CHAPTER 4. Bridge Design

4.1 **DESIGN CONDITIONS**

4.1.1 Design Standard

The bridge design standard of the Project, including Bago River Bridge with the on-ramp bridge and flyover, complies with the JSHB. However, the calculations of the live load and the collision force were referred to the AASHTO LRFD Design Standard as a conventional bridge design load in Myanmar. Natural conditions related to the criteria such as meteorological issues were considered independently in this section.

4.1.1.1 Seismic Force and Design

The Bago River Bridge and flyover were designed based on the JSHB. Although, seismic design would be a different issue because the return period of the strong earthquakes in Myanmar is much longer than that of Japan. If the same design methods are applied to the design of the Project, then the bearing force will be excessive.

The application of the seismic coefficient method is deemed to be suitable for the seismic design of the Project. However, multiple seismic performance shall be defined if a stronger earthquake than the expected occurs.

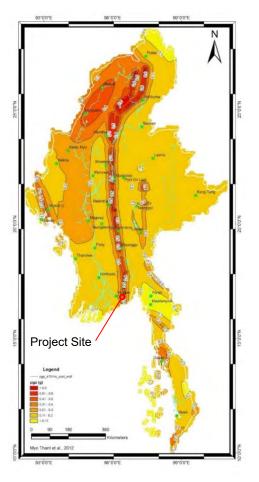
Seismic Performance	Possible maximum seismic force during service period
Level 1	The bridge is expected to have no damage caused by the earthquake.
Seismic Performance	Very few chances
Level 2	The bridge is not expected to collapse.

Source: JICA Study Team

(1) Design Horizontal Ground Acceleration (Seismic Coefficient)

The design horizontal ground acceleration for seismic performance level 1 around the project site is set to 0.30 from the Peak Ground Acceleration map made by the Myanmar Earthquake Committee ("Seismic Hazards Assessment for Myanmar", Myo Thant et al., 2012), which reflects a 475-year return period.

For seismic performance level 2, the design horizontal ground acceleration is set as 0.45, 1.5 times larger than the abovementioned value, because the Myanmar Building Code 2012 uses the same multiplication factor for the maximum considered earthquake.



Source: Seismic Hazards Assessment for Myanmar, Myo Thant et al., 2012 Figure 4.1.1 Peak Ground Acceleration Map (475-year return period)

(2) Required Seismic Performance and Seismic Design

To meet the seismic performance defined in Item (1) above, the seismic design shown in Table 4.1.2 below was conducted.

	Seismic Performance 1	Seismic Performance 2
Seismic coefficient	$k_{h1} = 0.30$	$k_{h2} = 1.5 \text{ x } k_{h1} = 1.5 \text{ x } 0.3 = 0.45$
Superstructure	Design to verify if unbreakable	Expect not to be unbreakable by safety factor and ductility
Substructure	Design to verify if unbreakable	Expect not to be unbreakable by safety factor and ductility
Bearing	Design to verify if unbreakable	(no design if other anti-collapse structure is installed)
Anti-collapse structure	(no design)	Design to verify if unbreakable
Expansion joint	Design to verify function	(no design)

Table 4.1.2 Relationship Between Seismic Performance and Seismic Design

Source: JICA Study Team

In the table, the "anti-collapse structure" was assumed to be the structure which connects the superstructure and substructure, and was expected not to break due to the level 2 seismic force, so that the superstructure will not collapse as well. Anchor bars on the substructure and bearings that are designed based on level 2 seismic coefficient are deemed as anti-collapse structures.

(3) Other Issues for Seismic Design

Seating length and bearing edge distance will be secured in accordance with the JSHB regulations. Reinforcement of superstructures and substructures will consider ductility and robustness.

4.1.1.2 Collision Force by Vessel

Collision force is calculated based on AASHTO.

(1) Design Vessel

The largest vessel running in Bago River is a barge ship with specifications indicated below, as researched by the Directorate of Water Resources and Improvement of River Systems (DWIR).

boat.

Size: 65.5 m x 15.9 m x 3.0 m (barge vessel)

Deadweight tonnage: 1,118 tons

Maximum vessel speed: 10 knot (5.14 m/s)

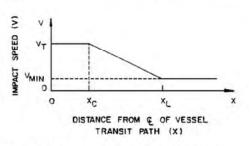
Draught height was assumed as 2.2 m by general barge ship with similar size.

(2) Impact Speed was Calculated based on the AASHTO LRFD 3.14.6.

3.14.6-Design Collision Velocity

The design collision velocity may be determined as specified in Figure 3.14.6-1, for which:

- V = design impact velocity (ft/s)
- $V_{\rm T}$ = typical vessel transit velocity in the channel under normal environmental conditions but not taken to be less than V_{MIN} (ff/s)
- V_{MIN} = minimum design impact velocity taken as not less than the yearly mean current velocity for the bridge location (ft/s)
- X = distance to face of pier from centerline of channel (ft)
- X_C = distance to edge of channel (ft)
- X_L = distance equal to 3.0 times the length overall of the design vessel (ft)



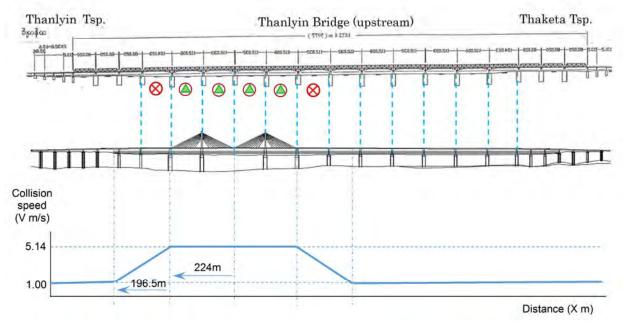
The length overall, LOA, for barge tows shall be taken

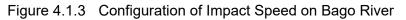
as the total length of the tow plus the length of the tug/tow



Source: AASHTO LRFD







Pier	Impact Speed (V)	Remarks
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	
P6, P15-P21	1.00 m/s	Mean current speed

Table 4.1.3 Impact Speed for the Pier

Source: JICA Study Team

It is noted that the depth of the river at Pier P5 and P22 is shallow for running the vessel, and that these piers will not affect the collision force. In other words, P5 and P22 were not designed with a collision force.

(3) Collision Force was Calculated based on the AASHTO LRFD 3.14.11.

3.14.11-Barge Collision Force on Pier

C3.14.11

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 ft	
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:

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

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

where:

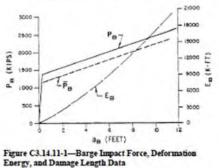
- P_8 = equivalent static barge impact force (kip)
- a_{θ} = barge bow damage length specified in Eq. 3.14.12-1 (ft)

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 (1985) 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.

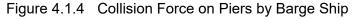
where:



 $\overline{P_{B}}$ = average equivalent static barge impact force resulting from the study (kip)



Source: AASHTO LRFD



Pier	Impact	Impact	KE	aB	PB	PB
	Speed (m/s)	Speed (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

Table 4.1.4 Impact force to the pier

Source: JICA Study Team

Impact force P_B has 100% effect on the transverse direction to the bridge, and 50% on the longitudinal direction.

(4) Water Level and Impact Height

As shown in Figure 4-5, impact force affects the pier from the Mean High Water level (MHW = +3.18 m) with 0.8 m (barge height from water surface).

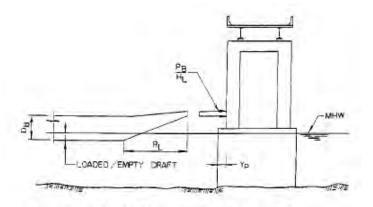


Figure 3.14.14.1-3-Barge Impact Force on Pier

Source: AASHTO LRFD

Figure 4.1.5 Impact Height of Barge Ship

Pier		P5,P6	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 height (m)		3.98	3.98	3.98	3.98	3.98	3.98

Source: JICA Study Team

4.1.1.3 Verification Study of Flight Track

Since the construction site of the Bago River Bridge is slightly near the Yangon International Airport, and the pylon of the cable-stayed bridge is high, clearance between flight track and pylon was verified.

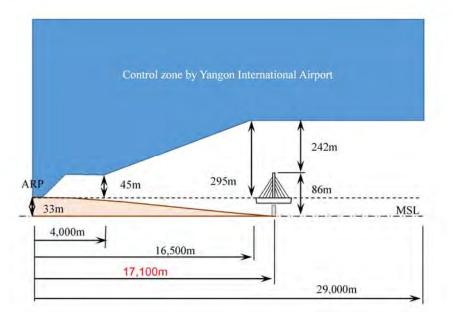
(1) Condition of Verification

- The Airport Reference Point (ARP) was assumed to exist at the center of the landing field.

- The distance between the ARP of the airport and P12 (pylon of the cable-stayed bridge) was measured on a web-based map service.

- Control zone of the airport was assumed to be the same as the definition of the International Civil Aviation Organization (ICAO).

(2) Result



Source: JICA Study Team

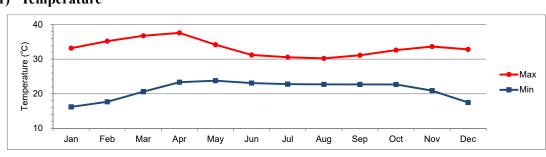


Pier P12 was allocated at 17.1 km from the ARP. The area farther than 16.5 km was assigned as the "outer horizontal plane", in which general structures should secure a height of less than 295 m.

ARP is from 33 m above MSL, while the P12 pylon is 86 m above MSL. This means that the pylon leaves 242 m under the control zone (295 + 33 - 86 = 242). If the high crane exceeds several meters above the top of the pylon, then there is an ample height allowance above the pylon.

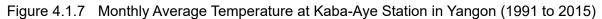
It is noted that ICAO regulates to install the Aircraft Warning Light for high structures from 200 ft to 650 ft (60 m to 200 m). Since the pylon has an 86 m height, then the Aircraft Warning Light is installed at the top of the pylon.

4.1.1.4 Meteorological Conditions in Yangon

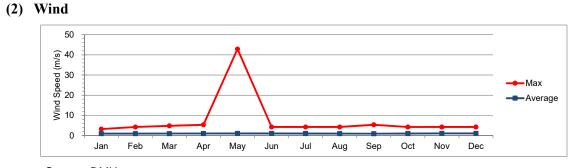




Source: DMH



Monthly average temperature is from 39.2 to 11.3 °C. For the design temperature change, reference temperature is set at 25 °C and was assigned with a rise-fall ratio of 15 degrees.



Source: DMH

Figure 4.1.8 Maximum and Average Wind Speed at Kaba-Aye Station in Yangon (1991 to 2015)

Fastest recorded wind speed in Yangon was 96.5 mph (42.9 m/s) by Cyclone Nargis that descended on 27 April 2008. The MOC assigned the design wind speed for bridges in Yangon region as 100 mph (44.4 m/s).

	n Period bability)	Dairy Rainfall: R ₂₄ (mm/day)	Rainfall intensity each rainfall duration (mm/br): It = R _o (/24*(24/t) m=2/3											
) (Ye	ar, %)	24 hour	24	12	8	6	3	2	1.5	1	0.75	0.5	0.333	0.167
Kat	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 form	mula of Pro	Ia of Probable rainfall = Generalized extreme value distribution										

(3) Rainfall Intensity

Source: JICA Study Team based on DMH

Figure 4.1.9 Rainfall Intensity at Kaba-Aye Station in Yangon (1968 to 2015)

For the design of drainage, a 10-minute rainfall intensity with three-year return period was used. In Yangon, 149 mm/h is the design rainfall intensity.

4.1.2 Materials to be Used

Materials to be used for the Project are based on the Japanese Industrial Standard (JIS) since JSHB is based on JIS, and is applied to the design of the bridge.

However, "equivalent" materials and/or products will be allowed in the technical specifications for the international procurement.

4.1.3 Conditions of Design Load and Load Combination

The design load is mentioned in the design criteria.

4.1.4 Concept of Comparative Study for Structure Optimization

In the F/S and Supplemental Survey, general bridge and structural types were selected for the determination of the project scope and scale. In this basic design (B/D), design items were examined and considered for the optimization of the structural types.

Item	Design Issue
Steel cable-stayed bridge	Height of the pylon
	Cross section of the girder
	(girder depth, bracket, rib, etc.)
	Type of the pylon (reverse-Y, H, single)
	Arrangement of the stayed cable
	Numbers of the cable
	Types of the cable
	Supporting condition and bearing types
	Shape of the pier
	Shape of the SPSP
Steel box girder	Cross section of the girder
_	(girder depth, bracket, rib, etc.)
	Substructure
	Foundation
	Bridge accessories
PC box girder (span by span	Bridge length
erection method)	Span arrangement
	Superstructure
	Substructure
	Foundation
	Bridge accessories
On-ramp bridge	Span arrangement and bridge length
	Superstructure
	Erection method
	Main girder
	Substructure
	Foundation
	Bridge accessories
Flyover	Bridge length
	Span arrangement
	Superstructure
	Foundation

Table 4.1.6 Contents of the Comparative Study

Source: JICA Study Team

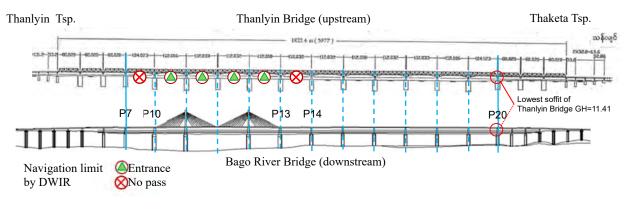
4.1.5 Span Arrangement in River Bridge Section

In consideration of the hydrological advantage and safety for the vessel, the pier arrangement of Bago River Bridge was allocated on the line-of-sight of the existing Thanlyin Bridge. Although Bago River is relatively shallow, middle-class vessel runs through the abyss near the Thanlyin side assigned by DWIR.

Four spans with green triangular signs indicated in Figure 4.1.10 are the current navigation route, which

was designed to allocate space for the cable-stayed bridge for the new Bago River Bridge. Even though "no pass" was allocated for the other spans, the same span length is allocated for more than 100 m of the span of Thanlyin Bridge.

Navigation height is determined by the lowest soffit of Thanlyin Bridge at the P20 pier location of Bago River Bridge where the vertical alignment is lowest at navigation channel.



Source: JICA Study Team

Figure 4.1.10 Pier Arrangement of Bago River Bridge

4.1.6 Design Conditions for the Bridge Design

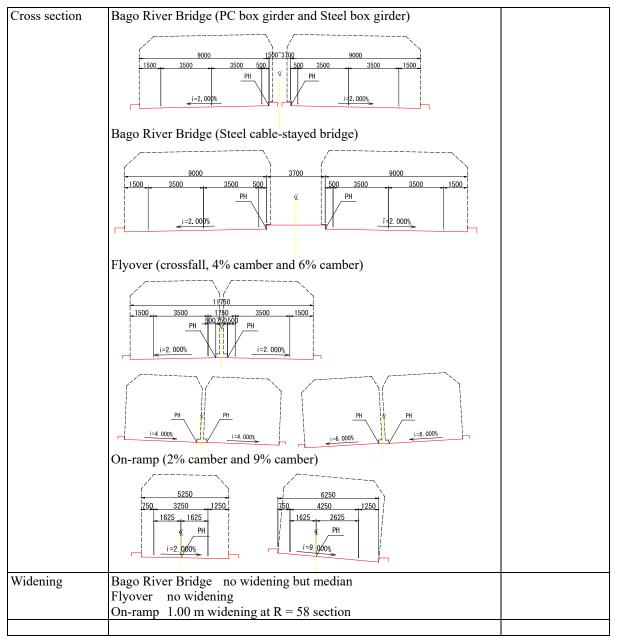
The design conditions are shown in the tables found in the next few pages.

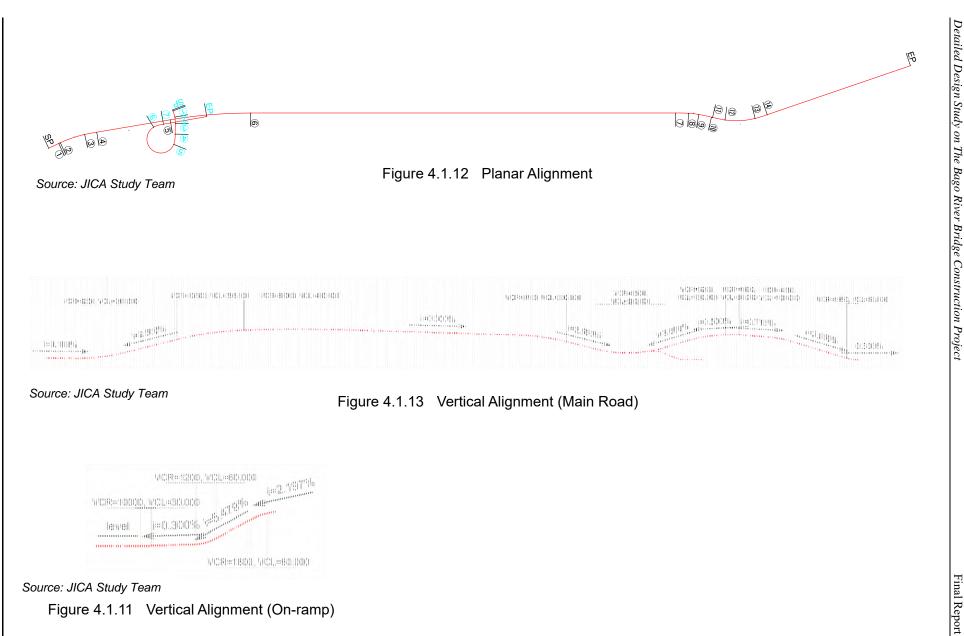
Item		Design Conditions					
Design objective							
	Project length 3,644.341 m						
	River bridge						
		Superstructure	Steel cable-stayed bridge 448.000 m				
			Steel box girder bridge 1,033.000 m				
			(257 m, 776 m)				
			PC box girder Bridge 550.000 m				
		0.1.4	(250 m, 300 m)				
		Substructure	Wall pier, hammerhead pier, reverse-T abutment				
		Foundation	Steel pipe sheet pile (SPSP), cast-in-				
	Flyover	Length	situ pile 602.000 m				
	1 Iyovei	Superstructure	Steel box girder bridge180.000 m				
		2 op order of the	Steel I girder bridge 122.000 m				
			PC I girder bridge 300.000 m				
			(60 m, 180 m, 60 m)				
		Substructure	Hammerhead pier, reverse-T abutment				
		Foundation	Cast-in-situ pile				
	On-ramp	Length	115.200 m				
	bridge		PC I girder bridge 115.200 m				
		Substructure	Hammerhead pier, reverse-T abutment				
	Road	Foundation Approach road	Cast-in-situ pile				
	improvement						
	mprovement	Arterial road	857 m, Thaketa side 430 m 834.341 m				
	Intersection	Star City in					
		Yadanar interse					
	Toll collection	Thaketa side (b	ooth northbound and southbound)				
Bridge name	Bago River Brid						
Line name	Thanlyin Chin K						
			gn (Japan), June 2015, Japan Road				
standards	Association (JR		is Design of Highward and Street (1)				
	Edition (2011) for		ric Design of Highways and Streets, 6th				
			raffic lane width 3.5 m				
			har, Department of Highway, Ministry of				
	Construction (20						
Structural design			7th Edition (2014) for calculations of live				
standards	load and collisio						
	Specifications for						
	Specifications for						
	Guidelines for Road Embankment, April 2010, JRA						
	Guidelines for R		•				
		nt, August 2012, JRA					
		undations, March 2015, JRA Steel Pipe Pile Foundations, December					
	1997, JRA		Steer ripe rife roundations, December				
	Other Relevant S	Standards and/or	Documents				
		Junuarus anu/Ol	Doumento				

Table 4.1.7 General Conditions

Item			Design c	onditions			Remark
Road	Bago River	Bridge			ent to Class	2-1	Based on
classification	Flyover	-		Equival	ent to Class	4-1	Japanese Road
	On-ramp				ent to Class		Structure Ordinance
	Improvemen					s 4-1	
Design speed	Bago River	Bridge, Flye	over	60 km/ł			
	On-ramp			30 km/ł			
	Thanlyin Ch		1	40 km/ł	1		
	Bago River						Supplemental
volume			orthbound 25				survey results,
		73 vehicle/d	ay (northbou	and 2,829 v/	d, southbour	nd 3,344 v/d)	YUTRA Master
	Flyover	• 1 / 1 /	.1.1 1.1.2	0.001 /1			Plan Case, 2035
			orthbound 12				time point
Planar road				ind 1,349 V/	d, southbour	nd 2,090 v/d)	
alignments	Bago River	Bridge to FI	yover	2	4	5	
angiments	SP 0+000.000	1 0 + 0.24 0.70	$\frac{2}{0+0.76}$ 170	3			
		0+024.970		0+161.513	$R=\infty$	0+521.900	
	R=∞	A=160	R=-500	A=160		R=-2000	
	6	7	8	9	10	11	
	0+857.522	2+627.420		2+724.080		2+782.486	
	R=∞	A=150	R=-420	A=150	R=∞	A=130	
	12	13	14	EP			
	2+835.298		3+014.383	3+644.341			
	R=320	A=130	R=∞	-			
	On-ramp		•			-	
	SP	1	2	3	4	5	
	0+000.000			0+105.007		0+367.483	
	R=∞	R=-140	R=∞	A=50	R=-58	A=50	
	6	7	EP				
	0+410.587						
	R=∞	R=-1000	-				
Profiles	Bago River						
	0+0.000	0+228.000		1 + 88.000	2+140.000	2+517.727	
	5.695	5.467	17.267	18.431	15.275	5.832	
	-0.100	2.500	0.300	-0.300	-2.500	3.000	
		2+960.000	3+160.000	3+475.000	3+500.000		
	15.200	15.850	14.420	4.970	4.895		
	0.500	-0.715	-3.000	-0.300	-		
	On-ramp				•		
	0+0.000	0+150.000			0+540.000		
	4.470	4.470	5.010	13.780	14.878		
	level	0.300	5.479	2.197	-		
Cant	Bago River				nber)		
			(Max. 6% ca	/			
	On-ramp 2	% camber (N	Max. 9% can	nber)			

Table 4.1.8 Road Design Conditions





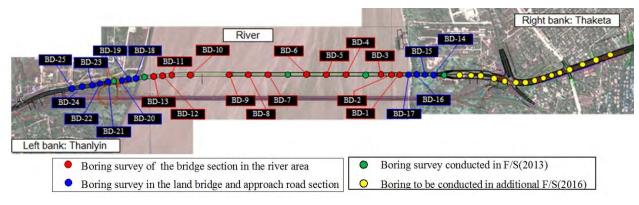
Item			Des	sign Cond	itions				F	Remark	
River name	Bago Rive										
Navigation			vill be the na ll also be the				1.		Agreem DWIR	ient wit	th
Clearance		eight ar	nd width sha				er P'	7 to P20 a	s Agreem DWIR	ient wit	th
Design discharge			year return	period)							
Design high water			-								
level (HWL)	Loa combin		Suppos	ition	Water le (MSL+			er flow m/s)			
	Norn	nal	Full/low spring		+3.18× 2.39	-		0			
	Wir	ıd	Highest	HWL	+4.99			0			
	Collisi navigatic		Full tide o tide		+3.18			0			
	Collisi side s		Maximur flow at fl 100year perio	ood of return	+2.53			1.19			
	Earthq	uake	Normal	water	+0.29			0.60			
	Duri constru		5year re perio		+4.34			0.65			
Design riverbed and											
scouring depth				P6	P7	P	2	P9	P10		
seouring deptil	Riverbee	l height		0.41	-3.59	-5.3		-4.82	-4.55		
	Foundati			-2.48	-6.38	-6.3		-6.35	-9.10		
		U	ring depth	-3.41	-8.91	-9.4		-9.31	-11.27		
			0 1	•	•						
	P11	P12	P13	P14	P15	P1	.6	P17	P18		
	-5.41	-7.96	-8.02	-6.28	-5.09	-5.2		-6.70	-6.99		
	-9.10	-9.10	-9.10	-8.06	-8.06	-8.0		-8.06	-8.06		
	-12.13	-13.67	-13.48	-11.43	-10.84	-10.	36	-9.70	-10.00		
								-	1		
	P19	P20	P21	P22	P23	P2		P25			
	-6.88	-6.55	-6.15	-4.61	-0.05		.11	4.04			
	-8.06	-7.28	-7.55	-7.59	-2.39		.73	3.78			
	-9.78 Half of the foundation		-8.56 mum scouri	-7.48 ing depth	-2.07 is used for		.98 seis	3.92 smic desig	gn of subs	structures an	ıd
Reference height	Benchman MSL = Cl	k surve: DL + 2.8		-							
	All the he	ight in t	he Project w	vill be exp	ressed as t	he hei	ght f	rom MSL			_

Table 4.1.9 River Conditions

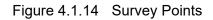
				Des	ign Coı	ndition	5			Remark
Survey	Show	vn in Figure 4.1	.15							
outlines		-								
Profile	Show	vn in Figure 4.1	.14							
		anlyin side (Al		and On	-ramp ł	oridge)				
arameters	1. 11						Internal	Cohesive	Deformation	
arameters	No.	Soil name	N-value	Unit	weight (kN	√m³)	friction angle	strength	Modulus	
				Yt	γsat	γ'	φ (°)	c (kN/m ²)	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. Ri	verbed (P7 to F	22)				,			
	No.	Soil name	N-value	Unit	weight (kN	√m³)	Internal friction angle	Cohesive strength	Deformation Modulus	
				γt	γsat	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	
				470	18.0	8.0	34	-	21,000	
	11	Silty SAND-II	30	17.0						
	12	Clayey SAND-I	35	19.0	20.0	10.0	34	-	24,500	
	12 13	Clayey SAND-I Clayey SAND-II	35 50					-	24,500 35,000	
	12 13	Clayey SAND-I	35 50	19.0	20.0	10.0	34			
	12 13	Clayey SAND-I Clayey SAND-II	35 50	19.0 19.0	20.0	10.0	34			
	12 13 3. Th	Clayey SAND-I Clayey SAND-II aketa side (P23	35 50 3 to A2)	19.0 19.0	20.0 20.0	10.0	34 35 Internal	- Cohesive	35,000 Deformation	
	12 13 3. Th	Clayey SAND-I Clayey SAND-II aketa side (P23	35 50 3 to A2)	19.0 19.0 Unit	20.0 20.0 weight (kt	10.0 10.0 √m³)	34 35 Internal friction angle	- Cohesive strength	35,000 Deformation Modulus	
	12 13 3. Th No.	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name	35 50 3 to A2) N-value	19.0 19.0 Unit	20.0 20.0 weight (kt	10.0 10.0 √m ³) γ'	34 35 Internal friction angle φ (°)	- Cohesive strength c (kN/m ²)	35,000 Deformation Modulus E ₅₀ (kN/m ²)	
	12 13 3. Th No.	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name Filled Soil	35 50 3 to A2) N-value 3	19.0 19.0 Unit <u>γ</u> t 19.0	20.0 20.0 weight (kt γ _{sat} 20.0	10.0 10.0 √m ³) γ' 10.0	34 35 Internal friction angle φ (°)	- Cohesive strength c (kN/m ²) 18	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500	
	12 13 3. Th No. 1 2	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I	35 50 3 to A2) N-value 3 1 13 5	19.0 19.0 Unit <u>Yt</u> 19.0 17.5 17.0 17.0	20.0 20.0 weight (kt γ _{sat} 20.0 17.5	10.0 10.0 √m ³) γ' 10.0 7.5	34 35 Internal friction angle φ (°) - -	- Cohesive strength c (kN/m ²) 18 15	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500	
	12 13 3. Th No. 1 2 3	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II	35 50 8 to A2) N-value 3 1 13 5 25	19.0 19.0 Unit <u>Yt</u> 19.0 17.5 17.0 17.0 17.0	20.0 20.0 weight (kt 20.0 17.5 18.0	10.0 10.0 √m³) γ' 10.0 7.5 8.0 7.0 8.0	34 35 Internal friction angle φ (°) - - 33 - 33 - 35	- Cohesive strength c (kV/m ²) 18 15 -	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500	
	12 13 3. Th No. 1 2 3 4 5 6	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-I	35 50 3 to A2) N-value 3 1 13 5 25 30	19.0 19.0 Unit γt 19.0 17.5 17.0 17.0 17.0 17.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0	10.0 10.0 √/m³) γ' 10.0 7.5 8.0 7.0 8.0 8.0 8.0	34 35 Internal friction angle φ (°) - - 33 - 35 34	- Cohesive strength c (kN/m ²) 18 15 - 30	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000	
	12 13 3. Th No. 1 2 3 4 5 6 7	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II	35 50 8 to A2) N-value 3 1 13 5 25	19.0 19.0 Unit <u>Yt</u> 19.0 17.5 17.0 17.0 17.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0	10.0 10.0 √m³) γ' 10.0 7.5 8.0 7.0 8.0	34 35 Internal friction angle φ (°) - - 33 - 33 - 35	- Cohesive strength c (kV/m ²) 18 15 - 30 -	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500	
	12 13 3. Th No. 1 2 3 4 5 6 7	Clayey SAND-I Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-I	35 50 3 to A2) N-value 3 1 13 5 25 30	19.0 19.0 Unit γt 19.0 17.5 17.0 17.0 17.0 17.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0	10.0 10.0 √/m³) γ' 10.0 7.5 8.0 7.0 8.0 8.0 8.0	34 35 Internal friction angle φ (°) - - 33 - 35 34	- Cohesive strength c (kN/m ²) 18 15 - 30	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000	
	12 13 3. Th No. 1 2 3 4 5 6 7	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P23 Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II	35 50 3 to A2) N-value 3 1 13 5 25 30	19.0 19.0 Unit <u>Yt</u> 19.0 17.5 17.0 17.0 17.0 17.0 17.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0	10.0 10.0 √m³) 7' 10.0 7.5 8.0 7.0 8.0 8.0 8.0 10.0	34 35 Internal friction angle φ (°) - - 33 - 35 34	- Cohesive strength c (kN/m ²) 18 15 - 30	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Vover bridge Soil name	35 50 3 to A2) N-value 3 1 13 5 25 30 50	19.0 19.0 Unit <u>Yt</u> 19.0 17.5 17.0 17.0 17.0 17.0 17.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0 20.0	10.0 10.0 √m³) 7' 10.0 7.5 8.0 7.0 8.0 8.0 8.0 10.0	34 35 Internal friction angle φ (°) - 33 - 35 34 35 34 35	- Cohesive strength c (kN/m ²) 18 15 - 30 Cohesive Cohesive	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II yover bridge Soil name Filled Soil	35 50 3 to A2) N-value 3 1 13 5 25 30 50	19.0 19.0 Unit 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0 20.0 weight (kł	10.0 10.0 V/m ³) V' 10.0 7.5 8.0 7.0 8.0 8.0 10.0 V/m ³)	34 35 Internal friction angle φ (°) - 33 - 35 34 35 34 35 1 1 - - 35 34 35	- Cohesive strength c (kN/m ²) 18 15 - 30 Cohesive strength	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No.	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II vover bridge Soil name Filled Soil CLAY-I	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 N-value	19.0 19.0 Unit 19.0 17.5 17.0 17.0 17.0 17.0 17.0 17.0 19.0 Unit Yt	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0 20.0 weight (kł Ysat	10.0 10.0 V/m ³) V' 10.0 7.5 8.0 7.0 8.0 8.0 10.0 V/m ³) V/m ³)	34 35 Internal friction angle φ (°) -	- Cohesive strength c (kN/m ²) 18 15 - 30 Cohesive strength c (kN/m ²)	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus E ₅₀ (kN/m ²)	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 N-value 4	19.0 19.0 Unit 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0 Unit Yt 18.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0 20.0 weight (kł <u>Ysat</u> 18.0	10.0 10.0 V/m ³) V' 10.0 7.5 8.0 7.0 8.0 8.0 10.0 V/m ³) V' 8.0 8.0 8.0 8.0 8.0 8.0	34 35 Internal friction angle φ (°) -	- Cohesive strength c (kN/m ²) 18 15 - 30 Cohesive strength c (kN/m ²) 24	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT	35 50 3 to A2) N-value 3 1 13 5 25 30 50 N-value 4 4 4	19.0 19.0 Unit 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0 Unit Yt 18.0 18.0	20.0 20.0 weight (kł 20.0 17.5 18.0 17.0 18.0 18.0 20.0 weight (kł <u>Ysat</u> 18.0 18.0 18.0	10.0 10.0 √/m ³)	34 35 Internal friction angle φ (°) - 33 - 35 34 35 34 35 1 friction angle φ (°) - - 35	- Cohesive strength c (kN/m ²) 18 15 - 30 Cohesive strength c (kN/m ²) 24	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300 1,300	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2 3	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II	35 50 3 to A2) N-value 3 1 13 5 25 30 50 N-value 4 4 4 10	19.0 19.0 Unit 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0 Unit Yt 18.0 18.0 18.0	20.0 20.0 weight (kľ 20.0 17.5 18.0 17.0 18.0 18.0 20.0 weight (kľ <u>Ysat</u> 18.0 18.0 18.0 18.0	10.0 10.0 V/m ³) V' 10.0 7.5 8.0 7.0 8.0 8.0 10.0 V/m ³) V' 8.0 8.0 8.0 8.0 8.0 8.0	34 35 Internal friction angle φ (°) - 33 - 33 - 33 - 35 34 35 34 35 Internal friction angle φ (°) - - 32	- Cohesive strength C (kN/m ²) 18 15 - 30 - Cohesive strength C (kN/m ²) 24 24 -	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300 1,300 5,000	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2 3 4	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II CLAY-II	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 N-value 4 4 4 10 8 22 21	19.0 19.0 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0 19.0 18.0 18.0 18.0 17.0 17.0 18.0	20.0 20.0 20.0 weight (kľ 20.0 17.5 18.0 17.0 18.0 20.0 weight (kľ 20.0 weight (kľ 18.0 18.0 18.0 18.0 18.0 18.0 18.0	10.0 10.0 √/m ³) √' 10.0 7.5 8.0 7.0 8.0 10.0 √/m ³) √' 8.0 8.0 10.0 √' 8.0 8.0 7.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	34 35 Internal friction angle φ (°) - 33 - 33 - 33 - 34 35 34 35 34 35 Internal friction angle φ (°) - 32 - 33 - 33 -	- Cohesive strength C (kN/m ²) 18 15 - 30 Cohesive strength C (kN/m ²) 24 24 - 48 - 126	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300 1,300 5,000 5,600 15,400 14,700	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2 3 4 5 5	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II CLAY-II Clayey SAND-II	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 N-value 4 4 4 10 8 22	19.0 19.0 19.0 19.0 17.5 17.0 17.0 17.0 17.0 19.0 19.0 18.0 18.0 18.0 18.0 17.0 17.0	20.0 20.0 20.0 weight (kľ 20.0 17.5 18.0 17.0 18.0 20.0 weight (kľ 20.0 weight (kľ 18.0 18.0 18.0 18.0 18.0 18.0 19.0	10.0 10.0 √/m ³) √' 10.0 7.5 8.0 7.0 8.0 10.0 √/m ³) √' 8.0 8.0 10.0 √' 8.0 8.0 10.0 9.0	34 35 Internal friction angle φ (°) - 33 - 35 34 35 34 35 34 35 34 35 34 35 34 35 34 35 34 35 32 - 32 - 33	- Cohesive strength C (kN/m ²) 18 15 - 30 Cohesive strength C (kN/m ²) 24 24 - 48 - 48	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300 1,300 5,000 5,600 15,400 14,700 24,500	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2 3 4 5 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II Sandy SILT Silty SAND-II CLAY-II Clayey SAND-II CLAY-III	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 N-value 4 4 4 10 8 22 21	19.0 19.0 19.0 19.0 17.5 17.0 17.0 17.0 17.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19	20.0 20.0 20.0 weight (kľ 20.0 17.5 18.0 17.0 18.0 20.0 weight (kľ 20.0 weight (kľ 18.0 18.0 18.0 18.0 18.0 18.0 18.0	10.0 10.0 √/m ³) √' 10.0 7.5 8.0 7.0 8.0 10.0 √/m ³) √' 8.0 8.0 10.0 √' 8.0 8.0 7.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	34 35 Internal friction angle φ (°) - 33 - 33 - 33 - 34 35 34 35 34 35 Internal friction angle φ (°) - 32 - 33 - 33 - 33 -	- Cohesive strength C (kN/m ²) 18 15 - 30 Cohesive strength C (kN/m ²) 24 24 - 48 - 126	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 17,500 21,000 35,000 17,500 1,300 1,300 1,300 5,600 15,400 14,700 24,500 24,500	
	12 13 3. Th No. 1 2 3 4 5 6 7 4. Fly No. 1 2 3 4 5 6 7 8 7	Clayey SAND-I Clayey SAND-II Clayey SAND-II aketa side (P2: Soil name Filled Soil CLAY-I Silty SAND-I Clayey SAND-II Clayey SAND-II Clayey SAND-II Clayey SAND-II Soil name Filled Soil CLAY-I Silty SAND-I Sandy SILT Silty SAND-II CLAY-II Clayey SAND-II	35 50 3 to A2) N-value 3 1 13 5 25 30 50 8 V-value 4 4 4 10 8 22 21 35	19.0 19.0 19.0 17.5 17.0 17.0 17.0 17.0 17.0 19.0 19.0 18.0 18.0 18.0 18.0 17.0 17.0 17.0 17.0	20.0 20.0 20.0 weight (kľ 20.0 17.5 18.0 17.0 18.0 20.0 weight (kľ 20.0 weight (kľ 18.0 18.0 18.0 18.0 18.0 18.0 19.0	10.0 10.0 √/m ³) √' 10.0 7.5 8.0 7.0 8.0 10.0 √/m ³) √' 8.0 8.0 10.0 √' 8.0 8.0 10.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	34 35 Internal friction angle φ (°) - 33 - 35 34 35 34 35 34 35 - - 32 - 33 - 32 - 33 - 33 - 33	- Cohesive strength C (kN/m ²) 18 15 - 30 Cohesive strength C (kN/m ²) 24 24 - 48 - 126 - 126 -	35,000 Deformation Modulus E ₅₀ (kN/m ²) 2,100 900 6,500 3,500 17,500 21,000 35,000 35,000 Deformation Modulus E ₅₀ (kN/m ²) 1,300 1,300 5,000 5,600 15,400 14,700 24,500	

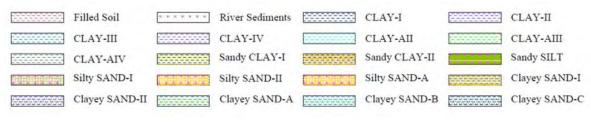
Table 4.1.10 Soil Conditions

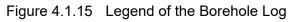
Bearing	Stable sand layer of more than 30 SPT value or clay layer of more than 20 SPT	
layer	value	
Liquefaction	Considered	
Regional	Not considered in the Project	
subsidence		

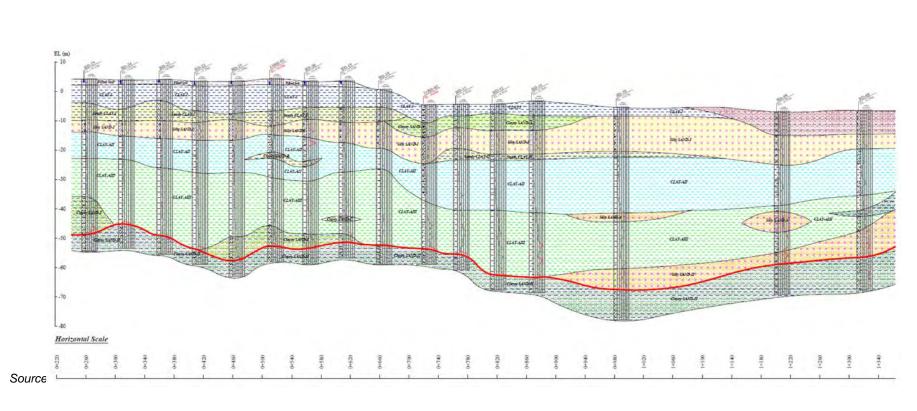


Source: JICA Study Team

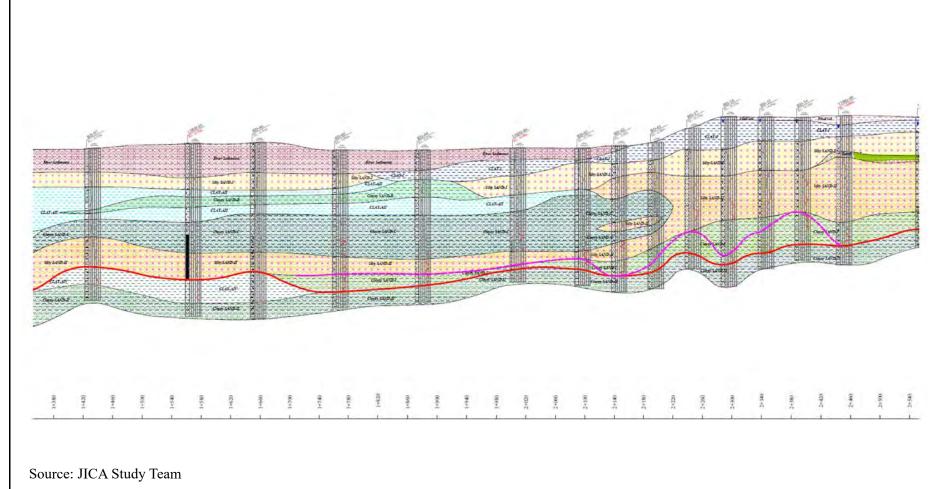


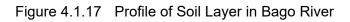












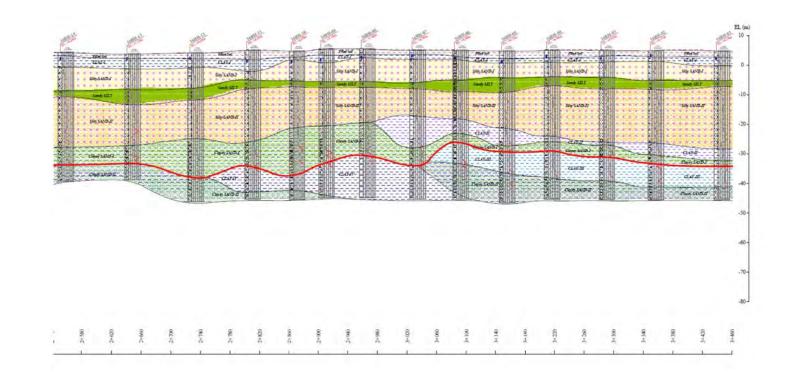
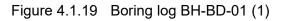


Figure 4.1.18 Profile of Soil Layer at Right Bank (Thaketa)

BC	ORE H	OLE N	o. BI	I-BD-01	11:2			BO	RING	LOC	3							Job		KYB-2 eet No.		25 OF 2
PR	OJECT	NAME	: <u>Geo</u>	technical S	urvey on the	e detailed c	esign for the	e Bago River Bridge Construction Project	BORING EQ	JIPMEN'	F	: <u>TO</u>	10 "D1"	j			DATE	: 1	5.11.2016		-	
LC	CATIC	0N	Besi	ide Existing	g Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		: Rot	ary Direc	t Circulatio	on [CLIENT		-	-	-	-	
		LEVEL	-						ORIENTATIO			: Ver		_	-		IPPO	NKC	FIC	n	IT	n
Ċ	DORDIN	NATE	: <u>E 2(</u>	04573.197;	N 1859026	. <u>672</u> DI	PTH :_	49.00m	GROUND W.	ATER LE	VEL	: <u>Un</u>			_		1010	N AC	LIC	U.,		
		11				22					m) &	-		STANDARI TEST M		RATION O (ASTM		PM	r sam	IPLING		
	(II)	(m)	(E)			RELATIVE DENSITY (or) CONSISTENCY				DATE & DEPTH (m)	R (mu	TH (m	(m) -	2	CUR	VE OF BL	ow •		Ê			1.10
	ELEVATION (m)		THICKNESS (m)	NV3	UR	INEL	NAME	SOIL DESCRIPTION		& DEI	IG (DI	R DEF	t ot -	N-Value dows / 30cm)	-	N-Valu	2	SAMPLE (Type & No.)	-TD	(%	2	(*)
	ELEV,	DEPTH GL.	THICK	DIAGRAM	COLOUR	RELA' (or) C	SOIL			DATE	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL-	N-V.		Blows / 30	40 50	SA (Typ	DEPTH GL	ICR (%)	SCR (%)	RQD (%)
-			-	1.4.4.4.4					-	-					T	TT	TT					
internation of the second					brownish gray	Soft	Sandy CLAY	Soft, brownish gray, moist to medium plasticity, Sandy CLAY (F				1.5	1.00	2/30				P-1	1.00			
THUR					5.07	$(1,1,\dots,n) \in \mathbb{R}$	centr	incomin presidenty, buildy clear i (i	ever deposity				2.00	2/20				P-2	1.45			
	-6.90	2.50	2.50	ww.w.w			-		-					3/30				F-2	2.45			
and and and and and and and and													3.00	ť				U T-1	3.00 (응) cm			
11111					gray	Very soft	CLAY	Very soft, gray, moist to wet, low plasticity, CLAY, with trace of	fine grained				4.00	0/45				P-3	3.80			
of the second								sand					5.00						4.45			
l IIII		11.1											3.00	0/45				P-4	5.45			
		6.00	3.50				Acres 1		-		6.00 Ø112		6.00	6/30	•			P-5	6.00			
a sector					gray	Loose	Clayey	Loose to medium dense, gray, mois	st to wet, fine	15.11.16	1.00	Γ.,	7.00	5/30				P-6	7.00			
and a						to medium	SAND	to medium grained, low plastic Cla	yey SAND	7,00				and a	V			153	7.45			
Manufacture and						dense						6	8.00	13/30	1			P-7	8.00			
1 mil													9.00	14/30	14			P-8	9.00			Long Long
(IIIII	-14.40	10.00	4.00										10.00		$ \rangle$				9.45			
				* * *			1000	1	1.1	1				19/30				P-9	10.45			
				8 8 8	gray	Medium	Silty	Medium dense, gray, moist, fine	to medium				11.00	22/30				P-10	11.00			
in the				* * *		dense	SAND	grained, Silty SAND					12.00	28/30		1		P-11	12.00			
a hard				* * *										20/30					12.45			-
				0 X N 8 X 8									13.00	18/30	11	1		P-12	13.00			and and
in the second													14.00	12/30	K			P-13	14.00			
and and the stand and and and and and and and and and					1								15.00					P-14	14.45			
1		est.		* * *										21/30		۲I.		P-14	15,45			
		16.00	6.00										16.00	13/30	f			P-15	16.00			
anticontration and anticontration and anticontration and and and and and and and and and an					gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to			1.	17.00	12/30	4			P-16	17.00			
inter 1						dense to	SAND	medium grained, low plastic Claye					18.00	1.1				100	17.45			and the
Thur I						dense							10.00	19/30		1		P-17	18.45			
11111													19.00	15/30	4			P-18	19.00			in the second seco
													20.00	14/30	11			P-19	20.00			
11111														14/30				1-12	20.45			
													21.00	19/30				P-20	21.00			all the
													22.00	12/30	K			P-21	22.00			
in line										16 11 16			23.00		Γ				22,45			
Turding turning										16.11.16 23.00	1			31/30		1		P-22	23.45			andreat
11111													24.00	25/30		+		P-23	24.00			and such as been
	-29.40	25.00	9.00										25.00	20/30		V I		P-24	25.00			
11111				N N E	(mark)	Medium	Silty	Medium dense to dense, gray, n	noist fine to					20/30		ΝL			25.45			
1111				* * *	gray	dense	SAND	medium grained, Silty SAND	ioist, thie to			1	26.00	24/30		4		P-25	26.00			
						to dense	100						27.00	34/30				P-26	27.00			
Willin		25.00		- 6 -									28.00			X			27.45			
dime.	-			4 x 4 x 4 4									1	23/30		1		P-27	28.45			
1	-33.40	29.00	4.00		gray	Medium	Clayey	Medium dense, gray, moist, fine	to medium	1			29.00	13/30	1			P-28	29.00			
Tutun Mutur				-	Bruy	dense	SAND	grained, low plastic Clayey SAND GL: (29.00 - 29.45)m; stiff, gray, fi					30.00	18/30				P-29	30.00			
in the second							0.0	grained, low to medium plasticity, Sandy	CLAY layer is					10/30		N		1.20	30.45			
E	NOT	_	1	a an ai	-	L	_	observed as intercalated layer at that depth			anner stru	_	31.00			iscontinuiti	-	1			1	_
	-	lative den		ription N-Value		tency descrip	N-Value	Pr.1 Distarbed sample PBT Permeab (SPT sample) PBT Permeab T-1 Undisturbed Sample: VS Vane Shi		Term Very thic			g (mm) 2000	Very	Term widely s	paced	Spacing (> 2		200	FUKKE	ng Eng	ineers
	1.1.1.1	ve density y loose		(new) D = 4	Consisten Very sol		(nail)	PMT Pressurer		Thick Medium		600 - 200 -	2000	Wi	dely spa dium spa	ced	600 - 2 200 - 1	000	FG=X	Yangor	Branc	h) 8-4200897
Ì	· - 1.	.005C	1	4 - 10	Soft		2 - 4	RQD (%)		Thin	- 1	60 -	200	Ck	osely spa	ced	60 - 2	00	Revision N	www.mylanin	Rev	uRant com
1	D	um dense lense	3	0 - 30 0 - 50	Firm Stiff		5 - 8 9 - 15	Rock core sampla 25 - 50	Poor	Very thi hickly lami	nated	20 -	20		closely s ely close	ly spaced	20 - 6	10	Revision L			1.2017
	Ver	y dense	1 0	iver 50	Very stif Hard		6 - 30 iver 30	Core Loss)		hinly lami	nated	<	6	Remarks	2					-		
									0 Excellent							_			_	_		



