ 29.1	2.201	6
LOC	ATIO	N	Besi	de Existing	g Bago River	Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulati	on .	CLIEN	Ľ				-		
GRO	UND	LEVEL	: -6.50	5013 757	N 1850360	627 D	PTH .	61.00m	GROUND	ATEPIS	VEL	· Ver	tical der Piur	Bad	-	Λ	VIP	PON	N KO	EI C	0.,	LT	D.
T	AULA T	I	: <u>E 20</u>	0013.754 ;	18 1858268.	uer Di	aritti :	onom.	-GROUND W	TERLE	VEL.	: Un	Let Kive	STANDARI	DPENET	RATION	TEST	-	100				_
	_		2			SITY				(iii	((mm	(iii	_	TEST	METHOI) (ASTM)	2	-	SAM	PLING	-	_
	m) NO	C - (m)	ESS (m)	2	0	E DEN (SISTE	BW	SOIL DESCRIPTION		DEPTH	DEPT ETER (DEPTH	(m)	(inclusion)	CUR	VE OF BL	WO.	•	LE No.)	(m) - 7			
	EVAT	PTU G	HCKN	AGRA	LOUR	ar) CO2	IL NA			VIE&	VSING	ATER	PILLO	N-Val		N-Valu Blows / 3	()cm)		SAMI SAMI	PTHG	R (%)	R (%)	(%) CC
	5	ā	P	6	ŏ	RE 8	SO		14.2. 14.1.1.1	'n	0	×	ă	C 0	10 :	20 30	40	50	-	DE	5 D	sc	×
The second	7 96	61.20	3 20		brown	dense	SAND	medium grained, low plastic Claye	y SAND	29.12.16			61.00	50/15			Т		P-60	61.00	21		
-0	1,80	01.30	3.30	94		-		This borehole is terminated	at 61.00m.	61.00			62.00	1.0016				T		61,30	21		
i i i i				11	11			according to the termination criteri	1.				02.00							1.010			
													63.00	8									
													64.00										
													65.00										
dimit.																							
													66.00										
THE PARTY													67.00										
													68.00										
													69.00										
													70.00										
													71.00										
													72.00										
													73.00										
													74.00										
													75 00										
													76.00										
1 mile													77.00										
													78 00										
													79.00										
													80.00										
													81.00										
													82.00										
The second													83.00										
													84.00										
and and a													95.00										
													85.00										
													86.00										
													87.00										
													00.00										
													88,00										
													89.00										
													90.00										
													01.00										
4	NOT	S		<u> </u>	L			Sample key		Pla	inner stri	Lucture	191.00	1	Di	scontinuit	ies						1113
+	Relatio	ative den	sity descr SPT	N-Value	Consist	ency descrip	nion N-Value	PBT Permeab PBT Permeab T_i Undesturbed Sample VS Vine Sb	ainy Test	Very thick		Spacing >	g (mm) -2000	Very	Term widely s	paced	Sp	acing (mi >200	m) 0		UKKE	N CO	L, LTD gineers
E	Ver	/ loose		0 - 4	Very soil		under 2	(Piston sampler) p-1 (Denison sampler) (Denison sampler)	meter Test	Thick Medium		600 - 200	2000	Ma	idely spa idium spa	eed reed	- 21	00 - 200 00 - 60	0	GEX	Vangor	Brans	27) 19 - 422069 1
F	L	oose m dense	- 10	4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube)	Very poor	Thin Very thir	0	60 - 20 -	200	Cle	osely spa closely s	ced paced		60 - 200 20 - 60		levision N	<i>v.</i>	Res	: 00
F	D	ense dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15	Rock core sample (Double core tube) 50 - 75	Poor T Fair T	hickly lamin	nated	6 -	20 6	Extrem	iely close	ly spaced		< 20		Revision D	ate	D6.)1,20/7
-			1 3		Hard		over 30	(Core Loss)	Good					Rentarks									

出典: JICA 調査団

図 4.1.35 ボーリング調査結果 BH-BD-08(3)

BO	RE H	OLE N	o. Bł	1-BD-09	11-			BO	RING	LOC	È						Job N	o. Fl She	KYB-20 eet No.	6-02	5 OF 3
PR	OJECT	NAME	Geo	technical S	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMEN'	0	; <u>TO</u>	io "D)"	_	-	DATE	: 22	.12.2016	~ 29.12	.2016	
LO	CATIO	N	Besi	ide Existing	Bago River	Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rota	ical	t Circulati	on <u>CLIE</u>	<u>vr</u>			-		
CO	ORDIN	ATE	: E 20	05073.242 ;	N 1858170.	312 DE	ртн :	62.00m	GROUND W.	ATER LE	VEL	: Unc	ler River	Bed		NIPPON	N KO	EI C	0., 1	TL).
											3).8			TANDAR	D PENETRATIO METHOD (AST	N TEST	PMT	SAM	PLING	-	T
	(11)	(u	(II)			TENCY		and a state		(m) H1	PTH (m)	(m) H1	î	-	CURVE OF I	BLOW .	~	Ê			
E (m)	VULL	3 GL-0	CNESS	RAM	UR	TIVE D	NAME	SOIL DESCRIPTION		& DEP	(G (DE	R DEP	1.61.+0	Value s / 30cm	N-Va	duë	MPLE × & No	HGL-((9)	(%	%) E (m)
SCAL	BLEV	DEPT	THIC	DIAG	COLO	RELA (or) (SOIL			DATE	CASID	WAT	LARC	(Blow	(Blows/ 10 20 30	30cm)) 40 50	SA (Type)	DEPT	TCR (SCR (RQD
Internet				* * *									1.00					1.00			
Thur				* * *	brownish gray	Very	Silty	Very loose to loose, brownish gray to medium grained. Silty SAND	y, moist, fine				1.00	2/30			P-1	1.45			- Linner
2				x 8 8	0.0	to loose		(River deposit)					2,00	4/30			P-2	2,00			12
3lin				* * *									3.00	1			PMT-01	3.00			13
4													4.00	2/30			P-3 P-4	3.50~3.95 4.00			4
5				N 4 8									5.00	200			DS	4.45			5
hum				* * *									6.00	3/30			1.3	5.45	51		
hund				N 16 1 • N 16						22.12.16			0.00	7/30			РМТ-02 Р-6	6.50-6.95	24		-
7				N 20 A						0.50			7.00	7/30			P-7	7.00	2.1		17
8	14.97	8.00	8.00		-								8.00	32/30		2	P-8	8.00			18
9 million				8 8 8	gray	Dense	Silty	Dense to loose, gray, moist, find	e to medium				9.00	18/30			p.9	9.00			19
10				8 x 8		to loose	SAND	grained, Silty SAND			10.00		10.00				PMT-03	9.45	2.1		10
11				* * *				GL: (17.00 ~ 17.45)m; medium fine to medium grained, low pl	dense, gray, astic Clayey		Ø112		11.00	16/30	1		P-10	11.00			E 11
1 miles				* * *				SAND layer is observed as interca that depth	lated layer at				12.00	17/30	Ī		P-11	11.45			Luna 12
14 million				* * *				Thin clay layer is intercalated in thi	is layer				12.00	16/30			P-12	12.00			alumn a
13													13:00	6/30			P-13	13.00	21		E13
14				+ + 9									14.00	11/30	N		P-14	14.00			14
15				6 × 8									15.00	28/30			P-15	15.00	2.		15
16													16.00	22/30			P-16	16.00			16
17										23,12,16			17.00	20/20			P-17	16.45			17
18	24.97	18.00	10.00	* * *						17,00			18:00	20130	$ \Lambda $			17.45			18
hum				1997			121							14/30	1		P-18	18.45			
19 mil					gray	Stiff	CLAY	Stiff to firm, gray, moist, low plasticity, CLAY with silt and	to medium trace of fine				19.00	6/30	1		P-19	19.00			EL19
201						firm		grained sand					20.00				0 T-1	20.00			20
21													21.00	6/30	+		P-20	21.00			21
22													22.00				E T-2	22.00			22
23	29.97	23.00	5.00										23.00	5/30			P-21	22.75 23.00			23
24						Elma	Barris .	Eine to come sliff anno model. Gan	material fam				24.00	12/20	\mathbf{V}		P.22	23.45			24
25					gray	to	CLAY	plasticity, Sandy CLAY	grained, low				25.00	12/30	N		1-22	24.45	24		125
lunt						stiff							25.00	23/30			P-23	25.45			linut
265													26.00	27/30			P-24	26.00 26.45			E26
27													27.00	13/30	1		P-25	27.00			27
28													28.00	10/30	4		P-26	28.00			28
29	35.97	29.00	6.00			1							29.00	11/30			P-27	29.00			29
30					gray	Stiff	CLAY	Stiff, gray, moist, low to mediu CLAY with silt and trace of fine gr	im plasticity, ained sand				30.00	10/20	1		P.28	29.45	3		30
31								Continue to next sheet				-LÎ	31.00	19(19)				30.45			31
	NOTI	ES lative dens	ity descr	ription I	Consist	ency descriv	tion	Sample key P-I Disturbed sample P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angele P-I dept angel	ility.Tist	Ph Term	anner stri	spacing	(mm)	_	Discontinu Term	ities Spacing (m	m)] [UKKEN	100	LTD
	Relativ	e density	SPT	N-Value	Consistenc	y SP1	N-Value	T-1 Undisturbed Sample VS Vane Sb (Piston sampler) PMT Processor	ear Test	Very thick Thick	6	> 600 -	2000 2000	Very	widely spaced idely spaced	> 200 600 - 200	10 20		Consultin Yangon	g Engi Branch)
	Very	y loose		0 - 4 4 - 10	Very soft Soft		nder 2 2 - 4	D-1 Undistuthed Sample (Denison sampler) Rock core sample	Tono	Medium		200 -	600 200	C	osely spaced	200 - 60 60 - 200	0	Cevision N	- 301-801 www.mysoma	Rev	lansicom 00
	D	ense	3	0 - 30 10 - 50	Firm		9 - 15	(Single core tabe) 0 - 25 Rock core sample (Double core tabe)	Poor T	very this hickly lami	nated	20 - 6 -	60 20	Extrem	closely spaced iely closely space	20 - 60 d <20		Revision D	ate	06,01	2017
	vely	cruntif	1 0	ind all	Hard	1	ver 30	Rock core sample (Core Loss) 30 - 75 W/ Water sample 90 - 100	Good Excellent	orany randor		<		Remarks							

出典: JICA 調査団

図 4.1.36 ボーリング調査結果 BH-BD-09(1)

BC	DRE H	OLE N	o. Bl	1-BD-09				BO	RING	LOC	1							Job N	lo. Fi Sh	KYB-20 eet No.	2	0F 3
PF	OJECT	NAME	: <u>G</u> eo	technical Sur	vey on the	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	DIPMENT	0	: <u>TO</u>	IO "D1"		5	DA	TE	: 22	.12.2016	~ 29.1	2.201	6
L	CATIO	N	Bes	ide Existing I	Bago Rive	r Bridge (T	hanlyin Brie	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	t Circulation	- <u>cu</u>	ENT						2
G	DORDIN	LEVEL	: <u>-6.9</u> : <u>E 20</u>	7m 05073.242 : N	1858170	.312 DE	РТН :_	62.00m	GROUND W	ON ATER LE	VEL	: Vert	tical fer River	Bed		NL	PPON	V KO	EIC	0.,	LT	D.
	-										8			STANDARD TEST M	PENETRA ETHOD (A	TON TES	ST	-	SAM	PLING		
	(II)	a.	(m)			TENCY		and an and a second		(m) 111	PTH (m R (mm)	TH (m)	ê	-	CURVEC	F BLOW		2	Ê			
E (m)	VOILV	11 GL - (KNESS	RAM	UR	TIVED	NAME	SOIL DESCRIPTION		& DEF	NG (DE	ER DEP	H GL - (Value s / 30cm	N	-Value		MPLE pe & No	H GL-((%	(%	(%) E (m)
SCAL	ELEV	1430	THIC	DIAG	conc	RELA (or)	SOIL			DATE	CASU	WAT	DEPT	(Blow	(Blov	30 40	0 50	SI (Ty	DEPT	TCR (SCR (RQD
310			n		PTAV	Stiff	CLAY	Stiff, gray, moist, low to media	m plasticity	24.12.16			31.00						31.00		111	and the
- Innie					Prof	- Sing		CLAY with silt and trace of fine gr	ained sand	31.00				13/30				P-29	31.45			hum
32	-38.97	32.00	3.00				1.2.1		1.001				32.00	18/30	1			P-30	32.00			alum
33					gray	Very stiff	Sandy CLAY	Very stiff, gray, moist, fine g plasticity, Sandy CLAY	grained, low				33.00	19/30				P-31	33.00			13
34						1						8	34.00	17/30	4			P-32	34.00			13
35	-41.97	35.00	3.00	- main	_								35.00	19/30	1			P-33	35.00			13
36				M X K	gray	Medium	Silty	Medium dense, gray, moist, fine	to medium				36.00	25/30	$ \Lambda$			P-34	35,45	21		30
37						dense	SAND	grained, Silty SAND					37.00	25/20				17.75	36.45			3
101								Thin clay layer is intercalated in thi	is layer				38.00	25/30				F-35	37.45			human
plante				* * *										28/30		<i>†</i>		P-36	38.45			lun
393				* * *									39.00	25/30				P-37	39.00 39.45	11		13
40				* * *									40.00	30/30				P-38	40.00			14
41	-47.97	41.00	6.00	* * *	_		-		_			6	41.00	36/30				P-39	41.00			14
42					gray	Hard	Sandy	Hard, gray, moist, fine grained, lo	ow plasticity.	25.12.16			42.00	45/30				P-40	42.00			4
43							CLAY	Sandy CLAY	Presservice	42.00			43.00	50/20			V	P-41	42.45	2.1		4
44													44.00	50/50			T		43.45			4
1 danie													45.00	50/30			1	P-42	44.45			hum
+2													43.00	50/30			1	P-43	45.45			thum.
46												12	46.00	50/30			1	P-44	46.00			4
47													47.00	28/30				P-45	47.00			4
48	-54.97	48.00	7.00		_								48.00	33/30		A		P-46	48.00			4
49				* * *	gray	Dense	Silty	Dense to very dense, gray, me	oist, fine to				49.00	50/29				P-47	49.00			4
50				* * *		to very	SAND	medium grained, Silty SAND		26.12.16			50.00	22/20				P.48	49.44			5
510				* * *		ucuac				50.00			51.00	32/30		N		1-40	50.45			and the
- International Providence Provid				***						1				35/30				P-49	51.45	61		hum
24	-38.97	52.00	4.00	* * *		-				1			52.00	50/29			1	P-50	52.00			- Chunt
53				* * *	gray	Dense	Silty	Dense to very dense, gray, moist, t	fine to coarse				53.00	50/29			+	P-51	53.00 53.44	11		15
54				* * *		very dense		graned, bitly bitle bill hie gar		27.12.16			54.00	50/30			+	P-52	54.00			154
55				8 × × 8 × ×									55.00	50/13			+	P-53	55.00			15
56				X X X X X X									56.00	50/27				P-54	56.00			150
571				* * *									57.00	50/15			1	p. 66	56.42 57.00			5
58				* * *						28 12 14			58 00	30/15			Ĩ	1-55	57.30			
alunt				* * *						58.00			38.00	50/13			1	P-56	58.28			aluun
59				* * *									59.00	50/28			+	P-57	59.00 59.43			159
60	-			м л.ж				and the					60.00	50/19				P-58	60.00 60.34			160 11
61	NOT	es		x x x	_			Continue to next sheet Sample key		Ph	anner stru	acture	61.00		Discon	tinuities						E61
	Rel	lative den	ity desc	ription TN-Value	Consistent	tency descrip	tion N-Value	P-1 Disturbed sample (SPT sample) PBT Permeable T_1 Undisturbed Sample VS Vana Star	ility Test	Term Very thick		Spacing >	(mm) 2000	Very w	Term ridely space	4	Spacing (m > 200	m) 10		UKKE	N CO	., LTD, ineers
	Ver	y loose		0 - 4	Very sof	- u	nder 2	PMT Pressurer D-1 Undisturbed Sample (Denison sampler)	meter Test	Thick Medium	-	600 - 200 -	2000 600	Wid	ely spaced	-	600 - 200 200 - 60	0	TGEX	Yangon	Branc 10896, 98	h) 9 - 420069762 ulturil.com
	Media	oose im dense	1	4 - 10 0 - 30	Soft Firm		5 - 8	Rock core sample (Single core tabe) ROD (%) 0 - 25	Very poor	Thin Very this	n.	60 -	200 60	Very c	ety spaced losely space	d	60 - 200 20 - 60		Revision N Revision D	o.	Rev.	00
3	Very	dense	1 0	over 50	Very stif	n j	5 - 30 ver 30	(Double core tube) 25 - 50 Rock core sample 50 - 75 (Core Loss) 75 - 50	Fair 1 Good	hinly lamir	nated	0 - <	6	Remarks	, ensuring sp	been	~ 20	<u> </u>	. Jun D			
				1	-tand	1 0		W-1 Water sample 90 - 100	Excellent				- 1	1								I,

図 4.1.37 ボーリング調査結果 BH-BD-09(2)

вс	ORE H	OLE N	o. Bł	I-BD-09				BO	RING	LOC	2	12 - ₁₉						Job N	lo. F. Sh	KYB-2 eet No	016-0	0F 3
PB	ROJECT	NAME	: Geo	technical Su	arvey on the	detailed d	esign for th	Bago River Bridge Construction Project	BORING EQ	UIPMEN'	0	: <u>TO</u>	10 "D)"			D	DATE	: 22	.12.2016	5~29,	2.201	6
GI	ROUNE	N LEVEL	: <u>Besi</u> : -6,9	de Existing 7m	Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rota	ary Directical	t Circulat	ion <u>c</u>	LIENT						
c	OORDI	NATE	: <u>E 20</u>	05073.242 ;	N 1858170.	. <u>312</u> DI	артн : _	62.00m	GROUND W	ATER LE	VEL	: <u>Un</u>	der River	Bed	-	N	IPPO.	N KQ	EIC	0.,	LT	D.
1						CY N				(11)	(m) &	îu		STANDAR TEST	D PENETR METHOD	ATION T ASTM)	EST	-	SAM	PLING	-	
	(III) (III)	(m) - 1	(m) SSS			E DENS	ME	SOIL DESCRIPTION		HLIABO	DEPTH TER (m	DEPTI((m)	(ma)	CURVI	OF BLO	• •	LE No.1	(m) - J			. le
CALE (n	LEVATI	EPTH G	HICKN	IAGRA	OLOUR	ELATIV (or) CON	VN TIO			ATE&	DNISN	ATER	EPTH G	N-Val	(B	N-Value lows / 30c	m)	SAMP (Type 8	EPTHG	CR (%)	CR (%)	QD (%)
S	22	a	H	а ж. е. ж.	0	2	8	-		•	9	>	a	00	10 20	30	40 50	-	a	·F	s	a m
61				* * *	gray	Dense to	SAND	Dense to very dense, gray, moist, grained, Silty SAND with fine gray	fine to coarse el	Ν.,			61.00	50/20			+	P-59	61.00			16
62	-69.97	62.30	10.30	X-X X		dense	-			29.12.16 62.00		4	62.00	50/15			+	P-60	62.00 62.30			16 mil
63	1							This borehole is terminated	at 62.00m,	10			63.00	21								6
64								according to the termination criterio	1.				64.00									6
65													65.00									6
661													66.00									6
67													67.00									6
68												10	68.00									in the second
- Contraction													60.00									luun
09													69.00									- Chung
10 miles												i.	70.00									-
71													71.00									27 June
72													72.00									17
73												þ	73.00									7
74													74.00									17
75													75.00									17
76													76.00									117
77													77.00									7
78													78.00									117
79													79.00									7
80													80.00									8
810													81.00									and a state of the
2 miles													01.00									lumo.
04													82.00									chung
831													83.00									alum
84													84.00									18
85													85.00									18
86													86.00									18
871													87.00									8
88													88.00									8
89													89.00									18
90													90.00									119
91			4		_	_	_	L	_				91.00									9
1	Ro	ES lative dens	ity descr	ription.	Consis	tency descrip	ntion	Sample key P. (Disombol sample (SPT sample) PBT Perusab	ility Test	Term	anner str	spacing	g (mm)		Disc Term	ontinuitie	Spacing (r	um)		FUKKE	N CO	. LTD.
	Relati	ve density v loose	SPT	N-Value	Consistent Verv soli	sp SP1	N-Value mail	T-i Undistanted Sample VS Vane Sk (Piston sampler) PMT Pressure p. Undistanted Sample	car Test	Very thick Thick Modure		> 600 - 200	2000	Wer	idely space	d d	> 20 600 - 20 200 - 6	00	-GEX	Consult (Yangor /// Isr - 8	Branc	ineers h) s-4200m/k/
	1 Medi	oose um dense	10	4 - 10 0 - 30	Soft	Ŧ	2 - 4	(Denisson sampler) Rock core sample (Single core tube) 0 - 25	Term Very poor	Thin Very thi	n	60 -	200	Ver	osely space closely spa	d	60 - 20 20 - 6	0	Revision A	10.	Rev	: 00
	Ver	Vense y dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tube) Rock core sample 30 - 75	Poor 7 Fair	hiçkly lami Thînly lami	nated sated	6 - <	20 6	Extrem Remark	tely closely	spaced	<20		Revision E	Date	06.0	1.2017
				L	Hard		over 30	(Core Loss) 75 - 90. ₩-1 Water sample: 90 - 10	Good Excellent													

出典: JICA 調査団

図 4.1.38 ボーリング調査結果 BH-BD-09(3)

во	RE H	OLE N	o. BI	I-BD-10				BC	RING	LOC	2					1.1	Job N	lo. F.	KYB-20 eet No.	16-02.	5 OF 3
PR	OJECT	NAME	: Geo	technical Su	irvey on the	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMEN	r	: <u>TO</u>	10 "Dl"		1	DATE	: 07	12.2016	- 13.13	.2016	5
LO	CATIC	IN	: Besi	de Existing	Bago Rive	r Bridge (I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	t Circulati	on CLIENT				-		
GR	OUND	LEVEL	: <u>-5.4</u> : E 20	7m)5181.555 :	N 1857979	.926 DI	PTH :	72.00m	GROUND W.	ON ATER LE	VEL	: Vert	tical ter River	Bed		PPON	KO	EI C	<i>:</i> 0.,	LT	D.
T							1	1			*	<u> </u>		STANDAR	PENETRATION T	EST	-	SAM	PUNG		-
	(u					NSITY				H (m)	(IIII))	(m)		TEST	METHOD (ASTM)			-		T	-
(m)	1) NOLL	GL = [m]	NESS (n	WW	В	IVE DE	AME	SOIL DESCRIPTION		¢ DEPT	al DEP	DEPTI	GL - (m	aluc 30cm)	CORVE OF BLC	•	(PLE & No.)	GL - (т	2	~	(1)
SCALE	ELEVA	BILLED	THICK	DIAGR	00102	RELAT (or) CC	SOIL N			DATE	DIAN	WATER	DEPTH	N-V	(Blows / 30c	m) 40 50	SAN (Type	нича	ICR (%	SCR (%	KOD (%
-					-									- 0						-	-
4					brown	Very	CLAY	Very soft to firm, brown to gray,	wet to moist,			10	1.00	1/30			P-1	1.00	21		
2					to gray	soft to	C.C.C.C.	low to medium plasticity, CLAY trace of fine grained sand	with silt, with			d	2.00	1/30			P-2	2.00			2
3						firm							3.00				PMT-01	3.00			100
4													4 00	2/30			P-3	4 00			
Innte														6/30	†		P-4	4.45			hum
Shund												10	5.00	5/30			P-5	5.00			alum.
6										07.12.16			6.00	in the			PMT-02	6.00			- Charles
7	12.47	7.00	7.00		-				_	6.50	1	10	7.00	5/30 6/30	1		P-6 P-7	7.00			7
8				* * *				122.2.2.2.2.2					8.00	5/20			p_9	7.45			min 8
Inntra				(gray	Loose to	SAND	Loose to medium dense, gray, r medium grained, Silty SAND	moist, fine to				0.00	5/30	VII		1-0	8.45			
dunt				* * *		medium dense					1		9.00	10/30	1		P-9	9.00			duni
10				***							10.00 Ø112		10.00	12/20	1		PMT-03	10.00			
11				* * *								140	11.00	14/30	I.		P-11	11.00			
12	1											1.0	12.00	16/30	11		P-12	12.00			in the
131				* * *									13.00	21/20	$ \chi $		D 12	12.45			1
Innin													12.00	21/30			1-15	13.45			
4 minut				* * *										22/30			P-14	14.00			alumin
15	20.47	15.00	8.00		-			-					15.00	23/30			P-15	15.00			
16					gray	Soft	CLAY	Soft to very stiff, gray, moist, lo	w to medium	08.12.16		1	16.00	7/30			P-16	16.00			1
17						to very		plasticity, CLAY					17.00		1		Dr.	17.00			1
18						Sun							18.00	400	t.		D 17	17.70 18.00			
10													10.00	4/30				18.45			
alunt	24											4	19.00	9/30	<i>i</i>		P-18	19.00			hun
201												16	20.00	5/30			P-19	20.00			2
21													21.00	13/30			P-20	21.00			2
22													22.00	6/30	1		P-21	22.00			2
235													23.00	200			0.22	22.45			12
Innin														5/30			1-22	23.45			
4												1.11	24.00		<u>.</u>		0 T-2	24.00 (册) cm 24.70			- Share
25													25.00	7/30	+		P-23	25.00			2
26													26.00	10/30	+		P-24	26.00			2
27													27.00	8/30	4		P-25	27.00			2
285				1.1.1									28.00		1			27.45			1
Inni														8/30	1		P-26	28.45			- Andrew
29													29.00	8/30	1		P-27	29.00 29.45			2
30													30.00	9/30	*		P-28	30.00			13
31	NOT	PS			_	_	-	Continue to next sheet			2004	notures	31.00	E.	//			00.40	Y.,		13
[Re	lative dens	ity descr	ription	Consis	stency descrip	tion	Disturbed sample P-1 Disturbed sample (SFT sample) PBT Permited	bility Test	Term Very this	k k	Spacing	(nun) 2000	Var	Term widely spaced	Spacing (m	m)		UKKEN	I CO.	LTD.
	Relativ	ve density	SPT	N-Value treat	Consisten Very sol	cy SPI	N-Vahie maat	T-1 Undisturbed Sample VS Vane St (Piston sampler) PMT Pressur	near Test	Thick		600 - 200	2000	W	idely spaced	600 - 200	0	CO-X	Yangon	Branch	+96615 1) - 420069762
3	L	oose m denue		4 - 10	Soft	-	2 - 4	Rock core sample (Single core tabe)) Term Very poor	Thin Very this		60 - 20	200	Cl	usely spaced	60 - 200		Revision N	o.	Rev:	00
	D	ense y dense	3	0 - 50 ver 50	Stiff Very stiff	-	9 - 15	Rock core sample (Double core tube)	Poor T	hickly lami	nated	6 -	20	Extrem	ely closely spaced	< 20		Revision E	late	16,12	2.2016
				L	Hard		ver 30	(Core Loss) 75 - 90 W+1 Water sample 90 - 10	Good 0 Excellent		-			Actuark!							

図 4.1.39 ボーリング調査結果 BH-BD-10(1)

BOR	E HOLI	E No.	вн	-BD-10			27	BO	RING	LOG	5						Job N	0. F.	KYB-20 eet No	16-02	5 OF 3
PRO	ECT NA	ME :	Geot	echnical Su	rvey on the	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMENT	1	: <u>TOF</u>	lO "D1"	_	-	DATE	: 07	.12.2016	~13.1	2.2016	<u></u>
LOC	ATION	1	Besid	de Existing	Bago Rive	r Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	Circulat	ion <u>Cl</u>	IENT					-
GRO	UND LEV	VEL :	-5.47 E 20:	m 5181.555 : 1	N 1857979	.926 DE	PTH :	72.00m	GROUND W	ON ATER LE	VEL	: Ven	tical ler River	Bed	-	NIPPOI	V KO	EI C	ю.,	LT	D.
1		T	-				11000		and the second		*		5	TANDAR	D PENETR/	TION TEST	_	SAM	PLINT	-	1
			(r)	IN E		NSITY				(m)	(mm))	(m) H		TEST	METHOD (ASTM)	1	3764		-	-
(i)	GL-(m)		NESS (n	W	24	IVE DE	AME	SOIL DESCRIPTION		DEPT	G DEP	DEPT	(J (m)	alue 30km)	CURVE	OF BLOW	(PLE & No.)	3E-(m			(11)
CALE	EPTH 0		HICK	DIAGR/	nono	(or) CO	OIL N.			ATE &	ASING	VATER	HLAR	N-Va	(B)	N=Value ows / 30em)	SAM	EPTH (CR (%	CR (%)	CALE (%
8			-		0		05			-	-	-		~ 0	10 20	30 40 30		0	-	V?	4 0
31					gray	Soft	CLAY	Soft to very stiff, gray, moist, low	w to medium			18	31.00	6/30	4		P-29	31.00			
32						very		plasticity, CLAY					32.00	7/30	1		P-30	32.00			13
33						sun							33.00		N			32.45			1113
hum														16/30	1		P-31	33.45			hum
34										1.0		19	34.00	19/30	1		P-32	34.00			il and
35										09.12.16 35.00			35.00	13/30	4		P-33	35.00			3
36-4	1.47 36.	00 2	1.00		_				_				36.00	49/30			P-34	36.00			hill
37				xx	gray	Dense	Silty	Dense, gray, moist, fine to med	ium grained,				37.00	26/20		1	P.35	36.45			3
20				* *			SAND	Sury SAIND					38.00	30/30		V	1-55	37.45			
- Shuth				* *										40/30			P-36	38.45			lum
393-4	4.47 39.	.00 3	.00	0 11									39.00	21/30	1		P-37	39.00 39.45			13
40					gray	Very	CLAY	Very stiff to hard, gray, moist, lo	w to medium				40.00	22/30	4		P-38	40.00			4
41						stiff to		plasticity, CLAY with silt and grained sand	trace of fine				41.00	25/30			P-39	41.00			44
42						bard							42.00	20		X		41.45			4
Innin														35/30		1	P-40	42.45			lunter
43													43.00	31/30		* I	P-41	43.00			al mu
44													44.00	33/30		1	P-42	44.00			4
45													45,00	18/30			P-43	45.00			4
46										10.12.16			46.00	21/30	11		P-44	46.00			4
47										46.00			47.00					46.45			4
Inner														25/30		7	P-45	47.45			human
+on													48.00	22/30	1		P-46	48.00			4 International
49													49.00	18/30	1		P-47	49.00 49.45			4
50													50.00	17/30	4		P-48	50.00			in Sta
51													51.00	16/30	1		P-49	51.00			5
52													52.00		$ \chi $			51.45			1
The second se														22/30			P-50	52.45			lunt.
222-2	8.47 53.	00 1	4.00	-		View	Parada.	Voru stiff to have arous major for	a to modium				53.00	45/30			P-51	53.00			
54					gray	stiff	CLAY	grained, low plasticity, Sandy CLA	Y				54.00	27/30		1	P-52	54.00			5
55-6	0.47 55.	.00 2	.00			hard				11.12.16	6.7		55.00	26/30			P-53	55.00			5
56				* *	gray	Medium	Silty	Medium dense to dense, grav, n	noist, fine to				56.00	37/30		N	P-54	56.00			15
57				* *		dense to	SAND	medium grained, Silty SAND					57.00	51150		I		56.45			1
				* *		dense		GL: (56.00 ~ 59.45)m, Thin o intercalated at that depth	clay layer is					36/30		1	P-55	57.45			line in the second seco
583				N 11 N 21								19	58.00	25/30			P-56	58.00 58.45			al lun
59												0	59.00	30/30			P-57	59.00			15
60				* *									60.00	42/30			P-58	60.00			6
61				22				Continue to next sheet	C	= 1			61.00					60.45			16
Ľ	Relative	e density	descri	ption	Consis	tency descrip	tion	Sample key P-1 Disambel sample (SPT sample) PBT Permeeb	ility Test	Pla Term	inner stru	spacing	(mm)	E	Disco Term	Spacing (n	nm)		FUKKE	N CO.	LTD.
L	Relative der	nsity	SPT	N-Value	Consisten	ey SPT	N-Value (nmi)	T-1 Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure	car Test	Thick	+	> 600 -	2000	Wer	idely spaced	600 - 20	00	GEY	Yangon	g Engi Branch	neers 1) 42009/762
F	Loose	*	4	1 - 10	Soft		2 = 4	D. (Denison sampler) Rock core sample (D. 200) Term	Thin	+	200 - 60 -	200	C	osely spaced	200 = 6	0 7	Revision N	U.	Rev:	Nunk-com 100
F	Dense Very den	unise .	30) - 50	Stiff Very aff		9 - 15	Rock core sample (Double core tube) 0 - 25 (Double core tube) 25 - 50 (Double core tube) 50 - 76	Poor 1	hickly lamin	ated	6 -	20	Extrem	anosety space	paced < 20		Revision E	late	16.1	2.2016
-	, , sole				Hard		ver 30	Rock core sample (Core Loss) T5 - 90 90 - 10	Good 0 Excellent	in and		-		Remark	8						

