

## Appendix K      Results of Soil Investigation

## **A List of Appendix K**

- 1. BORING LOGS**
- 2. SOIL PROFILE**
- 3. LABORATORY TEST RESULTS**
- 4. SOIL PROPERTY CHARTS**
- 5. POTENTIAL OF LIQUEFACTION**

## **1. BORING LOGS**

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 24.08.2016 ~ 27.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.02m ORIENTATION : Vertical **CLIENT**  
 COORDINATE : E 203871.632 ; N 1860013.429 DEPTH : 50.00m GROUND WATER LEVEL : 2.50m **NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING						
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW				SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)
1					brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY <b>(Filled Soil)</b>				1.00						A-1	1.00				
2	3.02	2.00	2.00							2.00	Ø112	2.00	5/30					P-1	1.50	2.00	2.45		
3					brown	Firm	CLAY	Firm, brown, moist, low to medium plasticity, CLAY				3.00	6/30					T-1	3.00				
4								GL- (4.00 ~ 4.45)m; silt percent is increased at that depth				4.00	6/30					W-1	3.65				
5	0.02	5.00	3.00									5.00	14/30					P-2	4.00	4.45			
6					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				6.00	14/30					P-3	5.00	5.45			
7												7.00	11/30					P-4	6.00	6.45			
8								GL- (8.00 ~ 8.45)m; loose, gray, wet, fine grained, low plastic Clayey SAND layer is observed as intercalated layer at those depth				8.00	7/30					P-5	7.00	7.45			
9												9.00	9/30					P-6	8.00	8.45			
10	4.98	10.00	5.00									10.00	2/30					P-7	9.00	9.45			
11					gray	Soft to firm	Sandy CLAY	Soft to firm, gray, moist, fine grained, low plasticity, Sandy CLAY, with trace of mica mineral				11.00	6/30					P-8	10.00	10.45			
12	6.98	12.00	2.00									12.00	10/30					P-9	11.00	11.45			
13					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				13.00	17/30					P-10	12.00	12.45			
14												14.00	7/30					P-11	13.00	13.45			
15	9.98	15.00	3.00					GL- (14.00 ~ 14.45)m; Silty SAND with clay patches is observed at that depth				15.00	21/30					P-12	14.00	14.45			
16					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				16.00	18/30					P-13	15.00	15.45			
17								GL- (20.00 ~ 20.45)m and (24.00 ~ 24.45)m; medium dense, gray, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at those depths				17.00	30/30					P-14	16.00	16.45			
18												18.00	29/30					P-15	17.00	17.45			
19												19.00	25/30					P-16	18.00	18.45			
20												20.00	24/30					P-17	19.00	19.45			
21										24.08.16		21.00	28/30					P-18	20.00	20.45			
22										20.00		22.00	30/30					P-19	21.00	21.45			
23												23.00	28/30					P-20	22.00	22.45			
24												24.00	18/30					P-21	23.00	23.45			
25												25.00	33/30					P-22	24.00	24.45			
26												26.00	27/30					P-23	25.00	25.45			
27												27.00	28/30					P-24	26.00	26.45			
28												28.00	42/30					P-25	27.00	27.45			
29												29.00	30/30					P-26	28.00	28.45			
30												30.00	48/30					P-27	29.00	29.45			
31												31.00						P-28	30.00	30.45			

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<b>NOTES</b> Relative density description Relative density    SPT N-Value (max) Very loose    0 - 4 Loose    4 - 10 Medium dense    10 - 30 Dense    30 - 50 Very dense    over 50 Consistency description Consistency    SPT N-Value (max) Very soft    under 2 Soft    2 - 4 Firm    5 - 8 Stiff    9 - 15 Very stiff    16 - 30 Hard    over 30		<b>Sample key</b> ● P-1 Disturbed sample (SPT sample) □ T-1 Undisturbed Sample (Piston sampler) □ D-1 Undisturbed Sample (Denison sampler) □ Rock core sample (Single core tube) □ Rock core sample (Double core tube) □ Rock core sample (Core Loss) □ W-1 Water sample		<b>Planner structure</b> Term    Spacing (mm) Very thick    > 2000 Thick    600 - 2000 Medium    200 - 600 Thin    60 - 200 Very thin    20 - 60 Thickly laminated    6 - 20 Thinly laminated    < 6		<b>Discontinuities</b> Term    Spacing (mm) Very widely spaced    > 2000 Widely spaced    600 - 2000 Medium spaced    200 - 600 Closely spaced    60 - 200 Very closely spaced    20 - 60 Extremely closely spaced    < 20		<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Tel : 951 - 8010896, 859 - 42098762 www.fukken.com.mm Revision No.    Rev: 02 Revision Date    19.09.2016	
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 24.08.2016 ~ 27.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.02m ORIENTATION : Vertical  
 COORDINATE : E 203871.632 ; N 1860013.429 DEPTH : 50.00m GROUND WATER LEVEL : 2.50m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING					
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW			SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)
														0	10	20						
3				*	gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND GL- (20.00 ~ 20.45)m and (24.00 ~ 24.45)m; medium dense, gray, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at those depths				31.00	18/30			P-29	31.00				31	
32				*								32.00	14/30			P-30	31.45	32.00			32	
33	-27.98	33.00	18.00	*								33.00	23/30			P-31	33.00	32.45			33	
34				*	gray	Very stiff	CLAY	Very stiff, gray, moist, low to medium plasticity, CLAY with fine grained sand	25.08.16			34.00	28/30			P-32	34.00	33.45			34	
35				*								35.00	28/30			P-33	34.45	35.00			35	
36				*								36.00	23/30			P-34	35.45	36.00			36	
37	-31.98	37.00	4.00	*		Dense	Clayey SAND	Dense, gray, moist, fine to medium grained, low plastic Clayey SAND				37.00	38/30			P-35	36.45	37.00			37	
38				*								38.00	40/30			P-36	37.45	38.00			38	
39	-33.98	39.00	2.00	*								39.00	50/27			P-37	38.45	39.00			39	
40				*	gray	Hard	CLAY	Hard, gray, moist, low to medium plasticity, CLAY with fine grained sand GL- (44.00 ~ 45.42)m; fine grained sand percent is increased at that depth				40.00	50/17			P-38	39.42	40.00			40	
41				*								41.00	37/30			P-39	40.32	41.00			41	
42				*								42.00	36/30			P-40	41.45	42.00			42	
43				*								43.00	35/30			P-41	42.45	43.00			43	
44				*								44.00	36/30			P-42	43.45	44.00			44	
45				*								45.00	50/27			P-43	44.45	45.00			45	
46	-40.98	46.00	7.00	*					26.08.16			46.00	50/15			P-44	45.42	46.00			46	
47				*	gray	Very dense	Clayey SAND	Very dense, gray, moist, fine to medium grained, low plastic Clayey SAND				47.00	50/15			P-45	46.30	47.00			47	
48				*								48.00	50/6			P-46	47.30	48.00			48	
49				*								49.00	50/7			P-47	48.21	49.00			49	
50	-45.23	50.25	4.25	*					27.08.16			50.00	50/10			P-48	49.22	50.00			50	
51				*				This borehole is terminated at 50.00m, according to the termination criteria.	50.00			51.00									51	
52				*								52.00									52	
53				*								53.00									53	
54				*								54.00									54	
55				*								55.00									55	
56				*								56.00									56	
57				*								57.00									57	
58				*								58.00									58	
59				*								59.00									59	
60				*								60.00									60	
61				*								61.00									61	