Final Report

	T NAME	: Geol						ORING EQUIP	MENT		-	IO "DI"	_		DATE	<u>: 1</u>	She	~ 19.11	-	OF
CATI				Bago Rive	r Bridge (T	hanlyin Bri		ORING METH	OD				Circulation	CLIEN	C.			- 1		-
	D LEVEI	_		N 1859076	672 DF	ртн .		RIENTATION ROUND WAT	ERLEY		Vert		Bed	- N	IPPO	N KO	EI C	0., I	TI).
Snu	I	· <u></u>					U	I I	- 1	Sec. 1	one	2	TANDARD	PENETRATION	TEST		- 14	PLING	-	-
ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	DUR	RELATIVE DENSITY (or) CONSISTENCY	NAME	SOIL DESCRIPTION		DATE & DEPTH (n)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL- (m)	TEST ME (Incover) (Blows / 30cm) 0	THOD (ASTM CURVE OF BL N-Valu	.ow •	SAMPLE (Type & No.)	DEPTH GL - (m)		(%	(%)
BLEV	DEPT	THIC	DIAG	COLOUR	RELA (or)	SOIL			ITAQ	CASI	WAT	DEPT	(Blow	(Blows/3 10 20 30		S/ (Ty	DEPT	TCR (%)	SCR (%)	RQD (%)
-35.40	31.00	3.00		gray	Medium dense	Clayey SAND	Medium dense, gray, moist, fine to grained, Clayey SAND		.11.16 31.00			31.00	34/30	N		P-30	31.00			
				gray	Dense	Silty SAND	Dense, gray, moist, fine to medium Silty SAND GL: (35.00 ~ 35.45)m, medium der fine to medium grained, low plasti SAND layer is observed as intercalate that depth	grained, nse, gray, c Clayey	31.00			32.00 33.00 34.00 35.00	33/30 35/30 41/30 27/30			P-31 P-32 P-33 P-34	31.45 32.00 32.45 33.00 33.45 34.00 34.45 35.00 35.45			
) 36.00			reddish brown fo yellowish brown	Medium dense 10 dense	Clayey SAND	Medium dense to dense, reddish t yellowish brown, moist, fine to grained, low plastic Clayey SAND GL: (36.00 – 36.45)m, very stiff, gray, fine grained, low to medium p Sandy CLAY layer is observed as int layer at that depth	medium brownish plasticity, tercalated	<u>-11,16</u> 42.00			37.00 38.00 39.00 40.00 41.00	29/30 24/30 36/30 33/30 29/30 33/30 33/30			P-35 P-36 P-37 P-38 P-39 P-40 P-41 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			
-48.4	2 49.42	<u>8.00</u> 5.42		yellowish brown to reddish brown	Dense to very dense	Clayey SAND	Dense to very dense, yellowish E reddish brown, moist, fine to coarse low plastic Clayey SAND	grained,	<u>11.16</u> 19.00			45.00 46.00 47.00 48.00	50/28 50/28 50/16 50/30 50/26 50/27			P-43 P-44 P-45 P-46 P-47 P-48	43.45 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 borchole is terminated at according to the termination criteria.	49.00m,				50.00 51.00 52.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 60.00								
NOT Rela Vo	FES telative density tive density ery loose Loose fium dense Dense ry dense	SPT 10	iption N-Value (mm) D - 4 4 + 10 D - 30 D - 30 Ver 50	Consistence Very soft Soft Eirm Stiff Very stiff	- a	tion N-Value tease mder 2 2 = 4 5 - 8 9 = 15 6 - 30	(Single core tube) 0 - 25 Ve Rock core sample (Dauble core tube) 25 - 50	st Test N Term ry poor N Poor Thick	Plas Term sry thick Thick fedium Thin Thin /ery thin tly lamina ly lamina	ated	Spacing	61.00 (mm) 2000 2000 600 200 60	Very w Wide Medii Close Very el	Discontinuit Term idely spaced ity spaced um spaced ity spaced osely spaced osely spaced v closely spaced	its Spacing () 200 - 2 200 - 4 60 - 2 20 - 6 <20	00 800 00 00	EGEY .	2.	g Engi Branch	nee 1) 420 0/

Figure 4.1.20 Boring log BH-BD-01 (2)

BO	RE H	OLE N	o. BH	I-BD-02				BO	RING	LOC							_	Job N		KYB-20 eet No.	-	OF
PR	OJECT	NAME	Geo	echnical St	arvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMEN	P	: <u>TO</u>	10 "D1"	-	_	D/	ATE	: 15	.11.2016		-	-
	CATIO				Bago Rive	r Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region	BORING ME					Circulatio	n CL	IENT		_			-	_
		LEVEL							ORIENTATI			: Ver			-	NI	PPO	NKO	EIC	0	LTI	D.
20 T	ORDIN	IATE	: <u>E 20</u>	4600,791 ;	N 1858985	.918 DE	ертн :	49.00m	GROUND W	ATER LE	VEL	: Une	der River		_		1.1.4		<u></u>		22	
1				100		Èò	1.1			8	(m) &	(F		TANDARD TEST M	ETHOD (/	ASTM)	51	PMT	SAM	PLING	_	
I	(III) N	(ii)	(III) S			RELATIVE DENSITY (or) CONSISTENCY	<u>ш</u>	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(H)	(H	CURVE	OF BLOW	• •	E (10)	(m) -			1
1	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	OUR	VIIVE	NAME			6 & 01	NG (L	ER DE	DEPTH GL - (m)	N-Value (Blows / 30cm)	(min	-Value		SAMPLE (Type & No.)	DEPTH GL-	(%)	(%)	(%)
	BLEV	DEPT	THIO	DIAC	COLOUR	REL (or)	SOIL		_	DAT	CASI	IVAT	DEPT	(Blow N	10 20	ws/30cm 30 4		S.E	DEPT	TCR (%)	SCR (%)	RQD (%)
ſ					brownish	Loose	SAND	Loose, brownish gray, wet, fine gr	ained SAND	100					1			12 -				
					gray	Louse	onuto	with clay (River deposit)	unica, or it to				1.00	4/30				P-1	1.00		1	
	-7.45	2.00	2.00	-1	-	-			-	-			2.00	3/30				P-2	2.00			
					gray	Soft	CLAY	Soft, gray, moist to wet, low	to medium				3.00					-	2.45	5		
					Dini	Don	CLICI	plasticity, CLAY	in incident									D T-1	(册) cm 3.71			
													4.00	2/30				P-3	4.00			
					1								5.00	4/30				P-4	5.00			
	11.45	6.00	4.00		2								6.00	4/30				P-5	5.45			
ſ					_		17 . 4	Maria Para da	10.11	1									6,45			
					gray	Loose to	Clayey SAND	Loose to medium dense, gray, mois to medium grained, low plastic Cla					7.00	12/30	1			P-6	7.00			
					-	medium dense				15.11.16	8.00 Ø112		8.00	15/30				P-7	8.00			
				0 00 0									9.00	11/30	VI			P-8	9.00			
													10.00						9.45 10.00			
	- 11	12												11/30	N.			P-9	10.00			
	16.45	11.00	5.00	00 00	-	-				1			11.00	17/30				P-10	11.00			
							1.21		1.20				12.00	15/30	11			P-11	12.00			
					gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND	to medium				13.00		$ \rangle$				12.45			
														19/30	1			P-12	13.45			
												18	14.00	22/30	🕨			P-13	14.00	2		
												1	15.00	17/30	14			P-14	15.00			
				10 A									16.00		I			P-15	15.45 16.00			
				12.2									1.1	19/30	IЛ			1-15	16.45			
													17.00	14/30	If I			P-16	17.00			
	23.45	18.00	7.00							16.11.16			18.00	14/30	141			P-17	18.00	6		
					1		i.	A day to share a share		10.00			19.00	17/20	$ \Lambda $			P-18	18.45 19.00			
					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, mois to medium grained, low plastic Cla		1				17/30				1.10	19.45			
						to dense	1.1.1						20.00	23/30				P-19	20.00			
								GL: (22.00 ~ 25.45)m, sand percen downward	t is increased	1			21.00	13/30	K			P-20	21.00			
													22.00	23/30	X			P-21	22,00			
														23/30		\setminus			22.45			
													23.00	44/30				P-22	23.00 23.45			
													24.00	33/30		1		P-23	24.00			
				tes are bre									25.00	28/30		1		P-24	25.00			
	31 45	26.00	8 00										26.00			X		1	25.45			
	21.43	10.00	0.00			1.1	1.000	what have start		1				33/30		1		P-25	26.00 26,45			
					gray	Dense to	Silty SAND	Dense to medium dense, gray, n medium grained, Silty SAND	noist, fine to				27.00	40/30				P-26	27.00			
						medium dense				17.11.16			28.00	29/30		Y		P-27	28.00			
	34.45	29.00	3.00	* 8		1				28.00			29.00		11	1			28.45			
	24.45	-9.00	2,00		gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to	1				19/30	1			P-28	29.45			
					24	dense to	SAND	medium grained, Clayey SAND					30.00	28/30		Y		P-29	30.00			
1			_			dense		Continue to next sheet					31.00			N			00000	2		
I	NOT Re	ES lative den:	sity descr	iption	Consis	tency descrip	tion	Sample key Ostanted sample PBT Permeab	ility Test	Tem		Spacing			Term		Spacing (n			UKKE		
	1000	e density	1,100	N-Value (must)	Consistent	8	N-Value	T-1 Undistutted Sample VS Vane Sh (Piston sampler) PMT Pressure	car Test	Very thick		600 -		Wid	videly space		> 20 600 - 20	100		Consultin Yangon	ng Eng Branci	ineer h)
-	L	y loose oose	1153	0 - 4 4 - 10	Very sof Soft		mder 2 2 - 4	D-1 (Denison sampler) RQD (%)	Term	Medium Thin		200 - 60 -	200	Clo	ium spaced ely spaced		200 - 6	0	Revision N	1012 1010	Rev:	
ł		um dense ense		0 - 30 0 - 50	Firm Stiff		5 - 8 9 - 15	(Single core tabe) 0 = 25 Rock core sample 25 = 50		Very thi hickly lam		20 -			losely space ly closely sp		20 - 60 < 20	0	Revision N Revision D	-		1.201
t		dense		ver 50	Very stif		6 - 30	(Double core tabe) Rock core sample (Core Loss) (Core Loss) (Core Loss)		Thinly lamin		<		Remarks		-			-		-	_

Figure 4.1.21 Boring log BH-BD-02 (1)

COORDINATE : E204000.791 : N 18589955.918 DEPTH <th: 49.00m<="" th=""> GROUND WATER LEVEL : Under River Bed NIPPON KOEI CO., LTD. (ii) (iii) (iii) (iiii) (iii) (iiii) (iii) (iiii) (iiii) (iii)<!--</th--><th>PRO</th><th>DJECT</th><th>NAME</th><th>: <u>Geot</u> : <u>Besi</u></th><th>de Existing</th><th></th><th></th><th></th><th>Bago River Bridge Construction Project_ dge), Thaketa Township, Yangon Region</th><th>RING BORING EQU BORING ME ORIENTATIO</th><th>JIPMENT THOD</th><th></th><th>-</th><th></th><th>Circulation</th><th>CLIENT</th><th></th><th>5.11.2016</th><th>KYB-2014 eet No.</th><th>2 OF 2016</th></th:>	PRO	DJECT	NAME	: <u>Geot</u> : <u>Besi</u>	de Existing				Bago River Bridge Construction Project_ dge), Thaketa Township, Yangon Region	RING BORING EQU BORING ME ORIENTATIO	JIPMENT THOD		-		Circulation	CLIENT		5.11.2016	KYB-2014 eet No.	2 OF 2016
No. No. <th></th> <th></th> <th></th> <th></th> <th></th> <th>N 1858985</th> <th>.918 DE</th> <th>ртн :_</th> <th>49.00m</th> <th></th> <th></th> <th>VEL</th> <th>-</th> <th>ler River</th> <th></th> <th></th> <th>N KO</th> <th>DEIC</th> <th>°O., L</th> <th>TD.</th>						N 1858985	.918 DE	ртн :_	49.00m			VEL	-	ler River			N KO	DEIC	°O., L	TD.
and the set of the se						17.7	SITY				(j)	4 (m) &	(m)		TANDARD P TEST ME	ENETRATION TEST THOD (ASTM)	1	SAM	PLING	1
gray Yery Silip gained, Siliy SAND Very deme, gray, moid, fine to -medium grained, Siliy SAND Very deme, gray, moid, fine to -medium grained, Siliy SAND Very deme, gray, moid, fine to -medium grained, Siliy SAND Pass 300 gained, Siliy SAND Pass 300 gained, Siliy SAND 44.45 39.00 6.00		ELEVATION (m)		THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DEN (or) CONSISTER	SOIL, NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPT) DIAMETER (WATER DEPTH	DEPTH GL - (m)	N.Value (Blows/30cm)	N-Value (Blows / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%) SCB (%)	RQD (%)
gray yano SAND yand, Sily SAND Yey deme, gray, moist, fine to medium grained, way listic Clays SAND layer is observed as intercalated layer at that depth 24.40 26.30 9.23 33.40 44.45 97.06 6.00	antonination in the second	38.45	33.00	4.00		gray	dense to	Clayey SAND		noist, fine to				32.00	28/30		P-31	31.45 32.00 32.45		
And the second	and a second	44.45	39.00	6.00		gray		Silty SAND	grained, Silty SAND GL: (34.00 ~ 34.45)m, medium fine to medium grained, low pl SAND layer is observed as interce	dense, gray, astic Clayey	18.11.16			35.00 36.00 37.00 38.00	26/30 50/29 50/29 50/27 50/28		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		
						brown to yellowish	dense to very		yellowish brown, moist, fine grained, low plastic Clayey SAND GL: (39.00 ~ 39.45)m, the colo	to medium or of Clayey	39.00			40.00 41.00 42.00 43.00	42/30 50/25 50/28		P-39 P-40 P-41 P-42	39.35 40.00 40.45 41.00 42.40 42.43 43.00 43.45		
<u>52.00</u> 53.00						brown to reddish			moist, fine to coarse grained, low p SAND GL: (44.00 ~ 44.44)m, trace of	lastic Clayey	19,11,16			45.00 46.00 47.00 48.00	50/29 50/20 50/28 50/29		P-44 P-45 P-46 P-47	44.44 45.00 45.44 46.00 46.35 47.00 47.43 48.00 48.44 49.00		
60.00		54.89	49.44	5.44							42.00			50.00 				49.44		

Figure 4.1.22 Boring log BH-BD-02 (2)

80	RE H	OLE No). BH	-BD-03				BO	RING	LUC	<u>.</u>							Job N		eet No.	16-02	OF
PRO	OJECT	NAME	Geot	echnical Su	arvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	UIPMENT		TOI	10 "D1"	r.			DATE	: 02	2.01.2017		-	
	CATIO		-					dge), Thaketa Township, Yangon Region.	BORING ME	THOD		_	ary Direc		ation	CLIE	VT		-		-	-
		LEVEL	_	_				and the second second	ORIENTATIO			: Ver			-		NIPPO	NKO	FIC	0	IT	D
co	ORDIN	ATE	: <u>E 20</u>	4623.803 ;	N 1858937.	665 DE	ертн :_	46.00m	GROUND W	ATER LE	VEL	Un			_		11.254.2	N NO	LIC	<i>U.</i> ,		
Ι		11				**					m)&			STANDA TES	RD PEN	ETRATIO	N TEST M)	PMT	SAM	PLING		
L	(III)	(ii	(m)			RELATIVE DENSITY (or) CONSISTENCY		00305 Sec.		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	ĩ	-	CL	JRVE OF I	BLOW .		Ê	1	111	
l	NOIL		NESS	WW	×	IVED	NAME	SOIL DESCRIPTION		& DEP	G (DE	R DEP	0,-10	alue / 30cm	-	N-V	due	SAMPLE (Type & No.)	GL-((9	-	3
	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DÍAGRAM	COLOUR	(or) O	SOIL			OATE.	NISK	NATE	DEPTH GL - (m)	N-Value (Blows / 30cm)	0 10	(Blows /	30cm) 0 40 50	SAJ (Type	DEPTH GL - (m)	ICR (%)	SCR (%)	RQD (%)
t	-	-		1		-				-	-	1			T	1	10 50	+	-		~	1
				6 X X 6 X X	brownish gray	Very loose	Silty SAND	Very loose to loose, brownish gray to medium grained, Silty SAND	, moist, fine				1.00	3/30	•			P-1	1.00	5		
					1.00	to loose		(River deposit)					2.00		11				1.45			
L	-8.72	2.50	2.50			Acres 1		-						5/30	1			P-2	2.45	31		
					-	C-D	Sec. 1.	Coll to Const annu model Cas a	miles I tour				3.00		1			PMT-01	3.00			
				1994	gray	Soft to	Sandy CLAY	Soft to firm, gray, moist, fine g plasticity, Sandy CLAY	grained, low				4.00	5/30 2/30	1			P-3 P-4	3.30 - 3.95 4.00			
						firm							10.4	2/30	II			1.	4.45			
	11									02.01.17			5.00	5/30	1			P-5	5.00			
-	12.22	6.00	3.50							-			6.00		1			PMT-02	6.00			
				1.1	Dent	Var	Sile	Very loose to medium dance	moiet fin-				7.00	3/30	1			P-6	6.50-6.95 7.00			
					gray	Very loose	Silty SAND	Very loose to medium dense, gray to medium grained, Silty SAND	, moist, nne				1.114	2/30				P-7	7.45			
						to medium	1.0	GL: (6.00 ~ 9.45)m; Very loose, 1	gray, fine to				8.00	2/30	•			P-8	8.00	5		
						dense		medium grained, Silty SAND with layer is intercalated at that depth	th thin clay				9.00	2/30				P-9	9.00			
								Thin clay layer is intercalated in this	s laver		-			2/30	V			1.5	9.45	5		
				* * *				Thin cuy byer is increasized in the	s luyer		10.00 Ø112		10.00	07/00		`		PMT-03 P-10	10.00			
													11.00	27/30 14/30				P-11	11.00			
													12.00						11.45			
													12.00	16/30		1		P-12	12.45			
				8 × 8						03.01.17		1.6	13.00	18/30		*		P-13	13.00			
	20.22	14.00	8.00	***	-								14.00	10/30	1			P-14	14.00			
Concession and					gray	Stiff	Sandy	Stiff, gray, moist, fine grained, lo	w plasticity,					10/30	I			1.44	14.45			
						-	CLAY	Sandy CLAY				18	15.00	13/30	9			P-15	15.00			
-	22.22	16.00	2.00		_		11			4			16.00	21/30				P-16	16.00			
many the providence of a providence of the second							-	Moline dansi ana mila Bas					17.00						16.45 17.00			
					gray	Medium dense	Clayey SAND	Medium dense, gray, moist, fine grained, low plastic Clayey SAND	to meaturn				11.00	18/30		/		P-17	17.45			
							1111	GL: (18.00 ~ 18.45)m and (23.00					18.00	11/30	¥			P-18	18.00			
				*:				medium dense, gray, fine to medi Silty SAND layer is observed as				11	19.00	11/30				P-19	19.00			
				4				layer at those depths						11,50					19.45			
												1.5	20,00	11/30	1			P-20	20.00			
													21.00	12/30				P-21	21.00			
													22.00	17/20					21.45			
														17/30		N		P-22	22.45			
													23.00	28/30		1		P-23	23.00			
										04.01.17			24.00	26/30		4		P-24	24.00			
	31 22	25.00	9.00	122						24.00			25 00			V			24.45			
	51.22	23.00	2.00							1			25.00	31/30				P-25	25.00			
					gray	Medium	Clayey	Medium dense to dense, gray, m	oist, fine to				26.00	25/30		1		P-26	26.00			
						dense to	SAND	medium grained, low plastic Clayey	SAND				27.00	18/30		1		P-27	26.45			
						dense								10/30		N		1-2/	27.45			
													28.00	24/30		7		P-28	28.00 28.45			
													29.00	21/30		V		P-29	29.00			
													30.00					10.5	29.45 30.00			
a feature of a state of the state of the state of a state of the state						-		Participa and A				19		19/30		N		P-30	30.45			
	NOT	ES		0				Continue to next sheet Sample key		Pi	anner stru	cture	31.00			Discontinu	aities	-			_	
F		lative densi				tency descrip		P-(Distartied sample (SPT ample) PBT Permeabil		Term Very thick	1.1	Spacing	2000	V	Ter.		Spacing (_		UKKE	N CO	LT
ŀ		ve density y loose	1.1.2.10	N-Value	Consistence Very soft		N-Value (see)	T A Undisturbed Sample VS Vane Shea (Puston sampler) PMT Pressurem		Thick		600 - 200	2000	-	Widely : Medium	spaced	600 - 2	000	FGEX	Yangor	Branc	ch) 19 - 4200
ţ	L	0050	1	1 - 10	Soft		uider 2 2 - 4	RQD (%)	Term	Thin		60 -	200		Closely	spaced	60 - 2	00	Revision N		Rev	
ł	D	im dense ense	30	0 - 30 0 - 50	Firm Stiff	-	5 - 8 9 - 15	(Single core inbe) 0 + 25 Rock core sample (Double core tube) 25 - 50		Very this hickly lami	sated	20 -	20			ly spaced osely space	20 - 6 d <20	- 0	Revision D	-		11.201
ſ	Ver	dense	1 01	ver 50	Very stiff	11	6 - 30	Rock core sample 30 - 75	Fair	Thinly lamit	ated	<	6	Rema	4.				_	-	-	_

Figure 4.1.23 Boring log BH-BD-03 (1)

	HOLE N			11 =				RING			_				Job	Sh	KYB-20 weet No.	2	OF 2
PROJEC							e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQU BORING ME			100	HO "DI"	t Circulation	DATE	: (2.01.2013	7-06.0	1.201	<u></u>
	D LEVEL	1000		Dago Rive	Bridge (1	naniyin bir	uge), Thaketa Township, Tangon Region.	ORIENTATIC			: Ver		Circulation	CLIENT	5 - 2 - L - A		5.7	-	5
COORD	DINATE	: E 2046	23.803 ;	N 1858937	.665 DE	PTH :_	46.00m	GROUND W	TER LE			der River	Bed		ON KO	DEI C	<i>:</i> 0., .	LTI).
					**	-				m) &		5	TANDARD P TEST ME	ENETRATION TEST THOD (ASTM)		SAM	IPLING		
ELEVATION (m)	DEPTH GL = (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (of) CONSISTENCY	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	DEPTH (GL + (m)	N-Value lows / 30km	CURVE OF BLOW • N-Value (Blows / 30em) 0 20 30 40 50	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
and and an		5 (1 A A A A A A A A A A A A A A A A A A		gray	Medium dense to dense	Clayey SAND	Medium dense to dense, gray, n medium grained, low plastic Claye					31.00 32.00 33.00	31/30 36/30 34/30		P-31 P-32 P-33	31,45 32,00 32,45			
-40.2	2 34.00	9.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gray to medium grained, Silty SAND	y, moist, fine	<u>05.01.17</u> 37.00			34.00 35.00 36.00 37.00 38.00 39.00	26/30 50/29 22/30 33/30 50/26 34/30 50/29		P-34 P-35 P-36 P-37 P-38 P-39 P-39	34.45 35.00 35.44 36.00 36.45 37.00 37.45 38.00 38.41 39.00 39.45			
	2 41.00			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 tha	low plastic	06.01.17 46.00			41.00 42.00 43.00 44.00 45.00 46.00	50/28 50/28 50/29 50/25 50/25 50/23		P-41 P-42 P-43 P-44 P-44 P-45 P-45	41.43 42.00 42.43 43.00 43.44 44.00 44.40 44.40 45.00 45.40			
արհակառնականակարնություններությունները հանձանությունները հանձանությունները հանձանությունները հանձանությունները 20	0 46.38	5.38					This borehole is terminated according to the termination criteria		-40.09			47.00 48.00 50.00 51.00 52.00 53.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00				46.38			
NO' F Rela V	TES Relative density density loose Loose dium dense Dense 'ery dense	SPT N-	- 4 - 4 - 10 - 30 - 50	Consistence Consistence Very soft Soft Firm Stiff Very stiff Hard	9 10 10	N-Value ummer under 2 2 - 4 5 - 8 9 - 15 6 - 30 wer 30	Sample key ● 1 Disteried emple. PBT Permedo ■ 1 Disteried emple. VS Vanc Sh ■ 1 Disteried emple. PMT Permedo ■ 1 Disteried emple. PMT Permedo ■ 0 Undimeted Sample. 0 - 25 ■ 0 Core Loss) 90 - 107 150 - 75 ■ 0 Wat Wate sample. 90 - 107 190 - 107	Term Very poor Poor Fair	Pla Term Very thick Thick Medium Thin Very thin sickly lamin thinly lamin	1 sated	Spacing > 600 -	600 200 60 20	Very wi Widel Media Close Very clo	dely spaced > y spaced 600 - m spaced 200 y spaced 60 - sely spaced 20	g (mm) -2000 -2000 - 600 - 60 - 20	FGEX	Va.	Ig Eng Branch Mass voi geocome Rev:	ineers h) - kator abint com

Figure 4.1.24 Boring log BH-BD-03 (2)

30	RE H	OLE N	o. BH	-BD-04				BO	RING	LOC	È						Job N		CYB-20 eet No.	-	5 OF
R	DJECT	NAME		1				Bago River Bridge Construction Project	BORING EQ	UIPMENT	0	; TOI	IO "D1"		ü	DATE	: 22	.11.2016	~26.1	1.2016	5
	CATIO				Bago Rive	er Bridge (I	'hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME				ary Direct Ci	reulation	CLIENT			1	-	_	
		LEVEL							ORIENTATI			: Ver		-	N	IPPO	V KO	EIC	0.,	LTI	D.
:0	ORDIN	NATE	: <u>E 20</u>	4732.060 ;	N 1858/51	1.630 DE	ертн :	51.00m	GROUND W	ATER LE	VEL	: Und	_	-	ETRATION	I.CT		14.4	-		-
I				1.1		ALIA ALIA	-			(ii)	4 (m) &	Ĥ	31/4	TEST METH	IOD (ASTM)	631	РМТ	SAMI	PLING	-	
L	ELEVATION (m)	(B)-	THICKNESS (m)			RELATIVE DENSITY (or) CONSISTENCY	8	SOIL DESCRIPTION		DATE & DEPUI (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(B)	E C	RVE OF BLC	w •	No.)	(E) -			
	VATIC	DEPTH GL	CKNB	DIAGRAM	COLOUR	ATIVI	NAME			E&D	ING (TER D	DEPTH GL(m) N-Value	ws / 30	N-Value (Blows / 30	m	SAMPLE (Type & No.)	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
	BLE	DEP	THE	VIC	COL	REL	SOIL			ING	CAS	WA	DEP	e 0 10	20 30		* Ę	DEP	TCR	SCR	RQI
			2		gray	Very	Clayey	Very loose, gray, moist to wet, fit	to medium				1.00				100	1.00			
						loose	SAND	grained, low to medium plastic ((River deposit)	layey SAND					30 P			P-1	1.45			
	-9.37	2.50	2.50										2.00 2/.	30			P-2	2.00			
	2107	all's		* * *	-		11.001			1			3.00 5/	30			P-3	3.00			
				* * *	gray	Very loose	Silty SAND	Very loose to loose, gray, moist, fi grained, Silty SAND	ne to medium				100					3.45			
				* * *		to loose	STERE	granica, only SAMO					3/.	30			P-4	4.45			
				1.1		noac							5.00 6/.	30			P-5	5.00			
				* * *						1.1	6.00		6.00 8/	30			P-6	6.00			
	13.87	7.00	4.50	N 11 1			11				Ø112		7.00	1/1		11		6.45 7.00	21		
ľ	13.87	7.00	4.00		-	1.2.5		13.57.72.77.7.3	1000				2/	30			P-7	7.45			
					gray	Soft	Sandy CLAY	Soft, gray, moist, fine grained, le Sandy CLAY	ow plasticity,			1	8.00 3/	30			P-8	8.00			
								1000000000					9.00				D	9.00			
	16.87	10.00	3.00										10.00 -	1			D T-I	(m) cm 9.80 10.00			
	10,07	10.00	3.00			-				1			10.00 7/	30			P-9	10.45			
					gray	Loose	Clayey	Loose to medium dense, gray,	moist, fine	22.11.16			11.00 25/	30			P-10	11.00			
						to medium	SAND	grained, low plastic Clayey SAND					12.00 18/	20	1		P-11	12.00			
						dense		GL: (12.00 ~ 12.45)m, medium	dense grav					30	Π		1917	12.45			
								fine to medium grained, Silty S/	ND layer is			18	13.00 15/	30	f		P-12	13.00			
				100 - 100 - 100 100 - 100 - 100				observed as intercalated layer at the	a depin				14.00 16	30			P-13	14.00			
												1	15.00				P-14	14.45			
																	1-14	15.45			
	22.87	16.00	6.00		-			-					16.00 10/	30			P-15	16.00 16.45			
			11		gray	Stiff	Sandy	Stiff, gray, moist, fine grained, lo	w to medium				17.00 15/	30	¥ I		P-16	17.00			
						1.1	CLAY	plasticity, Sandy CLAY					18.00				P-17	17.45			
													18.00 11/	50			1-17	18.45			
				51555									19.00 12/	30	6		P-18	19.00 19.45			
													20.00 11/	30			P-19	20.00			
				Nos:									21.00 11/				P-20	20.45			
														30			1-20	21.45			
10	28.87	22.00	6.00									16	22.00 17/	30	1		P-21	22.00 22.45			
					gray	Medium		Medium dense, gray, moist, fine	grained, low				23.00 23	30			P-22	23.00			
						dense	SAND	plastic Clayey SAND					24.00 22				P-23	23.45			
						-							25	30	T		P-25	24.45			
						-							25.00 21	30	+		P-24	25.00			
	32.87	26.00	4.00			-			_				26.00 21	30			P-25	26.00			
					-	Malin	Claure	Medium dense to dense, gray, r	noist fina to				27.00 22	20			p 76	26.45			
					gray	Medium dense	Clayey SAND	medium grained, low plastic Claye						50	T		P-26	27.45			
						dense							28.00 21/	30	* I		P-27	28.00			
													29.00 27	30			P-28	29.00			
										23.11.16			30.00 28					29.45			
								Continue to next sheet		23.11.16 30.00	1			20	1	1	P-29	30.45			
-	NOT	-		Ann. 100 100 1		1		Sample key				icture	31.00	-14-14	Discontinuitie	s	-			-	-
$\left \right $		lative den		iption N-Value	Consi	stency descrip	N-Value	P-1 Distanced sample PBT Perment (SPT sample) PBT Perment T_1 Undisturbed Sample VS Vane St		Term Very thick			2000	Ter Very wide	ly spaced	Spacing (m > 200	00	C	UKKE	g Engl	neer
$\left \right $	100	y loose	1.0	2 - 4	Very so	109	under 2	Di Undisturbed Sample PMT Pressure	meter Test	Thick Medium	-	600 - 200 -		Widely Medium	spaced	600 - 20 200 - 60			Yangon		
F	_	oose im dense	1 - 4	i - 10) - 30	Soft Firm	12	2 - 4	B-1 (Denison sampler) Rock core sample (Single core tube) ROD (%) 0 - 25		Thin Very this	-	60 - 20 -	200	Closely Very close		60 - 20 20 - 60	0	Revision Ne	»,	Rev:	01
F	D	lense v dense	30) - 50 ver 50	Stiff Very still		9 - 15 6 - 30	Rock core sample 25 - 50 (Double core tube) 25 - 70	Poor 1	hickly lami Thinly lamir	nated	6 -	20	Extremely cl		< 20		Revision De	ate	17.0	1.201
۰.			1 00		Hard		iver 30	Core Loss)					- 2	cmarks							

Figure 4.1.25 Boring log BH-BD-04 (1)

OI	RE H	OLE No). BH	-BD-04	-			<u>B O</u>	RING	LOG			_			Job		KYB-20 vet No.	2	
								Bago River Bridge Construction Project	BORING EQU				IO "DI"		DATE	: 2:	2.11.2016	~ 26.11	.2016	£
	CATIO	N LEVEL	1.00		g Bago River	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING MET ORIENTATIC			: Rota	ing Direct Circu	ulation	CLIENT	der.	1.1	1		
					N 1858751	630 DI	PTH :	51.00m	GROUND W/			-			NIPPO	ON KO	EI C	0., 1	TL).
		Т			-		1			101	-		STAND	ARD PEN	ETRATION TEST OD (ASTM)	-	SAM	PLING	1.7	-
	(Î)	(III)	(E			RELATIVE DENSITY (or) CONSISTENCY	13.			(m) HT	CASING (DEPTH (m) & DIAMETER (mm))	TH (m)		1	RVE OF BLOW •		â		T	
	ELEVATION (m)		THICKNESS (m)	WVX	RR .	TIVE D ONSIS	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	IG (DE WETER	WATER DEPTH (m)	DEPTH GL (m) N-Value (Blows / 30cm)	-	N-Value.	SAMPLE (Type & No.)	DEPTH GL - (m)	(9)	()	(%)
	ELEVI	DEPTH GL	THICK	DIAGRAM	COLOUR	RELA' (or) C	SOIL			DATE	CASIN	WATE	DEPTH GL- N-Value (Blows / 30c	0 10	(Blows/30cm) 20 30 40 50	SA (T)p	DEPTH	TCR (%)	SCR (%)	RQD (%)
				· · · · · · ·	1	1.26		a second a second	1.00						K					1
					gray	Medium dense	Clayey SAND	Medium dense to dense, gray, m medium grained, low plastic Clayer	oist, fine to SAND				31.00 21/30		Y II	P-30	31.00			
						to dense							32.00 20/30			P-31	32.00			
													33.00 27/30			P-32	33.00			
													24.00		X		33.45 34.00			
																P-33	34.45			
													35.00 50/30	2		P-34	35.00 35.45			
				10 - 10 - 10 - 10 - 10									36.00 40/30	0	•	P-35	36.00	61		
	43.87	37.00	11.00	· · · · ·	_								37.00 44/30			P-36	37.00			
				22	gray	Dense	Silty	Dense to very dense, gray, mo	nist fine to				38.00 33/30			P-37	37.45 38.00			
				32	Bray	to very	SAND	medium grained, Silty SAND	, inc. 10				10.00				38.45 39.00			
				8 S.		dense	1.1						50/20	2		P-38	39.00			
				1.						24.11.16 40.00			40.00 50/30	5		P-39	40.00			
				**									41.00 31/30			P-40	41.00			
	48.87	42.00	5.00	* *									42.00 41/30			P-41	41.45			
					greenish	Dense	Clayey	Dense to very dense, greenish gray	moist fina				12 00				42.45			
					gray	to very	SAND	to medium grained, low plastic Clay						8	1	P-42	43.43			
						dense							44.00 50/29		/	P-43	44.00 44.44			
													45.00 42/30			P-44	45.00	*		
	52.87	46.00	4.00										46.00 50/30	i l	N	P-45	46.00			
					yellowish	Dense	Clayey	Dense to yery dense, yellowish b	rown, moist,				47.00 50/30			P-46	46.45			
					brown	to very	SAND	fine to medium grained, low pla SAND	astic Clayey				10.00				47.45			
						dense	C - 1							2		P-47	48.45			
										25.11.16 49.00			49.00 50/27	7		P-48	49.00 49.42			
													50.00 50/27	ž –	•	P-49	50.00			
•	59.75	51.38	5.38							26.11.16			51.00 50/23	3		P-50	51.00			
	30.20	51.50	0.00			1		This borehole is terminated	at 51.00m,				52.00				21,30			
								according to the termination criteria	i .				53.00							
												0	54.00							
													55.00							
													56.00							
													57.00							
													58.00							
													59.00							
							44.4	· · · · · · · · · · · · · · · · · · ·					60.00							
	North	-					1, 111						61.00							
1	NOT Rei	ES lative densi	ity descrip	ption	Consis	tency descrip		Sample key P.I Disturbed sample (SPT sample) PBT Permeable	ility Test	Term		Spacing		Ten		5		UKKEN		
	1000	e density		N-Value mai	Consistence	9	N-Value man	T-E Undistubed Sample VS Vane She	ar Test	Very thick Thick		600 -	2000	Widely s	paced 600 -	2000	FGEX	Yangon B	Branch	h)
	L	y loose	4	- 4	Very soft Soft	- 1 × 3	under 2 2 - 4	D-f (Denison sampler) Rock core sample	Term	Medium		60 -		Medium s Closely s	paced 60 -	200	Revision No		Rev:	_
	D	un dense ense	30	- 30 - 50	Firm Stiff		5 - 8	(Single core tabe) 0 - 25 Rock core sample (Double core tabe) 25 - 50 (Double core tabe) 70 - 25		Very this tickly lamb	nated	20 -	20 Ex		v spaced. 20 - sely spaced. <		Revision D	-	17.01	-
	Very	dense	I ov	er 50	Very stiff Hard		6 - 30 over 30	Rock core sample (Core Loss) 50 - 75 75 - 90		hinly lamin	mites	<(Ren	marks						

Figure 4.1.26 Boring log BH-BD-04 (2)

BO	RE H	OLE N	lo. BH	I-BD-05	1			BC	RING	LOC	3							Job N	_	KYB-20 eet No:	-	5 OF
			_					Bago River Bridge Construction Project	BORING EQ			-	0HO "D1"		2		DATE	: 22.	11.2016	~ 26.11	2016	
	CATIC	LEVEL	1. 1.		Bago Rive	r Bridge ('I	hanlyin Bri	dge), Thaketa Township, Yangou Region.	BORING ME				stary Direc	t Circula	tion	CLIENT		1.00	1.1			
					N 1858656	.661 DI	PTH :	53.00m	GROUND W.			1.00	nder River	Bed		Ν	IPPO.	N KO	EI C	0., 1	TI).
Γ	-					25		1			8	T		STANDA	RD PENE METHO	IRATION D (ASTM	TEST)	PMT	SAM	PLING		
	(m) N	(m)	S (m)			RELATIVE DENSITY (or) CONSISTENCY	ű.	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m)	î	CUR	VE OF BL	ow •	(.0)	(m)			
	ELEVATION (m)	DEPTH GL -	THICKNESS (m)	DIAGRAM	COLOUR	ATIVE	NAME	JOIL DESCRIPTION		E & DE	ING (D	TER DE	DEPTH GL -	N-Value (Blows / 30cm		N-Value (Blows / 30	C home)	SAMPLE (Type & No.)	DEPTH GL -	(%)	(%)	RQD (%)
	ELE	DEF	THIC	DIA	COL	REI. (or)	SOIL			DAT	CAS	WA.	DEP	(Blo		20 30		s E	DEPJ	TCR (%)	SCR (%)	-
				* * *	brownish	Loose	Silty	Loose to medium dense, brownish					1.00	6/30				P-1	1.00			
				* * *	gray	to medium	SAND	fine to medium grained, Silty SAN (River deposit)	D				2.00	14/30	X			P-2	1.45			
	9.40	2.50	2.50	* * *	-	dense	-		-				3.00		X			1.5	2.45			
				* * *	brownish	Loose	Silty	Loose to medium dense, brownish	h grav moist					630	1			P-3	3.45			
					gray	to medium	SAND	fine to medium grained, Silty SAN					4.00	6/30	1			P-4	4.00			
						dense							5.00	5/30	1			P-5	5.00			
													6.00	8/30	ł			P-6	6.00			
				* * *									7.00	12/30	1			P-7	7.00			
1	14.90	8.00	5.50	* * *							8.00		8.00	4/30	1			P-8	8.00			
	11				-						Ø112		9.00		1				8.45 9.00			
					gray	Loose to medium	Clayey SAND	Loose to medium dense, gray, a medium grained, low plastic Claye					10.00		1			0 T-1	(#) cm 9.42 10.00			
						dense		GL: (11.00 ~ 11.45)m, medium fine to medium grained, Silty S.						1130	Ň			P-9	10.45			
						11		observed as intercalated layer at th	at depth				11.00	16/30				P-10	11.00			
	e l			· · · · · · · · · · · · · · · · · · ·	5								12.00	10/30	*			P-11	12.00			
-	19.90	13.00	5.00			-				22.11.10	5		13.00	4/30				P-12	13.50			
					gray	Soft	CLAY	Soft, gray, moist, low to media CLAY, with trace of fine grained s	um plasticity, and				14.00					U T-2	(#) cm 14.15			
	21.90	15.00	2.00										15.00	19/30				P-13	15.00			
					gray	Medium	Clayey	Medium dense, gray, moist, fine	grained, low				16.00	17/30				P-14	15.45 16.00			
						dense	SAND	plastic Clayey SAND					17.00		17				16.45 17.00			
														13/30	Í			P-15	17.45			
	24.90	18.00	3.00				1.000		-1.1.O				18.00	11/30	1			P-16	18.00 18.45			
					gray	Firm to	Sandy CLAY	Firm to stiff, gray, moist, fine gr medium plasticity, Sandy CLAY	ained, low to				19.00	6/30	1			P-17	19.00 19.45			
						stiff							20.00	10/30	¥			P-18	20.00			
													21.00	9/30				P-19	21.00			
	28.90	22.00	4.00	2000									22.00	20/30				P-20	22.00			
		-			gray	Medium	Clayey	Medium dense, gray, moist, fine	grained, low				23.00	19/30				P-21	22.45 23.00			
					1	dense	SAND	plastic Clayey SAND					24.00	1.1				P-22	23.45 24.00			
								GL: (25.00 - 25.45)m, medium fine to medium grained, Silty S.	AND layer is				25.00	22/30		N		1000	24.45 25.00			
								observed as intercalated layer at th	at depth					28/30				P-23	25.45			
i.	32.90	26.00	4.00			1.1	-						26.00	40/30			7	P-24	26.00 26.45			
		26.00 ES			gray	Medium dense	Clayey SAND	Medium dense to very dense, gra to medium grained, low plastic Cl					27.00	37/30			4	P-25	27.00			
				· · · · ·		to very	SHOLD .	to meaning graneu, low plastic Cl	ayey artinu				28.00	20/30		1		P-26	28.00 28.45			
						dense				23.11.10			29.00	23/30				P-27	29.00			
				· · · · · · · · · · · · · · · · · · ·									30.00	18/30				P-28	30.00			
				1				Continue to next sheet	-				31.00			1			30.45			
E		ES lative der	sity descr		Consis	tency descrip			bility Test	Tem		Spacir	ng (mm)		Tenn	iscontinuiti	es Spacing (r			UKKE		
ŀ	27. L	ve density y loose	1.00	N-Value	Consistence Very soft	2	N-Value	PMT Pressum	neur Test	Very thic Thick Medium		600	> 2000 - 2000 - 600	1	y widely Videly spa fedium sp	iced	> 20 600 - 20 200 - 6	00	FGEX	Yangon	Branch	h)
F	L	oose um dense	1.000	4 + 10 0 - 30	Soft	11	2 - 4	Rock core sample Single core tabe) Rock core sample Single core tabe)		Thin Very thi	n'	60	- 200 - 60		losely spi y closely	iced	60 - 20 20 - 6	0	Revision N	0.	Rev:	00
F	D	lense y dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tube) 50 - 75 Rock core sample	Poor T Fair T	hickly lam hinly lami	nated	6	- 20 - 6		mely close	ly spaced	< 20		Revision D	ate	12.12	1.201
				T	Hard	1	iver 30	(Care Loss) 75 - 90	Good Excellent										_			

Figure 4.1.27 Boring log BH-BD-05 (1)

-			-BD-05				BORI			_					444	Job 1	Sh	KYB-20 eet No.	2	OF
ROJEC							and the second second second second second	UNG EQUIPM				IO "D1" ary Direct (Circulatio		DATE	: 22	.11.2016	~ 26.11	2016	_
	D LEVEL			Dago Idite	r Bridge (1	namynt bri		ENTATION	U		Vert		circulation	CLIE						
		-		N 1858656.	.661 DI	PTH :_	1. P.	UND WATER	RLEV		1	- 1. C	led		NIPPO	N KO	DEI C	0., 1	LTI).
1			1					T		8		\$1	ANDARD	PENETRATIC THOD (AST	N TEST		SAM	PLING	-	
Ē	(III)	(i)			RELATIVE DENSITY (or) CONSISTENCY				E E	CASING (DEPTH (m) DIAMETER (mm))	(m) H1		_	CURVE OF			â			
NOIL		THICKNESS (m)	WW	×	IVE DI	NAME	SOIL DESCRIPTION		& DEP	G (DEI	CDEP1	CIL - (n	30cm	N-V	100.00	SAMPLE (Type & No.)	01 - (a		2	(9
ELEVATION (m)	DEPTH GL	THICK	DIAGRAM	COLOUR	RELAT (or) O	SOIL			DATE & DEPTH (m)	DIA	WATER DEPTH (m)	DEPTH (il (m)	(Blows/30cr	(Blows)	30cm)	SA3 (Type	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)
-42.9										111										
				gray	Medium	Clayey	Medium dense to very dense, gray, moi				1	31.00 5	0/24		N	P-29	31.00			
					dense to very	SAND	to medium grained, low plastic Clayey S/	AND				32.00	9/30			P-30	32.00			
					dense							22.00				1.0	32.45			
			a n a									35.00 3	9/30		7	P-31	33.45			
												34.00 3	4/30		<i>i</i>	P-32	34.00			
												35.00 2	6/30			P-33	35.00			
-42.9	0 36.00	10.00		-								26.00				1.1	35.45			
incle	0.000	10100	2.47					1.11			Ш		0/29			P-34	36.44			
				gray	Very dense	Silty SAND	Very dense to dense, gray, moist, f medium grained, Silty SAND	fine to $\frac{24.1}{37}$	11.16			37.00 5	0/27		+	P-35	37.00			
			* 7		to dense	STUTO	The sum and a sum a sum					38.00 5	0/29			P-36	38.00			
												20.00				P-37	38.44			
			* * *										0/29		1	P-37	39.44			
			× × 8									40.00 3	7/30		1	P-38	40.00			
			***									41.00 4	3/30		4	P-39	41.00			
48.9	0 42.00	6.00	* * *		14	12.221	1.2	= 114				42.00	4/30		1	P-40	42.00	61		
						1.111							4/50				42.45			
				greenish gray	Dense to	Clayey SAND	Dense to very dense, greenish gray to yel brown, moist, fine to medium grained					43.00 5	0/29			P-41	43.00 43.44			
				to yellowish	very dense		plastic Clayey SAND				12	44.00 4	0/30		K	P-42	44.00			
			an a	brown								45.00 5	0/30		N	P-43	45.00			
												14.00	-0				45.45			
			1101-0								11		0/30		1	P-44	46.45			
												47.00 3	6/30		$\langle $	P-45	47.00			
54.9	0 48.00	6.00			_							48,00 5	0/29			P-46	48.00			
				yellowish	Very	Clayey	Very dense, yellowish brown, moist,	fine to 25.1	IL16			49.00	0/29			P-47	48.44			
	0 48.00 0 53.40			brown	dense	SAND	medium grained, low plastic Clayey SAN	(D 49	00.00				0/29		11	1.2	49.44			
											1	50.00 5	0/28		1 *	P-48	50,00 50.43			
												51.00 5	0/27		+	P-49	51.00			
												52.00 5	0/29			P-50	52.00			
								26.1	1116			53.00				1.0	52.44			
60.3	0 53.40	5.40			5	_		53	11.16				0/25		1	P-51	53.40			
							This borehole is terminated at 5 according to the termination criteria.	3.00m,				54.00								
												55.00								
												56.00								
												-								
												57.00								
												58.00								
												59.00								
											11									
												60.00								
NO	TES	14.1		1	11 - S		Sample key		Plan	ner stra	ture	61.00		Discontin	aties			2		-
	Relative den		-		tency descrip		Pr.1 Disarbod sample PBT Permanbility Test		erm y thick		pacing >	2 (mm) 2000		Term idely spaced	Spacing (
- ALC:	ative density /ery loose	1.000	N-Value	Consistence Very soft	- /	N-Value immy	T-1 Undisturbed Sample (Piston sampler) VS Vane Shear Test PMT Pressuremeter Test	11	hick		600 -		Wid	ly spaced	600 - 2	000		Yangon	Branch	h)
	Loose dium dense		- 10 - 30	Soft Firm	1.1	2 - 4 5 - 8	The Lindisturbed Sample (Denison sampler) Rock core sample (Single core tabe) Rock core sample (Single core tabe) Rock core sample 0 - 25 Very (m T	'hin ry thin	+	60 - 20 -	200	Clos	ely spaced osely spaced	60 - 2 20 - 0	00	Revision N	_	Rev.	_
	Dense	30	- 50	Suff	1.1	9 - 15	Rock core sample (Double core tabe) 25 - 50 Poo	r Thickly	laminat laminat		6 -	20	Extremel	y closely spaced		10	Revision D	_	12.3.	2,201
	ery dense	01	er 50	Very stiff Hard		6 - 30 over 30	Rock core sample (Core Loss) 50 - 75 Fail 75 - 90 Goo		astribali		<1	<u> </u>	Remarks							