出典: JICA 調査団

図 4.1.40 ボーリング調査結果 BH-BD-10(2)

BC	RE H	OLE No	o. BH-BD	-10	12 :			<u>B 0</u>	RING	LOG	5						Job 3	lo. F Sh	KYB-2 eet No	3	25 OF 3
PR	OJECT	NAME	Geotechni	cal Su	irvey on the	detailed d	lesign for th	Bago River Bridge Construction Project	BORING EQ	UIPMENT	A	: TOP	10 "D1"		2	DATE	: 07	.12.2016	5~13.	2.201	6
LC	CATIC	I EVEL	Beside Ex	isting	Bago River	Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direct	t Circulatio	CLIEN	<u>T</u>		7.	-	5.	3.1
CC	ORDI	NATE	: <u>E 205181.</u>	555;	N 1857979.	926 DI	epth :	72.00m	GROUND W	ATER LE	VEL	: Und	der Rive	Bed		IPPO	N KO	EI C	<i>.</i> ,	L	TD.
						**					3.0	1	1	STANDARD TEST M	PENETRATIO	N TEST		SAN	PLING		Т
	(III)	(1	(ii)			ENSITY	51			TB (m)	PTH (mm) R (mm)	(m) H1	î		CURVE OF B	slow •		Ê			-
E (m)	ATION	101-0	CNESS	Levin L	UR	TIVE D	NAME	SOIL DESCRIPTION		& DEP	4G (DE	R DEP	(CL. + ()	Value s / 30km	N+Va	lue	MPLE x & No	HGL-((P)((%)	(%)
SCAL	BLEV	DEPT	THIC	NUM	COLC	RELA (or) (SOIL			DATE	CASIT	WAT	DEPT	(Blow	(Blows/ 10 20 36	30cm)) 40 50	S, CO	DEPTI	TCR (SCR (RQD
Cutter of				*	gray	Medium dense	Silty SAND	Medium dense to dense, gray, n medium grained. Silty SAND	noist, fine to				61.00				1	(1.00			
ollow	14	34	×	-		to dense		GL: (56.00 - 59.45)m, Thin o intercalated at that depth	clay layer is				01.00	48/30		1	P-59	61.45			dunt
62	67.47	62.00	7.00 ×	*	-					1			62.00	50/30		1	P-60	62.00			in the second
63					yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown to re moist, fine to medium grained,	ddish brown, low plastic				63.00	50/28		1	P-61	63.00			10
64					to reddish			Clayey SAND		12.12.16		16	64.00	50/22			P-62	64.00			100
65					brown					04.00			65.00	60/20			D.63	64.37			
- Contraction													cc. 00	50/20		ΙT	1-03	65.35			
oplant													00.00	50/16			P-64	66.31			- Change
67													67.00	50/26			P-65	67.00			10
68													68.00	50/25			P-66	68.00			6
69													69.00	50/20			P-67	69.00			in the
70													70.00	50/22			P.69	70.00			
71													71.00	50/22		ΙT	r-08	70.37			
, Ilmin										-			/1.00	50/21		11	P-69	71.00			Í
72	77.80	72.33	10.33			-				13.12.16			72.00	50/18		•	P-70	72.00			17
73							1.11	This borehole is terminated according to the termination criteria	at 72,00m,				73.00								17
74													74.00	(* 1							-
75													75.00								and and a
76													76.00								
Inte													10.40								and the second
77													77.00								1
78													78.00								17
79													79.00								100
80													80.00								
81													81 00								
in the second																					
821													82.00								al un
83													83.00	5							18
84													84.00								
85													85.00								al a
863													86.00								in the second seco
87													87.00								in the second seco
o la												1	07.00								
88													88.00								18
89													89.00								in State
90													90.00								in the second
91									_				91.00								and the second
	NOT	ES lative dens	ity description	1	Consist	ency descrip	nion	Sample key P-1 Diturbat sample (SPT sample) PBT Permeab	ility Test	Term	anner str	spacing	g (mm)		Discontinu Term	ities Spacing (um)		FUKKE	N CO	LTD.
	Relati	ve density	SPT N-Val	ue	Consistenc	y SP1	N-Value	T-1 Undesturbed Sample VS Value Sh (Piston sampler) PMT Pressure	nig Test	Very thick Thick	+	> 600 -	2000	Win	ely spaced	> 20 600 - 20	900	EC-Y	Consult (Yangoi Tel 361 4	ng Eng Branc	jineers :h) ii. coosorci
	L	y loose	0 - 4	-	Very soft Soft	-	111der 2 2 - 4	Contraction sampler) Rock core sample Rock co	Tom	Medium Thin Versith	1	200 - 60 -	200	Clo	ely spaced	200 - 6	00	Revision N	lie.	Rev	siters.com
	Medi	am dense Nense v dense	10 - 30 30 - 50		Firm Stiff Very stiff		9 - 8 9 - 15 6 - 20	(Single core mae) 0 - 25 Rock core sample (Double core tube) 50 - 26	Poor T	bickly lamin	nated	20 - 6 -	20	Extreme	y closely spaced	20 - 6	0	Revision L	Date	16.)	2,2016
	ver	,	I over 30	t	Hard		iver 30	Rock core sample 20 - 73 (Core Loss) 75 - 90 W. Water sample 90 - 100	Good Excellent	and a second second		4	4	Remarks							

図 4.1.41 ボーリング調査結果 BH-BD-10(3)

BC	RE H	OLE N	o. Bł	I-BD-11				<u>B O</u>	RING	LOC	3			·			Job N	lo. F. Sh	KYB-20 eet No.	16-02	0F 3
PR	OJECT	NAME	: Geo	technical Su	arvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQU	JPMEN	т	; <u>TO</u>	HO "D]"	-	2	DATE	: 07	.12.2016	5~12.1	2.2016	6
LC	CATIO	N	Besi	ide Existing	Bago Rive	r Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	Circulat	ion <u>CLI</u>	ENT				-	
CC	ORDIN	ATE	: E 20)5237.522 ;	N 1857879	348 DE	РТН :	65.00m	GROUND WA	ATER LE	EVEL	: Ver	ler River	Bed		NIPPOI	V KO	EI C	ю.,	LT	D.
				-							8	Ē		TANDAR	D PENETRAT	TON TEST		SAM	PLING		T
	(m)	â	(j)			ENSIT'S TENCY	15	denses meter		(m) [[]	PTH (mm)	(m) H1	î	-	CURVEO	FBLOW .	-	Ê			
E (m)	ATION	B GL-0	KNESS	RAM	KUR	TIVE D	NAME	SOIL DESCRIPTION		& DEP	NG (DE	ER DEP	H GL + (Value s / 30cm	N	Value	MPLE pe & No	HGL-((%)	1	(%) E (m)
SCAL	BLEV	DEPTI	THIO	DIAG	COLO	RELA (or) (SOIL			DATE	CASIP	WATE	UARD	(Blow	(Blow 10 20	(s/30cm) 30 40 50	SA KU	0.430	TCR (SCR (RQD (
In					brownish	Soft	Sandy	Very soft, brownish gray, moist,	fine grained,				1.00					1.00			-
- International Providence Provid					gray		CLAY	low to medium plasticity, Sandy Cl	LAY			h	1.00	0/45 •			P-1	1.45			
2													2.00	0/45			P-2	2,00			12
2 miles													3.00	0/45			P-3	3.00			13
4													4.00	0/45			P-4	4.00			4
5	-8.35	5.00	5.00										5.00					4.45			115
								6						5/30			1.2	5.45			
olum					gray	loose	SAND	wet, fine to medium grained, low p	lastic Clayey				0.00	4/30			P-6	6.45			- Luna
7					-	loose		0.0.10					7.00	5/30	+		P-7	7.00			17
8 miles						-							8.00	4/30			P-8	8.00			8
9													9.00	2/30			P-9	9.00			9
10	-13.35	10.00	5.00				121						10.00	17/20			P-10	9.45 10.00			10
11				* * *		Lasa	S.16.	Loore to modium dance area a	noist fing to		11.00			11/30	I		1-10	10.45			-
- International					gray	to	SAND	medium grained, Silty SAND	ioist, fille to		0112			14/30	1		P-11	11.45			-
12						dense		1212					12.00	12/30	1		P-12	12.00			E12
13				4 × 4								16	13.00	14/30	4		P-13	13.00			13
14				8 × 8									14.00	20/30			P-14	14.00			14
15				* * *								2.1	15.00	16/30	1		P-15	14.45			15
16				8 X = 8 X X									16.00		X			15.45			16
hunder													17.00	24/30	1		P-10	16.45			
, dann								2					17.00	10/30	*		P-17	17.00			
183	-21.35	18.00	8.00		grav	Stiff	Sandy	Firm to stiff, gray, moist, fine gra	ained, low to				18.00	10/30	1		P-18	18.00			E18
19							CLAY	medium plastic Sandy CLAY		07,12,10	5		19.00	8/30	4		P-19	19.00			19
20	-23.35	20.00	2.00		_	_			_		11		20.00	9/30			P-20	20.00			20
21						Time	CLAN	Fine to compatible ones maint ma	dinas ta biak				21.00					20.45			21
22					gray	to	CLAI	plasticity, CLAY	atatin to ingit				22.00				6 1-1	(m) cm 21.40 22.00			22
Innin						stiff		1.6.						9/30	1		P-21	22.45			
25 min													23.00	11/30	1		P-22	23.00			140
243													24.00	11			U T-2	24.00			24
25				917E									25.00	9/30			P-23	24.80			25
26												1.8	26.00	10/30	1		P-24	26.00			26
27													27.00	0/20	1		D. 25	26.45			27
201													28.00	9/30	Λ		1-43	27.45			1
- Shunda														6/30	1		P-26	28.45			in the second se
29													29.00	7/30	1		P-27	29.00 29.45			E29
30												16	30.00	9/30	+		P-28	30.00			30
31	NOT	es	-					Continue to next sheet Sample key	_	p	lanner str	ucture	31.00		Discow	tinuities					31
	Re	lative den	sity descr	ription	Consis	tency descrip	tion N-Value	P-1 Disturbed sample (SPT sample) PBT Permeab Use the sample	ility Test	Term Very thic	k	Spacing >	2000	Ver	Term widely spaced	Spacing (1	nm) 00			N CO.	., LTD.
	Relativ	y loose	arl	treatile 0 - 4	Consistence Very soft	a sei	mail nder 2	Criston sampler) VS Vane So VS Vane So VS Vane So PMT Pressure	meter Test	Thick Medium		600 - 200 -	2000	M	idely spaced edium spaced	600 - 20 200 - 6	00	rg=x	(Yangon	Branch	h) - 420089762 iterit com
	L. Media	oose im dense	1	4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25	Tem Very poor	Thun Very thi	in	60 - 20 -	200 60	Very	osely spaced closely space	60 - 20 1 20 - 6	0	Revision N	la.	Rev:	00
	D Very	ense dense	3	0 - 50 ver 50	Stiff Very stiff	c 1	9 - 15 6 - 30	Rock core sample (Double core tube) 25 - 50 Rock core sample 30 - 75	Poor T Fair T	hickly lami	inated nated	- 6 - <	20 6	Extrem	ely closely spi	iced < 20		Revision E	Date	14.1	2.2016
				L	Hard		ver 30	Core Loss) 75 - 90 W I Water sample 90 - 10	Good Excellent												

出典: JICA 調査団

図 4.1.42 ボーリング調査結果 BH-BD-11(1)

BC	RE H	OLE No	BH	-BD-11	1	10 - 11		BO	RING	LOG	2							Jul	No. I	KYB-2	016-0.	25 OF 1	
PR	OJECT	NAME	Geol	echnical Su	rvey on the	detailed	lesign for the	Bago River Bridge Construction Project	BORING EQU	IPMENT	r	; <u>TO</u> E	10 "D1"	i			DATE	1	07.12.201	6-12.	2.201	6	
LC	CATIC	N	Besi	de Existing	Bago Rive	r Bridge (Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ry Direc	t Circulat	ion	CLIE	NT_			-			Ì
GF	OUND	LEVEL	· E 20	5237 522 · 1	N 1857870	348 D	PTH ·	65 00m	GROUND W	TERIE	VEL	: Vert	ical ler River	Red	-	Λ	IPPO	ON K	OEI	co.,	Ľ	TD.	
	ORDI	I	. 1. 20	3237,322 .	105/019	1			GROUND W	TEREE	La.	1	ici Kivei	STANDAR	D PENET	RATIO	NTEST	10.1				-1	
				1.1		ASITY	1.11			1 (m)	H (m) 8	(m)	1	TEST	METHO	D(AST	M)	1	SAM	MPLING	-	-	
(m	III) NOL	(m) - (m)	ESS (m	W	2	VE DEA	AME	SOIL DESCRIPTION		DEPTH	(DEPT ETER(DEPTI	il (m)	luc 30cm)	CUR	VEOFE	BLOW •	BLE	(m) - (m)			. 1	Ĩ.
SALE (EVAT	EPTH C	HICKN	IAGRA	Inone	or) CO	N TIC			ATE &	DIAM	ATER	EPTH	N-Va Nows/		N-Va Blows /	due 30em)	SAM	BHI	CR (%)	(%) H.	(%) GD	VIEN
s	B	D	E.	8	0	20	SC			Ω	0	*	D	= 0	10 .	20 30	1 40 5	0	Die	¥.	SI	a s	6
31					grav	Firm	CLAY	Firm to stiff, grav, moist, med	ium to high				31.00	8/30	4			P-2	31.00			the state	31
32					2.9	to very	1000000	plasticity, CLAY		08.12.16			32.00	11/20	1				31.45			-	32
1						stiff	1.51			32.00				11/50	I			1-3	32.45			-	
25 miles													33.00	6/30	f			P-3	33.00			- Change	13
34												9	34.00	7/30	+			P-3	2 34.00			a line	34
35													35.00	10/30	1			P-3	3 35.00			-	35
36													36.00						35,45				36
- International												mî		11/30	Ν			1-5	36,45			in the second se	
3/1			1									3	37.00	17/30				P-3	5 37.00			il and	27
38	41.35	38.00	18.00										38.00	16/30	+			P-3	6 38.00			milu	18
39				2425		15						3	39.00	15/30	1			P-3	7 39.00			and a state	39
40					gray	Stiff	CLAY	Stiff to hard, gray, moist, med plasticity, CLAY with silt	ium to high				40.00						39.45				40
Innin						hard		Thin sand layers are well	observed as					18/30	11	1		P-3	40.45				
41								intercalated layer				3	41.00	15/30	1			P-3	9 41.00			il mu	Į1
42	(-)		- 8									1.5	42.00	23/30		4		P-4	42.00			14	12
43	-											3	43.00	26/30	-	1		P-4	43.00			and a	13
44	1												44.00						43.45				44
1										the state				24/30				P-4	44.45	1		-	
421										45.00	1	3	45.00	29/30		X		P-4	3 45.00				t)
46													46.00	24/30		4		P-4	4 46.00			14	46
47													47.00	24/30				P-4	5 47.00			1	17
48													48 00			\backslash			47.45				18
Internet	2											1		30/30		ľ		P-4	48.45				
49													49.00	50/30				P-4	7 49.00			il in	19
50												0	50.00	38/30			-	P-4	8 50.00			-	50
51													51.00	39/30			1	P-4	9 51.00			-	51
52				1992									52 00	50150			ΛΙ		51.45				52
hum												1		28/30		1		P-5	52.45	1		lun h	
53	11									10.12.16 53.00		1	53.00	21/30				P-5	1 53.00			il un	53
54	50												54.00	50/30			1	P-5	2 54.00			-	54
55													55.00	40/30				P-5	3 55.00				55
56													56.00	10.50			Λ		55,45				56
lunt														26/30		N		P-5	56.45			lum	
57												3	57.00	31/30				P-5	5 57.00			il un	57
58													58.00	31/30				P-5	6 58.00				58
59										11.12.16			59.00	21/30		\square		P-5	7 59.00			-	59
60	63 35	60.00	22.00				10.1			59.00			60.00	21130					59.45				50
- Columb	05.55	00.00	22.00			1.1	1	Continue to next sheet				1		50/18				P-5	8 60.33			il was	10
613	NOT	ES	-		-	L		Sample key		Pla	anner str	acture	61.00		D	iscontinu	nities		_		E.U.	E	51
	Relation	lative densi	ty descr SPT	iption N-Value	Consis	tency descri	tion N-Value	P-1 Disturbed sample PBT Permeab SPT sample) PBT Vermeab T_1 Undisturbed Sample VS Vers Sk	lity Test	Term Very thick	<	Spacing >	(mm) 2000	Ver	Term widely s	paced	Spacin	ag (mm) > 2000		FUKKE	N CO	, LTD.	I
	Ver	y loose		0-4	Very sol		inset inder 2	PMT Pressure	neter Test	Thick Medium		600 - 200 -	2000 600	M	idely spa edium spa	ced iced	600 · 200	- 2000 - 600	FGEX	(Yangor 7w 951-8	Brand	ch) 19 - #20089782 william com	
	L Media	oose un dense	10	1 - 10) - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25	Term Very poor	Thin Very thir	1	60 - 20 -	200 60	Ver	losely spa closely s	ced paced	60 - 20	- 200	Revision	No.	Rev	: 00	1
	Ver	ense y dense	3	0 - 50 ver 50	Stiff Very stiff		9 = 15 6 = 30	Rock core sample (Double core tube) Rock core sample 50 - 75	Poor TI Fair T	tickly lamit hinly lamit	nated	6 - < (20	Extrem	s s	ly space	4	<20	Revision	Date	14.	12.2016	
				L	Hard		over 30	(Core Loss)	Good Excellent						-								

図 4.1.43 ボーリング調査結果 BH-BD-11(2)

BC	ORE H	OLE N	o. BH	I-BD-11			_	BO	RING	LOC	2							Job N	lo. Fi Sh	KYB-201 eet No.	6-025	OF 3
PR	OJECT	NAME	: Geo	technical Si	urvey on the	detailed o	lesign for th	e Bago River Bridge Construction Project	BORING EQ	JIPMEN'	6	: <u>TO</u>	10 "D1"	_	-	D	ATE	: 07	.12.2016	~ 12.12	2016	
LC	CATI	ON	; Besi	de Existing	Bago River	Bridge (Chanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ury Direc	t Circulati	on c	LIENT	-					
GE	ROUNI	LEVEL	: -3.3	5m	N 1027070	149 11	20711	65 Mbu	ORIENTATIO	NTEDIC	10	: Ven	tical	Ded	-	NI	PPON	V KO	EIC	O.,	LT	D.
	JORDA		: <u>E 20</u>	13231,3223	N 1627872	<u>.346</u> Di	ario	T	OKOUND W.	I	VCL	I Die	ler Kiver	TANDAR	DENETR	ATION TE	ICT .	1.15.9				-
		1.1		1.1		SITY				(E	(in) (in	(II	-	TEST	METHOD (ASTM)		1	SAM	PLING	-	4
	m) NO	(m) -	(III) SS	-		E DEN	ME	SOIL DESCRIPTION		HLABO	DEPT TER (EPTI	(m)	(income)	CURVE	OF BLOV	N •	No.)	- (m)			2
ALE (m	EVATI	1778 63	ICKN	AGRAD	LOUR	LATIV CON	W NV			TTE & I	BING	VTER (PTH G	N-Val	(B)	N-Value ows/30er	n)	SAMP Type &	PTH GI	R (%)	K (%)	NLE (#
SC.	EL	DE	E	ĩ	8	RE	so		_	VQ	5	(M)	DE	更 ()	10 20	30 4	10 50	Ŭ	DE	5	N.	RQ I
61					greenish	Very	Clayey	Very dense, greenish gray to ye	llowish gray,	1.1	1.1	11	61.00	50/20				P. 50	61.00			61
- International Contraction					gray to	dense	SAND	moist, fine to medium grained, Clayey SAND	low plastic					50/20			T	1-39	61.35			In the second se
62m					gray							14	62.00	50/20			+	P-60	62.00			-62
63													63.00	50/20			+	P-61	63.00			63
64													64.00	50/22				P-62	64,00			64
65		1.1					10.41			121216			65.00				H	1.2	64.37			1
Juni	-68.63	65.28	5,28		-	-			_	65.00			-05.00	50/13			1	P-63	65.28			hum
66								This borehole is terminated according to the termination criteri	at 65,00m, a.				66.00									66
67								and the second second second					67.00									67
68													68.00									68
Innte																						hum
691												1	69.00									109
70												1	70.00									70
71													71.00									171
72													77 00									172
lunt																						lum
73													73.00									173
74													74.00									174
75													75.00									75
24													70.00									1
10 million												1.1	70,00									- Annual
77													77.00	1								77
78													78.00									78
79													79.00									79
hunt																						hum
803													80.00									E80
81												11	81.00	21								81
82													82.00									82
83													83.00									1.23
hun																						hum
84												1.18	84.00									184
85													85.00									85
86													86.00									86
87													87 00									in the second
1													07.00									
88													88.00									88
89													89.00									89
90													90,00									E90
dunt				-			-	· · · · · · · · · · · · · · · · · · ·														hum
911	NOT	ES						Sample key		Pl	unner stru	acture	91.00		Disc	ontinuities						E 91
	Relation	elative densitive densitive densiti	stity descri	N-Value	Consist	tency descrip	ption N-Value	PIT (Disturbed sample) PBT (Permeat PBT (Proved PBT (PBT (ality Test	Term Very thick		Spacing >	2000	Very	Term widely spa	ced	Spacing (n > 200	nm) 00		UKKEN	CO., Engi	LTD. eers
	Ve	ry loose		рекан 0 – 4	Very soll		under 2	(Pistor sampler) D-1 (Denison sampler) (Denison sampler)	meter Test	Thick Medium		600 - 200 -	2000	M	idely spaced dium space	d	600 - 20 200 - 60	00	GEX	Yangon E	tranch	420068762 miliopm
	Medi	.cose		4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock sore sample (Single core tube) 0 - 25	Very poor	Thin Very this	1	60 - 20 -	200 60	Very	osely spaces closely spa	ced	60 - 20 20 - 60	0	Revision N	ò.	Rev: 1	0
	Ver	Jense ry dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tabe) S0 - 75	Poot T Fair 3	hickly lama hinly lamin	used	6 -	20 6	Extrem	ely closely	spaced	< 20		Revisinn D	ate	14.12	2016
				1	Hard	1.112.3	aver 30	(Core Loss) 75 - 90 9 ₩-1 Water sample. 90 - 10	Good 0 Excellent													
-	_									-	-			-	_				_	_	-	_

出典: JICA 調査団

図 4.1.44 ボーリング調査結果 BH-BD-11(3)

во	ORE H	OLE N	o. Bl	I-BD-12				BO	RING	LOC	3					19	Job No.	FKY	B-2016-	025 OF 3
PR	OJECT	NAME	: <u>Geo</u> : <u>Besi</u>	technical S ide Existing	urvey on the Bago River	detailed d Bridge (T	esign for th hanlyin Bri	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ BORING ME	UIPMEN	τ	; <u>TO</u> ; <u>Ro</u> t	HO "D1" lary Direc	t Circulation	DA [*]	ГЕ	<u>: 28.11.</u>	2016~	05.12.20	16
GI	OUND	LEVEL	: <u>-4.4</u> : <u>E 20</u>	1m)5261.919 ;	N 1857832.	226 DE		63.00m	ORIENTATIO	ON ATER LE	VEL	: <u>Ve</u> :	rtical der Rive	Bed		PPON	KOE	I CO	., L1	D.
		-				**	1				\$(II)		1.5	STANDARD I TEST MI	PENETRATION TES THOD (ASTM)	r	РМТ	SAMPL.	ING	
(CALE (m)	SLEVATION (m)	JEPTH GL - (m)	THICKNESS (m)	MAGRAM	OLOUR	(or) CONSISTENC	OIL NAME	SOIL DESCRIPTION		OATE & DEPTH (m	ASING (DEPTH () DIAMETER (mm	WATER DEPTH (m)EPTH GL - (m)	N-Value Blows / 30cm)	CURVE OF BLOW N-Value (Blows / 30em)	•	SAMPLE (Type & No.)	EPTH GL-(m)	CR (%)	QD (%) CALE (m)
1 minuter Share	-7.41	3.00	3.00		brownish gray	Soft	Sandy CLAY	Soft, brownish gray, moist, fine gr medium plasticity, Sandy CLAY	ained, low to				1.00 2.00 3.00	2/30 2/30			P-1 1.	00 45 00 45 00		international in
4 5 6 7 7 8 m					brownish gray	Very loose to loose	Clayey SAND	Very loose to loose, brownish g wet, fine grained, low plastic Clayd GL: (5.00 – 5.45)m, loose, fine (SAND layer is observed at that dep	ray, moist to yy SAND grained, Silty th	<u>28.11.10</u> 6.00	8.00 Ø112		4.00 5.00 6.00 7.00 8.00	3/30 4/30 4/30 3/30 4/30			P-4 4. P-5 5. P-6 6. P-7 7. P-8 8.	45 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 45		44 100 15 100 16 100 17 100 18 100
9 10 11 12 12 13 14 14 15 16 16 16 16 16 16 16 16 16 16 16 16 16	-13.41	9.00	6.00		brownish gray to gray	Loose to medium dense	Silty SAND	Loose to medium dense, brownish moist to wet, fine grained, Silty SA	gray to gray, ND	<u>30.11.16</u> 15.00	5		9.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00	8/30 14/30 16/30 28/30 21/30 18/30 21/30 19/30			P-9 9. P-10 10 P-11 11 P-12 12 P-13 13 P-14 14 P-15 15 P-16 16 P-16 16	00 45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00		
171 181	-21.41	17.00	8.00		gray	Stiff	Sandy CLAY	Stiff, gray, moist, fine grained, lo plastic Sandy CLAY	w to medium				17.00 18.00	10/30 9/30			P-17 17 17 P-18 18 P-19 19	.00 .45 .00 .45 .00		15 International
201 21 22 23 24 25 26 27 28 27 28 29 29 30					gray	Firm to stiff	CLAY	Firm to stiff, gray, moist, med plasticity, CLAY	ium to high	<u>01,12,14</u> 26.00	5		20.00 21.00 22.00 23.00 23.00 25.000	12/30 13/30 7/30 9/30 7/30 10/30 7/30 6/30 11/30 7/30 5/30 7/30			Image: Product of the state of the	.45 .00 3cm .00 3cm .00 .00 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .45 .00 .445 .00 .445 .00 .445 .00 .445 .00 .445 .00 .445		222 222 222 222 222 222 222 222 222 22
31	NOT Relativ Ver L Media D Ver	ES lative density y loose oose am dense verse y dense	SPI 1 3 0	Figtion F N-Value (main 0 - 4 4 - 10 0 - 30 0 - 50 twor 50	Consist Consistenc Very soft Soft Firm Suff Very stift Hard	tency descrip y SPT	tion N-Value (mod) 2 - 4 5 - 8 9 - 45 6 - 30 wer 30	Continues to sext sheet Sample Sext P P. Distribution significant PHT Personali To reference support VS Vane Sh To reference support VS Vane Sh To reference support VS Vane Sh Di To reference support PMT Presence Charling of the support PMT Presence Rock core sample ROD (% 25 + 50 Rock core sample 25 + 50 25 - 75 Rock core sample 75 - 50 75 - 75 Work Law sumple 90 - 10 90 - 10	ility Test ear Test meter Test Very poor Poor Fair Good Excellent	P Term Very thic Thick Medium Thin Very thi hickly lami thinly lami	k inated nated	spacin 200 600 - 200 60 - 200 6 - 20 6 -	31.00 g (mm) -2000 - 2000 - 600 - 200 - 60 - 20 - 6	Very w Widi Modi Close Very el Extremely <u>Rematks</u>	Discontinuities Ferm S idely spaced Ity spac	pacing (nm) ≥ 2000 500 - 2000 200 - 600 60 - 200 60 - 200 < 20 < 20	FG Revis	FUI Cor (Ya Tri s tom No.	KKEN C Isulting En ngon Brai sr. stronger Re 12	D., LTD. igineers ich) issccoppris maker cam by: 00 12.2016

図 4.1.45 ボーリング調査結果 BH-BD-12(1)

BO	RE H	OLE N	o. B	H-BD-12				BO	RING	LOC	3						Job	No. F.	KYB-20	016-02	5
PRO	DJECT	NAME	: <u>Geo</u>	otechnical S	urvey on the	detailed d	lesign for the	e Bago River Bridge Construction Project	BORING EQU	лрмен	t i	; <u>TO</u>	IO "DI"		-	DATE	: 2	8.11.2016	5-05.1	2.2010	51 5
LO	CATIC)N	: Bes	side Existing	Bago Rive	r Bridge (Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ury Direct	Circulatio	CLI	ENT	_		-		
GR	OUND	LEVEL	: <u>-4,4</u> : F 2	41m 05261.919 -	N 1857832	226 DI	ртн .	63.00m	GROUND W	N TER LE	VEL.	: Ven	tical ter River	Red	-	NIPPO	N KC	DEIC	O.,	LTI).
T	ORDI				1 1057052				Sito Cito III		1.4		S	TANDARD	PENETRAT	ION TEST	10.44		IN OUC	-	-
	(1		0	1.1	1.1	NSITY	1.1			H (m)	(mm))	(m)	-	TEST M	ETHOD (A	STM)	TE.	5/10	PLING	-	-
(m)	UON (I	(II (m)	NESS (II	M		IVE DE	AME	SOIL DESCRIPTION		DEPT	(DEP AETER	DEPTI	GL (m)	30cm)	CURVEO	F BLOW •	(PLE & No.)	GL - (m	_	_	e Ē
SCALE	ELEVA	DEPTH	THICK	DIAGR	COLOU	RELAT (or) CC	N TIOS			DATE	DIAN	WATER	DEPTH	(Blows	(Blow	s/30cm) 30 40 50	SAA	HIGH	ICR (%	SCR (%	RQD (%)
-						1	1														
31					gray	Firm	CLAY	Firm to stiff, gray, moist, med	ium to high				31.00	6/30			P-31	31.00			131
32						stiff		pusticity, CLAT				- 8	32.00	7/30			P-32	32.00			32
33													33.00	7/30			P-33	33.00			33
34													34.00	0.00	I		P.24	33.45			34
- Annual													25.00	9/30			1-54	34.45			in the second se
dum													33.00	12/30	1		P-35	35,45			lumb
361-	40.41	36.00	17.00		-								36.00	19/30	1 Y		P-36	<u>36.00</u> 36,45			136
37					grav	Stiff	CLAY	Stiff to hard, gray, moist, med	ium to high	02.12.16			37.00	18/30	+		P-37	37.00			37
38						to hard		plasticity, CLAY with silt					38.00	16/30			P-38	38.00			38
39								Thin sand layers are well intercalated layer	observed as				39.00	26/30	$ \rangle$		P-39	39.00			39
40													40.00	2000			P.40	39.45			40
Innu													41.00	26/30			1-40	40.45			E
+1													41.00	21/30	1 K		P-41	41.00			thun.
421													42.00	26/30			P-42	42.00			42
43				1.43									43.00	24/30			P-43	43.00			43
44													44.00	36/30			P-44	44.00			44
45													45.00	14/30	1	111	P-45	45.00			45
46													46.00	10/20	$ \lambda $		P-46	45.45			46
47													47.00	19/30	$ \lambda $		1.40	46.45			47
- International														26/30	1		P-47	47.45			lum
481				1000						48.00			48.00	25/30			P-48	48.00			40 41
49												1	49.00	42/30			P-49	49.00 49.45			49
50												1	50,00	22/30	1		P-50	50.00			50
51													51.00	20/30			P-51	51.00			51
52													52.00	47/30		N	P-52	52.00			52
53													53.00					52.45			53
Inner														38/30		11	P-53	53.45			in the second
54													54.00	37/30			P-54	54.00			21uuu
55				in the									55.00	24/30	 <		P-55	55.00 55.45			155
56												13	56.00	42/30			P-56	56.00			56
57										04.12.16		18	57.00	37/30		4	P-57	57.00			57
58-	62.41	58.00	22.00)						2.195			58.00	50/27			P-58	58.00			58
59					greenish	Very	Clayey	Very dense, greenish gray to ye	llowish gray,				59.00					59.00			59
- Internet					gray Io	dense	SAND	moist, fine to medium grained, Clayey SAND	low plastic					50/27		111	P-59	59.43			in the second se
001					gray		21						00.00	50/17		111	P-60	60.00			
61	NOT	ES	-	1000	-		_	Sample key		<u>P1</u>	anner stru	cture	61.00		Discont	inuities				1	E61
F	Relati	lative density	sity desi	T N-Value	Consistence	tency descrip	ption FN-Value	Pr. Disturbed sample PBT Permeab T. Undisturbed Sample VS Vane Sh	ility Test car Test	Term Very thick		Spacing >	2000	Very	Term widely spaced	Spacing >2	(mm) 2000		FUKKE	N CO.	LTD.
	Ver	ry hoose		0 - 4	Very soft		under 2	PMT Pressure (Denison sampler)	meter Test	Medium	-	600 - 200 -	600 200	Mec	iery spaced lium spaced	600 - 1 200 -	600	FGEX	rangon fw:051-80	ndese, ses	- 420089762 Burl com
	Medi	um dense		10 - 30 30 - 50	Firm		5 - 8	Rock core sample (Single core tube) 0 - 25 Rock core sample 25 - 50	Very poor Poor	Very thi	n	20 -	60 20	Very of Extreme	losely spaced	1 20 -	60	Revision N Revision E	lo. Date	Rev:	00 2.2016
t	Ver	y dense	1	over 50	Very stiff Hard		6 - 30 over 30	(Double core tube) Reck core sample (Core Loss) (Core	Fair 7 Good	hinly lami	nated	\$	á	Remarks							
-	1			1	timed	-1-1		W-1 Water sample 90 - 10	0 Excellem												1