<b>NOTES</b> Relative density description Relative density    SPT N-Value (max) Very loose            0 - 4 Loose                    4 - 10 Medium dense        10 - 30 Dense                    30 - 50 Very dense            over 50		Consistency description Consistency        SPT N-Value (max) Very soft             under 2 Soft                    2 - 4 Firm                    5 - 8 Stiff                    9 - 15 Very stiff             16 - 30 Hard                    over 30		<b>Sample key</b> ● P-1 Disturbed sample (SPT sample) □ T-1 Undisturbed Sample (Piston sampler) □ D-1 Undisturbed Sample (Denison sampler) ■ Rock core sample (Single core tube) ■ Rock core sample (Double core tube) □ Rock core sample (Core Loss) ○ W-1 Water sample		PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test		<b>Planner structure</b> Term                  Spacing (mm) Very thick            > 2000 Thick                   600 - 2000 Medium                200 - 600 Thin                    60 - 200 Very thin             20 - 60 Thickly laminated    6 - 20 Thinly laminated    < 6		<b>Discontinuities</b> Term                  Spacing (mm) Very widely spaced   > 2000 Widely spaced        600 - 2000 Medium spaced        200 - 600 Closely spaced        60 - 200 Very closely spaced   20 - 60 Extremely closely spaced < 20		<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Revision No.            Rev: 02 Revision Date           19.09.2016	
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 24.08.2016 ~ 27.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.05m ORIENTATION : Vertical  
 COORDINATE : E 203939.419 ; N 1859955.273 DEPTH : 50.00m GROUND WATER LEVEL : 1.50m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING				SCALE (m)		
												DEPTH GL - (m)	N-Value (Blows / 30cm)	0	10	20	30	40	50	SAMPLE (Type & No)		DEPTH GL - (m)	TCR (%)
1					brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY <b>(Filled Soil)</b>			▽	1.00						A-1	1.00				1
2	3.05	2.00	2.00									2.00						A-2	1.50				2
3					brown	Firm	CLAY	Firm, brown, moist, low to medium plasticity, CLAY				3.00						A-3	2.00				3
4	1.55	3.50	1.50									4.00	10/30					P-1	2.50				4
5					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				5.00	10/30					P-2	3.00				5
6												6.00	18/30					P-3	3.50				6
7												7.00	6/30					P-4	4.00				7
8												8.00	10/30					P-5	4.45				8
9												9.00	12/30					P-6	5.00				9
10	4.95	10.00	6.50									10.00	4/30					P-7	5.45				10
11					gray	Soft to very stiff	Sandy CLAY	Soft to very stiff, gray, moist, fine grained, low plasticity, Sandy CLAY, with trace of mica mineral				11.00	10/30					P-8	9.00				11
12												12.00	19/30					P-9	10.00				12
13	7.95	13.00	3.00						24.08.16			13.00	21/30					P-10	10.45				13
14					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				14.00	19/30					P-11	11.00				14
15								GL- (25.00 ~ 25.45)m; dense, yellowish brown, fine to medium grained, SAND layer is observed as intercalated layer at that depth				15.00	30/30					P-12	11.45				15
16								GL-(28.00 ~ 30.00)m; medium dense, fine grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth				16.00	23/30					P-13	12.00				16
17												17.00	32/30					P-14	12.45				17
18												18.00	37/30					P-15	13.00				18
19												19.00	28/30					P-16	13.45				19
20												20.00	20/30					P-17	14.00				20
21												21.00	27/30					P-18	14.45				21
22												22.00	31/30					P-19	15.00				22
23												23.00	20/30					P-20	15.45				23
24												24.00	25/30					P-21	16.00				24
25												25.00	42/30					P-22	16.45				25
26												26.00	15/30					P-23	17.00				26
27												27.00	24/30					P-24	17.45				27
28												28.00	27/30					P-25	18.00				28
29												29.00	18/30					P-26	18.45				29
30									25.08.16			30.00	30/30					P-27	19.00				30
31									29.00			31.00											31

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Relative density description		Consistency description		Planner structure		Discontinuities	
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)	Term	Spacing (mm)	Term	Spacing (mm)
Very loose	0 - 4	Very soft	under 2	Very thick	> 2000	Very widely spaced	> 2000
Loose	4 - 10	Soft	2 - 4	Thick	600 - 2000	Widely spaced	600 - 2000
Medium dense	10 - 30	Firm	5 - 8	Medium	200 - 600	Medium spaced	200 - 600
Dense	30 - 50	Stiff	9 - 15	Thin	60 - 200	Closely spaced	60 - 200
Very dense	over 50	Very stiff	16 - 30	Very thin	20 - 60	Very closely spaced	20 - 60
		Hard	over 30	Thickly laminated	6 - 20	Extremely closely spaced	< 20
				Thinly laminated	< 6		

**NOTES**

- P-1 Disturbed sample (SPT sampler)
- T-1 Undisturbed Sample (Piston sampler)
- D-1 Undisturbed Sample (Denison sampler)
- Rock core sample (Single core tube)
- Rock core sample (Double core tube)
- Rock core sample (Core Loss)
- W-1 Water sample

**Sample key**

PBT	Permeability Test
VS	Vane Shear Test
PMT	Pressuremeter Test

ROD (%)	Term
0 - 25	Very poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

**Remarks**

**FUKKEN CO., LTD.**  
Consulting Engineers (Yangon Branch)  
Tel : 951 - 8010896, 859 - 420989762  
www.fukken.co.jp

Revision No. **Rev: 02**  
Revision Date **19.09.2016**

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 24.08.2016 ~ 27.08.2016  
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**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING								
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW			SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
													0	10	20	30	40	50						
31	-25.95	31.00	18.00		gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				31.00	23/30						P-28	31.00				31
32					gray	Very stiff to hard	CLAY	Very stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand				32.00	24/30						P-29	31.45	32.00			32
33												33.00	33/30						P-30	32.45	33.00			33
34												34.00	38/30						P-31	33.45	34.00			34
35	-29.95	35.00	4.00		gray	Dense to very dense	Clayey SAND	Dense to very dense, gray, moist, fine to medium grained, low plastic Clayey SAND				35.00	41/30						P-32	34.45	35.00			35
36												36.00	50/30						P-33	35.45	36.00			36
37												37.00	50/23						P-34	36.45	37.00			37
38	-32.95	38.00	3.00		gray	Very stiff to hard	CLAY	Very stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand				38.00	50/28						P-35	37.00	38.00			38
39												39.00	24/30						P-36	37.38	38.43			39
40												40.00	50/27						P-37	39.00	39.45			40
41									26.08.16			41.00	40/30						P-38	40.00	40.42			41
42									41.00			42.00	50/25						P-39	41.00	41.45			42
43												43.00	50/20						P-40	42.00	42.40			43
44												44.00	32/30						P-41	43.00	43.35			44
45												45.00	50/27						P-42	44.45	44.45			45
46	-40.95	46.00	8.00		gray	Very dense	Clayey SAND	Very dense, gray, moist, fine to medium grained, low plastic Clayey SAND				46.00	50/17						P-43	45.00	45.42			46
47												47.00	50/20						P-44	46.00	46.32			47
48												48.00	50/15						P-45	47.00	47.35			48
49												49.00	50/10						P-46	48.00	48.30			49
50	-45.25	50.30	4.30						27.08.16			50.00	50/15						P-47	49.25	50.00			50
51								This borehole is terminated at 50.00m, according to the termination criteria.				51.00												51
52												52.00												52
53												53.00												53
54												54.00												54
55												55.00												55
56												56.00												56
57												57.00												57
58												58.00												58
59												59.00												59
60												60.00												60
61												61.00												61