Figure 4.1.28 Boring log BH-BD-05 (2)

							BO			_							She	et No.	1	OF
CTNA		_						BORING EQ	UIPMEN	r	: <u>TO</u>	10 "D1"		-	DATE	<u>: 1</u> 3		-	-	-
ION		-		Bago Rive	r Bridge (I	hanlyin Brid	dge), Thanlyin Township, Yangon Region.				-		Circulation	- CLIE	NT				1	_
		-		1110	(18		20.00				-			-	NIPPO	N KO	EIC	0.,	LTI	D.
DINAT	TE :	: <u>E 204</u>	4845.093 ;	N 1858556	1.617 DE	етн :	59.00m	GROUND W	ATER LE	VEL	: <u>Un</u>			-		111				
				1	SILY				(II)	H (m) &	(III)		TEST ME	THOD (AST	M)	PMI	SAM	PLING	-	_
		SS (m	5	1.57	E DEN	ME	SOIL DESCRIPTION		DEPTH	DEPT STER (EPTH	(m)	ocm)	CURVE OF	BLOW •	LE No.)	(E)			
01110		ICKN	NGRAU	LOUR	LATIV COD	IL NA			TE&	SING	VTER	PTH G	N-Vali ows/3	N-V (Blows	alue / 30cm)	SAMP Type &	PTH G	R (%)	R (%)	RQD (%)
- SU	30	H	i i i	8	RE (o	SOI			VQ	5	W.	DE	0 (9	10 20 3	0 40 50		DEI	DI	SC	RQ
			* = *				And the second second second second				11	1.00	2/20			D I	1.00	2.1		
				gray	loose	SAND	to medium grained, Silty SAND	y, moist, fine					5/50 T				1.45			
			* * *	-	loose		(River deposit)					2.00	0/45			P-2	2.00			
					1 m		GL: (4.00 ~ 4.45)m and (9.00 ~ 1	9.45)m grav.				3.00	4/30			P-3	3.00	1		
			2 × 3				fine to medium grained, low pl	astic Clayey				4.00				101				
							those depths	nated tayer at	1			4.00	3/30			P-4	4.45	34		
			:::									5.00	4/30			P-5	5.00			
			4.8.8									6.00	3/30			P.6	6.00			
													I				6.45	5.1		
											16	7.00	6/30			P-7	7.00	81		
			• • •							8.00		8.00	5/30			P-8	8.00			
			* * *							19112		9.00	1/20			po	9.00			
												· · ·	4/30			1-9	9.45			
\$1 10.	.00 1	0.00		-							15	10.00	13/30			P-10	10.00			
				gray	Medium	Silty	Medium dense, gray, moist, fine	to medium				11.00	21/30			P-11	11.00			
					dense	SAND	grained, Silty SAND		17 12 16			12 00		$ \Lambda $			1000			
							Thin clay layer is intercalated in thi	is layer	12.00	1			13/30	1		P-12	12.45	31		
												13.00	15/30	 		P-13				
												14.00	13/30			P-14	14.00			
																100				
			* * *										13/30	1		P-15	15.45	54		
11 16.	.00	6.00				-			1			16.00	8/30			P-16	16.00			
11				gray	Firm	CLAY						17.00		N			17.00	61		
11 19	00	200										18 00		λ		1.00				
1110.		2.00		1	12.4		A REAL PROPERTY AND A REAL PROPERTY AND A					18.00	18/30			P-17	18.00			
				gray	dense	SAND						19.00	18/30			P-18	19.00			
					loose							20.00	7/30	Y I		P-19	20.00			
		2.00											"			L.C.	20,45			
+1 21	.00	3.00	d alls all the				-	S. Marka				21.00	5/30			P-20	21.00	21		
				gray	Firm	CLAY						22.00	5/30			P-21	22.00			
			<u> </u>									23.00				D 22	23.00			
													0/30			1.	23.45	5		
11 24.	.00 .	3.00				1.0		-	1			24.00	33/30			P-23	24.00			
			202	gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to				25.00	20/30	$ \downarrow $		P-24	25.00	×.,		
					to	SAND	medium grained, low plastic Claye	y SAND				26.00	20120			Dat				
					dense				100				20/30	II		P-23	26.45			
									18.12.16	4		27.00	20/30			P-26	27.00			
									1			28.00	21/30			P-27	28.00			
												20 00	in the			p. 20	28,45			
			222										20/30	1		P-28	29.45			
												30.00	28/30	•		P-29	30.00			
Tre							Continue to next sheet					31.00								1
_	e densi	ty descrip	ption	Consis	tency descrip	Nion	Disturbel sample	ility Test	Term		Spacing			Ferm						
		1 1	(See		9	(meli)	T-1 Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure		Thick		600 -	2000	Wide	ly spaced	600 - 20	100	1	Yangon	Branch	h)
				Very sof Soft			(Denison sampler)		Medium	-						0	1.0.0.4.9.8	NW. HYWING	appeciants.	ant o
edium d	iense	10	- 30	Firm		5 - 8	(Single core sample 0 - 25 Rock core sample 25 - 50	Very poor	Very thi		20 -	60	Very el	osely spaced	20 - 6	0		_		-
				Very stif	r)		(Double core tube) 25 - 50 (Double core tube) 50 - 75 (Core Loss) 75 - 90.						Remarks	and shares	-1					-
	TTES Retains strive do Very too	TON ND LEVEL DINATE 10,00 1 11 10,00 1 11 18,00 11 24,00 1 11 24,00 1	IDN ENSIGN ND LEVEL : -4.41 NDATE : E 204 II III III IIII III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	IDN 1 Beside Existing ND LEVEL -4.41m IDNATE : E 204845.093 ; ID ID ID ID ID ID<	IDN Elected Existing Bage River VD LEVEL -4.41m INATE : E204845.003 : N I ISSESSO INATE : E204845.003 : N I ISSESSO III III III IIII III IIII III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	IDN E Beside Existing Hage River Bridge (1) ND LEVEL : -44/10 IDNATE : E 204845003 : N ISSS55601 D ID ID ID ID ID ID ID ID	IDN : Beside Existing Bage River Bridge (Thantyen Bridge Thantyen	Did Life Life : : : : : : : : : : : : : : : : : : :	100 1 ended fausting layar Bray Bridge ("bandy in forder), Thanking Tormening, Yangan Ray, More Mark 1990, P. 1995, S.	1000 1	NUM Implementation by provide the starting of human by provide human by provide the starting of human by provide the starting	Difference Earlier between bedges Thanks in indeges, Thanks in iteracistic, Standbard, Stand	NUM Jakké horine fuse liver belor (Lussis funde, jampin count), vige para NUM TI Jeste horine fuse liver belor NUM TI NUM TI <thn< td=""><td>No. Linds: Linds:</td><td></td><td></td><td>Norm And Attachmen Base Base Base Charlen Based, Database Based, Databased, Databased, Database Based, Databased, Database Based, Data</td><td>Number base base base base base base base base</td><td>Поли 1996 Воли 1996 ВОЛИ 1997 <</td><td>Num Num Num</td></thn<>	No. Linds:			Norm And Attachmen Base Base Base Charlen Based, Database Based, Databased, Databased, Database Based, Databased, Database Based, Data	Number base base base base base base base base	Поли 1996 Воли 1996 ВОЛИ 1997 <	Num Num

Figure 4.1.29 Boring log BH-BD-06 (1)

BOR	EHO	DLE No	. BH	I-BD-06	1			BO	RING	LOG	1						Job N	_	KYB-20 eet No.	-	S OF .
			_					e Bago River Bridge Construction Project	BORING EQU		0	1.000	IO "D1"		-	DATE	<u>e 17</u>	.12.2016		-	
	ATIO	N			Bago Rive	r Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			1000	-	Circulation	CLIEN	T	-			2	7
	RDIN				N 1858556	.617 DI	EPTH :	59.00m	ORIENTATIC GROUND W/		VEL	· Ver	ter River	Bed	7	NIPPO.	N KO	EIC	0., 1	LTI).
T		-		-						-				-	PENETRATIO	N TEST	_	SAM	PLING	-	
	î					NSITY				H (m)	CASING (DEPTH (m) & DIAMETER (mm))	(m) H					1.0		I	1	-
(m)	ELEVATION (m)	(m) - 1E	(ESS (m)	8	~	RELATIVE DENSITY (or) CONSISTENCY	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	ICOEP IETER	WATER DEPTH (m)	DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF E		SAMPLE (Type & No.)	3L - (m)			~
In the American	LEVAT	DEPTH GL	THICKNESS	DIAGRAM	COLOUR	ELATI (or) CO	SOIL N			ATE&	ASING	ATER	EPTH	N-Va	N-Va (Blows /	30cm)	SAM (Type	DEPTH GL-	TCR (%)	SCR (%)	RQD (%)
1	Ψ.	2	-		0	2	ŝ		_	0	Q.		9	= 0	10 20 30	0 40 50		ē	P	S	2
الشنسانشنسانشنساشتنسا					gray	Medium	Clayey	Medium dense to dense, gray, m					31.00	24/30			P-30	31.00			
						dense to	SAND	medium grained, low plastic Claye	y SAND				32.00	40/30			P-31	31.45			
						dense								40/30		AL.	1-51	32.45			
													33.00	31/30			P-32	33.00			
												C:	34.00	26/30	1		P-33	34.00			
													35.00	21/30			P-34	35.00			
													2000				1.1.1	35,45 36.00			
1			-		-							118		21/30	N		P-35	36.45			1
-41	1.41	37.00	13.00		-			-		19.12.16 37.00			37.00	36/30			P-36	37.00			-
					gray	Medium	Silty	Medium dense to dense, gray, n	point fine to				38.00	26/30			P-37	38.00			
n line				***	gray	dense	SAND	medium grained, Silty SAND	ioisi, inic io				39.00	10.00			P-38	38.45			
the second se				* * *		dense		GL: (39.00 ~ 39.45)m, (43.00 ~	42 45\m and					18/30			1-30	39.45			
mulu								(46.00 ~ 46.45)m, medium dense	e and dense,				40.00	19/30			P-39	40.00			
				* * *				gray, fine to medium grained, Clayey SAND layer is observed a				1	41.00	32/30			P-40	41.00	21		
				1.1				layer at those depths					42.00	25/30			P-41	42.00			
								Thin clay layer is intercalated in thi	is layer				17 00		$ \rangle$	2112	1	42.45	ê		
				111	1								43.00	31/30			P-42	43.45			
				2.1									44.00	26/30	•		P-43	44.00	1		
													45.00	28/30	111		P-44	45.00	6		
													46.00	28/30			P-45	45.45			
in the second				***										28/30			10.0	46.45			
										20.12.16	1		47.00	45/30		2	P-46	47.00 47.45			
-52	2.41	48.00 1	1.00	8 8 8					_				48.00	28/30	1		P-47	48.00			
di anti					gray	Very	Sandy	Very stiff to hard, gray, moist, fine	grained, low				49.00	31/30			P-48	49.00			
						stiff to	CLAY	plasticity, Sandy CLAY					50.00					49.45 50.00			
<u>mhantanhantanhantan</u>						hard								31/30	1		P-49	50,45			
ului I													51.00	30/30			P-50	51.00			
													52.00	32/30			P-51	52.00 52.45			
													53.00	31/30			P-52	53.00			
-58	8 41	54 00	6.00										54.00					53.45 54.00			
-		54.00	0.00		Ĩ.		111110							50/25			P-53	54.40	5		
in line					greenish	Very dense	Clayey SAND	Very dense, greenish gray to yel	llowish gray,				55.00	50/21		1	P-54	55.00			
					gray to yellowish	10.01	SAND	moist, fine to medium grained, Clayey SAND	low plastic	21.12.16		16	56.00	50/20			P-55	56.00			
					gray					50.00			57.00	co.200			D 25	56.35	21		
		54.00												50/20		11	P-56	57.35			
												19	58.00	50/25		1	P-57	58.00 58.40			
-63	3 83	59 47	5.42		_		+			22.12.16			59.00	50/27		1	P-58	59.00 59.42			
			~ 14		-			This borehole is terminated	at 59.00m.				60.00					37.74			
					-			according to the termination criteria					61.00								
N	NOTE	2 <u>S</u> ative densi	in der	intion T		Acticy descrit	winw 1	Sample key	1	Ph Term	anner stri	acture Spacing			Discontinu	ities Spacing (r			1		
-		ative densi e density	-	N-Value	Consisten	Lain	N-Value	P-1 Distarbed sample ISPT sample: PBT Permeable T-t Undisturbed Sample VS Vane Shu (Piston sampler) neutrone	car Test	Very thick Thick			2000	Very w	idely spaced	> 20 600 - 20	00	5	UKKE Consultin Yangon	ng Engi	neers
F	Very	loose		0 - 4	Very sof		under 2	D-1 Undisturbed Sample (Denison sampler)		Medium	+	200 -	600	Medi	um spaced	200 - 6	00	rGEX (al (951-80)	10896, 959	- 420069. Bunt com
E	Mediu	m dense	10	4 - 10 0 - 30	Safi Firm	-	2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25	Very poor	Thin Very thin		60 - 20 -	60	Very cl	oly spaced osely spaced	60 - 20 20 - 6	0	Revision N	_	Rev:	00
E		dense		0 - 50 ver 50	Stiff Very stif	r i	9 - 15 6 - 30	Rock core sample 25 - 50 (Double core tube) Rock core sample 50 - 75	Fair	iickly lamin hinly lamin		6 - <		Extremel Remarks	y closely space	< 20		Revision D		20.1	
				- 1	Hard		over 30	(Care Loss) 75 - 90	Good Excellent												

Figure 4.1.30 Boring log BH-BD-06 (2)

30	RE HO	OLE N	o. BH	I-BD-07	1			BO	RING	LOC	1							Job N		KYB-20 eet No.	-	OF
PRO	DJECT	NAME	: Geot	echnical S	urvey on the	detailed d	esign for the	e Bago River Bridge Construction Project	BORING EQ	JIPMEN	r i	: <u>TO</u>	HO "DI"	-	_		DATE	<u>: 1</u> 7	.12.2016			-
	CATIO		1000		g Bago Rive	r Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME				tary Direc	Circulat	ion	CLIEN	<u>r</u>					-
		LEVEL	100					6.60	ORIENTATIO			: Ver			-	A	IPPO	N KO	EIC	0.,	LTI	D.
:0	ORDIN	ATE	: <u>E 20</u>	4958.214	N 1858360	. <u>117</u> DI	ертн :_	51.00m	GROUND W.	ATER LE	VEL	: <u>Un</u>	nder River		_		1.1.1	1.10		÷9.		20
						έð				Ŧ	(m) &	î		TEST	METHO	TRATION DD (ASTM)	PMT	SAM	PLING	_	_
	(m) N	(H)-	S (m)			RELATIVE DENSITY (or) CONSISTENCY	iii.	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(W)	Î	CU	RVE OF BL	ow •	E ('0')	(m)-			
	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	DUR	VIIVE	NAME			E& DI	NG (T	ER DI	DEPTH GL - (m)	N-Value (Blows / 30cm)	-	N-Valu	ic.	SAMPLE (Type & No.)	DEPTH GL	(9%)	(%)	(30)
	BLEV	DEPI	THIC	DIAC	COLOUR	(or)	SOIL			iva	CASI	IVM	DEPT	(Blov	10	(Blows / 34 20 30	40 50	S.E	DEPT	TCR (%)	SCR (%)	RQD (%)
ſ				* * *	1					1000		1							0.00			
				8 K X	brownish	Very	Silty	Very loose to loose, brownish gra	y, moist, fine				1.00	5/30	7			P-1	1.00	21		
				* * *	gray	loose to	SAND	to medium grained, Silty SAND (River deposit)					2.00	3/30				P-2	2.00			
				8 8 8 8 8 8		loose							3.00	0.000	\backslash				2.45			
				* * *										8/30	1			P-3	3.45			
													4.00	9/30	+			P-4	4.00			
			17	* * *									5.00	10/30	1			P-5	5.00			
	12.35	6.00	6.00										6.00		1				5.45			
			-		brownish	Loose	SAND	Loose, brownish gray, moist, find	e to medium	1				8/30	1			P-6	6.45			
					gray		1000	grained, SAND					7.00	6/30	+			P-7	7.00			
	14.35	8.00	2.00								8.00		8.00	3/30				P-8	8.00			
	6			8 N R	1		in a second	Succession Success			Ø112		9.00		X				8.45 9.00	21		
				a (6 . #	gray	Very loose	Silty SAND	Very loose to medium dense, gray to medium grained, Silty SAND	y, moist, fine					13/30	T	3		P-9	9.45			
				* * *		to medium		1		17.12.16			10.00	11/30	×			P-10	10.00			
				* * *		dense		GL:(10.00~10.45)m, thin clay intercalated at that depth	layer is			1	11.00	14/30	1			P-11	11.00			
													12.00						11.45			
				* * *									12.00	17/30	1/			P-12	12.00			
	19.35	13.00	5.00		-	-	-		-				13.00	10/30	¥			P-13	13.00			
					1.55	Turne	01	Loose to medium dense, gray, n					14.00	9/30	1			P-14	14.00			
				· · · · ·	gray	Loose to medium	Clayey SAND	medium grained, low plastic Claye					15.00					100	14.45			
				1		dense								9/30	1			P-15	15.45			
				n n m									16.00	13/30	+			P-16	16.00 16.45			
													17.00	14/30	1			P-17	17.00			
													18.00						17.45			
1				10 - 10 - 10 10 - 10										13/30	1			P-18	18.45			
-	25.35	19,00	6.00	(-						19.00	7/30	1			P-19	19.00			
					gray	Firm	CLAY	Firm, gray, moist, low to media CLAY with silt and trace of fine gr					20.00		1			0 T-1	20.00			
2	27.35	21.00	2.00				12.5						21.00					P-20	(m) cm 20,70 21.00			
		1.11			gray	Loose	Clayey SAND	Loose, gray, moist, fine to medium	grained, low					4/30				P-20	21.45	3		
	28.35	22.00	1.00	· · · · · ·	-	lener l		plastic Clayey SAND					22.00	5/30				P-21	22.00			
					gray	Firm to	CLAY	Firm to very stiff, gray, moist, low plasticity, CLAY with silt and					23.00	18/30				P-22	23.00			
1	30.35	24.00	2.00			stiff		grained sand		11			24.00			I I			23.45			
							16.1	Long to the second	1. (market)					20/30		N		P-23	24.45			
					gray	Medium dense	Clayey SAND	Medium dense, gray, moist, fine grained, low plastic Clayey SAND	to medium				25.00	25/30				P-24	25.00 25.45			
								grament to it philone charged of it to					26.00	13/30	1	11		P-25	26.00			
										18.12.16			27.00		11			P-26	26.45 27.00			
										27.00	1			14/30	1			F-20	27,45			
													28.00	18/30		1		P-27	28.00 28.45			
													29.00	23/30				P-28	29.00 29.45			
	36.35	30.00	6.00			1.	_						30.00	10/201		N		P-29	30.00			
				8 8 8				Continue to next sheet						30/30		I		1-43	30.45			
1	NOTI		_	5. 8. 2	1		_	Sample key			anner stru		31.00	_		Discontinuit		1			1	-
ŀ	-	lative dens		iption N-Value	Consisten	tency descrip	N-Value	P. (Disturbed sample (SFT ample) PBT Permenb T. (Undisturbed Sample T. (Undisturbed Sample VS Vane Sh		Term Very thick	1	2.0	ig (mm) > 2000		Term widely	spaced	Spacing (> 20	00		UKKE	ig Eng	ineer
ł	Very	y loose		(max) 0 - 4	Very sof	9 1 1	under 2	(Piston sampler) PMT Pressure (Deriven sampler)	nieter Test	Thick Medium	-	200	- 2000 - 600	M	idely sp edium sp	paced	600 - 20 200 - 0	00	FGEX	Yangon	roded sea	h) 9 - 4200 ulteri co
ŀ		oose am dense		4 - 30 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25		Thin Very this			- 200 - 60		osely sp closely		60 - 20 20 - 6	0	Revision N	-	Rev:	-
F		ense dense		0 - 50 ver 50	Stiff Very stiff		9 - 15	Rock core sample (Double core tube) 50 - 75		hickly lami hinly lamir			- 20	Extrem	_	ely spaced	<20		Revision D	ate	26.1	2.20
7	-		-		Hard		iver 30	Core Loss) 75 - 90				-		- Contraction								

Figure 4.1.31 Boring log BH-BD-07 (1)

SOR	EHC	DLE No	BH	I-BD-07	1			BO	RING	LOC							Job 1		KYB-201 et No.	2 6	_
								e Bago River Bridge Construction Project	BORING EQ				10 "D1"	Clauded	-	DATE	<u>: 1</u>	7.12.2016	~ 20.12	2016	
	UND	LEVEL	_		Bago River	r Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			: <u>Rota</u> : Vert		Circulation	CLIEN						
	RDIN				N 1858360.	117 DE	ртн :_	51.00m	GROUND W.				ter River I	Bed		VIPPO	N KO	EI C	0., L	TD	
Γ	Τ	T	1		-	20					a) &		S	TANDARD P	ENETRATION THOD (ASTN	(TEST		SAM	PLING		ī
3	(III)	(II)	(m)			RELATIVE DENSITY (or) CONSISTENCY	10			DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(m)	î	CURVE OF B	LOW •		(III)			ī
and a second	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	DUR	UTIVE I CONSE	NAME	SOIL DESCRIPTION		E& DE	NG (DI	ER DEI	DEPTH GL -	(Blows / 30cm)	N-Val	ue	SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	(m)	(%)
	BLEV	DEPT	THIC	DIAC	COLOUR	RELJ (or)	SOIL			DAT	CASI	IVM	DEPT	(Blov N	(Blows/3 0 20 30		s.E	DEPT	TCR (%)	SUK	RQD (%)
				* * *			$ _{L^{\infty}(\Omega)} = 0$					Ĩ	31.00					31.00			
				* * *	gray	Medium dense	Silty SAND	Medium dense to dense, gray, m medium grained, Silty SAND	oist, fine to					23/30	I I		P-30	31,45			
				8 × × × × ×		to dense							32.00	24/30	†		P-31	32.00 32.45			
				* * *				GL: (36.00 ~ 36.45)m and (38.00 dense, gray, fine to medium grained	d, low plastic				33.00	25/30	L L		P-32	33.00			
								Clayey SAND layer is observed as layer at those depths	s intercalated				34.00	0/30	V		P-33	34.00			
									1.0				35.00	88/30			P-34	34.45			
								Thin clay layer is intercalated in thi	s layer				26.00			<u> </u>	1.15	35,45			
				8.7.8								18		31/30	I I K		P-35	36.45			
				***									37.00	\$4/30			P-36	37.00 37.45			
				2.2.2									38.00	31/30	ł		P-37	38.00 38.45			
				* * *									39.00	29/30			P-38	39,00			
				8 8 8 8 8 8									10.00	5/30			P-39	39.45 40.00			
				× × × × = ×										5/30		7		40.45			
				x x s						19.12.16 41.00		19	41.00	30/30	1		P-40	41.00 41.45			
				* * ×								10	42.00	29/30	1		P-41	42.00			
													43.00	1/30		8	P-42	43.00			
5(0.35	44.00	4.00	* * *									44.00	40/30			P-43	44.00			
					gray	Hard	Sandy	Hard, gray, moist, fine grained, lo	ow plasticity,			h,	10.00			N	P-44	44.45			
			2.00				CLAY	Sandy CLAY						50/30		11		45.45			
24	2.35	46.00	2.00				1						46.00	50/29		11	P-45	46.00			
					greenish gray	Very dense	Clayey SAND	Very dense, greenish gray to yel moist, fine to medium grained,					47.00	50/29		1	P-46	47.00			
					to yellowish			Clayey SAND					48.00	50/26		1	P-47	48.00			
					gray								49.00	50/28			P-48	49.00			
													50.00			11	P-49	49.43 50.00			
														50/25		11		50.40			
5	7.75	51.40	5,40	1000		_				20.12.16			1.4	50/25		11	P-50	<u>51.00</u> 51.40			
						11.1	11	This borehole is terminated according to the termination criteria	at 51.00m.			10	52.00				1.00				
													53.00								
													54.00								
													55.00								
													56.00								
												10	57.00								
													58.00								
													59.00								
													60.00								
							1.0														
N	NOTE	-	الم منازين	intia- T		Longy dama"	eine 1	Sample key Pri Distarbed sample (SPT sample) PBT Permeable		Pl Term	inner stre		61.00		Discontinui erm	ties Spacing (1.000	-	-
1		tive densi e density	-	N-Value	Consistenc	tency descrip	N-Vaine	T-I Undisturbed Sample VS Vate She	ar Test	Very thick			2000	Very wit	fely spaced y spaced	>2 600 - 2	000		UKKEN Consulting Yangon B	Engine ranch)	88
F		loose		0 - 4	Very soft Sali		nder 2 2 - 4	D-1 Undisturbed Sample (Denison sampler)	Term	Medium		200 -	600	Mediu	m spaced y spaced	200 - 0	600	FGEX	1 (851-8010 The straining	505 959 - 4 	450
-		n dense	10	0 - 30. 0 - 50	Firm		5 - 8 9 - 15	Rock core sample (Single core tube) 0 - 25 Rock core sample 25 - 50	Very poor	Very thin hickly lamit		20 -	60	Very clo	sely spaced closely spaced	20 - 0	0	Revision N Revision D		Rev: 0	_
T	Very			ver 50	Very stiff Hard	й <u>ј</u>	6 - 30 ver 30	(Double core tube) Rock core sample (Core Loss) 20 20 20 20 20 20 20 20 20 20 20 20 20		hinly lamir		<		Remarks						-	=

Figure 4.1.32 Boring log BH-BD-07 (2)

BO	RE H	OLE NO	BH	-BD-08	11			BO	RING	L00	3						Job 1	_	YB-2010 Pet Na.	1 OF	Fi
PR	OJECT	NAME	Geote	echnical S	urvey on the	detailed d	esign for th	e Bago River Bridge Construction Project	BORING EQ	UIPMEN	r	; <u>TO</u>	10 "D)".	_	D	ATE	: 24		~ 29.12.		_
LO	CATIC	N	Besic	le Existing	Bago River	r Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		Rot	ary Direct (irculation	CLIENT		- 192				-
GR	OUND	LEVEL	-	1.00					ORIENTATIO			: Ver			1.	IPPO	VKO	FIC	0 1	TD	
co	ORDIN	ATE	: <u>E 20</u>	5013.754 ;	N 1858268.	.627 DE	PTH :_	61.00m	GROUND W	ATER LE	VEL	: <u>Un</u>					v nu		U., L	10.	2
	1		12			Υ			_		m)&		ST	ANDARD PER TEST METH	ETRATION TI IOD (ASTM)	EST	РМТ	SAM	PLING		T
	(m)	ĵ.	(m)			RELATIVE DENSITY (or) CONSISTENCY		SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(II)	7 C	URVE OF BLO	w •	(0	(8)			٦
(iii)	VIION	101-	THICKNESS (m)	WVX	No.	IIVE I	NAME	SOIL DESCRIPTION		& DE	G(D)	R DEI	101	3061	N-Value		SAMPLE (Type & No.)	GL-	(9)		1
SCALE (m)	ELEVATION (m)	DEPTH GL - (m)	THICH	DIAGRAM	COLOUR	RELA (or) (SOIL			DATE	CASIN	WATE	DEPTH GL - (m)	(Blows / 30cm) 0 10	(Blows / 30cr		SA (Typ	DEPTH GL	TCR (%)	RQD (%)	and a state
+				* *			-								TT						E
				**	brownish	Very	Silty	Very loose to loose, brownish gray	y, moist, fine			. 6	1.00 2	/30 •			P-1	1.00			
					gray	loose to	SAND	to medium grained, Silty SAND (River deposit)					2.00	/30			P-2	2,00			
1111					1.1	loose		(inter adjusted)									1-2	2.45			
													3.00 2	/30			P-3	3.00			
1													4.00	/30			P-4	4.00			lunit.
				8 8									5.00					4.45			and the second
lund.	1													5/30			P-5	5.45			
				8.2									6.00 4	/30			P-6	6.00	5.1		-
the state													7.00	/30			P-7	7.00			the second se
-	-14.56	8.00	8.00										0.00				6	7.45	5		and the second
	14,20	0.00	a.00		-		1.71	1	33.4	1		16	0.00	9/30	1		P-8	8.00			
				* *	gray	Medium dense	Silty	Medium dense to dense, gray, m medium grained, Silty SAND	noist, fine to				9.00 1	6/30	•		p.9	9.00 9.45			and a
0						to dense	01010	The second se	- Anna		10.00		10.00	8/30	1		P-10	9.45			
11111						Gense		Thin clay layer is intercalated in this	stayer		Ø112			8/30	Ι		F-10	10.45			and a state
													11.00 1	5/30	4		P-11	11.00	1		
2				1.2									12.00 3	4/30	1		P-12	12.00			
4	10 56	13.00	5 00										12.00		1			12.45			
	-19.50	13.00	5.00	6. 107 of 16.			1					16	13.00 6	/30			P-13	13.45			al and
4					gray	Loose	Clayey SAND	Loose to medium dense, gray, m medium grained, low plastic Clayey	ioist, fine to				14.00 9	/30			P-14	14.00			a set la
5						medium dense	3,5,60	medium gramed, low plastic Chayey	y SAULD				15.00	2/30			P-15	15.00			
				0 - 0		Genae												15.45			
al and				1									16.00 1	3/30			P-16	16.00 16.45			(International
44444	11												17.00 1	3/30			P-17	17.00			and seaton duration beating beating beating
з.	-24.56	18.00	5.00	100 00	-								18.00	4/30			P-18	18.00	2.1		and and
1														4/30			1-10	18.45			in the
4					gray	Stiff to	CLAY	Stiff to firm, gray, moist, low plasticity, CLAY with silt and t	race of fine	24.12.10		1.5	19.00	/30			P-19	19.00	61		
						firm		grained sand					20.00				Г Т-1	20.00			
in the second													21.00					(m) cm 20.80 21.00			and and
in the second	17												(/30			P-20	21.45			dama
10000000000000000000000000000000000000												1.6	22.00	/30			P-21	22.00			- House
3													23.00	/30			P-22	23.00			-
	20.50	~					1.0							³⁰ 1			1.20	23.45			and the second
	-30.56	24.00	6.00				1.2			1		11	24.00 2	4/30	1		P-23	24.00			aline
5					gray	Very	Sandy	Very stiff to firm, gray, moist, fine	grained, low				25.00 2	5/30	4		P-24	25.00	÷.,		trends.
6						stiff to	CLAY	plasticity, Sandy CLAY					26.00					25.45			u dana
united and the second s						firm								//30			P-25	26.45			
7													27.00 9	/30			P-26	27.00		1	
													28.00	/30			P-27	28.00			
min													20.00	X				28.45			11111
	11												29.00	4/30			P-28	29.00 29.45			al and
	-36.56	30.00	6.00		gray	Stiff	CLAY	Stiff, gray, moist, low to mediu	m plasticity				30.00 1	1/30			P-29	30.00			and the second se
I					Bink	Sun	Sarti	CLAY with silt and trace of fine gra				1	31.00					30.45			and the second
<u>م</u> ا	NOT		tu dana"	etion I	Comila	tones dame	tion	Sample key		Term	lanner stru	acture Spacing		Ter	Discontinuities	Spacing (n	um) 1 6		1 1000000	-	-
		lative density	-	ption N-Value	Consistence	tency descrip	N-Value	K-1 Distanced sample K-1 (SPT sample) PBT Permetabi T,1 Undistanced Sample VS Vane Size VS Vane Size		Very thic		>	2000	Very wide	ly spaced	> 20	90		UKKEN Consulting Yangon Br	Enginee	rD. ers
ł	Ver	y loase		nosi - 4	Very soft	i u	nder 2	PMT Pressuren	1 S 105 - 10	Thick Medium		600 - 200 -	600	Widely Medium	spaced	600 - 20 200 - 6	90	TGEX !	Yangon Br 4 951 60108	anch) 8. 999 - 420 Romalieri -	00897
		oose im dense	10	- 10 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) RQD (%) 0 + 25	Very poor	Thun Very thi		60 - 20 -	60	Closely Very close	ly spaced	60 - 20 20 - 60		Revision N		Rev: 00	-
		ense dense		r - 50. rer 50.	Stiff Very stiff		9 - 15 5 - 30	Rock core sample (Double core tube) 25 - 50 Rock core sample 50 - 75		hickly lam Thinly lami		.6 - <		Extremely cl Remarks	osely spaced	< 20		Revision D	ate	06.01.20	117
_ 1								Core Loss) 75 - 90													

Figure 4.1.33 Boring log BH-BD-08 (1)

22.5				_								_	_	_		_	_		Shi	eet No.	2	OF
								e Bago River Bridge Construction Project	BORING EQU			100	10 "D1"		8.	D/	TE	: 24	.12.2016	~ 29.12	2016	_
	ATIC	N LEVEL	1000		Bago Rive	Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING MET ORIENTATIO			: Rota		Circulatio	n CL	IENT						
					N 1858268	627 DE	PTH :	61.00m	GROUND WA			-	der River	Bed		NI	PPO	N KO	EIC	0.,1	TL).
T						**	1				3) &	13	5	TANDARD TEST M	PENETRA'	TION TE ASTM)	51		SAM	PLING	_	
	ELEVATION (m)	DEPTH GL-(m)	THICKNESS (m)	DIAGRAM	NUC	RELATIVE DENSITY (or) CONSISTENCY	NAME	SOIL DESCRIPTION		DATE & DEPTH (m	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	DEPTI(GL+(m)	N-Value (Blows / 30cm)	CURVE	OF BLOV (-Value ws / 30on		SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	(%)	RQD (%)
-	BLEV	DEP3	THIC	DIAG	COLOUR	-	SOIL			ING	CASI	LVM	DEP	(Blox N		30 4		°€.	DEPT	TCR (%)	SCR (%)	-
111111111111111	8.56	32.00	2.00		gray	Stiff	CLAY	Stiff, gray, moist, low to medium CLAY with silt and trace of fine gra				i ĉ	31.00	14/30	Y			P-30 P-31	31.00 31,45 32.00			
untur line	0.50	24.00	2.00		gray	Very stiff to stiff	Sandy CLAY	Very stiff to stiff, gray, moist, fine plasticity, Sandy CLAY	grained, low				33.00	11/30				P-32	32.45 33.00 33.45			
-4	0.36	34.00	2.00	* * *	gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND	to medium	25.12.16 35.00			34.00	16/30 23/30		6		P-33 P-34	34.00 34.45 35.00 35.45			
-4	3.56	37.00	3.00	***				Thin clay layer is intercalated in this	s layer				77 00	23/30				P-35 P-36	36.00 36.45 37.00			
Γ					gray	Very stiff	Sandy CLAY	very stiff, gray, moist, fine gr plasticity, Sandy CLAY	rained, low				38.00	25/30 16/30	$ \langle$			P-30	37.45 38.00 38.45			
													40.00	25/30 26/30				P-38 P-39	39.00 39.45 40.00			
-4	7.56	41.00	4.00	N N N	-				_	26.12.16 41.00			41.00	34/30		>		P-40	40.45 41.00 41.45			
					gray	Medium dense to very	Silty SAND	Medium dense to very dense, gray to medium grained, Silty SAND Thin clay layer is intercalated in this					42.00	30/30 27/30		Å		P-41 P-42	42.00 42.45 43.00			
						dense		This cay age to increase a main	, my sr				44.00	44/30			>	P-43	43.45 44.00 44.45 45.00			
				 									46.00	32/30 50/30		1	>	P-44 P-45	45.45 46.00 46.45			
													18 00	37/30 39/30		1		P-46 P-47	47.00 47.45 48.00			
				* * *						27.12.16 49.00			49.00	50/27				P-48	48.45 49.00 49.42			
-2	0.30	50.00	9.00		greenish gray	Very dense	Claycy SAND	Very dense, greenish gray to yello moist, fine to medium grained,					50.00	50/26 50/28			1	P-49 P-50	50.00 50.41 51.00 51.43			
					to yellowish brown			Clayey SAND					52.00	50/15			İ	P-51 P-52	52.00 52.30 53.00			
	d									. 1.			54.00	50/28			1	P-53	53.43 54.00 54.43			
	1.56	55.00	5.00		yellowish brown	Hard	CLAY	Hard, yellowish brown, moist, low	1	28.12.16 55.00			55.00	45/30 44/30			Í	P-54 P-55	55.00 55.45 56.00			
-6	4 56	58.00	3.00		ULUWB		Ľ.	plasticity, CLAY Thin fine sand layer is intercalated in	n this layer				57.00	44/30				P-56	56.45 57.00 57.45 58.00			
			JAM		yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, me medium grained, low plastic Clayey	oist, fine to SAND				50.00	50/23 50/18			1	P-57 P-58	58.00 58.38 59.00 59.33			
								Continue to next sheet		Ц,			60.00	50/10			1	P-59	60.00 60.25			
É		lative dens		iption N-Value		tency descrip	tion N-Value	Sample key • F-1 Bisarhed sample • F-1 (SPT sample) • PBT Permeabili • F-1 (Indisturbed Sample VS Vane Steel		Pla Term Very thick	inner stru	Spacing	_	Very	Discor Term widely space		Spacing (n > 20			UKKEN		
F	Ver	ve density y loose		0 - 4	Consistence Very soft		nder 2	Del Undisturbed Sample (Denison sampler)	eter Test	Thick Medium		600 - 200 -	2000	Wid	tely spaced lium spaced		600 - 20 200 - 6	00	CODX .	Yangon i	Branch	1) - 42006
E	Media	am dense ense	10	4 - 10 0 - 30 0 - 50	Soft Firm Stiff	1000	2 - 4 5 - 8 9 - 15	Rock core sample (Single core tube) RQD (%) Rock core sample 0 = 25 Rock core sample 25 - 50	Term Very poor Poor Th	Thin Very thin ickly lamin		60 - 20 - .6 -	60	Very o	sely spaced losely space ly closely sp		60 - 20 20 - 60 < 20		Revision N Revision D		Rev; 0	_

Figure 4.1.34 Boring log BH-BD-08 (2)

OR	RE HO	DLE N	o. BH	-BD-08				BO	RING	LOG								.10	h No.	FK1 Shee	B-2016 No.	-025 3 OF
								e Bago River Bridge Construction Project	BORING EQ				10 "D1"	Sec. 19	-		DATE	1	24.12	.2016 -	29,12.2	016
	UND	N LEVEL	1.1.1.1		g Bago River	Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME ORIENTATIO			: Rota		Circulatio	<u> </u>	LIENT	1				1.27	1
					N 1858268.	627 DI	SPTH :_	61.00m	GROUND W.					Bed		N	IPP	ON K	OE	100)., L	TD.
Γ	1				1	22	1.0		-		m) &			TANDARD TEST M	PENETR	ATION ASTM	TEST			SAMPI	ING	
ŝ	(m) N	(II)	S (m)			RELATIVE DENSITY (ar) CONSISTENCY	-	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(m) -		CURVI	E OF BL	ow •	3	('0)	(m) -		
	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	COLOUR	ATIVE CONS	L NAME			TE&DI	SING (1	TER DE	DIPTH GL-	N-Value (Blows / 30cm)	(B	N-Value lows / 30	e (cm)	SAMPLE	Jrs &	DEPTH GL - (m)	TCR (%) SCR (%)	RQD (%)
	E	DE	TH	710	-		SOIL			Vđ	CN	N.	EKU	()	10 20	30	40 5	0	G .	0EF	5 13	RQ
-6	7.86	61.30	3.30		yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, n medium grained, low plastic Claye		29.12.16 61.00			61.00	50/15				P-	50 6	1.00		
								This borehole is terminated according to the termination criteri		01.00			62.00									
								according to the termination effect	**				63.00									
													64.00									
												1										
													65.00									
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													89.00									
													90.00									
													1.									
	NOTE		lar h Si S			1	-	Sample key		_	nner stru		91.00			ontinuiti			-		Ļ	
F		ative dens		ption N-Value	Consistence	tency descrip	Nion N-Value	Pr. 1 Distantional sample PBT Permetab Traditional sample VS Vare Sh (Potens sampler)		Term Very thick		>	g (mm) 2000	Very s	Term ridely spa		-	ng (mm) > 2000		Co	KKEN	Engineer
F	Very	loose	- (1-4	Very soft		mder 2	(Pictor sampler) (Pictor sampler) (Denson sampler) (Denson sampler) (Denson sampler)	meter Test	Thick Medium		600 - 200 -	- 600	Med	ely space ium space	xl	200	- 2000	FG	EX Ter	angon Br var - konter	anch) e pis - cipi comulter (o
F	Media	m dense	1	1 - 10 0 - 30 0 - 50	Soft Firm Stiff	-	2 - 4 5 - 8 9 - 15	Rock core sample (Single core tabe) Rock core sample 25 - 50	Very poor	Thin Very thin hickly lamin		60 - 20 - 6 -	60		ely space losely spa	iced	20	- 200 - 60 < 20		sion No. sion Date	_	Rev: 00
E		dense) = 50 /er 50	Very stiff Hard	- 1	9 - 15 6 - 30 wer 30	(Double core tube) 25 - 50 (Double core tube) 50 - 75 (Core tube) 75 - 90	Fair 1	hinly lamin		¢ =		Remarks	- Causely	-Parego	_		L Logar	- godi	1.1	

Figure 4.1.35 Boring log BH-BD-08 (3)

| ON
D LEVEL | : Besi | de Existing
im
5073.242 ; 1
WW255VIQ | Bago River | Bridge (') | | dge), Thaketa Township, Yangon Region.

 | BORING EQU
BORING ME
ORIENTATIO
GROUND W/ | THOD | | _ | | t Circulatio | <u>n</u> <u>Cl</u>
 | DATE
<u>JENT</u> |
 | 2.12.2016
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LEVEL NATE	: <u>-6.97</u> : <u>E 20</u>

 | ORIENTATIC | N | | | | t Circulatio | <u>n</u> <u>Cl</u>
 | JENT. | NVO
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 | 0 | T | 2 |
| NATE | : <u>E 20</u> | 5073.242 ;)
WV85VIG # * | 13 | | | 62.00m

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 | TTT C
 | n | TT | |
| | THICKNESS (m) | * * * | COLOUR | ATTVE DENSITY
CONSISTENCY | ME |

 | | TLA LL | VEL | : Un | der River | Bed | _
 | NIPPO | IN NO
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 | 0.,1 | |). |
| | THICKNESS (m) | * * * | COLOUR | ATTVE DENSIT | ME |

 | | | 30 | | 3 | TANDARD
TEST N | PENETRA
ETHOD (
 | TION TEST
ASTM) | PMT
 | SAM
 | PLING | | |
| | THICKNESS | * * * | COLOUR | CONSIS | ME |

 | | DATE & DEPTH (m) | CASING (DEPTH (m) &
DIAMETER (mm)) | WATER DEPTH (m) | 1.00 | |
 | OF BLOW . | -
 | Ê
 | | | - 1 |
| DEPTH | THICK | * * * | COLO | NO(| NA. | SOIL DESCRIPTION

 | | & DEP | G (DE | R DEP | GL-(r | (alue
/ 30cm |
 | N-Value | SAMPLE
(Type & No.)
 | GL-(1
 | (9 | 9 | RQD (%) |
| | | 1.0 | - | REI
(or | SOIL |

 | | DATE | CASIN | WATE | DEFTH GL - | N-Value
(Blows / 30cm) | (Blo
 | ws/30cm)
30 40 50 | SA
(Typ
 | DEPTH GL - (m)
 | TCR (%) | SCR (%) | RQD (%) |
| | | 1.0 | | | - |

 | | | | | | |
 | |
 |
 | | | |
| | | | brownish | Very | Silty | Very loose to loose, brownish gray,

 | moist, fine | | | 18 | 1.00 | 2/30 |
 | | P-1
 | 1.00
 | | | |
| | | * * * | gray | to
to
loose | SAND | to medium grained, Silty SAND
(River deposit)

 | | | | | 2,00 | 4/30 |
 | | P-2
 | 2,00
 | | | |
| | | * * * | | loose | |

 | | | | | 3.00 | 1 |
 | | PMT-01
 | 3.00
 | | | |
| | | * * * | | | |

 | | | | | 4.00 | 2/30 |
 | 111 | P-3
 | 3.50~3.95
4.00
 | | | |
| | | N N N | | | |

 | | | | | | 3/30 |
 | | P-4
 | 4.45
 | | | |
| | | n × A
n × A | | | |

 | | | | | 5.00 | 3/30 |
 | | P-5
 | 5.00
 | 21 | | |
| | | * * * | | | |

 | | | | | 6.00 | 1 |
 | | PMT-02
 |
 | | | |
| | | | | | |

 | | 22.12.16
6.50 | | | 7.00 | 7/30 | t
 | | P-6
 | 6.50 - 6.95
7.00
 | | | |
| 8.00 | 8.00 | $\kappa = \kappa$ | 1.00 | | |

 | | | | | 8.00 | | N
 | |
 | 7.45
 | 5 | | |
| 0.00 | 0.00 | 8 - R - R | | | |

 | | 1 | | | | 32/30 |
 | 1 | P-8
 | 8.45
 | 3 | | |
| | | * * * | gray | Dense | Silty |

 | to medium | | 2 | | 9.00 | 18/30 |
 | | P-9
 | 9.00
9.45
 | | | |
| | | 8 8 8 | | loose | SAND |

 | lanca anni | | 10.00 | | 10.00 | | 1
 | | PMT-03
 | 10.00
 | 1 | | |
| | | * * * | | | | fine to medium grained, low plas

 | stic Clayey | | 10112 | | 11.00 | 16/30 | 1
 | | P-10
 | 11.00
 | | | |
| | | * * * | | | | that depth

 | ited layer at | | | | | 17/30 | II
 | | 1-11
 | 11.45
 | | | |
| | | * * * | | | | Thin clay layer is intercalated in this

 | layer | | | | 12.00 | 16/30 | 1
 | | P-12
 | 12.00
 | | | |
| | | ÷ • • | | | |

 | | | | | 13.00 | 6/30 |
 | | P-13
 | 13.00
 | 61 | | |
| | | | | | |

 | | | | | 14.00 | 11/30 | V
 | | P-14
 | 14.00
 | | | |
| | | 8 = 4.
8 8 9 | | | |

 | | | | | 15.00 | | N
 | |
 |
 | 31 | | |
| | | N 8 4 | | | |

 | | | | | | 28/30 |
 | ΛΗ | P-15
 | 15.45
 | 64 | | |
| | | 6 K K | | | |

 | | · · · · | | 1 | 16.00 | 22/30 | Í
 | | P-16
 | 16.00
 | | | |
| | | 1.1.1 | | | |

 | | 23.12.16 | 1 | | 17.00 | 20/30 | 1
 | | P-17
 | 17.00
 | 5 | | |
| 18.00 | 10.00 | W. 8. 8 | | _ | 10.00 |

 | | 1.1 | | | 18:00 | 14/30 | 1
 | | P-18
 | 18.00
 | | | |
| | | | - | | | 12.1

 | | | | | 19:00 | | X
 | |
 |
 | | | |
| | | | gray | to | CLAY | plasticity, CLAY with silt and tra

 | to medium
ace of fine | | | | | 6/30 |
 | | P-19
 | 19.45
 | | | |
| | | | 1 | firm | | grained sand

 | | | | | 20.00 | |
 | | U T-1
 |
 | | | |
| | | | | | |

 | | | | | 21.00 | 6/30 |
 | | P-20
 | 21.00
 | | | |
| | | | | | |

 | | | | | 22.00 | |
 | |
 | 22.00
 | | | |
| 23.00 | 5.00 | | | | |

 | | | | | 23.00 | |
 | | 1.1
 | 44.13
 | | | |
| | | | | | |

 | | | | | | 5/30 |
 | | P-21
 | 23.45
 | | | |
| | | | gray | Firm | Sandy | Firm to very stiff, gray, moist, fine g

 | grained, low | | | 11 | 24.00 | 12/30 | N
 | | P-22
 | 24.00
 | | | |
| | | | | very | | frankly, and said

 | | | | | 25.00 | 23/30 |
 | | P-23
 | 25.00
 | | | |
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 | | | | | 26.00 | 27/30 |
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 | 26.00
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 | | | | | 27 00 | | X
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 | | P-25
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 | | | | | 28.00 | 10/30 | 1
 | | P-26
 | 28.00
 | | | |
| 29.00 | 6.00 | | | | | 10.000 D 1.000

 | 10.7.6 | | | | 29.00 | 11/30 |
 | | P-27
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 | | | |
| | | | gray | Stiff | CLAY |

 | | | | | 30.00 | 10/30 |
 | | P.28
 | 30.00
 | | | |
| | | | - | | | Continue to next sheet

 | | | | Q. | 31.00 | 10/30 | N
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clative der | sity deserv | ption 1 | Consid | ency descri- | Hion | Sample kcy
P-1 Disturbed sample BDT Permashili