出典: JICA 調査団

図 4.1.46 ボーリング調査結果 BH-BD-12(2)

BC	ORE H	IOLE N	o. Bl	I-BD-12				BO	RING	LOC	2							Job N	lo. F. Sh	KYB-2 weet No.	3	5 OF 3
PF	ROJECT	NAME	: <u>Geo</u>	technical S	urvey on the	detailed of	esign for th	Bago River Bridge Construction Project	BORING EQ	UIPMEN'	r	: <u>TO</u>	HO "D1"		-	D	ATE	: 28	11.2016	5~05.1	2,201	6
L	OCATIO	0N	: Besi	ide Existing	g Bago River	Bridge (hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direct	Circulatio	1 CL	IENT					1.	-
GI	ROUNE	LEVEL	: <u>-4.4</u>	1m	N 1957075	226 54	IPTU .	63.00m	ORIENTATIO	ATERIC	VET	: Ver	tical	Rad	+	NI	PPO	N KO	EIC	O.,	LT	D.
	JURUI		. <u>c</u> 2	10201313	14 165/832.	20 DI	- and i	(12,000)	OKOUND W.		WEL .	. <u>On</u>	s s	TANDARD	PENETRA	TION TE	51	× 33	. 61.6.	and in the		T
						VSITY				(iii)	((un) 4	(m)	-	TEST M	ETHOD (ASTM)		1	SAM	IPLING	-	-
â	II) NOL	3L-(m)	ESS (m	N		VE DE	NME	SOIL DESCRIPTION		DEPTI	ICTER (DEPT9.	(in) - Ju	doc 30cm)	CURVE	OF BLOV	•	(PLE & No.)	(m) - JE			. 1
CALE (LEVAT	EPTBC	HICKN	IAGRA	INOTO	ELATT (or) CO	OIL N			ATE&	DIAM	/ATER	EPINC	N-Va	(Blo	v Value ws / 30cm	n)	SAM (Type.	EPTH C	CR (%)	CR (%)	QD (%
S III	- 22	0	H		Ū.	22	ŝ				Ċ.	~	-	~ 0	10 20	30 4	0 50	-	Q	4	w.	8 10
61					greenish gray	Very dense	Clayey SAND	Very dense, greenish gray to ye moist, fine to medium grained,	llowish gray, low plastic				61.00	50/15				P-61	61.00			10
62					to yellowish			Clayey SAND					62.00	50/17				P-62	62.00			
620		÷.			gray								62 00	50(1)			II	1-02	62.32	11		
031	-67.72	63.31	5.31		-	_			-	63.00			63.00	50/16			+	P-63	63.00			il man
64								This borehole is terminated	at 63.00m,			0	64.00					1.1				6
65								according to the termination criteri	a.				65.00									
66													66.00									
001													00.00									dum
67													67.00									10
68													68.00									in the
69													69.00									
Innte																						hunt
70													70.00									n m
71													71.00									17
725													72.00									ulun7
antine of																						turit.
Shund													75.00									-
74													74.00									17
75													75.00									117
76													76.00									-
hunt																						dunu
77													77.00									17
78													78.00									17
79													79.00									-
Junto																						inter
803													80.00									il un
81													81.00									18
82													82.00									11100
													112 100									
- Shund											1											alum t
84											1		84.00									18
85													85.00									1118
86													86.00									interest
lunt																						hum
87											1		87.00									18
88													88.00									100
89													89.00									allow 8
00													00.00									militi
alun													90.00									il un
91	NOT	ES	1	P				Sample key		PI	anner str	ucture	91,00		Disco	ntinuities	in e	L	_			Es
	Re	elative den	sity desci	ription	Consis	ency descrip	Nion	F. [Rearbot semple ISPT angle] PBT Permonit	ility Test	Term Very thick	k	Spacing >	2000	Veryw	Term idely spac	ed	Spacing (n > 20	ana) 00		FUKKE	N CO	, LTD.
1	Relati	ive density ry loose	21/	most 0 - 4	Consistence Very soft	y se	inder 2	Pristor sampler) PMT Pressure Instituted Sample	meter Test	Thick Medium		600 - 200 -	2000	Wid	ely spaced um spaced	-	600 - 20 200 - 6	00	TGEX	(Yangor Tel sar - sa	Branc notated set	h) + 420089782
	Med	loose	-	4 - 10 0 - 30	Soft		2 - 4	(Derrison sampler) Rock core sample (Simple core table) D = 25	Very poor	Thin Very thi		60 -	200	Clos Verv e	ely spaced	ed	60 - 20	0	Revision N	ía,	Rev	00
	l	Dense Ty dense	3	0 - 50 wer 50	Shift Very stiff		9 - 15	Rock core sample 25 - 50 (Double core rubd) 50 - 75	Poor T	hickly lami	nated	6 -	20.	Extremel	y closely s	paced	< 20		Revision É	Date	12,1	7.2016
		, soully	1 0	the two	Hard		over 30	Rock core sample (Core Loss) To - 10 (Core Loss)	Good					Remarks								
1								90 - 10	Excendin													

出典: JICA 調査団

図 4.1.47 ボーリング調査結果 BH-BD-12(3)

BC	RE H	OLE N	o. BI	I-BD-13				BO	RING	LOC	2						Job A	o. Fl	KYB-2010 eet No	6-025 1 OF	7 2
PR	OJECT	NAME	: Geo	technical St	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMENT	r'	: <u>TO</u>	HO "D1"		2	DATE	: 28	.11,2016	~05,12.	2016	
LC	CATIO	N	: Besi	ide Existing	Bago River	Bridge (T	hanlyin Brid	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulatio	CLIE/	<u>NT</u>					
GF	OUND	LEVEL	: 4.4	2m	N 1967700	671 197	DTU	56.00m	ORIENTATIO	ON ATER 1 P	VE	: Ver	tical	Bad		NIPPON	V KO	EI C	0., L	TD.	
	ORDIN	ATE	: <u>E 20</u>	15289.363 ;	N 1857790.	6/1 DE	ин :_	56.00m	GROUND W	I	VEL	: <u>Un</u>	der River	Bed	PENETRATIO	N TEST	DMT				
			~			SILV				(0)	((um) ((um	(m)		TEST N	ETHOD (AST	M)	PMI	SAM	PLING	-	
(m	m) NOI	iL - (m)	ESS (m)	×		VE DEN NSISTE	IME	SOIL DESCRIPTION		DEPTH	(DEPT ETER (DEPTH	(m) - TL	30cm)	CURVE OF I	BLOW •	PLE & No.)	iL - (m)			(11
VILE (EVAT	PIHO	HICKN	AGRA	anone	er) CO	DIL NA			ATE&	ASING	ATER	EPTH G	N-Val	N-Va (Blows /	30cm)	SAMI (Type d	PTB G	(%) X.	(%) CC	ALEG
S(iii	2	4	a mmr	0	R.	St		-	q	0	*	ñ	≈ 0	10 20 3	40 50		DI	P 2	N N	SC
1					brownish	Very	Sandy	Very soft to soft, brownish gray	, moist, fine				1.00	1/30			P-1	1.00		Т	
2					gray	soft to	CLAY	grained, low to medium plast CLAY	icity, Sandy				2.00	200				2.00			2
						son								2/30			1.2	2.45	,		
alun												14	3.00	2/30			P-3	3.00			alum
4	-8.42	4.00	4.00		-				_				4.00	2/30			P-4	4.00	6		4
5					brownish	Very	Clayey	Very loose to loose, brownish gr	ay, moist to	28.11.16			5.00	3/30			P-5	5.00			5
6					gray	to	SAND	wet, tine grained, low plastic Claye	y SAND	2.00			6.00	100			D.6	6.00			6
- International Provide Provid					(icose		plasticity, Sandy CLAY layer is	observed as				7.00	4/30			1-0	6.45			-
duni	1							intercatated tayer at that depth						013			U T-1	(m) cm 7.80			L'
8	-12.42	8.00	4.00				-	-					8.00	5/30			P-7	8.00			18
9				***	brownish	Loose	Silty	Loose to medium dense, brownish moist to wet fine grained Silty SA	gray to gray,				9.00	4/30			P-8	9.00			19
10				***	to	medium dense	on the second	GL: $(11.00 \sim 11.45)$ m, stiff, fine	grained, low		10.00		10.00	22/20	N		P.0	9.45			10
1				***		1002		plasticity, Sandy CLAY layer is ob depth	served at that		Ø112		11.00	23/30	X			10.45			E.,
The second								GL: (12.00 ~ 12.45)m. medium	dense, fine					15/30			P-10	11.00			
12				1.1				grained, Clayey SAND layer is obs	served at that				12.00	15/30			P-11	12.00			12
13				***									13.00	19/30			P-12	13.00			13
14				**									14.00	15/20			P-13	13.45			14
15	10 12	15 00	7.00	* * *	-								15.00	13/30	I		1.1.	14.45	21		15
- and	17.12	15.00	1.44		(and a		Number all the same sector that the	ting the second	1				7/30	1		P-14	15.45			
16					gray	to	CLAY	medium plasticity, Sandy CLAY	uned, low to				16.00	9/30	¥		P-15	16.00 16.45			E16
17						sun							17.00	10/30	+		P-16	17.00			17
18													18.00	14/30			P-17	18.00			18
19	-23.42	19.00	4.00		J								19.00					18.45			19
untim					-				- 11					9/30	1		P-18	19.45			min
201					gray	Firm	CLAY	Firm to very stiff, gray, moist, me	dium to high	20.00	1		20.00	12/30	1		P-19	20.00			120
21	2					stiff		GL: (31.00 ~ 31.45)m, very stiff.	fine grained.				21.00	10/30	4		P-20	21.00			21
22								low to medium plasticity, Sandy C observed as intercalated layer at that	LAY layer is				22.00	10/30	•		P-21	22.00			22
23				1222									23.00	5/20				22.45			23
24													24.00	3/30			P-22	23.45			100
41													24.00	5/30			P-23	24.00			-
25													25.00	7/30			P-24	25.00			25
26				0232									26.00	5/30			P-25	26.00			26
27													27.00	9/30	V		P-26	27.00			27
285												Ц,	28.00	7150			1	27,45			28
- Short														10/30	1		P-27	28.45			linn
29													29.00	6/30	$\left\{ \mid \mid \right\}$		P-28	29.00 29.45			E29
30													30.00	9/30			P-29	30.00			30
31	North				-			Continue to next sheet					31.00		X	144.5		50.43	4		E31
	Rei	lative dens	sity desci	ription	Consist	tency descrip	tion	Sample key P-1 Bisturbed sample (SP) ample) PBT Permeah	lity Test	Term	anner str	spacing	g (nun)		Term	Spacing (m	m)		UKKEN	CO., L'	TD.
	Relativ	e density	SPI	N-Value mass	Consistenc	y SPT	N-Value	T-+ Unitismithed Sample VS Vane Shi (Piston sampler) PMT Pressurer	neter Test	Thick		600 -	2000	Wi	iely spaced	> 200 600 - 200	0		Yangon Bi	Enginee ranch)	87S
	L	voose		4 - 10	Soft		2 - 4	BD-1 (Denison sampler) Rock core sample	Term	Thin		60 -	200	Clo	sely spaced	200 - 60		evision N	an Type age	Rev: 00	50071
	D	ense dense	3	0 - 50	Stiff		9 - 15	Rock core sample (Double core tube)	Poor 7	hickly lami	nated	6 -	20	Extreme	ly closely spaced	d <20 - 60		Revision D	ate	12.12.20	016
	ver	aquite	1 0		Hard	0	ver 30	Rock core sample (Core Loss) So - 75 (Core Loss) T5 - 90 (Do - 100	Good	any mult		<	V.	Remarks							
	_							- 100 - 100	- convertient				-								

出典: JICA 調査団

図 4.1.48 ボーリング調査結果 BH-BD-13(1)

BORE HOI	LE No	BH-F	3D-13				BO	RING	LOC	2						Job ?	to. F.	KYB-20 eet No.	16-02	5 OF 1
PROJECT N LOCATION	AME	Geotec	hnical Su Existing	arvey on the Bago River	detailed o Bridge (7	lesign for the Thanlyin Bri	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ BORING ME	JPMENT THOD	e:	: <u>TOF</u> : <u>Rota</u>	IO "D1" ary Direct	Circulatio	n <u>CL</u>	DATE <u>ENT</u>	<u>. 28</u>	3.11.2016	- 05. <u>1</u>	2.2016	5
COORDINA	TE	: <u>-4,42m</u> : <u>E 2052</u>	89.363 ;	N 1857790.	671 DI	SPTH :_	56.00m	GROUND W	ATER LE	VEL	: Ver	ler River	Bed		NIPPO	ON KO	EI C	<i>O.,</i>	LTI	D.
					48				6	((m) &	œ	S	TANDARD TEST M	PENETRAT ETHOD (A	TON TEST STM)		SAM	PLING		
ELEVATION (m)	DEPTH GL-(m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSI (or) CONSISTENC	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (mr	WATER DEPTH (n	DEPTH GL (m)	N-Value (Blows / 30cm)	CURVE C (Bloy 10 20	•Value vs / 30cm) 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
antimulation latitude and antimulation of the second secon		۲۰٫۰۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰٫۰		gray	Firm to stiff	CLAY	Firm to very stiff, gray, moist, me plasticity, CLAY GL: (31.00 ~ 31.45)m, very stiff, low to medium plasticity, Sandy C observed as intercalated layer at the	fine grained, LAY layer is at depth	01.12.16 31.00			31.00 32.00 33.00 34.00 35.00	26/30 7/30 9/30 15/30 8/30			P-30 P-31 P-32 P-33 P-34	31.00 31.45 32.00 32.45 33.00 33.45 34.00 34.45 35.00 35.45			
131-40.42 3	6.00	7.00		gray	Stiff to hard	CLAY	Stiff to hard, gray, moist, med plasticity, CLAY with silt Thin sand layers are well intercalated layer	ium to high	0 <u>2 12 16</u> 40.00			36.00 37.00 38.00 39.00 40.00 40.00 44.00 44.00 44.00 44.00 44.00	11/30 23/30 23/30 22/30 20/30 22/30 22/30 38/30 38/30 32/30 26/30			P-35 P-36 P-37 P-38 P-39 P-40 P-41 P-42 P-42 P-43 P-44 P-45 P-45	36.00 36.45 37.00 37.45 38.00 39.45 40.00 40.45 41.00 41.45 42.00 42.45 43.00 43.45 43.00 43.45 44.00 43.45 45.05 45.45 45.05			
1977-1977-1977-1977-1977-1977-1977-1977	1.00 1	1777 1777 1777 1777 1777 1777 1777 177		grcenish gray to yellowish gray	Dense to very dense	Clayey SAND	Dense to very dense, greenish gray gray, moist, fine to medium graine Clayey SAND	to yellowish d, low plastic	03.12.16 48.00			48.00 49.00 50.00 51.00 53.00 53.00	27/30 27/30 13/30 14/30 50/30 50/30 50/30		1	P-46 P-47 P-48 P-49 P-50 P-51 P-52 P-53	47.45 48.00 48.45 49.00 49.45 50.00 50.45 51.00 51.45 52.00 52.45 53.00 53.45 54.00			
100.82 50	6.40	5.40					This borehole is terminated according to the termination criteria	at 56.00m, a.	54.00 05.12.16 56.00			<u>55.00</u> <u>56.00</u> <u>57.00</u> <u>58.00</u> <u>59.00</u> <u>60.00</u>	50/22		•	P-54	54.45 55.00 55.37 56.00 56.40			ana tetisi karakan dan atari ikan dara dan atari kan kan
NOTES Relative of Very lo Loos Medium Demo Very do	ive densit density oose se dense se lense	ty descripti SPT N- um 0 - 4 - 10 - 30 - over	on Value 4 10 30 50 50	Consist Consistenc Very soft Soft Firm Stiff Very stiff Hard	y SPI	Nion N-Value multi milder 2 2 - 4 5 - 8 9 < 15 6 - 30 over 30	Sample key ● 10 (bisished sende (bisished sample) PBT Fermede ■ 1- (prior sample) VS Vise Sb ■ 1- (distanted Sample (prior sample) PMT Persure (trainament) PMT ■ 0- (distanted Sample (trainament) PMT Persure (trainament) PMT Persure (trainament) ■ 0- (distanted sample) (conclose table) 0 - 25 (conclose table) 25 - 50 (conclose) 20 - 75 (conclose) ■ 0- conclose table (conclose) - 50 (conclose) 75 - 90 - 75 - 90	ality Test ear Test meter Tost Very poor Poor Fair Good	Pl Term Very thick Thick Medium Thin Very thin hickly tamin thinly lamin	nnnef stru s	eture Spacing 600 - 200 - 60 - 20 - 6 - <	61.00 (num) 2000 600 200 60 200 60	Very v Wie Med Clow Very c Extreme <u>Remarks</u>	Discon Term videly spaced lely spaced lely spaced lely spaced losely space losely space	tinuities Spacing d > 200 - 60 - d 20 - aced <	g (mm) 2000 2000 - 600 200 - 60 200 - 60 20	Revision E	FUKKE Consultin Yangon Wistr-au io.	N CO. Ig Engi Branch Rev: 12.1	. LTD. ineers 1) - coosy dartcom - 00 2.2016

図 4.1.49 ボーリング調査結果 BH-BD-13(2)

BORE H	IOLE N	o. BH-l	BD-14	-			BC	RING	LOC	3						Jub 1	lo. Fl She	KYB-2010 eet No.	-025 1 OF 2
PROJECT	I NAME ON	: <u>Geotec</u> : <u>Beside</u> : 4.13m	hnical Su Existing	rvey on the Bago River	detailed d Bridge (T	esign for the	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region	BORING EQ BORING ME	UIPMEN THOD	r	: <u>TOI</u> : <u>Rot</u>	HO "D1" ary Direc	t Circulatio	n <u>CLL</u>	DATE <u>ENT</u>	<u>: 1</u>	.11,2016	~ 19.11.	:016
COORDI	NATE	: E 2044	73.747 ; 1	N 1859195.	701 DE	ртн :	48.00m	GROUND W	ATER LE	VEL	: 1.1	Dm			NIPPO	N KO	EIC	0., L	TD.
1					ary CY	1			(11	(m) &	(m	2	STANDARD TEST M	PENETRAT ETHOD (AS	ION TEST STM)	PMT	SAM	PLING	
SCALE (m) ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTH DIAMETER (m	WATER DEPTH (DEPTH GL - (m)	N-Value (Blows/30cm)	CURVE O N- (Blow 10 20	F BLOW • Value s / 30cm) 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%) SC'R (%)	RQD (%) strate(m)
1 111	1.00	1.00		brownish gray	Loose	Filled	Loose, brownish gray, moist, fin grained, SAND (Filled Soil)	e to medium				1.00					1.00		
1.3. 1.3. 1.5.	1.00			gray.	Very soft to soft	CLAY	Very soft to soft, gray, moist to we plasticity, CLAY GL: (7.00 ~ 7.45)m; soft, gray, low to medium plasticity, Sandy C observed as intercalated layer at th	t, low to high fine grained, 'LAY layer is at depth	15.11.10 7.00	5	¥	2.00 3.00 4.00 5.00 6.00	2/30 2/30 0/45 1/30 2/30 4/30			P-1 P-2 PMT-07 P-3 T-1 P-4 PMT-02 P-5 P-6	1.00 1.45 2.00 2.45 3.00 <u>3.50~1.35</u> <u>4.00</u> (B) cm <u>4.80</u> 5.00 5.45 <u>6.00</u> <u>7.00</u> 7.45		يتساري ساييسا يسماي سماي مساير مساير
89779999999999999999999999999999999999	8.00	7.00		gray.	Very loose to medium dense	Silty SAND	Very loose to medium dense, gray, fine grained, Silty SAND	moïst to wet,		10.00 Ø112		8.00 9.00 11.00 12.00 13.00 14.00 15.00	2/30 15/30 17/30 13/30 6/30 18/30 14/30 14/30 16/30 19/30			Р-7 Р-8 Р-9 Р-10 Р-11 Р-12 Р-13 Р-14 Р-15 Р-16	8.00 8.45 9.00 9.45 10.00 11.00 11.45 12.00 12.45 13.00 13.45 14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45		ուն, ուսեներու արենքությունը որոներությունը։ Աներությունը հետությունը հետությունը հետությունը։
1991 1991 1991 1991 1991 1991 1991 199	18.00	8.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine	<u>16.11.10</u> 20.00			18.00 19.00 20.00 21.00 22.00 23.00 23.00 24.00	14/30 32/30 22/30 30/30 50/21 43/30 22/30 26/30			P-17 P-18 P-19 P-20 P-21 P-22 P-23 P-23 P-24	18,00 18,45 19,00 19,45 20,00 20,45 21,00 21,45 22,00 22,36 23,45 24,00 24,45 25,45 25,60		1011
20 <u>3-21.87</u> 27 28 29 30 30 31	26.00	8.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND Continue to next sheet Samele key	y, moist, fine		annerstr	octure	26.00 27.00 28.00 29.00 30.00 31.00	30/30 39/30 50/20 30/30 41/30	Discont	inuities	P-25 P-26 P-27 P-28 P-29	26.00 26.45 27.00 27.45 28.00 28.35 29.00 29.45 30.00 30.45		22 m 22 m 22 m 23 m 23 m 23 m 23 m 23 m
Relat Ve Med	elative density ive density ry loose Loose ium dense Dense ry dense	SPT N- 0 - 10 - 30 - over	ion -Value - 4 - 10 - 30 - 50 - 50	Consist Consistence Very soft Soft Firm Stift Very stift Hard	y SPT	tion N-Value Immet ander 2 2 - 4 5 - 8 9 - 15 5 - 30 ver 30	▶ (a) (missibility and a simple) ▶ (b) (missibility a simple) ▼ST Permeal ■ (missibility a simple) ▼S Vaces Simple) ▶ (missibility a simple) ■ (missibility a simple) ▶ (missibility a simple) ▶ (missibility a simple) ■ (missibility a simple) ▶ (missibility a simple) ▶ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple) ■ (missibility a simple)	ver Test meter Test Term Very poor Poor Fair Good 0 Excellent	Term Very thic Thick Medium Thin Very thi hickly lami thinly lami	k n inated nated	Spacing	g (mm) 2000 2000 600 200 60 200 6	Very v Wid Med Clos Very c Extreme <u>Remarks</u>	Term videly spaced lely spaced ium spaced losely spaced losely spaced ly closely spa	Spacing (> 20 600 - 2 200 - 6 60 - 2 200 - 6 60 - 2 20 - 6 ced < 20	mm) 000 000 000 00 00	Revision D	UKKEN Consulting Yangon Br w 357 - 80108 o. ate	CO., LTD. Engineers anch) a sea. +2009782 consulter con Rev: 01 10.01.2017

出典: JICA 調査団

図 4.1.50 ボーリング調査結果 BH-BD-14(1)

во	RE H	OLE N	o. BH	I-BD-14				BO	RING	LOG	Ł						Jab N	la. F. Sh	KYB-20. eet No.	16-02.	5 OF 2
PR	CATIC	NAME	: <u>Geot</u> : <u>Besi</u>	echnical Si de Existing	arvey on the Bago Rive	e detailed d r Bridge (T	esign for th hanlyin Bri	e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQ	UIPMENT THOD	0	: TOF	IO "DI" ary Direc	t Circulation	D.	ATE	: 15	11.2016	r~ 19.11	2016	5
CO	ORDI	NATE	: <u>E 20</u>	4473.747 ;	N 1859195	.701 DE	етн :_	48.00m	GROUND W	ATER LE	VEL	: <u>1.10</u>	ncai Dai			PPO	N KO	EIC	0., 1	LTI).
			2			SITY	177	-		(m)	1 (m) & m))	(8)		TEST MET	NETRATION THE HOD (ASTM)	ST	-	SAM	PLING	-	
SCALE (m)	ELEVATION (m)	DEPTH GL- (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DEN (or) CONSISTER	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPT) DIAMETER (n	WATER DEPTH-	DEPTH GL-(m)	N-Value (Blows/30cm)	N-Vahie (Blows / 30cr 0 20 30 4	n) 10 50	SAMPLE (Type & No.)	0EPTH GL-(m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
31	27 87	32.00	6.00	ж л ж л л л л =	gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine			1	31.00	41/30		•	P-30	31.00 31.45			and the second
33 34 35 36 37	27.81	32.00	0.00		gray	Medium dense to very dense	Clayey SAND	Medium dense to very dense, gra to medium grained, low plastic Cla	y, moist, fine yey SAND	<u>17,11,16</u> 35.00			33.00 33.00 34.00 35.00 35.00 37.00	35/30 31/30 50/30 45/30 50/17 46/30	Ĺ		P-31 P-32 P-33 P-34 P-35 P-36	32.00 32.45 33.00 33.45 34.00 34.45 35.00 35.45 36.00 36.32 37.00 37.45			ihmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun ilmutikuun i Anatoo anatoo
38 39 40 41 41 41 42	33.87	38.00	6.00		greenish gray	Very dense	Clayey SAND	Very dense, greenish gray, mi medium grained, low plastic Claye GL: (42.00 ~ 42.32)m; fine grave at that depth	oist, fine to y SAND I is including				38.00 39.00 40.00 41.00 42.00	50/15 50/18 50/20 50/15 50/17			P-37 P-38 P-39 P-40 P-41	38.00 38.30 39.00 39.33 40.00 40.35 41.00 41.30 42.00 42.32			17 International Alicenter Science
431 44 45 46 47 47	38.87	43.00	5.00		yellowish brown to reddish brown	Very dense	Clayey SAND	Very dense, yellowish brown to re moist, fine to coarse grained, low p SAND	eddish brown, Jastic Clayey	43.00			43.00 44.00 45.00 46.00 47.00	50/22 50/22 50/23 50/20 50/25			P-42 P-43 P-44 P-45 P-46	43.00 43.37 44.00 44.37 45.00 45.38 46.00 46.35 47.00 47.40			4 min 4 min 4 min 4 min 4 min 4
481040910010010101001001001001001001001001001	44.17	48.30	5.30					This borehole is terminated according to the termination criteri	at 48.00m, a.	19,11,16			49.00 50.00 51.00 53.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00 60.00	50/15		•	P-47	48.00 48.30			3. In 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19
510	NOT Relati Ver L Medi U Ver	ES lative density y loose oose am dense bense y dense	SPT () () () () ()) ()) ())))	iption N-Value (rest) 1 - 4 1 - 10 1 - 30 0 - 50 ver 50	Consisten Consisten Very soft Soft Firm Stiff Very stiff Hard	Rency descrip cy SPT 1 4 F 1	tion (well (well 2 - 4 5 - 8 9 - 15 6 - 30 (wer 30	Sample key Pr. Dimend emptities PBT Parmethies By Londiturbed Sempler VS Vaces By Londiturbed Sempler VS Vaces By Londiturbed Sempler VS Vaces By Londiturbed Sempler PMT Present Reck core semple 0 25 Reck core semple 360 75 Reck core semple 75 70 Weit Wate semple 70 10	titity Test coar Tasi meree Tast Very poor Poor Fair Good Excellent	Pk Term Very thick Thick Medium Thin Very thii hickly lamin thinly lamin	nnner stri	acture Spacing > 600 - 200 - 60 - 200 - 60 - 20 - 6 - 5 - 5 -	61.00 2000 2000 600 200 60 20, 60	T Very wid Widej Mediuz Closei Very clos Extremely <u>Remarks</u>	Discontinuities prive ely spaced / spaced / spaced / spaced ely spaced ely spaced	Spacing (w > 200 600 - 20 200 - 60 60 - 20 20 - 60 < 20 < 20	um) 00 00 00 10 1 1 1	FGEX Revision N Revision E	FUKKEN Consultion Yangon I nel ser - Norr O Nane	Rev. 70.01	LTD. neers) accessing accessing 01 1.2017

図 4.1.51 ボーリング調査結果 BH-BD-14(2)

в	ORE H	OLE N	o. Bł	1-BD-15				<u>B O</u>	RING	LOC	3						Job N	Vo. Fi Sh	KYB-201 eet No.	5-025 1 OF	2
Pf	ROJECT	NAME	: Geo	technical S	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	r	: <u>TO</u>	10 "D1"		4	DATE	: 08	3.11.2016	~ 12,11.	2016	
L	OCATIO	N	: Besi	ide Existing	g Bago River	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	t Circulati	on CLI	ENT		-	-	-	-
G	ROUND	LEVEL	: 4.24	im	N 1000104	eia Di	DTIL	e1.00-	ORIENTATI	ON	1.001	: Ver	tical		-	NIPPO	N KO	EIC	0., L	TD.	
Ç	JORDIN	NATE	: <u>E 20</u>	14501.604 ;	N 1859154.	.812 DI	егн с	51.00m	GROUND W	ATER LE	EVEL	: 1.00	Jm	and i Link i Ka	-		1.11		-		_
1	111	11		1.1	-	Ğδ				Ē	(m) &	(î		TEST 1	D PENETRAT METHOD (AS	ION TEST ITM)		SAM	PLING	_	
	(II) Z	(iii)	(m)			DENS	in .	SOIL DESCRIPTION		PTH (ER (m	PTH ((m)	î	CURVE O	BLOW .	(0)	(m)			
E (m)	ATIO	H GL-	KNES	RAM	DUR	CONS	WYN			B & DE	NG (D	ER DE	HGL	-Value cs / 30c	N	Value	AMPL5	HGL-	(%)	192	E(m)
SCAL	ELEV	DEPT	THIC	DIAG	COLC	REL/	SOIL.			UVI	CASI	WAT	DEPT	(Blow	(Blow 10 20	30 40 50	S, US	DEPT	TCR.	RQD	SCAL
Inn		1000			brownish	Loose	Filled	Loose, brownish gray, moist, fin	e to medium			1.1						17.5			
10	3.24	1.00	1.00		gray		SAND	grained, SAND (Filled Soil)		1	1.00	¥	1.00	1/30			P-1	1.00	- 11		H
2					grav	Verv	CLAY	Very soft, gray, moist to wet,	low to high				2.00	0/45			P.7	2.00		н.	2
at an a						soft	-1 ⁻¹ -1	plasticity, CLAY						I				2.45	1.1		
alun								GL: (7.00 ~ 7.45)m, very soft	t, gray, fine				3.00				U T-1	3.00 ()) cm			
4								CLAY layer is observed as interca	lated layer at				4.00	1/30			P-3	4.00			4
2 militi								that depth					5.00				1.5	4.45	1.1		1
lunt																	U T-2	(m) cm 5.80			
6													6.00	1/30			P-4	6.00			6
7													7.00	1			M.T.	7.00			7
2 milius	3.76	8.00	7.00										8.00	1			D 1-3	(st) cm 7.80			illes a
alunt	-2010	0.00	1.00	1 2 3			1.1	States -		1			0.00	4/30			P-5	8.45			hunt
9				* * *	gray	Loose	Silty	Loose to medium dense, gray, mois	st to wet, fine				9.00	24/30			P-6	9.00			19
10				N 4 4		medium	0.0,0	G1. (12.00) 12.40m; 6m; -					10.00	14/20	1		P.7	10.00			10
- International Contraction				* * *				medium grained, low plasticity, S	Sandy CLAY					14.50				10.45			E
11				* * *				layer is observed as intercalated depth	layer at that	1		1.05	11.00	10/30	1		P-8	11.00	21		
12				* * *									12.00	6/30			P-9	12.00			12
135				* * *						08.11.10			13.00	10.00	N		B.10	13.00			13
hout				111						13.00	1			18/30	I		P-10	13.45			
141													14.00	17/30	•		P-11	14.00	1		E14
15													15.00	21/30			P-12	15.00			15
16													16 00					15.45	1		16
hunt														20/30	IN		P-13	16.45			hunt
175				× × ×									17.00	27/30			P-14	17.00			17
18	-13.76	18.00	10.00	8 35 35									18.00	47/30			P-15	18.00			18
10		11		* * *		Danca	Cilm	Dance to madium dance area in	noist fina ta				10 00			X		18.45			E10
Junt				20 00 00 20 00 00	giay	to	SAND	medium grained, Silty SAND	norst, rute to				19.00	33/30		1	P-16	19.00			
201				и н н		dense	5.1						20.00	35/30			P-17	20.00			20
21				* * *									21.00	24/30	1	1	P-18	21.00			21
220				***									22.00					21.45			122
alunt				* * *									22.00	25/30	1		P-19	22.00			in the second
23				* * *									23.00	22/30	+		P-20	23.00			23
24	-19.76	24.00	6.00	1.1.2					-				24.00	25/30			P-21	24.00			24
25				XXX		1		And the second second					25 00			N		24.45			125
lint				* * *	gray	Medium dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND w	y, moist, fine ith clay					40/30		Ň	P-22	25.45			hum
26				* * *		to very		Thin clay layer is intercalated in the	is layer				26.00	44/30		•	P-23	26.00			126
27				X X X X X M		dense							27.00	50/25			P-24	27.00			27
281				XXX									28 00					27.40			122
40mm				XKX									20.00	37/30			P-25	28,45			4°
29				* * *									29.00	34/30			P-26	29.00			29
305													30.00	30/30		V I	P-27	30.00			30
310				K H H			3.4	Continue to next sheet					31.00					30.45			1
512	NOT	ES	dau / A	statu-				Sample key		Tar Pl	anner stru	sciure Spacin-	(mm)	-	Discont	inuities Spaning to	am) C			-	
	Relativ	sative density	SP1	npuon N-Value	Consistence	sy SP1	N-Value	T-1 (SPT sample) PBT Permeab T-1 Undisturbed Sample VS Vane Sh	niity Test	Very thic	k	> shacing	2000	Very	widely spaced	> 20	00		UKKEN Consulting	CO., LT Engineer	D. rs
	Ver	y loose	1	0 - 4	Very soft	L a	inder 2	Del Undistorbed Sample (Demison sampler)	meter Test	Medium	1	200 -	- 600	Me	dium spaced	600 - 20 200 - 6	00	FGEX	wishi - totos	96, 559 - 4200 960 - 1486 - 4200	389762 0/1
	Media	oose am dense	1	4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25	Very poor	Thin Very thi	n .	60 -	200 60	Very	osely spaced closely spaced	60 - 20 20 - 6	0	Revision N	a.	Rev: III	
	D	lense y dense	3	10 - 30 over 50	Stiff Very stiff	r)	9 - 15 6 - 30	Rock core sample (Double core tube) Rock core sample 50 - 75	Poor 1 Fair	hickly lami hinly lami	nated	6 <	20 6	Extrem	ely closely spa	ced < 20		Revision D	ate	10.01,201	17
	-		-		Hard		wer 30	(Core Loss) 75 - 90 	Good 0 Excellent				-	- Contract Co							
-								L	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		_			-							