<p><b>NOTES</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Relative density description</th> <th colspan="2">Consistency description</th> </tr> <tr> <td>Relative density</td> <td>SPT N-Value (max)</td> <td>Consistency</td> <td>SPT N-Value (max)</td> </tr> <tr> <td>Very loose</td> <td>0 - 4</td> <td>Very soft</td> <td>under 2</td> </tr> <tr> <td>Loose</td> <td>4 - 10</td> <td>Soft</td> <td>2 - 4</td> </tr> <tr> <td>Medium dense</td> <td>10 - 30</td> <td>Firm</td> <td>5 - 8</td> </tr> <tr> <td>Dense</td> <td>30 - 50</td> <td>Stiff</td> <td>9 - 15</td> </tr> <tr> <td>Very dense</td> <td>over 50</td> <td>Very stiff</td> <td>16 - 30</td> </tr> <tr> <td></td> <td></td> <td>Hard</td> <td>over 30</td> </tr> </table>	Relative density description		Consistency description		Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)	Very loose	0 - 4	Very soft	under 2	Loose	4 - 10	Soft	2 - 4	Medium dense	10 - 30	Firm	5 - 8	Dense	30 - 50	Stiff	9 - 15	Very dense	over 50	Very stiff	16 - 30			Hard	over 30	<p><b>Sample key</b></p> <ul style="list-style-type: none"> <li>● P-1 Disturbed sample (SPT sample)</li> <li>■ T-1 Undisturbed Sample (Piston sampler)</li> <li>■ D-1 Undisturbed Sample (Denison sampler)</li> <li>■ Rock core sample (Single core tube)</li> <li>■ Rock core sample (Double core tube)</li> <li>■ Rock core sample (Core Loss)</li> <li>■ W-1 Water sample</li> </ul>	<p><b>Planner structure</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Term</th> <th>Spacing (mm)</th> </tr> <tr> <td>Very thick</td> <td>&gt; 2000</td> </tr> <tr> <td>Thick</td> <td>600 - 2000</td> </tr> <tr> <td>Medium</td> <td>200 - 600</td> </tr> <tr> <td>Thin</td> <td>60 - 200</td> </tr> <tr> <td>Very thin</td> <td>20 - 60</td> </tr> <tr> <td>Thickly laminated</td> <td>6 - 20</td> </tr> <tr> <td>Thinly laminated</td> <td>&lt; 6</td> </tr> </table>	Term	Spacing (mm)	Very thick	> 2000	Thick	600 - 2000	Medium	200 - 600	Thin	60 - 200	Very thin	20 - 60	Thickly laminated	6 - 20	Thinly laminated	< 6	<p><b>Discontinuities</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Term</th> <th>Spacing (mm)</th> </tr> <tr> <td>Very widely spaced</td> <td>&gt; 2000</td> </tr> <tr> <td>Widely spaced</td> <td>600 - 2000</td> </tr> <tr> <td>Medium spaced</td> <td>200 - 600</td> </tr> <tr> <td>Closely spaced</td> <td>60 - 200</td> </tr> <tr> <td>Very closely spaced</td> <td>20 - 60</td> </tr> <tr> <td>Extremely closely spaced</td> <td>&lt; 20</td> </tr> </table>	Term	Spacing (mm)	Very widely spaced	> 2000	Widely spaced	600 - 2000	Medium spaced	200 - 600	Closely spaced	60 - 200	Very closely spaced	20 - 60	Extremely closely spaced	< 20
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 20.08.2016 ~ 24.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation **CLIENT**  
 GROUND LEVEL : 5.21m ORIENTATION : Vertical **NIPPON KOEI CO., LTD.**  
 COORDINATE : E 203988.555 ; N 1859910.930 DEPTH : 50.00m GROUND WATER LEVEL : 2.50m

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING				
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW ●			SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)
31	-25.79	31.00	18.00	XXXX	gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND	23.08.16			31.00	25/30		P-29	31.00				31
32	-26.79	32.00	1.00	XXXX	gray	Very stiff	CLAY	Very stiff, gray, moist, low to medium plasticity, CLAY with fine grained sand	45.00			32.00	35/30		P-30	31.45				32
33				XXXX	gray	Medium dense to very dense	Clayey SAND	Medium dense to dense, gray, moist, fine to medium grained, low plastic Clayey SAND				33.00	28/30		P-31	32.00				33
34				XXXX								34.00	45/30		P-32	32.45				34
35				XXXX								35.00	50/27		P-33	33.00				35
36	-30.79	36.00	4.00	XXXX								36.00	33/30		P-34	33.45				36
37				XXXX	gray	Very stiff to hard	CLAY	Very stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand				37.00	31/30		P-35	34.00				37
38				XXXX								38.00	31/30		P-36	34.45				38
39				XXXX								39.00	39/30		P-37	37.00				39
40				XXXX								40.00	27/30		P-38	37.45				40
41				XXXX								41.00	37/30		P-39	38.00				41
42				XXXX								42.00	37/30		P-40	38.45				42
43				XXXX								43.00	50/30		P-41	39.00				43
44	-38.79	44.00	8.00	XXXX	gray to brownish gray	Very dense	Clayey SAND	Very dense, gray to brownish gray, moist, fine to medium grained, low plastic Clayey SAND	24.08.16			44.00	50/25		P-42	39.45				44
45				XXXX								45.00	50/25		P-43	40.00				45
46				XXXX								46.00	50/18		P-44	44.00				46
47				XXXX								47.00	50/18		P-45	44.40				47
48				XXXX								48.00	50/17		P-46	45.00				48
49				XXXX								49.00	50/17		P-47	46.00				49
50	-45.16	50.37	6.37	XXXX								50.00	50/22		P-48	46.33				50
51				XXXX				This borehole is terminated at 50.00m, according to the termination criteria.				51.00								51
52				XXXX								52.00								52
53				XXXX								53.00								53
54				XXXX								54.00								54
55				XXXX								55.00								55
56				XXXX								56.00								56
57				XXXX								57.00								57
58				XXXX								58.00								58
59				XXXX								59.00								59
60				XXXX								60.00								60
61				XXXX								61.00								61

<b>NOTES</b>				<b>Sample key</b>				<b>Planner structure</b>				<b>Discontinuities</b>				<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Tel: 951-8010896, 859-42098762 www.myanmargeoconsultant.com	
Relative density description		Consistency description		● P-1 Disturbed sample (SPT sampler) ○ T-1 Undisturbed Sample (Piston sampler) ○ D-1 Undisturbed Sample (Denison sampler)	PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test	Rock core sample (Single core tube) Rock core sample (Double core tube) Rock core sample (Core Loss) W-1 Water sample	Term Very thick > 2000 Thick 600 - 2000 Medium 200 - 600 Thin 60 - 200 Very thin 20 - 60 Thickly laminated 6 - 20 Thinly laminated < 6	Term Very poor 0 - 25 Poor 25 - 50 Fair 50 - 75 Good 75 - 90 Excellent 90 - 100	Term Very widely spaced > 2000 Widely spaced 600 - 2000 Medium spaced 200 - 600 Closely spaced 60 - 200 Very closely spaced 20 - 60 Extremely closely spaced < 20	Revision No. _____ Revision Date _____	Rev: 02 19.09.2016						