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T-1 Undisturbed Sample VS Vanc Shear
(Piston sampler) W CT 2

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Yangon | g Engi
Branch | neers |
| ry loose | _ | | Very soft
Soft | | | D-1 (Denison sampler) RQD (%)

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 | www.inysona | prosines | ars.co. |
| um dense
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25 - 50

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Figure 4.1.36 Boring log BH-BD-09 (1)

BC	RE H	OLE N	. BH	-BD-09				BOR	RINGL	0 G								Job N	_	KYB-20 eet No.		5 OF
			_						BORING EQUI				10 "D1"		-	DA	TE	: 22	.12.2016	-	2.2010	5
	CATIC				Bago Riv	er Bridge (1	hanlyin Bri	Commentation of the second s	BORING METH			-		t Circulation	- <u>CL</u>	IENT					2	1
	OUNE	LEVEL	_		N 185917	0.312 DE	ртн		ORIENTATION GROUND WAT		/EL	· Vert		Bed	-	NII	PPO	N KO	EI C	O.,	LTI	D.
T	ORDE	NATE	: <u>E 20</u>	5073.242 ;	N 185817	1 <u>312</u> DE	етн :_	62.00m	JROUND WAT	ER LE	WEL .	: Und		Bed STANDARD TEST MI	PENETRA					PLING	_	
	÷		î			NSITY				H (m)	(mm))	(m) H		TEST MI				1.0		-LING		-
r.	ION (II	(II) - (III)	ESS (m	N	2	VEDE	NAME	SOIL DESCRIPTION		DEPTI	(DEPT	DEPTI	(m) - Ji	30km)		OF BLOW	•	R No.)	(m) - J			
or MEE (III	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (or) CONSISTENCY	SOIL N/			DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL +(m)	N-Value (Blows / 30cr	(Blo	-Value ws/30cm)		SAMPLE (Type & No.)	DEPTH GL-	ICR (%)	SCR (%)	RQD (%)
-	-	5	-	5	.0	~	s				Ú.	~	4	~ 0	10 20	30 40	1 50	-	G	H	s	~
in the second					gray	Stiff	CLAY	Stiff, gray, moist, low to medium CLAY with silt and trace of fine grain	plasticity, 2	4.12.16			31.00	13/30				P-29	31.00			
the second se	-38.97	32.00	3.00			_		and the second second					32.00	18/30				P-30	32.00			
		111			gray	Very	Sandy	Very stiff, gray, moist, fine gra	ined, low				33.00					P-31	32.45			
Internet					-BV	stiff	CLAY	plasticity, Sandy CLAY						19/30	I				33.45			
						1.1						19	34.00	17/30	1			P-32	34.00 34.45	34		
-	41.97	35.00	3.00	X 8 3						01			35.00	19/30				P-33	35.00 35.45			
11111				XXXX	gray	Medium	Silty	Medium dense, gray, moist, fine to grained, Silty SAND	o medium				36.00	25/30				P-34	36.00			
						-stores							37.00	25/30				P-35	37.00			
				2 × 5				Thin clay layer is intercalated in this l	ayer				38.00			ΙI		P-36	37.45 38.00			
artine.				X X 8									39.00	28/30		ΛΙ			38.45 39.00			
and				* * *									1	25/30				P-37	39.45	34		
THE OWNER OF THE OWNER OWNER OF THE OWNER				* * *									40.00	30/30				P-38	40.00			
	47.97	41.00	6.00	* * *		-			-				41.00	36/30				P-39	41.00			
		11				Hard	Sandy	Hard, gray, moist, fine grained, low	plasticity 2	5.12.16 42.00			42.00	45/30				P-40	41.45			
					gray	Hatu	CLAY	Sandy CLAY	plasticity.	42.00			43.00				1		42.45			
														50/30			Ť	P-41	43.45			
and and				1 1 1 1									44.00	50/30			+	P-42	44.00			
													45.00	50/30			+	P-43	45.00			
line in													46.00	50/30				P-44	46.00			
<u> </u>													47.00	28/30		1		P-45	47.00			
1	54 97	48.00	7.00										48.00			X		E.L.	47.45			
				* * *	1.00	12.1	4.5	Section States States						33/30		1		P-46	48.45			
and				x = 4 + 8 =	gray	Dense to	Silty SAND	Dense to very dense, gray, mois medium grained, Silty SAND	t, fine to	11			49.00	50/29			X	P-47	49.00 49.44			
line in the second				* * 4		dense			2	6.12.16 50.00		i de	50.00	32/30				P-48	50.00 50.45			
l l l l l l l l l l l l l l l l l l l													51.00	35/30		1		P-49	51.00			
-	-58.97	52.00	4.00	8 8 6	_	_							52.00	50/29				P-50	51.45 52.00			
and and a second se		-		x x x x x x			10.1						53.00				T		52.44 53.00	21		
=				* * *	gray	Dense to	Silty SAND	Dense to very dense, gray, moist, fine grained, Silty SAND with fine gravel	Concernence of the					50/29			1	P-51	53.44			
				* * *		very dense	11		2	7.12.16 54.00			54.00	50/30			1	P-52	54.00 54.45			
<u> </u>				* * *									55.00	50/13			+	P-53	55.00 55.28			
11111				× × ×									56.00	50/27			1	P-54	56.00			
				* * *									57.00	50/15				P-55	56.42 57.00			
				x x x	_					1212				1.1			Ī		<u>57.30</u> 58.00			
thun t				* * *					2	58.00			58.00	50/13			1	P-56	58.28			
11111				* * *									59.00	50/28			+	P-57	59.00 59.43			
ti linit				* * *					_				60.00	50/19			+	P-58	60.00			
	Nor	00		* * *			i lette i	Continue to next sheet					61.00									
1	NOT Re	ES lative dens	-	_	Consi	stency descrip		Sample key P-1 Distanted sample (SPT sample) PBT Permeability	Test	Pla Term /ery thick		Spacing			Discor Term	S	pacing (m		F C	UKKE	N CO.	LTD
		ve density y loose	100	N-Value main 0 - 4	Consister Very so	-9	N-Value	T-t (Piston sampler) VS Vane Shear T (Piston sampler) PMT Pressurement	Test	Thick Medium	+	> 600 - 200 -		Wid	idely space ely spaced um spaced		> 200 600 - 200 200 - 60	00	TGEX	Yangon	Branch	1)
	1	oose um dense	1.0	0 - 4 4 - 10 0 - 30	Very so Soft		nder 2 2 - 4 5 - 8	Bock core sample	Term	Medium Thin Very thin	-	200 - 60 - 20 -	200	Clos	um spaced aly spaced osely space		200 - 60 60 - 200 20 - 60)	Revision N	ww.cyarm	Rev:	attaine con-
ļ	1	lense y dense	34	0 - 30 0 - 50 ver 50	Firm Stiff Very sti		9 - 15 5 - 30	Rock core sample (Double core tube) 25 - 50 (50 - 75	Poor This	kly lamin nly lamin	ated	20 - 6 - <)	20	Extremel	v closely space		< 20 - 60		Revision D	_		1.2013
2			1. 0		Hard		ver 30	(Core Loss) 75 - 90	Good	2 Junda	-		-	Remarks								

Figure 4.1.37 Boring log BH-BD-09 (2)

ORE H	OLE N	o. BH	-BD-09	11.1			BO	RING	LOG	ł						1	Job N		KYB-20 eet No.	-	0F
							e Bago River Bridge Construction Project	BORING EQ			_	IO "D)"		1	DAT	TE .	: 22	.12.2016	~ 29,1	2.201	6
CATIC	ON LEVEL			Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME			: Rota		Circulation	CLIE	INT						
				N 1858170	.312 DI	epth :	62.00m	GROUND W			1.5		Bed		NIP	PPO	V KO	EI C	0.,	LTI	D.
					2	1				() (K		8	TANDARD PE TEST MET	NETRATION (AS	ON TEST	P	-	SAM	PLING		
(W)	Ê	(E)		1.0	RELATIVE DENSITY (at) CONSISTENCY	1.2			DATE & DEFTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m)	÷ (URVE OF	BLOW		(0	(E	1		11
ELEVATION	DEPTH GL - (m)	THICKNESS (m)	RAM	NUR	UNVE L	NAME	SOIL DESCRIPTION		S& DE	NG (D)	ER DEI	DEPTHOL	(Blows / 30cm)	NA	/alue		SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	1	(96)
BLEV	DEPT	THIC	DIAGRAM	COLOUR	RELA (or)	SOIL			HVG	CASH	WAT	DEPT	(Blow	(Blows	(30cm) 30 40	50	S/ (Ty	DEPT	TCR (%)	SCR (%)	RQD (%)
			x x x	gray	Dense	Silty	Dense to very dense, gray, moist, I	ine to coarse	18			61.00					0	0.00			2
			× × × * * *		to very	SAND	grained, Silty SAND with fine grav	el					50/20			1	P-59	61.00 61.35			
69.97	62.30	10.30	8 8 8		dense	-			29.12.16 62.00		1	62.00	50/15			+	P-60	62.00 62.30			
							This borehole is terminated					63.00	211								
							according to the termination criteria	•				64.00									
												65.00									
												66.00									
												67.00									
												68.00									
												69.00									
												70.00									
												71.00									
											1.3	72.00									
												73.00									
												74.00									
												75.00									
												76.00									
												77.00									
												78.00									
												79.00									
												80,00									
												81,00									
											3	82.00									
												83.00									
												84.00									
												85.00									
												86.00									
												87.00									
												88.00									
												89.00									
												90.00									
NOT	FS	-1	+ 1				Presente from					91.00		Diseas						1.	1
NOT Re	ES ilative den	_		Const	aency descrip		Sample key • F- Dismbol sample (SPT sample) PBT Permeabs	lity Test	Term		Spacing			Discontin	Sp	vacing (m			UKKE		
1.	ve density	1000	N-Value	Consisten	9	N-Value most	T-4 Undistanted Sample: VS Vane Sha (Pinter sampler)		Very thick Thick		600 -		Widely	spaced	6	> 200	0	GEX	Consultin Yangon Willion au	Branc	h)
- 1	ny loose	4	1 - 4 1 - 10	Very sol Soft		under 2 2 - 4	D-1 (Denison sampler) RQD (%)	Term	Medium Thin Versi this		200 -		Closely	spaced		100 - 60 60 - 200)	Revision N		Rev	200
í.	um dense Jense	30	0 - 30 0 - 50	Firm	1	5 - 8 9 - 15	(Single core tube) 0 - 25 Rock core sample (Double core tube) 25 - 50		Very thir hickly lamin	nated	20 - 6 -	20	Extremely of	ely spaced losely spac	ed	20 - 60 <20	14	Revision D		06.0	
Ver	y dense	1 01	ver 50	Very stil Hard		6 - 30 wer 30	Rock core sample (Core Loss) 50 - 75 W+1 Water sample 90 - 100	Goud	Thinly lamin	anca	< (Remarks								-

Figure 4.1.38 Boring log BH-BD-09 (3)

BC	DRE H	OLE N	o. BH-)	BD-10				BO	RING	LOC	2								Job N	_	YB-20 et No.	-	5 OF 3
PR	OJECT	NAME	: Geotec	hnical Su	irvey on th	e detailed d	esign for the	Bago River Bridge Construction Project	BORING EQU	JPMEN'	r.	: <u>TO</u>	HO "DI"				DATE	8	: 07	.12,2016			-
LC	CATIC	N	Beside	Existing	Bago Rive	r Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ary Direc	t Circulat	ion	CLIE	NT	_		-	-		-
		LEVEL	1.00					5.7	ORIENTATIC			: Ver		5.4	-	1	VIPP	ON	KO	EIC	0	1.7	D.
cc	ORDE	ATE	: <u>E 2051</u>	81.555 ; 1	N 1857979	.926 DE	EPTH :_	72.00m	GROUND W	ATER LE	VEL	: <u>Un</u>	der River		-	1.5		011	no	Le C	J.,		
						65				î	(m) &	(11		STANDAR TEST	D PENI METHO	TRATIC DD (AS	ON TEST FM)		_	SAM	LING	-	_
	(m) N((H) =	(m) SS			RELATIVE DENSITY (or) CONSISTENCY	a	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m) -	(international international i	cu	RVE OF	BLOW (•	.E No.)	-(III) -			
SCALE (m)	ELEVATION (m)	DEPTH GL.	THICKNESS (m)	DIAGRAM	COLOUR	AJTIVE	NAME			E&D	TAMET	TER DE	DEPTH GL.	N-Value (Blows / 30cm)		N-V (Blow-	/alue / 30cm)		SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
SCA	BLE	DEP	IHI	NIG	COI.	REL. (or)	SOIL			IVG	CAS	WM	DEP	(B)	10		30 40	50	•E	DEP	TCR	SCR	-
THE REAL PROPERTY IN			E		-								1.00							1.00	1		-
10000000000000000000000000000000000000					brown	Very	CLAY	Very soft to firm, brown to gray,				19	1.00	1/30					P-1	1.45			E
			E		gray	soft to		low to medium plasticity, CLAY w trace of fine grained sand	with silt, with			114	2.00	1/30					P-2	2.00			rense benefitetet den sette sind sensel og sette benefitetet den sette sind sette den sette sind sette sind se
in the			E			firm							3.00					1	PMT-01	3.00			
-													4.00	2/30					P-3	4.00			
a mult			E	222	5								4.00	6/30	1				P-4	4.45			
100			E									10	5.00	5/30	+				P-5	5.00			
the state of the s													6.00		ų.			,	PMT-02	6.00			
and and	-12.47	7.00	7.00	H.H.H.						07.12.16 6.50			7.00	5/30	t				P-6	650-695 7.00			
	12.37	7.00	7.00	××										6/30	†				P-7	7.45			
lind and indext and and and indext and		111		* *	gray	Loose	Silty	Loose to medium dense, gray, n	noist fine to				8.00	5/30	4				P-8	8.00			
tion 1				* *	8.47	to medium	SAND	medium grained, Silty SAND					9.00	10/30	Y				P-9	9.00			
Tutur			*	* *		dense					10.00		10.00		1					9.45 10.00			
the second se				я ж							Ø112			13/30	+				PMT-03 P-10	0.50 - 10.95			
				8 8								14	11.00	14/30	14	8			P-11	11.00			
	1			2.2									12.00	16/30					P-12	12.00			
			¢	* *									13.00			V				12.45			
												1		21/30		T			P-13	13.45			E
11111			4										14.00	22/30		+			P-14	14.00			
	-20.47	15.00	8.00	××	-							1.0	15.00	23/30		4			P-15	15.00			
in the			14							08.12.16			16.00	7/20	Y	1			P-16	15.45			
Manufadual and a fundation of the second sec			E		gray	Soft to	CLAY	Soft to very stiff, gray, moist, low plasticity, CLAY	v to medium	16,00			1	7/30	T				P-10	16.45			
						very stiff							17.00		1				U T-1	17.00 (m) cm 17.70			
	6												18.00	4/30					P-17	18.00			
													19.00	0.00	Ν				P-18	18.45			
after a			11.1										1.	9/30	A				r-10	19.45			Ē
													20.00	5/30					P-19	20.00			
l l l l l l l l l l l l l l l l l l l			E										21.00	13/30	>	6			P-20	21.00			
in the													22.00	6/30	A				P-21	22.00			
in the second														0/30	T				1-21	22.45			
			E										23.00	5/30	†				P-22	23.00 23.45			
													24.00		Ч.				0 T-2	24.00			
in the													25.00	7/30	1				P-23	(3)) cm 24.70 25.00			
and and													26.00		V					25.45			
													26.00	10/30	t				P-24	26.00			
			1.1.1										27.00	8/30					P-25	27.00			
					6								28.00	8/30					P-26	28.00			
			0.121										29.00						1.54	28.45 29.00			
diam'r			111										29.00	8/30	1				P-27	29.00			
			1.1.1										30.00	9/30	*				P-28	<u>30.00</u> 30.45			
								Continue to next sheet					31.00	2	1					30.43	4		
1	Re	ES lative dens	ity descript	ion	Conse	atency descrip	stion	Sample key P-1 Disturbed sample (SPT sample) PBT Permeable	lity Test	Term		Spacing			Term			cing (mm)			UKKE	NCO	LTD
1	-	re density	SPT N		Consisten	Ent.	N-Vahie	T-i Undistanted Sample VS Vane Sha	ar Test	Very thick	-	> 600 -	2000 2000		widely idely sp	spaced saced	600	>2000	71	0	onsultir (anoon	g Eng	neers
3		y loose	0.	4	Very sol Soft		mdor 2 2 - 4	D-1 Undisturbed Sample (Denison sampler)	Term	Medium		200 -	- 600	M	edium sp osely sp	paced	200	0 - 600		TOEX	/ 051-80	IDEPE REA	appears Runi com
9	Medi	im dense		- 30	Firm	1.1	5 - 8 9 - 15	(Single core tube) 0 = 25 Rock core sample 25 = 50	Very poor	Very thi		20 -	- 60	Very	closely	spaced sely spac	2	0 - 60	114	Revision Ne Revision De	_	Rev:	00
		ense y dense	30 -		Very stil	T 1	6 - 30	(Double core tube) 50 - 75	Fair T	hinly lami		- 6 - <		Remark	_	- spac	-41	~ 20					
				L	Hard		over 30	(Core Loss) 75 - 90 W-1 Water sample 90 - 100						1									

Figure 4.1.39 Boring log BH-BD-10 (1)

301	RE H	OLE No	. BH	-BD-10				BO	RING	LOG	£					Job	_	KYB-20. eet No.		OF
								e Bago River Bridge Construction Project	BORING EQ			100	HO "DI"	-	DATE	<u>: 0</u>	7.12.2016	~ 13.12	2016	5
	CATIC	LEVEL	_		Bago Rive	r Bridge (I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			: Rot	ary Direct Circu	ilation	CLIENT			1	Ť.	
	ORDIN		-	The second second	N 1857979	.926 DE	PTH :	72.00m	GROUND W.			-	der River Bed		NIPPO	NKC	DEI C	ю.,	LT	D.
T					-				_		3 (1	13	STAND	ARD PEN	ETRATION TEST OD (ASTM)	1	SAM	PLING	-	
	(m)	(11)	(II)			RELATIVE DENSITY (or) CONSISTENCY				DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	1. C.	T	RYE OF BLOW .	(.0	(m) -			
	ELEVATION (m)		THICKNESS (m)	DIAGRAM	DR	TIVE I	NAME	SOIL DESCRIPTION		& DEI	NG (DI	ER DEP	DEPTH GL - (m) N-Value (Blows / 30cm)	-	N-Value	SAMPLE (Type & No.)	- 19 F	(%	1%	(%)
	ELEV	DEPTH GL	THIC	DIAG	COLOUR	RELA (or)	SOIL		_	DATH	CASI	WAT	DEPT N	0 10	(Blows / 30cm) 20 30 40 50	S, (Ty	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
ساسته استهما ساسا ساسه	13					1.1		the states and					31.00 6/30				31.00			
					gray	Soft to	CLAY	Soft to very stiff, gray, moist, low plasticity, CLAY	to medium			10		1		P-29	31,45			
						very stiff		1.1.1					32.00 7/30	1		P-30	32.00 32.45			
													33.00 16/30		•	P-31	33.00			
													34.00 19/30		¥	P-32	34.00			
										09.12.16			35.00 13/30			P-33	34.45			
	41,47	36.00	21.00			_				35.00	14		20.00			P-34	35.45			
				* *	gray	Dense	Silty	Dense, gray, moist, fine to media	um grained,				37.00 26/20		ПЛ		36.45			
				* *			SAND	Silty SAND						11		P-35	37.45			
				* *				and the second s				16	38.00 40/30			P-36	38.00			
	44.47	39.00	3.00	0.0		-							39.00 21/30			P-37	<u>39.00</u> 39.45			
					gray	Very	CLAY	Very stiff to hard, gray, moist, low	to medium				40.00 22/30		4	P-38	40.00			
						stiff to		plasticity, CLAY with silt and tr grained sand	ace of fine				41.00 25/30			P-39	40.45			
						bard							42.00		\mathbf{X}		41.45			
															1	P-40	42.45			
	1												43.00 31/30		t I	P-41	<u>43.00</u> 43.45			
	1												44.00 33/30			P-42	44.00			
													45.00 18/30			P-43	45.00			
										10,12.16			46.00 21/30			P-44	46.00			
												1	47.00 25/30			P-45	46.45			
													18 00		$I \mid I \mid$	P-46	47.45			
	6														I I I I		48.45			
													49.00 18/30		1	P-47	49.00			
												18	50.00 17/30		+	P-48	50.00 50.45	2.4		
	19												51.00 16/30		4	P-49	51.00			
	1d												52.00 22/30			P-50	52.00	6		
	58.47	53.00	14.00		-								53.00 45/30		N	P-51	52.45 53.00			
	-	1			gray	Very stiff	Sandy	Very stiff to hard, gray, moist, find					54 00			P-52	53.45 54.00			
	10.00	55.00	2.00			to hard	CLAY	grained, low plasticity, Sandy CLAY					21130		11		54.45			
	00,47	33.00	2.00	* *	1		1	1	11.1	11.12.16 35.00			55,00 26/30			P-53	<u>55.00</u> 55.45			
	1			* *	gray	Medium dense	Silty SAND	Medium dense to dense, gray, me medium grained, Silty SAND	oist, fine to				56.00 37/30			P-54	56.00 56.45			
				* *		to dense		GL: (56.00 ~ 59.45)m, Thin cl	ay layer is			1 é	57.00 36/30			P-55	57.00 57,45			
	5			• x				intercalated at that depth					58.00 25/30			P-56	58.00			
				N N N N									59.00 30/30		N I	P-57	58.45 59.00			
				* *									60.00				59.45 60.00			
	21			* *		2.1	11	Continue to next sheet					42(3)			P-58	60.45			
F	NOT	ES lative densi	hideo	inting T	Par.	stency descrip	tim 1	Sample key		Pk Term	inner stri		61.00	Ten	Discontinuities n Spacing	(mm)] [-	1.00	14
ł	-	lative densi ve density	-	N-Value	Consisten	1	N-Value	T-1 (SPT sample) PBT Permetabili T-1 Undisturbed Sample VS Vane Shee	r Test	Very thick Thick			2000	Very widely Widely s	y spaced >	2000		UKKEN Consultin Yangon I	g Engi Branch	ineer
F		y loose oose		0 - 4 1 - 10	Very sof Soft		inder 2 2 - 4	D-1 Undisturbed Sample (Denison sampler) PMT Pressurem ROD (%)	eter Test Term	Medium	-	200 -	200	Medium s Closely s	spaced 200 -	600	FGEX	ai 1957-801	1806, 269 perioreal	- 4200 Ibird (0
F	Media	um dense lense	10) - 30) - 50	Firm Stiff		5 - 8 9 - 15	(Single core sample (Single core tabe) 0 - 25 Rock core sample 25 - 50	Very poor	Very thin hickly lamin		20 -	60 1	ery closel	y spaced 20 -	60	Revision Ne Revision De	_	Rev: 16.12	
C	Ver	y dense	0	/er 50	Very stif Hard	T I	6 - 30 wer 30	(Double core tube) Rock core sample (Core Loss) 50 - 75 75 - 90	Fair T Good	hinly lamin	ated	*		arks					-	-

Figure 4.1.40 Boring log BH-BD-10 (2)

BOI	RE H	OLE N	o. BH	-BD-10				<u>B0</u>	RING	LOG							_	Sh	et Na.	-	25 OF
PRC	DJECT	NAME	Geot	echnical Si	urvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMEN	1.1	; TOP	IO "DI"	<	2	DATE	: 01	1.12,2016		-	
	CATIO							dge). Thanlyin Township, Yangon Region.	BORING ME					t Circulation	CLIEN	100	-			_	
GRO	DUND	LEVEL	: -5.47	m		-			ORIENTATIO			: Vert	tical				VEC	FIC	n	IT	m
coc	ORDIN	ATE	: <u>E 20</u>	5181.555 ;	N 1857979	.926 DI	epth :	72.00m	GROUND W	ATER LE	VEL	: Une	ler River			102.11	AC	EIC	0.,	L 1	<i>D</i> .
T						Ěč				(u	(m) &	(n	3	TEST MI	ENETRATION THOD (AST)	TEST 1)		SAM	PLING	-	
	N (m)	(III)-	S (m)		÷	RELATIVE DENSITY (or) CONSISTENCY	ы.	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m)-	(PH	CURVE OF BI	LOW .	10) 10)	(III) -			
	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	DUR	ATIVE	NAME	Saturda and		E&DE	NG (L	ER DE	DEPTH GL +	N-Value (Blows / 30cm)	N-Val	uc .	SAMPLE (Type & No.)	H GL	(9%)	(%)	(%)
	BLEV	DEPT	THIC	DIAG	COLOUR	REL/	SOIL			DAT	CASI	WAT	1430	(Blov	(Blows/2 10 20 30		S, CI	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
mump				**	gray	Medium dense	Silty SAND	Medium dense to dense, gray, m medium grained, Silty SAND	oist, fine to									(1.00)			
alaan		22		X #		to dense		GL: (56.00 ~ 59.45)m, Thin c intercalated at that depth	lay layer is				61.00	48/30			P-59	61.00 61.45			
	67.47	62.00	7.00	X X				intercanated in that depth	_				62.00	50/30		14	P-60	62.00 62.45			
					yellowish	Very	Clayey	Very dense, yellowish brown to re-	ddish brown,				63.00	50/28			P-61	63.00			
					to	dense	SAND	moist, fine to medium grained, Clayey SAND	low plastic	in the				30/28		Π	1.01	63.43			
					reddish brown			1		12.12.16 64.00			64.00	50/22		11	P-62	64.00 64.37	54		
													65.00	50/20		+	P-63	65.00			
													66.00	50/16			P-64	66.00 66.31			
													67.00				10.2	67.00			
														50/26		1	P-65	67.00			
													68.00	50/25		+	P-66	68.00 68.40			
													69.00	50/20			P-67	69.00	4		
													70.00					69.35 70.00			
														50/22		Ī	P-68	70.37			
													71.00	50/21		+	P-69	71.00 71.36			
	77.80	72.33	10.33				1.1			13.12.16			72.00	50/18			P-70	72.00			
				N.T.M.B.			1.1	This borehole is terminated					73.00					14,00			
								according to the termination criteria	÷												
													74.00								
													75.00								
													76.00								
													77.00								
													1.1								
													78.00								
													79.00								
													80.00								
													1.4								
													81.00								
													82.00								
													83.00								
													84.00								
													85.00								
													86.00								
													1.1								
												Ŷ	87.00								
													88.00								
													89.00								
												19	90.00								
	NOT	ES						Sample key		pr	unter stru	ctore	91.00		Discontinui	itirs			-		11
Ľ		tative dens			Cansis	tency descrip	nion	P-1 Ditarbel sample (SPT sample) PBT Permeable	lity Test	Term		Spacing			Term	Spacing (n		P P			
Ĺ		ve density	1000	N-Value	Consistent	2	(mar)	T-1 Undisturbed Sample VS Vane Sha (Pistor sampler) PMT Pressuren		Very thick Thick		600 -		Wid	idely spaced ly spaced	> 20 600 - 20	20	FGEX	Consulti Yangon	Pranci	14
F	L	y loose		0 - 4	Very soft Soft		under 2 2 - 4	RQD (%)	Tont	Medium Thin		200 - 60 -	200	Clos	un spaced ly spaced	200 - 6	0	Revision N		Rev	
F		um dense lense		0 - 30 0 - 50	Firm Stiff		5 - 8 9 - 15	(Single core tube) 0 - 25 Rock core sample 25 - 50	Very poor Poor T	Very this nickly lama		20 -			osely spaced closely spaced	20 - 6		Revision N Revision D	-		2,201
Г		y dense		ver 50	Very stiff		6 - 30	(Double core sube) 50 - 75		hinly latnin		<				-				_	

Figure 4.1.41 Boring log BH-BD-10 (3)

BO	RE H	OLE No	BI	I-BD-11		_		BO	RING	LOC	ł,						Job 1	_	KYB-20 ret Na.	_	5 OF
								e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQ				HO "D)" lary Direct C	in the second second		DATE	: 01	7.12.2016	~ 12.12	2.2016	5
	OUND	LEVEL	-		Bago River	Bridge (1	haniyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME ORIENTATIO			: Ver		irculation	CLIENT	Yezza.		2.5			
	ORDIN			5237.522 ;	N 1857879.	348 DE	PTH :_	65.00m	GROUND W			_		sd	NL	PPON	V KO	DEI C	0.,	LT	D.
Τ						2.2				-	W)&	-	ST/	NDARD PEN TEST METH	NETRATION T TOD (ASTM)	EST		SAM	PLING		
	N (m)	(j)	S (m)			RELATIVE DENSITY (or) CONSISTENCY	ŵ	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(E)		URVE OF BLO	w •	(0)	(11)			
	ELEVATION (m)	DEPTH GL -	THICKNESS (m)	DIAGRAM	DUR	ATIVE	NAME	SOL DESCRIPTION		E & DE	NG (D	ER DE	DEPTH GL -	(Blows / 30cr	N-Value (Blows / 30c		SAMPLE (Type & No.)	DEPTH GL-(m)	(%)	(%)	RQD (%)
	BLEV	DEPJ	THIC	DIAG	COLOUR	REL. (or)	SOIL			ING	CASI	LVM	DEP	(B) 0 10	20 30		s.E	DEPT	TCR (%)	SCR (%)	RQD (%)
	- 1				brownish	Soft	Sandy	Very soft, brownish gray, moist,	fine grained,				1.00					1.00			1
					gray		CLAY	low to medium plasticity, Sandy Cl	LAY					45 •			P-1	1.45			
													2.00 0	45 •			P-2	2,00			
													3.00 0	45 •			P-3	3.00			
													4.00 0	45			P-4	4.00			
	-8.35	5.00	5.00										5 00				100	4.45			
			-				1.1.1	an a more a succession		1				/30			P-5	5.45	6		
				······································	brownish gray	Very loose	Clayey SAND	Very loose to loose, brownish g wet, fine to medium grained, low p					6.00 4	/30			P-6	6.00 6.45	3.1		
				··· ··· ···		to loose		SAND					7.00 5	30			P-7	7.00			
													8.00 4	30			P-8	8.00			
													9.00 2	30			P-9	8.45 9.00			
1	13.35	10.00	5.00				-						10.00	X			100	9.45			
	13,35	10.00	2.00	9 X X		9.77	1.21		10.00	1				/30	7		P-10	10.45	51		
				A X N S II S	gray	Loose to	Silty SAND	Loose to medium dense, gray, n medium grained, Silty SAND	noist, fine to		11.00 Ø112		11.00 14	/30	<i>†</i>		P-11	11.00			
				4 8 9 8 8 8		medium dense							12.00 12	/30			P-12	12.00			
												H)	13.00 14	/30			P-13	12.45			
													1100		\mathbf{N}		0.5	13.45			
				* * *								H.		/30	1		P-14	14.45			
				* * *									15.00 16	/30			P-15	15.00			
				* * *									16.00 24	/30			P-16	16.00			
	1.04			* * *									17.00 10	/30			P-17	17.00			
	21.35	18.00	8.00	9 × 8 4 × 4									18.00	/30			P-18	17.45			
I					gray	Stiff	Sandy CLAY	Firm to stiff, gray, moist, fine gra medium plastic Sandy CLAY	ained, low to				10.00					18.45 19.00			
						1.1	CLAI	meetium plastic Salidy CEAT		07.12.16	1			30			P-19	19.45	61		
ŀ	23.35	20.00	2.00		-	-				1			20.00 9	/30			P-20	20.00			
					gray	Firm	CLAY	Firm to very stiff, gray, moist, me	dium to high				21.00				1 T-1	21.00 (+) cm 21.40			
						to very	1.11	plasticity, CLAY					22.00 9	30			P-21	22.00			
						stiff							22.00					22.45			
١.														/30			P-22	23.45			
													24.00				U T-2	24.00 (m) cm 24.80			
													25.00 9	30			P-23	25.00			
													26.00 10	/30			P-24	26.00			
													27.00 9	/30			P-25	26.45 27.00			
													28.00	14			1.00	27.45 28.00			
														30			P-26	28.45			
													29.00 7	/30			P-27	29.00 29.45			
													30.00 9	30			P-28	30.00			
L	NOT	-			-		1.1	Continue to next sheet Sample key			anner stru		31.00		Dispertion			0.0110		-	1
ļ	-	ES lative densi	-		Consis	tency descrip		P-1 Disturbed sample PBT Permeab PBT Permeab		Term Very thick		Spacin	g (mm) 2000	Ter Very wide		Spacing (m > 200			UKKEN		
	_	ve density y loose	-	N-Value mail	Consistence Very soft	2	N-Value mail	Ti (Pistor sample) VS Vase So (Pistor sampler) PMT Pressure	CO. 07.	Thick Medium		600 -	2000	Widely Medium	spaced	> 200 600 - 200 200 - 60	00	FGEX	Yangon	Branch	(r)
ł	L	oose im dense	1	4 - 10	Soft Firm		2 - 4 5 - 8	Continued Sample Continued Sample (Denison sampler) Rock core sample (Single core tube) 0 - 25	Term Very poor	Thin Very this		60 -		Closely Very close	spaced	200 - 60 60 - 20 20 - 60	0	Revision No	an reparent	Rev:	494.00
ł	D	ense ense	3	0 - 50. ver 50	Stiff Very stiff	- 2	9 - 15 6 - 30	Rock core sample (Double core tabe) 50 - 75	Poor 7	hickly lami hinly lamir	nated	6 -	20	Extremely cl		< 20		Revision De	ate	14,1	2.201
ĥ				L	Hard		wer 30	Rock core sample (Core Loss) 75 - 90 W-1 Water sample 90 - 100	Good		-			Remarks							

Figure 4.1.42 Boring log BH-BD-11 (1)

BOR	E HO	LE No	. BH-	BD-11	1			BO	RING	LOG	1					Job 1	_	KYB-20. eet No.	_	5 OF 3
PROJ	ECT N	AME :	Geotec	chnical Su	rvey on the	detailed d	lesign for the	Bago River Bridge Construction Project	BORING EQU	JIPMENT		; TOI	10 "DI"	_	DATE	: 01	1.12.2016	-		_
	ATION							lge), Thanlyin Township, Yangon Region.	BORING ME				ary Direct Circ	alation	CLIENT				-	
			-3.35n						ORIENTATIC	Ň		Vert	ical	_	120 C	NEC	FIC	n	IT	n
COOP	RDINA	TE :	E 2052	237.522 ; 1	N 1857879	.348 DI	EPTH :_	65.00m	GROUND W/	TER LE	VEL	: Unc	ler River Bed		NIPPO	VAC	EIC	<i>O.</i> ,	LI.	υ.
	-					22				~	*) ()		STANI	ARD PEN ST METH	ETRATION TEST OD (ASTM)	-	SAM	PLING		
1	(11)	(II)	(ii)			RELATIVE DENSITY (or) CONSISTENCY	1.2	an calory		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	-		RVE OF BLOW	2	(11)		Τ	
SCALE (III)	NOIL	0-1D	THICKNESS (m)	WV	8	IVED	NAME	SOIL DESCRIPTION		& DEP	G (DE	S DEP	DEPTH OL - (m N-Value (Blows / 30cm)	-	N-Value	SAMPLE (Type & No.)		3		
SCALE (III)	TEAN	DEPTH GL-	HICK	DIAGRAM	COLOUR	(or) C(SOLN			ATE	WISN:	VATER	DEPTH OL- N-Value (Blows / 30c	0 10	(Blows / 30cm)	SAA	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
-	-	2	-		0	~	~			4		>	ч 9	0 10	20 30 40 50	-	0	+	~	E
արչիստերիստությունը արչիստերիստությունը					-	Firm	CLAY	Firm to stiff, gray, moist, med	ium to high	1			31.00 8/30			P-29	31.00			the state of the s
1			1		gray	to	CLAI	plasticity, CLAY	ium io mgn	1.1				11			31.45			in the second se
			1.1			very stiff		(08,12,16 32.00			32.00 11/3			P-30	32.00			
3			1										33.00 6/30	4		P-31	33.00			hum
			1										24.00	I II		2.20	33.45 34.00			and band band band band
- International Providence of the International Providence of			1.1										7/30	1		P-32	34.45			al mut
5			-										35.00 10/30			P-33	35.00	21		the second se
6													36.00 11/3			P-34	36.00			and to a triad least to a least t
-			1.14	de c								mî	- 11/3	ΊΝ		1.54	36,45			and a
1													37.00 17/30		7	P-35	37.00 37.45			-
8-41	1.35 3	8.00 1	8.00	100									38.00 16/30		4	P-36	38.00			-
milium			1.1.1					Charles Street					20.00				38.45 39.00			1000
dana da			14		gray	Stiff	CLAY	Stiff to hard, gray, moist, med	ium to high				13/3	2		P-37	39.00			alamati
)]			1.15			to hard		plasticity, CLAY with silt					40.00 18/30	5		P-38	40.00			-
								Thin sand layers are well intercalated layer	observed as				41.00 15/30		$I \mid I \mid$	P-39	41,00	5		
The second se			4	93.2										1		1-39	41.45			
			11										42.00 23/3	9	A	P-40	42.00			
3			1										43.00 26/3			P-41	43.00	2		a la
THE R															I	1.2	43.45	81		
սանհասանհասանհասանհասանհասանհասանհասանհ			1.1										44.00 24/3	5	1	P-42	44.00			the second
5			1	22.2						09.12.16 45.00			45.00 29/3		I¥ I I	P-43	45.00			a da se
6			1										46.00 24/3			P-44	45.45			alana
			2											1		1-44	46.45	94		in the second
7													47.00 24/3		•	P-45	47.00			
8			1	120								19	48.00 30/3		N I	P-46	48.00			-
			i e										10.00				48.45			
			1										49.00 50/3			P-47	49.00 49.45			
													50.00 38/3			P-48	50.00			and a state
			14										51.00 30/3			P-49	50.45 51.00			-
Innte			1.1.											11		P-49	51.45			وما ومعامدها ومعامدة ومعامية المعامية ومعامدها ومع
4			1.1										52.00 28/3		1	P-50	52.00 52.45			and and
			Ę							10.12.16			53.00 21/3			P-51	53.00			
The second se									1.1	55.00			54.00 50/2				53.45 54.00			-
			1										50/3			P-52	54.45			-
			to to										55.00 40/3			P-53	55.00			and a
ului			1.1										56.00 26/2			P-54	55.45 56.00			-
thun the			14											1	N	P-54	56,45			
													57.00 31/3			P-55	57.00			
													58.00 31/3			P-56	58.00			
and the			14										50.00			12.	58.45			
i i i i			1.1							11.12.16 59.00			59.00 21/3	2		P-57	59.00 59.45			
-63	3.35 6	0.00 2	22.00		_	1							60.00 50/1	8		P-58	60.00			
and and			1.1.4					Continue to next sheet		1			61.00			1000	00.00	8		
	OTES	-	in de la companya				-	Sample key			inner stru				Discontinuities					
	Relative		ty descript		Consisten	tency descrip	N-Value	P-1 Disturbed sample (STT sample) PBT Permeab T-1 (Undisturbed Sample T-1 (Lindisturbed Sample) VS Vane Sh		Term Very thick	1		2000	Terr Very widel	y spaced >2	000	(UKKEN	g Engin	neers
F	Very h		0	od	Very sol	2	inat nder 2	B 1-1 (Piston sampler) D-1 (Disturbed Sample D-1 (Distance Sample)	meter Test	Thick Medium	-	600 - 200 -		Widely s Medium		000 600	FGEX	Yangon B	Sranch	4200997 lant.com
F	Loos	s¢		- 10	Soft Firm		2 - 4	(Denison sampler) Rock core sample (Single core tabe) ROD (%) 0 + 25		Thin Very thir		60 - 20 -	200	Closely s	paced 60 - 2	00	Revision N		Rev:	21300
E	Den	se	30	- 50	Stiff		9 - 15	Rock core sample 25 - 50	Poor T	hickly lamin	ated	6 -	20 E	iremely clo	ssely spaced <2		Revision D	ate	14,12	2016
	Very d	ense	ove	r 50	Very stif		6 - 30 over 30	Core Loss)	Good	hinly lamin	ated	\$	Ret	narks						
				100					Excellent											

Figure 4.1.43 Boring log BH-BD-11 (2)

OR	RE H	OLE N	. BH	I-BD-11				<u>B 0</u>	RING	LOG							Job 1		KYB-20 eet No.		OF
								e Bago River Bridge Construction Project	BORING EQU				10 "D1"	an	-	DATE	<u>: 07</u>	12.2016	5~12.1	2.201	6
	ATIO	LEVEL			g Bago River	Bridge (Chanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME ORIENTATIC			: Rotr		Circulation	- CLIEN	<u>r</u>					
					N 1857879	348 DI	PTH :	65.00m	GROUND W			100.00	ler River	Bed	- N	IPPO	N KO	DEI C	<i></i>	LT	D.
Т								1	rossetter (fr		-				ENETRATION THOD (ASTN	TEST			PLING		
	(11		ie l	1.1	1.1	NSITY ENCY				H (m)	(mm))	(II (III)	1.31	100	CURVE OF B	-	1				t.
	UON (I	3L = (m)	ESS (n	×	~	VE DE NSIST	NAME	SOIL DESCRIPTION		DEPT	((DEP	DEPT	m) - 18	30cm)			PLE & No.)	ш) - Д			~
	ELEVATION (m)	DEFTH GL	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (sr) CONSISTENCY	N TIOS			DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL (m)	(Blows/30cm)	N-Val (Blows /)	30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
-	ш	0			0	P2 -	30			2	0	*	ц	B 0	10 20 30	40 50		ñ	-	S.	
					greenish gray	Very dense	Clayey SAND	Very dense, greenish gray to ye moist, fine to medium grained,	llowish gray, low plastic			6	61.00	50/20			P-59	61.00			
					to yellowish		Core and	Clayey SAND					62.00	50/20			P-60	62.00			
					gray									50/20		11	1-00	62.35			
					()								63.00	50/20		1	P-61	63.00 63.35			
													64.00	50/22		+	P-62	64.00			
6	9.63	65.28	5.28		1.					12.12.16			65.00	50/13			P-63	65.00			1
-0.	0.03	03.20	3.40						20.00	65.00			66.00			11		65.28			
								This borehole is terminated according to the termination criteria					-	-							
								and the second					67.00								
													68.00								
													69.00								
													70.00								
													70.00								
													71.00								
													72.00								
													73.00								
													1.2								
													74.00								
													75.00								
													76.00								
													77.00								
													78.00								
													79.00								
													80.00	200							
													81.00								
													81.00								
													82.00								
													83.00								
													84.00								
												16	85.00								
													86.00								
													87.00								
													88.00								
													89.00								
													90.00								
l				2.1					-				91.00					1			
		ES lative dens ve density	-	iption N-Value	Consistenc	tency descrip y SP	ption FN-Value	Sample key Pt-1 Distarbed sample (STT ample) PBT Permeah T-1 (Piston sampler) VS Vane Sh		Term Very thick		Spacing >	(mim) 2000	Very w	Discontinui Ferm idely spaced	Spacing (000	-	FUKKE	ng Eng	ineen
Ì	Ver	y loose	0	(seni)) - 4	Very soft		under 2	PMT Pressure	incirer Test	Thick Medium		600 -	600	Media	ly spaced im spaced	600 - 20 200 - 6	500	rœ∋x	Yangon	TORES SA	- 42008
1	Media	oose am denso	10	r = 10) - 30	Soft Firm		2 - 4 5 - 8	RQD (%) (Single cure tube) 0 - 25	Very poor	Thin Very thin		60 -	60	Very cl	ly spaced osely spaced	60 - 20 20 - 6	0	Revision N	lo.	Rev	_
ĺ		iemse y dense		0 - 50 ver 50	Stiff Very stiff	2 1	9 - 15 6 - 30	Rock core sample (Double core table) 25 - 50 (Double core table) 30 - 75	Fair	sickly lamin hinly lamin		6 - <)		Extremely Remarks	closely spaced	< 20		Revision L	rate	14.1	2.201
				L	Hard		over 30	Gene Loss) 75 - 90	Good Excellent					L							

Figure 4.1.44 Boring log BH-BD-11 (3)

OR	RE HO	OLE N	о. В Н	-BD-12	1			BO	RING	LUG	- 2				-		eet No.	6-025 1 OF
RO	JECT	NAME	: Geot	echnical Su	arvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQ	JIPMENT		; <u>TO</u>	HO "DI"	DATE	: 28	8.11.2016	~ 05.12.	2016
oc	ATIO	N	: Besi	de Existing	Bago River	Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rot	ary Direct Circulation	CLIENT				
RO	UND	LEVEL	: -4.41	m		1 A A			ORIENTATIO	DN		: Ver	tical	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NVO	FIC		TD
00	RDIN	ATE	: <u>E 20</u>	5261.919;	N 1857832.	226 DE	PTH :_	63.00m	GROUND W	ATER LE	VEL	: <u>Un</u>	der River Bed	NIPPO	N AO	EIC	0., L	ID.
Γ				1		1.1.1				1.1	*	10	STANDARD PEN	ETRATION TEST	PMT	SAM	PLING	-
		0	-	IN U	1.00	RELATIVE DENSITY (or) CONSISTENCY				(iii)	CASING (DEPTH (m) DIAMETER (mm))	((m)	TEST METH		T			T
12	ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)			EDE	ME	SOIL DESCRIPTION		DATE & DEPTH (m)	DEP	WATER DEPTH (m)	(m) (m20	RVE OF BLOW .	No)	(E) - 1		
ß	ILVAT	THG	CKN	DIAGRAM	COLOUR	ATTV (L NAME			E&	ING	TER	DEPTH GL - (m) N-Value (Blows / 30cm)	N-Value (Blows / 30cm)	SAMPLE (Type & No.)	DEPTH GL-	TCR (%)	RQD (%)
13	BLE	DEP	IHI	VIC	COL	REI (or	SOIL			DAT	CAS	V/A	01 0 (Blc	20 30 40 50	~E	DEP	TCR	RQI
					brownish	Soft	Sandy	Soft, brownish gray, moist, fine gr	ained, low to	,		1			1.51			
	. 1				gray		CLAY	medium plasticity, Sandy CLAY					1.00 2/30 •		P-1	1.00		
				1.1.1			1.0	and the second second					2.00 2/30		P-2	2.00		
															1.4	2.45		
-	7.41	3.00	3.00		-		-		_				3.00 3/30		P-3	3.00		
					brownish	Very	Clayey	Very loose to loose, brownish g					4.00 3/30		P-4	4.00		
	1				gray	loose to	SAND	wet, fine grained, low plastic Claye	ey SAND							4.45		
						loose		GL: (5.00 ~ 5.45)m, loose, fine (5.00 4/30 •		P-5	5.00	21	
				ee = 10				SAND layer is observed at that dep		28.11.16			6.00 4/30 •		P-6	6.00		
										6.00			7.00			6.45	511	
				····							1.1		7.00 3/30		P-7	7.00		1
				0.00						118	8.00		8.00 4/30		P-8	8.00	6	
	3 41	9.00	6.00								Ø112					8.45		
-1	2.41	2.00	5.00				1.0		100	1		15	9.00 8/30		P-9	9.00		
				1.7	brownish	Loose	Silty	Loose to medium dense, brownish					10.00 14/30		P-10	10.00		
					gray to	to medium	SAND	moist to wet, fine grained, Silty SA	IND				11.00 16/20		2.0	10.45		
					gray	dense							16/30	N	P-11	11.45		
													12.00 28/30		P-12	12.00		
													13.00 21/20			12.45		
												18	21/30	1	P-13	13.45		
													14.00 18/30	4	P-14	14.00		
				N N N	1					30.11.16			15.00 21/20			14.45		
										15.00			21/30	TIII	P-15	15.45		
	. 1											16	16.00 19/30	A	P-16	16.00		
-2	1.41	17.00	8.00			_							17.00 10/20			16.45		
				2.142	gray	Stiff	Sandy	Stiff, gray, moist, fine grained, lo	w to medium	1			10/30		P-17	17.45		
						100	CLAY	plastic Sandy CLAY					18.00 9/30		P-18	18.00		
-2	3.41	19.00	2.00			1							19.00		P-19	19.00		
ſ			1 Th							1			12/50		P-19	19.45		
					gray	Firm	CLAY	Firm to stiff, gray, moist, med	ium to high				20.00		D T-I	<u>20.00</u> (普) cm		
						to stiff	1.11	plasticity, CLAY					21 00		P-20 P-21	21.00		
				1111	1										1-41	21.45		
													22.00 9/30		P-22	22.00		
													23.00 7/30		P-23	23.00		
				1000											F-23	23.45		
													24.00 10/30		P-24	24.00		
													25.00 7/30		P-25	25.00		
										and						25.45		
										01.12.16 26.00			26.00 6/30		P-26	26.00		
										-			27.00 11/30		P-27	27.00		
																27.45		
				1000									28.00 7/30		P-28	28.00 28.45		
													29.00 5/30		P-29	29.00		
													20.00			29.45		
				1222								19	30.00 7/30		P-30	30.00		
1							$ _{\mathcal{L}} = _{\mathcal{L}}$	Continue to next sheet		-			31.00					
ſ	Rel	ES lative dens	ity deser	iption	Consis	lency descrip	Nion	Sample key P-1 Distanted ausple (SPT sample) PBT Permeab	ilin Test	Term	inner stri	-	g (mm) Ten	n Spacing (anm)		UKKEN	CO 11
	Relativ	e density	SPT	N-Value	Consistenc	y SP1	N-Value (mos)	Til Undisturbed Sample VS Vane Sh (Piston sampler)	ear Test	Very thick Thick			2000 Very widel	y spaced > 20	000		Consulting Yangon Bi	Enginee ranch)
F		y loose) - 4	Very soft		inder 2	D-1 Undistutbed Sample (Denison sampler) PMT Pressure	meter Test	Medium		200	600 Medium	spaced 200 - 6	500		W 957 - 80108	
		oose im dense	10	t - 10 2 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 - 25	Very poor	Thin Very thir		60 - 20 -	60 Very closel	y spaced 20 - 6	0	Revision N	_	Rev: 00
	D	ense		0 - 50	Stiff		9 - 15	Rock core sample (Double core tube) 25 - 50		hickly lamin		6 -		osely spaced < 20		Revision D	ate	12.12.20
	Very	dense	01	ver 50	Very stiff		6 - 30		Fair	hinly lamin	ated	<	6 Remarks					-