出典: JICA 調査団

図 4.1.52 ボーリング調査結果 BH-BD-15(1)

BORE	HOLE N	io. Bl	H-BD-15				BO	RING	LOG	1						Job N	a. F.	KYB-20 eet No	2	5 OF 7
PROJEC	TNAME	: <u>Geo</u>	stechnical St	arvey on the	detailed d	esign for th	Bago River Bridge Construction Project	BORING EQ	JIPMENT	F	: <u>TO</u>	10 "DI"	1.00	DA	TE	: 08	.11.2016	i~ 12.1	1.201	5
LOCAT	ION	Bes	ide Existing	Bago Rive	r Bridge (1	hanlyin Bri	lge), Thaketa Township, Yangon Region.	BORING ME	THOD		Rota	ary Direc	t Circulation	- CLIENT						
GROUN	D LEVEI	4.24	im	NUMBER	013 DI		P1 00-	ORIENTATIO	DN	VEL	: Ver	tical	_		PPON	KO.	EIC	0.,	LT	D.
LOOKD	INALE	: <u>E</u> 2	1	14 1829154		and s	21.4MB	GROUND W	I	VEL	1.00	/m	STANDARD P	-	T	1				1
		-			SITY NCY				(m)	H (m) 8	(m)	_	TEST ME	THOD (ASTM)		-	SAM	IPLING	-	_
(III) NO	(m) - 1	ESS (m	5	1.2	E DEN	ME	SOIL DESCRIPTION		DEPTI	DEPT	DEPTH	(m)	(un)	CURVE OF BLOW	•	LE No.)	(m) - J			
NLE (P	DHI	ICKN	GRA	LOUR	(U) CON	T NV	1		TEA	SING	TER	DILLO	N-Val	N-Value (Blows / 30cm)		SAMF SAMF	THG	K (%)	(%) 2	(%) O
BLI	DEI	H	DIA	00	REI (o	los		_	VC	CA	WW	DEI	18 0 .	0 20 30 40	50		DEF	TCI	SCI	RQ
			л л л л я 2	1.11	1.1	2.1	Section 2 and		00 11 16			31.00					31.00			
			H a H	gray	Medium dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND w	y, moist, fine ith clay	31.00	1		21.00	32/30			P-28	31.45			
2					to very	24.00	Thin clay layer is intercalated in th	ie lavor				32.00	41/30		6	P-29	32.00			
3			8 9 P		dense		This city layer is intercalated in th	is layer				33.00	20/20			P.30	33.00			
		en e	* * *				Contraction of the second						29/30			F-30	33.45			International
13-29.7	6 34.00	10.00		-	-			_				34.00	25/30			P-31	34.00			
5			1222	gray	Medium	Clayey	Medium dense to very dense, gray	y, moist, fine				35.00	40/30			P-32	35.00			
					dense to	SAND	to medium grained, low plastic Cla	iyey SAND				36.00					35.45			
			aba dal bai uj		very dense							30.00	38/30			P-33	36.45			
7					100.0r						1	37.00	26/30			P-34	37.00			
8												38.00	41/20			p.16	38.00			-
The second se													41/30			1-35	38.45			hunth
2											1.0	39.00	50/28		*	P-36	39.00 39.43			
			14. 14. 14. 11									40.00	50/20		+	P-37	40.00			
												41 00					41.00			
			1000								1	40.00	50/25		1	P-38	41.40			
2									10.11.16			42.00	50/25		+	P-39	42.00			
3-38.7	6 43.00	9.00										43.00	50/20			P-40	43.00			
				and the second	View	Charles	Very dance to dance, soldich brow	n maint fina					50/25		T	1 10	43.44			
4 mm				brown	dense	SAND	to medium grained, low plastic Cla	yey SAND				44.00	50/30		1	P-41	44.00			
5					dense						15	45.00	43/30		(P-42	45.00			
6-41.7	6 46.00	3.00	·			-						46.00	-		V		45,45			al and
-	100						A	Se					50/30		T	1-45	46.45			in the second
7				yellowish brown	Dense to	Clayey SAND	Dense to very dense, yellowis reddish brown, moist, fine to co	h brown to arse grained,			1	47.00	50/28		+	P-44	47.00			il.
8				10 reddish	very dense		low plastic Clayey SAND					48.00	50/24		+	P-45	48.00			
				brown	10.1							40 00				5.3	48.39			in the second seco
									49.00			-12.00	50/27		1	P-46	49.42			dunt
0												50.00	50/22		+	P-47	50.00			iii lu
1			(12.11.16			51.00	50/15			P-48	51.00			all
-47.0	6 51.30	. 5.30	S STREET COME COMES		-		alan atalah sina ata	12.22	51.00				50110		T	-1	51.30			
all							This borehole is terminated according to the termination criteri	at 51,00m, a.				32.00								dum
3											14	53.00								milu
4												54.00								all states
and the second																				and the
2 miles												55.00								
6											d	56.00								hund
7												57.00								and the
hun																				
8												58.00								
9												59.00								all states
												60.00								
												00.00								-
1	TES			-			Samala bas			annes are	Instance	61.00		Discontinuitie			_			E
	Relative der	isity desc	ription	Consis	tency descrip	tion	P-1 Disturbed sample (SFT sample) PBT Permeab	sility Test	Terra	I	Spacing	(mm)		erm S	pacing (mr	m)		FUKKE	N CO	, LTD.
Rek	utive density	SP	TN-Value (mms)	Consistence	sy SP1	N-Vahie (mas)	T-1 Undisturbed Sample VS Valie Sh (Piston sampler)	icar Test	Very thick Thick		> 600 -	2000	Very wi	nety spaced	> 2000 600 - 2000	0		Consulta (Yangon	g Eng Branc	ineers 1)
V	ery loose		0 - 4 A - 10	Very soft Soft		mder 2 2 - 4	Det Undisturbed Sample (Denison sampler)) Term	Medium	+	200 -	600 200	Media	m spaced ly spaced	200 - 600	0	GEX	Tel: 851 - 80	roape sa	- 42008976 Bars.com
Me	dium dense		10 - 30	Firm		5 - 8	(Single core sample (Single core tube) 0 - 25 Rock core sample	Very poor	Very thin	haled	20 -	60 20	Very els	sely spaced	20 - 60		Revision N Revision D	la. Date	Res:	01
V	ery dense		over 50	Very stiff		6 - 30	(Double core tubo) 50 - 75	Fair	hinly lamin	ated	<	6	Remarks	Total Succes	~ 20		100	- 1		1.1.1
			1	Hard	1	wer 30	Core Loss) 75 - 90	0 Excellent												

図 4.1.53 ボーリング調査結果 BH-BD-15(2)

во	RE H	OLE N	o. Bł	I-BD-16				<u>B O</u>	RING	LOO	3							Job N	lo. Fl	KYB-20	6-02:	OF 2
PRO	OJECT	NAME	: Geo	technical Su	rvey on the	e detailed d	esign for the	e Bago River Bridge Construction Project	BORING EQ	JIPMEN	т	: <u>TO</u>	HO "DI"	-	4	4	DATE	: 08	.11.2016	~ 12.11	.2016	-
LO	CATIO	N	Besi	ide Existing	Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		Rot	ary Direc	t Circulati	on	CLIENT	÷					
CO	ORDIN	ATE	: <u>E 20</u>	04526.627 :	N 1859111	.524 DE	РТН :_	57.00m	GROUND W.	ATER LI	EVEL	: <u>ver</u> : <u>1.3</u>	Om			N	IPPO	N KO	EIC	0., 1	TL),
1	-										30		Ĩ.	STANDAR	PENET	RATION	TEST	_	SAM	PLING	_	T
	(E)	â	(111)			TENCY	-1	and an inclusion		TH (m)	PTH (m)	TH (m)	â	-	CURV	E OF BLO	ow •		î	T	T	
E (m)	NOITA	10T-0	KNESS	RAM	UR	TIVE D	NAME	SOIL DESCRIPTION		& DEP	NG (DE	ER DEP	0-10H	Value s / 30cm	-	N-Value		WPLE pe & No	1 GL - ((%	(%	(%) E (m)
SCAL	ELEV	DEPT	THIC	DIAG	COLC	REL/	SOIL			DAT	CASI	TAW	DEPT	(Hlow	10 2	Blows / 30	40 50	's E	DEPT	TCR	SCR	ROD
1 militar	3.35	1.00	1.00		brownish gray	Loose	Filled SAND	Loose, brownish gray, moist, fine grained, SAND (Filled Soil)	e to medium			T	1.00						1.00			indust
Junit									777.048	1		¥		0/45				P-1	1.45			hunt
Almut					gray	Very soft	CLAY	Very soft to soft, gray, moist to we plasticity, CLAY, with silt	t, low to high				2.00					0 T-1	2.00 (#) cm 2.80			alumi
3						to soft		Silt percent is increased downward.			3.00 Ø112		3.00	0/45 🔶				P-2	3.00 3.45			3
4											11		4.00					0 T-2	4.00			4
1 Sile													5.00	0/45 •				P-3	4.80			din 5
6													6.00					DT2	6.00			16
7													7.00	0/45				P-4	6.80 7.00			7
2 miliun													8.00	I					7.45			and and a
Innin													0.00					0 T-4	(#) cm 8.80			human
hun													9.00	2/30				P-5	9.00			alum
10												R	10.00					0 T-5	10.00 (m) cm 10.72			10
11	-6.65	11.00	10.00	N N R				-	_				11.00	5/30				P-6	11.00			11
12				* * *	gray	Loose	Silty	Loose to medium dense, gray,	moist, fine				12.00	5/30				P-7	12.00			12
13				RPP		medium dense	SALID	graned, Sitty SACOS					13.00	15/30	1			P-8	13.00			13
141				* * *									14.00	13/30	1			P-9	13.45			14
154	10.65	15.00	4.00	* * *	1		1						15.00	20/20				P.10	14.45			15
16				× * *									16.00	20/30		Ń			15.45			16
Innin					greenish gray	dense	SAND	moist, fine to medium grained, Silt	gray to gray, y SAND				17.00	23/30				P-11	16.45			in the second
- Annual				***	gray	dense		Thin clay layer is intercalated in thi	is layer					30/30		1		P-12	17.45			alumb
18				***									18.00	21/30				P-13	18.00 18.45			18
19				X 8 X .									19.00	25/30		¥		P-14	19.00 19.45			19
20				8 8 8 8 8 8						08.11.1	6		20.00	26/30				P-15	20.00			20
21				* * *									21.00	33/30				P-16	21.00			21
22													22.00	21/30		Λ		P-17	22.00			22
23													23.00	20/20				P.18	22.45			23
24				***									24 00	20/30	1/			1-10	23.45			24
- International Providence Provid				× N N × S Z									25.00	13/30	1			P-19	24.45			
251				* * *								14	25.00	15/30				P-20	25.45			1
261-	21.65	26.00	11.00		-								26.00	22/30				P-21	26.00 26.45			26
27					gray	Medium	Silty	Medium dense to very dense, gray	, moist, fine				27.00	19/30				P-22	27.00			27
28						dense to	SAND	to medium grained, Silty SAND wi	th clay				28.00	27/30		4		P-23	28.00			28
29						dense		at that depth	is increased				29.00	32/30				P-24	29.00			29
30													30.00	50/29				P-25	29.45			30
313								Continue to next sheet					31.00				1		30.44			31
]	NOTI	ative dens	ity desc	ription	Consis	tency descrip	tion	Sample key P-1 Disturbed sample (SPT sample) PBT Permeab	ility Test	Term	lanner sin	acture Spacing	g (mm)		Dis Term	scontinuiti	Spacing (n	nm)	F F	UKKEN	CO.,	LTD.
	Relativ	e density	SPT	N-Value (maint	Consisten	sy SPT	N-Value	T-I Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure	car Test meter Test	Very thic Thick	*	> 600 - 200	2000	W	widely space	ed and	>20 600 - 20 200 - 4	00	FIGER	Yangon B	g Engi Branch	18867S
	La	xose m dense		4 - 10	Soft Firm		2 - 4 5 - 8	Consistent sampler) Rock core sample (Single core tube) 0 - 25	Term Very poor	Thin Very th	in	60 - 20 -	200 60	CI	osely space	ed baced	200 - 6 60 - 20 20 - 6		Revision N	0.	Rev:	61 01
	D	ense dense	3	0 - 50 wer 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tube) Rock core sample 50 - 75	Poor T Fair 1	hickly lam hinly lam	inated	6 -	20 6	Extrem	ely closel	y spaced	<20		Revision D	ate	10.01	.2017
			2	L	Hard		ver 30	(Core Loss) 75 - 90 W i Water sample 90 - 10	Good Excellent									1				

出典: JICA 調査団

図 4.1.54 ボーリング調査結果 BH-BD-16(1)

BC	ORE H	OLEN	lo. Bl	H-BD-16				BO	RING	LOC	1						Job N	o. F. Sh	KYB-20. eet No.	6-02:	5 OF 2
PR	OJECT	NAME	: Geo	otechnical St	arvey on the	e detailed c	esign for the	e Bago River Bridge Construction Project	BORING EQ	UIPMENT	F	TOP	10 "D1"	10.10	I	DATE	: 08	.11.2016	~ 12.11	.2016	4
LC	CATIC	LEVEL	: Bes	ide Existing	Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rota	tical	t Circulation	- CLIENT	Sec.	in the		1		
c	ORDIN	ATE	: <u>E</u> 2	04526.627 :	N 1859111	. <u>524</u> DI	ертн :_	57,00m	GROUND W	ATER LE	VEI.	: 1.30	m			IPPO	N KO	EIC	0.,1	TL).
						35				î	(m) &	ĩ		STANDARD P TEST ME	ENETRATION T THOD (ASTM)	EST	-	SAM	PLING	- 1	
	(m) NO	(m)	(m) SS			E DENS	ME	SOIL DESCRIPTION		BLIE (DEPTH ITER (m	DEPTH (I	(m)	(m)	CURVE OF BLC	w •	LE No.)	(m)	11		2
ALE (n	LEVAT	EPTH GI	HICKNE	IAGRAN	OLOUR	eLATTV ar) CON	NN TIC			ATE & I	ASING (ATER I	EPTH GI	N-Vah	N-Value (Blows / 30c	m)	SAMP (Type &	PTH G	CR (%)	CR (%)	QD (%)
S		Q	P		0	2	N.		_	2	0	*	0	≈ 0 1	0 20 30	40 50		Di	9	Ø.	S SC
31				* * *	gray	Medium	Silty	Medium dense to very dense, gra	y, moist, fine				31.00	41/30		¥1	P-26	31.00			3
32				***		to to	SAND	to medium grained, Silty SAND w	ith clay	09.11.16		1.	32.00	38/30		4	P-27	32.00			32
33				* * *		dense		at that depth	t is increased				33.00	38/30			P-28	33.00			33
34				* * *									34.00	50/28			P-29	33,45			34
35	-30.65	35.00	9.00	* * *									35.00	20/20			B 20	34.43			33
361													36.00	30/30	N		1-30	35.45			
- Contraction					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, r medium grained, low plastic Claye	noist, fine to y SAND				27.00	14/30	1		P-31	36.45			
- Innte						dense		GL: (35.0m ~ 35.45)m, trace of c	rganic matter				37.00	10/30			P-32	37.45			alumin
38								are observed at mar deput				4	38.00	26/30			P-33	38.00 38.45			13
39				0									39.00	41/30			P-34	39.00 39.45			39
40													40.00	37/30			P-35	40.00			4
41													41.00	35/30			P-36	41.00			4
42													42.00	27/30			P-37	42.00			4
43	-38.65	43.00	8.00					1				2	43.00	34/30			P-38	42.45			4
44		r i					1	5.0 - 0.0 - 5		10.11.16			44.00	44/30			P-39	43.45			4
45		NAME : Gontechnical Sur Bestide Existing II LEVEL : 4.35m URTE : E 204526.627 : N (0) : 0 (0) : 0 (0) : 0 (0) : 0 (0) : 0 (0) : 0 (0) : 0 (0) : 0 (1) : 0 (2) : 0 (3) : 0 (2) : 0 (3) : 0 (2) : 0 (3) : 0 (2) : 0 (3) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (4) : 0 (5) : 0 (2) : 0 (3) : 0 (3) <td:< td=""><td>reddish brown</td><td>Medium dense</td><td>Clayey SAND</td><td>Medium dense to very dense, rede yellowish brown, moist, fine</td><td>to medium</td><td>44.00</td><td></td><td></td><td>45.00</td><td>50/20</td><td></td><td></td><td>P 40</td><td>44.45</td><td></td><td></td><td>4</td></td:<>	reddish brown	Medium dense	Clayey SAND	Medium dense to very dense, rede yellowish brown, moist, fine	to medium	44.00			45.00	50/20			P 40	44.45			4		
46					yellowish brown	very dense		grained, low plastic Clayey SAND					46.00	50/20		1	1-40	45.41			4
17 AV													47.00	19/30	N		P-41	46.45			
+ Junu													47.00	33/30			P-42	47.45			-
481												1	48.00	50/29		2	P-43	48.00			4
49		A											49.00	37/30			P-44	49.00 49.45			4
50	-45.65	50.00	7.00		-								50.00	50/28			P-45	50.00 50.43			50
51				ar (944) (444) (444)	reddish	Dense	Clavey	Dense to very dense, reddish	n brown to				51.00	38/30			P-46	51.00			5
52					brown to	to very	SAND	yellowish brown, moist, fine to co low plastic Clayey SAND, with	barse grained, trace of fine				52.00	50/26			P-47	52.00			5
53			S		brown	dense		gravel					53.00	50/28			P-48	53.00			53
54										11.11.16			54.00	50/29			P-49	54.00			154
555	21			0						54.00			55.00	50/25			P-50	55.00			15
56													56.00	60/22		II	0.41	55.40 56.00			50
570										12.11.14			57.00	30/23		I	1-51	56.38			Interior
alunda a	-53.01	57.36	7.36		-					57.00	1		50.00	50/21		1	P-52	57.36			Luni
28 million								This borehole is terminated according to the termination criteri	at 57.00m, a.				58.00								ñ.
595													59.00								5 Inna
60													60.00								60
61	NOT	ES			-			Sample key		Pi	anner stri	acture	61,00		Discontinuitie						6
	Relativ	lative den	sity desc SP	T N-Value	Consis	tency descrip	N-Value	P-1 Disambed sample PBT Permeat (SPT sample) PBT V Value T-1 Undisample VS Value SN Value	nility Test war Test	Term Very thick		Spacing >	2000	Very wi	dely spaced	Spacing (n > 20	um) 00		UKKEN	CO.	LTD: neers
	Ver	y loose		0 - 4 4 - 10	Very soft	1	inder 2	D- Undisturbed Sample (Denison sampler) PMT Pressure	meter Test	Thick Medium Thin	+	600 - 200 -	2000 600 200	Wide Media Close	ny spaced in spaced ly spaced	600 - 20 200 - 60 60 - 20	00	•œ≡x	anyon i in ist-alt	Hanich Hasi, add personnal	- 420688762 hank som
	Medi	un dense ense		10 - 30 30 - 50	Firm		5 - 8 9 - 15	Rock core sample (Single core tube) 0 - 25 Rock core sample 25 - 50	Very poor Poor 7	Very this	nated	20 -	60 20	Very cle Extremely	sely spaced closely spaced	20 - 60		Revision N Revision D	o. late	Rev: 10.01	01 .2017
	Ver	y dense	1	over 50	Very stift Hard	r i	6 - 30 over 30	(Louble core (labe) Rock core sample (Core Loss) 50 - 75 75 - 90	Fair Good	Thinly lamin	nated	<	6	Remarks					-	-	
								W-1 Water sample 90 - 30	0 Excellent					1							÷.

出典: JICA 調査団

図 4.1.55 ボーリング調査結果 BH-BD-16(2)

во	ORE H	OLE N	o, Bł	I-BD-17				BC	RING	LOC	3						Job N	lo. Fl She	KYB-201 eet No.	6-025 1 OI	7 2
PR	OJECT	NAME	: <u>G</u> eo	technical S	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMEN	Г	: <u>TO</u>	10 "D1"	-	-	DATE	: 23	.11.2016	~ 26.11.	2016	- 3
LO	CATIC	ON LEVEL	: Bes	ide Existing	g Bago Rive	r Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		Rota	ary Direct	t Circulatio	CLII	ENT		1.1			
CO	ORDIN	NATE	: E 20	04551.650 ;	N 1859068	.236 DE	ртн :_	47.00m	GROUND W.	ATER LE	VEL	: Un	der River	Bed	3	NIPPO	N KO	EIC	0., L	TD.	
T				1	1		-				8			STANDARD TEST N	PENETRATI	ON TEST	PMT	SAM	PLING	-	Т
	(iii)	Ê	(H)		1.4	STENCY				PTH (m)	R (mm)	(m) HT	Û.		CURVE OF	BLOW .	2	(E)			1
(m)	VOLLY,	H GL - (KNESS	RAM	DUR	VTIVE D	NAME	SOIL DESCRIPTION		E& DEI	NG (DI	ER DEF	H GL-(-Value es / 30cm	N* ³	Value	AMPLE pc & N(H GL -	(%)	(%)	E (III)
SCAI	BLEV	DEP1	THIC	DIAC	con	REL/	SOIL			DAT	CASI	WAT	DEPT	(Blov	10 20	30 40 50	s.E	DEPT	TCR	RQD	SCAL
Turn							6	1 Sec. 2010					1.00					1.00			
hund					gray	Very	CLAY	Very soft, gray, moist to wet, low plasticity, CLAY with trace of fine	w to medium				2.00	0/45			T-I	1.45			E,
- Innie									5					0/45			P-2	2.45			hum
alun													3.00				U T-1	3.00 ()) cm 3.80			-
4													4.00	0/45 •			P-3	4.00			4
5													5.00	0/45			P-4	5.00			5
6													6.00	0/45			P-5	6.00			6
7	-6.65	7.00	7.00					6					7.00	3/30			P-6	7.00			1007
8					PTAV	Verv	Clavey	Very loose to loose eray moist t	o wet fine to		8.00		8.00	6/20			P.7	7.45			11118
9					gray	loose to	SAND	medium grained, low plastic Claye	y SAND		Ø112		9.00	0/30	V			8.45			ming
Inne						loose							10.00	10/30	1 I		P-8	9.45			
10 miles		1											10.00	7/30	1		P-9	10.00			-
1	-10.65	11.00	4.00	1 10 10 10 10				-	-				11.00	10/30			P-10	<u>11.00</u> 11.45			il line
12				8 × 3	brownish	Loose	Silty	Loose to medium dense, brownish	gray to gray,				12.00	21/30			P-11	12.00			12
13	g			× × ×	to	medium dense	37140	moist to wet, the graned, sitty SP					13.00	22/30	+		P-12	13.00		H.	13
14	÷.,			* * *									14.00	24/30	14		P-13	14.00			14
15				* * *									15.00	27/30			P-14	14.45			15
16	-15.65	16.00	5.00										16.00	22/30	V		P.15	15.45			16
17													17.00	22/30	I			16.45			17
10 million				111			6.1						10.00	22/30			P-10	17.45			hum
10mm					gray	Medium	Silty	Medium dense to dense, gray,	moist, fine					23/30			P-17	18.45			10
19						to dense	5/110	graned, Sity SATE					19.00	40/30			P-18	19.00 19.45			19
20						20				23.11.10	5		20.00	18/30			P-19	20.00			20
21												į	21.00	28/30			P-20	21.00			121
22													22.00	24/30	4		P-21	22.00			22
23													23.00	21/30			P-22	23.00			23
24													24.00	40/30			P-23	23.45			24
25													25.00	10/20			P.24	24.45			25
26	25.65	26.00	10.00										26.00	18/30	$ \lambda $		1-24	25.45			126
1 million	25.05	20.00	10.00	1 × 10									20.00	28/30	1 1		P-25	26.45			lum
2/1				2 2 2	gray	Medium dense	Silty	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine				27.00	23/30			P-26	27.00			
28				1 8 8 1 8 8 9	1	to very		Thin clay layer is intercalated in th	is layer			16	28.00	50/27			P-27	28.00 28.42			28
29				***		dense							29.00	50/25		1	P-28	29.00 29.40			29
30				* * *									30.00	37/30		-	P-29	30.00			30
31	NOT	FC		K × 8				Continue to next sheet					31.00	-				30.45			E31
	Re	lative dens	sity desc	ription	Consis	tency descrip	tion .	Sample KCY P-1 Distarbed sample (SPT sample) PBT Permeat	nility Test	Term Very thic	k k	Spacing >	2000	Verv	Term widely spaced	Spacing (n	am) 00			CO., L'	TD.
	Relativ	ve density ry loose	SPI	(uma) 0 - 4	Consistent Very sof	ay SPT	inder 2	T-i (Piston sampler) VS Vanc St (Piston sampler) PMT Pressure D-1 Undisturbed Sampler	nar Test meter Test	Thick Medium		600 - 200	2000	Wi	dely spaced dium spaced	600 - 20 200 - 6	00	TGEX	Yangon B	ranch)	0066763
	L. Media	oose am dense	1	4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	RQD (% (Single core tube)	Very poor	Thin Very the	n .	60 - 20 -	200	Cle Very	sely spaced closely spaced	60 - 20 20 - 60	0	Revision N	0.	Rev: 01	
	Ver	Dense y dense	3	10 - 50 over 50	Stiff Very stiff	n ji	9 - 15 5 - 30	Rock core sample (Double core tube) Rock core sample	Poor T Fair T	hickly lam hinly lami	nated	6 -	20 6	Extrema Remarks	ely closely spa	ced < 20	_1	cevision D	ate	10.01.26	
				1	Hard	0	ver 30	(Core Loss) 75 - 90 Weil Water sample 90 - 10	0 Excellent												

出典: JICA 調査団

図 4.1.56 ボーリング調査結果 BH-BD-17(1)

BORE H	OLE N	o. BE	-BD-17				<u>B 0</u>	RING	LOC	i					Job	No. F	KYB-2010 eet No.	5-025 2 OF 2
PROJECT LOCATIC GROUNE	NAME ON D LEVEL	: <u>Geo</u> : <u>Besi</u> : 0.35	echnical Su de Existing m	rvey on the Bago Rive	e detailed d r Bridge (1	lesign for th Thanlyin Bri	e Bago River Bridge Construction Project_ dge), Thaketa Township, Yangon Region.	BORING EQ BORING ME ORIENTATIO	UIPMENT THOD	г	: <u>TOI</u> : <u>Rot</u> : <u>Ver</u>	IO "D1" nry Direc	t Circulation	DATE	1	23.11.2010	5~26.11.	2016
COORDI	NATE	: <u>E</u> 20	4551.650 ;	N 1859068	236 DI	SPTH :_	47.00m	GROUND W	ATER LE	VEL	: Un	ler River	Bed		ON KO	DEIC	:0., L	TD.
	151				CX.			1.1		(m) &	(u		STANDARD PE TEST MET	NETRATION TEST HOD (ASTM)		SAM	IPLING	1.1
SCALE (m) ELEVATION (m)	$DEPTHGL_{+}(m)$	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (m	WATER DEPTH (DEPTH GL. (m)	N-Value (Blows / 30cm)	CURVE OF BLOW • N-Value (Blows / 30cm) 0 20 30 40 5	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%) SCP (%)	RQD (%) SCALE (m)
31 32 33 34 34	25.00	8.00	 X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X	gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND Thin clay layer is intercalated layer	y, moist, fine				31.00 32.00 33.00 34.00	35/30 47/30 32/30 22/30	X	P-30 P-31 P-32 P-33	31.00 31.45 32.00 32.45 33.00 33.45 34.00 34.45		un Bundhun Bunn Bunn Bunn
36-1-0-4.00 36-1-0-1-0-1-0-1-0-1-0-1-0-1-0-1-0-1-0-1-		9.00		gtay to brownish gray	Dense to very dense	Clayey SAND	Dense to very dense, gray to br moist, fine to coarse grained, low p SAND, with trace of fine gravel	ownish gray, lastic Clayey	<u>24.11.16</u> 36.00	5		36.00 37.00 38.00 39.00 40.00	50/28 50/30 50/28 50/28 50/30 50/14		P-34 P-35 P-36 P-37 P-38 P-35	35.43 35.43 36.45 37.43 37.43 38.43 39.00 39.45 40.00 40.29		նեսունեսունեսունեսունեսուն
41_1	42.00	7.00		reddish brown to yellowish brown	Dense to very dense	Clayey SAND	Dense to very dense, reddist yellowish brown, moist, fine grained, low plastic Clayey SANi of fine gravel	i brown to to medium D, with trace	25.11.16 45.00			41.00 42.00 43.00 44.00 45.00 46.00	50/26 50/22 50/27 50/30 50/26 50/30		P-4(P-4) P-42 P-42 P-42 P-44	41.00 41.41 42.00 42.37 43.00 43.42 43.42 44.00 44.45 45.00 45.41 54.600 46.45		
21-1-1-22 41-41-22 1-41-22	47.39	5.39					This borehole is terminated according to the termination enteri	at 47.00m, a.	47.00	2		47,00 48,00 50,00 51,00 53,00 53,00 55,000 55,0000 55,0000 55,00000000	50/24		• P-4	47.39		ԳրունԳրուհետուներուներուներուներուներուներուներուներ
501 501 Relati Vet Meddu U Vet	ES clative density ry loose cose um dense Dense ry dense	SPT	iption N-Value. (mm) D = A 4 = 10 0 = 30 0 = 30 0 = 50 ver 50	Consis Consistenc Very saft Soft Firm Saft Very stiff Hard	tency description	960m N-Value 1990 2 - 4 3 - 8 9 - 33 6 - 30 0vver 30	Sample Sey Prij Dnuchol snyck PBT Perusoli PBT Paris Dnachol snyck Paris Dnachol snyck Paris Dnachol snyck Paris Dnachol snyck Paris Promoti Production snyck PMT PMT Prosnych PMT Prosnych PMT Prosnych PMT Prosnych PMT Prosnych PMT Prosnych PMT PMT PMT PMT	Hity Test meter Test Term Very poor Poor Tair Good Term	PI Term Very thic Thick Mediam Thin Very thi Nickly Iami Nickly Iami	k n nated	secture Spacing 200 - 200 - 20 - 6 - <	59.00 60.00 61.00 (mm) 2008 2000 60 20 6	Tr Very wid Widels Median Classel Very clos Extremely i Extremely i	Discontinuities rm Spacia (spaced 600 spaced 200 graced 60 ety spaced 200 graced 60 ety spaced 200 spaced 60 ety spaced 200 spaced 60 ety spaced 200 spaced 60 ety spaced 200 ety spaced 200 et	sg (mm) > 2000 - 2000 - 600 - 200 - 600 - 200 - 200 - 200 - 200	FGEX Revision I Revision I	FUKKEN Consulting (Yangon Bi Terr set Jaine Marter Jaine Jaine	CO., LTD. Engineers ranch) es se - countrig messatification Rev: 01 10.01.2017

出典: JICA 調査団

図 4.1.57 ボーリング調査結果 BH-BD-17(2)