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 20.08.2016 ~ 23.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.26m ORIENTATION : Vertical **CLIENT**  
 COORDINATE : E 204044.248 ; N 1859862.131 DEPTH : 50.00m GROUND WATER LEVEL : 2.00m **NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING				SCALE (m)			
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW ●				SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)		SCR (%)	ROD (%)	
													0	10	20	30	40	50						
1					brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY (Filled Soil)				1.00							A-1	1.00				
2	2.76	2.50	2.50							2.00	2.00								A-2	1.50				
3					brown	Firm	CLAY	Firm, brown, moist, low to medium plasticity, CLAY				2.00							Uw-1	2.00				
4	1.26	4.00	1.50									3.00	5/30						P-1	2.50				
5												3.00								3.00				
6												3.45								3.45				
7					gray	Medium dense	Silty SAND	Medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				4.00	14/30							P-2	4.00			
8												4.45								4.45				
9												5.00	13/30							P-3	5.00			
10												5.45								5.45				
11												6.00	16/30							P-4	6.00			
12												6.45								6.45				
13												7.00	24/30							P-5	7.00			
14												7.45								7.45				
15												8.00	21/30							P-6	8.00			
16												8.45								8.45				
17												9.00	5/30							P-7	9.00			
18												9.45								9.45				
19					gray	Firm to soft	Sandy CLAY	Firm to soft, gray, moist, fine grained, low plasticity, Sandy CLAY, with trace of mica mineral				10.00	4/30							P-8	10.00			
20												10.45								10.45				
21												11.00	4/30							P-9	11.00			
22												11.45								11.45				
23												12.00	7/30							P-10	12.00			
24												12.45								12.45				
25												13.00	9/30							P-11	13.00			
26												13.45								13.45				
27												14.00	6/30							P-12	14.00			
28												14.45								14.45				
29												15.00	10/30							P-13	15.00			
30												15.45								15.45				
31									20.08.16	16.00		16.00	28/30							P-14	16.00			
32												16.45								16.45				
33					gray	Loose to dense	Silty SAND	Loose to dense, gray, moist, fine to medium grained, Silty SAND  GL- (25.00 ~ 25.45)m & (27.00 ~ 27.45)m; dense, gray, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth					17.00	24/30						P-15	17.00			
34												17.45								17.45				
35												18.00	25/30							P-16	18.00			
36												18.45								18.45				
37												19.00	25/30							P-17	19.00			
38												19.45								19.45				
39												20.00	21/30							P-18	20.00			
40												20.45								20.45				
41												21.00	21/30							P-19	21.00			
42												21.45								21.45				
43												22.00	8/30							P-20	22.00			
44												22.45								22.45				
45												23.00	20/30							P-21	23.00			
46												23.45								23.45				
47												24.00	30/30							P-22	24.00			
48												24.45								24.45				
49												25.00	38/30							P-23	25.00			
50												25.45								25.45				
51												26.00	36/30							P-24	26.00			
52												26.45								26.45				
53												27.00	31/30							P-25	27.00			
54												27.45								27.45				
55												28.00	37/30							P-26	28.00			
56												28.45								28.45				
57												29.00	17/30							P-27	29.00			
58												29.45								29.45				
59												30.00	20/30							P-28	30.00			
60												30.45								30.45				

**NOTES**

Relative density description		Consistency description	
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)
Very loose	0 - 4	Very soft	under 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Firm	5 - 8
Dense	30 - 50	Stiff	9 - 15
Very dense	over 50	Very stiff	16 - 30
		Hard	over 30

**Sample key:**

- P-1 Disturbed sample (SPT sample)
- T-1 Undisturbed Sample (Piston sampler)
- D-1 Undisturbed Sample (Denison sampler)
- Rock core sample (Single core tube)
- Rock core sample (Double core tube)
- Rock core sample (Core Loss)
- W-1 Water sample

**Planner structure:**

Term	Spacing (mm)
Very thick	> 2000
Thick	600 - 2000
Medium	200 - 600
Thin	60 - 200
Very thin	20 - 60
Thickly laminated	6 - 20
Thinly laminated	< 6

**Discontinuities:**

Term	Spacing (mm)
Very widely spaced	> 2000
Widely spaced	600 - 2000
Medium spaced	200 - 600
Closely spaced	60 - 200
Very closely spaced	20 - 60
Extremely closely spaced	< 20

**ROD (%) Term**

0 - 25	Very poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

**Remarks:**

Continue to next sheet





PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 19.08.2016 ~ 23.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.00m ORIENTATION : Vertical **CLIENT**  
 COORDINATE : E 204091.678 ; N 1859823.064 DEPTH : 51.00m GROUND WATER LEVEL : 2.50m **NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING				SCALE (m)			
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW ●					SAMPLE (Type & No)	DEPTH GL - (m)		TCR (%)	SCR (%)	ROD (%)
													0	10	20	30	40	50						
1					brownish gray to yellowish brown	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY with fine grained sand <b>(Filled Soil)</b>											A-1	1.00				
2		2.50	2.50							2.00	Ø112								A-2	1.50				
3					yellowish brown	Soft	Sandy CLAY	Soft, yellowish brown, moist, fine grained, low to medium plasticity, Sandy CLAY					2/30						P-1	2.00				
4		1.00	4.00	1.50									12/30					P-2	2.50					
5					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral					4/30						W-1	3.00				
6								GL- (5.00 ~ 5.45)m; soft, gray, fine grained, low to medium plasticity, Sandy CLAY layer is observed as intercalated layer at that depth					9/30						P-3	3.45				
7													4/30						P-4	4.00				
8													9/30						P-5	4.45				
9		-4.00	9.00	5.00									8/30						P-6	5.00				
10					gray	Soft to stiff	Sandy SILT	Soft to stiff, gray, moist, fine grained, low plasticity, Sandy SILT, with trace of mica mineral					11/30						P-7	5.45				
11								Sand percent is increased in some portion.					4/30						P-8	6.00				
12													9/30						P-9	6.45				
13													8/30						P-10	7.00				
14		-9.00	14.00	5.00									11/30						P-11	7.45				
15					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine to medium grained, Silty SAND					4/30						P-12	8.00				
16								GL- (14.00 ~ 14.45)m and (25.00 ~ 25.45)m; medium dense, gray, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at those depths					7/30						P-13	8.45				
17													5/30						P-14	9.00				
18													9/30						P-15	9.45				
19										19.08.16			13/30						P-16	10.00				
20										18.00			19/30						P-17	10.45				
21													13/30						P-18	11.00				
22													9/30						P-19	11.45				
23													13/30						P-20	12.00				
24													19/30						P-21	12.45				
25													20/30						P-22	13.00				
26		-21.00	26.00	12.00									17/30						P-23	13.45				
27					gray	Stiff to hard	CLAY	Stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand					20/30						P-24	14.00				
28													12/30						P-25	14.45				
29													14/30						P-26	15.00				
30													15/30						P-27	16.00				
31													22/30						P-28	16.45				
													22/30							20.00				
													12/30							20.45				
													12/30							21.00				
													10/30							21.45				
													15/30							22.00				
													22/30							22.45				
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													22/30							25.45				
													12/30							26.00				
													14/30							26.45				
													15/30							27.00				
													21/30							27.45				
													20/30							28.00				
													21/30							28.45				
													20/30							29.00				
													20/30							29.45				
													20/30							30.00				
													20/30							30.45				
													20/30											

Continue to next sheet

<b>NOTES</b> Relative density description Relative density    SPT N-Value (max) Very loose            0 - 4 Loose                    4 - 10 Medium dense        10 - 30 Dense                    30 - 50 Very dense            over 50 Consistency description Consistency        SPT N-Value (max) Very soft             under 2 Soft                    2 - 4 Firm                    5 - 8 Stiff                    9 - 15 Very stiff            16 - 30 Hard                    over 30		<b>Sample key</b> ● P-1 Disturbed sample (SPT sample) □ T-1 Undisturbed Sample (Piston sampler) □ D-1 Undisturbed Sample (Denison sampler) ■ Rock core sample (Single core tube) ■ Rock core sample (Double core tube) □ Rock core sample (Core Loss) ● W-1 Water sample	<b>Planner structure</b> Term            Spacing (mm) Very thick      > 2000 Thick            600 - 2000 Medium         200 - 600 Thin             60 - 200 Very thin       20 - 60 Thickly laminated    6 - 20 Thinly laminated    < 6	<b>Discontinuities</b> Term            Spacing (mm) Very widely spaced    > 2000 Widely spaced        600 - 2000 Medium spaced        200 - 600 Closely spaced        60 - 200 Very closely spaced    20 - 60 Extremely closely spaced < 20	<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Tel : 951 - 8010896, 859 - 420989762 www.fukken.com.mm Revision No.            Rev: 02 Revision Date            19.09.2016
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 19.08.2016 ~ 23.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation CLIENT : **NIPPON KOEI CO., LTD.**  
 GROUND LEVEL : 5.00m ORIENTATION : Vertical  
 COORDINATE : E 204091.678 ; N 1859823.064 DEPTH : 51.00m GROUND WATER LEVEL : 2.50m