Figure 4.1.45 Boring log BH-BD-12 (1)

N LEVEL	Beside Existing -4.41m	Bago River	Bridge (T	hanlyin Brid	dge), Thanlyin Township, Yangon Region. BORI	ING EQUIP ING METHO ENTATION DUND WATE	DD ER LEV	EL :	Rotary Vertic	r River Bed STANDA TES	RD PENE F METHC	DATE <u>CLIENT</u> <u>NIPP(</u> TRATION TEST D(ASTM) RVE OF BLOW	ON KO	SAM			
LEVEL (e)-10 HL/20	-4.41m E 205261.919 ;	N 1857832.	226 DE ALISING DENSITIENCE (04) CONSISTENCE Firm to	SOIL NAME	0RU5 63.00m GRO	ENTATION OUND WATE	RLEV	EL :	Vertic Under	al River Bed STANDA TES	RD PENE F METHC	NIPP(TRATION TEST D(ASIM)		SAM			». —
(m)- TD HLARD	<u>E 205261.919 ;</u>	COLOUR	C III (or) CONSISTENCY	SOIL NAME	63.00m. GRO	UND WATE		EL :	Under	r River Bed STANDA TES	METHO	TRATION TEST D (ASTM)		SAM).
DEPTH GL-(m)		COLOUR	C III (or) CONSISTENCY	SOIL NAME				*	T	STANDA TES	METHO	D(ASTM)	PLE & No.)		PLING	T	-
- TD HLdad	THICKNESS (n)		Firm 10	SOIL	SOIL DESCRIPTION		& DEPTH (m)	(DEPTH (m))	(m) HITH	C			PLE & No.)		Τ	T	
- TD HLdad	THICKNESS (Firm 10	SOIL	SOIL DESCRIPTION		& DEPT	(DEP	La	c (m)	COP	CVE OF BLOW	PLE No.)	Ę	- 1		
	THICKN		Firm 10	SOIL			3 1		0	2 28				12			- 7
	8		Firm 10				ATE	DIAM	ATER	DEPTH GL - (m) N-Value (Blows / 30cm)		N-Value (BJows / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%) SUALE (m)
36.00 1		gray	10	CLAN		-	n I	0	3	a e	0 10	20 30 40 50		DF	¥	S	N N
36.00 1		gray	10		Firm to stiff, gray, moist, medium to	e kink			-	6/30	1		P-31	31.00	9		13
36.00 1			sun	CLAI	plasticity, CLAY	o mgn				000				31,45			-
36.00 1			100						f	7/30	1		P-32	32.00 32.45			13
36.00 1									4	3.00 7/30	•		P-33	33.00			
36.00 1									1	4.00 0/20	1		P-34	33,45 34.00			13
36.00 1									Γ	- 9/30	1		1-34	34.45			-
36.00 1										15.00 12/30	1		P-35	35.00			
	7.00	_	-	-		_			2	6.00 19/30		\downarrow	P-36	36.00			3
						02	12.16		3	7.00 18/20			D 37	36.45			1
	2000	gray	Stiff	CLAY	Stiff to hard, gray, moist, medium to	o high 3	12.16					<i>t</i> i	P-37	37.45			hunt
			hard		plasticity, CLAY with silt				1	16/30			P-38	38.00	11		13
	1000				Thin sand layers are well observe intercalated layer	ed as			3	9.00 26/30		NII	P-39	39.00			13
										0.00				_			and the second
									Ē	26/30		1	P-40	40.45			-
									4	1.00 21/30		\mathbf{H}	P-41	41.00	84		4
									4	2.00 26/30		Λ	P-42	42.00			4
										2 00		I I		1.2	21		
									f	24/30			P-43	43.45			Thur a
									4	4.00 36/30			P-44	44.00			4
									4	5.00 14/30			P-45	45.00			4
		8											1.				4
									F	19/30		N	P-46	46.45	81		lum
									4	7.00 26/30		¥ I I	P-47				4
	1.1.1.1					03.	.12.16	. 1	4	8.00 25/30			P-48	48.00			4
						4	8.00			0.00							E.
									F	42/30			P-49	49.00			1
	1.1.1.1								1	22/30			P-50	50.00			5
										1.00 20/30			P-51	51.00			5
	1000									2 00							undans,
									Ê	47/30		7	P-52	52.45			lun
									4	3.00 38/30		1	P-53				15
	2223								4	4.00 37/30			P-54	54.00			5
										5.00							-
									1	24/30			P-55	55.45	11		in the second second
		5							-	6.00 42/30			P-56	56.00	81		15
						04.	.12.16	1	-	7.00 37/30		1	P-57	57.00			5
er 00 -	2.00					5	7.00							57.45			
.0.00 2		Line.	100	1200	Sec. 19. Sec				1	50/27		•	P-58	58.00			illum .
		greenish gray	Very dense	Clayey SAND	moist, fine to medium grained, low				1.0	9.00 50/27		•	P-59	59.00			15
		to yellowish			Clayey SAND				e	50.00 50/17			P-60				6
		gray	_	0-4					ſ				1-00	60.32			and a
s	and the second	1			Sample key				ure							_	E6
-	y description SPT N-Value		1 000		D Undisturbed Sample VS Very Show Tart	Ve	ry thick	1	> 20	00 V4	ry widely	spaced >	2000	_ 0	onsultin	g Engi	neers
loose	0	Very soft		Iner	B 1-1 (Piston sampler) B-1 (Undisturbed Sample D-1 (Deniron number)	M	ledium	1	100 - 6	00	Medium sp	aced 200 -	600	FGEX	Yangon	1006 2000	1) - #20089762 Burd.com
iose m dense	4 - 10 10 - 30	Soft Firm						-					60		-	Rev:	00
mse	30 - 50	Stiff		9 - 15	Rock core sample (Double core tube) 25 - 50 Poor 50 - 75 Fuir	m Thickl	ly lamina							Revision De	ate	12.12	2.2016
-ward	010 30	Hard		o = 30 wer 30				1.00	<6	Rema							_
in in	ž density loose ise a dense	SPT N-Value density SPT N-Value source 0 - 4 se 4 - 10 idense 10 - 30 se 30 - 50	greenish gray to fan to gray to fan to gray to fan to gray to fan f	greenish gray to very dense to very gray to very gray to very gray to very gray gray ve density description Consistency description density SPT N-Value Consistency SPT to very soft to the very soft to	greenish gray to yellowish gray Very dense Clayey Clayey dense Vedeniji description Consistency Clayey dense Vedeniji description Consistency SFT N-Value consistency Set 0 - 4 Very soft e 4 - 10 Soft 2 - 4 ideme 10 - 30 Firm 5 - 8 se 30 - 50 SMF 9 - 15	8.00 22.00 greenish grey Very dense Very book Clayey SND Very book Clayey SND Very book Clayey SND Very book Clayey SND Very book Clayey SND Very book Clayey SND Very book SND Very book SND <td< td=""><td>8.00 22.00 greenish grey Very dense Clayey Very dense, greenish gray to yellowish gray, out, fine to medium grained, low plastic Of a 8.00 22.00 Very out, out, fine to medium grained, low plastic Of a 9 Very out, out, fine to medium grained, low plastic Of a 1 Offense SND 1 Offense ST 1 Offense ST 10 Son 2.4 10<!--</td--><td>8.00 22.00 03.12.16 9 greenish yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy how how how how how how how how how how</td><td>8.00 22.00 8.00 22.00 greenish gry b Very dense 9.01 22.00 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>8.00 22.00 22.00 01.12.16 2 8.00 22.00 2 2 2 2 8.00 22.00 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2</td><td>8.00 22.00 </td><td>8.00 2.2.00 9.112.16 49.00 20.30 9.112.16 49.00 20.30 41.00 21.70 45.00 24.30 44.00 36.30 44.00 36.30 45.00 45.00 45.00 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 42.70 26.30 45.00 42.70 50.00 22.70 51.00 20.30 52.00 47.70 26.30 51.00 20.30 52.00 42.70 50.00 22.70 51.00 20.30 52.00 42.90 52.00 50.02 50</td><td>8.00 22.00 arcentative targeters arcentative targeters arcentative targeters arcentative targeters arcentative targeters bit intercalities (1997) bit intercalities (</td><td>8.00 22.00 20.00 20.00 20.00 9.39 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 9.00 20.30 14.00 14.00 9.40 9.40 9.00 20.30 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00</td><td>8.00 2.2.00 Image: specific big specifi</td><td>State State <td< td=""><td>8.00 22.00 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 <t< td=""></t<></td></td<></td></td></td<>	8.00 22.00 greenish grey Very dense Clayey Very dense, greenish gray to yellowish gray, out, fine to medium grained, low plastic Of a 8.00 22.00 Very out, out, fine to medium grained, low plastic Of a 9 Very out, out, fine to medium grained, low plastic Of a 1 Offense SND 1 Offense ST 1 Offense ST 10 Son 2.4 10 </td <td>8.00 22.00 03.12.16 9 greenish yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy how how how how how how how how how how</td> <td>8.00 22.00 8.00 22.00 greenish gry b Very dense 9.01 22.00 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10</td> <td>8.00 22.00 22.00 01.12.16 2 8.00 22.00 2 2 2 2 8.00 22.00 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2</td> <td>8.00 22.00 </td> <td>8.00 2.2.00 9.112.16 49.00 20.30 9.112.16 49.00 20.30 41.00 21.70 45.00 24.30 44.00 36.30 44.00 36.30 45.00 45.00 45.00 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 42.70 26.30 45.00 42.70 50.00 22.70 51.00 20.30 52.00 47.70 26.30 51.00 20.30 52.00 42.70 50.00 22.70 51.00 20.30 52.00 42.90 52.00 50.02 50</td> <td>8.00 22.00 arcentative targeters arcentative targeters arcentative targeters arcentative targeters arcentative targeters bit intercalities (1997) bit intercalities (</td> <td>8.00 22.00 20.00 20.00 20.00 9.39 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 9.00 20.30 14.00 14.00 9.40 9.40 9.00 20.30 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00</td> <td>8.00 2.2.00 Image: specific big specifi</td> <td>State State <td< td=""><td>8.00 22.00 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 <t< td=""></t<></td></td<></td>	8.00 22.00 03.12.16 9 greenish yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy dense yolowish gray Very dense yolowish gray Claycy how how how how how how how how how how	8.00 22.00 8.00 22.00 greenish gry b Very dense 9.01 22.00 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	8.00 22.00 22.00 01.12.16 2 8.00 22.00 2 2 2 2 8.00 22.00 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2 2 2 2 2 2 8.00 22.00 2	8.00 22.00	8.00 2.2.00 9.112.16 49.00 20.30 9.112.16 49.00 20.30 41.00 21.70 45.00 24.30 44.00 36.30 44.00 36.30 45.00 45.00 45.00 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 26.30 45.00 45.00 45.00 46.00 19.70 42.00 42.70 26.30 45.00 42.70 50.00 22.70 51.00 20.30 52.00 47.70 26.30 51.00 20.30 52.00 42.70 50.00 22.70 51.00 20.30 52.00 42.90 52.00 50.02 50	8.00 22.00 arcentative targeters arcentative targeters arcentative targeters arcentative targeters arcentative targeters bit intercalities (1997) bit intercalities (8.00 22.00 20.00 20.00 20.00 9.39 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 8.00 22.00 40.00 20.30 9.40 9.40 9.00 20.30 14.00 14.00 9.40 9.40 9.00 20.30 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00 14.00	8.00 2.2.00 Image: specific big specifi	State State <td< td=""><td>8.00 22.00 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 <t< td=""></t<></td></td<>	8.00 22.00 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 2000 1000 <t< td=""></t<>

Figure 4.1.46 Boring log BH-BD-12 (2)

ORE H	OLE N	o. BH	I-BD-12				BO	RING	LOG								Job 1	Sh	KYB-20 eet No.	3	OF
							Bago River Bridge Construction Project	BORING EQ		1	: <u>TOH</u>			-	D	ATE	: 28	3,11.2016	~ 05.1	2,201	6
ROUNE	ON D LEVEL	-		g Bago River	Bridge ()	Thanlyin Bri	dge). Thanlyin Township, Yangon Region.	BORING ME ORIENTATIO			: <u>Rotar</u> : Verti		Circulation	- <u>CL</u>	IENT	1.00		1.1.1			
ORDE		-		N 1857832.	226 DI	ертн :_	63.00m	GROUND W.				er River	Bed		NI	PPO	N KO	EIC	<i>O.</i> ,	LT	D.
					22				2	(m) &	-	s	TANDARD F	ENETRA THOD (A	TION TE STM)	51		SAM	PLING		
(m) N	(m)	(B)			RELATIVE DENSITY (or) CONSISTENCY	E.	SOIL DESCRIPTION		DATE & DEPTH(m)	CASING (DEFTH (m) & DIAMETER (mu))	WATER DEPTH (m)	(E)	. CE	CURVEC)F BLOV	•	E (0)	- (m)			
ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	ATIVE	NAME.	10/19/04/00		TE & DI	UNG (TER DE	DEP[1](GL_1(m)	(Blows/ 40cm)	(Bloy	Value ws/30cm	ni	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	(%)	RQD (%)
BLB	DEP	THE	DIA	COL	REL	SOIL		_	EVG	CAS	W.	DEP	(Blo x	0 20			"E	DEP	TCR	SCR (%)	RQL
		1		greenish	Very	Clayey SAND	Very dense, greenish gray to ye	llowish gray,				61.00	50/15				P-61	61.00			
				gray to yellowish	dense	SAND	moist, fine to medium grained, Clayey SAND	low plasue					22				P-62	62.00			
				gray					10.1				50/17			Ĩ	1-02	62.32			
67.72	63.31	5.31		-		-		-	05.12.16 63.00			63.00	50/16			•	P-63	<u>63.00</u> 63.31			
							This borehole is terminated according to the termination criteria					64.00									
							according to the termination enterta	1.				65.00									
												66.00									
											I F	2									
											l ł	67.00									
												68.00									
												69.00									
												70.00									
											†	10.00									
												71.00									
												72.00									
												73.00									
												74.00									
												75.00									
												76.00									
												77.00									
											†	11.00									
												78.00									
												79.00									
												80.00									
												81.00									
												82.00									
												83.00									
												84.00									
												85.00									
												86.00									
												87.00									
												88.00									
												89.00									
												90.00									
	-											91.00									
NOT	_	ite dae-	intion 1	Carrie	onoù dara-t-	niou 1	Sample key	ir.	Ple Term	inner stru				Discon		Spacing (n	am)] [1.00
-	elative density	-	N-Value	Consistence	ency descrip y SPT	N-Value	• r-1 Nucoted sample (SFT sample) PBT Permuch • r-1 Unsistenabed Sample VS Vane Sh • r-1 (Pistors sampler) VS Vane Sh	car Test	Very thick Thick			000	Very w	dely space ly spaced		>20 600 - 20	00		UKKE Consulti Yangor	ng Eng	lineo h)
Ve	ry loose) - 4 1 - 10	Very soft Soft		ander 2 2 - 4	Data Undisturbed Sample (Derison sampler)	Tem	Medium		200 - 2	600	Medi	m spaced ly spaced		200 - 20	00	FGEX	fer: 957 - 96	toligit, pa	9) 4200
Medi	ium dense	10) - 30	Fum		5 - 8	(Single core table) 0 - 25	Very poor	Very this		- 20 - 1	60	Very cl	oely space		20 - 66	>	Revision N Revision D	_	Rev. 72.1	_
	Dense ry dense) - 50 ver 50	Shiff Very stiff	1	9 + 15 6 - 30	(Double core tube) Rock core sample 50 - 75	Fair	hickly lamin hinly lamin		6 - 2 < 6		Extremely Remarks	crosely sp	aced	< 20			-	344	- and
			1	Hard		over 30		Goud Excellent					1.20								

Figure 4.1.47 Boring log BH-BD-12 (3)

BC	ORE H	OLE N	o. Bł	I-BD-13				BO	RING	LOC	2						Job N	_	KYB-201 eet No.	_	5 OF 2
			_					e Bago River Bridge Construction Project	BORING EQ		г		HO "DI"		2	DATE	: 28	.11.2016	~05.12	.2016	4
	CATIC	LEVEL	1.1.1.1		Bago Rive	Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			: Rot		Circulatio	n CLIE	NT					
	ORDIN				N 1857790	671 DI	PTH :	56.00m	GROUND W.		VEL	_	der River	Bed		NIPPO	N KO	EIC	0.,1	TL).
T		-									*		_	TANDARD	PENETRATIO	ON TEST	РМТ	SAM	PLING	_	Т
	(III)	(III)	(iii			RELATIVE DENSITY (or) CONSISTENCY	1,1	Contractor (TH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(B)	1	CURVE OF		-	â		Т	-
(m)	BLEVATION		THICKNESS (m)	WV	5	DIVE D	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	G (DE METER	R DEP	GL- (c	aluc / 30cm	N-V	alue	SAMPLE (Type & No.)	GL - (()	0	(2
or vice (m	ELEV/	DEPTH GL	THICK	DIAGRAM	COLOUR	RELAT (or) C	SOIL 1			DATE	CASIN	WATE	DEPTH GL	(Blows / 30cm)	(Blows	/ 30cm) 0 40 50	SAI (Typ	DEPTH GL - (m)	TCR (%)	SCR (%)	(%) (D)
				119				The second s	1.55.4											T	E
and	21				brownish gray	Very soft	Sandy CLAY	Very soft to soft, brownish gray grained, low to medium plast			11		1.00	1/30			P-1	1.00			adara den sten den
11111						to soft		CLAY	01.00				2.00	2/30			P-2	2.00			
								1.					3.00	2/30			P-3	3.00			
	-8.42	4.00	4.00				1.5						4.00				10.3	3.45			
	-0.42	4.00	4.00		1				and the second second					2/30			P-4	4.45			
and and					brownish gray	Very loose	Clayey SAND	Very loose to loose, brownish g wet, fine grained, low plastic Claye		28,11.16			5.00	3/30			P-5	5.00			
reported and and and and and and and and and an						to loose		GL: (6.00 ~ 6.45)m, soft, fine	grained, low				6.00	4/30			P-6	6,00			
11111								plasticity, Sandy CLAY layer is intercalated layer at that depth	observed as				7.00	1				6.45 7.00			
in the second	-12.42	8.00	4.00										8.00	-11			U T-1	(#) cm 7.80 8.00			
	12.12	0.00	4,00	**		6.0	200			1				5/30			P-7	8.45			
and and				* * *	brownish gray to	Loose to medium	Silty SAND	Loose to medium dense, brownish moist to wet, fine grained, Silty SA			1.1		9.00	4/30			P-8	9.00 9.45			
antentantentantentantantentantantan	1			* *	gray	dense	1	GL: (11.00 ~ 11.45)m, stiff, fine			10.00 Ø112		10.00	23/30	1		P-9	10.00			
								plasticity, Sandy CLAY layer is ob depth	served at that		0.112		11.00	15/30	1		P-10	11.00			
								GL: (12.00 ~ 12.45)m, medium	dense, fine				12.00				101	11.45			
				2.2.3				grained, Clayey SAND layer is ob depth	served at that				10.2	15/30	1		P-11	12.45			
				**									13.00	19/30			P-12	13.00 13.45			
the second second	5.1												14.00	15/30			P-13	14.00			
	-19.42	15.00	7.00			_							15.00	7/30			P-14	15.00			
other					gray	Firm	Sandy	Firm to stiff, gray, moist, fine gr	ained, low to				16.00	9/30	V		P-15	15.45			
and the state of t						to stiff	CLAY	medium plasticity, Sandy CLAY					17.00				1.0	16.45 17.00			- 6
directs.														10/30	1 I		P-16	17.45			
	5												18.00	14/30	>		P-17	18.00 18.45			
	-23.42	19.00	4.00						_				19.00	9/30	4		P-18	<u>19.00</u> 19.45			
in the	21						CLAY	Firm to very stiff, gray, moist, me	diana da biab	30.11.16			20.00	12/30	1		P-19	20.00			
and and					gray	Firm to stiff	CLAT	plasticity, CLAY	unun io ingi	20.00			21.00		I		1.51	20.45			
1 mil								GL: (31.00 - 31.45)m, very stiff, low to medium plasticity, Sandy C					1.1	10/30	1		P-20	21.45			
and								observed as intercalated layer at the	at depth				22.00	10/30	*		P-21	22.00 22.45			
													23.00	5/30			P-22	23.00			
a little													24.00	5/30			P-23	24.00			
in the second													25.00	7/30			124	24.45			
art ree													26.00	1/30			P-24	25.45	81		
line li													26.00	5/30			P-25	26.00 26.45			
													27.00	9/30	¥		P-26	27.00			
													28.00	10/30	+		P-27	28.00			
													29.00	6/30	1		P-28	28.45 29.00			
													30.00					29.45 30.00			- 6
<u>Tatankatankatankatankatankatankatan</u>								Continue to next sheet					12	9/30	N		P-29	30.00			
1	NOT	ES	-					Sample key			anner str	_	31.00	_	Discontin		1			_	_
		lative density	-	ription N-Value	Consistence	tency descrip	tion N-Value	P-1 Disturbed sample PBT Permeab T-1 Undistrubed Sample VS Varie Sh (Pston sampler)		Term Very thick		>	g (nun) 2000	Very v	Term videly spaced	Spacing (n >20	00		UKKEN	g Engir	neers
	Ver	y loose	-	0 - 4	Very soft	2	inder 2	D-1 (Design sampler) D-1 (Design sample	meter Test	Thick Medium		200	- 2000 - 600	Med	lely spaced	600 - 20 200 - 6	00	rg=x	Yangon E	Branch	1) - 4200887.
	Media	oose am dense	1	u - 10 0 - 30	Soft Firm		2 - 4	Rock core sample (Single core tube) 0 - 25	Very poor	Thin Very this		20		Very e	sely spaced losely spaced	60 - 20	0.	Revision M Revision D	-	Rev: 1	00
		ense y dense		0 - 50 wer 50	Stiff Very stiff	- 1	9 - 15 6 - 30	Rock core sample (Double core tubic) 25 - 50 Rock core sample (Core Loss) 50 - 75 75 - 90 75 - 90	Fair	hickly lami hinly lamir		6 -	20 6	Extreme Remarks	ly closely spac	ed <20		Sevenan D	ule	Jeal	.culti
					Hard		wer 30		Good Excellent						_						

Figure 4.1.48 Boring log BH-BD-13 (1)

BOR	EHO	OLE No). BH	-BD-13	1.0			BO	RING	LUG	2						Sh	eet No.	. 2	25 OF
PRO	JECT	NAME	Geot	echnical Su	rvey on the	detailed d	esign for the	Bago River Bridge Construction Project	BORING EQU	JPMEN	÷	TOP	O "DI"		DATE	12	8.11.2010			-
	ATIO				Bago River	r Bridge (7	hanlyin Brid	dge), Thanlyin Township, Yangon Region.	BORING ME					Circulation	CLIENT		_			-
		LEVEL	-					1.2.	ORIENTATIC			: Vert		10		ON KC	DELC	O.,	LT	D.
coo	RDIN	ATE	: <u>E 20</u>	5289.363 ; 1	N 1857790.	671 DI	PTH :	56.00m	GROUND W	TER LE	VEL	Und	er River		-			~"		
Т						65				î	(III) &	(î	8	TANDARD F	ENETRATION TEST THOD (ASTM)		SAN	PLING	-	- 1
	(m) N	Ĵ.	S (m)			RELATIVE DENSITY (or) CONSISTENCY	ei ei	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(III) -	(m)	CURVE OF BLOW	E (0)	(m) -			
	ELEVATION (m)	DEPTH GL.	THICKNESS (m)	DIAGRAM	COLOUR	ATIVE	SOIL NAME			E&D	TING (1	LER DE	DEPTH GL.	(Blows/30cm)	N-Value (Blows / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	(%)	(%)
	ELE	DEP.	THIC	DIA	COL	REL. (or)	SOIL		_	DAT	CAS	IVM	DEP	(Blo.	10 20 30 40 5	0 s	DEPI	TCR (%)	SCR (%)	RQD (%)
													31.00				31.00	-		1
					gray	Firm to	CLAY	Firm to very stiff, gray, moist, me plasticity, CLAY	dium to high	01.12.16 31.00			51.00	26/30		P-30	31,45			
				-1-1-1-1		stiff		GL: (31.00 ~ 31.45)m, very stiff,	fine grained	1.1		é	32.00	7/30		P-31	32.00			
			1					low to medium plasticity, Sandy C observed as intercalated layer at tha	LAY layer is				33.00	9/30		P-32	33.00			
			1	1999				observed as intercatated layer at tha	it depth				34.00				33,45			
			13	1.1.1								3	34.00	15/30		P-33	34.00			
			1									14	35.00	8/30		P-34	35.00			
-4	0.42	36.00	17.00		-								36.00	11/30		P-35	36.00			
			1	Field a				L					37.00				36.45			
			1		gray	Stiff to	CLAY	Stiff to hard, gray, moist, med plasticity, CLAY with silt	ium to high				1	23/30		P-36	37.45			
						hard		Thin sand layers are well	alwani a				38.00	23/30	*	P-37	38.00			
			1					intercalated layer	observed as				39.00	19/30		P-38	39.00			
										02.12.16			40.00	20/30		P-39	39.45 40.00			
										40.00			41.00				40.45			
			1										41.00	25/30		P-40	41.45			
			3									10	42.00	24/30		P-41	42.00			
													43.00	38/30		P-42	43.00			
			1										11.00				43.45			
			3										-	40/30	1	P-43	44.45			
			3									163	45.00	32/30	¥ I	P-44	45.00			
			13										46.00	26/30	4	P-45	46.00			
													47.00	27/30		P-46	46.45			
			13							1.1			1.2	27/30		1-40	47.45			
										03.12.16 48.00			48.00	27/30		P-47	48.00			
												13	49.00	13/30	•	P-48	49.00			
			13										50.00	14/30		P-49	50.00			
-5	5.42	51.00	15.00	2253									51.00				50.45			
1					1									50/30		P-50	51.45			
					greenish	Dense to	Clayey SAND	Dense to very dense, greenish gray				114	52.00	50/30		P-51	52.00 52.45			
					gray to vellowish	very dense	SAUD	gray, moist, fine to medium grained Clayey SAND	u, low plastic			1	53.00	50/30		P-52				
			3		gray					04.12.16			54.00	50/30		P-53	53.45			
-6			1							54.00							54.45			
			1	in a la									55.00	50/22		P-54	55.00			
-6	0.82	56.40	5.40		-					05.12.16 56.00			56.00	50/25	3	P-55	56.00			
								This borehole is terminated				13	57.00							
								according to the termination criteria	1.				58.00							
													59.00							
													60.00							
					1							1	61.00							
Г	Rel	2 <u>S</u> ative densi	ty deser	iption	Consis	tency descrip	Nion	Sample key P-1 Distarbed sample (SPT iample) PBT Permeabing	ility Test	Term		Spacing				ng (mm)		FUKKE	EN CO	
		e density		N-Value mail	Consistenc	2	N-Value Inset	T-i Undistarbed Sample VS Vanc Sta (Piston sampler) PMT Pressure		Very thick Thick		600 -		Wide	ly spaced 600	> 2000 - 2000		Consult (Yango	ing Eng n Brand	ginee ch)
F	Lo	loose	- a	0 - 4 4 - 10	Very soft Soft		inder 2 2 - 4	D-1 (Denison sompler) RQD (%) RQD (%)	Term	Medium Thin		200 -	200	Close		- 200	Revision N	and offers		- 4200 - 4200 - 4200
F	D	m dense mse	30	0 - 30 0 - 50	Firm Stiff		5 - 8 9 - 15	(Single core tube) 0 = 25 Rock core sample (Double core tube) 25 = 50	Poor	Very thir hickly lami	nated	20 - 6 -	20			~ 60 < 20.	Revision I	-		12.20
. 1	Van	dense	1	ver 50	Very stiff	1 1	6 - 30	Back same samels 50 - 75	Fair	hinly lamin		50		Remarks				_		

Figure 4.1.49 Boring log BH-BD-13 (2)

BC	ORE H	OLE No	. BH	I-BD-14				<u>B 0</u>	RING	LOC	_							Job N	She	KYB-201 eet No.	1	OF 1
	OJECT		2000					e Bago River Bridge Construction Project dge), Thaketa Township, Yangon Region.	BORING EQ BORING ME		r		HO "D1"	t Circulatio			TE	: 15	.11.2016	~ 19.11	.2016	-
		LEVEL	0.00		bago love	r bridge (1	hantytit bit	uger, Thaketa Township, Tangou Region.	ORIENTATIO			t Ver		Cheman		IENT					-	
co	ORDIN	ATE	: <u>E 20</u>	4473.747 ;	N 1859195	.701 DE	ертн :_	48.00m	GROUND W	ATER LE	VEL	: <u>1.1</u>	Om	_	_	NL	PPO	N KO	EIC	<i>0., 1</i>	.11	
Ι	-		1			22					m)&		2	STANDARD TEST M	PENETRA ETHOD (TION TE ASTM)	ST	PMT	SAM	PLING	_	
Sector Contractor	ELEVATION (m)	DEPTH 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)	N-Value (Blows/30cm)	1	OF BLOW)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
mulum	3.13		1.00	1	brownish gray	Loose	Filled	Loose, brownish gray, moist, fine grained, SAND (Filled Soil)	e to medium	-			1.00			30 4	0 50	1.2	1.00	-		
and a dealer of a deale	3.13	1.00	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 the	fine grained, LAY layer is	15.11.16 7.00		¥	2.00 3.00 4.00 5.00 6.00	2/30 2/30 0/45 1/30 2/30 2/30				P-1 Bw-1 P-2 PMT-01 P-3 T-1 P-4 PMT-02 P-5 P-6	1.45 2.00 2.45 3.00 3.50 - 1.95 4.00 (B) cm 4.80 5.00 5.45 6.00 5.45 6.00 7.00			
	-3.87	8.00	7.00		gray	Very loose to medium dense	Silty SAND	Very loose to medium dense, gray, fine grained, Silty SAND	moîst to wet,	7,00	10.00 Ø112	<u>)</u>	8.00 9.00 10.00 11.00 12.00 13.00 14.00	2/30 15/30 17/30 13/30 6/30 18/30 14/30				P-7 P-8 PMT-03 P-9 P-10 P-11 P-11 P-12 P-13	7.45 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			
3	-13.87	18.00	10.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine	<u>16.11.16</u> 20.00	Ŀ		15.00 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00	14/30 16/30 19/30 14/30 32/30 22/30 30/30 50/21 43/30		××		P-14 P-15 P-16 P-17 P-18 P-19 P-20 P-21 P-22	15.00 15.45 16.00 16.45 17.00 17.45 18.00 18.45 19.00 19.45 20.00 20.45 21.00 21.45 22.00 22.36 23.00			
whether we have been and a strated and a strated with the	- <u>21.87</u>	26.00	8.00		gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND	y, moist, fine	-			24.00 25.00 26.00 27.00 28.00 29.00 30.00	22/30 26/30 30/30 39/30 50/20 30/30 41/30		1 and	>	P-22 P-23 P-24 P-25 P-26 P-27 P-28 P-29	23.45 24.00 24.45 25.00 25.45 26.00 26.45 27.00 27.45 28.00 28.35 29.00 29.45 30.00			
THEFT		-				-	-	Continue to next sheet	-				31.00	- 1				1	30.45			
And the second se	Relativ Ver L Media D	ES lative density ve density y loose oose am dense lense y dense	SPT	iption N-Value unait 0 - 4 4 - 10 0 - 30 0 - 50 ver 50	Consistence Very soft Soft Firm Stiff Very stift Hard		N-Value miler miler miler miler miler 2 - 4 5 - 8 9 - 15 6 - 30 wer 30	Samuels key ● A (bits-bot wenty) PBT Permeak ■ J. (undicated Sample,] J. (undicated Sample,] Lindicated Sample,] Lindicated Sample,] Lindicated Sample,] Lindicated Sample,] Rock core sample [Rock core sample] Rock core sample] Rock cor	car Test meter Test Very poor Poor Fair	PI Term Very thick Thick Medium Thin Very thi hickly lamin thinly lamin	k n nated	Spacing	g (nm) 2000 2000 - 600 200 - 60 200 - 60 20	Wis Mec Clo Very c	Disco Term widely space lely spaced fium spaced sely spaced closely space ly closely s	ed	Spacing (n > 200 600 - 20 200 - 60 60 - 20 20 - 60 < 20	00 00 00 0 0 7	- 0	2.	g Engi Branch	neers 1) - 42009 Iert con

Figure 4.1.50 Boring log BH-BD-14 (1)

301	RE H	OLE N	o. Bl	I-BD-14				BC	RING	LOG							Job N	_	KYB-20 eet No.	-	OF
								Bago River Bridge Construction Project	BORING EQ			-	10 "DI"		DA	TE	: 15	11.2016	~ 19.11	2016	5
	CATIC				Bago Rive	r Bridge (I	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME					t Circulatio	CLIENT	100				1.	7
	ORDIN	LEVEL	-		N 1859195	.701 DF	PTH :	48.00m	ORIENTATIO			: <u>Ver</u>				PON	N KO	EI C	0., 1	LTI	D.
Τ	on on								Sale et le la	1	-	1	_	STANDARD	PENETRATION TES ETHOD (ASTM)	T		SAM	PLING	-	-
	î					NSITY				H (m)	CASING (DEPTH (m) & DIAMETER (mm))	(m) H		TEST M	CURVE OF BLOW		1		T	1	
	I) NOI	(II) - (III)	ESS (n	N	2	VE DE NSIST	NAME	SOIL DESCRIPTION		DEPT	(DBP ETER	DEPT	il (m	30cm)	10.00 Mar 10.000 M		R No.)	ш) (ш			U.
	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (or) CONSISTENCY	SOIL N			DATE & DEPTH (m)	NSING	WATER DEPTH (m)	DEPTH GL -(m)	N-Value (Blows / 30cm	N-Value (Blows / 30cm)		SAMPLE (Type & No.)	DEPTH GL- (m)	TCR (%)	SCR (%)	RQD (%)
-	田.	o I	F	а ж. ж. т	gray	Medium	Silty	Medium dense to very dense, gra	e moist fine	0	Ú.	3	0	€ 0	10 20 30 40	50	-	10	¥	Ň	8
				N	gray	dense to	SAND	to medium grained, Silty SAND	y, moisi, mie				31.00	41/30			P-30	31.00			
	797	32.00	6.00	**	-	very dense							32.00				1.11	31.45 32.00	21		
	27.07	52.00	0.00			Junior	1			1			12.00	35/30	1		P-31	32.45			
and an average before the second second second second second					gray	Medium	Clayey SAND	Medium dense to very dense, gra					33.00	31/30			P-32	33.00			
						dense to very	SAMU	to medium grained, low plastic Cla	iyey SAIND				34.00	50/30			P-33	34.00			
					2	dense							75.00	831		1		34.45			
										17.11.16 35.00	2.		35.00	45/30		٩.	P-34	35.00 35.45			
													36.00	50/17			P-35	36.00 36.32			
													37.00	46/30			P-36	37.00			
ļ	13 07	38.00	6.00										10 00			1		37.45			
1	13.6/	38.00	0.00							1			38.00	50/15		1	P-37	38.00 38.30			
	1				greenish gray	Very dense	Clayey SAND	Very dense, greenish gray, m medium grained, low plastic Claye	oist, fine to				39.00	50/18			P-38	<u>39.00</u> 39.33			
					giay	uense	SAND						40.00	50/20			P-39	40.00	1		
								GL: (42.00 ~ 42.32)m; fine grave at that depth	I is including					30/20		T	1.50	40.35			
												18	41.00	50/15		+	P-40	$\frac{41.00}{41.30}$			
													42.00	50/17			P-41	42.00			
	38.87	43.00	5.00							18.11,16			43.00					43.00			
1			1				Te	1000 - 1000 - 1000 - 100	2.2	43.00				50/22		T	P-42	43.37			
					yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown to re moist, fine to coarse grained, low p					44.00	50/22		+	P-43	44.00			
					to reddish			SAND					45.00	50/23			P-44	45.00			
					brown								46.00					45.38			
														50/20		T.	P-45	46.35	54		
													47.00	50/25		+	P-46	47.00			
	44 17	48.30	5.30							19.11.16			48.00	50/15		+	P-47	48.00	5.1		
-	1.1.1	40.00	2.020					This borehole is terminated	at 48.00m	40.00			49.00	100			1.0	40.00			
					L			according to the termination criteri										11			
													50.00								
													51.00								
													52.00								
													53.00								
													54.00								
													55.00								
													56.00								
													57.00								
													58.00								
													-00.00	1							
													59,00								
													60.00								
													61.00								
	NOT							Sample key			nner stru		61.00		Discontinuities				1	1	
h		lative den ve density	-	N-Value	Consistent	tency descrip	N-Value	Pr. 1 Distanted sample (SVT sample) PBT Permeab T. (Undistanted Sample VS Vene St VS Vene St		Term Very thick		>	g (mm) 2000		videly spaced	pacing (m > 200	0	- 0	UKKEN	g Engi	inee
	_	y loose		0 - 4	Very sof	с <u>к</u>	under 2	Oriston sampler) Orit Undisturbed Sample PMT Pressure Orit Undisturbed Sample	uneser Test	Thick Medium		600 - 200 -	600	Med	ium spaced	600 - 200 200 - 60	0	FGEX	Yangon	0098. 958	h)
F		oose um dense		4 - 10 0 - 30	Soft Firm		2 - 4 5 - 8	Rock core sample (Single core tube) 0 + 25	Very poor	Thin Very thin		60 - 20 -			ely spaced losely spaced	60 - 200 20 - 60		Revision No	·	Rev.	01
	D	ense y dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Deuble core tube) 25 - 50 50 - 75	Poor T	hickly lamin hinly lamin	ated	6 - <	20	Extreme	ly closely spaced	< 20		Revision D	ate	10.0	1.20
					Hard		over 30	Core Loss)			-	-	-	Remarks							

Figure 4.1.51 Boring log BH-BD-14 (2)

<u>108.11.2016 ~ 12.11.2016</u> X KOEI CO., LTD. SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMPLING SAMP
SYMMETING (175F & No.) TCR (%) SCR (%) BETH GL - (m) BCR (%) BCR (%)
SYMMETING (175F & No.) TCR (%) SCR (%) BETH GL - (m) BCR (%) BCR (%)
SAMPLE (Type & No.) DEPTH GL - (m) TCR (%) SCR (%) SCR (%)
SAMPLE (Type & No.) DEPTH GL - (m) TCR (%) SCR (%) SCR (%)
$\begin{array}{c} P_{-1} & 1.00 \\ \hline 0 & 1 & 1.45 \\ P_{-2} & 2.00 \\ 2.45 \\ \hline 0 & 7_{-1} & \hline 0 & \hline 0 & 0 \\ \hline 0 & 7_{-1} & \hline 0 & \hline 0 & \hline 0 & 0 \\ \hline 0 & 7_{-1} & \hline 0 & \hline 0 & \hline 0 & 0 \\ \hline 0 & 7_{-1} & \hline 0
■×1 1.45 P-2 2.00 2.45 3.00 P-3 4.00 4.45 5.00 P-4 6.00 P-4 6.00 Y-3 7.00 Y-3 7.00 Y-3 7.00
$\begin{array}{c c} P-2 & \underline{2.45} \\ \hline & 2.45 \\ \hline & 3.00 \\ P-3 & \underline{4.00} \\ P-3 & \underline{4.00} \\ \hline & 1.2 & \underline{60} \\ \hline & 1.2 & \underline{60} \\ \hline & 1.2 & \underline{60} \\ P-4 & \underline{6.45} \\ \hline & 1.3 & \underline{7.00} \\ \hline & 1.3 & \underline{7.00} \\ \hline & & 0.0 \\ \hline \end{array}$
$ \begin{array}{c} & 3.00 \\ \hline m & T-1 & \hline m \\ 3.80 \\ P-3 & 4.00 \\ \hline 4.45 \\ \hline m T-2 & \hline m \\ \hline m \\ P-4 & 6.00 \\ \hline P-4 & 6.45 \\ \hline m \\ T-3 & \hline m \\ m$
B P-3 4.00 P-3 4.45 5.00 P-4 6.00 P-4 6.00 P-4 6.00 P-4 6.00 P-3 T-3 ∰ cm 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-3 5.00 P-4 P-4 5.00 P-4 5.
4.45 5.00 P-4 6.00 P-4 6.00 0 7.00 0 T-3 @ cm
y 7-2 (∰ cm 5.80 p.4 6.00 6.45 1.3 (∰ cm 7.3 (∰ cm)
P-4 6.00 6.45 T-3 (20) cm
₩ T-3 (₩) cm
0 1-3 (m) cm
7.80 p.5 8.00
P-5 8.00 8.45
P-6 9.00 9.45
P-7 10.00
10.45 p.e. 11.00
111112
P-9 12.00 12.45 P-10 13.00
P-10 13.00
13.45
14.45
P-11 14.00 14.45 P-12 15.00 15.45 P-13 16.00 16.05
P-13 16.00
10.45
17.45
P-15 18.00 18.45
P-16 19.00
P-14 17.00 17.45 P-15 18.00 18.45 P-16 19.00 19.45 P-17 20.00 P-17 20.045
20.00
P-18 21.00 21.45
P-19 22.00 22.45
P-20 23.00
23.45
P-21 24.00 24.45
P-22 25.00 25.45
P-23 26.00
26.45
P-21 2440 2445 P-22 25.00 25.45 P-23 26.00 26.45 P-24 27.00 27.40 P-25 28.00 28.45 P-26 29.00 29.45 P-27 30.00 30.45
P-25 28.00 28.45
P-26 29.00
29,45
P-27 30.00 30.45
m) FUKKEN CO., LTD. Consulting Engineers
(Yangon Branch)
TOEX BY WARRANGEDOCTOR
Revision No. Rev. 01 Revision Date 10.01.2017
10 10

Figure 4.1.52 Boring log BH-BD-15 (1)

Final Report

во	RE H	OLE N	o. BH	-BD-15				BO	RING	LOG						Job 1		KYB-20. set No.		5 OF
PR	OJECT	NAME	Geot	echnical Su	arvey on the	detailed d	lesign for the	Bago River Bridge Construction Project	BORING EQU	IPMENT	1.0	TOH	10 "D1"	-	DATE	: 08	3.11.2016		_	-
LO	CATIC	0N	Besi	de Existing	Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME	THOD		Rota	ry Direc	t Circulation	CLIENT		-		-	-
		LEVEL			30000	10.024			ORIENTATIC			: Vert	2012		- NIPPO	NKO	EIC	0.1	TI).
co	ORDIN	NATE	: <u>E 20</u>	4501.604 ;	N 1859154	.812 DI	EPTH :_	51.00m	GROUND W/	TER LE	VEL	: 1.00	_		-		Lic	0., 1		~
			1			έż				8	(m) &	(1		TEST ME	ENETRATION TEST THOD (ASTM)		SAM	PLING		
	N (m)	(III)	S (m)	1		RELATIVE DENSITY (or) CONSISTENCY	ش	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m)	Î	CURVE OF BLOW	10 ⁴	(m)			
	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	DUR	CONS	NAME			E&DI	NG (D	ER DE	DEPTH GL	(Blows / 30cm)	N-Value (Blows / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	8	(%)
	ELEV	DEPT	THIC	DIAG	COLOUR	REL) (or)	TIOS			DATH	CASI	WAT	DEPT	(Blow	10 20 30 40 50	s,E	DEPT	TCR (%)	SCR (%)	RQD (%)
		111		* * *	100		1.5.1	1 2	1.015							1.5				
	24			* * *	gray	Medium dense	Silty SAND	Medium dense to very dense, gra to medium grained, Silty SAND w	y, moist, fine	09.11.16 31.00			31.00	32/30		P-28	31.00 31.45			
				* * *		to very	See	Thin clay layer is intercalated in th					32.00	41/30	}	P-29	32.00			
				* * *		dense		Thin ciay layer is intercatated in th	is layer				33.00	29/30		P-30	32.45			
				* * *		1.0		I Della Children Inna						29/50		1-50	33.45			
	29.76	34.00	10.00		-			-					34.00	25/30		P-31	34.00	21		
	-		1		gray	Medium	Clayey	Medium dense to very dense, gra					35.00	40/30		P-32	35.00		н	
						dense to	SAND	to medium grained, low plastic Cla	iyey SAND				36.00	38/30		P-33	35.45 36.00		н	
						very dense								38/30	ПЛГ		36.45			
				11									37.00	26/30		P-34	37.00 37.45			
			3										38.00	41/30		P-35	38.00			
													39.00	50/28		P-36	39.00			
			3										40.00				<u>39.43</u> 40.00			
														50/20		P-37	40.35			
												1.	41.00	50/25	+	P-38	41.00			
										10.11.16			42.00	50/25	+	P-39	42.00			
	38.76	43.00	9.00							42.00			43.00	-		P-40	42.40			
			1		reddish	New	C 1	Very dense to dense, reddish brow	a and the					50/29			43.44			
			1		brown	Very dense to	Clayey SAND	to medium grained, low plastic Cla					44.00	50/30	1	P-41	44.00	11		
						dense							45.00	43/30		P-42	45.00			
	41.76	46.00	3.00		-								46.00	50/30		P-43	46.00			
					yellowish	Dense	Clayey	Dense to very dense, yellowis	h brown to				47.00				46.45			
			1		brown	10 very	SAND	reddish brown, moist, fine to co low plastic Clayey SAND	arse grained,				1.1.2	50/28	†	P-44	47.43			
					reddish brown	dense		tow plastic chaycy shirts				19	48.00	50/24	+	P-45	48.00 48.39			
					, sterne					11.11.16 49.00		1.3	49.00	50/27	+	P-46	49.00 49.42			
										24420			50.00	50/22		P-47	50.00			
					0					3.3				50/22		1-47	50.37	81		
	47.06	51.30	5.30	-	-		-			12,11,16 51.00			51.00	50/15	†	P-48	51.00 51.30	1		
								This borehole is terminated according to the termination criteri		171			52.00			1.00	-			
								according to the termination erneri	d.				53.00							
													54.00							
	24												1							
	5												55.00							
	1												56.00							
													57.00							
													58.00							
													59,00							
													60.00							
			1.	1.000	· · · · ·								61.00							
; 1	NOT	ES lative dens	in the s	intine 1	- March	tency descrip	tion 1	Sample key	1	Term	nner stru	cture Spacing	_		Discontinuities ferm Spacing (mm) 1 [- L	-	
	-	lative density	SPT	N-Value	Consistent	Lore	N-Value	T-1 Undistanted Sample VS Vane Sh	nility Test	Very thick Thick			2000	Very wi	dely spaced >2 ly spaced 600 - 2	000		UKKEN Consulting Yangon B	Engi	nee
	Ver	y loose	() - 4 - 10	Very soft Soft		inder 2	D-1 Undisturbed Sample (Denison sampler)	Term	Medium	-	200 -	600	Media	y spaced 600 - 2 un spaced 200 - ly spaced 60 - 2	600	FGEX		896 ¥59	
ļ	Medi	oose am dense	10) - 30	Firm		5 - 8	(Single core tube) . 025	Very poor	Very thir		20 -	60	Very cla	osely spaced 20 - 1	i0	Revision N Revision D	_	Rev: 10.01	
l		lense y dense		0 - 50 /er 50	Shift Very stift	r 1	9 - 15 6 - 30	Rock core sample (Double core table) 25 - 50 Rock core sample (Core Loss) 50 - 75 75 - 90 75 - 90	Fair T	nickly lamin hinly lamin		6 -		Remarks	closely spaced <2				1.00	_
					Hard	1	over 30	to the second seco	Good 0 Excellent					-						