во	RE H	OLE N	o, Bł	I-BD-18	-			BO	RING	LOC	2						Job 1	Vo. F.	KYB-201	6-025	7.7
PR	OJECT	NAME	: Geo	technical St	urvey on the	detailed d	lesign for th	e Bago River Bridge Construction Project	BORING EQU	JIPMEN'	r	: <u>TO</u>	10 "D1"	_	_	DATE	: 03	12.2016	~ 07.12.	2016	-
LO	CATIC	N	: Bes	ide Existing	Bago River	Bridge (1	Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		a Rota	ary Direc	t Circulation	on CL	ENT					-
GR	OUND	LEVEL	: 0.60	m 15350 970 -	N 1857705	509 DI	IDTU .	50 00m	ORIENTATIC	TEPIE	VEL	· Ven	tical	Red	- 11	NIPPO	ON KO	EIC	0., L	TD.	
Т	OKDI			1	14 165 / 105.	<u>598</u> DI	a ni	55,00m	GROOND W	They be	3			STANDARI	PENETRA	TION TEST	PMT	C. exis	m p.c.	_	T
			-			NSITY ENCY				(m)	(mm))	4 (m)	-	TEST 8	IETHOD (A	STM)	1	3//	PLINU	1	
(H)	I) NOL	31~(10)	VESS (n	W	~	VE DE	AME	SOIL DESCRIPTION		DEPT	IC DEP	DEPT	(W) = 715	30cm)	CORVEC	PERFOR .	PLE & No.)	m) - Ju			Ē
CALE	PART I	NLLIN	UHICKO	NAGR	0010.	(br) CC	N TIO			ATE &	DIAN	WATER	EPTH	N-Vi Blows	(Blov	-Value vs / 30cm)	SAN (Type	HLIJE	CR (%	NDD (%	CALE
	-	-		1233	-					-	-	100		- 0	10 20	1 1		0			S.
1	5				brownish	Very	CLAY	Very soft, brownish gray, moist	medium to			10	1.00	0/45 •			P-1	1.00			il.
2					gray	soft		high plasticity, CLAY (River deposit)				1.0	2.00	0/45			P-2	2.00			1112
3	-2.40	3.00	3.00		1								3.00					3.00			3
						Van	OLAY	Varuest to call army moist to us	Llong to high				100				B T-1	(m) cm 3.80			1
June					gray	soft	CLAI	plasticity, CLAY	t, low to trigh			10	4.00	0/45			P-3	4.45			hum
5						soft						148	5.00	2/30			P-4	5.00			15
6	-5.40	6.00	3.00	0000					_				6.00	4/30			P-5	6.00			
7					gray	Very	Sandy	Very soft to firm, gray, moist, fine	grained, low		7.00		7.00	2/30			P-6	7.00			17
8						soft to	CLAY	to medium plasticity, Sandy CLAY			0112		8.00	2/30			P.7	8.00			100
o milita						IIII		GL: (6.00 ~ 7.45)m, silt percent is	increased at				9.00	200				8.45			in the second se
Juni								that depth						1/30			P-8	9.45			
10	1	1											10.00	1/30			P-9	10.00			10
11-	10.40	11.00	5.00	X K	-	-	-	÷	-	03.12.16			11.00	7/30	4		P-10	11.00			1
12				**	gray	Loose	Silty	Loose to dense, gray, moist, fine	e to medium				12.00	10/30	X		P-11	12.00			12
13	- 1			× ×		to dense	SAND	grained, Silty SAND					13.00	18/30			P-12	13.00			13
141				* *				GL: (17.00 ~ 17.45)m, clay patche at that depth	s is observed				14.00					13.45			14
1				* *									15.00	13/30	T		1-13	14.45			In the second se
Innte				* *										14/30	1		P-14	15.45			hum
161111	5			* *								18	16.00	42/30			P-15	16.00			16
17				* *									17.00	8/30	1		P-16	17.00			17
18				××									18.00	13/30	A		P-17	18.00			18
19				**									19.00	14/30	1		P-18	19.00			19
201-	19.40	20.00	9.00	* *	_								20.00	12/20	1		P.10	19.45	21		20
21		1											21.00	12/30	X			20.45			21
and the second					gray	Firm to	Sandy CLAY	Firm to stiff, gray, moist, med plasticity, CLAY with silt, trace of	ium to high fine grained					7/30	1		P-20	21.45			
22						stiff		sand					22.00	12/30	7		P-21	22.00			1/22
23													23.00	8/30	4		P-22	23.00			23
24				0.5.7.7									24.00	12/30	4		P-23	24.00			24
25													25.00	11/30	4		P-24	25.00			25
26	. 1												26.00	14/20			P.25	25.45			26
27	26.40	27.00	7.00										27 00	14/30	V		-25	26.45			27
- International	-untu	27.00	7.444		gray	Firm	CLAY	Firm to very stiff, grav, moist, me	dium to high					10/30	I		P-26	27.45			linne
28						to very		plasticity, CLAY with silt		28.00			28.00	7/30	1		P-27	28.00 28.45			128
29						stiff	10.91	Thin sand layers are well intercalated layer	observed as				29.00	8/30	+		P-28	29.00			29
30													30.00	7/30	+		P-29	30.00			30
31	NOT	FS						Continue to next sheet					31.00			Un think		30.43			31
ſ	Re	LS lative dens	sity desc	ription	Consist	ency descrip	ption	Sample key P-(Disturbed ample (SPT sample) PBT Permeab	ility Test	Term Very third	anner str	Spacing	(mm)	Var	Discon Term widely course	Spacing	(mm)		UKKEN	CO., L	TD.
	Relativ	ve density ty loose	SP	N-Value (mar) 0 - 4	Consistent Very soft	y SP	inuat	Image: T_T (Didisturbed Sample (Piston sampler)) VS Vane Sh Image: T_T (Piston sampler) PMT Pressare Image: T_T (Didisturbed Sample) PMT Pressare	car Test meter Test	Thick	+	600 -	2000	Wi	dely spaced dium spaced	600 - 200 -	2000	FGEX	Yangon B	ranch)	n 5 X069762
	L	.oose um dense	-	4 - 10	Soft		2 - 4	(Denison sampler) RQD (%) Rock core sample (Single core tube) 0 - 25	Term Very poor	Thin Very thi	n -	60 - 20 -	200	Ck	isely spaced closely space	60 - d 20 -	200	Revision A	u.	Rev: 01	2201
F	D Ver)ense y dense	2	10 - 50 over 50	Stiff Very stiff	1	9 ~ 15 6 - 30	Rock core sample (Double core tube) 50 = 75	Pour Ti Fair T	hinly lami	nated	6 - <	20 6	Extrem	ely closely sp	aced <	20	Revision L	ute	14.01.20	17
				1	Hard		over 30	(Core Loss) 75 - 90 (Core Loss) 90 - 10	Good Excellent									_			

出典: JICA 調査団

図 4.1.58 ボーリング調査結果 BH-BD-18(1)

BORE	HOLE N	o. BH-BD-18				BO	RING	LOC	3					Job	Va. F Sh	KYB-20 eet No.	16-02	5 OF 2
PROJEC	CT NAME TON ND LEVEL	<u>Geotechnical</u> <u>Beside Existin</u> 0.60m	Survey on the	e detailed o r Bridge ('	design for th Thanlyin Bri	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region	BORING EQI BORING ME ORIENTATIO	JIPMEN THOD	г	: <u>TOF</u> : <u>Rota</u> : Vert	IO "D1" try Direct	Circulation	DATE <u>CLIENT</u>	<u>: 0</u>)	5.12.2016	5~07.12	2.2016	_
COORI	DINATE	: <u>É 205350.820</u>	; N 1857705	. <u>598</u> D	EPTH :_	59.00m	GROUND W	ATER LE	VEL	: Unc	ler River	Bed	NIPPO	N KO	DEI C	:O., I	LTI).
117				έż			1.11	8	(m) &	(u	s	TANDARD PE TEST MET	NETRATION TEST HOD (ASTM)		SAN	PLING		1
SCALE (m) ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m) DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (m	WATER DEPTH (DEPTH GL. (m)	N-Value (Blows / 30cm)	N-Value (Blows / 30cm) 20 30 40 50	SAMPLE (Type & No.)	OEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
8 1	8		S S gray gray gray gray	Eirma to very stiff Firm to stiff	CLAY	 Firm to very stiff, gray, moist, me plasticity, CLAY with sill GL: (37.00 - 37.45)m; Stiff, g medium grained, low to mediu Sandy CLAV layer is observed at layer at that depth Thin sand layers are well intercalated layer Firm to stiff, gray, moist, med plasticity, CLAY, with trace of sand GL: (47.00 - 47.45)m, loose, medium grained, low plastic Clay observed as intercalated layer at the same series of the same series of	itium to high gray, fine to im plasticity, observed as observed as intercalated observed as gray, fine to gray, fine to gray, fine to gray, fine to	<u>05,12,16</u> 42,00		* *	B 31.00 32.00 33.00	 0 16 7/30 8/30 8/30<td></td><td> T-3 P-30 P-31 P-32 P-33 P-34 P-35 P-36 P-37 P-38 P-39 P-40 P-41 P-42 P-43 P-44 P-45 P-46 P-47 P-48 </td><td>≅ 31.00 (∰) cm 31.80 32.05 33.00 33.45 33.00 33.45 33.00 33.45 35.00 36.45 37.00 36.45 37.05 38.45 38.00 38.45 37.45 38.00 38.45 39.00 40.45 40.00 40.45 43.00 41.45 43.00 45.45 43.00 46.45 43.00 46.45 47.05 47.05 50.00 50.45 50.05 50.55</td><td>2</td><td>8</td><td>8 ամ 2նամ 2նամ 2նամ 2նամ 2նամ 2նամ 2նամ 2</td>		 T-3 P-30 P-31 P-32 P-33 P-34 P-35 P-36 P-37 P-38 P-39 P-40 P-41 P-42 P-43 P-44 P-45 P-46 P-47 P-48 	≅ 31.00 (∰) cm 31.80 32.05 33.00 33.45 33.00 33.45 33.00 33.45 35.00 36.45 37.00 36.45 37.05 38.45 38.00 38.45 37.45 38.00 38.45 39.00 40.45 40.00 40.45 43.00 41.45 43.00 45.45 43.00 46.45 43.00 46.45 47.05 47.05 50.00 50.45 50.05 50.55	2	8	8 ամ 2նամ 2նամ 2նամ 2նամ 2նամ 2նամ 2նամ 2
51 52 53 54 55 55 55 55 55 55 55 55 55 55 55 55	40 53.00 40 55.00	2.00	gray yclowish brown brown	Dense to very dense Dense to very dense	Clayey SAND Clayey SAND	Dense to very dense, gray to yell moist, fine to medium grained, Clayey SAND GL: (54.00 ~ 54.43)m, fine to med observed at that depth Dense to very dense, yellowish th fine to medium grained, low pl SAND	owish brown, low plastic lium gravel is rrown, moist, lastic Clayey	50.00			<u>51.00</u> <u>52.00</u> <u>53.00</u> <u>54.00</u> <u>55.00</u> <u>56.00</u> <u>57.00</u>	9/30 7/30 38/30 50/28 50/30 50/30		P-49 P-50 P-51 P-52 P-53 P-54 P-55	50,45 51,00 51,45 52,00 52,45 53,00 53,45 54,00 54,43 55,00 54,43 55,00 54,43 55,00 54,45 56,00 56,45 57,00 57,45			հուննում։Ոստնեսունեսունեսունեսունես
581 591 601 810 611 810 810 810 810 810 810 810 810 810 8	XI 59.43 XI	4.43 ity description SPT N-Value	Consis Consisten Very sof	stency description	ption FN-Value mail under 2 2 - 4	This borehole is terminated according to the termination criteri Samels &	at 59,00m, a. withy Test moter Test Test	07.12.16 59.00 PI Term Very thic Thick Medium	ánner stri	acture Spacing > 600 - 200 - 60	58.00 59.00 60.00 61.00 (mm) 2000 2000 600	50/29 50/28	Discontinuities m Spaced >2 spaced 600 -2 spaced 200 spaced 200	P-56 P-57	58.00 58.44 59.00 59.43	FUKKEI Consultin (Yangon mi usi - eo	N CO. Ig Engi Branch	LTD. 12082767 Autom
Mi	lative density Very loose Loose edium dense Dense Very dense	SPT N-Value transf 0 - 4 4 - 10 10 - 30 30 - 50 over 50	Consisten Very sof Soft Firm Stiff Very stif Hard	cy SP	1 N-Value imat under 2 2 - 4 5 - 8 9 - 15 16 - 30 over 30	■ r (minumbed Sample (Prisone sampler) VS Vac 83 ■ a (minumbed Sample (Dension model) PM(T) Persum (Dension model) PM(T) ■ a (minumbed) RROD (%) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) B (20 0 %) B (20 0 %) B (20 0 %) ■ (boolds) core table) <t< td=""><td>ear Test meter Test Very poor Poor Fair Good 0 Excellent</td><td>Thick Medium Thin Very thi hickly lami hinly lami</td><td>n nated aated</td><td>600 - 200 - 60 - 20 - 6 - <0</td><td>2000 600 200 60 20 5</td><td>Widely Medium Closely Very close Extremely c</td><td>spaced 600 - 2 spaced 200 - 2 spaced 60 - 2 ly spaced 20 - 1 ly spaced 20 - 1 osely spaced < 2</td><td>000 600 00 50 0</td><td>Revision N Revision L</td><td>(Yangon Tel 351 - 60 No. Date</td><td>Rev: 14.0</td><td>) 42 bert 01</td></t<>	ear Test meter Test Very poor Poor Fair Good 0 Excellent	Thick Medium Thin Very thi hickly lami hinly lami	n nated aated	600 - 200 - 60 - 20 - 6 - <0	2000 600 200 60 20 5	Widely Medium Closely Very close Extremely c	spaced 600 - 2 spaced 200 - 2 spaced 60 - 2 ly spaced 20 - 1 ly spaced 20 - 1 osely spaced < 2	000 600 00 50 0	Revision N Revision L	(Yangon Tel 351 - 60 No. Date	Rev: 14.0) 42 bert 01

出典: JICA 調査団

図 4.1.59 ボーリング調査結果 BH-BD-18(2)

BC	DRE H	OLE N	lo. BF	I-BD-19	1			<u>B O</u>	RING	L00	1						Job N	la. E. Sh	KYB-201 eet No.	6-025	DF 2
PF	ROJECT	NAME	: Geo	technical St	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	5	: <u>TOI</u>	IO "D1"	-	57	DATE	: 29	0.11.2016	~ 05.12.	2016	-
L	CATIO	N	: Besi	de Existing	Bago River	Bridge (I	hanlyin Brid	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ry Direc	t Circulati	on CLI	ENT			-		
GI	ROUND	LEVEL	: 3,52	m	N 1967464	600 DI		60 Win	ORIENTATI	ON	VEL	: Ver	ical	_	-	NIPPO	NKO	EIC	0., L	TD	¢.
- 4	JORDIN	ATE	: 820	5381.139;	N 1857664.	590 DE	PTH :_	60.00m	GROUND W	I	VEL	: 0.50	no -	STANDAR	PENETRAT	ION TEST	PMT				-
	~	É.	~			ASITY				(iii)	((um) ((um	(m)		TEST	METHOD (AS	TM)	1	SAM	PLING	-	-
î	IDN (II	(m)-11	ESS (m	x		VE DET NSISTI	WE	SOIL DESCRIPTION		DEPTI	(DEPT	DEPTH	(m) - Ji	30cm)	CURVE O	FBLOW •	PLE & No.)	fL - (m)			Ŧ
TALE (LEVAT	EPTH C	HICKN	LAGRA	orone	ELATI or) CO	N TIC			ATE &	DIAM	ATER	EPTH C	N-Va Blows/	(Blow	Value s / 30cm)	SAM (Type)	D HILde	CR (%)	CK (24)	OD (7%)
S	B	D	4	a	0	8	λ.	A Dr. Barren	-	0	0		a	= 0	10 20	30 40 50	-	Ďi	F (6 4	N N
diren		2.			brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, high plasticity, CLAY	, medium to			*	1.00	0/45			P-1	1.00			
2	1.52	2.00	2.00					(Filled Soil)					2.00				Dw.	1.45			12
lumber of the					gray	Very	CLAY	Very soft, gray, moist to wet,	low to high		1.12			0/45			P-2	2.45			
Slim						soft		plasticity, CLAY		3.00	Ø112		3.00				U T-1	3.00 ()) cm			al an
4	-0.48	4.00	2.00		-	_	10.00						4.00	1/30			P-3	4.00	31		4
5					gray	Very	CLAY	Very soft to soft, gray, moist to we	t, low to high				5.00	1/30			P-4	5.00			5
6						to		plasticity, CLAY					6.00					5.45			16
Innte						SUL								1/30			P-3	6.45			In the second se
7				5525									7.00				F T-2	7.00 (#) cm			
81													8.00	2/30			P-6	8.00			18
9	-5.48	9.00	5.00		1		_						9.00	6/30			P-7	9.00			19
10						0.0			tend therein				10.00					9.45			E10
Innin					gray	to	CLAY	medium plasticity, Sandy CLAY	ined, low to					4/30			1-8	10.45			hunt
1					1	initi		GL: (11.00 ~ 11.45)m; very loos	e, gray, fine				11.00	2/30			P-9	11.45			
12								intercalated layer at that depth	observed as				12.00	4/30			P-10	12.00			12
13													13.00				In	13.00			13
14	-10.48	14.00	5.00										14.00	-	1		6.5	13.80 14.00			E14
Internet			10	* *				1						//30	T I		1-11	14.45	5		
151				XX	gray	Loose	Silty	Loose to dense, gray, moist, fine	to medium				15.00	7/30			P-12	15.00			- Ind
16				* *		to dense	SAND	grained, Silty SAND					16.00	27/30			P-13	16.00			<u>E16</u>
17				* *				GL: (19.00 ~ 20.45)m, trace of cla at that depth	y is observed				17.00	40/30		N	P-14	17.00			17
18				* *				1 T T T T T T				Ι.	18.00	21/20		YII.	0.15	17.45			E18
10				**									10.00	21/30	1		1.0	18.45			
- Inne				* *									19.00	17/30	1		P-16	19.00			lum
20		5.		* *		- 61				30.11.16			20.00	12/30	1		P-17	20.00			E20
21	-17.48	21.00	7.00	* *				-					21.00	5/30			P-18	21.00			21
22		21			gray	Firm	CLAY	Firm to stiff, gray, moist, medi	ium to high				22.00				10 -	22.00			22
23						to stiff		plasticity, CLAY with silt					23.00				01-4	(m) cm 22.50 23.00			E.3
Innin								GL: (23.00 ~ 23.45)m, loose, gray, Silty SAND layer is observed at tha	fine grained, at depth.					5/30			P-19	23.45			hum
241													24.00	9/30			P-20	24.00			E24
25	-21.48	25.00	4.00		-				_				25.00	16/30	4		P-21	25.00			25
26					grav	Stiff	CLAY	Stiff to very stiff, grav, moist, me	dium to high				26.00	16/30			P-22	26.00			26
27						to very		plasticity, CLAY with silt					27.00				-	26.45			27
International						stiff		Thin sand layers are well intercalated layer	observed as								D-1	(🛞) cm 27.50			
28												0	28.00	19/30	1		P-23	28.00			28
29													29.00	10/30	Y		P-24	29.00			29
30													30.00	9/30	1		P-25	30.00			130
31	_					-	1.1	Continue to next sheet					31.00				12	30.45			31
	NOT	ES lative den	sity descr	ription	Consis	ency descrip	tion	Sample key r. Disartied sample PRT Disartiel PRT Disartiel		Term	anner stru	icture Spacing	(mm)	-	Discont Term	Spacing (n	nm)		UKKEN	CO 1	LTD
	Relativ	re density	SPI	N-Value	Consistence	SP1	N-Value	T.T Undistuthed Ssople VS Vane Shi (Piston sampler) DST a	car Test	Very thick	•	> 600 -	2000 2000	Very	widely spaced idely spaced	> 20 600 - 20	00		Consulting Yangon B	Engine ranch)	Bers
	Ver	y loose		0 - 4	Very soft Soft		under 2 2 - 4	B-1 Undisturbed Sample (Denison sampler) Rock corr sample	Term.	Medium		200 -	600 200	Cl	dium spaced osely spaced	200 - 6	00	FGEX	a) 591-8676	normalie Normalie	20089762. nl.osm
	Media	um dense lense	1	0 - 30 0 - 50	Firm		5 - 8 9 - 15	(Single core tube) Rock core sample (Dadle core tube) 0 - 25 25 - 50	Very poor Poor	Very thi hickly lami	nated	20 - 6 -	60 20	Very	closely spaced ely closely spa	20 - 60 ced ≈ 20	0	nevision N Revision D	ate	Rev: 0 14.01.5	2017
	Ver	y dense	0	ver 50	Very still Hard	1	6 - 30 iver 30	Rock core sample (Core Loss) 50 + 75 75 - 90	Fair Good	Thinly lami	nated	<	5	Remark							
								W J Water sample 90 - 100	Excellent												

出典: JICA 調査団

図 4.1.60 ボーリング調査結果 BH-BD-19(1)

BC	RE H	OLE N	. BH-BI	D-19				BO	RING	LOC	i							Job N	la. F Sh	KYB-2 eet No	016-0	25 OF 2
PF	OJECT	NAME	: Geotechn	ical Su	rvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN'	r	: <u>TO</u>	HO "DI"	-	_	E	DATE	: 29	.11.2016	5 - 05.	12.201	6
L	CATIC	N	Beside E	xisting	Bago Rive	r Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Dire	t Circulation	<u>n</u> <u>c</u>	LIENT	() ()	1.0			1.	1
GI	OUND	LEVEL	: E 205381	.139 :	N 1857664	.590 DE	PTH :	60.00m	GROUND W	ON ATER LE	VEL	: <u>Ver</u> : 0.5	tical Om	_	-	N	IPPO!	N KO	EIC	ю.,	LT	D.
				-					0.00000000	1	*		1	STANDARD	PENETR	ATION T	EST		SAN	PLING		1-
	(ii					NSITY ENCY	12			(II) (II)	(mn) ((mm)	H (m)	-	TEST N	ETHOD (ASTM)		1.5	0.44		-	-
(H)	I) NOLL	GL - (m	NESS (r	WW		IVE DE	AME	SOIL DESCRIPTION		¢ DEPT	3 (DEP	CDEPT	01 (m	alue 30cm)	CORVE	N Value		& No.)	GL - (m		~	
SCALE	ELEVA	DEPTH	THICK	DIAGR	COLOU	RELAT (or) C(N TIOS			DATE	DIAD	WATER	DEPTH	N-V Blows	(B)	lows / 30c	am)	SAA (Type	ныз	ICR (%	SCR (%	ROD (%
	-	-	15		gray	Stiff to	CLAY	Stiff to very stiff, gray, moist, me	dium to high				1		1		10 50					1
31	-27.48	31.00	6.00			very stiff		plasticity, CLAY with silt		-			31.00	7/30	(P-26	31.00			131m
32						-		and the contraction					32.00	10/30	1			P-27	32.00			13
33					gray	to	CLAY	plasticity, CLAY with silt	rum to high				33.00		Δ			D 30	32.45			143
International						naro		Thin sand layers are well	observed as					1150				1-20	33,45			in the
341 mil								intercatated layer		34.00	1	116	34.00	14/30				P-29	34.00			il
35													35.00	7/30	1			P-30	35.00			13
36			15									\square	36.00	9/30	1			P-31	36.00			13
37													37.00	10/30	11			P-37	36.45			13
38													38 00	10:30	II				37.45			
- Column													30,00	9/30	1			P-33	38.45			dimit
39													39.00	10/30				P-34	39.00 39.45			13
40			33										40.00	16/30				P-35	40.00			14
41			3										41.00	21/30				P-36	41.00			4
42													47 00	21120		V			41.45			14
lunt	14		2											32/30		1		P-37	42.45			dum
433												11	43.00	20/30	1			P-38	43.00			4
44			E										44.00	7/30				P-39	44.00			4
45										02.12.16			45.00	10/30	V			P-40	45.00			4
46	-42.48	46.00	15.00										46.00	20/20	N			0.0	45.45			4
- International Provide Provid					gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to	1		110	17.00	20/30				1.41	46.45			
4/1						to	SAND	medium grained, low plasife Claye	y SAND			15	47.00	32/30		1		P-42	47.00			4 aug
48	44.48	48.00	2.00		_	uctise						1 E	48.00	9/30		1		P-43	48.00			4
49					gray	Stiff	CLAY	Stiff to very stiff, gray, moist, me	dium to high			15	49.00	11/30	K			P-44	49.00			114
50						to very	1.1	plasticity, CLAY with fine grained	sand			17	50.00	30/30				P-45	50.00			1
51						Suit						15	51 00	50,50		1			50.45			
Innin														18/30	1	-		P-46	51,45			hum
52	-48.48	52.00	4.00		and			Distante (1958) desite contra at					52.00	50/27			7	P-47	52.00 52.42			
53					gray	to	SAND	medium grained, low plasite Claye	y SAND				53.00	38/30		13		P-48	53.00 53.45			5
54				E.		dense		GL: (53.00 ~ 53.45)m, Hard,	gray, moist,				54.00	41/30				P-49	54.00			15
55	-51.48	55.00	3.00					depth	erven at mat	03.12.16			55.00	50/22				P-50	55,00			15
- Contraction					oray	Very	Claver	Very dense gray to vellowish h	rown moist	55,00				50/25			ΙT	1.00	55.38			and the
alum					to yellowish	dense	SAND	fine to medium grained, low pl	lastic Clayey			1		50/10			1	P-51	56.25			lum
57					brown			1000					57.00	50/18			+	P-52	57.00 57.33			5
58													58.00	50/19			+	P-53	58.00			15
59													59.00	50/17				P-54	59.00			15
60								1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	and a	05,12,14			60.00						60.00			16
- Andrews	-56.77	60.29	5.29	-	-			This borehole is terminated according to the termination criteri	at 60.00m, a.	60.00	1			50/14			I	P-35	60.29			lunto
613	NOT	ES		_	-		_	Sample key		l <u>Pl</u>	anner str	ucture	161.00		Disc	ontinuitie	<u>s</u>					E6
	Relativ	lative density	SPT N-Ve	ilue	Consistence	tency descrip	N-Value	P-1 (SVT sample) PBT Permetab T-1 (Undisturbed Sample) VS Vane Sh	ality Test	Term Very thic		Spacin;	2000	Very	ferm widely spa	ced	Spacing (m > 200	um))0		FUKKE Consult	IN CO	, LTD.
	Ver	y loose	0 - 4		Very soft	-	under 2	(Piston sampler) PMT Pressure (Denison sampler)	nveter fleat	Medium		200	- 600	Mo	tium space	xt	600 - 200 200 - 60	ю	FGEX	Tel: 001 - 0 Hillow Imparts	TOTOTAL R	41) 16 - 4700997(12 16 - 4700997(12
	Media	im dense	4 - 1	0	Firm		5 - 8	Rock core sample (Single core tabe) 0 - 25 Rock core sample	Very poor	Thin Very thi	n	60 - 20 -	- 60	Very	losely space	ced	20 - 200		Revision N Revision I	Vox. Date	Res	: 01 91 2017
	Ver	ense dense	30 - 5 over 5	a l	Very stiff	1	6 - 30	(Double core tube) 25 - 50 (Double core sample 50 - 75	Fair	Thinly lami	nated	6 -	6	Remarks	ry closely	spaced	< 20					
				L	Hard	1 - 5	OF JO	- (Lore Loss) - 75 - 90 - 90 - 10	0 Excellent					2.5								

出典: JICA 調査団

図 4.1.61 ボーリング調査結果 BH-BD-19(2)

во	RE H	OLE N	o. BE	I-BD-20	01-			<u>B O</u>	RING	LOC	2						-	Job 1	Vo. F Sh	KYB-20 eet No.	16-02.	5 OF 3
PR	OJECT	NAME	Geo	technical Su	arvey on the	detailed o	esign for the	e Bago River Bridge Construction Project	BORING EQ	JIPMEN	r,	: <u>TO</u>	HO "DI"	nt		-	DATE	; 22	2.11.2016	~ 28.11	.2016	
LO	CATIO	N	Besi	de Existing	Bago Rive	Bridge ()	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ary Direc	at Circula	ion	CLIEN	T		1.5	1	5	
GR	OUND	LEVEL	: <u>3.41</u> : <u>E.20</u>	m 5411.868 :	N 1857625.	150 DI	PTH :	62.00m	GROUND W.	ON ATER LE	VEL.	: <u>Ver</u> : <u>0.3</u>	tical 5m	_	-	Γ	VIPPO	N KO	DEI C	0., 1	TL).
Т		1								ICT.	30	T		STANDAS	D PENET	TRATION D (ASTM	TEST	PMT	r sam	PLING	-	
	(m)	(8)	(II)			DENSIT				TH (m)	EPTH (n R (mm)	(m) HT	(ii	2	CUR	VE OF BI	Low •	3	(ÎL)		T	
E (m)	ATION	- TH CIT-	KNESS	RAM	and	VITVET	NAME	SOIL DESCRIPTION		E & DE	NG (DI	ER DEF	- 10 ft	-Value vs / 30cr		N-Val	ue-	AMPLE pe & N	H GL -	(%)	(%)	(%) E (m)
SCA	BLE	DEPU	THE	DIAG	con	REL.	SOIL			DAT	CAS	LVM	DEP	(Blon	10	20 30	40 50	s E	DEPJ	TCR	SCR	RQD
1 IIII					brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, high plasticity, CLAY	medium to			¥	1.00	1/20				P.1	1.00			
2	1.91	1.50	1.50					(Filled Soil)	-				2.00	1/30				G w-1	1.45			
Inni					gray	Very	CLAY	Very soft to soft, gray, moist to we	, low to high				2.00	0/45				P-2	2.45			The second secon
alum						to soft		plasticity, CLAY				1	3.00	0/45				PMT-0 P-3	3.00			alum
4												Ś	4.00					U T-1	4.00 (30) cm			4
5 m													5.00	2/30				P-4	5.00			15
6				333									6.00		8			PMT-02	6.00			6
7												18	7.00	1/30 1/30				P-5 P-6	7.00			1
8 minut													8.00						8.00			8
9	-7.59	11.00	7.50								9.00		9.00					0 1-2	(m) cm 8.80 9.00			19
10		-					1.0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	40-3		Ø112		10.00	2/30				P-1	9.45			In the second se
alum					gray	Soft to	Sandy CLAY	Soft to firm, gray, moist, fine gra medium plasticity, Sandy CLAY	ined, low to	10.00	1		10.00	2/30				PMT-02 P-8	10.00			-
- Hun						firm	1100					ŀ	11.00	4/30	1			P-9	11.00			alum
12													12.00	6/30	ŧ			P-10	12.00			12
13	-9.59	13.00	4.00	x x x		_			_				13.00	5/30	4			P-11	13.00			13
14								Territor and the second					14.00		Ĩ			E T-3	14.00			14
15					gray	to dense	SAND	Silty SAND	rine graineu,				15.00	8/30	1			P-12	14.80			15
16				* * *		-							16.00	15/30	N			P-13	16.00			16
171				* * *									17.00	25/20		N		P.14	16.45			17
18				* * *								Ц	18 00	33/30	1.0	K			17.45			15
Inni	10.00	10.00	C 00	* * *		1.1							10.00	15/30	1			P-15	18.45			
191	15.39	19.00	6.00									P	19.00	8/30	1			P-16	19.00			alam
201					gray	Firm	Sandy CLAY	Firm to very stiff, gray, moist, low plasticity. Sandy CLAY	v to medium	23.11.10		1	20.00	10/30	-			P-17	20.00			120
21						very stiff		GL: (21.00 ~ 21.43)m; Very dense,	gray, fine to				21.00	50/28				P-18	21.00			21
22						1		medium grained, Silty SAND laye as intercalated layer at that depth	r is observed			ĥ	22.00	13/30	1	1		P-19	22.00			22
23													23.00	7/30	4			P-20	23.00			23
24													24.00	11/30	1			P-21	23.45			1124
25													25.00						24.45			125
26													26.00		1			D.1	(#) cm 25.70 26.00			120
Tunn													27.00	12/30				1-22	26.45			hum
2/1000												1	27.00	21/30		λL		P-23	27.00	2		lum
28	1											1	28.00	27/30				P-24	28.00			128 1128
29	25.59	29.00	10.00		OTAL	Stiff	CLAN	Stiff grav mojet modium to bi	ah plasticity			1	29.00	9/30	1			P-25	29.00			29
30					Suny	Sun	CLIPT	CLAY with silt	pa plaateny,			1	30.00					U D-2	30.00			130
31	NOT	es				_		Continue to next sheet		p	anner stra	ucture	31.00			iscontinui	ties		30.60			31
-	Rel	iative dens	ity descr	iption	Consis	tency descrip	tion N-Value	K-1 Distarbed sample (SPT sample) Indistrubed Samuele	lity Test	Term Very thic	k l	Spacin;	g (num) 2000	Ver	Term y widely s	paced	Spacing (r	mm) 000		UKKEN	CO.	LTD.
	Very	e density y loose		reen) 0 - 4	Very soft	2 MC	multi Inder 2	Tit i Undisturbed Sampler) Tit (Denison sampler) PMT Pretsare	neter Test	Thick Medium		600 - 200	2000	N	videly spa ledium spa	eed aced	600 - 20 200 - 6	900 500	FGEX	Yangon I	Branch Ise av) 4200en/762 Autoon
	Media	m dense	3	4 - 10 0 - 30	Soft Firm		2 - 4	Rock core sample (Single core tabe) Rock core sample	Term Very poor	Thin Very thi	n	60 - 20 -	200	Ver	tosely spa y closely s	spaced	60 - 20 20 - 6	0	Revision N Revision I	laite	Rev.	01
1đ	Very	dense	0	ver 50	Very slift		9 - 15 6 - 30 wer 30	(Double core tube) 25 - 50 Rock core sample 50 - 75 (Core Loss) 75 - 90	Fair T Good	hinly lami	nated	6 -	£.	Remar	nery close	ay spaced	< 20		and south L	-		
-	-				,rind			8 W-1 Water sample 90 - 100	Excellent													