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING							
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW		SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
													0	10	20	30	40	50					
3					gray	Stiff to hard	CLAY	Stiff to hard, gray, moist, low to medium plasticity, CLAY with silt				31.00	33/30						P-29	31.00			
32	-27.00	32.00	6.00									32.00	50/28						P-30	31.45	32.00		
33					gray	Very dense	Clay SAND	Very dense, gray, moist, fine to medium grained, low plastic Clayey SAND	20.08.16			33.00	50/21						P-31	33.00	32.43	33.36	
34	-29.00	34.00	2.00						33.00			34.00	27/30						P-32	34.00	34.45		
35					gray	Very stiff to hard	CLAY	Very stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand				35.00	41/30						P-33	35.00	35.45		
36								Thinly fine grained sand layer is including in this layer				36.00	29/30						P-34	36.00	36.45		
37								GL- (35.00 ~ 35.45)m; dense, gray, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth				37.00	20/30						P-35	37.00	37.45		
38												38.00	33/30						P-36	38.00	38.45		
39												39.00	33/30						P-37	39.00	39.45		
40												40.00	29/30						P-38	40.00	40.45		
41	-36.00	41.00	7.00									41.00	50/20						P-39	41.00	41.35		
42					brownish gray to yellowish brown	Dense to very dense	Clayey SAND	Dense to very dense, brownish gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND				42.00	50/27						P-40	42.00	42.42		
43												43.00	50/25						P-41	43.00	43.40		
44												44.00	50/26						P-42	44.00	44.41		
45												45.00	38/30						P-43	45.00	45.45		
46												46.00	50/30						P-44	46.00	46.45		
47									22.08.16			47.00	50/25						P-45	47.00	47.40		
48									47.00			48.00	50/20						P-46	48.00	48.35		
49												49.00	50/17						P-47	49.00	49.32		
50												50.00	50/19						P-48	50.00	50.34		
51	-46.32	51.32	10.32						23.08.16			51.00	50/17						P-49	51.00	51.32		
52								This borehole is terminated at 51.00m, according to the termination criteria.	51.00			52.00											
53												53.00											
54												54.00											
55												55.00											
56												56.00											
57												57.00											
58												58.00											
59												59.00											
60												60.00											
61												61.00											

<p><b>NOTES</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Relative density description</th> <th colspan="2">Consistency description</th> </tr> <tr> <td>Relative density</td> <td>SPT N-Value (blows)</td> <td>Consistency</td> <td>SPT N-Value (blows)</td> </tr> <tr> <td>Very loose</td> <td>0 - 4</td> <td>Very soft</td> <td>under 2</td> </tr> <tr> <td>Loose</td> <td>4 - 10</td> <td>Soft</td> <td>2 - 4</td> </tr> <tr> <td>Medium dense</td> <td>10 - 30</td> <td>Firm</td> <td>5 - 8</td> </tr> <tr> <td>Dense</td> <td>30 - 50</td> <td>Stiff</td> <td>9 - 15</td> </tr> <tr> <td>Very dense</td> <td>over 50</td> <td>Very stiff</td> <td>16 - 30</td> </tr> <tr> <td></td> <td></td> <td>Hard</td> <td>over 30</td> </tr> </table>	Relative density description		Consistency description		Relative density	SPT N-Value (blows)	Consistency	SPT N-Value (blows)	Very loose	0 - 4	Very soft	under 2	Loose	4 - 10	Soft	2 - 4	Medium dense	10 - 30	Firm	5 - 8	Dense	30 - 50	Stiff	9 - 15	Very dense	over 50	Very stiff	16 - 30			Hard	over 30	<p><b>Sample key</b></p> <ul style="list-style-type: none"> <li>● P-1 Disturbed sample (SPT sample)</li> <li>■ T-1 Undisturbed Sample (Piston sampler)</li> <li>■ D-1 Undisturbed Sample (Denison sampler)</li> <li>■ Rock core sample (Single core tube)</li> <li>■ Rock core sample (Double core tube)</li> <li>■ Rock core sample (Core Loss)</li> <li>■ W-1 Water sample</li> </ul>	<p><b>Planner structure</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Term</th> <th>Spacing (mm)</th> </tr> <tr> <td>Very thick</td> <td>&gt; 2000</td> </tr> <tr> <td>Thick</td> <td>600 - 2000</td> </tr> <tr> <td>Medium</td> <td>200 - 600</td> </tr> <tr> <td>Thin</td> <td>60 - 200</td> </tr> <tr> <td>Very thin</td> <td>20 - 60</td> </tr> <tr> <td>Thickly laminated</td> <td>6 - 20</td> </tr> <tr> <td>Thinly laminated</td> <td>&lt; 6</td> </tr> </table>	Term	Spacing (mm)	Very thick	> 2000	Thick	600 - 2000	Medium	200 - 600	Thin	60 - 200	Very thin	20 - 60	Thickly laminated	6 - 20	Thinly laminated	< 6	<p><b>Discontinuities</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Term</th> <th>Spacing (mm)</th> </tr> <tr> <td>Very widely spaced</td> <td>&gt; 2000</td> </tr> <tr> <td>Widely spaced</td> <td>600 - 2000</td> </tr> <tr> <td>Medium spaced</td> <td>200 - 600</td> </tr> <tr> <td>Closely spaced</td> <td>60 - 200</td> </tr> <tr> <td>Very closely spaced</td> <td>20 - 60</td> </tr> <tr> <td>Extremely closely spaced</td> <td>&lt; 20</td> </tr> </table>	Term	Spacing (mm)	Very widely spaced	> 2000	Widely spaced	600 - 2000	Medium spaced	200 - 600	Closely spaced	60 - 200	Very closely spaced	20 - 60	Extremely closely spaced	< 20
Relative density description		Consistency description																																																															
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<p><b>Remarks</b></p>																																																																	



PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 19.08.2016 ~ 24.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.18m ORIENTATION : Vertical  
 COORDINATE : E 204138.122 ; N 1859780.059 DEPTH : 50.00m GROUND WATER LEVEL : 2.20m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING			
												DEPTH GL - (m)	N-Value (Blows / 30cm)	SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)
31	25.82	31.00	3.00		gray	Medium dense to dense	Clayey SAND	Medium dense to dense, gray, moist, fine to medium grained, low plastic Clayey SAND				31.00	29/30						
32					gray	Very stiff to hard	CLAY	Very stiff to hard, gray, moist, low to medium plasticity, CLAY with fine grained sand	20.08.16 32.00			32.00	29/30	P-31	32.00				
33								Thinly fine grained sand layer is including in this layer				33.00	19/30	P-32	33.00				
34												34.00	22/30	P-33	34.00				
35												35.00	33/30	P-34	35.00				
36												36.00	22/30	P-35	36.00				
37												37.00	34/30	P-36	37.00				
38	32.82	38.00	7.00									38.00	50/28	P-37	38.00				
39					yellowish brown	Dense to very dense	Clayey SAND	Dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND	22.08.16 40.00			39.00	34/30	P-38	39.00				
40												40.00	50/28	P-39	40.00				
41												41.00	50/10	P-40	41.00				
42												42.00	50/20	P-41	42.00				
43												43.00	50/10	P-42	43.00				
44												44.00	50/15	P-43	44.00				
45												45.00	50/22	P-44	45.00				
46												46.00	50/13	P-45	46.00				
47												47.00	50/17	P-46	47.00				
48	42.82	48.00	10.00									48.00	50/11	P-47	48.00				
49					gray	Hard	CLAY	Hard, gray, moist, low to medium plasticity, CLAY with silt				49.00	50/12	P-48	49.00				
50	45.08	50.26	2.26					Thinly fine grained sand layer is including in this layer	24.08.16 50.00			50.00	50/11	P-49	50.00				
51								This borehole is terminated at 50.00m, according to the termination criteria.				51.00							
52												52.00							
53												53.00							
54												54.00							
55												55.00							
56												56.00							
57												57.00							
58												58.00							
59												59.00							
60												60.00							
61												61.00							