Figure 4.1.53 Boring log BH-BD-15 (2)

SOF	RE H	OLE No	o. BH	I-BD-16				<u>B O</u>	RING	LOO	3				_		_	Job N		KYB-20 eet No.	-	25 OF 2
			-					Bago River Bridge Construction Project	BORING EQ		т	-	HO "DI"		-	D	ATE	: 08	.11.2016	~ 12,1	1.2010	6
	OUND	LEVEL	1.77		Bago Rive	r Bridge (1	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME			: Ner		et Circulati	on	CLIENT						
coc	ORDIN	ATE	: <u>E 20</u>	4526.627 ;	N 1859111.	524 DE	ртн :_	57.00m	GROUND W	ATER LI	VEL	: 1.3		_		N	IPPO.	N KO	EIC	0., 1	LTI	D.
Τ	-1		1		1.45	22	10,011				3) (m)		12.3	STANDAR TEST	D PENE METHO	RATION T D (ASTM)	EST		5AMI	PLING	Ŀ,	
	ELEVATION (m)	DEPTH 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)	N-Value (Blows / 30cm)		Ne OF BLO NeValue (Blows / 30c 20 30	m)	SAMPLE (Type & No.)	(m) - 10 HI190	TCR (%)	SCR (%)	RQD (%)
					brownish	Loose	Filled	Loose, brownish gray, moist, fine	e to medium			11			T		TT	1	1.1			
	3.35	1.00	1.00		gray gray	Very soft to soft	CLAY	grained, SAND (Filled Soil) Very soft to soft, gray, moist to we plasticity, CLAY, with silt Silt percent is increased downward.			<u>3.00</u> Ø112	¥	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00	0/45 • 0/45 • 0/45 • 2/30 •				P-1 Bw+1 P-2 P-3 P-3 P-4 P-4 P-5 D T-5	1.00 1.45 2.00 cm 2.80 3.00 3.45 5.00 5.45 6.00 () cm 6.80 7.45 8.00 () cm 6.80 9.00 9.45 10.72			
			4.00	* * * * * * * * *	gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, grained, Silty SAND	moist, fine				11.00 12.00 13.00 14.00	5/30 5/30 15/30 13/30				P-6 P-7 P-8 P-9	11.00 11.45 12.00 12.45 13.00 13.45 14.00 14.45 15.00			
		26.00			greenish gray to gray	Medium dense to dense	Silty SAND	Medium dense to dense, greenish moist, fine to medium grained. Silt Thin clay layer is intercalated in thi	y SAND	08.11.1	<u>5</u>		16.00 16.00 17.00 19.00 29.00 21.00 23.00 23.00 24.00 25.00	20/30 23/30 30/30 21/30 25/30 25/30 33/30 21/30 20/30 13/30 15/30 22/30	ť			P-10 P-11 P-12 P-13 P-14 P-15 P-16 P-17 P-18 P-19 P-20 P-21	15.45 16.00 16.45 17.00 17.45 18.00 19.45 20.00 20.45 21.00 20.45 21.00 22.45 23.00 23.45 23.00 23.45 24.00 24.45 25.45 25.45 25.45			
	NOT				gray	Medium dense to very dense	Silty SAND	Medium dense to very dense, gray to medium grained, Silty SAND wi GL: (29.0 ~ 30.45)m, clay percent at that depth Continue to next sheet Samete key	ith clay		lanner stir		27.00 28.00 29.00 30.00	22/30 19/30 27/30 32/30 50/29	-			P-21 P-22 P-23 P-24 P-25	26.45 27.00 27.45 28.00 28.45 29.00 29.45 30.00 30.44			
	Relativ Ver L. Media	lative densi ve density y loose oose um dense lense y dense	SPT	iption N-Value _{(math} 0 - 4 4 - 10 0 - 30 0 - 50 ver 50	Consis Consistence Very soft Soft Firm Stiff Very stift Hard		tion N-Value (mm) Inder 2 2 - 4 5 - 8 9 - 15 5 - 30 ver 30	Pri Description Description PBT Permissib 1 - Obstantived Sample's PVS Vane Sh PMT Permissib 1 - Obstantived Sample's PMT Permissib PMT Permissib 1 - Obstantived Sample's PMT Permissib PMT Permissib 1 - Obstantived Sample's PMT Permissib ROD (%) - 235 1 Obstantived Sample's - 235 - 235 - 235 - 235 - 235 - 507 - 505 - 507 - 505 - 507 - 505 - 507 - 505 - 507 - 505 <td< td=""><td>ear Test meter Test Very poor Poor Fair</td><td>Term Very thic Thick Medium Thin Very th hickly lam Thinly lami</td><td>k in inated</td><td>5 Spacin 600 - 200 60 - 20 60 - 20 6 -</td><td>g (mm) - 2000 - 2000 - 600 - 60 - 200 - 60 - 60 - 60 - 60 - 60</td><td>W Ma Cl Very</td><td>Term widely spa idely spa adium spi osely spa closely spa ely close</td><td>ced aced aced</td><td>Spacing (n > 20 600 - 20 200 - 6 60 - 20 20 - 6 < 20 < 20</td><td>00 100 100 10</td><td></td><td>2.</td><td>ng Eng Branck Iosid, soi Processia Rev:</td><td>h) a. 20066</td></td<>	ear Test meter Test Very poor Poor Fair	Term Very thic Thick Medium Thin Very th hickly lam Thinly lami	k in inated	5 Spacin 600 - 200 60 - 20 60 - 20 6 -	g (mm) - 2000 - 2000 - 600 - 60 - 200 - 60 - 60 - 60 - 60 - 60	W Ma Cl Very	Term widely spa idely spa adium spi osely spa closely spa ely close	ced aced aced	Spacing (n > 20 600 - 20 200 - 6 60 - 20 20 - 6 < 20 < 20	00 100 100 10		2.	ng Eng Branck Iosid, soi Processia Rev:	h) a. 20066

Figure 4.1.54 Boring log BH-BD-16 (1)

Final Report

		4.000	3D-16						LOG	-		_				-	She	et No.	2	OF
							Bago River Bridge Construction Project	BORING EQ			_	10 "D1"		-	DATE	: 08	.11.2016	~ 12.11	.2016	5
OCATI			Existing	Bago River	Bridge (T	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME					Circulatio	n <u>CLIE</u>	NT		1		5	
OORDI	NATE		26.627 : 1	N 1859111.	524 DE	РТН :	57.00m	ORIENTATIO			: <u>Vert</u>				NIPPO	N KO	EI C	0.,1	TL).
													TANDARD TEST M	PENETRATIC ETHOD (AST	N TEST		SAM	PLING	_	T
(II)	(m)	6			TENCY		A Second		DATE & DEPTH (m)	PTH (m 3 (mm)	1H (m)	î		CURVE OF		1	î		1	
NOIL		NESS	WV	H.	IVE D DNSIS	NAME	SOIL DESCRIPTION		& DEP	G (DE	X DEP1	GL-(r	N-Valuc lows / 30cm)	N-V		SAMPLE (Type & No.)	GL - (r		2	13
ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (or) CONSISTENCY	SOIL N			DATE	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL - (m)		(Blows 10 20 3	/30cm)	SAV AqCD	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)
		it.	a x											TT						1
		# #		gray	Medium	Silty	Medium dense to very dense, gra		127		16	31.00	41/30		¥	P-26	31.00			
		14 14	10		dense to	SAND	to medium grained, Silty SAND w		09.11.16 32.00			32.00	38/30		4	P-27	32.00			
		×	N 16		very dense		GL: (29.0 ~ 30.45)m, clay percen at that depth	t is increased	52100			33.00				0.20	32.45 33.00			
			N . N.										38/30			P-28	33,45			
			7 N 2 L								1.1	34.00	50/28			P-29	34.00			
-30.65	35.00	9.00				1						35.00	30/30			P-30	35.00			
							the state of the state of the					36.00		X			35.45 36.00			
				gray	Medium dense	Clayey SAND	Medium dense to dense, gray, n medium grained, low plastic Claye		1.1.1				14/30	1		P-31	36.45			
					to dense		GL: (35.0m ~ 35.45)m, trace of o					37.00	10/30			P-32	37.00			
		140					are observed at that depth					38.00	26/30	1		P-33	38.00			
												39.00					38.45			
													41/30			P-34	39.45			
			22									40.00	37/30		+	P-35	40.00	7		
												41.00	35/30		4	P-36	41.00			
												42.00					41.45			
												1.1.1	27/30	٩		P-37	42.45			
38.65	43.00	8.00							100			43.00	34/30			P-38	43.00			
				-					10.11.16	Vine I		44.00	44/30			P-39	44.00			
				reddish brown	Medium dense	Clayey SAND	Medium dense to very dense, redo yellowish brown, moist, fine	to medium				45.00			1×10^{-1}		44.45			
				to yellowish	to very		grained, low plastic Clayey SAND						50/26		-	P-40	45.41			
				brown	dense						1.6	46.00	19/30			P-41	46.00			
												47.00	33/30			P-42	47.00			
												48.00	-			P-43	47.45			
													50/29			1:43	48.44			
												49.00	37/30			P-44	49.00 49.45			
45.65	50.00	7.00		-				-				50.00	50/28			P-45	50.00 50.43			
							5-5-5-1-c-					51.00	38/30		1	P-46	51.00			
				reddish brown	Dense to	Clayey SAND	Dense to very dense, reddish yellowish brown, moist, fine to co					1.1	36/30			1-40	51.45			
				to yellowish	very dense		low plastic Clayey SAND, with gravel					52.00	50/26			P-47	52.00 52,41			
				brown								53.00	50/28		•	P-48	53.00			
									11.11.16			54.00	50/29			P-49	54.00			
									54.00						II	124	54.44			
											1	55.00	50/25			P-50	<u>55.00</u> 55.40			
									100			56.00	50/23		+	P-51	56.00 56.38			
									12.11.16			57.00	50/21			P-52	57.00			
53.01	57.36	7.36		-	-		150 2002 a 100 a 100	a later	57,00			58.00					57.36			
							This borehole is terminated according to the termination criteri													
												59.00								
												60.00								
			Щ.									61.00					-			
NOT		ity descripti		Comin	tency descrip	tion	Sample key P-1 Disturbed surple P-1 Disturbed surple P-3 Distur		Pla Term	nner stru	cture Spacing		T	Discontin	uities Spacing (i	am) 1 6		1.000	100	-
	elative density	SPT N-	_	Consistenc	1 200	N-Value	PBT Permeab PBT Permeab PBT Visual Sample: VS. Vane Sh	ear Test	Very thick Thick	1		2000		videly spaced fely spaced	> 20 600 - 20	00.		UKKEN Consultin Yangon I	g Engi Branch	inee h)
-	ry loose	0 -		Very soft Soft		inder 2	D-1 Undisturbed Sample (Denison sampler) PMT Pressure	Term	Medium		200 -	600	Med	lium spaced sely spaced	200 - 60 - 20	00	FGEX ;	W - 961 - 901 www.tryacimet	DESK 950 perconnel	- 420
Med	ium dense	10 -	30	Firm	1113	5 - 8	(Single cure tube) 0 - 25	Very poor	Very thin		20 -	60	Very o	losely spaced	20 - 6		Revision Ne Revision Di	_	Rev:	1.0
11-14	Dense ry denso	30 -		Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tube) 25 - 50 50 - 75		hickly lamin hinly lamin		6 =		Extreme	ly closely space	ad <20		in the second Da			1000

Figure 4.1.55 Boring log BH-BD-16 (2)

BC	ORE H	OLE No	o. BH	I-BD-17				BO	RING	LOC	3						Job	_	KYB-20 eet No.	-	5 OF 2
			-					e Bago River Bridge Construction Project	BORING EQ		г	-	DHO "DI"		-	DATE	: 2	3.11.2016	~ 26.1	1.2016	_
	CATIO	DN D LEVEL			Bago Rive	r Bridge ('I	hanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME			1.5	ertical	t Circulatio	<u>n</u> <u>CL</u>	IENT					
	ORDI				N 1859068	.236 DI	ern :	47,00m	GROUND W		VEL	1.00	nder River	Bed		NIPPO	ON KC	DEIC	0.,1	LTL).
Τ			1			25					3 (1)			STANDARD TEST N	PENETRA ETHOD (TION TEST ASTM)	PM	T SAM	PLING		Т
	(m) N	(m)-	(m) S2	151		RELATIVE DENSITY (or) CONSISTENCY	æ	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m) -	Ĩ	CURVE	OF BLOW •	E (0.)	(m) -			
or vire (III)	BLEVATION	DEPTH GL-	THICKNESS	DIAGRAM	COLOUR	ATIVE CONS	L NAME	and sold of the local sold of		TE&DI	SING (1	TER DI	DEPTH GL	N-Value (Blows / 30cm)	(Blc	Value ws / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
÷	BLE	DEF	118	VIC	CO	(or (or	SOIL			DA	N, CA	WA	DEF	(Bit		30 40 50	,	DEP	TCP	SCI	RQI
anter a second and a second and a second													1.00	0/45			P-1	1.00			all states
					gray	Very soft	CLAY	Very soft, gray, moist to wet, low plasticity, CLAY with trace of fine					2.00	0/45 •			P-2	1.45			
								1212 1020					3.00					2.45			
																	U T:	(#) cm 3.80			
					8								4.00	0/45 •			P-3	4.00			
													5.00	0/45 •			P-4	5.00			
													6.00	0/45			P-5	6.00			
	-6.65	7.00	7.00					1					7.00	3/30			P-6	7.00			
unutre 1				11 and 12 and 14	gray	Very	Clayey	Very loose to loose, gray, moist to	o wet, fine to		8.00		8.00	6/30			P-7	7.45			
utuntuntuntuntun						loose to	SAND	medium grained, low plastic Claye	y SAND		Ø112		9.00		\mathbb{N}		P-8	8.45 9.00			
THE OWNER OF THE OWNER OWNER OF THE OWNER OWNER OWNER						loose							10.00	10/30	ΙI			9.45 10.00			
-		1.5.2	100											7/30			P-9	10.45			
	-10.65	11,00	4.00	1 10 10 10 10 1 10 10 10	-		-						11.00	10/30			P-10	11.00 11.45			
				1 × 30 1 × 10	brownish	Loose	Silty	Loose to medium dense, brownish					12.00	21/30			P-11	12.00			
1				× × *	gray to gray	to medium dense	SAND	moist to wet, fine grained, Silty SA	ND				13.00	22/30			P-12	13.00 13.45			
				< × ×	6.45	1.0							14.00	24/30			P-13	14.00			
and													15.00	27/30			P-14	14.45			
	15.65	16.00	5.00										16.00			7	1.3	15.45 16.00			and the
-	15:05	10.00	5100							1			1	22/30			P-15	16.45			
uhida di adala da ada adala da ada ada ada ada a				. К С - т М				j					17.00	22/30	t		P-16	17.00			and starts
mhun				10 A 10 A	gray	Medium	Silty	Medium dense to dense, gray,	moist, fine				18.00	23/30	4		P-17	18.00 18.45			
				**		dense to	SAND	grained, Silty SAND					19.00	40/30			P-18	19.00 19.45			
in little						dense				23.11.16			20.00	18/30		1	P-19	20.00			
and a second				* * *									21.00	28/30			P-20	21.00			
unin													22.00	24/30		[]]	P-21	21.45			
internation of the second													23.00					22.45 23.00			
				196 (M)									1	21/30			P-22	23.45			
1 mili													24.00	40/30			P-23	24.00 24.45			
Tool and tool and tool				**									25.00	18/30			P-24	25.00			
-	-25.65	26.00	10.00										26.00	28/30			P-25	26.00 26.45			
a luinte				1 x 30 2 x 30	gray	Medium	Silty	Medium dense to very dense, grav	v moist fine				27.00	23/30			P-26	27.00			
Tillul I				**	Stay	dense to	SAND	to medium grained, Silty SAND	, anots, mic				28.00	50/27		N	P-27	27.45			and and
The second				***		very dense		Thin clay layer is intercalated in thi	is layer				29.00				12	28.42			hudhan
- Internation				* * *										50/25		1	P-28	29,40			
Thun I				* * *				Contrast to and share					30.00	37/30		1	P-29	30.00 30.45			
1	NOT	_		K		-		Continue to next sheet Sample key			anner str		31.00		_	ntinuities				-	
		elative density	-	ription N-Value	Consisten	tency descrip	n-Value	Pri Distanted sample (SFT sample) PBT Permstab Tri Undistanted Sample VS Vane Sh (Pitton sampler)		Term Very thic			ng (mm) > 2000		Term videly spac		2000		UKKE	g Engi	neers
	Ve	ry loose		(mm) 0 - 4	Very sof		inder 2	(Piston sampler) D-1 (Derison sampler) (Derison sampler)	meter Test	Thick Medium	-	200		Mee	lely spaced lium spaced		600	FGEX	Yangon W 957 als	0494, 959.	1) - 4200855 Bland Cont
	Medi	.oose um dense Dense	-10	4 - 10 0 - 30 0 - 50	Soft Firm Stiff		2 - 4 5 - 8 9 - 15	Rock core sample (Single core tube) Rock core sample 25 = 50	Very poor	Thin Very thi hickly lami			- 200 - 60 - 20	Very e	sely spaced losely space ly closely s			Revision N Revision D	_	Rev: 10.01	01
1		Pense ny dense		0 - 50 wer 50	Very stif	r 1	9 - 15 6 - 30 over 30	(Double core tabe) (Double core tabe) Rock core sample (Core Loss) (Core Loss)	Fair	hinly lamb			- 20 <6	Remarks	A competity of						
				-	nard				0 Excellent												

Figure 4.1.56 Boring log BH-BD-17 (1)

Final Report

30	RE H	OLE No	. BH	BD-17				BO	RING	LOC	1					Job	_	KYB-20 eet No.	_	5 OF
PRO	DJECT	NAME	Geote	chnical St	urvey on the	detailed d	lesign for th	e Bago River Bridge Construction Project	BORING EQ	JIPMENT	r -	: TOP	10 "D1"		DATE	: 2	3.11.2016	~26.1	.2016	5
	CATIC				Bago Rive	r Bridge (1	Thanlyin Bri	dge), Thaketa Township, Yangon Region.	BORING ME			1000		Circulatio	ON CLIENT			-		
		LEVEL			Service			lan.	ORIENTATIO			Ver			- NIPPO	NKO	EIC	0.1	T	D.
CO	ORDIN	NATE	: <u>E 204</u>	551.650 ;	N 1859068	.236 DI	SPTH :_	47.00m	GROUND W.	ATER LE	VEL	: Uns	der River		-		~ ~			
						48				2	W (m)		5	TANDARI TEST N	PENETRATION TEST METHOD (ASTM)		SAM	PLING		
	(m) N	E	S (m)			RELATIVE DENSITY (or) CONSISTENCY	ai	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mu))	WATER DEPTH (m)	(m)	(j)	CURVE OF BLOW	('0)	(m) -		1	1
	ELEVATION (m)	DEPTH GL = (m)	THICKNESS (m)	DIAGRAM	SUR	VITVE	NAME	and odderer that		E&DE	NG (D	ER DE	DEPTH GL- (m)	N-Valuc (Blows / 30cm)	N-Value	SAMPLE (Type & No.)	DEPTH GL -	(%)	(%)	(%)
L	ELEV	DEPT	THIC	DIAC	COLOUR	REL) (or)	Solt			UVD	CASI	WAT	DEPT	(Blow	(Blows / 30cm) 10 20 30 40 50	s E	DEPT	TCR (%)	SCR (%)	RQD (%)
ſ		1					1.0		12.1	1.0		111								
					gray	Medium	Silty	Medium dense to very dense, gray	y, moist, fine	111			31.00	35/30		P-30	31.00			
						dense to	SAND	to medium grained, Silty SAND					32.00	47/30		P-31	32.00			
				6 8 =		very dense		Thin clay layer is intercalated layer					33.00				32.45			
				5 16 16 1 16 16									-	32/30		P-32	33.45			
				(w w (w W				111					34.00	22/30		P-33	34.00			
-	34.65	35.00	9.00	x x x	1								35.00	50/28		P-34	35.00			
							-			24 11 16			36.00				35.43	2		
	21				gray to	Dense to	Clayey SAND	Dense to very dense, gray to br moist, fine to coarse grained, low p		24.11.16 36.00	1			50/30		P-35	36.45			
					brownish gray	very dense	JAND.	SAND, with trace of fine gravel	hasue clayey				37.00	50/28	•	P-36	37.00			
					Bruy	ocase							38.00	50/28		P-37	38.00			
													39.00				38.43			
														50/30		P-38	39.00			
													40.00	50/14		P-39	40.00			
													41.00	50/26		P-40	41.00			
	41 65	42.00	7 00				1						42.00				41.41			
Γ	-1.05	42.00	7.00										42.00	50/22		P-41	42.00			
					reddish brown	Dense to	Clayey SAND	Dense to very dense, reddish yellowish brown, moist, fine					43.00	50/27		P-42	43.00			
	61				to yellowish	very dense	SAMD	grained, low plastic Clayey SANI					44.00	50/30	1111	P-43	44.00			
					brown	ucuse		of fine gravel					45.00	50/50			44.45			
					1					25.11.16 45.00		111	45.00	50/26	1111	P-44	45.00			
										2.4			46.00	50/30	+	P-45	46.00	1		
										26.11.16			47.00	50/24		P-46	47.00			
	41.65	47.39	5.39					and devices and a strength		47.00				30/24	1111	1.40	47.39			
					1.111		10.00	This borehole is terminated according to the termination criteria					48.00	5			1.11			
													49.00							
													50.00							
													51.00							
													52.00							
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													54.00							
													55.00							
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													57.00							
													58.00	100						
													59.00							
	5.1												60.00	P						
									1.11				61.00							
٢	NOT	ES lative dens	ity descrip	tion 1	Consis	tency descrip	otion	Sample key • r-1 Dinabel sample (SPT ample) PBT Permash	ility Test	Term		spacing			Discontinuities Term Spacing			UKKEN	100	LT.
t	-	ve density		V-Value	Consistent	Lere	N-Value	T-t Undistanted Sample VS Vane Sh (Piston sampler)	nar Test	Very thick	-	> 600 -	2000 2000			000		Consultin Yangon	g Engi Branct	neer 1)
F		y loose	-	- 4	Very soft Soft		under 2 2 - 4	Do Undisturbed Sample (Denison sampler)	1	Medium	+	200 -	- 600	Mo	dium spaced 200 - osely spaced 60 - 1	600	FŒX	90 951-801 1000 11/100104	NAME AND	4500 Rolf G
t	Media	um dense	10	- 30	Firm	1.5	5 - 8	Rock core sample (Single core tabe) 0 - 25	Very poor	Very this hickly lami		20 -	60	Very	closely spaced 20 -	60	Revision N Revision D	_	Rev:	_
t		v dánse		- 50 sr 50	Stiff Very stiff	r 1	9 - 15 6 - 30	(Double core tabe) Rock core sample 50 - 75	Fait 1	hickly lami hinly lamir		6 - <		Remarks	ely closely spaced < 2	•]]		7 1	- with	
				1	Hard		over 30	(Core Loss) 75 - 90 w-i Water sample: 90 - 10						1.2						

Figure 4.1.57 Boring log BH-BD-17 (2)

| , BH-BD-18 |

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 | ATIVE DENSIT
CONSISTENC | NAME | SOIL DESCRIPTION |

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 | ING (DEPTH (r
AMETER (mm) | TER DEPTH (m) | (H-GL = (m) | -Value
ws / 30cm)
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ypc & No.) | (m) - 15 H | (50)
(50) | (54)
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 | (ot) | Soil | |

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 |
 | | "E | DEP | TCR |
 | E |
| 3.00 | brownish
gray

 | Very
soft | CLAY | Very soft, brownish gray, moist,
high plasticity, CLAY
(River deposit) | medium to

 |
 | | | 1.00
2.00 | 0/45 •
0/45 •
 |
 | | P-1
P-2 | 1.00
1.45
2.00
2.45
3.00 | |
 | and an alternation of the second |
| | gray

 | Very
soft
to
soft | CLAY | Very soft to soft, gray, moist to wet,
plasticity, CLAY | low to high

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 | | | 4.00 | 0/45 •
2/30 •
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 | | Р-3
Р-4 | (m) cm
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to
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CLAY | to medium plasticity, Sandy CLAY | ncreased at

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9.00 | 4/30
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2/30
1/30
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 | | P-5
P-6
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| 9.00 | gray

 | Firm
to
stiff | Sandy
CEAY | Firm to stiff, gray, moist, mediu
plasticity, CLAY with silt, trace of t
sand | m to high
fine grained

 |
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 | | P-17
P-18
P-19
P-20
P-21
P-22
P-23
P-24
P-24 | 23.45
24.00
24.45
25.00
25.45 | |
 | |
| 7.00 | gray

 | Firm
to
very
stiff | CLAY | plasticity, CLAY with silt
Thin sand layers are well ob
intercalated layer |

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28.00
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30.00 | 14/30
10/30
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8/30
7/30
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 | | P-25
P-26
P-27
P-28
P-29 | 26.45
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(2000) 5.00 X X </td <td>Beside Existing Bage River 0.60m I 2005350.820 : N 1857705.5 0.00</td> <td>Beside Existing Bage River Bridge TT Discription 0.60m Discription Discription 1203336.0820 : N 1857705 598 Discription Discription 0.60m Brownish Very 0.60m Brownish Very 0</td> <td>Beside Existing Bago River Bridge (Thankyin Brid
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Figure 4.1.58 Boring log BH-BD-18 (1)

: <u>Be</u> : 0.6	side Existing	Bago River	Bridge (T	'hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING EQU BORING MET ORIENTATIO GROUND WA	HOD		: <u>Rota</u> : <u>Vert</u>	ical	Circulatio 3ed	<u> </u>	CLIENT	IPPO		.12.2016		2.2010	
: <u>0.6</u> : <u>E</u>	90m 205350.820 ; 1	N 1857705.	598 DE	артн : <u>-</u>		ORIENTATIO	N		: Vert	ical		-	1000		N KO	EI C	0.,	LTI	
: <u>E</u>	205350.820 ; 1	COLOUR									led	_	1000		N KO	EI C	0.,	LTI	
		COLOUR			59.00m	GROUND WA	TER LE	VEL	: Und	ler River H	Bed		14.	irro	V AU	LIC	U.,		18
THICKNESS (m)	DIAGRAM		RELATIVE DENSITY (or) CONSISTENCY	WE															,
THICKNESS (m)	DIAGRAM		RELATIVE DENSIT (or) CONSISTENCY	IME			100	3) &		.S1	TANDARD TEST M	PENETH	RATION T (ASTM)	EST		SAM	PLING	÷	11
THICKNESS	DIAGRAM		RELATIVE D	NME			DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	-	-	CURV	E OF BLO	w e		(1			
THICK	DIAGE		RELATI (or) CO		SOIL DESCRIPTION		DEPT	(DEI	DEPT	(m) - 10	30cm)	Cont		1.00	SAMPLE (Type & No.)	at-(n		1	- 1
	a			N TIOS			ATE 8	ASING	ATER	DEPTH OL-	N-Value (Blows / 30cm)		N-Value Blows / 30e	:m)	SAM (Type	DEPTH GL - (n)	TCR (%)	SCR (%)	RQD (%)
		grav	-	S		-	9	0	-	P	= 0	10 2	0 30	40 50		í0	P	S)	-
			Firm	CLAY	Firm to very stiff, gray, moist, medi	ium to high				31.00						31.00			and
		5.0	to	CLAI	plasticity, CLAY with silt	ium io iugu				-					0 T-2	(m) cm 31.80			
		1	very stiff		GL: (37.00 ~ 37.45)m; Stiff, gra					32.00	7/30				P-30	32.00			
					medium grained, low to medium Sandy CLAY layer is observed as					33.00	7/30				P-31	33.00			
					layer at that depth					24.00					13	33.45			10 million and 10 million
					Thin sand layers are well of intercalated layer	oserved as				54.00	8/30	1			P-32	34.00			E
					intercatated tayer	1.167				35.00	8/30				P-33	35.00			3
	1111									36.00		N			P-34	35,45	[]		
			1								4/30	1			1-34	36.45			
										37.00	9/30	1			P-35	37.00			1
		8								38.00	8/30				P-36	38.00			
										20.00						38.45 39.00	1		E
											8/30	1			P-37	39.45			
		6								40.00	8/30				P-38	40.00	ł.		23 hours & hou
										41.00	1/30	1			P-39	41.00			and a
											1.214					41.45			in the
							<u>05.12.16</u> 42.00		11	42.00.	1/30	t			P-40	42.00			il.
	2225									43.00	4/30	4			P-41	43.00			44
										44.00						43.45			-
											7/30	1			P-42	44.45			ուզիսորգիս
	2222	0.00								45.00	4/30	+			P-43	45.00			14
19.0	0	-	_	-						46.00	8/30				P-44	46.00			in a
		-		in the	1.5 ST 1. 1. 2. 3.	1.00				17 00						-			and the
		gray	to	CLAY	plasticity, CLAY, with trace of fi				11	47.00	7/30				P-45	47.45			luna
		Ċ	sittf		sand	10.51				48.00	5/30				P-46	48.00			4
										49.00	2/20				P.47	49.00			
		6			observed as intercalated layer at that	depth					3/30	1			1.44	49.45			
		8			· · · · · · ·		06.12.16 50.00			50.00	7/30				P-48	50.00			
										51.00	9/30	1			P-49	51.00	511		
	1.1.1.1									\$2.00					1.2				mini
1.		-			1						7/30				P-50	52.45			hund
7.00		gray	Dense	Clayey	Dense to very dense, gray to yellow	vish brown,				53.00	8/30				P-51		6		
		to	to very	SAND	moist, fine to medium grained, I					54.00	50/28				P-52	54.00			1
3.00		brown	dense	1.1	GL: (54.00 ~ 54.43)m, fine to mediu	im gravel is					0/20				h- alt				
2.00	1-2-1-2-5			12	ubserved at that deput					55.00	0/30			11	P-53	55.45			
	100	yellowish brown	Dense to	Clayey SAND	Dense to very dense, yellowish bro fine to medium grained, low plas	own, moist, stic Clavey				56.00	50/30			1.	P-54	56.00			
			very		SAND					57.00					nee				
	11111										0/30			I T	F-55	57.45			
										58.00	0/29			+	P-56				
	22225						07.12.16			59.00	50/28				P-57	59.00			
4.43	an and an an	-			White Research in concerning		59.00									59.43			in the second
				20	This borehole is terminated a according to the termination criteria.	a 59.00m,													il wat
_			_		Sample key		Pla	unner stru	cture	61.00		Dis	continuitie	s			M P		Ē
T n			Inor		Pr.1 Distorted sampler PBT Permstability		Term	-10	Spacing			Term		Spacing (n	uni) 90		UKKE	N CO.	LTD.
SI	itseef	_	2	(maa)	PMT Pressurement		Thick		600 -	2000	Wid	lely space	ed	600 - 20	00	0	Yangon	Branch	h)
_	0 - 4	Very soft Soft			P ou Undashirbed Sample		Medium		200 -	600	I Med	nım spac	est 1	200 - 4	00 1	ATTA:			allent cont
				2 - 4	RQD (%)	Term	Thin		60 -	200	Clos	sely space	ed	60 - 20	0	OKKIN.			
	10 - 30 30 - 50	Firm	15 - 3	$\frac{2-4}{5-8}$ 9 - 15	Rock core sample RQD (%)	Very poor	Thin Very this ickly famil			200 60	Clos	sely space losely sp	ed mod		0	Revision Ne Revision De	a.	Rev	
asi	2.00 2.00	19.00 7.00 2.00 4.43 sy description SFT N-Value 0.4 1.0	7.00 gray 2.00 gray to yellowish brown 2.00 yellowish brown 4.43 yellowish brown ay description Considers SFT N-Value Considers met O	7.00 gray Firm. 0 7.00 gray Siff 9 gray bit 9 bit bit	gray Firm. bo suff CLAY 7.00 gray Firm. bo suff CLAY 7.00 gray Dense voly yellowish brown Clayey SAND 2.00 gray Dense voly yellowish brown Clayey SAND 2.00 yellowish brown Dense voly dense Clayey SAND 4.43 Image: Single Clayey brown Single Clayey brown Clayey SAND 4.43 Image: Single Clayey brown Single Clayey brown Single Clayey SAND aiy decription Consistency decription Single Clayey Sangle Clayey brown	gray Firm bit CLAY bit Firm to stiff, gray, moist, media plasticity, CLAY, with trace of f sand 7.00 gray Dense bit Clayey bit 7.00 gray Dense bit Clayey bit 9 Dense bit Clayey bit Dense to very dense, gray to yellow moist, fine to medium grained, Clayey SAND 2.00 gray Dense bit Clayey bit 9 Very bit SAND bit 9 yellowish brown Clayey brown Dense to very dense, gray to yellow GL: (54.00 - 54.43)m, fine to media observed at that depth 9 yellowish brown Dense to to yellowish brown Clayey brown Dense to very dense, yellowish br fine to medium grained, low play SAND 4.43 Image: Clayey brown This borehole is terminated a according to the termination criteria. ay description Consistency description 0 - 4 Smole ky brown	gray Firm b sit0f CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand 7.00 GL: (47.00 ~ 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 9 Dense to yellowish brown Dense to sAND Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 ~ 54.43)m, fine to medium gravel is observed at that depth 2.00 yellowish brown Dense to yellowish brown Clayey SAND 2.00 Yellowish brown Dense to yellowish brown Clayey SAND 4.43 This borehole is terminated at 59.00m, according to the termination criteria. ay description STT N-value 0 - 4 Very soft STT N-value consistency description 0 - 4 Very soft	gray Firmi but CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth. 06.12.16 50.000 gray Dense to yellowish brown Dense to sobserved as intercalated layer at that depth. 06.12.16 50.000 2.00 gray Dense to yellowish brown Clayey SAND Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 - 54.43)m, fine to medium gravel is observed at that depth. 2.00 Very brown Clayey SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND Very SAND 4.43 This borehole is terminated at 59,00m, according to the termination criteria. Very SAND Very SAND at decirption Consistency description Very SAND Premadatily Test Sambe key Very SAND at decirption Consistency description Very SAND Premadatily Test Sambe key Very SAND	gray Firm bit CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth. 06.12.16 30.00 gray Dense to yellowish Clayey to sobserved as intercalated layer at that depth. 06.12.16 30.00 gray Dense to yellowish Clayey to sobserved as intercalated layer at that depth. 06.12.16 30.00 2.00 gray Dense to yellowish Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 - 54.43)m, fine to medium gravel is observed at that depth 06.12.16 30.00 2.00 Werey Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 07.12.16 39.00 4.43 This borehole is terminated at 59.00m, according to the termination criteria. 07.12.16 39.00 av Consistency description 0 - 4 Str N-Value Consistency description 0 - 4 Very stift	gray Firm bit CLAY suff Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand GL: (47.00 ~ 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 06.12.16 50.00 gray Dense to yellowish Clayey to yellowish dense Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 ~ 54.43)m, fine to medium gravel is observed at that depth yellowish brown Dense dense Clayey SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 2.00 This borehole is terminated at 59.00m, according to the termination criteria. 07.12.16 50.00 wy description Samb Xy we swarp This borehole is terminated at 59.00m, according to the termination criteria. wy description Consistency description 0 - 4 - Very with Consistency description PT Provemality Termination Termination Termination Termination Termination	19.00 gray Firm, to CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand 46.00 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 06.12.16 50.00 7.00 gray Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND is observed at that depth 06.12.16 50.00 7.00 gray Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 - 54.43)m, fine to medium gravel is observed at that depth 50.00 51.00 2.00 SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 - 54.43)m, fine to medium gravel is observed at that depth 55.00 55.00 4.43 Dense Clayey Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 55.00 55.00 55.00 4.43 Dense Clayey Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00 55.00	19.00 gray Firm to stiff CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand 46.00 8/30 7/30 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 06.12.16 50.00 7/30 49.00 7.00 gray Dense Clayey Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 06.12.16 50.00 7/30 9/30 2.00 wery dense SAND Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 51.00 9/30 52.00 7/30 9/30 2.00 wery dense Clayey Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 51.00 50/30 52.00 50/30 4.43 Dense Clayey SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic <clayey SAND 57.00 50/30 4.43 Dense Clayey SAND This borehole is terminated at 59.00m, according to the termination criteria. Trans to spectruent Yery Sident Tes Yery Sid</clayey 	19.00 gray Firm to CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand 46.00 8/30 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 0.12.16 30.00 7/30 7.00 gray yellowish brown dense Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 0.12.16 30.00 7/30 7.00 gray yellowish brown dense Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 7/30 7.00 gray yellowish very dense Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 50.28 7.00 SAND very dense SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 50.30 7.12.16 S0.00 50.00 50.30 50.28 50.29 7.12.16 This borehole is terminated at 59.00m, according to the termination criteria. 10.00 50.00 50.00 80.00 S0.00 This borehole is terminated at 59.00m, according to the termination criteria. 10.00 10.00 10.00	19.00 gray Firm bit CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained said 46.00 8/30 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth. 06.12.16 50.00 13/30 7.00 gray Dense bown Clayey SAND Dense to very dense, gray to yellowish hrown, moist, fine to medium grained, low plastic Clayey SAND 50.00 7/30 2.00 bown boserved at that depth 50.00 50/30 yellowish Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 50/30 2.00 bown dense Clayey SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50/30 50/30 yellowish Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50/30 50/30 yellowish dense Clayey SAND This borehole is terminated at 59.00m, according to the termination criteria. 77.17.16 50/30 50/30 Stop 50/28 50/29 50/28 60.00 50/28 50/29 50/28 50/28	19.00 gray Firm bitsticity, CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sand 46.00 8/30 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalited layer at that depth 50.00 7/30 7.00 gray brown Dense to start Clayey Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 7/30 2.00 gray brown Dense to sherved at that depth Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 50.28 2.00 gray brown Dense to sherved at that depth Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 50.00 50.28 4.43 Dense Clayey SAND Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND 61.00 50.29 4.43 Dense Clayey SAND Dense to term innation criteria. 07.121.6 50.00 4.43 This borehole is terminated at 59.00n, according to the termination criteria. 10 10 10 10 at dense String to the termination criteria. 10 10 10	19.00 gray Firm CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained, sand 46.00 8/30 9/40 2.00 Stiff GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth 9/200 13/30 9/30 9/40 7.00 gray Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND is observed at that depth 05/12/16 50.00 7/30 9/40 9/40 7.00 gray Dense to very dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND GL: (54.00 - 54.43)m, fine to medium gravel is observed at that depth 9/30 9/30 9/30 9/30 9/30 2.00 brown Os.12 (56.00 - 54.43)m, fine to medium gravel is observed at that depth 9/30 <	19.00	19.00 gray Firm b Stiff gray, brim CLAY Firm to stiff, gray, moist, medium to high plasticity, CLAY, with trace of fine grained sard 46.00 8/30 9/30 46.43 P.44 46.00 8/30 19.00 GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey SAND is observed as intercalated layer at that depth. 61.12.16 90.00 7/30 9.44.4 9.44.4 9.44.4 80.00 83.03 7.00 gray brown dense CLayey SAND 06.12.16 90.00 7/30 9.44.4	19.00 gray Firm b Stiff gray, brind CLAY Firm to stiff, gray, moist, medium to high sand 46.00 8/30 9/4.4 46.00 gray brind GL: (47.00 - 47.45)m, loose, gray, fine to medium grained, low plastic Clayey ND is observed as intercalated layer at that depth. 66.12.16 90.00 7/30 9/4.4 46.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/4.4 49.00 13/30 9/30 9/30 9/30 9/30 9/30 13/30 13/30 13/30 13/30 13/31 9/4.4 50.00 13/32 9/4.4 50.00 13/32 9/30 13/32 9/30 13/32 13/33 13/33 13/33 13/33 13/33 13/33 </td

Figure 4.1.59 Boring log BH-BD-18 (2)

BOR	EH	OLE No). BH	1-BD-19			_	BO	RING	LUC	Í.			_	_			Job N	_	YB-201 et No.	1 OF
			_					Bago River Bridge Construction Project				_		-	-	DA	TE	: 29	11.2016	- 05.12.	2016
	ATIO				Bago River	Bridge ('I	Thanlyin Bri	dge), Thanlyin Township, Yangon Region.					-	t Circulati	on	CLIENT			1.2		2
		LEVEL	_		N 1857664.	590 DI	EPTH :_	60.00m				_				NL	PPO	V KO	EI C	0., L	TD.
Г	1	T		1	1					1	-		<u></u>	TANDARI	PENET	RATION TE	sī	PMT	SAM	LING	-
	ĩ	~	â		1.011	RELATIVE DENSITY (or) CONSISTENCY	112			(H (m)	(m) HT(m))	(m) H		1	_			1		Т	1
	NOIL	GL-(m)	NESS (WW	a a	IVE DI	NAME	SOIL DESCRIPTION		& DEP	G (DEI METEB	R DEPT	GL - (n	alue / 30cm	5911		-	APLE & No.	GL-(r		3
	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	RELAT (or) O	SOIL N			DATE	CASIN	WATE	DEPTH	(Blows		Blows / 30cm		SA) A(T)	DEPTH	TCR (%	RQD ()
					brownish	Very	CLAY	Very soft, brownish gray, moist	medium to			¥									
		11			gray	soft	CLAI	high plasticity, CLAY (Filled Soil)	, meetani io				1.00	0/45 •				P-1	1.00		
1	.52	2.00	2.00				H	() just soul				10	2.00	0/45				P-2	2.00		
1					gray	Very soft	CLAY	Very soft, gray, moist to wet, plasticity, CLAY	low to high	29.11.16	3.00	2.1	3.00					l.	3.00		
	0.48	4.00	2.00		=	1				3,00	0112		4.00	120				1000	3.80 4.00		
					gray	Very	CLAY	Very soft to soft, gray, moist to we	t low to high				5.00					100	4.45		
					gray	soft to	CLAI	plasticity, CLAY	i, iow to ingi					1/30				P-4	5.45		
						soft							6.00	1/30				P-5	6.00 6.45		
													7.00	1				U T-2	7.00		
_(8.00	2/30				P-6	8.00		
	5.48	9.00	5.00										9.00	6/30				P-7	9.00		
-1						100		Sector Contractor					10.00		Τ				9.45		
					gray	Soft to	Sandy CLAY	Soft to firm, gray, moist, fine gra medium plasticity, Sandy CLAY	ained, low to					4/30				P-8	10.45		
						firm	1.1	GL: (11.00 ~ 11.45)m; very loos					11.00	2/30				P-9	11.00		
								grained, Silty SAND layer is intercalated layer at that depth	observed as				12.00	4/30				P-10	12.00		
								T T THE T					13.00					IT.3	13.00		
-1	0.48	14.00	5.00		1								14.00	7/30	1			1.25	13.80 14.00		
1				* *				1					15.00		I				14.45		
				* *	gray	Loose to	Silty SAND	Loose to dense, gray, moist, find grained, Silty SAND	to medium					7/30				P-12	15.45		
				x x x x		dense		GL: (19.00 ~ 20.45)m, trace of cla	v is observed				16.00	27/30				P-13	16.00		
				* *				at that depth	BORING METHOD Exercit DETERMENTATION Exercit DETERMENTATION GROUND WATER LIVE 3.000 Image: state												
				××									18.00	21/30		Λ		P-15	18.00		
				* *									19.00	17/30				P-16	19.00		
				* *						30 11.16		12	20.00	5.1 I							
	7 40	21.00	7.00	* * *						20.00				12/30	X			1.1.1	20.45		
	/,40	21.00	7.00				11.30	Sector sector		1		1		5/30	f			P-18			
					gray	Firm to	CLAY	Firm to stiff, gray, moist, med plasticity, CLAY with silt	ium to high				22.00					D T-4			
						stiff		GL: (23.00 ~ 23.45)m, loose, gray,					23.00	5/30				P-19	23.00		
								Silty SAND layer is observed at the	it depth.				24.00	9/30	Y			P-20	24.00		
ŧ.,	1.48	25.00	4.00		<u> </u>		1						25.00		A			P-21			
-2															I			1.00	25.45		
					gray	Stiff	CLAY	Stiff to very stiff, gray, moist, me plasticity, CLAY with silt	dium to high					16/30	1			P-22	26.45		
						very stiff		Thin sand layers are well	observed as				27.00					DD-1			
								intercalated layer					28.00	19/30)			P-23			
													29.00	10/30	¥			P-24	29.00		
													30.00	9/30	1			P-25	30.00		
								Continue to next sheet					31.00		1				30.45		
	NOT	ES lative dens	ity descr	ription I	Consist	ency descrip	ntion	Sample key • r-1 Desarbed sample (SPT ample) PBT Permeab	iliny Tiese	Term				F			Spacing (m	m)] [CO 17
F	Relativ	e density	SPT	N-Value	Consistenc	y SP	N-Value	Trif (Piston sampler)	our Test	Very thick Thick		> 600 -	2000 2000	W	widely spa	paced ced	> 200 600 - 200	X0 00	C	onsulting	Engineer
E	L	y loose oose		0 - 4 4 - 10	Very soft Soft		under 2 2 - 4	B-1 (Denison sampler) RQD (%)	Term	Thin		200 - 60 -	600 200	Cle	sely spa	ced	60 - 20	0	ULKEN.	a specific and	NACO BARRELO
E	Ď	im dense ense	3	0 - 30 0 - 50	Firm Stiff	_	5 - 8 9 - 15	(Single core tube) 0 - 25 Rock core sample (Dauble core tube) 25 - 50	Poor	hickly lami	nated	6 -	20	Extrem	ely close					_	
L	Very	dense	1 0	wer 50	Very still Hard		6 - 30 aver 30	Rock core sample (Core Loss) 50 - 75 75 - 90		hinly lamin	inted	50	5 - J	Remarks							

Figure 4.1.60 Boring log BH-BD-19 (1)