出典: JICA 調査団

図 4.1.62 ボーリング調査結果 BH-BD-20(1)

BO	RE H	OLE N	o. Bl	I-BD-20				BO	RING	LOG	1							÷.	Job N	la. F. Sh	KYB-2 eet No	016-0	25 OF
PR	OJECT	NAME	: Geo	technical St	rvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMENT	1	: <u>TO</u>	HO "D1"				DA	TE	: 22	.11.2016	5~28.	11.201	6
LO	CATIO	N	Bes	ide Existing	Bago River	Bridge ('I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circula	tion	CLIE	NT					1	7
GR	OUND	LEVEL	: 3.41	m			19170	-	ORIENTATIO	ON		: Ver	tical			1	NL	PPO	N KO	EIC	O.,	LT	D.
co	ORDIN	ATE	: <u>E 20</u>	05411.868 ;	N 1857625.	150 DI	артна _	62.00m	GROUND W	ATER LE	VEL	: 0.3	5m		_						.,		
	11					λ.				(ii)	((m) &	î		STANDAR	NETH	ETRATIC OD (AS	ON TES	ST	-	SAM	PLING	_	
	(m) N() E	(III) SS (III)		-	E DENS	8	SOIL DESCRIPTION		EPTH	DEPTH TER (m	EPTH ((m) -	(m)	CU	RVE OF	BLOW	•	No.)	(m) -			
LE (m)	VATIC	THGL	CKNES	GRAM	OUR	ATIVE	NAN			E&D	ING (LER D	TH GL	4-Value ws/30	1	N-V (Blows	ahie / 30km	a.	AMPI Ope &	THGL	(%)	(%)	(%)
SCA	BLB	DEP	THIC	DIA	COL	REL (or)	SOIL			DAT	CAS	LVM	DEP	(Blo	0 10	20 3	0 4	0 50	٩E	DEPI	TCR	SCR	RQD
and the								the second second					21 00	111					L.	21.00			
1				5555	gray	Stiff	CLAY	Stiff, gray, moist, medium to hig	h plasticity,	1.0			31.00	11/30	t	1			P-26	31.45			
32										24.11.16			32.00	10/30	+				P-27	32.00			
33				2230									33.00	0/30	1				P-28	33.00			
1	10.60	24.00											22.00	1150	1					33.45			
in the second	50.59	54.00	5.00	T.T.T.T.T					-			16	34.00	10/30	t				P-29	34.45			
35					gray	Firm	CLAY	Firm to stiff, grav, moist, medi-	um to high				35.00	6/30	4				P-30	35.00			
36					-	to stiff		plasticity, CLAY with silt					36.00	6/30					P-31	36.00			
17								Thin sand layers are well o	bserved as			1.6	37.00						1.2	36.45			
Inn								GI: (45.0m ~ 45.45)m medium	dense arav					6/30	1				P-32	37.45			
38				<u></u>				moist, fine to medium grained,	low plastic				38.00	8/30	ł				P-33	38.00			
39						layer at that depth	Intercatateu				39.00	7/30	4				P-34	39.00					
401													40.00							39.45			
June		159 34.00 5.00 34.00 10/30 gray Firm to stiff CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY with silt 36.00 6/30 Thin sand layers are well observed as intercalated layer GL: (45.0m ~ 45.45)m, medium dense, gray, moist, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth 38.00 8/30 40.00 6/30 41.00 6/30 42.00 8/30		P-35	40.45																		
41				gray Firm to stiff CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY with silt 33.00 9/30 Thin sand layers are well observed as intercalated layer Thin sand layers are well observed as intercalated layer 36.00 6/30 GL: (45.0m - 45.45)m, medium dense, gray, moist, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth 38.00 8/30 40.00 6/30 41.00 6/30 42.00 43.00 7/30 44.00 7/30	P-36	41.00																	
42		gray Firm lo CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY with silt 35.00 6/30 Thin sand layers are well observed as intercalated layer GL: (45.0m ~ 45.45)m, medium dense, gray, moist, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth 38.00 8/30 40.00 6/30 41.00 6/30				P-37	42.00																
431													43.00	-	1				D 20	42.45	2.		
hum														//30	T.				P-30	43.45			
44													44.00	7/30	4				P-39	44.00			
45													45.00	28/30		D			P-40	45.00			
46													46.00	11/30		1			P-41	46.00			
17m													17.00	10.50	I					46.45			
- International										47.00			47.00	10/30	1				P-42	47.45			-
48													48.00	7/30	4				P-43	48.00			
49													49.00	10/30	1				P-44	49.00			
501													50.00							49.45			
hum														10/30	1				P-45	50.45			
51													51.00	10/30	•				P-46	51.00			
52	48.59	52.00	18.00	222		-			-			1.5	52.00	35/30					P-47	52.00			
53	11				oreenish	Medium	Clavey	Medium dense to very dense, gree	nish eray to				53.00	22/20		1	r		D 49	53.00			
The					gray	dense to	SAND	yellowish brown, moist, fine grained low plastic Clayey SAND	to medium					23/30					1-40	53.45			
54					yellowish brown	very dense		graned, fow plastic clayey serves					54.00	34/30					P-49	<u>54.00</u> 54.45			
55													55.00	50/25				Y	P-50	55.00			
56													56.00	45/30				1	P-51	56.00			-
17 International	\$3.50	57 00	5.00										57 00	15130				/	1	56.45			
· ·	.33,39	37.00	5.00							57.00			37.00	50/25				1	P-52	57.40			
58					yellowish gray	Very dense	Clayey SAND	Very dense, yellowish gray to yello moist, fine to medium grained,	low plastic				58.00	50/13				+	P-53	58.00 58.28			
59					to yellowish			Clayey SAND					59.00	50/14				1	P-54	59.00			
60					brown								60.00					I		60.00			and the
Juni														50/15				1	P-55	60.30			
61	NOT	ES	_					Sample key		Ph	unner str	ucture	61.00			Discontin	nuities			_			l
	Re	lative dens	ity desc	ription	Consist	tency descrip	tion N-Value	Pr. Distantial sample PBT Permeabil Use Use	iny Test	Term Very thick		Spacing	g (nun) 2000	Ver	Ten ty widel	n y spaced	T	Spacing (n > 20	am) 00-		FUKKE	IN CC	, LTD.
	Relativ	ve density	or	mult 0 - 4	Very soft	y or	ment ander 2	T-1 (Piston sampler) VS Vane She VS Vane She PMT Pressuren PMT	ee (185) neter Test	Thick Medium		600 - 200	2000	N	Widely s fedium	spaced	-	600 - 20 200 - 6	00	FGEX	(Yangor Twistie	Brank	ch) 19 - kultitevn
	L	oose un dense	1	4 - 10	Soft		2 - 4	(Denison sampler) Rock core sample (Single core tabe) RQD (%)	Term Very poor	Thin Very thir		60 -	200	Ver	losely s	spaced y spaced	+	60 - 20	0	Revision N	io.	Rev	01
	D	ense ense	3	10 + 50	Stiff Very stiff		9 - 15	Rock core sample (Double core tabe) 25 - 50 (Double core tabe) 50 - 76	Poor T	hickly lamin	ated	6 -	20	Extre	mely cle	osely spac	ed	< 20		Revision E	Date	14.	01.2017
1			1		Hard		over 30	Rock core sample (Cere Loss) 75 - 90	Good	, and a minim				Remark	<u></u>								

出典: JICA 調査団

図 4.1.63 ボーリング調査結果 BH-BD-20(2)

B	ORE H	OLE N	o. Bl	I-BD-20				BO	RING	LOC	1							Job N	o. Fl	KYB-20	16-02	5 OF 3
PF	OJECT	NAME	: Geol	echnical S	urvey on the	detailed o	lesign for th	e Bago River Bridge Construction Project	BORING EQ	UIPMENT	F	; <u>TO</u> I	10 "D1"			DÀ	TE	1_22	.11.2016	- 28,1	1.2016	-
L	CATIO	N	: Besi	de Existing	g Bago River	Bridge (Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		; Rota	ary Direc	t Circulation	- CLI	ENT				-		
GI	DORDI	NATE	: 3.41 : E 20	m 5411.868 ;	N 1857625.	150 DI	EPTH :	62.00m	GROUND W	ON ATER LE	VEL	: <u>Ver</u>	tical 5m		- 11	NI	PPO	N KO	EI C	0.,	LTI).
							1	1			*			STANDARD	ENETRAT	ON TES	τ		SAM	PLING		T
	<u>î</u>		(iii	1.1		USUL SUSITY				(H) (m)	TH (m))	(m) H.	0	TEST MI	THOD (A	BLOW			2		T	
(m)	NOILY	1 GL = (1	CNESS (WV	UR	IIVE DI	NAME	SOIL DESCRIPTION		& DEP	IG (DEI	R DEPT	101-10	Value V 30cm	N	Value		MPLE c & No.	101 - (n	(9)	(9	(m)
SCALI	ELEV	DETD	THIC	DIAG	COLD	RELA (ar) (SOIL			DATE	CASD	WATE	DEPTI	(Blow)	(Blow 10 20	s/30cm) 30 40	50	SA CTyp	DEPTI	TCR (SCR (RQD (
61		1			yellowish	Very	Clayey	Very dense, yellowish gray to yell	owish brown.	1	1	P	61.00			-			61.00			1
dunte					to yellowish	ucuse	SAMU	Clayey SAND	low plastic					50/13			1	P-56	61.28			
62	-58.89	62.30	5.30	022	brown					28.11.16 62.00		2	62.00	50/15			+	P-57	62.00 62.30			-
63					1.11			This borehole is terminated according to the termination criteri	at 62.00m,				63.00					1	20			6
64													64.00									64
65													65.00									6
661													66.00									60
67													67,00									6
duntu																						
opunite 0													68.00									
69 <u>1</u>													69.00									69
70													70.00									170
71													71.00									17
72													72,00									73
73													73.00									7
740													74.00									174
74 milit													75.00									
Shund													/5.00									
76													76.00									170
77													77.00									17
78													78,00									78
79													79.00									75
805													80.00									80
81													81.00									and
dunte																						
82mm													82.00									all and
83													83.00									83
84													84.00									184
85													85.00									18
86													86.00								Ц	180
87													87.00									8
20 miliun													88.00									hunter
alout																						- Chung
89												18	89.00									189
90													90.00						-			190
91	NOT	ES				_		Sample key		Pl	annet stra	acture	91.00		Discont	inuities						591
	Re	elative dem	atty deset	iption	Consist	ency descri	ption	Pr. Ustarfod sample (SPT sample) PBT Permeab Determined Sample V/	ility Test	Term Very thick		Spacing >	g (min) 2000	Very w	Term idely spaced	- 8	pacing (m > 200	em) 00		UKKE	V CO.	LTD.
	Relati	ry loose	ari	10-1	Consistence Very soft	y se	under 2	Price (Price sampler) VS Vane Sh VS Vane Sh PMT Pressary Det (Undistanted Sample Det (Undistanted Sampler)	metter Test	Thick Medium		600 - 200 -	2000 - 600	Wide Medi	ly spaced am spaced	-	600 - 20 200 - 60	00 10	•œ≡x	Yangon	Branch	r) - 420085752 Best port
1	1 Medi	loose am dease		4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	RQD (% Rock core sample (Single core tube), 0 - 25	Term Vary poor	Thin Very this	1	60 - 20 -	200	Close Very cl	ly spaced osely spaced		60 - 20 20 - 60	2	Revision N	a.	Rev	01
	Ver	Jense ry dense	3	0 - 50 ver 50	Stiff Very stiff	1	9 + 15 16 - 30	Rock core sample (Double core tube) 25 - 50 (Double core tube) 50 - 75	Poor 7 Fair	hickly lami fhinly lamin	nated	6 - <	20 6	Extremely Remarks	closely spa	ced	< 20		evision D	ate	14.0	2017
					Hard		over 30	Core Loss) 75 - 90 w-1 Water sample 90 - 10	Good Excellent					-								

出典: JICA 調査団

図 4.1.64 ボーリング調査結果 BH-BD-20(3)

BORE	HOLE N	No. B	H-BD-21	-			<u>B 0</u>	RING	LOC	3						Job N	lo. Fi Sh	KYB-20 zet No.	16-02:	OF 3
PROJE	CT NAME TION	: <u>Geo</u>	otechnical Si side Existing	arvey on the Bago River	e detailed d r Bridge (7	esign for the hanlyin Bri	Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQI BORING ME	UIPMEN THOD	r	: <u>TOF</u> : <u>Rot</u>	IO "D1" ary Direc	t Circulatio	m CLIEN	DATE T	: 08	.11.2016	~ 17,11	.2016	_
COORI	ND LEVEI DINATE	: <u>3.3</u>	4m 05475.433 ;	N 1857547.	.954 DI	ртн :_	66.00m	GROUND W	ON ATER LE	VEL	: <u>Ven</u> : <u>0.30</u>	n)			VIPPO	N KO	EIC	0., 1	LTL),
1					22				6	(m)&	(1		STANDARD TEST N	PENETRATIO	(TEST ()		SAM	PLING		
CALE (m) LEVATION (m)	EPTH GL-(m)	HICKNESS (m)	MAGRAM	OLOUR	(et) CONSISTEN	OIL NAME	SOIL DESCRIPTION		ATE & DEPTH (ASING (DEPTH DIAMETER (m	VATER DEPTH (EPTH GL = (m)	N-Value Blows / 30cm)	CURVE OF B N-Val (Blows /	LOW •	SAMPLE (Type & No.)	EPTH GL - (m)	CR (%)	CR (%)	(QD (%) CALE (m)
1	4 150	1.50		brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, lo plasticity, CLAY (Filled Soil)	w to medium			¥	1.00	0/45 •	10 20 30	40 30	Øw.i P-1	1.00	1	N.	a manufu
21111111111111111111111111111111111111	6 2.50	2.50		gray	Very soft	CLĂY	Very soft, gray, moist, medit plasticity, CLAY	ım to high				2.00 3.00 4.00	1/30			Р-2 Р-3	2.00 (m) cm 2.50 3.00 3.45 4.00			1021001310014
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	11.00	7.00		gray	Soft	ĊLAY	Soft, gray, moist, medium to hi CLAY GL: (9.00 ~ 9.45)m, medium grained, low plastic Clayey SA observed as intercalated layer at the	gh plasticity, dense, fine ND layer is it depth	08.11.10 6.00	5.00 Ø112		5.00 6.00 7.00 8.00 9.00 10.00	2/30 2/30 13/30 4/30	,)		P-5 P-4 P-5 NT-3 P-6 P-7	4.45 5.00 5.60 6.45 7.00 7.45 8.00 9.00 9.45 10.00 10.45 11.00			ومسارية والمسارية و
12	56 13.00	2.00		gray	Soft to firm	Sandy CLAY	Soft to firm, gray, moist, fine gra medium plasticity, Sandy CLAY	nined, low to				12.00	6/30 2/30			P-8 P-9 P-10	11.45 12.00 12.45 13.00			humilumi
141 151 161 171 181 191 191 191 191 191 191 191 191 19	66 20.00	7.00		gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND GL: (16.00 ~ 16.45)m and (18.0 medium dense, gray, fine to med low plastic Clayey SAND layer is intercalated layer at those depths GL: (19.00 ~ 19.45)m, clay patche at that depth	to medium) – 18.45)m, lium grained, s observed as s is observed				14.00 15.00 16.00 17.00 18.00 19.00	29/30 20/30 17/30 23/30 17/30 17/30			P-11 P-12 P-13 P-14 P-14 P-15 P-16	13.45 14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45 18.00 18.45 19.00 19.45 20.00			والمسابية والمسابية والمسابية والمسابية
2010-001-001-001-001-001-001-001-001-001				gray	Soft to- stiff	CLAY	Soft to stiff, gray, moist, low plasticity, CLAY Continue to next sheet	to medium	<u>09.11.10</u> 22.00	ź		21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00	8/30 11/30 6/30 3/30 4/30 5/30 7/30 4/30 8/30 9/30 7/30			P-17 P-18 P-19 P-20 P-21 P-22 P-22 P-23 P-24 P-25 P-26 P-27	20.45 20.45 21.00 21.45 22.00 22.45 23.00 24.45 25.00 26.45 25.00 26.45 27.00 27.45 28.00 28.45 29.00 29.45 30.00 29.45			2000 2010 2010 2010 2010 2010 2010 2010
Re	DTES Relative der lative density Very loose Loose ledium dense Dense Very dense	SP	ription T N-Value (mail) 0 - 4 4 - 10 10 - 30 30 - 50 over 50	Consist Consistence Very soft Soft Firm Stiff Very stiff Hard	tency descrip	tion N-Value mder 2 2 = 4 5 - 8 9 - 15 6 - 30 wer 30	Samuels key ▶ Donanted sample PBT Permede □ 1. Undianted sample PBT Permede □ 1. Undianted sample VS Vane Sh □ 1. Undianted sample PMT Persons □ 1. Undianted Sample PMT Persons □ 1. Undianted Sample PMT Persons □ 1. Undianted Sample 0.2 25 □ Rock core sample 0.2 25 - 50 □ Rock core sample 100 - 715 100 - 715 □ Rock core sample 75 - 50 90 - 100	iiity Test ear Test Term Very poor Poor Fair Good Excellent	Pi Term Very thic Thick Mediann Thin Very thi hickly lami thinly lami	k k	spacing > 600 - 200 - 60 - 20 - 60 - 20 - 6 - <	(mm) 2000 2000 600 200 60 200 60 20 6	Very Wi Mos Clo Very Extremo	Discontinu Term widely spaced fely spaced fium spaced sely spaced itesely spaced ly closely spaced	Spacing (n > 200 600 - 20 200 - 60 60 - 20 20 - 60 < 20	mm) 000 00 00 00 00	FGEX Revision D	UKKEI Consultin Yangon A (13) Act Water A	Rev: 14.01	LTD. seers)

図 4.1.65 ボーリング調査結果 BH-BD-21(1)

NUME Linear interaction of the second	во	RE H	OLE N	. BI	1-BD-21	1			BC	RING	LOG	1						3	Job N	o. Fi Sh	KYB-20 eet No	2	OF a	-
	PR	OJECT	NAME	: Geo	technical Su	irvey on the	e detailed d	esign for the	e Bago River Bridge Construction Project	BORING EQ	UIPMENT	5	: <u>TO</u>	HO "D1"			DATE	B	: 08.	11.2016	~ 17.1	1.201	6	Ĩ
	LO	CATIC	N.	Bes	ide Existing	Bago Rive	r Bridge (I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulation	- [au	ENT				-	1	_	ī
VEX.NUM PRODUCTION DECEMPTORY PROV P	GR	OUND	LEVEL	: 3.34	im		nea er		10.00	ORIENTATIO	ON		: Ver	tical	-	-	NIP	PON	KO.	EIC	O.,	LT	D.	
Normal Processor Normal Processor<	CO	ORDE	ATE	: <u>E 20</u>	05475.433 ;	N 1857547	.954 DE	арти :_	66.00m	GROUND W	ATER LE	VEL	: <u>0.3</u>	Om	STANDARD	-	TON TEST				~ *		-	-
No. GRC VP (NO. 90 No. GRC							SILY				E.	H (m) &	(m)		TEST ME	THOD (A	STM)	- 1	_	SAM	PLING	_		
No. No. <td>(0</td> <td>ON (m</td> <td>(m) - 1</td> <td>SSS (m)</td> <td>5</td> <td>- 64</td> <td>E DEN</td> <td>ME</td> <td>SOIL DESCRIPTION</td> <td></td> <td>DEPTH</td> <td>DEPT STER (</td> <td>HLLA</td> <td>(m) - J</td> <td>0cm)</td> <td>CURVE O</td> <td>FBLOW</td> <td>•</td> <td>LE No.)</td> <td>(m) - J</td> <td></td> <td></td> <td></td> <td>1</td>	(0	ON (m	(m) - 1	SSS (m)	5	- 64	E DEN	ME	SOIL DESCRIPTION		DEPTH	DEPT STER (HLLA	(m) - J	0cm)	CURVE O	FBLOW	•	LE No.)	(m) - J				1
N D	ALE (n	EVATI	PING	IICKN	AGRA	LOUR	LATIV Sr) CON	VN TH			VTE &	DIAMI	ATER I	p III.d	N-Val	(Blow	-Value /s / 30cm)		SAMP Type &	PTH G	R (%)	R (%)	(%) C(ALE (n
13 222 1100 120 1	SC	EI	ũ	Ë	īd	8	E G G	8	Page to address models have	All and discus	'n	3	Ň	D	80	10 20	30 40	50	-	DE	¥	SC	RC	S.
21 2100 2000 1000 <	31	27.66	31.00	11.00		gray	stiff	CLAI	plasticity, CLAY	to medium	10.11.16		11	31.00	5/30				P-28	31.00			-	31
The set of	32	1					5.0	CLAN	Saft to stiff army maint low	to madium	31.00			32.00						31.45			-	32
33	Internet					gray	to	CLAT	plasticity, CLAY	to inculuit					6/30				P-29	32.45				
Alian Alian <td< td=""><td>33</td><td></td><td></td><td></td><td>0.000</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>33.00</td><td>6/30</td><td></td><td></td><td>1</td><td>P-30</td><td>33.00</td><td></td><td></td><td>-</td><td>33</td></td<>	33				0.000									33.00	6/30			1	P-30	33.00			-	33
$ \frac{1}{2} 1$	34													34.00	5/30			1	P-31	34.00				34
1 1	35													35.00	6/30			5	P-32	35.00			il and	35
1 1	36													36.00					0.00	35,45	2			36
22 1	-														10/30	Ī			P-35	36.45			trata.	-
NE Jacob Ja	3/1													37.00	8/30			1	P-34	37.00			al and	31
132 1200	38													38.00	7/30			1	P-35	38.00				38
Here Image: second	39													39.00	7/30			1	P-36	39.00			in the second se	39
30.00 10.00 <td< td=""><td>40</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>11.11.16</td><td></td><td>Ы</td><td>40.00</td><td>7/20</td><td></td><td></td><td></td><td>P.37</td><td><u>39.45</u> 40.00</td><td></td><td></td><td></td><td>40</td></td<>	40										11.11.16		Ы	40.00	7/20				P.37	<u>39.45</u> 40.00				40
12 100 10	A1										40.00			41.00	1130					40.45			-	1
42 43 44 44 44 44 44 44 44 44 44 44 44 44	-inter-												1	+1.00	7/30			4	P-38	41.45			-	Ĩ
43 44 44 45 45 45 45 45 45 45 45 45 45 45	42	1												42.00	6/30			1	P-39	42.00			a data	42
44 66 66 66 67 67 66 66 66 66 66 66 66 66	43													43.00	7/30				P-40	43.00	6		in the second	43
45 450 450 450 450 450 450 42 42 450 450 450 450 450 42 42 450 450 450 450 450 42 42 450 450 450 450 450 42 42 450 450 450 450 450 43 450 450 450 450 450 450 44 4200 4200 4200 4200 4200 450 <td>44</td> <td></td> <td>D</td> <td>44.00</td> <td>9/30</td> <td></td> <td></td> <td></td> <td>P-41</td> <td>43.45</td> <td></td> <td></td> <td></td> <td>44</td>	44												D	44.00	9/30				P-41	43.45				44
46 46 47 47 47 48 48 49 49 49 49 49 49 49 49 49 49 49 49 49	45													45.00						44.45				45
90 47 47 48 48 48 48 48 48 48 48 48 48 48 48 48	Innte														8/30			11	P-42	45,45				
41 42 43 44 44 44 44 44 44 44 44 44 44 44 44	401												12	46.00	9/30			1	P-43	46.00				40
48 48.00 12/20 48.00 12/20 48.00 12/20 48.00 48.00 50 50 50 50 50 50 50 1330 12/20 1330 12/20<	47													47.00	7/30			1	P-44	47.00			and the	47
49 49.6 50.0 13.30 13.30 13.30 13.30 14.43.5 50 51 52 52 52 52 52 52.00 13.30 13.30 13.30 19.46 49.00 49.43.5 52 52 52 52.00 13.30 13.30 13.30 19.46 49.20 13.30 19.45	48													48.00	12/30			1	P-45	48.00				48
50 50 51 52 52 52 52 52 52 52 52 52 52 52 52 52	49													49.00	13/30				P-46	49.00				49
23 49.66 53.00 22.00 13/30 13/30 14/2 12/11.66 52 33 49.66 53.00 22.00 11/30 14/30 </td <td>50</td> <td></td> <td>50.00</td> <td>13/30</td> <td>II</td> <td></td> <td></td> <td></td> <td>49.45</td> <td></td> <td></td> <td></td> <td>50</td>	50													50.00	13/30	II				49.45				50
51 10/10 10/20 10	- Contraction				1557										13/30	1		1	P-47	50.00			al an	20
52 33 49 66 53.00 22.00 92.00 11/30 92.00 11/30 92.45 53 49 54 40 gray Loose to medium dense Clayey to sAND Loose to medium dense, gray, moist, fine grained, low plastic Clayey SAND 53.00 10/30 92.00 11/30 92.45 55 56 56 56 57 57 55 56 50 gray Stiff CLAY Stiff, gray, moist, low to medium plasticity, CLAY 55 500 10/30 92.00 11/30 92.55 92.55.00 56 50 50 gray Stiff CLAY Stiff, gray, moist, low to medium plasticity, CLAY 55.00 10/30 92.00 92.55 55.00 59 50 gray Stiff CLAY Stiff, gray, moist, low to medium plasticity, CLAY 55.00 10/30 92.55 55.00 50 50 gray dense SAND Medium dense to dense, greenish gray, moist, fine to medium grained, low plastic Clayey 58.00 20/30 92.55 58.60 59 50 dense STMD Continue to next abert Termesting Tat, transmith Termesting Tat, transmith Termesting Tat, transmith Termesting Tat, transmith Termesting Tat, transmith Termesting Tat, trat, transmith Termesting Tat, transmith<	51													51.00	10/30	ŧ I		1	P-48	51.00 51.45				51
33 49.66 33.00 22.00 97.50 53.00 10/30 97.50 53.00 54 0 0 0 0 0 0 97.50 53.00 10/30 97.50 53.00 10/30 97.50 53.00 10/30 97.50 53.00 10/30 97.50 53.00 10/30 97.50 53.00 10/30 97.50 53.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.50 55.00 10/30 97.55 55.00 10/30 97.55 55.00 10/30 97.55 55.00 10/30 97.55 55.00 10/30 97.55 55.00 10/30 97.55 55.00 55.45 10/30 97.55 55.00 10/30 97.55 55.00 55.45 57.45 57.45 57.45 57.45 57.45 57.45 57.45 57.45 57.45 57.45 57.45	52										12.11.16		1¢	52.00	11/30			1	P-49	52.00				52
S4 gray Loose to medium dense, gray, moist, fine grained, low plastic Clayey SAND Loose to medium dense, gray, moist, fine grained, low plastic Clayey SAND S4.00 11/30 P-51 54.00 55 51.66 57.00 2.00 gray Stiff CLAY Stiff, gray, moist, low to medium plasticity, CLAY 55.00 10/30 9-52 55.00 56 57.00 2.00 greenish greenish gray, moist, low to medium plasticity, CLAY 56.00 11/30 9-53 56.00 57 53.66 57.00 2.00 Gray Medium dense to dense, greenish gray, moist, fine to medium grained, low plastic Clayey 57.00 18/30 9-54 57.00 59 60 0.0 35/30 9-55 58.00 59.00	53	49.66	53.00	22.00		_		1.1.1.					11	53.00	10/30				P-50	53.00				53
Static Static CLAY Stiff, gray, moist, low to medium plasticity, CLAY Stiff, gray, moist, low to medium plasticity, SAND Stiff, gray, moist, low to medium plasticity, fine to medium grained, low plastic Clayey SAND Stiff P-55 Stoff NOTES Continue to next thed Strutch Strutch P1 Strutch P2 Strutch P2-55 Strutch P2-55 <td>54</td> <td></td> <td></td> <td></td> <td></td> <td>gray</td> <td>Loose</td> <td>Clayey</td> <td>Loose to medium dense, gray, grained low plastic Clavey SAND</td> <td>moist, fine</td> <td></td> <td></td> <td>Ш</td> <td>54.00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>53.45</td> <td></td> <td></td> <td></td> <td>54</td>	54					gray	Loose	Clayey	Loose to medium dense, gray, grained low plastic Clavey SAND	moist, fine			Ш	54.00						53.45				54
S3 31.66 50.00 2.00	hunt				144 ann 144		medium dense	unite	granica, iow plastic citycy or tro						11/30				P-51	54.45			launa a	
S60 S7 S7 S7 S7 S60 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7	551	51.66	55.00	2.00		170.0	1.4	1.1.12			1		11	55.00	10/30	t		1	P-52	55.00 55.45			-	55
57 35.366 57.00 2.00 97.45 58.00 18/30 97.45 58.00 57.45 97.45 58 greenish dense SAND Medium dense to dense, greenish gray, moist, fine to medium grained, low plastic Clayey 58.00 20/30 97.45 </td <td>56</td> <td></td> <td></td> <td></td> <td></td> <td>gray</td> <td>Stiff</td> <td>CLAY</td> <td>Stiff, gray, moist, low to media CLAY</td> <td>im plasticity,</td> <td></td> <td></td> <td>Ľ</td> <td>56.00</td> <td>11/30</td> <td></td> <td></td> <td>1</td> <td>P-53</td> <td>56.00</td> <td></td> <td></td> <td>and and</td> <td>56</td>	56					gray	Stiff	CLAY	Stiff, gray, moist, low to media CLAY	im plasticity,			Ľ	56.00	11/30			1	P-53	56.00			and and	56
S8 59 59 60 60 60 60 Image of the set solution dense in the set in the set of th	57	53.66	57.00	2.00						_				57.00	18/30				P-54	57.00			doubt	57
Solution Single former	58					greenish	Medium	Clavev	Medium dense to dense, greenish	gray, moist				58.00	20/20				P.55	57.45 58.00			and and	58
NOTES Continue to next sheet Discreting for (0.00) Discreting for (0.00) P-56 59.45 59.45 NOTES Consistency description (0.00) Consistency description (0.00) Term ships Discreting for (0.00) P-57 50.00 59.45 Relative demity description (0.00) Consistency description (0.00) Term ships Paper structure (0.00) Discreting for (0.00) Term ships Discreting for (0.00) Term ships Specing (mm) This Term ships	-	1			1	gray	dense to	SAND	fine to medium grained, low p SAND	lastic Clayey				50.00	20/30				, c., j	58.45			hundre	-
60-1 151116 60.00 35/30 P-57 60.00 NOTES Consistency description 61.00 61.00 35/30 P-57 60.00 NOTES Consistency description Consistency description PST PST PST Consistency description PST	aluni						dense		22					39.00	20/30			4	P-56	59.00 59.45			ulous	29
613 Continue to next deet 61.00 Discritize NOTES Sample Ley Stample Ley Flasmer structure Discritize Relative density description Consistency description SPT N-Valae SPT N-Valae SPT N-Valae Discritize Term Spacing (mm) Very Mick > 2000 Term Spacing (mm) Very Mick > 200 Term Spacing (mm) Very Mick > 200 Term Spacing (mm) Very Mick > 200 Term Spacing (60										15.11.16 60.00			60.00	35/30			þ	P-57	60.00 60.45			and and	60
Image: space of the s	61	NOT	ES	K	1-1-1-1			- head	Continue to next sheet		pi	inner et-	l	61.00		Diveor	Linuities					1		61
Relative density Set I N-Y aller (mode) Consistency (mode) Set I N-Y aller (mode) Consistency (mode) Instrument (mode) VS Xes Set T net (mode) Number of (mode) Number of	1	Re	lative dens	ity desc	ription	Consi	stency descrip	ition	P.1 Disumbid comple (SPT sample) PBT Permeat	ility Test	Term Very thick		Spacing	g (mm) 2000	Verv	Form dely snace	Spa	cing (mm)			UKKE	N CO	., LTD,	1
Lessic 4 + 10 Soft 2 + 4 Performance		Relativ	ve density y loose	SP	0 - 4	Consisten Verv sol	cy SPT	N-Value (mail) mder 2	Indisturbed Sample VS Vane St (Piston sampler) PMT Pressure	ear Test	Thick	+	600 -	2000	Wide	ly spaced un spaced	60	0 - 2000	=	GEX	Yangon	Branc tosse, so	h) + 42005971	ii i
Dense 30 - 50 Suiff 9 - 15 Peek core sample 25 - 50 Peor Thickly laminated 6 - 20 Extremely closely spaced < 20 Revision Date 14 Very dense over 50 Very stiff 16 - 30 For core sample 50 - 75 Fair Thinly laminated < 6		L	oose im dense	-	4 - 10	Soft		2 = 4 5 - 8	(Denison sampler) ROD (% (Single core tabe) D - 25	Very poor	Thin Very thin		60 -	200	Close Very ele	ly spaced osely space	6	0 - 200		tevision N	0.	Rev	: UI	-
Keck core sample		D	ense y dense	3	30 - 50 over 50	Stiff Very stif	r i i	9 - 15	Reck core sample (Double core tube) 25 - 50 50 - 75	Poor T	hickly lamin	nated	6 -	20 6	Extremely	closely spi	iced	< 20	R	levision D	late	14.0	1.2017]
Hard Over 30 Cover 30 75 - 90 Good 9%-1 Warr sample 90 - 100 Excellent					L	Hard		iver 30	(Core Loss) W-1 Water sample 90 - 10	Good Excellent					ACCOUNTS									