<b>NOTES</b> Relative density description Relative density    SPT N-Value (max) Very loose            0 - 4 Loose                    4 - 10 Medium dense        10 - 30 Dense                    30 - 50 Very dense            over 50		Consistency description Consistency        SPT N-Value (max) Very soft             under 2 Soft                    2 - 4 Firm                    5 - 8 Stiff                    9 - 15 Very stiff             16 - 30 Hard                    over 30		<b>Sample key</b> ● P-1 Disturbed sample (SPT sample) □ T-1 Undisturbed Sample (Piston sampler) □ D-1 Undisturbed Sample (Denison sampler) ■ Rock core sample (Single core tube) ■ Rock core sample (Double core tube) □ Rock core sample (Core Loss) □ W-1 Water sample		PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test		<b>Planner structure</b> Term                  Spacing (mm) Very thick            > 2000 Thick                   600 - 2000 Medium                200 - 600 Thin                    60 - 200 Very thin             20 - 60 Thickly laminated    6 - 20 Thinly laminated    < 6		<b>Discontinuities</b> Term                  Spacing (mm) Very widely spaced   > 2000 Widely spaced        600 - 2000 Medium spaced        200 - 600 Closely spaced        60 - 200 Very closely spaced   20 - 60 Extremely closely spaced < 20		<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Revision No.            Rev: 02 Revision Date           19.09.2016	
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 16.08.2016 ~ 19.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.66m ORIENTATION : Vertical  
 COORDINATE : E 204264.719 ; N 1859651.489 DEPTH : 50.00m GROUND WATER LEVEL : 3.50m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING						
												DEPTH GL - (m)	CURVE OF BLOW					SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)
													N-Value (Blows / 30cm)	0	10	20	30	40	50				
1								Soft, brown, moist, fine grained, low to medium plasticity, Sandy CLAY															
2	3.66	2.00	2.00					(Filled Soil)		2.00													
3								Firm, brown, moist, medium to high plasticity, CLAY		Ø112													
4																							
5	1.16	4.50	2.50					Loose to medium dense, gray, moist to wet, fine grained, Silty SAND with clay patches															
6																							
7								GL- (8.00 ~ 8.45)m; firm, gray, fine grained, low plasticity, Sandy CLAY layer is observed as intercalated layer at that depth	16.08.16														
8																							
9																							
10																							
11	-5.34	11.00	6.50					Stiff, gray, moist, fine grained, low plasticity, Sandy CLAY, with trace of mica mineral															
12																							
13	-7.34	13.00	2.00					Medium dense, gray, moist, fine to medium grained, Silty SAND, with trace of mica mineral															
14																							
15																							
16	-10.34	16.00	3.00					Medium dense to dense, gray, moist, fine to medium grained, Silty SAND															
17								GL- (19.00 ~ 19.45)m; dense, gray, fine to medium grained, SAND layer is observed at that depth															
18																							
19								GL- (22.00 ~ 24.45)m; thin clay layer is observed as intercalated layer at that depth															
20																							
21																							
22																							
23																							
24																							
25																							
26	-20.34	26.00	10.00					Loose to medium dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel															
27																							
28																							
29																							
30																							
31																							

Continue to next sheet

**NOTES**

Relative density description		Consistency description	
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)
Very loose	0 - 4	Very soft	under 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Firm	5 - 8
Dense	30 - 50	Stiff	9 - 15
Very dense	over 50	Very stiff	16 - 30
		Hard	over 30

Sample key		Planner structure		Discontinuities	
● P-1	Disturbed sample (SPT sample)	PBT	Permeability Test	Term	Spacing (mm)
□ T-1	Undisturbed Sample (Piston sampler)	VS	Vane Shear Test	Very thick	> 2000
□ D-1	Undisturbed Sample (Denison sampler)	PMT	Pressuremeter Test	Thick	600 - 2000
■	Rock core sample (Single core tube)			Medium	200 - 600
■	Rock core sample (Double core tube)			Thin	60 - 200
■	Rock core sample (Core Loss)			Very thin	20 - 60
■	Water sample			Thickly laminated	6 - 20
				Thinly laminated	< 6

Term	Spacing (mm)	Term	Spacing (mm)
Very thick	> 2000	Very widely spaced	> 2000
Thick	600 - 2000	Widely spaced	600 - 2000
Medium	200 - 600	Medium spaced	200 - 600
Thin	60 - 200	Closely spaced	60 - 200
Very thin	20 - 60	Very closely spaced	20 - 60
Thickly laminated	6 - 20	Extremely closely spaced	< 20
Thinly laminated	< 6		

**FUKKEN CO., LTD.**  
Consulting Engineers (Yangon Branch)  
Tel: 951-8010896, 859-42098762  
www.myanmargeoconsultant.com

Revision No. **Rev: 02**  
Revision Date **19.09.2016**

Remarks



PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 16.08.2016 ~ 19.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.66m ORIENTATION : Vertical  
 COORDINATE : E 204264.719 ; N 1859651.489 DEPTH : 50.00m GROUND WATER LEVEL : 3.50m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING				SCALE (m)	
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW			SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)		ROD (%)
														0	10	20						
31					yellowish brown	Loose to medium dense	Clayey SAND	Loose to medium dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel	17.08.16 32.00			31.00	20/30		P-28	31.00 31.45					31	
32												32.00	18/30		P-29	32.00 32.45					32	
33												33.00	15/30		P-30	33.00 33.45					33	
34												34.00	16/30		P-31	34.00 34.45					34	
35	-29.34	35.00	9.00									35.00	50/29		P-32	35.00 35.44					35	
36					yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND with fine gravel				36.00	18/30		P-33	36.00 36.45					36	
37												37.00	50/29		P-34	37.00 37.44					37	
38												38.00	50/14		P-35	38.00 38.29					38	
39	-33.34	39.00	4.00									39.00	33/30		P-36	39.00 39.45					39	
40					gray	Hard	CLAY	Hard, gray, moist, low to medium plasticity, CLAY with silt  Thinly fine grained sand layer is including in this layer				40.00	50/24		P-37	40.00 40.39					40	
41												41.00	50/17		P-38	41.00 41.32					41	
42												42.00	50/13		P-39	42.00 42.28					42	
43												43.00	50/15		P-40	43.00 43.30					43	
44												44.00	50/14		P-41	44.00 44.29					44	
45												45.00	50/14		P-42	45.00 45.29					45	
46												46.00	50/16		P-43	46.00 46.31					46	
47												47.00	50/14		P-44	47.00 47.29					47	
48												48.00	50/17		P-45	48.00 48.32					48	
49	-43.34	49.00	10.00									49.00	50/14		P-46	49.00 49.29					49	
50	-44.58	50.24	1.24		gray	Very dense	Clayey SAND	Very dense, gray, moist, fine to medium grained, low plastic Clayey SAND	19.08.16 50.00			50.00	50/9		P-47	50.00					50	
51								This borehole is terminated at 50.00m, according to the termination criteria.				51.00									51	
52												52.00									52	
53												53.00									53	
54												54.00									54	
55												55.00									55	
56												56.00									56	
57												57.00									57	
58												58.00									58	
59												59.00									59	
60												60.00									60	
61												61.00									61	