BORI	E HO	OLE N	o. BI	I-BD-19				BO	RING	LUG	2		_						Sh	eet No.		OF :
			_					Bago River Bridge Construction Project	BORING EQU			_	10 "D1"		-		DATE	: 25	.11.2016	~ 05.1	2.2016	6
LOCA					Bago River	Bridge (I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING MET			1.000		t Circula	tion [CLIENT	5			1		
		LEVEL	-		LI LOS MAL	F00	PTO .	(0.00 ···	ORIENTATIC			: Vert			-	A	IPPO	N KO	EIC	0.,	LTI	D.
COOP	CDIN	ATE	: <u>E 20</u>)5381.139 ; ;	N 1857664.	590 DE	avin :	60.00m	GROUND W/	ATER LE	VEL	: 0.50		CTANIS		TRATION				1.1		_
						SITY				(E)	H (m) &	(iii)	_	TEST	METHO	D (ASTM)	-	SAM	PLING	-	
I PUATION (m)	miles	(III) -	THICKNESS (m)			RELATIVE DENSITY (or) CONSISTENCY	ą	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m) -	, Î	CUR	VE OF BL	ow •	Ro.)	(m)			
FLEVATIO		DEPTH GL	CKNB	DIAGRAM	COLOUR	ATIV	NAME			E&D	ING (TER D	DEPTH GL	N-Value lows / 30cm		N-Value (Blows / 30	ei kem)	SAMPLE (Type & No.)	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
4.14		DEP	IHI	DIA	COL	REL (or)	TIOS			DAT	CAS	WA	DEP	(Blo			40 50	W.F.	DEP	TCR	SCR	RQC
-27	.48	31.00	6.00		gray	Stiff to very stiff	CLAY	Stiff to very stiff, gray, moist, me plasticity, CLAY with silt	edium to high	1.1			31.00	7/30	1			P-26	31.00			
1		11							- 14				172	11.50	T			1-20	31.45			
يعيا المعالية المعالية بالمعالية بالمعالية المعالية بالمعالية بالمعالية بالمعالية بالمعالية بالمعالية بالمعالية					gray	Firm	CLAY	Firm to hard, gray, moist, med	ium to high				32.00	10/30	+			P-27	32.00			
						to hard		plasticity, CLAY with silt					33.00	7/30	4			P-28	33.00			
				2.22				Thin sand layers are well	observed as	01.12.16			34.00		X				33.45			
								intercalated layer		01.12.16 34.00			34.00	14/30	1			P-29	34.45			
													35.00	7/30	4			P-30	35.00			
													36.00		V			P-31	35.45	2		
													1.1	9/30	1			1-51	36.45			
													37.00	10/30	+			P-32	37.00			
													38.00	9/30	1			P-33	38,00			
													39.00						38.45			
													39.00	10/30	1			P-34	39.00			
													40.00	16/30				P-35	40.00			
													41.00					1.20	40.45			
														21/30		N		P-36	41.45			
													42.00	32/30				P-37	42.00			
													43.00	20/30		\square		P-38	43.00	2.1		
														20/30	V	11		1 20	43.45	3		
													44.00	7/30	1			P-39	44.00			
										02.12.16			45.00	10/30	1			P-40	45.00			
-42	48	46.00	15.00							45.00			46.00						45.45			
		10.00	10.00		gray	Medium	Clayey	Medium dense to dense, gray, n	noist, fine to	1			-10.00	20/30				P-41	46.45			
						dense to	SAND	medium grained, low plasitc Claye					47.00	32/30				P-42	47.00			
-44	.48	48.00	2.00			dense	1.						48.00	9/30		T1		P-43	48.00			
						1.1	1	Strange Co	7					9/30	1			1-45	48.45			
					gray	Stiff	CLAY	Stiff to very stiff, gray, moist, me plasticity, CLAY with fine grained	dium to high				49.00	11/30				P-44	49.00			
						very stiff		participation (grant					50.00	30/30		N		P-45	50.00			
													51.00			VI			50.45	21		
													51.00	18/30				P-46	51,45			
-48	.48	52.00	4.00		-		-						52.00	50/27				P-47	52.00			
					gray	Dense to	Clayey SAND	Dense to very dense, gray, m medium grained, low plasitc Claye	oist, fine to				53.00	38/30				P-48	53.00			
						very dense	Dand							36/30			1	1-40	53.45			
						uclise		GL: (53.00 ~ 53.45)m, Hard, medium plasticity, CLAY is obs		121		11	54.00	41/30				P-49	54.00			
-51	.48	55.00	3.00					depth		03.12.16			55.00	50/23				P-50	55,00			
					gray	Very	Clayey	Very dense, gray to yellowish h	rown, moist,	3300			56.00						55.38	21		
					to yellowish	dense	SAND	fine to medium grained, low pl SAND	lastic Clayey					50/10			1	P-51	56.25			
					brown								57.00	50/18			+	P-52	57.00 57.33			
													58.00	50/19				P-53	58.00			
														50/19			II	1.50	58.34			
													59.00	50/17			+	P-54	59.00 59.32			
	77	60.20	6.00					This borehole is terminated	at 60.00m	05.12.16 60.00			60.00	50/14				P-55	60.00			
-50	S.C.	60.29	5.29	+				according to the termination criteri		60.00			61.00				II	1.00	60.29			
N	OTE	_			-		-	Sample key			unner stru	chure Spacing			-	iscontinuiti	<u>es</u>				_	_
p	-	ative density		ription N-Value	Consistenc	ency descrip	N-Value	D . Undisturbed Sample VS Vane Sh	illity Test	Term Very thick		>	2000		Term y widely s		Spacing (n > 20	00		Consulti	ng Engi	ineers
E		v loose		0 - 4	Very soft		under 2	D (Piston sampler) D () Undisturbed Sampler (Denicon complet)	micier Feat	Thick Medium		600 - 200 -	600	N	Videly spa ledium spa	sced	600 - 20 200 - 6	00	FGEX	Yangon W est es	estanch	h) a. 420065
-	Lo	m dense		4 - 10 0 - 30	Soft Firm	_	2 - 4 5 - 8	RQD (% Single core tabe)		Thin Very this		60 - 20 +	200	C	losely spa y closely :	iced	60 - 20 20 - 6	0 -	evision N		Rev;	
É	De	ense	3	0 - 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample 25 - 50	Poor Ti	hickly lami	nated	6 -	20		nely close		<20		Revision D	ale	14.0	1.2017
		dense		wer 50.				Rock core sample 50 - 75	Fair T	hinly lamin		<1		Remark								

Figure 4.1.61 Boring log BH-BD-19 (2)

one n	OLE N	0. BI	1 00 20	-			<u>B0</u>	RING	LUC	-	_						She	eet No.	1	OF
						for the second second	Bago River Bridge Construction Project	BORING EQ		r	-	10 "D1"		-	DATE	<u>i 22</u>	.11.2016	~ 28.11	.2016	
GROUND		1.000		Bago River	Bridge (1	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME ORIENTATIO			: Rot		t Circulati	<u>c</u>	IENT	1.4.4	1.1.1	5.	1.	1
COORDIN		_		N 1857625.	150 DI	ти :_	62.00m	GROUND W.			: 0.3			_	NIPPO	N KO	EIC	0., 1	LTL).
		121	1		**					800			STANDARI TEST N	PENETRA METHOD (A	TION TEST (STM)	PMI	SAM	PLING		٦
ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	DUR	RELATIVE DENSITY (or) CONSISTENCY	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL (n)	N-Value (Blows / 30cm)	N	DF BLOW •	SAMPLE (Type & No.)	DEPTH GL - (m)	(%	(*)	(36)
ELEV	DEPT	THIC	DIAG	COLOUR	REL/	SOIL.			DATI	CASI	1.	DEPT	(Blow	10 20	ws/30cm) 30 40 50	s.E	DEPT	TCR (%)	SCR (%)	RQD (%)
1.91	1,50	1.50		brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, high plasticity, CLAY (Filled Soil)	medium to			¥	1.00	1/30			P-I	1.00			
-7.59				gray	Very	CLAY	Very soft to soft, gray, moist to wet	t, low to high			6	2.00	0/45 •			P-2	2.00			
					soft to soft		plasticity, CLAY				1	3.00	0/45 •			РМТ-01 Р-3	3.00 3.50 - 3.95 4.00			
												5.00				0 T-1	4.00 (m) cm 4.70 5.00			
												6.00	2/30			P-4	5.45 6.00			
											12	7.00	1/30 1/30			P-5 P-6	6.50-6.95 7.00 7.45			
		E								2		8.00				10 T-2	8.00 (***) cm 8.80			
-7.59	11.00	7.50		-	_			-		9.00 Ø112		9.00	2/30			P-7	8.80 9.00 9.45			
				gray	Sofi to	Sandy CLAY	Soft to firm, gray, moist, fine gra medium plasticity, Sandy CLAY	iined, low to	22.11.16 10.00			10.00	2/30			РМТ-03 Р-8	10.00			
					firm							11.00	4/30			P-9	<u>11.00</u> <u>11.45</u>			
	13.00	4.00										12.00	6/30			P-10	12.00 12.45 13.00			
	13.00	4.00	* * *									14.00	5/30			P-11	13.45 14.00			
			* * *	gray	Loose to	Silty SAND	Loose to dense, gray, moist to wet, Silty SAND	fine grained,				15.00	8/30	1		P-12	(#) cm 14.80 15.00			
			* * *		dense						5	16.00	15/30	N		P-13	15.45 16.00			
			* * *									17.00	35/30			P-14	16.45 17.00 17.45			
			* * *								1	18.00	15/30	1	111	P-15	18.00			
-15.59	19.00	6.00	* * *					-				19.00	8/30	1		P-16	19.00 19.45			
				gray	Firm to	Sandy CLAY	Firm to very stiff, gray, moist, lov plasticity, Sandy CLAY	w to medium	23.11.16 20.00			20.00	10/30	1		P-17	20.00 20.45			
				5	stiff		GL: (21.00 ~ 21.43)m; Very dense, medium grained, Silty SAND laye	gray, fine to r is observed				21.00	50/28		P	P-18	21.00			
				8			as intercalated layer at that depth					22.00	13/30	1		P-19	22.00 22.45 23.00			
												24.00	7/30	I		P-20	23.45 24.00			
												25.00	11/50			U D-1	24.45 25.00			
												26.00	12/30	4		P-22	(m) cm 25.70 26.00			
				8								27.00	21/30			P-23	26.45 27.00 27.45			
												28.00	27/30			P-24	28.00 28.45			
	29.00	10.00		gray	Stiff	CLAY	Stiff, gray, moist, medium to high	gh plasticity.				29.00	9/30			P-25	29.00 29.45			
						eeu.	CLAY with silt Continue to next sheet					30.00				DD-2	30.00 (#) cm 30.60			
NOT	ES lative dens	its day	intion 1		tency descrip	tion 1	Sample key	u Ir	Pl	anner stru		31.00		Discor	ttinuities Spacing (
Relativ	ve density	SPT	N-Value	Consistenc	y SPI	N-Value	T-1 Undistarbed Sample VS Vane She (Piston sampler) PMT Pressure		Very thick Thick		> 600 -	2000 2000	W	widely space dely spaced	d > 20 600 - 20	000		VKKEN Consulting Yangon B	g Engir Branch	neer 1)
L	y loose .oose um dense	1	0 - 4 4 - 10 0 - 30	Very soft Soft Firm		inder 2 2 = 4 5 - 8	D. Undisturbed Sample (Denison sampler) Rock core sample (Single core tabe) 0 - 25	Term	Medium Thin Very this	7	200 - 60 - 20 -	200	Ck	dium spaced sely spaced closely space	60 - 20	00	Revision Ne	0.	Rev: 1	01
D	Dense y dense	3	0 - 50 ver 50	Stiff Very stiff		9 - 15 6 - 30	Rock core sample (Double core tube) 25 = 50 Rock core sample (Core Loss) 50 = 75 75 - 90 75 - 90	Poor T	hickly lami	nated	6 -	20		ely closely sp			Revision D	ate	14.01	.201

Figure 4.1.62 Boring log BH-BD-20 (1)

30	RE H	OLE N	o. BE	I-BD-20				BORING	LOC	i					Joh		KYB-2 eet No.		OF
								Bago River Bridge Construction Project BORING E		ē.	1.000	HO "D1"		DATE	: 2	2.11.2016	~ 28.	1.201	6
	CATIC		-		Bago Rive	r Bridge ()	hanlyin Bri	dge), Thanlyin Township, Yangon Region. BORING M					Circulation	CLIENT					7
	ORDIN	LEVEL	-		N 1857625	.150 DI	EPTH :	62.90m GROUND		VEL	: <u>Ver</u> : 0.3:			NIPP	ON KC	DEI C	О.,	LT	D.
T									1	-	Ē		ANDARD PE	NETRATION TEST HOD (ASTM)		SAM	PLING		
l	(m)	(II)	(m)			RELATIVE DENSITY (or) CONSISTENCY		and a second	DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	8	2 0	URVE OF BLOW .	2	Ê			
	ELEVATION (m)	1 GL-(THICKNESS (m)	WW	CIR.	TIVED	NAME	SOIL DESCRIPTION	& DEF	AG (DE	R DEP	DEPTH GL-1(m)	N-Value (Blows/30cm 0	N-Value	SAMPLE (Type & No.)	1	(9)	(2	17
	ELEV	DEPTH GL-	THIC	DIAGRAM	COLOUR	RELA (or) (SOIL		DATE	CASID	WATB	DEPTI	(Blow	(Blows / 30cm) 9 20 30 40 50	s sv R(T)	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
						1		No. B. Strawood			11	31.00				31.00		111	
					gray	Stiff	CLAY	Stiff, gray, moist, medium to high plasticity CLAY with silt	1			1.1	1/30		P-26	31.45			
									24.11.10 32.00	1		32.00 1	0/30		P-27	32.00 32.45			
									1			33.00	9/30		P-28	33.00 33.45			
	30.59	34.00	5.00	_					-			34.00 1	0/30		P-29	34.00			
	11						5.5					35.00	6/30		P-30	34.45 35.00			
					gray	Firm to stiff	CLAY	Firm to stiff, gray, moist, medium to high plasticity, CLAY with silt	1			26.00				35,45 36.00			
						suir		Thin sand layers are well observed a intercalated layer	s		1 f	37.00	6/30 🔹		P-31	36.45			
								GL: (45.0m ~ 45.45)m, medium dense, gray			ľ		6/30		P-32	37.45			
								moist, fine to medium grained, low plasti Clayey SAND layer is observed as intercalated	5			38.00	8/30		P-33	38.00 38.45			
								layer at that depth				39.00	7/30		P-34	<u>39,00</u> 39,45			
												40.00	6/30		P-35	40.00			
												41.00	6/30		P-36	40.45			
												12.00			165	41.45			
													8/30		P-37	42.45			
											1	43.00	7/30 •		P-38	43.00 43.45			
												44.00	7/30		P-39	44.00			
												45.00 2	8/30		P-40	45.00			
												46.00 1	1/30		P-41	46.00	í.		
									25.11.10			47.00	0/30		P-42	46.45			
									47.00			48.00			P-43	47.45			
													7/30		1122	48.45 49.00			
				4 52							li		0/30		P-44	49.45			
												50.00 1	0/30		P-45	50.00 50.45			
												51.00 1	0/30		P-46	<u>51.00</u> 51.45			
	48.59	52.00	18.00				-		-			52.00 3	5/30		P-47	52.00 52.45			
	1				greenish	Medium	Clayey	Medium dense to very dense, greenish gray to	5			53.00 2	3/30		P-48	22.00	2		
					gray to vellowish	dense to	SAND	yellowish brown, moist, fine to mediun grained, low plastic Clayey SAND	1			54.00	4/30		P-49	53.45 54.00			
					brown	dense					11	55 00			1168	54.45 55.00			
													0/25		P-50	55.40			
									12			56,00 4	5/30	•	P-51	56.00 56.45			
	53.59	57.00	5.00						26.11.10			57.00 5	0/25		P-52	57.00 57.40			
	71				yellowish gray	Very dense	Clayey SAND	Very dense, yellowish gray to yellowish brown moist, fine to medium grained, low plasti-				58.00 5	0/13		P-53	58.00 58.28			
					to yellowish			Clayey SAND			0	59.00 5	0/14		P-54	50.00			
					brown							60.00	0/15		P-55	19.29			
											h		0/15		1-55	60.30			
	NOT	ES lative dens	ity desr-	ription 1	Consie	I dency descrip	ption 1	Sample key Disurted omple P-1 Disurted omple DBIT Permachility Test	Term	anner str	_	61.00		Discontinuities rm Spacin	g (mm)		FUKKE	NCC	, e
ĺ	Relati	ve density	SPT	N-Value (mast)	Consistenc	sp SP	N-Value	T-I Undisturbed Sample VS Varie Shear Test (Piston sampler)	Very thic Thick		> 600 -	2000	Very wid Widely	ely spaced > spaced 600 -	2000		Consulti Yangor	ng Eng Branci	h)
	L	y loose oose	1	0 - 4. 4 - 10	Very soft Soft		ander 2 2 = 4	D-) (Denison sampler)	Medium		200 -	200	Closely	n spaced 200 (spaced 60 -	200	Revision N	in the second	Rev	-
Í	t	um dense Jense	3	0 - 30 0 - 50	Firm Stiff		5 - 8 9 - 15	Rock core sample ROD (7w) Term. (Single core tube) 0 - 23 Very pion Rock core sample 25 - 50 Poor (Dendie core tube) 0 - 25 Very pion	Very thi Thickly lami	nated	20 - 6 -	.20		ely spaced 20 closely spaced <	20	Revision N Revision D		14.0	
	Ver	y dense	1 0	ver 30	Very stiff Hard		6 - 30 over 30	Rock core sample (Core Loss) 50 - 75 Pair W.1 Water sample 90 - 100 Excellent	Thinly lami	ated	<	6	Remarks						

Figure 4.1.63 Boring log BH-BD-20 (2)

ORE	EHO	DLE N	. BH	-BD-20				BO	RING	LOG								Job N		KYB-20. tet No.		5 OF
			- C					e Bago River Bridge Construction Project	BORING EQU				10 "D1"		4	DA	TE	1 22	.11.2016	~28.11	.2016	_
	TIO				Bago River	Bridge (hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			-		Circulation	- CLI	ENT						
		LEVEL ATE	_		N 1857625.	150 15	PTH	62.00m	GROUND W			: Vert			-	NI	PPO	N KO	EI C	0., 1	TL).
J.J.K.		T	: <u>E 20.</u>	3411.608 ;	N 1837023.	130 01	aran	02.000	GROOND W	_	_	0.52		TANDARD	PENETRAT	ION TES	T					_
C			1			SITV				(11)	H (m) &	010		TANDARD TEST MI	ETHOD (AS	TM)		1	SAM	PLING	-	_
ELEVATION (m)		(m) -	THICKNESS (m)	4		RELATIVE DENSITY (or) CONSISTENCY	ME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(m)	(inclusion)	CURVE O	FBLOW	•	No.)	(m)			
NATIO		DEPTH GL	CKNE	DIAGRAM	COLOUR	LATIV	L NAME			TEAD	SING (TERD	DEPTH GL	(Blows/30cm)	N- (Blow	Value s/30cm)		SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
EiJ	3	DEI	H1.	Πα	8	ER (o	SOIL			DA	CA	W	BG	₿ Ø	10 20	30 40	50	-	DEI	0	SC	RQ
					yellowish gray	Very dense	Clayey SAND	Very dense, yellowish gray to yell moist, fine to medium grained,	owish brown, low plastic		1		61.00	50/13				P-56	61.00 61.28			
					to yellowish			Clayey SAND					-	50/15			T	1-50	1.11			
58.	.89	62.30	5.30		brown	_				28.11.16 62.00		2	62.00	50/15			+	P-57	62.00 62.30			
					1.1			This borehole is terminated					63.00					1.00				
								according to the termination criteria	k.				64.00									
													65.00									
													66.00									
													67.00									
													68.00									
													08.00									
													69.00									
													70.00									
													71.00									
													-									
													72.00									
												1.00	73.00									
													74.00									
													75.00									
													76.00									
													77.00									
													78.00									
													79.00									
													80.00									
													81.00									
													01.00									
													82.00									
													83.00									
													84.00									
													1									
													85.00									
													86.00									
													87.00									
													88.00									
													89.00									
													90.00									
													1.54									
N	OTE	s					-	Sample key		Pla	nner stru		91.00	_	Discont	inuities		L				_
	Rela	ative dens		iption N-Value	_	ency descri	ntion N-Value	Pri Instanted sample PBT Permeab STI sample) PBT Varies		Term Very thick	1	Spacing >	(mm) 2000		Term idely spaced		Spacing (m > 200			UKKEN		
		e density loose	1.0		Consistence Very soft	2	inder 2	Trat Endisambed Sample: VS Vace Sh (Piston sampler) PMT Pressure (Derison sampler) (Derison sampler)		Thick Medium		600 - 200 -	2000	Wid	ely spaced		600 - 20 200 - 60	00		Yangon I	Branch	1)
1.	Lo	m dense		- 10	Soft Firm	1. 1. 1. 1	2 - 4	ROD (%) Rock core sample (Single core fulse) O - 25	Term Vary poor	Thin Very thin		60 -	200	Clos	ely spaced osely spaced	-	60 - 20	2	Revision N		Rew	_
	De		30	0 - 50	Stiff	1, 201	9 - 15	Rock core sample 25 - 50	Poor	nickly lamin	ated	6 -	20	Extreme)	y closely spaced		× 20		Revision D	_	14.01	20
-	very	ocnet	1 01	/er 50	Very stiff Hard		6 - 30 over 30			ontry tamin	neu	<	0	Remarks						-	-	_

Figure 4.1.64 Boring log BH-BD-20 (3)

BC	RE H	OLE N	lo. B	H-BD-21				BO	RING	LOC	1					Je	ob No.	FKY Sheet	B-2016-	025 1 OF 3
LC GR	CATIO	N LEVEL	: <u>Be</u> : <u>3.3</u>	side Existing	Bago Rive	r Bridge (T	hanlyin Bri	Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region. 66.00m	BORING EQU BORING MET ORIENTATIC GROUND W/	THOD N		-	ical	t Circulation	CLIENT	PON K		2016~	17.11.20	
T						arry ACY			1	(m)	1 (m) &	(m)		STANDARD F TEST ME	ENETRATION TEST THOD (ASTM)	-		SAMPL	ING	
SCALE (m)	ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (of) CONSISTENCY	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	DEPTH GL = (m)	N-Value (Blows / 30cm)	CURVE OF BLOW N-Value (Blows / 30cm) 10 20 30 40	• somple	(Type & No.)		ICR (%) SCR (%)	RQD (%) SCALE (m)
Tunn	1.84	1.50	1.50		brownish gray	Very soft	CLAY	Very soft, brownish gray, moist, low plasticity, CLAY (Filled Soil)	to medium			¥	1.00	0/45 •		B y P				
21mmmunut	-0.66	2.50	2.50		gray	Very soft	CLĂY	Very soft, gray, moist, mediun plasticity, CLAY	n to high				2.00 3.00 4.00	1/30		P.	T-1 (1) 2 2 3	00 cm 50 00 45		2 ¹ ////////////////////////////////////
10 11 11 11 11 11 11 11 11 11 11 11 11 1					gray	Soft	CLAY	Soft, gray, moist, medium to high CLAY GL: (9.00 ~ 9.45)m, medium grained, low plastic Clayey SAN observed as intercalated layer at that	dense, fine D layer is	08.11.16 6.00	<u>5.00</u> Ø112		5.00 6.00 7.00 8.00 9.00	2/30 2/30 13/30 4/30		р Р Р Р Р	4. 5. 1-2 4 6. 7. 8. 7. 8. 9. 9. 7. 10. 10. 10. 10. 10. 10. 10. 10	00 cm 50 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 00 45 00 00 00 00 45 00 00 00 45 00 00 00 45 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 45 00 00 00 45 00 00 00 00 00 00 00 00 00 0		والتعميل المسالية معالية
121111	-9.66	11.00	2.00		gray	Soft to firm	Sandy CLAY	Soft to firm, gray, moist, fine grain medium plasticity, Sandy CLAY	ned, low to				11.00 12.00 13.00	6/30 2/30 16/30		P. P.	9 <u>11</u> 9 <u>12</u> 10 <u>13</u>	00 45 00 45 00		
14 minute	-16.66	20.00	7.00		gray	Medium dense	Silty SAND	Medium dense, gray, moist, fine grained, Silty SAND GL: (16.00 – 16.45)m and (18.00 medium dense, gray, fine to medin low plastic Clayey SAND layer is intercalated layer at those depths GL: (19.00 – 19.45)m, clay patches at that depth	~ 18.45)m, um grained, observed as				14.00 15.00 16.00 17.00 18.00 19.00	29/30 20/30 17/30 23/30 17/30 17/30		р. Р. Р. Р. Р.	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	00 45 10 10		
					gray	Soft to- stift	CLAY	Soft to stiff, gray, moist, low plasticity, CLAY	to medium	<u>09.11.16</u> 22.00			22.00 22.00 23.00 24.00 25.00 25.00 27.00 22.00 22.00 22.00 30.00 30.00	8/30 11/30 6/30 3/30 4/30 5/30 7/30 4/30 8/30 9/30 7/30		р. р. р. р. р. р. р. р. р. р.	20 20 118 21 21 21 22 22 23 20 23 23 23 21 24 24 24 22 25 26 26 23 26 26 26 24 27 27 27 25 28 28 28 26 29 29 20 20 20 20 20	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 45		14-14-14-14-14-14-14-14-14-14-14-14-14-1
	Relativ Ver L Medic D	ES lative den ve density y loose oose um dense ense y dense	Sł	cription T N-Value (max) 0 - 4, 4 - 10 10 - 30 30 - 50 over 50	Consisten Consisten Very sof Soft Firm Stiff Very stif Hard	9 0 10	tion N-Vahue (most) ander 2 2 - 4 5 - 8 9 - 15 5 - 30 ver 30	Sample Lec ● N-10000001 ample PBT Permixeliki □ 1. Undisorbed Sample PMT Permixeliki □ 1. Undisorbed Sample PMT Personampleric □ 0. Sample core tabely □ 0 25 So □ Rock core sample - 25 - 50 So - 75 - 90 ■ -1 Water sample - 90 - 100 - 90 - 100 - 100	rTost Term Very poor Poor In Fair T Good	Ple Term Very thick Thick Medium Thin Very thin sickly lamin hinly lamin	nated	Spacing	(mm) 2000 2000 600 200 60 200 20	Very wi Wide Media Close Very ch	dely spaced 60 im spaced 20 ly spaced 6	acing (mm) > 2000 80 - 2000 30 - 600 30 - 200 20 - 60 < 20	Revis	Co (Ya	R	O., LTD. ngineers

Figure 4.1.65 Boring log BH-BD-21 (1)

BC	RE H	OLE N	o. BH	-BD-21				BO	RING	LOG	1						Ŀ	Iob Ne	_	YB-20 et No.	-	5 OF 3
								e Bago River Bridge Construction Project	BORING EQ		0	1.000	10 "D1"		-	DATE		: 08,	11.2016			-
	CATIC	DN LEVEL			Bago Rive	r Bridge ('I	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			: Rot	17.00	Circulatio	n <u>CL</u>	IENT				5		
	ORDI			-	N 1857547.	.954 DE	етн :_	66.00m	GROUND W		VEL	: 0.3				NIPI	PONI	KOI	EIC	0., 1	LTI).
T			1								800	16	S	TANDARD TEST M	PENETRA ETHOD (/	TION TEST ASTM)	-		SAMP	LING		Т
	(iii	<u>i</u>	(B)			RELATIVE DENSITY (or) CONSISTENCY		in the second second		TH (m)	DEPTH (m) STER (mm))	WATER DEPTH (m)	1.0	-		OF BLOW	•	0	(ii)		1	-
E (m)	ELEVATION (m)	1.1	THICKNESS	KAM	UR	TIVE D	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	AG (DE	R DEP	DEPTH GL+(m)	N-Value lows / 30cm	N	V-Value	MPLE	(Type & No.)		(%	(2	
SCALE	FLEV	DEPTH GL	THICH	DIAGRAM	COLOUR	RELA (or) (SOIL			DATE	CASING (DIAME	WATE	DEPTI	(Blows		ws/30cm) 30 40	50 5	(Typ	DEPTH GL-	TCR (%)	SCR (%)	RQD (%)
-		31.00			gray	Soft to stiff	CLAY	Soft to stiff, gray, moist, low plasticity, CLAY	to medium			11									111	and the
1	-27,00	31.00	11.00				100	Passaraji canta	1.00	10.11.16 31.00			31.00	5/30	4		P	-20 P	31.00 31.45			iliuu
2					gray	Soft to	CLAY	Soft to stiff, gray, moist, low plasticity, CLAY	to medium				32.00	6/30	ŝ.		P		32.00 32.45			and and
3						stiff		Sector Martine Contraction					33.00	6/30			Р		33.00 33.45			huilu
4													34.00	5/30			Р	-31	34.00			al la l
5													35.00	6/30					34.45			Interior
- House													36.00						35,45 36.00			
Junio														10/30	1		P	-32	36.45			lum
7													37.00	8/30	1		P		37.00 37.45			
8													38.00	7/30			Р	-35	38.00 38.45			iii liii
9													39.00	7/30			P		39.00			the state of the s
0										11.11.16			40.00	7/30			P	-37	39.45 40.00			and the second
in the second										40.00			41.00					-	40.45			
Innin														7/30				-30	41.45			inter
- Inne												1	42.00	6/30			P		42.00 42.45			ahuut
3													43.00	7/30			P		43.00			and have
4													44.00	9/30	ł		Р		44.00			
֎ֈՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ֎ՠՠ													45.00	8/30			Р	-42	45.00			-
6													46.00	9/30			Р	-43	46.00			in the second
7													47.00					- 6	46.45			and the second
Summer of													48.00	7/30	V				47.45 48.00			in the second seco
- International														12/30	t		P	-4.5	48.45			il and
9													49.00	13/30	+		P		49.00 49.45			iliuu
0												d.	50.00	13/30	+		Р		50.00 50.45			
1													51.00	10/30	4		Р	-48	51.00 51.45	1		hill
2										12.11.16			52.00	11/30			P	49	52.00			-
=	49.66	53.00	22.00			-				52.00			53.00	10/30	11		P	- F	52.45 53.00			
4					gray	Loose to	Clayey SAND	Loose to medium dense, gray, grained, low plastic Clayey SAND	moist, fine				54 00	1.1	Ī				53.45 54.00			-
4						medium dense	SAID	granied, low plastic clayey SAND						11/30	t		P		54.45			luntu
Shunter	-51.66	55.00	2.00		1.000			Stiff, gray, moist, low to mediu	1.1.1.1.				55.00	10/30	t		P		55.00 55.45			all and
6	1				gray	Stiff	CLAY	CLAY	in plasticity,				56.00	11/30	k		P		56.00 56.45			11 milium
7	53.66	57.00	2.00		-								57.00	18/30			P	-54	57.00 57.45			<u> </u>
8					greenish	Medium	Clayey	Medium dense to dense, greenish	gray, moist,				58.00	20/30			Р	-55	58.00			uluil.
9					gray	dense to dense	SAND	fine to medium grained, low pl SAND	astic Clayey				1000	20/30					58.45 59.00			in the second
0 mm						dense				15 17 12			1000						59.45 60.00			hundred
mumphing and support								Continue to next sheet		15.11.16 60.00	1			35/30		1	P		60.00			mhuntu
13	NOT			and and a			1	Sample key	1.			acture Spacing	61.00	_	Discor	ntinuities	cing (mm)					E
		lative dens ve density		N+Value	Consistence	tency descrip	N-Value	P-1 Distanted sample ISST sample: T-t Undisturbed Sample VS Vane Sh Diston sample(r) VS Vane Sh	car Test	Term Very thick Thick		Spacing > 600 -	2000		Term widely space lely spaced	:d	>2000 > 2000		C	UKKE onsultin angon	ng Eng	ineers
		ry loose		0 - 4	Very soft Soft		under 2 2 - 4	D-1 Undisturbed Sample (Denison sampler) PMT Pressure		Medium	+	200 - 60 -	600	Med	ium spaced sely spaced	200	0 = 2000 0 = 600 0 - 200		GEX !	1/957-00 	1089K 968	- 420069763 attant.com
	Medi	um dense Dense	10	0 - 30 0 - 50	Firm	-	5 - 8 9 - 15	Kock core sample (Single core tabe) 0 - 25 Rock core sample 25 - 50	Very poor Poor 7	Very thin hickly lamin	nated	20 -	60	Very o	losely space ly closely sp	ed 2	0 - 60 < 20		evision No evision Da	_	Rev: 14.0	01
į	Ver	y dense		/er 50	Very stiff Hard	n j	6 - 30 wer 30	(Double core tube) Rock core sample (Core Loss) (Core	Good	hinly lamin	ated	<		Remarks								
							_	Bw-1 Water sample 90 - 10		-			- 1					_				_

Figure 4.1.66 Boring log BH-BD-21 (2)

0	RE H	OLE N	o. BH	I-BD-21				<u>B O</u>	RING	LOG	2						Jub		KYB-2 eet No		25 OF
								e Bago River Bridge Construction Project	BORING EQI				10 "D1"		2,0	DATE	: 0	8.11.2010	5~17.	11.201	6
	CATIO		-		Bago River	Bridge (7	'hanlyin Bri	dge), Thanlyin Township, Yangon Region,	BORING ME	THOD		Rot	ary Direc	t Circulatio	- CL.	IENT					
		LEVEL		1					ORIENTATIO			: Ver		_	- 1	NIPPO	N K	EIC	n	IT	D
)	ORDIN	IATE	: <u>E 20</u>	5475.433 ;	N 1857547.	954 DI	етн :_	66.00m	GROUND W	ATER LE	VEL	: 0.30			-					~1	
			1	1.01		YTS YO				(11)	f (m) &	(II)		STÅNDARD TEST M	PENETRA' ETHOD (A	TION TEST ASTM)	-	SAN	IPLING	0	-
	ELEVATION (m)	(m)	THICKNESS (m)	4		RELATIVE DENSITY (or) CONSISTENCY	ME	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(m)	ocm)	CURVEO	OF BLOW •	No.)	(m)			
	UVA	DEPTH GL = (m)	CKNB	DIAGRAM	COLOUR	ATTV CON	L NAME			TE&L	SING (TER D	DEPTH (3L- (m)	N-Value (Blows / 30cm)	(Blo	(-Value ws / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
	BLE	DEP	THE	VIG	COL	REL	SOIL		_	IVG	CAS	W/M	DEP	(Blo 0		30 40 50	"E	DEP	TCR	SCR	RQE
	57.66	61.00	4.00		1							r"	61.00			N		61.00	11		'n
ļ			1100		-									50/30		1	P-58	61,45			
					reddish	Dense	Clayey	Dense to very dense, reddish	brown to				62.00	50/30		1 4	P-59	62.00 62.45			
					brown	to very	SAND	yellowish brown, moist, fine	to medium	16.11.16 63.00			63.00	50/30			P-60	63.00			
					yellowish brown	dense		grained, low plastic Clayey SAND		63,00				50.50			1.00	63.45			
					biown			GL: (61.00 ~ 61.45)m, fine grav increased at that depth	el percent is				64.00	50/30		111	P-61	64.00 64.45			
			5										65.00	50/30			P-62	65.00			
										17.11.16			66.00				P-63	65.45 66.00			
	63.10	66.44	5.44		-	-			_	66.00				50/29		l I Î	P-0.5	66.44			
							1	This borehole is terminated					67.00								
								according to the termination criteria					68.00								
													69.00								
													70.00								
													71.00								
													72.00								
												1	73.00	S.,							
													74.00								
													75.00								
													76.00								
													77.00								
													78.00								
													10,00								
													79.00								
													80.00								
													81.00								
													1								
													82.00								
													83.00								
													84.00								
													04.00								
													85.00								
													86.00								
													07 00								
												1	87.00								
													88.00								
													89.00								
				1.1			$ 0\rangle = 1$						90.00								
	NOT	rs l						Sample key			DDCT 11	churc	91.00		Dire	vimuitiee					
	-	ES lative dens	ity descr	iption	Consis	ency descrip	tion	Sample key Pi-I ^{Discurbed semple} (STI semple) PBT Permeab	ility Test	Term		Spacing	(mm)		Discor	Spacing	_		FUKK	EN CO)., LT
		e density	1.1	N-Value	Consistenc	·	N-Value	The second secon	ear Test	Very thick Thick		600 -		Wit	ridely space ely spaced	600 -			Consult (Yango	ing En Bran	ginee ch)
		y loose oose		0 - 4 4 - 10	Very soft Soft		under 2 2 - 4	B D-1 (Denison sampler) ROD (%)	Term	Medium Thin	-	200 -		Clo	ium spaced ely spaced	200 -	200	FG∋X			
	Media	im dense ense	.10	0 - 30 0 - 50	Firm	1	5 - 8 9 - 15	(Single core tube) 0 - 25 Rock core sample 25 - 50	Very poor	Very thin hickly lamin		20 -	60	Very c	losely space y closely sp	sd 20 -	60	Revision I Revision I			01.20
		dense		ver 50	Very stiff	1	6 - 30	(Double core tube) Bock core sample 50 - 75	Fair 1	hinly lamin		<		Remarks					-	-	-
					Hard	-1-3	iver 30		D Excellent					-							

Figure 4.1.67 Boring log BH-BD-21 (3)

во	RE H	OLE No	, BI	1-BD-22				<u>B 0</u>	RING	LOC	l						Job !		KYB-20 eet No.	-	5 OF 3
			_					Bago River Bridge Construction Project	BORING EQU		r.	-	10 "D1"	20.00		DATE	: 2)	.11.2016	~ 28.1	.2016	2
	CATIO	LEVEL	1.1		Bago River	Bridge (Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME			: Rota		Circulation	- CLIE!	<u>VT</u>					
	ORDIN				N 1857509.	453 DI	SPTH :	62.00m	GROUND W		VEL	: 0.4;			- 1	NIPPO	N KO	EI C	0., 1	LTL).
Τ			1			22	-				*		3	TANDARD P TEST ME	ENETRATIO THOD (AST	N TEST M)	PMT	SAM	PLING		
	í.	Ē	(m)			RELATIVE DENSITY (or) CONSISTENCY		SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m)	(11)	CURVE OF I	slow •		(E)			
	ELEVATION (m)	DEPTH GL-	THICKNESS (m)	DIAGRAM	JUR.	VTIVE I CONSI	NAME	SOIL DESCRIPTION		E&DE	NG (D	ER DE	DEPTH GL - (m)	N-Value (Blows/30cm)	N-Vi (Blows/	lue	SAMPLE (Type & No.)	DEPTH GL - (m)	(%)	(%)	(%)
-	BLEV	DEPT	THIC	DIAC	COLOUR	REL (or)	SOIL.			DAT	CASI	IVM	DEP	(Blox) 40 50	S. (T3	DEPT	TCR (%)	SCR (%)	RQD (%)
and and					brownish gray	Very soft	CLAY	Very soft, brownish gray, moist high plasticity, CLAY	, medium to			¥	1.00	0/45			Bwa P-1	1.00			-
1	1.88	1.50	1.50		-			(Filled Soil)					2.00				19.3	1.45			-
dimite i					gray	Very soft	CLAY	Very soft to soft, gray, moist to we plasticity, CLAY	t, low to high		-			0/45			P-2	2.45			in the second
a lund						10 soft		GL: (8.00 ~ 8.45)m; loose, brown	ish eray, fine	1.14	3.00 Ø112		3.00	0/45 •			P-3	3.00 3.45			uluut
ului.								grained, Silty SAND layer is intercalated layer at that depth	observed as	21.11.16 4.00			4.00				0 T-1	4.00			union
turn turn												5	5.00	0/45			P-4	4.70 5.00 5.45			
danta													6.00	1/30			P-5	6.00			
and													7.00	2/30			P-6	6.45 7.00			hint
and and					\$								8.00				P-7	7.45			
and and					5								9.00	4/30				8.45 9.00			
												11	- 4	3/30			P-8	9.45			il and
1	-6.62	10.00	8.50		-								10.00	2/30			P-9	10.00 10.45			-
undanta and and and and and and and and and an					gray	Soft to	Sandy CLAY	Soft to stiff, gray, moist, fine gra medium plasticity, Sandy CLAY	ained, low to				11.00	2/30			P-10	11.00			
in line					3	stiff							12.00	1			В T-2	12.00 () cm 12.60			
duinte													13.00	9/30			P-11	12.60 13.00			-
-	10.62	14.00	4.00										14.00	18/30	\mathbb{N}		P-12	13.45 14.00			
Summer Street				× × × × × ×	brownish	Medium	Silty	Medium dense, brownish gray to g	ray moist to	22.11.16			15.00	16/30	I		P-13	14.45			
and				н н н	gray to	dense	SAND	wet, fine grained, Silty SAND		15.00			16.00		T.			15.45			
dunt				* * *	gray							11		17/30			P-14	16.45			
thur the				* * *									17.00	28/30			P-15	17.00			illum i
in the second				* * *									18.00	14/30	$\langle $		P-16	18.00 18.45	51		
				* * *									19.00	27/30			P-17	19.00 19.45			
	16.62	20.00	6,00	* * *	1				-				20.00	4/30			P-18	20.00			ما الأساني
dimite					gray	Soft	CLAY	Soft, gray, moist, medium to hi	eh plasticity.				21.00	3/30			P-19	21.00			-
					6			CLAY	Per Province/1				22.00					21.45	1		
minute in the second second													23.00	1			8 т.з	(#) cm 22.80 23.00			
													24.00	4/30			P-20	23,45			
thur the														3/30			P-21	24.00 24.45			line
	21.62	25.00	5.00		-	-				23.11.16			25.00	3/30			P-22	25.00 25.45			
and the					gray	Soft to	CLAY	Soft to stiff, gray, moist, medi plasticity, CLAY with silt	ium to high				26.00	4/30			P-23	26.00			
in the second						stiff		Thin sand layers are well	observed as				27.00	Ţ			₿т-4	27.00			- Line
attractor								intercalated layer					28.00	6/30			P-24	28.00			-
internet in													29.00	4/30			P-25	28.45 29.00			minin
indau.													30.00					29.45 30.00			and the
Tetrahand Stand Stand Stand Strand Strates					-			Continue to next sheet			4		31.00	5/30			P-26	30.45			-
يە ا	NOT	ES lative densi	ity descr	ription	Consist	iency descrip	ption	Sample key Fei Distarbed sample (SP1 sample) PBT Permeab	ility Test	Pi: Term	mner stri		g(mm)		Discontinu 'erm	ities Spacing (mm)		UKKE	100	LTD
	Relativ	e density	SPI	N-Value	Consistenc	y SP	N-Value	T-1 Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure	car Test	Very thick Thick		> 600 -	2000 2000	Very wi Wide	dely spaced ly spaced	> 20 600 - 20	000		Consultin	g Engin	neers
	L	y loose oose un dense		0 - 4 4 - 10 0 - 30	Very soft Soft Firm		ander 2 2 - 4 5 - 8	D-1 Undisturbed Sample (Denison sampler) (Single core tabe) (Single core tabe)	Term	Medium Thin Very thin	+	200 - 60 - 20 -	200	Close	m spaced ly spaced sely spaced	200 - 6 60 - 20 20 - 6	00	Revision Ne	-	Rev:	-
	D	ense ense dense	3	0 - 30 0 - 50 wer 50	Firm Stiff Very stiff	1	5 - 8 9 - 15 6 - 30	Rock core sample 25 - 50 (Double core tube) 50 - 75	Poor	very thin hickly lamit	nated	20 - 6 - <	20	Extremely	closely spaced			Revision D	ate	14.01	2017
1	1 1 1 1				Hard		over 30	Rock core sample (Core Loss) 30 - 10 W-1 Water sample 90 - 100	Good					Remarks							

Figure 4.1.68 Boring log BH-BD-22 (1)

30	RE H	OLE N	o. BH	I-BD-22				<u>B O</u>	RING	LOG	i i							Job 1	_	KYB-	2016-0	25 OF
PR	OJECT	NAME	: Geot	echnical Su	rvey on the	detailed c	lesign for th	e Bago River Bridge Construction Project	BORING EQ	JIPMENT	r	: TOI	10 "DI"	-		, ±1	DATE	: 21	1.11.2016	-		
LC	CATIC	N	: Besi	de Existing	Bago River	r Bridge ('l	Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME	THOD		Rota	ry Direc	t Circul	ation	CLIENT	0.			_	-	
		LEVEL	1.00						ORJENTATIO			Ver			_	1	IPPO	NKO	FIC	0	17	D
CC	ORDIN	ATE	: <u>E 20</u>	5507.335 ;	N 1857509.	453 DI	epth : _	62.00m	GROUND W.	ATER LE	VEL	: 0.43	2m		-	19	110	1 10	Lic	,	51	υ.
Τ			-		1	20					3) &	(it)	- 1	STANDA TES	RD PEN	ETRATION OD (ASTM	TEST		SAN	PLINC	3	
	(Î	2	î.			RELATIVE DENSITY (or) CONSISTENCY	1	La Contra La		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mn))	WATER DEPTH (m)	â		CU	RVE OF BL	ow •		î			
	NOL	(m) - 110	VESS (N.	×	VE DI	NAME	SOIL DESCRIPTION		DEP	(DE	DEPT	(m) (m)	duc 30cm			1.05	A No.	3L - (m)		15	
	ELEVATION (m)	DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	eLATI or) CO	SOIL N			ATE &	ASING	ATER	DEPTH OL-	N-Value (Blows / 30cm)		N-Value (Blows / 30	(cm)	SAMPLE (Type & No.)	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
1	ā	â	÷	a	_	≥ Soft to	Ø CLAY	Soft to stiff, gray, moist, medi	ium to high	D	Ú.	*	Q	8	0 10	20 30	40 50	-	B	4	ŝ	×
and the	27.62	31.00	6.00		gray	stiff	CLAI	plasticity, CLAY with silt	uni to mga				31.00	4/30	1			P-27	31.00			
=	15-11		1		gray	Soft	CLAY	Soft to stiff, gray, moist, medi	ium to high	1				4/30	ΤI.			1-2/	31.45			
			1	1.000		to stiff		plasticity, CLAY with silt					32.00	4/30	•			P-28	32.00			
								Thin sand layers are well intercalated layer	observed as				33.00	17	1				33.00	1		
								GL: (52.0m ~ 52.45)m, sand	managent in						1			U T-5	(#) em 33.70			
								increased at that depth.	percent is				34.00	7/30	1			P-29	34.00			
										24.11.16			35.00	8/30				P-30	35.00			
			1							32,00			36.00	631					35.45	1		
			1											5/30	1			P-31	36.45	1		
			3										37.00	6/30	+			P-32	37.00			
			3										38.00	sinn	1			P-33	37.45			
														5/30	1			P-33	38.45			
													39.00	8/30	+			P-34	39.00 39.45			
			12										40.00	7/30	1			P-35	40.00			
			1										17.00	1130	I			1.00	40.45			
													41.00	6/30	1			P-36	41.00			
			3										42.00	7/30	-			P-37	42.00			
													47.00	1000					42.45	1		
													43.00	8/30	1			P-38	43.00 43.45			
													44.00	8/30				P-39	44.00			
													45.00	0.70				P-40	44.45			
			1							100				9/30				1-40	45.45			
			13							25,11,16 46.00			46.00	10/30	+			P-41	46.00			
										100			47.00	9/30	1			P-42	47.00	1		
													48.00					1.1	47.45			
												13	46.00	8/30	1			P-43	48.45			
			13										49.00	9/30	4			P-44	49.00			
													50.00						49.45			
			13											12/30	ľ			P-45	50.45			
			1										51.00	12/30				P-46	51.00			
													52.00	15/30				P-47	52.00	1		
																		1-3	52.45			
													53.00	15/30	1			P-48	53.00 53.45	1		
			3										54.00	12/30	4			P-49	54.00			
			13										55.00						54.45			
										_			1.1	11/30	Î			P-50	55.45	1		
										26.11.16			56.00	11/30				P-51	56.00			
	53.62	57.00	26.00										57.00	50/9				P-52	57.00	1		
					propriet	Very	Chan	Vary dance groonish own to m	lourish area					20/9			II	1334	57.24	1		
					greenish gray	dense	Clayey SAND	Very dense, greenish gray to ye moist, fine to medium grained,					58.00	50/28			1 +	P-53	58.00 58.43			
			3		to yellowish			Clayey SAND					59.00	50/28				P-54	59.00			
					gray								60.00				II		59.43	1		
													60.00	50/25			1	P-55	60.00 60.40			
	NOT	29		1922	<u> </u>			County to Low		L			61.00			Discourse					1	
	NOT Re	ES lative dens	ity descr	iption	Consist	tency descrip	ption	Sample key P-1 Distarbed sample P-1 (SPT sample) PBT Permeab	ility Test	Term		Spacing			Term		Spacing (r			FUKK	ENCO)., LT
	Relativ	ve density	SPT	N-Value	Consistenc		(nest)	Pito (Piston sempler)		Very thick Thick	•	600 -			ry widely Widely s	paced	> 20 600 - 20	00		Consul (Yango	lling En on Bran	ginee ch)
		y loose oose	-	0 = A 4 - 10	Very soft Soft		under 2 2 - 4	D-1 (Denison sample)		Medium Thin		200 -			Medium s Closely s		200 - 6	0	FGEX			Carrier of
	Meda	im dense)(0 - 30 0 - 50	Firm	1.1	5 - 8 9 - 15	Rock core sample (Single core tabe) Rock core sample Rock core sample 25 - 50	Very poor	Very thir hickly lamin		20 -	60	Ve	ry closel;		20 - 6	0	Revision N Revision L	_	_	01.201
		y dense		0 - 50 ver 50	Stiff Very stiff	1	6 - 30	(Double core tube) Rock core sample 50 - 75	Fait	hickly famin hinly famin		<		Rema		with alranced	< 20					
					Hard		over 30	(Core Loss) 75 - 90												_		
				12	(Januar									_	_							_

Figure 4.1.69 Boring log BH-BD-22 (2)