出典: JICA 調査団

図 4.1.66 ボーリング調査結果 BH-BD-21(2)

во	RE H	OLE N	o. BH-	BD-21				BO	RING	LOC	2					- 1	Job N	la. F Sh	KYB-20 eet No.	3	5 OF 3
PR	OJECT	NAME	: Geote	chnical Su	arvey on the	detailed o	lesign for th	Bago River Bridge Construction Project	BORING EQ	UIPMENT	E,	: <u>TO</u>	10 "DI"		. - 1	DATE	: 08	.11.2016	5~17.1	1.201	6
LO	CATIO	N	Besid	e Existing	Bago River	Bridge (Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		: Rota	ary Direc	Circulation	CLIEN	<u>r</u>				-	
GR	OUND	LEVEL	: 3.34n	475,433 :	N 1857547	954 D	SPTH :	66.00m	GROUND W	ATER LP	VEL	: Vert	ncal Im	-	Λ	VIPPO	N KO	EI C	O.,	LT	D.
		1		475,400 1	1051541	101 0		loonala.	SKOOND II	I	1.00	1	1 5	TANDARD PE	NETRATION	TEST	-			-	-
		11		191		VSITY				1 (m)	H(m) ((um	(m)		TEST MET	HOD (ASTM	()	1	SAM		-1	-
(iii	a) NOL	(m) - (m)	IESS (II	W		VE DE	AME	SOIL DESCRIPTION		DEPTI	(DEP)	DEPTI	3E (m)	30cm)	URVEOFBL	.ow •	PLE & No.)	jt - (m)			- i
CALE	LEVAT	EPTH	HICKN	IAGR/	nono	ELATI (or) CO	N TIO			ATE&	ASING NAM	ATER	EPUIC	Blows /	(Blows / 3	ie ()cm)	SAM (Type	EPTH (CR (%)	CR (%)	QD (%
S	8	0	+	D	u	24	S			0	0	>	9	0 II	20 30	40 50	-	0	F.	s	8 8
61	57.66	61.00	4.00		1	_				1.00			61.00	50/30			P-58	61.00			6
62							1	1. C. C. C.					62.00	50/20			P.50	61.45			6
1					reddish brown	Dense to	Clayey SAND	Dense to very dense, reddish yellowish brown, moist, fine	brown to to medium					50/50		T	1.00	62.45			
031					to yellowish	very dense	1.1.1.1.1	grained, low plastic Clayey SAND		63.00			63.00	50/30		1	P-60	63.00			il ma
64					brown			GL: (61.00 ~ 61.45)m, fine grav increased at that depth	el percent is			13	64.00	50/30		+	P-61	64.00	ł I		6
65								and the second second					65.00	50/30			P-62	65.00			6
66										17.11.16			66.00	50/20			P 63	65,45			16
67	63.10	66.44	5.44							66.00			67.00	20129		IT	1-05	.66.44			
0/1								This borehole is terminated according to the termination criteria	at 66.00m,				67,00								olumb
68													68.00								6
69													69.00								6
70													70,00	611							7
71													71.00								1
Inne																					hum
72													72.00								7
73													73.00								7
74													74.00								117
75													75.00								7
76													76 00								inter 1
dunt																					hunt
77												11	77.00								17
78													78.00								7
79													79.00								7
803													80.00								1118
01																					
- International																					al mut
82												1	82.00								18 m
83												i d	83.00								18
84													84.00								18
85													85.00								18
hund																					Luna .
ophini													80.00								alum a
87													87.00								18
88													88.00								8
89													89.00								18
90													90.00								
Inter																					dunte
913	NOT	ES						Sample key		<u>р</u>	anner stri	acture	91.00		Discontinuit	ties					E9
	Relativ	lative density	ity descrip	ntion N-Value	Consist	tency descri	ption F.N-Value	P.1 (Set ample) PBT Permeab T-1 Undisturbed Sample VS Varie S0	hity Test	Term Very thick		Spacing >	2000	Te Very wide	m ly spaced	Spacing (n > 20	am) 90		FUKKE		, LTD.
	Ver	y loose.	0	-4	Very soft		under 2	PMT Pressure (Denison sampler)	nieter Test	Thick Medium		600 - 200	2000	Widely Medium	spaced	600 - 20 200 - 6	00	FG≣X	Tangon Tal. 351 - 30	Branc toset is inpeccine	11) 1 - 4290m87782 attenti.com
	Media	oose im dense	-4	- 10	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube)	Term Very poor	Thin Very thin	0	60 - 20 -	200 60	Closely Very close	spaced by spaced	60 - 20 20 - 60		Revision N	hus	Rev	0/
	Very	ense (dense	30	- 50 ar 50	Stiff Very stiff		9 - 15 6 - 30	(Dauble some sample Rock core sample Rock core sample	Poor T Fair	nickly lami thinly lamir	nated	6 <)	20. 6	Extremely c	iosely spaced	< 20		Cristion L	éác.	14.0	1.4015
_				Ļ	Hard		over 30	(Core Loss) (75 - 90 (90 - 10)	Excellent												

出典: JICA 調査団

図 4.1.67 ボーリング調査結果 BH-BD-21(3)

BC	REH	OLE N	o. BH	I-BD-22				<u>B O</u>	RING	LOC	ł						Job N	lo. Fl Shi	KYB-20 eet No	16-025	OF 3
PR LC GR	OJECT CATIO	NAME ON	: <u>Geot</u> : <u>Besi</u> : <u>3.38</u>	echnical Su de Existing m	arvey on the Bago Rive	e detailed o r Bridge (1	lesign for the	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQU BORING ME ORIENTATIO	UIPMEN THOD DN		: <u>TOF</u> : <u>Rota</u> : <u>Ver</u>	HO "D1" ary Direc	t Circulatio		DATE <u>NT</u>	: 21	11.2016	~ 28.11	.2016	-
cc	ORDIN	NATE	: <u>E 20</u>	5507.335 ;	N 1857509	.453 DI	epth :_	62.00m	GROUND W.	ATER LE	VEL	: 0.4	2m			NIPPO	N KO	EIC	0., 1	LTL).
						SITY				ĵ.	1 (m) & m))	(W		STANDARD TEST M	PENETRATI ETHOD (AS	ON TEST IM)	РМТ	SAM	PLING	-	
(m)	(m) NOL	jl (m)	ESS (m)	W	~	VE DEN NSISTE	WIE	SOIL DESCRIPTION		DEPTH	(DEPT) ETER (P	DEPTH	3L - (m)	hie 30cm)	CURVE OF	BLOW •	PLE & No.)	iL - (m)			a îi
SCALE (BLEVAT	DEPTHO	THICKA	DIAGR	COLOU	RELATI (or) CO	SOIL N			DATE&	CASING	WATER	DEPTHO	N.Va (Blows/	(Blows 10 20 3	atue / 30cm) 0 40 50	SAM (Type	DEPTH (TCR (%	SCR (%)	RQD (%
11 million	1.88	1.50	1.50		brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, high plasticity, CLAY (Filled Soil)	, medium to			¥	1.00	0/45 •			6 wd P-1	1.00			1
21m					grav	Verv	CLAY	Very soft to soft, gray, moist to we	t, low to high			8	2.00	0/45			P-2	2.00			12
3hun						soft to	1.1.1	plasticity, CLAY		1.5	3.00 Ø112		3.00	0/45			P-3	3.00			13
4 milium						3011		grained, Silty SAND layer is intercalated layer at that depth	observed as	21.11.16			4.00				U T-1	4.00			4
5 million								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					5.00	0/45 🗣			P-4	4.70 5.00 5.45			15
10 million													6.00	1/30			P-5	6.00			
2 million													7.00	2/30			P-6	7.00			7
8 miles					5								8.00	4/30			P-7	8.00			8
9 milit												2	9.00	3/30			P-8	9.00			19
10	-6.62	10.00	8.50										10.00	2/30			P-9	10.00			10
11In					gray	Soft	Sandy	Soft to stiff, gray, moist, fine gra	ined, low to			Ы	11.00	2/30			P-10	11.00			1
12						to stiff	CLAY	medium plasticity, Sandy CLAY					12.00	1			Пт-2	11.45 12.00			12
13													13.00	9/30			P-11	12.60 13.00			13
14	10.62	14.00	4.00			-							14.00	18/30	N		P-12	13.45 14.00			14
15				× × × × × ×	brownish	Medium	Silty	Medium dense, brownish gray to g	gray, moist to	22.11.16		5	15.00	16/30			P-13	14.45 15.00			15
16				8 8 8 8 8 8	gray to gray	dense	SAND	wet, fine grained, Silty SAND		15.00			16.00	17/30	1		P-14	15.45			16
171				* * *									17.00	28/30			P-15	16.45 17.00			17
181				* * *	2								18.00	14/30	X		P-16	17.45			18
19				* * *									19.00	27/30			P-17	18.45 19.00			19
20	16.62	20.00	6,00	* * *			_		-			LU.	20.00	4/30	K		P-18	19.45 20.00			20
21					anav	Soft	CLAY	Soft gray moist medium to hi	oh plasticity				21.00	3/30			P-19	20.45			2)
22					6		class	CLAY	en hussen),				22.00					21.45			22
23													23.00	4/30			P-20	22.80 23.00			23
24													24.00	3/30			P-21	23.45 24.00			24
25	21.62	25.00	5.00							23.11.10			25.00	3/30			P-22	24.45 25.00			25
26					gray	Soft	CLAY	Soft to stiff, gray, moist, medi	ium to high	23.00			26.00	4/30			P-23	25.45 26.00			20
27						to stiff		plasticity, CLAY with silt					27.00					26.45			27
28								intercalated layer	observed as				28.00	6/30			P-24	(m) cm 27.60 28.00			28
29													29.00	4/30			P-25	28.45 29.00			29
30													30.00	5/30			P-26	29.45 30.00			30
31								Continue to next sheet	1-4	1			31.00	5/30	-		1 40	30.45			31
1	Re	ES lative dens	ity descr	iption	Consis	tency descrip	ntion	Sample key Pr-1 Distanted sample (SPT sample) PBT Permeab	ility Test	Term Very this	anner stra	Spacing	(mm)	Verv	Discontin Term idely spaced	Spacing (r	min)		UKKEN	CO.,	LTD.
1	Relativ	ve density y loose	SPT	N-Value mui 0 - 4	Consistence Very soft	ay SPT	N-Value (mail	T-i Undistarbed Sample (Pisten sampler) PMT Pressure D-i Undistarbed Sample	ear Test meter Test	Thick Medium		600 - 200 -	2000 600	Wid	ely spaced um spaced	600 - 20 200 - 6	000 500	FGEX	Yangon w par - son	Branch	425085767 million
1	L Media	ion dense	10	4 + 10 0 - 30 0 - 50	Soft Firm		2 - 4 5 - 8 9 - 15	Rock core sample (Single core tabe) Rock core sample 75 - 50	Very poor Poor	Thin Very thi hickly tarri	n	60 - 20 -	200 60 20	Clos Very c	ety spaced losely spaced v closely energy	60 - 20 20 - 6	00 50	Revision N Revision D	o. ate	Rev: 1	2017
U	Ven	y danse	0	ver 50	Very stiff Hard	r 1	6 - 30 over 30	(Double core tube) Rock core sample (Core Loss) (Double core tube) 30 - 75 75 - 90	Fair 1 Good	hinty lamin	nated	<	6	Remarks	Succession about	- 20					-
								1 W-1 Water sample 90 - 100	0 Excelleni												

出典: JICA 調査団

図 4.1.68 ボーリング調査結果 BH-BD-22(1)

BORE	HOLE 1	lo. Bl	1-BD-22				BO	RING	LOC	È							Job N	io. Fi	KYB-20 eet No.	16-02	5 OF 3
PROJE	CT NAME	: <u>Geo</u>	technical St	rvey on the	detailed o	lesign for th	e Bago River Bridge Construction Project	BORING EQ	JIPMENT	r -	: <u>TO</u>	10 "DI"		20	DAT	ſE	: 21	.11.2016	- 28.1	.2016	5
LOCA	TION	: Bes	ide Existing	Bago Rive	r Bridge (')	Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ary Direc	t Circulatio	<u>n</u> <u>CL</u>	IENT			1.5.5			
COOR	DINATE	: E 20	05507.335 ;	N 1857509.	.453 DI	EPTH :_	62.00m	GROUND W	ATER LE	VEL	: 0.4	2m		ΞP	NIF	PPON	KO	EIC	0.,	LTL).
1	-	1			20	1.0.00				a) &			STANDARD TEST M	PENETRAT ETHOD (A	TION TEST STM)	r		SAM	PLING		T
(W)	2	(iii			DENSIT	1.1	Contraction of		(III) (III)	R (mm)	TH (m)	(H	2	CURVEC	F BLOW		2	(m			
E (m)	H GL-(KNESS	RAM	KUR.	TIVE CONSIS	NAME	SOIL DESCRIPTION		& DEI	NG (DI	ER DEP	H GL-(Value s/30en	N	Value		MPLE pe & N	- 10 F	(%	(%	(%)
SCAL	DEPTI	THIC	DIAG	COLIC	RELA (or))	SOIL.			DATE	CASD	WAT	DEPT	(Blow	(Blox 10 20	30 40	50	S/	DEPT	TCR (SCR (RQD
11-27	62 31.00	6.00		gray	Soft to stiff	CLAY	Soft to stiff, gray, moist, medi plasticity, CLAY with silt	um to high	12			31.00						31.00			and and
				gray	Soft	CLAY	Soft to stiff, gray, moist, medi	um to high					4/30				P-27	31.45			in the second
alum					stiff		Thin cand laware are wall	obvarvad se				32.00	4/30				P-28	32.00			iluna.
3					1.0	1	intercalated layer	buserved as			. 6	33.00					U T-5	33.00 (#) cm			
4				3			GL: (52.0m ~ 52.45)m, sand increased at that depth.	percent is				34.00	7/30				P-29	33.70			iniilu
5							Contrado Trente ver-		24.11.16			35.00	8/30				P-30	35.00			min
6									33,00			36.00		1			D 31	35.45			and the second
												37.00	5/50				1-51	36.45			La
alum												57.00	6/30	1			P-32	37.45			luni
8mm												38.00	5/30				P-33	38.00			
19												39.00	8/30				P-34	39.00			milu
												40.00	7/30				P-35	40.00			
1												41.00	6/30				P-36	40.45			-
20												42.00	0/30				0.00	41,45			and the second
Internet													7/30				P-37	42.45			huntu
2 million												43.00	8/30				P-38	43.45			il wat
4												.44.00	8/30	+			P-39	44.00			4
15												45.00	9/30	4			P-40	45.00			mile.
101									25,11.16			46.00	10/30	1			P-41	46.00			-
7												47.00	9/30				P-42	46.45			at the second
48												48.00						47.45			
Imm			222									10.00	8/30	1			P-43	48.45			human
2 miles												49.00	9/30	1			P-44	49.00			hunt
0 million											1	50.00	12/30	h			P-45	50.00 50.45			11 milium
4												51.00	12/30	H.			P-46	51.00			in the second se
2												52.00	15/30	1			P-47	52.00			mili
33				2								53.00	15/20				P.48	52.45			III.
4												54.00	13130	I				53.45			and and
- International Providence Provid												24.00	12/30	Ť			P-49	54.45			il and it
5												55.00	11/30	ŧ I.			P-50	55.00 55.45			
6			365						26.11.16			56.00	11/30	-			P-51	56.00			-
7 -53.	62 57.00	26.00				_	-	-				57.00	50/9		H	-	P-52	57.00			hunde
8				greenish	Very	Clayey	Very dense, greenish gray to ye	llowish gray,				58.00	50/28				P-53	57.24 58.00			utunil
9				to vellowish	uense	SAND	Clayey SAND	low plastic				59.00					Det	58.43 59.00			and the second
				gray								ca 00	50/28			1	F-34	59.43			and the second
luni													50/25			1	P-55	60.00			alumit.
N	DTES	1					Sample key		Pl	anner str	ucture	61.00		Discon	ttinuities			_		1	Ē
Re	Relative de	sity desc	ription N-Value	Consisten	tency descrip	ntion N-Value	Pri Dimeted sample PBT Permeab PBT Permeab Ti Undisturbed Sample VS Vane Sh	ility Test	Term Very thick		Spaciny >	(mm) 2000	Very	Term videly space	d St	pacing (nm > 2000	n))	F	UKKEI	y CO. g Engi	, LTD.
	Very loose		(mai) 0 = 4	Very soft		ander 2	(Piston sampler) D-4 Undisturbed Sample (Denison sampler)	meter Test	Thick Medium		600 -	2000	Med	ety spaced		500 - 2000 200 - 600		TGEX	Tangon W RS1 In:	seec ass	1) L 420089763 Alani com
M	Loose ledium dense		4 + 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25 Rock core sample	Very poor	Thin Very thu	1	60 - 20 -	200 60	Very a	ery spaced losely space	ki.	60 - 200 20 - 60		Revision N Revision D	io.	Rev:	a) 1.2017
	Very dense	2	iver 50	Very stiff	r j	6 - 30	(Double core tube) Rock core sample (Double core tube) 50 - 75 77 - 40	Fair T	hinly lamir	ated	0 (- s	6	Remarks	y closely sp	4,00	< 20					- And P
			L.	Hard	10	over 30	(Core Loss) 75 - 90 90 - 10) Excellent													

出典: JICA 調査団

図 4.1.69 ボーリング調査結果 BH-BD-22(2)

BC	ORE H	OLEN	o. Bł	I-BD-22	11-			BC	RING	LOC	2						Job N	lo. F. Sh	KYB-20 eet No.	3	5 OF 3
PR	олест	NAME	Geo	technical S	urvey on the	detailed d	lesign for th	e Bago River Bridge Construction Project	BORING EQ	UIPMENT	r -	: <u>TO</u>	10 "D1"		_ 1	DATE	: 21	.11.2016	6~28.1	1.201	5
LC	CATIC	N	Besi	de Existing	Bago River	Bridge (7	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		; <u>Rot</u>	ary Direc	Circulation	CLIENT	100					
GF	ROUNE	LEVEL	- 3.38	m	N: 1957500	151 DI	IPTH .	62 00m	ORIENTATI	ON ATERIE	VEL	: <u>Ver</u>	tical		N	IPPO	N KO	EIC	O.,	LTI	D.
	ARDI	I	. <u>E</u> 20		14 163 / 3092	10 202	- in :_	verven	GROUND W	I CR LE	ALL .	<u>. u.4</u>		STANDARD P	-	EST		- D *2			1
	~					SILY				(m)	H (m) &	(m)		TEST ME	THOD (ASTM)		1	SAM	IPLING	-	
(i)	ION (m	iL - (m)	ESS (m	ż		VE DEN	IME	SOIL DESCRIPTION		DEPTH	(DEPT	DEPTH	d (m)	Jue 30cm)	CURVE OF BLC	w •	PLE & No.)	(II (m)		1	1
VILE (EVAD	EPTH(G	HICKN	AGRA	DLOUR	ELATIN or) CON	HL NA			ATE&	ASING	ATER	EPTH G	N-Val	N-Value (Blows / 30	2003	SAMB USpo &	DHILd	(R (%)	-R (%)	OD (%)
SC	13	Di	P	5	C	8.0	s			D	0	M	ā	€ 0 1	0 20 30	40 50	-	DE	¥	š	R(
61					greenish gray	dense	SAND	very dense, greenish gray to ye moist, fine to medium grained,	lowish gray, low plastic				61.00	50/23			P-56	61.00			6
62					yellowish		1	Clayey SAND		28.11.16			62.00					61.38			16
- International Contraction	-58.92	62.30	5.30		gray		-			62.00	1		1.1	50/15		11	P-2/	62.30			
633	6	11						This borehole is terminated according to the termination criteri	at 62.00m,	11			63,00								61 10
64													64.00								6
65	1												65.00								6
													46.00								
00												1									el.
67													67.00								6
68													68.00								6
69													69.00								100
70													70.00								humi
/online													70.00								ulumi
71													71.00								17
72	1												72,00								17
73											Ι.		73.00								7
Tunt																					
/41													/4.00								
75													75.00								7
76	È.												76.00								17
77													77.00								17
70													78 00								
/olum													70.00								-
79													79.00								17
80													80.00								18
81													81.00								18
82													82 00								1
hum																					lum
833													83.00								18
84													84.00								8
85													85.00								18
86													86.00								1
Inni																					dunin
87													87.00								18
88													88.00								18
89													89.00								1118
90													90.00								
aluni													90.00								line
91	NOT	ES	-			_		Sample key	- 2	PE	anner sir	ucture	91.00		Discontinuitie	2				1	E9
5	Re	lative dens	ity descr	iption N-Value	Consist	ency descrip	nion N-Value	Provide angle PBT Permeat Indistanted Sample VS	Utty Test	Term Very thick		Spacing >	2000	T Very wi	erm lefy spaced	Spacing (n > 20	800) 20		FUKKE	N CO	LTD.
	Ver	y loose		0 - 4	Very soft		under 2	■ ¹ ⁻¹ (Piston sampler) □ p ₋₁ (Indisturbed Sample p ₋₁ (Indisturbed Sample	meter Test	Thick Medium		600 - 200 -	2000	Widel	y spaced m spaced	600 - 20 200 - 6	00	FGEX	Yangon	Brand	2) - 420049762 Bird com
	L Medi	nose um dense	1	4 = 10 0 - 30	Sofi		2 - 4 5 - 8	ROD (% (Single core sample (Single core tabe)	Term Very poor	Thin Very this	0	60 - 20 -	200 60	Close Very clo	y spaced sely spaced	60 - 20 20 - 6	0	Revision N	la.	Rev	01
	Ver	ense v dense	3	0 - 50 ver 50	Stiff Very stiff	1	9 = 15 6 - 30	Rock core sample (Double core table) 50 - 75	Poor 1 Fair	hickly lamin binly lamin	nated	16 e 1	20 6	Extremely	closely spaced	< 20		Revision D	Date	14.0	1.2017
					Hard		over 30.	(Core Loss) 75 - 90 (w. (Water sample 90 - 10	Good Excellent				1	-							

出典: JICA 調査団

図 4.1.70 ボーリング調査結果 BH-BD-22(3)
BC	ORE H	OLE N	o, BH	I-BD-23				BC	RING	LOC	3						Job /	Vo. F. Sh	KYB-20. eet No.	6-023	OF 2
PF	OJECT	NAME	: Geo	technical Su	rvey on the	e detailed d	esign for th	Bago River Bridge Construction Project	BORING EQ	UIPMEN	r	: <u>TO</u>	IO "DI"	t Circulat	ion	DATE	: 28	3.11.2016	~05.12	2016	-
GI	ROUND	LEVEL NATE	: 3.98 : E 20	m 05541.753 ;	N 1857475	.540 DI	PTH :	59.00m	ORIENTATIO GROUND W	ON ATER LE	EVEL	: <u>Ver</u> : <u>0.4</u> :	tical 2m	er Circular		NIPP	ON KO	EI C	<i>.</i> , 1	TL).
1		1				Ĕδ				î	\$ (iii)	(î		STANDAR TEST	D PENETRA METHOD (/	TION TEST ASTM)	PMT	SAM	IPLING	-	
SCALE (m)	ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENS (or) CONSISTEN	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTH DIAMETER (m	WATER DEPTH (DEPTH GL (m)	N-Value (Blows/30cm)	CURVE ((Blo 10 20	V-Value ws/30cm) 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	ICR (%)	SCR (%)	RQD (%) SCALE (m)
and the second	2.48	1.50	1.50		brown	Very soft	CLAY	Very soft, brown, moist, medi plasticity, CLAY (Filled Soil)	ium to high			¥	1.00	0/45 •			Øw. P-1	1.00			munit
12 and a manufacture of the second	2.70				gray	Soft to very soft	CLAY	Soft to very soft, gray, moist to we plasticity, CLAY	t, low to high		<u>3.00</u> Ø112		2.00 3.00 4.00 5.00	2/30 2/30 2/30 0/45			P-2 PMT-0 P-3 P-4 PMT-02 P-5	2.00 2.45 3.00 <u>130-395</u> 4.00 (#) cm 4.70 5.00 5.45 6.00 650-695			21
7 1 8 9 9 10 10 11 1 12 13 10 1	-3.02	7.00	5.50		gray	Very soft to soft	Sandy CLAY	Very soft to soft, gray, moist, fine to medium plasticity, Sandy CLAY GL: (11.00 ~ 11.45)m; very loc gray, fine grained, Silty SAN observed as intercalated layer at th	grained, low see, brownish ND layer is at depth	28.11.10 8.00	5		7.00 8.00 9.00 10.00 11.00 12.00 13.00	0/45 0/45 2/30 2/30 2/30 3/30			Р-6 Ю Т-2 Р-7 Р-7 Р-8 Р-9 Р-10 Р-11	7.00 7.45 8.00 (m) cm 8.80 9.00 9.45 10.00 11.45 12.00 11.45 12.00 13.45			ىسىلىدىمىلىدىسالىدىسىلىسىلىسىلىسى سىراتىسىلىدىسىلىدىسىلىسىلىسى
14 15 16 17 18 19	-10.02	20.00	7.00		gray	Loosé to medium dense	Silty SAND	Loose to medium dense, gray, moi grained, Silty SAND	st to wet, fine				14.00 15.00 16.00 17.00 18.00	10/30 14/30 13/30 13/30 14/30 13/30			P-12 P-13 P-14 P-15 P-16 P-17	14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45 18.00 18.45 19.00 19.45			فيسلقه والتسليق والتراقية
20 21 22 23 24 25 26 27 28 29 30	-26.02	30.00	10.00		gray	Soft to firm	CLAY	Soft to firm, gray, moist, med plasticity, CLAY	ùun to high	2 <u>9.11.1</u> 24.00	5		21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00	4/30 4/30 4/30 4/30 5/30 4/30 4/30 5/30			 Ŋ 1-3 P-18 P-19 P-20 P-21 Ŋ 7-4 P-22 P-23 P-24 P-25 Ŋ 7-5 Ŋ 7-5 	20,000 20,700 21,000 21,200 22,455 23,000 23,455 24,000 24,455 25,000 26,455 27,000 26,455 27,000 26,455 27,000 26,455 27,000 28,455 29,000 28,455 29,000 29,455 30,000 29,455 30,000 29,455 30,000 29,455 30,000 29,455 29,000 29,455 29,000 29,455 29,000 29,455 29,000 29,455 29,000 29,455 29,000 29,455 29,000 29,455 29,000 20,455 29,000 20,455 20,000 20,000			
31								Continue to next sheet					31.00				0 T-5	() cm 30.80			3
	NOT Relati Ver L Medi Ver	ES elative density ve density y loose .oose um dense Dense y dense	SPI	ription N-Value (mat) 0 - 4 4 - 10 0 - 30 0 - 50 vvc 50	Consist Consisten Very soft Soft Firm Shift Very stif Hard	tency descrip cy SPI	tion N-Value (mos) mider 2 2 - 4 5 - 8 9 - 15 6 - 30 (ver 30)	Sample key N° Pointred onysit PIIT Permetal I Dations sampler) PIIT Persear I Dations sampler) PIIT Persear I Robins sampler) PIIT Persear I Robins sampler) PIIT Persear I Robins constrainty ROD (Mol - 23 ID Robins constrainty - 23 - 23 ID Robins constrainty - 25 - 50 - 75 ID Robins constrainty - 75 - 90 - 75 - 90	bility Test ear Test meter Test) Term Very poor Poor Fair Good Uscollers	Pi Term Very thic Thick Medium Thin Very thi hickly lami	k k n n insted nated	<u>ecture</u> Spacing 600 - 200 60 - 20 - 60 - 20 - 6 - <	g (mm) 2000 2000 600 200 60 20 60 20 6	Very W M CC Very Extrem	Discor Term widely spaced idely spaced dium spaced closely spaced closely spaced sely closely sp i	ntinuities Spacin Ed 5 600 - 200 60 - ed 20 paced ×	g (mm) 2000 2000 = 600 200 = 60 200 = 60	Revision N Revision E	FUKKEN Consultin (Yangon I Ter 187 - 800 Auto (a.	I CO., g Engis Branch see co Rev: 1 14.01	LTD. keers) -coosener wrizon 01 2017

図 4.1.71 ボーリング調査結果 BH-BD-23(1)

BOR	HOLE	No. 1	BH-BD-23				BOR	INGI	. O G							Job N	lu. F.	KYB-20 eet No	16-02	5 OF 2
PROJ	ECT NAM	E : <u>C</u>	icotechnical Su	irvey on the	detailed d	esign for the	Bago River Bridge Construction Project BC	ORING EQUI	PMENT		: <u>TO</u> E	10 "D1"			DATE	: 28	.11.2016	~ 05.1	2.2010	5
LOCA	TION	: <u>B</u>	Beside Existing	Bago Rive	r Bridge ("	hanlyin Bri	dge), Thanlyin Township, Yangon Region. BC	ORING MET	HOD		Rota	ary Direct	Circulation	- CLIE	NT				-	
GROU	DINATE	SL: <u>3</u> : F	.98m 205541.753 :	N 1857475	540 DI	артн :	59.00m GR	RIENTATION ROUND WA	TER LE	/EL	: <u>Vert</u> : 0.42	tical Im			NIPPO	N KO	EIC	<i>O.,</i> 1	LTI	D.
	T	T			 			1		30.0		s	TANDARD F	ENETRATION THOD / AS	ON TEST		SAM	PLING		Т
Y my	9	(8)			TENCY			1.1	(m) 111	PTH (m) R (mm)	TH (m)	Ê	2	CURVE OF	BLOW .	2	Ê		1	
(E (m)	10 CT-0	KNESS	RAM	DUR	UTIVE D CONSIS	NAME	SOIL DESCRIPTION		E & DEF	NG (DE	ER DEP	11 GL - (-Value os / 30cm	N-V	alue	NMPLE pe & No	H GL-((%)	(%)	(%)
SCAL	1430	THIC	DIAG	con	REL.	SOIL			DAT	CASI	IVM	DEPJ	(Blov N	10 20 3	0 40 50	ŝ	DEPT	TCR	SCR	RQD
31	11				-		And a state of the state of the					31.00	100			P.76	31.00			and him
		L		gray	Soft to	CLAY	Soft to stiff, gray, moist, medium to hig CLAY with silt	gh plastic				32.00	100			1-20	31.45			mini
lun l					suu		Thin sand layers are well obser-	erved as				22.00	7/30			P-27	32.45			lunni
Shund							intercatated tayer	f	33.00		19	33.00	5/30			P-28	33.00			dum
4											18	34.00	5/30			P-29	<u>34.00</u> 34.45			illoud
5												35.00	8/30			P-30	35.00			and and
36												36.00	6/30			P-31	36.00			hilling
7												37.00	7/30			P-32	37.00			united in
38												38.00	8/30			P-33	38.00			mails
39				-								39.00	6/30			P-34	<u>38.45</u> 39.00			utur
101												40.00	700			P 15	39.45 40.00			and the
												41.00	//30				40.45			in the second seco
in the second se												12.00	10/30	1		P-36	41.45			-
al and												42.00	5/30			P-37	42.00			duun
4.3		L										43.00	6/30			P-38	43.45	31		alunt
14								4	44.00			44.00	7/30			P-39	44.00			adama
45												45.00	7/30			P-40	45.00			in the second
16												46.00	6/30			P-41	46.00			miluu
17												47.00	6/30			P-42	47.00			tuitu
18												48.00	11/30			P-43	48.00			dunda
19												49.00	10/30			P-44	48.45			annih
50												50.00	8/30			P-45	49.45 50.00			autural
51									02.12.16			51.00	0.00				50.45			in the second
								[51.00			52 00	8/30			1-40	51.45			and the second
and to	02 52 00			1							11	52.00	7/30			P-47	52.45	64		lunn
131-49	.02 33.00	23.	00		2			4.16					31/30			P-48	53.45	51		il man
4				greenish gray to	to very	SAND	Dense to very dense, greenish gray to y brown, moist, fine to medium grain plastic Clavay SAND	ned, low				54.00	50/27			P-49	54.00 54.42			allound
55				yellowish brown	dense	1.0-0	plastic Clayey SALID					55.00	50/23		•	P-50	55.00 55.38			iil
56												56.00	50/19		•	P-51	56.00 56.34			uidan
57												57.00	50/24		•	P-52	57.00			milu
58								4	03.12.16 58.00			58.00	50/29		•	P-53	58.00			at and a
59									05.12.16			59.00	50/28			P-54	59.00			atriite
-55	.45 59.43	5 6.4	13	-		1111	This happhele is senting in	50.00-	59.00			60.00					59,43			
61	5.					1.	according to the termination criteria.	59.00m,				61.00					_			and the second
	OTES Relative de	ensity d	lescription	Consis	tency descri	ntion	Sample key P-1 Disurtied emple (SPT sample) PBT Permeability Te	est	Pla Term	nner stru	icture Spacing	(mm)		Discontin	Spacing (n	im)		FUKKE	V CO.	, LTD,
B	elative densi	ity 3	SPT N-Value	Consistent	sy SP	N-Value main	T-1 Undisturbed Sample VS Vane Shear Test (Piston sampler) PMT Pressuremeter T	a Test	Very thick Thick		> 600 - 200	2000	Very wi	dely spaced ly spaced	> 20 600 - 20	00	GEY	Consultin Yangon	g Eng Branch	ineers h) - cmosored
E	Loose Loose	c	4 + 10 10 + 30	Soft Firm		2 = 4 5 - 8	D-1 (Denison sampler) Rock core sample (Single core table) D - 25 Vec	form ty poor	Thin Very thin	-	200 - 60 - 20 -	200	Close Very cle	ly spaced sely spaced	200 = 6 60 - 20 20 - 60	0	Revision N	olivi. Ayyumuu W.	Rev	UI
F	Dense Very dense	+	30 - 50 over 50	Stiff Very stiff	_	9 - 15 6 - 30	Rock core sample (Double core tabe) So - 75	Poor Thi Fair Th	ckly lamin inly lamin	ated	6 -	20 6	Extremely	closely spac	ed < 20		Revision E	lato	14.0	1.2017
1			L	Hard		iver 30	↓ (Core Loss) 75 - 90 G ★w.1 Water sample 90 - 100 Exc.	Good Cellent												