<b>NOTES</b>				<b>Sample key</b>				<b>Planner structure</b>				<b>Discontinuities</b>				<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Tel: 951-8010896, 859-420989762 www.myanmargeoconsultant.com
Relative density description		Consistency description		● P-1 Disturbed sample (SPT sample) ○ T-1 Undisturbed Sample (Piston sampler) ○ D-1 Undisturbed Sample (Denison sampler)	PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test	Term Spacing (mm) Very thick > 2000 Thick 600 - 2000 Medium 200 - 600 Thin 60 - 200 Very thin 20 - 60 Thickly laminated 6 - 20 Thinly laminated < 6	Term Spacing (mm) Very widely spaced > 2000 Widely spaced 600 - 2000 Medium spaced 200 - 600 Closely spaced 60 - 200 Very closely spaced 20 - 60 Extremely closely spaced < 20	Revision No. Revision Date	Rev: 02 19.09.2016							
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)	Rock core sample (Single core tube) Rock core sample (Double core tube) Rock core sample (Core Loss) W-1 Water sample	ROD (%) Term 0 - 25 Very poor 25 - 50 Poor 50 - 75 Fair 75 - 90 Good 90 - 100 Excellent	Remarks										
Very loose	0 - 4	Very soft	under 2													
Loose	4 - 10	Soft	2 - 4													
Medium dense	10 - 30	Firm	5 - 8													
Dense	30 - 50	Stiff	9 - 15													
Very dense	over 50	Very stiff	16 - 30													

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 15.08.2016 ~ 18.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 4.97m ORIENTATION : Vertical  
 COORDINATE : E 204261.084 ; N 1859612.551 DEPTH : 50.00m GROUND WATER LEVEL : 3.50m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING								
												DEPTH GL - (m)	CURVE OF BLOW					SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
													N-Value (Blows / 30cm)	0	10	20	30	40	50						
1					brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY	15.08.16	1.00															
2	2.97	2.00	2.00					(Filled Soil)																	
3	1.97	3.00	1.00		brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY		2.00			4/30												
4					gray	Loose	Silty SAND	Loose, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral		Ø112			8/30												
5					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine grained, Silty SAND, with trace of mica mineral					8/30												
6					gray	Stiff	Sandy CLAY	Stiff, gray, moist, fine grained, low plasticity, Sandy CLAY, with trace of mica mineral					9/30												
7					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine grained, Silty SAND, with trace of mica mineral					8/30												
8					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					11/30												
9					gray	Medium dense to dense	Silty SAND	GL- (21.00 ~ 22.45)m; Loose, fine to medium grained, low plastic Clayey SAND layer is observed as intercalated layer at that depth					11/30												
10	-5.03	10.00	7.00		gray	Medium dense to dense	Silty SAND	GL- (25.00 ~ 25.25)m; thin clay layer is observed as intercalated layer at that depth					14/30												
11					gray	Medium dense to dense	Silty SAND	GL- (25.00 ~ 25.25)m; thin clay layer is observed as intercalated layer at that depth					9/30												
12	-7.03	12.00	2.00		gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine grained, Silty SAND, with trace of mica mineral					15/30												
13					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine grained, Silty SAND, with trace of mica mineral					10/30												
14					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist, fine grained, Silty SAND, with trace of mica mineral					14/30												
15	-10.03	15.00	3.00		gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					20/30												
16					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					29/30												
17					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					25/30												
18					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					17/30												
19					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					21/30												
20					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					23/30												
21					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					10/30												
22					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					10/30												
23					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					34/30												
24					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					32/30												
25					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND					23/30												
26	-21.03	26.00	11.00		yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel	16.08.16	26.00			23/30												
27					yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel					25/30												
28					yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel					25/30												
29					yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel					28/30												
30					yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel					34/30												
31					yellowish brown	Medium dense to very dense	Clayey SAND	Medium dense to very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel					31.00												

Continue to next sheet

NOTES				Sample key		Planner structure		Discontinuities	
Relative density description		Consistency description		● P-1	Disturbed sample (SPT sample)	PBT	Permeability Test	Term	Spacing (mm)
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)	□ T-1	Undisturbed Sample (Piston sampler)	VS	Vane Shear Test	Very thick	> 2000
Very loose	0 - 4	Very soft	under 2	□ D-1	Undisturbed Sample (Denison sampler)	PMT	Pressuremeter Test	Thick	600 - 2000
Loose	4 - 10	Soft	2 - 4	□	Rock core sample (Single core tube)			Medium	200 - 600
Medium dense	10 - 30	Firm	5 - 8	□	Rock core sample (Double core tube)			Thin	60 - 200
Dense	30 - 50	Stiff	9 - 15	□	Rock core sample (Core Loss)			Very thin	20 - 60
Very dense	over 50	Very stiff	16 - 30	□	Water sample			Thickly laminated	6 - 20
		Hard	over 30					Thinly laminated	< 6

ROD (%)	Term
0 - 25	Very poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

Term	Spacing (mm)
Very widely spaced	> 2000
Widely spaced	600 - 2000
Medium spaced	200 - 600
Closely spaced	60 - 200
Very closely spaced	20 - 60
Extremely closely spaced	< 20

**FUKKEN CO., LTD.**  
Consulting Engineers  
(Yangon Branch)  
www.fukken.com

Revision No.            Rev: 02  
Revision Date 19.09.2016



PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 16.08.2016 ~ 18.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation CLIENT : **NIPPON KOEI CO., LTD.**  
 GROUND LEVEL : 5.20m ORIENTATION : Vertical  
 COORDINATE : E 204288.053 ; N 1859558.128 DEPTH : 50.00m GROUND WATER LEVEL : 3.60m

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING					
												DEPTH GL - (m)	CURVE OF BLOW			SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)
			N-Value (Blows / 30cm)	0 10 20 30 40 50																	
1	3.70	1.50	1.50		brown	Soft	CLAY	Soft, brown, moist, fine grained, low plasticity, CLAY (Filled Soil)	16.08.16	Ø112	2.00	1.00				A-1	1.00				1
2					brownish gray	Loose	Silty SAND	Loose, brownish gray, moist, fine to medium grained, Silty SAND (Filled Soil)							2.00	7/30			P-1	1.50	
3	2.20	3.00	1.50		brownish gray to gray	Soft	CLAY	Soft, brownish gray to gray, moist, medium to high plasticity, CLAY				3.00	3/30			P-2	2.00				3
4					brownish gray to gray	Soft	CLAY	Soft, brownish gray to gray, moist, medium to high plasticity, CLAY				4.00				T-1	3.00				4
5					brownish gray to gray	Soft	CLAY	Soft, brownish gray to gray, moist, medium to high plasticity, CLAY				5.00	2/30			P-3	3.45				5
6					brownish gray to gray	Soft	CLAY	Soft, brownish gray to gray, moist, medium to high plasticity, CLAY				6.00				T-2	4.00				6
7	-1.80	7.00	4.00		gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				7.00	5/30			P-4	4.70				7
8					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				8.00	7/30			P-5	5.00				8
9					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				9.00	15/30			P-6	5.45				9
10	-4.80	10.00	3.00		gray	Firm to stiff	Sandy SILT	Firm to stiff, gray, moist, fine grained, low plasticity, Sandy SILT, with trace of mica mineral				10.00	10/30			P-7	6.00				10
11					gray	Firm to stiff	Sandy SILT	Firm to stiff, gray, moist, fine grained, low plasticity, Sandy SILT, with trace of mica mineral				11.00	7/30			P-8	6.80				11
12					gray	Firm to stiff	Sandy SILT	Firm to stiff, gray, moist, fine grained, low plasticity, Sandy SILT, with trace of mica mineral				12.00	12/30			P-9	7.00				12
13	-7.80	13.00	3.00		gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				13.00	15/30			P-10	7.45				13
14					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				14.00	11/30			P-11	8.00				14
15					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				15.00	11/30			P-12	8.45				15
16					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				16.00	18/30			P-13	9.00				16
17					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				17.00	23/30			P-14	9.45				17
18					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				18.00	37/30			P-15	10.00				18
19					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				19.00	19/30			P-16	10.45				19
20					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				20.00	24/30			P-17	11.00				20
21					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				21.00	17/30			P-18	11.45				21
22					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				22.00	30/30			P-19	12.00				22
23					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				23.00	40/30			P-20	12.45				23
24					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				24.00	22/30			P-21	13.00				24
25					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				25.00	25/30			P-22	13.45				25
26					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				26.00	41/30			P-23	14.00				26
27					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				27.00	19/30			P-24	14.45				27
28					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				28.00	26/30			P-25	15.00				28
29					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				29.00	17/30			P-26	15.45				29
30					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				30.00	32/30			P-27	16.00				30
31					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				31.00									31