NUMERAL LANGE OBJECT TUDE NUMERAL LANGE DEFENSION NUMERAL LANGE			BD-22					RING	-	_							Job N		KYB-20 eet No.	-	OF
NUMBER LYMB LYMB <thlymb< thr=""> LYMB LYMB</thlymb<>		_											Circulation		-	TE	: 21	.11.2016	~ 28.1	1.201	5
Science				boge rores	Contract (DDA	VEO	FIC	0	1 7	n
manual state manual state <th< th=""><th>OORDINATE</th><th>: E 205</th><th>507.335 ; 1</th><th>N 1857509.4</th><th>453 DE</th><th>ртн :</th><th>62.00m</th><th>GROUND W</th><th>ATER LE</th><th>VEL</th><th>0.43</th><th>÷</th><th></th><th>-</th><th>10.00</th><th></th><th>V NO</th><th>LIC</th><th><i>U</i>.,</th><th>511</th><th></th></th<>	OORDINATE	: E 205	507.335 ; 1	N 1857509.4	453 DE	ртн :	62.00m	GROUND W	ATER LE	VEL	0.43	÷		-	10.00		V NO	LIC	<i>U</i> .,	511	
3.802 6.2.0 5.30 Vary desc. greening groups or yellowidg grey. Clayery SAND 25.116 61.00 5023 9023 97.57 92.50 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 5023 97.57 92.51 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 5023 97.57 92.51 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 50.01 97.57 92.57 92.57 3.802 63.00		1,1	11		SITY SCY				(iii	I (m) &	(III)		TANDARD TEST M	ETHOD (A	ION TES STM)	ST .		SAM	PLING	_	
3.802 6.2.0 5.30 Vary desc. greening groups or yellowidg grey. Clayery SAND 25.116 61.00 5023 9023 97.57 92.50 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 5023 97.57 92.51 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 5023 97.57 92.51 3.802 62.30 5.30 Vary desc. greening groups or yellowidg grey. SND 25.116 61.00 50.01 97.57 92.57 92.57 3.802 63.00	CLEVATION (m)	(HICKNESS (m)	MAGRAM	SOLOUR	RELATIVE DENS (or) CONSISTED	SOIL NAME	SOIL DESCRIPTION		DATE & DEPTH	CASING (DEPTI DIAMETER (n	WATER DEPTH	DEPTH GL - (m)	N-Value Blows / 30cm)	N- (Blow	Value s / 30cm)	1	SAMPLE (Type & No.)	артн GL - (m)	ICR (%)	SCR (%)	(%) (%)
		10000		greenish gray to	Very	Clayey	moist, fine to medium grained,	llowish gray, low plastic				1.1					P-56	61.00			
	-58.92 62.30	5.30							28.11.16 62.00			62.00	50/15				P-57				
89.00												64.00 65.00 66.00 67.00 68.00 70.00 71.00 72.00 72.00 73.00 72.00 73.00 73.00 73.00 73.00 73.00 74.00 73.00 72.00 73.00 72.00 73.00 72.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 73.00 74.00 73.00 73.00 74.00 73.00 74.00 75.000									
Relative density description Consistency description Onisotence PBT Permeability Test Term Spacing (mm) Term Spacing (mm)	Relative density Very loose Loose Medium dense Dense Very dense	SPT N 0 4 10 30		Consistency Very soft Soft Firm. Stiff Very stiff	y SPT	N-Value nder 2 2 - 4 5 - 8 9 - 15 5 - 30		aar Test meter Tast Term Very poor Poor	Very thick Thick Medium Thin Very thir hickly lamin hinly lamin	i nated		2000 2000 600 200 60 60 200	Wid Medi Clos Very c	idely spaced cly spaced um spaced ely spaced osely spaced y closely spa		> 200 600 - 20 200 - 60 60 - 20 20 - 60 20 - 60 < 20	00 00 00		Jonsulti Yangon	Rev	gineer h) v - raior

Figure 4.1.70 Boring log BH-BD-22 (3)

BC	ORE H	OLE N	o. BH	I-BD-23				<u>B 0</u>	RING	LOC	2						Job /	_	KYB-20 eet No.	-	5 OF 1
	ROJECT						- V	Bago River Bridge Construction Project	BORING EQU BORING ME			1.1	IO "DI"	t Circulatio		DATE	<u>: 28</u>	.11.2016		0.00	_
GI	ROUNE	LEVEL	: 3.98	3m					ORIENTATIO	ON		Ver	tical	. coronano	CLIE	NT NIPPO	NKO	ELC	0.	LT	D .
C	OORDI	NĂTE	: <u>E 20</u>	05541.753 ;	N 1857475	. <u>540</u> DE	ертн :_	59.00m	GROUND W	ATER LE	VEL	: 0.4		STANDARD	PENETRATIC	IN TEST	PM		- 2		
	ŵ		(H			NSITY ENCY		a strange		H (m)	((IIII) &	H (m)	-	TEST M	ETHOD (AST	M)	1		PLING		-
SCALE (III)	ELEVATION (m)	DEPTH 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)	N-Value (Blows/30cm)	N-V (Blows) 10 20 -3	alue / 30cm)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
and and and					brown	Very soft	CLAY	Very soft, brown, moist, medi plasticity, CLAY (Filled Soil)	um to high			¥	1.00	0/45 •			Bwd P-1	1.00			
2 million	2.48	1.50	1.50		gray	Soft	CLAY	Soft to very soft, gray, moist to we	t low to high			16	2.00	2/30			P-2	1.45 2.00 2.45			all and a
admittantistantintantintantina int					gray	to very soft	CLAI	plasticity, CLAY	i, iow to nigh	0.7	3.00 Ø112		3.00				PMT-0 P-3	3.00			
and and						SOR							4.00	2/30			P-5	4.00			
territoria de la constanta													5.00	2/30			P-4	4.70 5.00 5.45			
4													6.00	0/45			РМТ-02 Р-5	6.00			
duration of a		7.00	5.50					1.000					7.00	4/30			P-6	7.00			
and south the					gray	Very soft to	Sandy CLAY	Very soft to soft, gray, moist, fine to medium plasticity, Sandy CLAY		28.11.16 8.00			8.00	í			₿ т-2	8.00 (#) cm 8.80			
in the second se						soft		GL: (11.00 - 11.45)m; very loo gray, fine grained, Silty SAN	D layer is				9.00	0/45.			P-7	9.00 9.45 10.00			
and								observed as intercalated layer at the	at depth				11.00	2/30			PMT-03	10.00 10.50 - mys			
and and													12.00	2/30			P-9 P-10	11.45			
Turk true													13.00	3/30			P-11	12.45			
and and	-10.02	14.00	7.00										14.00	10/30			P-12	13.45 14.00			
on triation				* * *	gray	Loose	Silty SAND	Loose to medium dense, gray, moi	st to wet, fine				15.00	14/30	A.		P-13	14.45 15.00			
and				* * *		medium dense	SAND	grained, Silty SAND					16.00	13/30	4		P-14	15.45 16.00 16.45			
and in the				* * *									17.00	13/30	•		P-15	17.00			
and first				* * *									18.00	14/30	ł		P-16	18.00 18.45			
3	1.0			* * *									19.00	13/30	1		P-17	19.00 19.45			
danal The	1000	20.00	6.00	× × *	-							14	20.00				Б Т-3	20.00 () cm 20.70			
differentiation of the second se					gray	Soft to	CLAY	Soft to firm, gray, moist, med plasticity, CLAY	ium to high				21.00	4/30			P-18	21.00			
in the second se						firm							22.00	4/30			P-19	22.00 22.45 23.00			
ы	1. S									29,11,16			24.00	4/30			1.40	23.45			
with the last										24.00			25.00	4/30			P-21	24.45			
The last of the la													26.00	5/30			P-22	(m) cm 25.70 26.00			
and the second													27.00	4/30			P-23	26.45			
or frinklass						l h							28.00	4/30			P-24	27.45			
advictual introduction distant introduction of the second se													29.00	5/30			P-25	28.45 29.00 29.45			
in Color	-26.02	30,00	10.00				-						30.00	1			-5	20.00			
and a	NOT			1110				Continue to next sheet Sample key		-	anner stru		31.00		Discontin			30.80			
	-	lative den ve density	-	ription F N-Value (mail	Consi Consisten	tency descrip	N-Value (mai)	P-1 Ostarbed sample (SPT sample) PBT Pernscah J. (VidSumbed Sample VS Vane Sb (Vistor sampler) Distor sampler)	car Test	Term Very thick Thick		Spacing > 600 -	2000	Very v	Term videly spaced ely spaced	Spacing (> 20 600 - 2	000		UKKE Consulti Yangon	ng Eng Branc	ineers h)
	1	y loose	1	0 - 4 4 - 10	Very sol Soft	1.1	under 2 2 - 4 5 - 8	D-1 Undiscusted Sample (Denison sampler) Rock core sample		Medium Thin Very thi		200	600 200	Clos	ium spaced ely spaced	200 - 0	500 00	Revision N	wi 1951 - 80	TOURS POR	- 4200897 Burd Lore
	- 1	am dense Nense y dense	3	0 - 30 40 - 50 over 50	Firm Stiff Very stif	1.1	5 - 8 9 - 15 6 - 30	(Single core tube) 0 - 25 Rock core sample (Double core tube) 25 - 50 Rock core sample 50 - 75	Poor T Fair 3	Very thin hickly lamit hinly lamit	nated	20 · 6 ·	20		losely spaced ly closely space	20 - 0 ed <20	0	Revision D	_		1.2017
	5			1	Hard	c	over 30	(Core Loss) 75 - 90	Good Excellent												

Figure 4.1.71 Boring log BH-BD-23 (1)

BORE H	IOLE N	o. BH	I-BD-23				BOF	RINGL	0 G								Job 1		KYB-2 eet No.	-	5 OF
		_					and the second second second	BORING EQUI				10 "D1"		÷.		DATE	: 21	3.11.2016	~ 05.1	2.2016	_
LOCATI				Bago Rive	r Bridge (1	hanlyin Bri	a a state st	BORING METH					Circulatio	<u> </u>	LIENT					2	
COORDI	D LEVEL NATE	-		N 1857475	540 DI	EPTH :		ORIENTATION GROUND WAT		/EL	Vert				N	IPPO	N KO	DEIC	<i>O.</i> ,	LTI).
T		-						1		-			TANDARD TEST M	PENET	RATION (ASTM)	TEST		SAM	PLING	-	
(m) \$	(11)	(m)			RELATIVE DENSITY (or) CONSISTENCY	10	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	(m)		-	E OF BL		(.0	(m)	10.4		
ELEVATION (m)	- 14-	THICKNESS (m)	RAM	DUR	CONSE	NAME	SOIL DESCRIPTION		& DE	NG (D	ER DEI	DEPTH GL -	N-Value (Blows / 30cm)	-	N-Value	0	SAMPLE (Type & No.)	DEPTH GL-	(%	2	(%)
ELEVATIO	DEPTH GL	THIC	DIAGRAM	COLOUR	RELA (or)	SOIL			DATE	CASID	WAT	TAR	(Blow		31ows / 30 0 30		S/ (Ty	DEPTI	TCR (%)	SCR (%)	RQD (%)
						12.1	the second second					31.00						31.00			
ուն անդարան անդ Անդարան անդարան				gray	Soft to	CLAY	Soft to stiff, gray, moist, medium to h CLAY with silt	iigh plastic					4/30				P-26	31.45			
					stiff		Thin sand layers are well obs	served as	, i 1			32.00	7/30				P-27	32,00 32,45			
							intercalated layer	3	0.11.16		10	33.00	5/30				P-28	33.00			
												34.00	5/30				P-29	34.00			
												75 00						34.45			
												33.00	8/30	<i>t</i>			P-30	35,45			
												36.00	6/30				P-31	36.00			
												37.00	7/30				P-32	37.00			
												38.00	8/30				P-33	37.45			
												20.00		Π			10.0	38.45			
												39.00	6/30				P-34	39.00 39.45			
												40.00	7/30				P-35	40.00			
												41.00	10/30	Y			P-36	41.00			
												12.00		1			1.5	41.45			
													5/30				P-37	42.45			
									11			43.00	6/30				P-38	43.00			
								0	1.12.16			44.00	7/30				P-39	44.00			
								1				45.00	7/30				P-40	44.45			
												46.00						45.45			
												1.4	6/30	'			P-41	46.45			
												47.00	6/30				P-42	47.00			
												48.00	11/30				P-43	48.00			
			2227									49.00	10/20	1			P-44	48.45 49.00			
													10/30	Ī				49.45			
												50.00	8/30	1			P-45	50,00 50,45			
		-4						0	2.12.16			51,00	8/30				P-46	51.00			
												52.00	7/30				P-47	52.00			
-49.02	53.00	23.00										53.00					P-48	52.45 53.00	21		
					5		B	1					31/30				P-40	53.45			
				greenish gray	Dense to	Clayey SAND	Dense to very dense, greenish gray to brown, moist, fine to medium gra					54.00	50/27				P-49	54.00 54.42			
				to yellowish brown	very dense		plastic Clayey SAND					55.00	50/23			+	P-50	55.00 55.38			
				DIOWN								56.00	50/19				P-51	56.00			
												57 00						56.34			
												1.4	50/24			1	P-52	57.39			
								0	3.12.16 58.00			58.00	50/29			+	P-53	58.00			
-55 44	59,43	6.43						0	5.12.16			59.00	50/28			+	P-54	59.00 59.43			
-35.43	37.43	0.43		-		1	This bankala is surdered to a					60.00						39.43			
-55.45						11	This borehole is terminated at according to the termination criteria.	59.00m,	27			61.00									
NOT	_	ity date:	intion T	Frank	Langer data	wine 1	Sample key		Pla	nner stru		_		Dis Term	continuiti	es Spacing (1			1 10 10 10	, I	14
-	elative dens ive density	-	N-Value	Consistence	tency descrip	N-Value	P-1 Disturbed sample (SPT sample) PBT Pernscability T-t Undisturbed Sample VS Vane Shear 1 Piston sample(r) P	hst V	ery thick Thick			2000		videly space		>20 600 - 20	000		UKKE Consulti Yangor	ng Engi Branch	ineer 1)
Ve	ary loose		0 - 4	Very soft		inder 2	D-1 Undisturbed Sample (Denison sampler) PMT Pressurement		Medium	+		600	Med	ium spac icly spac	ed	200 - 6	500	FGEX	W 957-64	10894, 968	- 4200
Med	Loose ium dense	10	4 - 10 0 - 30	Sali Firm	-	2 - 4	Rock core sample (Single core tube) 0 - 25		Thin Very thin	and	20 -	60	Very c	losely sp	aced	20 - 6		Revision N Revision D	_	Rev: 14.0	-
	Dense ry dense		0 - 50 Ver 50	Stiff Very stiff	n j	9 - 15 6 - 30	(Double core tube) Rock core sample 50 - 75	Fair Thir	kly lamin dy lamin		6 <6		Extreme Remarks	y closel	spaced	< 20				14.0	
			L	Hard	1	over 30	(Core Loss) 75 - 90 W+1 Water sample 90 - 100 F	Goud						-							

Figure 4.1.72 Boring log BH-BD-23 (2)

BORE H	IOLE N	o. BH-B	D-24				<u>B 0</u>	RING	LOG	È .						Job N	1.	KYB-20. eet No.) OF 2
							Bago River Bridge Construction Project	BORING EQU				10 "D1"	-	-	DATE	<u>1 1</u>	7.11.2016	~ 25.11	.2016	
GROUNE			sxisting l	Bago River	Bridge (T	hanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME ORIENTATIC					t Circulation	CLIE	NT	0.13	- 11		1	. 1
COORDI			0.999 ; N	1857432.	621 DE	PTH :	57.00m	GROUND W			: Ver			-	NIPPO	N KO	DEI C	0., 1	TL).
1		-	1							_			STANDARD	PENETRATIC	ON TEST	PM	SAM	PLING	-	T
Ê		a			NSITY ENCY		Contract of the		(m) H.	CASING (DEPTH (m) & DIAMETER (mm))	(m) H	2		CURVE OF		1			T	-
NOU	GL-(m)	NESS (W	ж	IVE DE	NAME	SOIL DESCRIPTION		DEPT	G DEP	t DEPT	GL-(m	N-Value Slows / 30cm)		akie	SAMPLE (Type & No.)	GL - (m)		~	
(III) NOUVAITE	DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	(ac) CONSISTENCY	SOIL N			DATE & DEPTH (m)	DIAZ	WATER DEPTH (m)	DEPTH GL- (m)	N-V (Blows	(Blows	/ 30cm) 0 40 50	SAM SAM	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
-		15		prownish	Soft	CLAY	Soft, brownish gray, moist, med	lium to high					- 0				4	-		I
2.35	1.50	1.50		gray			plasticity, CLAY (Filled Soil)				¥	1.00	2/30 9			P-1 Ww.r	1.00			and and and
		1.20				No.		27.00				2.00	0/45			P-2	2.00			
				gray	Very soft	CLAY	Very soft to soft, gray, moist to we plasticity, CLAY	t, low to high		3.00		3.00					2.45			
					to soft					Ø112						0 T+I	(册) cm 3.75			
											1	4.00	0/45 •			P-3	4.00			
al a												5.00	0/45 🔶			P-4	5.00			
												6.00	0/45			P-5	6.00 6.45			
												7.00	1/30			P-6	7.00			
and												8.00					7.45			
																0 T-2	(m) cm 8,80			
												9.00	2/30 •			P-7	9.00 9.45			
-6.15	10.00	8.50 -		_		-						10.00	2/30			P-8	10.00			
				gray	Soft	Sandy	Soft to stiff, gray, moist, fine gra	ained, low to	17.11.16			11.00	4/30			P-9	11.00			
					to stiff	CLAY	medium plasticity, Sandy CLAY		11.00			12.00				P-10	11.45			
													2/30				12.45			
3												13.00	10/30	1		P-11	13.00 13.45			
-	14.00	4.00	* *	-								14.00	12/30	+		P-12	14.00			
		8	* *	gray	Medium dense	Silty	Medium dense, gray, moist, fine grained, Silty SAND	to medium				15.00	14/30	A.		P-13	15.00			
			* *									16.00	20/30			P-14	16.00			
			* *									17.00		$ 1 \rangle$		P-15	16.45 17.00			
													17/30				17.45			
		*	* *	1								18.00	29/30	P		P-16	18.00 18.45			
-15.15	19.00	5,00		-								19.00	4/30	T I		P-17	19.00 19.45			
				gray	Soft	CLAY	Soft to firm, gray, moist, med	ium to high				20.00				0 T-3	20.00			
					to firm		plasticity, CLAY with silt					21.00	3/30			P-18	20.80			
												22.00				P-19	21.45			
												1.0	4/30				22.45			
									18.11.16 23.00			23.00	5/30			P-20	23.00 23.45			
												24.00	4/30			P-21	24.00			
												25.00				0 T-4	25.00			
												26.00	5/30			P-22	(m) cm 25.80 26.00			
	27.00	8.00		_			1		21,11,16			27.00	200				26.45			
		11		gray	Soft to	CLAY	Soft to stiff, gray, moist, med- plasticity, CLAY with silt	ium to high	27.00			104	5/30			P-23	27.45			
					stiff		Thin sand layers are well	absorbed as				28.00	4/30			P-24	28.00 28.45			
		6					intercalated layer	observed as				29.00	3/30			P-25	29.00 29.45			
									22.11.16			30.00				U T-5	20.00			
				-			Continue to next sheet					31.00	1				30.50			
Re	_	sity descriptio	n	Consist	tency descrip	tion	Sample key • r-1 Disturbed sample (SPT sample) PBT Permeah	ility Test	Term		Spacing			Discontir Tenn	Spacing (UKKEN	I CO.,	LTC
	ive density	SPT N-V		Consistence		N-Value	T-1 Undisturbed Sample: VS Vane Sh (Piston sampler) PMT Pressure	mar Test	Very thick Thick		600 -		Wid	idely spaced	> 20	000		Consultin Yangon I	g Engin Branch	neers 1)
1	ry loose	0 - 4 4 -	10	Very soft Soft		nder 2 2 - 4	Det (Denison sampler) RQD (%	Term	Medium Thin		200 -	200	Clos	um spaced ely spaced	200 - 0	00	Revision N	view cryanitia	Rev	Barel Jacon
, t	ium dense Dense	10 - 3 30 - 5	50	Firm Stiff	1 3	5 - 8 2 - 15	Rock core sample 25 - 50	Poor	Very thir nickly lamin	nated	20 -	20	Extremel	osely spaced y closely spac	20 - 6 cd < 20	0	Revision D		14.01	.2017
Ver	ry dense	over	M	Very stiff Hard		5 - 30 ver 30	Rock core sample (Core Loss) 50 = 75 75 - 90	Fair	hinly lamin	ated	<	0.	Remarks							_

Figure 4.1.73 Boring log BH-BD-24 (1)

ORE H	OLE N	o. BH	I-BD-24				<u>B0</u>	RING	LOC	2						Job !		KYB-21 eet No.	-	OF
							e Bago River Bridge Construction Project	BORING EQU			-	10 "D1"	and a c		DATE	<u>; 1</u>	7.11.2016	~ 25.1	1.2016	5
OCATIO	ON LEVEL	0.757	100 million 100	Bago River	r Bridge ("	Thanlyin Bri	dge), Thanlyin Township, Yangon Region.	BORING ME ORIENTATIO			: Rota		Circulatio	CLIE!						
OORDE				N 1857432.	621 DI	EPTH :	57.00m	GROUND W			: 0.70				NIPPO.	N KO	EI C	0.,	LTI	D.
1		-	-		*~				1.11	3.6		3	TANDARD TEST M	ENETRATIO	N TEST M)		SAM	PLING		
((iii	(II			RELATIVE DENSITY (or) CONSISTENCY		- anna -		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	î		CURVE OF I		12	(m)			
ELEVATION (m)		THICKNESS (m)	RAM	NUK .	TIVE L	INAME	SOIL DESCRIPTION		& DEI	NG (DI	ER DEF	DEPTH (31 (m)	N-Value (Blows / 30cm)	N-Va	luc	SAMPLE (Type & No.)		(9)	(9%	(*/s)
ELEV	DEPTH GL	THIC	DIAGRAM	COLOUR	RELA (or)	SOIL			DATH	CASP	WAT	DEPT	(Blow	(Blows / 10 20 30		S. (F)	DEPTH GL	JCR (%)	SCR (%)	RQD (%)
						11.71	No. of Lot of Lot.	100				31.00				15.1	31.00			
				gray	Soft	CLAY	Soft to stiff, gray, moist, medi	ium to high			18		7/30			P-26	31,45			
					to stiff		plasticity, CLAY with silt					32.00	6/30			P-27	32.00			
							Thin sand layers are well intercalated layer	observed as				33.00	5/30			P-28	33.00			
												34.00	5/30			P-29	34.00			
												35.00					34.45			
											11		7/30			P-30	35.45			
												36.00	7/30			P-31	36.00 36.45	5		
												37,00	7/30			P-32	37.00			
												38.00	8/30			P-33	38.00			
												39.00	7/30			P-34	38.45 39.00			
												40.00				12.2	39.45 40.00			
													9/30			P-35	40.45			
			1.77									41.00	9/30			P-36	41.00			
												42.00	7/30			P-37	42.00			
											1.5	43.00	8/30			P-38	43.00			
									23.11.16			44.00	8/30			P-39	43.45			
									44.00			45.00				P-40	44.45			
												1	7/30			1.1.1	45.45			
												46.00	9/30			P-41	46.00 46.45			
												47.00	9/30			P-42	47.00			
												48.00	7/30			P-43	48.00 48.45			
-45.15	49.00	23.00	-1-1-1-1									49.00	50/25		-	P-44	49.00			
				light	Very	Clayey	Very dense, light gray to greenish					50.00	50/21			P-45	49.40			
				gray to greenish	dense	SAND	fine to medium grained, low pl SAND	astic Clayey				51,00			II	100	50.36 51.00			
				gray									50/25		11	P-46	51.40			
	52.00	3.00		-		1					P	52.00	50/22		1	P-47	52.00 52.37			
				yellowish		Clayey	Very dense, yellowish brown, m		24,11,16			53.00	50/25		+	P-48	53.00 53.40			
				brown	dense	SAND	medium grained, low plastic Claye	y SAND				54.00	50/24			P-49	54.00 54.39			
												55.00	50/29			P-50	55.00			
-53.55												56.00			I	16.1	55,44 56.00			
			-2223						in a				50/26		1	P-51	56.41			
-53.55	57.40	5.40				الحراب			25.11.16 57.00			57.00	50/25		1	P-52	<u>57.00</u> 57.40			
							This borehole is terminated according to the termination criteria					58.00								
							and the second second second					59.00								
												60.00								
				-		1		_				61.00								
NOT	ES lative dens	ity descr	iption	Consis	tency descrip	ption	Sample key • P-1 Distarbed sample (SPT sample) PBT Permeab	elity Test	Term		Spacing	: (mm)		Discontinu Term	Spacing (1			UKKE		
102	ve density		N-Value	Consistenc	9	N-Value	T (Distor sample) VS Vane Sh (Piston sampler) PMT Pressure		Very thiel Thick		600 -		Wid	idely spaced	>20	100		Consulti	ng Engi Branch	ineer h)
- 1	ry loose	1 - 1	0 = 4 4 = 10	Very soft Saft		2 - 4	D-1 (Denison sampler) ROD (%)	Term	Medium Thin Very thin		200 - 60 - 20		Clos	um spaced by spaced	60 - 20	ю	Revision N		Rev:	
1	um dense Dense y dense	3	0 - 30 0 - 50 ver 50	Firm Stiff Very stiff	-1	5 - 8 9 - 15 6 - 30	Rock core sample (Double core tube)	Poor	Very this hickly lami hinly lamir	nated	20 - 6 -	20	Extremel	osely spaced closely space	20 · 6 d <20	0	Revision D	_		1,201
		1 0	yed and	Hard		6 - 30 over 30	(Core Loss) 75 - 90		any second		4		Remarks							

Figure 4.1.74 Boring log BH-BD-24 (2)

				I-BD-25	1				RING		-						Job	She	KYB-20 eet No.	1	OF 2
	OJECT							e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQU			1.57	IO "DI"	t Circulation	_	DATE	: 0	3.11.2016	~ 12.1	1.2016	-
		LEVEL	: 4.15	m				wash, country to cownship, rangon Region.	ORIENTATIO			: Ver			CLIEN	I VIPPO	NEC	FLC	0		•
co	ORDI	NATE	: <u>E 20</u>	5605.365 ;	N 1857393	.002 DI	ертн :_	58.00m	GROUND W	ATER LE	-	: 0,60	-	CTAKINA DE 1	- I ENETRATION	112.01	ANO	1	-		~
						SULY				(m)	CASING (DEPTH (m) & DIAMETER (mm))	(m)		TEST ME	THOD (ASTN	0	-	SAM	PLING	_	_
î	IION (III	(m) - 10	THICKNESS (m)	W	æ	VE DEN	NAME	SOIL DESCRIPTION		DATE & DEPTH (m)	(DEPT	DEPTH	GL - (m)	30cm)	CURVE OF B		SAMPLE (Type & No.)	3L - (m)	_		~
SAALE (III	ELEVATION (m)	DEPTH GL - (m)	THICKN	DIAGRAM	COLOUR	RELATIVE DENSITY (at) CONSISTENCY	N TIOS			DATE &	CASING	WATER DEPTH (m)	DEPTH GL - (m)	N-Value (Blows / 30cm)	N-Val (Blows/1 10 20 30	(0cm)	SAM SAM	DEPTH GL	TCR (%)	SCR (%)	RQD (%)
			È		brown	Soft	Sandy CLAY	Soft, brown, moist, low to media Sandy CLAY (Filled Soil)	um plasticity,			¥	1.00	3/30			P-1	1.00			
minu	2.15	2.00	2.00							-			2.00	2/30			P-2	2.00			
miliu					gray	Very	CLAY	Very soft to soft, gray, moist, me plasticity, CLAY	dium to high		3.00 Ø112		3.00				Б т.)	3.00			
mulant						to soft		plasheny, CLAY				2	4.00	1/30			P-3	3./5 4.00 4.45			
Internet												2	5.00	0/45 •			P-4	5.00			1
and and													6.00				Б т.з	6.00			
and a state													7.00	0/45			P-5	6.75 7.00 7.45			
a statut	-3.85	8.00	6.00				1						8.00	2/30			P-6	8.00			
internal of		-			gray	Soft	Sandy	Soft, gray, moist, fine grained, lo	w to medium				9.00				P	8.45			
Contraction of the							CLAY	plasticity, Sandy CLAY					10.00	2/30			P-7	(m) cm 9.75 10.00			
Intim													11.00	3/30			P-8	10.45 11.00			
and and													12.00				P-9	11.45			
intrus 1										08.11.16			13.00	2/30				12.45			
internal	-9.85	14.00	6.00							13.00	1		14.00	2/30			P-10	13.45	8		
- unit	-9.85	14.00	0.00	n n n	-		lere't						15.00	20/30	1		P-11	14.45	-		
and an and an and an				***	gray	Medium dense	Silty SAND	Medium dense, gray, moist, find grained, Silty SAND	to medium					14/30			P-12	15.45			
TITLE I						10.00							16.00	20/30			P-13	16.00 16.45			
				* * *									17.00	17/30			P-14	17.00 17.45			
dine and	-13.85	18.00	4.00	<u>× × ×</u>	-								18.00	2/30			P-15	18.00 18.45			
milium					gray	Very soft	CLAY	Very soft to soft, gray, moist, log plasticity, CLAY	w to medium				19.00	1/30			GT-4/P-1	19.00 19.45			
differenting in the second manufacture of the second s						to soft		, and the second s				•	20.00	3/30			P-17	20.00			
1111111111													21.00	3/30			P-18	21.00			
and line												0	22.00	1/30			P-19	22.00			
													23.00	2/30			P-20	00.00	5		
1011 manual m													24.00	3/30			P-21	24.00			
1 Million													25.00	3/30			P-22	25.00	2		
dinin													26.00	3/30			T-5/P-2	25.45			
1117	-22.85	27.00	9.00		_				_				27.00	3/30			P-24	26.45 27.00			
in the second					gray	Soft	CLAY	Soft to firm, gray, moist, med	ium to high				28.00	3/30			P-25	27.45 28.00			
minin						firm		plasticity, CLAY with silt Thin sand layers are well	observed as				29.00	5/30			P-26	28.45 29.00			
Tuttu								intercalated layer		09.11.1/			30.00	100			1.00	29.45 30.00			
Tanua and an and an and an an								Continue to next sheet		09.11.10 30.00	1		31.00	5/30			P-27	30.45			
1	NOT	ES lative dens	ity descr	ription	Const	stency descrip	ntion	Sample key P-1 Disasted sample (SPT sample) PBT Permeat	illay Test	Term		Spacing	g (mm)		Discontinui	tics Spacing (r			UKKE	N CO.	
		ve density	100	N-Value	Consisten	cy SP1	N-Value	Tel Undisturbed Sample VS Vane Sh (Piston sampler) PMT Pressure		Very thic Thick		600 -		Wide	dely spaced ly spaced	> 20 600 - 20 200 - 6	100		Consultin	Branch	neers n)
	- 1	y loose oose am dense		0 - 4 4 - 10 0 - 30	Very sol Soft Firm		inder 2 2 - 4 5 - 8	Da-1 Undisturbed Sample (Denison sampler) Rock core sample (Single core tabe)	Term	Medium Thin Very thi		200 - 60 - 20 -	200	Close	im spaced ly spaced isely spaced	200 - 6 60 - 20 20 - 6	00	Revision N		Rev.	01
	E	lense y dense	3	0 - 50 iver 50	Stiff Very stif	7 i	9 - 15 6 - 30	Rock core sample (Double core tube) 50 - 75 Rock core sample	Poor T Fair T	hickly lami	inated	6 -	20		closely spaced	<20		Revision D	ale	14,0	1.2017
12				1	Hard		aver 30	(Core Loss) 75 - 90	Good 0 Excellent												

Figure 4.1.75 Boring log BH-BD-25 (1)

_	. 110	LL NO). DI	I-BD-25				BO	RING	100			_				Job N		YB-20. et No.		OF
PROJE			_					e Bago River Bridge Construction Project dge), Thanlyin Township, Yangon Region.	BORING EQU BORING MET			-	10 "D1"	t Circulatio	_	DATE	: 08	.11.2016	~ 12.11	.2016	-
		LEVEL			Bago Rive	r Bridge (1	naniyin Bri	dge), Thaniyin Township, Yangon Kegion.	ORIENTATIC			Ven		Circulatio	CLIENT						
COOR	DIN/	ATE	: <u>E 20</u>	5605.365 ;	N 1857393.	002 DI	ертн :_	58.00m	GROUND W/	TER LE	VEL	: 0.6	Om			IPPO	V KO	EIC	0.,1	TL).
						A.A.				(u	(m) & (i)	e		STANDARD TEST M	PENETRATION ETHOD (ASTM)	TEST	1	SAM	PLING		
(m) NC		(B) -	(m) SS	-		RELATIVE DENSITY (or) CONSISTENCY	ą	SOIL DESCRIPTION		DATE & DEPTH (m)	CASING (DEPTH (m) DIAMETER (mm))	WATER DEPTH (m)	(m) -	e (ing	CURVE OF BLO	• wo	E No.)	- (m)			
ELEVATION (m)		DEPTH GL	THICKNESS (m)	DIAGRAM	COLOUR	LATIV st) CON	SOIL NAME			VIE&I	SING (ATER D	DEPTH OL:	N-Value (Blows/30cm)	N-Value (Blows / 30	em)	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)
-	+	DE	11	DI	80	RE ((so		_	DI	5	Ň	DE	.e 0	10 20 30	40 50	-	DE	TC	S	_
					gray	Soft	CLAY	Soft to firm, gray, moist, media	um to high				31.00	8/30			P-28	31.00			
						to firm		plasticity, CLAY with silt					32.00	7/30			P-29	32.00			
								Thin sand layers are well o intercalated layer	bserved as				33.00	5/30			P-30	32,45 33.00			
													34.00	6				33.45 34.00			
													· .	5/30			P-31	34.45			
													35.00	7/30			P-32	35.00 35.45			1
													36.00	4/30			P-33	36.00	1		-
													37.00	4/30			P-34	37.00 37.45			
1 million													38.00	6/30			P-35	38.00 38.45			
													39.00	5/30			P-36	39.00			
	.85 4	40.00 1	14.00						har I				40.00	28/30	N		P-37	39.45 40.00			
					gray	Medium	Clayey	Medium dense, gray to greenish					41.00		11		P-38	40.45			
					to greenish gray	dense	SAND	fine to medium grained, low pla SAND	stic Clayey				42.00	30/30			1.2	41,45			
					giay								· .	25/30	1		P-39	42.45			
	85 4	43.00	3.00										43.00	18/30			P-40	43.00 43.45			
1000					yellowish	Medium dense	Clayey SAND	Medium dense to very dense, yello moist, fine to medium grained,		10.11.16 44.00			44.00	23/30			P-41	44.00	5-		
			1			to very		Clayey SAND	ton phane				45.00	24/30	+		P-42	45.00			1
						dense							46.00	26/30	14		P-43	46.00			1
													47.00	29/30	111		P-44	47.00			
													48.00	30/30			P-45	48.00			
													49.00	29/30			P-46	48.45			3
11111													50.00					49.45 50.00			
														39/30			P-47	50.45			1
													51.00	50/29		1	P-48	51.00 51.44			
			1							11.11.16 52.00			52.00	21/30			P-49	52.00 52.45			
	.85 5	53.00	10.00		-	-	-						53.00	50/27			P-50	53.00 53.42			
					yellowish	Very	Clayey	Very dense, yellowish brown to rec					54.00	50/26		+	P-51	54.00 54.41			
					to reddish	dense	SAND	moist, fine to medium grained, Clayey SAND	low plasite				55.00	50/27			P-52	55.00 55.42			1
					brown			1.					56.00	50/29			P-53	56.00			
			1										57.00	50/27			P-54	56.44			
										12.11.16			58.00			1 T	in any	57.42 58.00			10000
-54.	25 5	58.40	5.40		-	-	-			12.11.16 58.00				50/25		1	P-55	58.40			
								This borehole is terminated a according to the termination criteria.					59.00								
-54.													60.00								
	OTE							Sample key			inner stru		61.00		Discontinuiti	8					-
Re	-	tive densi	-	iption N-Value	Consis	tency descrip	ntion N-Value	P-1 Disturbed sample (SPT sample) PBT Permeabil T-1 Undistantbed Sample VS Vace Shea		Term Very thicl			2000		Tenn videly spaced	Spacing (m > 200)0		UKKEN	g Engin	neers
1	Very	loose		(mor) 0 - 4	Very soft		inder 2	(Piston sampler) PMT Pressurem (Denison sampler) (Denison sampler)	eter Test	Thick Medium	-		- 600	Med	tely spaced fium spaced sely spaced	600 - 20 200 - 60 60 - 20	00	rœx	angon E	1994. #50 ·	i) - x200si Ilani con
M	Los Aedium Der	n dense	10	4 - 10 0 - 30 0 - 50	Soft Firm Stiff		2 - 4 5 - 8 9 - 15	Rock core sample (Single core tube) 0 - 25 Rock core sample 25 - 50	Term Very poor Poor Ti	Thin Very this nickly lami		60 - 20 - 6 -	60	Very c	losely spaced losely spaced ly closely spaced	60 - 20 20 - 60 <20		Revision Ne Revision De	_	Rev: 1	-
	Very			ver 50	Very stiff Hard	1	6 - 30 over 30	(Double core tube) Rock core sample (Core Loss) 25 - 50 50 - 75 75 - 90		hinly lamir		.<		Remarks		~0					_

Figure 4.1.76 Boring log BH-BD-25 (2)

	А	A1	Р	1	P:	2	P3	3	Р	4	F	P5	P	6	Р	7	P1	0	Р	11	Р	12	Р	13	Р	14	Р	15	Pl	6	P17	7	P18	3	P19		P20	Р	21	P	22	P2	3	P24	4	P25		A2
D(m)	BD	D-23	BD	-22	BD-		No13B			-20		-19	BD	-18	BD	-13	BD-	11	BD	-10	B	D-9	BI	D-8	BI)- 7	No13	BH-03	BD	-6	BD-	5	BD-4	4 1	No13BH-0	4 I	3D-3	BI	D-2	BI	D-1	BD	-17	BD-1	16	BD-1	5	BD-14
2	Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil	-	I-YA		CLAY-I	1/3	I-YA	0	CLAY-I	1/3	ents		suts		ents						ents		nents		r sediments	r sodiments	1/3	R.S.		I-YA	1/3	I-Y		F.S	-	F.S	-	F.S -
4	CLAY-I	-	I-X	-	7	-	-		I-YAL	-	I-YA	-	CL		Clayey SAND-A	1/3	CL				er sedime	1/3	er sedime	1/3	er sedime	1/3	diments		sediments	1/3	er sedime	2/3	KIVET SEGII	1/3	Rive	oria CL-I	-	CLAY.	2/3	Ъ		CLAY	1/3	I-X		CLAY.	1	- '
6 7 8	_		CLA	2/3	CLAY-	2/2	CLAY	-	-	1/2	CI	2/3	Sandy LAY-I	1/3	SA		y SAND-/	1/3	I-UN	2/3	Riv		Riv		Riv		River sedi	1/3	Rivers		Riv		х-1 Т-Х		CLAY-I	ND-I	1/3		2/3	Silty SAND-I	2/3		2/3	CLA	-		1	1
9 10	dy CLAY-I	1/3	a	-	7	1			Sandy CLAY-I	2/3	andy LAY-I	2/3	2 N		SiltySAND-I	1	Claye		SiltySAN			1	I-UNA	1	SAND-I	1/3			V		eySAND	- 8	CLA	2/3		SiltySAN		I-DNA		Ħ	1	I-QNV	2/3				1	1
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16 17 18 19 20	' SA	1	Silty SAND-	1	Silty SA	-	SaCI-II	1	CL-AII S	1	Silty SA	1	silty		II-AI	1	Sa CL-II	1	CLAY SandyC -AII LAY-II	1	CL -AII	1	CLAY-#	1	CLAY	-	Clayey SAND-B CL-A	-	Clayey SAND-B CL-A	-	CLAY-AII Claye SAND-		CLAY-AII	-	CLAY-AII	Clayey SAND-	1	Clayey SAND-C	1	ClayeySAND-	1	SiltySAND-II	1	Silty		Silty SAND-II	1 24	II-QNV

	Al	71	PF1	,PF2	P	F3	P	F4	P	F5	PF6	PF7	PF8	,PF9	PF10	,PF11	PF	12	PF	13	PF14	,PF15	A	F2
D(m)	BH	-13	BH	-12	BH	-11		-10		I-9		I-8		I-7	BF	I-6	BF	I-5		I-4		I-3		I-2
1 2	Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil		Filled Soil	-	Filled Soil	-	Filled Soil		Filled Soil	-	Filled Soil	-	Filled Soil	-	Filled Soil	-
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14	SILJ		SandySILT																_					
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17	Ę		Ŕ		SiltySAND-I	1	Silty		SiltyS,	1	SiltySAND-II	1	SiltySAND-II	1	SiltySAND-II	1	SiltySAND-II	1	Silty		SiltySAND-II	1	SiltySAND-II	1
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20	s sa		Silt																					

Figure 4.1.77 Reduction coefficient by liquefaction

Item	Design Conditions	Remark
Temperature	39.2 to 11.3 (Celsius) at Kaba-Aye metrological station, 1991 to 2015	
Wind speed	42.9 m/s (Cyclone Nargis, 27 April 2008)	
Rainfall amount	149 mm/h (3-year return period, 10-minute rainfall intensity)	

 Table 4.1.11
 Natural Conditions

Item	De	sign Conditions	Remark
Dead load		it self-weight of the materials.	JSHB 2.2.1
	Materials	Unit Self-weight	
		(kN/m^3)	
	Steels	77.0	
	Cast steel	71.0	
	Aluminum	27.5	
	Reinforced concrete	24.5	
	Prestressed concrete	24.5	
	Concrete	23.0	
	Mortar, cement	21.0	
	Timber	8.0	
	Bitumen	11.0	
	Asphalt concrete	22.5	
Live load	1. AASHTO HL-93		AASHTO LRFD
		ifferent types of loads is consid	
	(1) design truck or design ta	ndem	specifications, 3.6.1
	(2) design lane load		
	(1)-1 Design truck (HS20-44	4)	
	V1 = 4,3	unununununun nunun kununun	
	1 1-4.5	V2 = 4.3 to 9.0 m	
	÷	• • • • • •	
	35kN 145kN	145kN	
	(1)-2 Design tandem		
	+ 12m	-	
	110kN 110kN		
	(2) Design lane load		
	ETTTTTTTT	9.3 kN/m	
		$\downarrow \downarrow	
	(3) Two design trucks for ne	gative moment	2 (1 2
	4 3m k 4 3m k	15.0m 4.30m 4	3.6.1.3
	7 + 3m 7 + 3m 7	15.0m + 3.50m + 3	
	****	<u> </u>	
	35kN 145kN 145kN	35kN 145kN	145kN
	TORIT PERMIT	court court	20.00
			3.6.1.1

Table 4.1.12 Design Conditions

1		
	Types of combination	
	(1)(1)-1+(2)	
	2)(1)-2+(2) 2)(2)+(2)+(2)+(2)+(2)	
	3) (3)×0.9 + (2)×0.9	
	Multiple presence factor	
	Table 3.6.1.1.2-1—Multiple Presence Factors, m	
	source a standard a standard a standard and a standard a standard a standard a standard a standard a standard a	
	Multiple Presence	
	Number of Loaded Lanes Factors, m	
	1 1.20	
	2 1.00	
	3 0.85	
	>3 0.65	
	Nominal lane width shall be 3.0 m.	
		MOC direction
		MOC direction
	2. Special vehicular load (735kN concentrated load or equivalent	
	distribution load) for main girder	
	735kN	
	16.33kN/m ²	
	Winner V	
	11111111	
	4500	
	(a) Concentrated load (b) Distribution load	
Design lane	The width of the design lanes should be taken as 3.0m. The number	AASHTO 3.6.1.1.1
	of design lanes should be determined by taking the integer part of the	
	ratio $w/3.0$, where w is the clear roadway width in feet between curbs	
	and/or barriers.	
	SITE STATE	
	9000 5250 Lane1 Lane2 Lane3 Lane1	
	3000 3000 3000 3000	
	1500 2@3500=7000 500 <u>1250</u> 3250 750	
	(a) Main road (b) Onramp	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\Lane2\\Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $\begin{array}{c}11750\\\hline Lane1\\ Lane2\\ Lane3\\\hline \end{array}$	
	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline Lane1\\ \hline 11750\\ \hline 3000\\ \hline 3000\\ \hline \hline 1000\\ \hline 3000\\ \hline 1000\\ \hline$	
	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline Lane1\\ 3000\\ \hline 100\\ \hline 1500\\ 3500\\ \hline 550\\ 3000\\ \hline 1500\\ \hline 1500 \hline 150 $	
	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline 300 $	
Calculation	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline Lane1\\ 3000\\ \hline 100\\ \hline 1500\\ 3500\\ \hline 550\\ 3000\\ \hline 1500\\ \hline 1500 \hline 150 $	JSHB V 6.3.2
	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline 300 $	JSHB V 6.3.2
method of inertia	(a) Main road (b) Onramp $ \begin{array}{c} 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline 300 $	JSHB V 6.3.2
method of inertia force	(a) Main road (b) Onramp Lanel Lane2 Lane3 3000 3000 3000 Lane2 Lane3 (c) Flyover (median is deemed as "clear roadway") Calculation method of inertia force shall comply with JSHB.	
method of inertia	(a) Main road (b) Onramp	JSHB V 6.3.2 JSHB I 2.2.3
method of inertia force	(a) Main road (b) Onramp $ \begin{array}{c} \hline 11750\\ \hline 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline$	
method of inertia force	(a) Main road (b) Onramp $ \begin{array}{c} \hline 11750\\ \hline 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline$	
method of inertia force	(a) Main road (b) Onramp (c) Flyover (median is deemed as "clear roadway") (c) Flyover (median is deemed as "clear roadway") Calculation method of inertia force shall comply with JSHB. Steel bridge $i = 20/(50+L)$ PC bridge $i = 10/(25+L)$	
method of inertia force	(a) Main road (b) Onramp $ \begin{array}{c} \hline 11750\\ \hline 11750\\ \hline 11750\\ \hline 1000\\ \hline 3000\\ \hline$	

	pylon: $i = 0.15$, cable: $i = 0.20$	
Effect of	Reference temperature: 25 °C	
temperature	Main structure	
change	RC, PC: +10 °C to +40 °C (25 °C \pm 15 °C), relative difference	
	between members: 5 °C	
	Steel: $\pm 10 \degree$ C to $\pm 40 \degree$ C (25 °C $\pm 15 \degree$ C), relative difference between	
	members: 15 °C	
	Bearings, expansion joints	
	RC, PC: $+5 \degree$ C to $+45 \degree$ C ($25 \degree$ C $\pm 20 \degree$ C)	
	Steel: 0 °C to +50 °C (25 °C \pm 25 °C)	
Effect on concrete	Prestressed force, Influence of creep and drying shrinkage shall be	JSHB I 2.2.4, 2.2.5
	considered.	
Wind load	100 mph (44.7 m/s), Basic wind speed in Yangon City	MOC instruction
	(This expression is "3-second gust wind speed")	
	$U_{10}=U_{max}/G=44.7/1.51=29.6(m/s) \rightarrow 30.0 (m/s)$	
	Here, U_{10} : 10-minutes average wind speed (m/s)	
	U _{max} : 3-second gust wind speed (m/s)	
	G: Gust factor $G=1+k(\sigma/U_{10})=1+3x(7.6/44.7)=1.51$	
	k: Peak factor, k=3	
	σ : Standard deviation of wind speed, $\sigma = 7.6$	
Flowing water	Flowing water pressure shall be considered.	JSHB I 2.2.7
pressure		
Hydrodynamic	Hydrodynamic pressure during earthquake shall be considered.	JSHB I 2.2.7
pressure		
Collision force	Collision force by barge shall be considered.	
Effect of	Effect of earthquake shall be considered.	
earthquake	$k_h = 0.30$ at project site, $k_{hgL0} = 0.24$	

Item	Design Conditions	Remark
Railings	Bago River Bridge Shapes	
	Steel railing 250 250	
	Road side H = 1,100 mm	
	Median side $H = 900 \text{ mm}$	
	Design force:	
	more than 130 kJ (Class A)	
	Flyover250	
	Concrete barrier	
	Roadside H = 1,000 mm	
	more than 160 kJ (Class Sc)	
	Median side $H = 250 \text{ mm}$ (raised	
	median) $+ \frac{750}{2} + \frac{1}{2}$	
	On-ramp	
	Steel railing $H = 900$ (same as Bago	
	River Bridge median)	
Noise barrier	Not considered	
Guard fence	Not considered	
Lighting	Considered	
Equipment	Bago River Bridge	
Equipment	Water pipe (ϕ 45 cm × 2 lanes) W = 6.0 kN/m	YCDC water
	0.7 kN/m^2 for all width is considered as future installation plan	resources
	Flyover and On-ramp bridge	department
	Not installed	aepartinent
Inspection ladder	Bago River Bridge (steel girder)	
	Installation of inspection ladder in steel box girder	
	Flyover, On-ramp bridge, PC girder of Bago River Bridge	
	Not installed	
Drainage	Steel catch pit (manufactured product) will collect surface water.	
0	Discharged water will be drained directly to the river where the	
	drainage pipe is on the river, and will be gathered and drained to the	
	channel where the drainage pipe is on land.	
	Design rainfall intensity: 149 mm/h	
Pavement	Steel cable-stayed girder, steel box girder	
	Polymer-modified asphalt pavement, $t = 80 \text{ mm}$	
	PC box girder, Flyover	
	Normal asphalt, $t = 80 \text{ mm}$	
Waterproofing	Install under pavement (liquid coating)	
layer		

Table 4.1.13 Bridge Attachments