出典: JICA 調査団

図 4.1.72 ボーリング調査結果 BH-BD-23(2)

BORE	HOLE	No.	BH-BD-	24	11			<u>B 0</u>	RING	LOC	2						Jab N	lo. F. Sh	KYB-201 eet No.	6-025	OF 2
PROJEC	CT NAM	AE :	Geotechnic Beside Exi 3.85m	al Su	rvey on the Bago Rive	e detailed o r Bridge ('l	lesign for th Chanlyin Bri	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region	BORING EQ BORING ME	UIPMEN THOD	r	: <u>TO</u>	IO "D1" ary Direc	et Circulation	CLIEN	DATE	<u>= 17</u>	.11.2016	~ 25.11	.2016	
COORI	DINATE	BL :	E 205570.9	99;1	N 1857432	621 DI	ертн :_	57.00m	GROUND W	ATER LE	VEL	: <u>ver</u> : <u>0.7</u>	Om			NIPPO.	N KO	EIC	O., 1	TD).
	1		11			27	1.11			â	(m) &	(8		STANDARD TEST M	PENETRATIO ETHOD (ASTN	N TEST A)	РМТ	SAM	PLING		
ALE (m) EVATION (m)	(m)-1E HId	A state of the second	dICKNESS (m) AGRAM		NOUR	ELATIVE DENSI	OIL NAME	SOIL DESCRIPTION		VTE & DEPTH (ASING (DEPTH DIAMETER (mo	ATER DEPTH (II	(m) (m)	N-Value lows / 30cm)	CURVE OF B N-Va (Blows /	LOW • hue 30cm)	SAMPLE SAMPLE (Type & No.)	PTH GL-(m)	R (%)	(R (%s)	()) (%) (ALE (m)
N III	0	1		1012	5 brownish gray	Soft	CLAY	Soft, brownish gray, moist, med plasticity, CLAY	dium to high	đ	ä	*	ā 1.00	€ 0 2/30 ●	10 20 30	40 50	P-1	1.00	2	ž	Na Sc
2.3 <u>minalmunalmunalmunalmunalmunalmunalmunal</u> <u>0</u>	5 10.0	0 8. 0 4.	50		gray	Very soft soft Soft b stiff	CLAY Sandy CLAY	Very soft to soft, gray, moist to we plasticity, CLAY Soft to stiff, gray, moist, fine gra medium plasticity, Sandy CLAY	et, low to high	- - - - -	3.00 Ø112		2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00	0/45 0/45 0/45 1/30 2/30 2/30 2/30 2/30 10/30 12/30			(*********************************	1.45 2.00 (@)erm 3.75 4.00 4.45 5.00 6.45 7.00 6.45 7.00 6.45 7.00 6.45 10.00 10.45 11.00 11.45 11.00 11.45 11.00 11.45 13.00 13.45			արգիտություներություներությունը առջիտությունը հայուներությունը։
2000-01-01-01-01-01-01-01-01-01-01-01-01-	1 <u>5</u> 19.0	0 5.	.00	ADDREEDED × × × × × × × × ×	gray	dense Soft to firm	CLAY	grained, Silty SAND Soft to firm, gray, moist, med plasticity, CLAY with silt	ium to high	-			16.00 17.00 18.00 19.00 20.00 21.00	14/30 20/30 17/30 29/30 4/30			P-13 P-14 P-15 P-16 P-17 U T-3 P-18 P-19	15.00 15.45 16.00 16.45 17.00 17.45 18.00 18.45 19.00 19.45 20.00 21.00 21.45 22.00 22.45			
2 <u>3</u> 24 25 26 27 27 28 27 28	15 27.0	0 8.	00		gray	Soft to stiff	CLAY	Soft to stiff, gray, moist, med plasticity, CLAY with silt Thin sand layers are well	ium to high observed as	21.11.16 23.00 21.11.10 27.00			23.00 24.00 25.00 26.00 27.00 28.00	5/30 4/30 5/30 5/30 4/30			P-20 P-21 U T-4 P-22 P-23 P-24	23.00 23.45 24.00 24.45 25.00 26.00 26.45 27.00 27.45 28.00 28.45			Shaadii hada sha
30 31 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	DTES Relative dens Very loose edium den Dense Very dense	density sity p nsc	description SPT N-Value 0 = 4 4 + 10 10 - 30 30 - 50 over 50	é	Consisten Consisten Very soft Soft Firm Suft Very stift Hard	tency descrip	otion N-Value trans 2 = 4 9 - 15 6 - 30 over 30	Intercalated layer Samule ker Samule ker Prinzersel samte PET Persent 1: Undarined sample Yes Vaccob 1: Undarined sample PMT Persent 1: Undarined sample Total Scott 1: Costt laws 023 Scott Scott 1: Costt laws Total Scott Scott Scott 1: Costt laws Total Scott Scott	ality Test sear Test meter Test Very poor Poor Fair Good	22.11.10 30.00 Term Very thic Thick Medium Thin Very thi hickly lami	anner stra k	spacing 5pacing 200 60 - 200 60 - 200 700 700 700 700 700 700 700	22.00 30.00 31.00 2000 600 200 60 20 6	3/30 Very w Wid Mod Clos Very c Estreme Remarks	Discontinu Term idely spaced ely spaced um spaced ely spaced osely spaced osely spaced	tities Spacing (n ≥ 20 600 - 20 200 - 6 60 - 20 20 - 6 1 < 20	P-25	29.00 29.45 30.00 (#) cm 30.50	FUKKEN Consulting Yangon F War ass a and Market State	CO., Engir kranch) sociola Resc I 14.01.	LTD, 100087402 artilom 91 .2017

図 4.1.73 ボーリング調査結果 BH-BD-24(1)

BC	ORE H	OLE No	. BH	-BD-24	1			BO	RING	LOC	3							Job N	lo. Fl Shi	KYB-20 eet No	16-02	5 OF 2	2
PR	OJECT	NAME	Geot	technical St	tryey on the	detailed of	lesign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	r	: <u>TO</u>	10 "D1"	(-	D/	ATE	: 17	11.2016	~ 25.1	1.2016	5	-
LC	CATIC	N	Besi	de Existing	Bago River	Bridge (hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rota	ary Direc	Circulation	- CLL	ENT							-
GR	OUNE	LEVEL	: 3.85	m 15570.999 -	N 1857432	621 DI	PTH :	57.00m	GROUND W	ON ATER LE	VEL.	: Ver	lical Jin		-	NL	PPO	N KO	EI C	0.,	LTI	D.	
Т	- used	Т									*		-	TANDARD	ENETRAT	ION TE	sr		SAM	PLING	-	T	-
	œ.		â	1.1		NSITY ENCY				H (m)	(mm))	H (m)	-	TEST ME	CUDVE O	STM)		1.5	2			-	
(m)	NOL	GL - (m	NESS (I	WW	н	TVE DE	AME	SOIL DESCRIPTION		& DEPT	G (DEP METER	R DEPT	GI (m	(alue / 30cm)	CORVEO.	Value		APLE S& No.)	GL - (n	3			(H)
SCALE	ELEVA	DEPTH	THICK	DIAGR	conot	RELAT (or) C	SOIL			DATE	CASIN	WATE	DEPTH	(Blows	(Blow	s/30cm 30 4	0 50	SA?	DEPTH	JCR (%	SCR (%	ROD	SCALE
-														1	T	T		100				-	
31					grav	Soft	CLAY	Soft to stiff, gray, moist, med	ium to high			16	31,00	7/30				P-26	31.00			and have	31
32				5555		to stiff		plasticity, CLAY with silt					32.00	6/30				P-27	32.00			-	32
33								Thin sand layers are well intercalated layer.	observed as				33.00	5/30				P-28	33.00			dumb	33
34													34.00	5/30				P-29	33.45			and the second	34
35													35.00						34.45			and and	3
- International Providence in the second sec													20.00	7/30				P-30	35.45			da una da una	ľ.
30													36.00	7/30				P-31	36.00	5		- during	30
37													37.00	7/30				P-32	37.00 37.45			-	3
38													38.00	8/30				P-33	38.00			hinday	38
39													39.00	7/30				P-34	39.00			dunda	39
40													40.00	9/30				P-35	39.45 40.00				4
41													41.00						40.45			and the	41
Jum													12.00	9/30				P-30	41.45			hunder	1
44				3451									42.00	7/30	0			P-37	42.00			alumn to	44
43												18	43.00	8/30				P-38	43.00 43.45			and the set	43
44										23.11.16			44.00	8/30				P-39	44.00			andara	44
45													45.00	7/30				P-40	45.00			duridu	45
46													46.00	9/30				P-41	46.00			dumb	46
47													47.00	0/20				P_47	46.45			and and	47
48													48 00	2030					47.45				48
Internet		10.00			-									7/30	1			P-43	48.45			lundu	
49	-45.15	49.00	23.00				i Line J	a an air ann an	Str. Jure				49.00	50/25				P-44	49.00			shand	45
50					light gray	dense	SAND	Very dense, light gray to greenish fine to medium grained, low p	h gray, moist, lastic Clayey				50.00	50/21			+	P-45	50.00 50.36			under a	50
51					greenish gray			SAND					51.00	50/25				P-46	51.00			tuniluu	51
52	-48.15	52.00	3.00		1977.								52.00	50/22			+	P-47	52.00			- and -	52
53						1	C 1	Van dauge collection because	units fine to	24.11.16			53.00	50/25				P-48	53.00			al and	53
54					brown	dense	SAND	medium grained, low plastic Claye	y SAND	53.00			54.00				Ι	n 40	53.40			and and	54
- International Contraction														50/24			T	1-49	54.39			lunder	
Salut													33.00	50/29			1	P-50	55,44			alum h	20
561													56.00	50/26			+	P-51	56.00 56.41			and the second	50
57	-53.55	57.40	5.40							25.11.16			57.00	50/25			•	P-52	57.00 57.40			and the	57
58								This borehole is terminated	at 57.00m,				58.00									tunda	58
59								according to the termination criteri	a.				59.00									dauda	59
60													60.00									and and a	60
61							11.1						61.00									and the	61
1	NOT	ES lative densi	ty descr	iption	Consis	lency descrip	ntion	Sample key • P-1 Detuated sample • P-1 (SPT sample) • PBT Permeat	bility Tea	Term	anner str	ucture Spacing	: (mm)		Discont Term	inuities	Spacing (m	m)		UKKE	V CO.	LTD.	ī
	Relati	ve density	SPT	N-Value	Consistenc	y SP	N-Value	Undisturbed Sample VS Vane Sk (Pistor, sampler) PMT Pressure	mear Test	Very thick	-	> 600 -	2000 2000	Very w Wide	idely spaced ly spaced		> 200	0		Consultin Yangon	g Engi Branch	ineers n)	12
	Ver	y loose		0 = 4 4 = 10	Very soft Soft		2 - 4	D-1 (Denison sample) (Denison sample) Rock core sample) Term	Medium	-	200 -	600 200	Close	um spaced		200 - 60		Revision N	0.	Rev:	Bard.com	-
	Medi	ense	3	0 - 30 0 - 50	Firm Stiff Versi stiff		9 - 15 6 - 30	(Single core tabe) 0 - 25 Rock core sample (Double core tabe) 25 - 50	Poor I	hickly lame	nated	20 -	20	Extremely	closely spaced	iced	20 - 60 < 20		Revision D	ate	14.0	1.2017	1
ľ		- Anna Anna	1 0		Hard		over 30	Rock core sample (Core Loss) 30 - 73 W+1 Water sample 90 - 10	Good			4		Remarks									

出典: JICA 調査団

図 4.1.74 ボーリング調査結果 BH-BD-24(1)

BC	RE H	OLE N	o. Bl	I-BD-25	1			BO	RING	LOC	1						Joh N	lo. F.	KYB-20 vet No	16-02	5 OF 2
PR LC	OJECT	NAME ON	: <u>Geo</u>	technical Su	rvey on the Bago Rive	e detailed d r Bridge (1	lesign for th Thanlyin Bri	e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ BORING ME	JIPMEN THOD	r	: <u>TOI</u> : <u>Rota</u>	IO "D1" ary Direc	t Circulatio	m CLIEN	DATE	: 08	11.2016	i~ 12.1	1.201	6
GF	OUNE	NATE	: 4.15 : E 20	m)5605.365 ; i	N 1857393	.002 DI	epth :	58.00m	GROUND W	ON ATER LE	VEL.	: <u>Ver</u> : <u>0,60</u>	ical Im		_ 1	NIPPO	V KO	EI C	0.,	LT	D.
	1					25				2	(m) &	(0		STANDARD TEST N	PENETRATIO IETHOD (AST:	N TEST M)		SAM	PLING		
SCALE (m)	ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	conotis	RELATIVE DENS (or) CONSISTEN	SOIL NAME.	SOIL DESCRIPTION		DATE & DEPTH (CASING (DEPTH DIAMETER (m	WATER DEPTH (DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF E N-Va (Blows/ 10 20 30	secow • slue 30cm) 0 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SCALE (m)
1000	2.15	2.00	2.00		brown	Soft	Sandy CLAY	Soft, brown, moist, low to media Sandy CLAY (Filled Soil)	ım plasticity,			¥	1.00	3/30			P-1	1.00 1.45 2.00			uninina 2
31000 4100 5100 6100 71000	-3.85	8.00	6.00		gray	Very soft to soft	CLAY	Very soft to soft, gray, moist, me plasticity, CLAY	dium to high		3.00 Ø112		3.00 4.00 5.00 6.00 7.00	1/30 0/45 0/45			P-3 P-4 P-5 P-5	2.45 3.00 (m) cm 3.75 4.00 4.45 5.00 5.45 6.00 (m) cm 6.75 7.00 7.45 8.00			ma3har4har5har6harm7harm8
2 10 10 10 10 10 10 10 10 10 10 10 10 10	-3.82	8.00	8.00		gray	Soft	Sandy CLAY	Soft, gray, moist, fine grained, lo plasticity, Sandy CLAY	w to medium	08.11.16 13.00			9.00 9.00 10.00 11.00 12.00 13.00	2/30 • 2/30 • 3/30 • 2/30 • 2/30 •			P-6 T-3 P-7 P-8 P-9 P-10	8.00 8.45 9.00 (a) cm 9.75 10.00 10.45 11.00 11.45 12.00 12.45 13.00 13.45			
14 15 minute minute minute	-9.85	14.00	6.00		gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND	to medium				14.00 15.00 16.00	20/30 14/30 20/30 17/30	3		P-11 P-12 P-13 P-14	14.00 14.45 15.00 15.45 16.00 16.45 17.00 17.45			14 14 15 10 10 10 10 10 10 10 10 10 10 10 10 10
18 19 19 19 19 19 19 19 19 19 19	12.83	18.00	4.00		gray	Very soft to soft	CLAY	Very soft to soft, gray, moist, low plasticity, CLAY	v to medium				19.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00	2/30 1/30 3/30 3/30 1/30 2/30 3/30 3/30			P-15 P-17 P-18 P-19 P-20 P-21 P-22 P-22	18:00 18:45 19:00 19:45 20:00 20:45 21:00 21:45 22:00 22:45 23:00 23:45 24:00 24:45 25:00 25:45 26:00 26:45			21 19 19 19 20 21 22 23 24 24 24 24 24 24 24 24 24 24
27 28 29 30	-22.85 NOT	27.00 ES	9.00		gray	Soft to firm	CLAY	Soft to firm, gray, moist, med plasticity, CLAY with silt Thin sand layers are well intercalated layer Continue to next sheet Samele kee	ium to high observed as	09:11.10 30.00	anner stru	acture	27.00 28.00 29.00 30.00 31.00	3/30 3/30 5/30 5/30	Discontinu	utites	P-24 P-25 P-26 P-27	27.00 27.45 28.00 28.45 29.00 29.45 30.00 30.45			227 228 229 200 200 200 200 200 200 200 200 200
	Relati Ver 1 Medi I Ver	elative density ve density ry loose .nose um dense Dense y dense	SP1	ription N-Value ymm) 0 - 4 4 - 10 0 - 30 0 - 50 wer 50	Consisten Consisten Very sof Soft Firm Stiff Very stiff Hand	reney descrip	ption F N-Value (amo) ander 2 2 - 4 5 - 8 9 - 15 6 - 30 over 30	Image: second service PBT Permetable 12 12 Indicatived Sample VS Vanc St. 13 12 Indicatived Sample VS Vanc St. 14 12 Indicatived Sample PMT Present 15 12 Indicatived Sample PMT Present 16 12 Indicatived Sample PMT Present 17 Rock core sample ROD 15% C25 - 50 10 Ack core sample 100 - 25 Single core sample 10 (Creft Loss) 59 - 75 -90 - 70 10 (Creft Loss) 73 - 90 - 70 73 - 90 - 70 10 Wave warmen 90 - 10 73 - 50	ility Test ear Test Term Very poor Poor Tair Good Excellent	Term Very thic Thick Medium Thin Very thi hickly lami hinly lami	k n nated sated	Spacing > 600 - 200 - 60 - 200 - 60 - 20 - 6 - 20 - 6 - 20 -	(mm) 2000 2000 600 200 60 20 60 20 6	Very We Me Clo Very Extreme Remarks	Term widely spaced lefy spaced linum spaced sely spaced sely spaced ilosely spaced ily closely spaced	Spacing (m > 200 600 - 200 200 - 60 600 - 200 600 - 200 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 200 - 60 4 < 200	m) 00 00 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	FGEX Revision I Revision I	FUKKE Consultie Yangon W 1917-pc Nate	N CO ng Eng Branc rissi io genore Rev 14.0	, LTD, ineers n) - coolsons allerCom 01 1.2017

図 4.1.75 ボーリング調査結果 BH-BD-25(1)

BC	ORE H	OLE N	o. BI	I-BD-25	1			BO	RING	LOC	1						Job N	la. El She	KYB-201 eet No.	6-025	OF 2
PF	OJECT	NAME	: <u>Geo</u>	technical Su ide Existing	rvey on the Bago Rive	detailed d Bridge (T	esign for the hanlyin Bri	Bago River Bridge Construction Project dge), Thanlvin Township, Yangon Region.	BORING EQ BORING ME	UIPMENT THOD	P)	: <u>TOF</u> ; <u>Rota</u>	HO "D1" ary Direc	t Circulation	- CLIENT	DATE	<u>: 08</u>	.11.2016	~ 12.11	2016	-
G	DORDIN	LEVEL	: <u>4.15</u> : <u>E 20</u>	m)5605.365 ;	N 1857393.	002 DE	ртн :_	58.00m	GROUND W	ON ATER LE	VEL	: <u>Vert</u> ; <u>0.60</u>	tical Om			IPPO	N KO	EI C	0., L	TL) .
			J.			ury cy				Ē	(m) &	î		STANDARD PE TEST MET	NETRATION HOD (ASTM	TEST	-	SAM	PLING	-	
(m	(m) NOL	iL - (m)	ESS (m)	W		VE DENS NSISTEN	WE	SOIL DESCRIPTION		DEPTH	(DEPTH	DEPTH ((m) - 'F	Jue 30cm)	URVE OF BL	ow •	PLE & No.)	iL - (m)			î
SCALE (ELEVAT	DEPTHO	THICKN	DIAGRA	COLOUR	RELATI (or) CO	SOIL N			DATE&	CASING	WATER	HTTAR	(Blows/	N-Valu (Blows/30 0 20 30	e kem) 40 50	SAM (Type)	DEPTH C	TCR (%)	SCR (%)	RQD (%
31 32 33					gray	Soft to firm	CLAY	Soft to firm, gray, moist, med plasticity, CLAY with silt Thin sand layers are well intercalated layer	ium to high observed as				31.00 32.00 33.00	8/30 7/30			P-28 P-29 P-30	31.00 31.45 32.00 32.45 33.00			utilina and and and and and and and and and a
34													34.00	5/30			P-31 P-32	33.45 34.00 34.45 35.00			1113 1113 11113
36													36.00	4/30			P-33	35.45 36.00 36.45			minilum a
38													38.00	4/30 6/30			P-34	37.45			hunter
39													39.00	5/30			P-36	39.00 39.45			ubu3
40	-35.85	40:00	14.00		gray	Medium	Clayey	Medium dense, gray to greenish	gray, moist,				40.00	28/30	1		P-37	40.00 40.45 41.00			4 mluuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu
421					greenish gray	dense	SAND	SAND	astic Clayey				42.00	25/30	A		P-39	41.45 42.00 42.45			anna tha
43	-38.85	43.00	3.00					in the second second		10.11.16		2	43.00	18/30			P-40	43.00 43.45 44.00			4
45					yellowish brown	Medium dense to very	Clayey SAND	Medium dense to very dense, yell moist, fine to medium grained, Clayey SAND	low plastic	44.00			45.00	23/30	Į		P-41	44.45 45.00 45.45			In the second
46						dense							46.00	26/30	ł		P-43	46.00			tud human
481													48.00	29/30 30/30	1		P-44 P-45	47.45			luuuuuuuu
491000													49.00	29/30	4		P-46	49.00	2		444
51													51.00	39/30 50/29			P-47 P-48	50.00 50.45 51.00			Sharmen Sh
52										11.11.16 52,00			52.00	21/30	<		P-49	52.00 52.45			and and
53	-48.85	53.00	10.00		vellowich	Vani	Clayar	Very dense, vellowich brown to re	ddieb brown				53.00	50/27 50/26			P-50	53.00 53.42 54.00			Silunta Si
55					brown to reddish	dense	SAND	moist, fine to medium grained, Clayey SAND	low plasite				55.00	50/27		-	P-52	54.41 55.00 55.42			units and
56 57					0.0WI								56.00	50/29		1	P-53	56.00 56.44 57.00			50
581	-54.25	58.40	5.40				-			12.11.16 58.00			58.00	50/25			P-55	57.42 58.00 58.40			inin5
59								This borehole is terminated according to the termination criteria	at 58.00m, a.				59.00								59
61	NOT	es						Sample key		<u><u>P1</u></u>	anner str	acture	61.00		Discontinuit	8					6
	Relati Ver	lative density ve density y loose	ity descr SPI	ription N-Value (most 0 - 4	Consistence Very soft	y SPI	N-Value moter 2	P-1 (SPT sample) PBT Permeab T-1 (Clistened Sample) T-1 (Clistened Sample) VS Vace Sh (Piston sampler) PMT Pressure D-1 (Decise sample)	ility Test cat Test meter Test	Term Very thick Thick Medium		> 600 - 200 -	2000 2000 600	Very wid Widel Mediu	enn ely spaced / spaced n spaced	Spacing (n > 20 600 - 20 200 - 6	aun) 100 100 100	FGEX	UKKEN Consulting Yangon E	CO., Engir Branch	LTD: yeers) #200e#76#
	L Media D	oose un dense ense v dense	1	4 - 10 0 - 30 0 - 50 wer 50	Soft Firm Stiff Very stiff		2 = 4 5 - 8 9 - 15 5 - 30	Rock core sample (Single core tabe) ROD (%) Rock core sample (Double core tabe) 0 - 25 Rock core sample (Double core tabe) 0 - 75	Term Very poor Poor T Fair	Thin Very this hickly lami	n nated nated	60 - 20 - 6 -	200 60 20	Closel Very clos Extremely	y spaced cly spaced closely spaced	60 - 20 20 - 60 < 20	0 0	Revision N Revision D	o. lutir	Rev:/	0) 2017
			1 0		Hard		ver 30	Rock core sample (Core Loss) 30 ± 73 75 − 90 W(I Water sample) 90 ± 100	Good Excellent	,			_	Remarks							

出典: JICA 調査団

図 4.1.76 ボーリング調査結果 BH-BD-25(2)

ファイナル・レポート

	I													-													1																			
D ()	A	1	PI	1	P2		P3	01	P4		P5		P6		P7	P	10	P11	0	P12		P13	-	P14	F	P15	P	6	PI	17	P18		P19	P	20	P	21	P2	22	P2	23	P24	_	P25	<u> </u>	A2
D(m)	- BD-	-23	- BD-	-22	BD-21	N C	013BH-	-01	BD-20	P	BD-19	В	D-18	- В	J-13	BL	-11	BD-	0	BD-9		BD-8		BD-/	No13	SBH-03	BI	2-6	BL)-5	BD-	4 NG	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4 BI	D-3	DC	1/2	BD-	-1	BD-	-1/	BD-10) E	BD-15	E	3D-14
2 3 4 5	AY-I Fille Soi	-	-I Fille Soi	- Hills	- Soi	Fille	Soi	AV-I Fille	- Soi	Fille	- Soi	CLAY-I		vey CLAY-	1/3	CLAY-I	0	CLAY4	1/3	r sediments	1/3 I studiuments	1/.	r sediments	1/3	ments		diments		r sediments	2/3	/er sediments	1/3	Empos 2/3	CT-1 River sodimen	1/3	CLAY-1	2/3	CLAY-I	1/3	CLAY-I	1/3	7	1	1 CLAT-1	-AV	-
6 7 8 9	איו מ	1/3	CLAY	2/3	CLAY-1	/3	CLAY-I		ל ד ^{וע}	/3	2/.	Sandy CI AV-I	1/3	I Clay SAN	1/3	iyey SAND-A	1/3	AND-I	2/3	Rive	Rive		D-I Rive		River sedi	1/3	River se	1/3	ND Rive		AY-I Riv	2/3	- LAT-I	I-UNA	1/3		2/3	Silty SAND-I	2/3	_	2/3	CLAY	-	1	- 8	1 2/3
10 11 12 13	Sandy CLA	2/3	Sandy CLAY-I		1 CTAY-1		I-YA-I	Sand	1 CTV	Sandv	CTAX-1	3		SiltySAND-	1	D-I Cla		SiltyS	1	ابن D-I	1 SilvSAND.	1	SiltySANI	1/3	I-QNA		ySAND-A	1	All ClayeySAI	- 1	ySAND-B CI	-	I-MNA	Silty S/	2/3	SiltySAND-I		ySAND-II	1	SiltySAND-	1		1 CIVE STILL	1-CINIX/SAIII	I-DIA	1
14 15 16 17 18	silty SAND-I	1	silty SAND-I	1	1 sily sAND-1	Silty 2	AND-1 SandyC	- I-CINES AHIS	1	1 444.000 1100	Silty SAND-1	Silty SAND-I	1	andy CLAY-II	1	SiltySANI	1	Y SandyC I LAY-II	1	SAN		1	CLAY-AII	-	y CL-AII SiltyS/	-	^{vy} CL-All Claye	-	AII Clayey CL-	- 1	AY-AII Claye	- citue		ySAND-C CL-AI	1	c, c	1	ySAND-C Silt	1	II-UNA?	1	SiltySAND-I	1) I	y Silty	1
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図 4.1.77 液状化による低減定数

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出典: JICA 調査団

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表 4.1.11 その他自然条件(設計値は別途設定)

項目	設計条件	摘要
温度変化	39.2℃~11.3℃(ヤンゴン市内 Kaba aye 観測所、1991~2015)	
風速	既往最大はCyclone Nargis(2008/4/27)の観測値 42.9m/s。	
降雨量	149mm/h (3 年確率 10 分降雨強度)	

出典:JICA 調査団

表 4.1.12 橋梁荷重条件

項目	設計	条件	摘要
死荷重	材料の単位体積重量は、下記の値	直を使用する。	道示 I 2.2.1
	材料	単位体積重量(kN/m ³)	
	鋼・鋳鋼・鍛鋼	77.0	
	鋳鉄	71.0	
	アルミニウム	27.5	
	鉄筋コンクリート	24.5	
	プレストレストコンクリート	24.5	
	コンクリート (無筋)	23.0	
	セメントモルタル	21.0	
	(防水田) 源書剤(防水田)	11.0	
	アスファルト舗装	22.5	
江世壬			AASUTO LDED Pridao
伯们里	<u>1. AASHIU HL-95</u> N工ののの共手の個人以上して化		design
	以下①②の荷重の組合せとして作	ド用させる。	specifications.
	 ①設計車両(design truck)また 	こは設計タンデム荷重(design	3. 6. 1
	tandem)		
	②設計車線荷重(design lane lo	ad)	
	①-1 設計車両(HS20-44 トラッ	- ク)	
	VI=4.3 V2=4 35kN 145kN ①-2 設計タンデム荷重	4.3 to 9.0 m 145kN	
	1-2		
	1.2m 1.12m 110kN 110kN	<i></i>	
	②設計車線荷重		3.6.1.3
		9.3 kN/m	



衝撃係数	道路橋示方書I共通編のL荷重相当を載荷する。	道示 I 2.2.3
	鋼橋 i=20/(50+L)	
	PC 橋 i=10/(25+L)	
	斜張橋の主塔及びケーブルは既往の実績値から別途設定する。主	
	塔:i=0.15、ケーブル i=0.20	
温度変化	道路橋示方書に準拠するが、基準温度を 25℃とする。	
	主構造	
	RC, PC:+10℃~+40℃(25℃±15℃)・部材間の相対温度差 5℃	
	鋼構造:+10℃~+40℃(25℃±15℃)・部材間の相対温度差15℃	
	支承、伸縮装置	
	RC, PC 桁:+5℃~+45℃(25℃±20℃)	
	鋼桁 :+0℃~+50℃ (25℃±25℃)	
コンクリートに	プレストレストカ、コンクリートのクリープ及び乾燥収縮の影響	道示 I 2.2.4,
作用する力	については、道路橋示方書に準拠する。	2. 2. 5
風荷重	100mph (44.4m/s) ※ヤンゴン市の基本風速	MOC による指示
	但しこれは「3秒ガスト風速(瞬間風速)」による表現であるため、	
	これを「10分間平均風速」(耐風設計便覧で使用)に変換する。	
	$U_{10}=U_{max}/G=44.7/1.51=29.6(m/s) \rightarrow 30.0(m/s)$	
	ここに、 U ₁₀ : 10 分間平均風速 (m/s)	
	U _{max} :3秒ガスト風速(m/s)	
	G: ガスト係数 G=1+k(σ/U ₁₀)=1+3×(7.6/44.7)=1.51	
	k: ピーク係数、k=3	
	σ: 風速の標準偏差、σ=7.6	
流水圧	道路橋示方書に準拠して考慮する。	道示 I 2.2.7
地震時動水圧	考慮する	
船舶の衝突荷重	考慮する	
地震の影響	設計水平震度 k _h =0.30、k _{hg} =0.24	ミャンマー地震工学 会

表	4.1.13	橋面工設計条件
11	T.I.IU	侗山上以山木什

項目	設計条件	摘要
防護柵	 バゴー橋本橋(路側、中央分離帯) 鋼製防護柵 設計強度 130kJ以上 (A種、Am種) 設置高さ 路面から 1,100mm (路 側)、900mm (中央分離帯) 高架橋、オンランプ橋(路側) コンクリート製防護柵 設計強度 160kJ以上 (Sc種) 設置高さ 路面から 1000mm 高架橋の中央分離帯は、マウントアップのみとする。 	
落下物防止柵	設置しない	
照明	設置する	
添架物	 バゴー橋本橋 水道管(φ45cm×2条) W=6.0kN/m オーバーレイ等を考慮し、付加荷重 0.7kN/m²を全幅員に考慮 高架橋、オンランプ橋 設置しない 	水道管は YCDC 水道局からの要 請
検査路	バゴー橋本橋 上部工検査路:鋼箱桁内部に設置 下部工検査路:設置しない。但し、掛け違い橋脚に橋面からの階段 と、沓座に転落防止用手摺を設置。 高架橋、オンランプ橋 上部工検査路・下部工検査路:設置しない	
排水装置	路側の排水枡で集水する(鋼製、製作品) 流末は、河川上は桁下まで鉛直管を下ろして垂れ流し、陸上は横引き して下部工位置で地上へ下ろす 設計降雨強度 149mm/h	現地
舗装	鋼斜張橋、鋼箱桁(鋼床版) 改質密粒アスファルト舗装、80mm PC 箱桁橋、オンランプ、高架橋 普通アスファルト舗装、80mm	
防水層	設置する(塗布系)	