Continue to next sheet

<b>NOTES</b>				<b>Sample key</b>				<b>Planner structure</b>				<b>Discontinuities</b>				<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) www.fukken.com Tel : 951 - 8010896, 859 - 42098762	
Relative density description		Consistency description		● P-1 Disturbed sample (SPT sampler) ○ T-1 Undisturbed Sample (Piston sampler) ○ D-1 Undisturbed Sample (Denison sampler) ■ Rock core sample (Single core tube) ■ Rock core sample (Double core tube) □ Rock core sample (Core Loss) ○ W-1 Water sample	PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test	Term Spacing (mm) Very thick > 2000 Thick 600 - 2000 Medium 200 - 600 Thin 60 - 200 Very thin 20 - 60 Thickly laminated 6 - 20 Thinly laminated < 6	Term Spacing (mm) Very widely spaced > 2000 Widely spaced 600 - 2000 Medium spaced 200 - 600 Closely spaced 60 - 200 Very closely spaced 20 - 60 Extremely closely spaced < 20	Revision No. _____ Revision Date _____	Rev: 02 19.09.2016								
Relative density      SPT N-Value (min) Very loose            0 - 4 Loose                    4 - 10 Medium dense        10 - 30 Dense                    30 - 50 Very dense            over 50		Consistency            SPT N-Value (min) Very soft                under 2 Soft                      2 - 4 Firm                      5 - 8 Stiff                      9 - 15 Very stiff                16 - 30 Hard                      over 30		ROD (%)      Term 0 - 25      Very poor 25 - 50      Poor 50 - 75      Fair 75 - 90      Good 90 - 100    Excellent		Remarks											

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 16.08.2016 ~ 18.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 5.20m ORIENTATION : Vertical  
 COORDINATE : E 204288.053 ; N 1859558.128 DEPTH : 50.00m GROUND WATER LEVEL : 3.60m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING								
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW			SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
													0	10	20	30	40	50						
31	25.80	31.00	18.00	* * *	gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				31.00	26/30						P-28	31.00				31
32				* * *	yellowish brown	Medium dense to dense	Clayey SAND	Medium dense to dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND, with trace of fine gravel				32.00	26/30							P-29	31.45 32.00 32.45			32
33				* * *								33.00	29/30							P-30	33.00 33.45			33
34				* * *								34.00	36/30							P-31	34.00 34.45			34
35				* * *								35.00	35/30							P-32	35.00 35.45			35
36	30.80	36.00	5.00	* * *								36.00	50/23							P-33	36.00 36.38			36
37				* * *	yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, moist, fine to medium grained, low plastic Clayey SAND with fine gravel				37.00	50/20							P-34	37.00 37.35			37
38				* * *								38.00	50/15							P-35	38.00 38.30			38
39	33.80	39.00	3.00	* * *								39.00	32/30							P-36	39.00 39.45			39
40				* * *	gray	Hard	CLAY	Hard, gray, moist, low to medium plasticity, CLAY with silt  Thinly fine grained sand layer is including in this layer	17.08.16 40.00			40.00	36/30							P-37	40.00 40.45			40
41				* * *								41.00	50/27							P-38	41.00 41.42			41
42				* * *								42.00	50/15							P-39	42.00 42.30			42
43				* * *								43.00	50/28							P-40	43.00 43.43			43
44				* * *								44.00	50/16							P-41	44.00 44.31			44
45				* * *								45.00	50/15							P-42	45.00 45.30			45
46				* * *								46.00	50/13							P-43	46.00 46.28			46
47				* * *								47.00	50/15							P-44	47.00 47.30			47
48	42.80	48.00	9.00	* * *								48.00	50/15							P-45	48.00 48.30			48
49				* * *	gray	Very dense	Clayey SAND	Very dense, gray, moist, fine to medium grained, low plastic Clayey SAND				49.00	50/13							P-46	49.00 49.28			49
50	45.05	50.25	2.25	* * *					18.08.16 50.00			50.00	50/10							P-47	50.00 50.25			50
51				* * *				This borehole is terminated at 50.00m, according to the termination criteria.				51.00												51
52				* * *								52.00												52
53				* * *								53.00												53
54				* * *								54.00												54
55				* * *								55.00												55
56				* * *								56.00												56
57				* * *								57.00												57
58				* * *								58.00												58
59				* * *								59.00												59
60				* * *								60.00												60
61				* * *								61.00												61

<b>NOTES</b>	<b>Sample key</b>	<b>Planner structure</b>	<b>Discontinuities</b>																																																														
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PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 12.08.2016 ~ 17.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 4.37m ORIENTATION : Vertical  
 COORDINATE : E 204312.961 ; N 1859485.491 DEPTH : 50.00m GROUND WATER LEVEL : 1.60m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING								
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW ●			SAMPLE (Type & No)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
													0	10	20	30	40	50						
31					gray to yellowish brown	Medium dense to dense	Clayey SAND	Medium dense to dense, gray to yellowish brown, moist, fine to medium grained, low plastic Clayey SAND  GL- (31.00 ~ 31.45)m; trace of organic matter is observed at that depth					31.00	17/30					P-28	31.00				31
32													32.00	22/30					P-29	31.45 32.00 32.45				32
33													33.00	23/30					P-30	33.00 33.45				33
34													34.00	20/30					P-31	34.00 34.45				34
35								GL- (34.00 ~ 34.45)m; Very stiff, mottled brown and gray, fine to medium grained, low to medium plasticity, Sandy CLAY layer is observed as intercalated layer at that depth					35.00	32/30					P-32	35.00 35.45				35
36									15.08.16				36.00	36/30					P-33	36.00 36.45				36
37													37.00	30/30					P-34	37.00 37.45				37
38													38.00	33/30					P-35	38.00 38.45				38
39													39.00	30/30					P-36	39.00 39.45				39
40													40.00	33/30					P-37	40.00 40.45				40
41													41.00	38/30					P-38	41.00 41.45				41
42	-37.63	42.00	13.00										42.00	50/30					P-39	42.00 42.45				42
43					yellowish brown to gray	Dense to very dense	Clayey SAND	Dense to very dense, yellowish brown to gray, moist, fine grained, low plastic Clayey SAND  GL- (50.00 ~ 50.30)m; the grained size of sand is fine to medium grained.					43.00	50/30					P-40	43.00 43.45				43
44													44.00	50/30					P-41	44.00 44.45				44
45													45.00	50/23					P-42	45.00 45.38				45
46													46.00	50/21					P-43	46.00 46.36				46
47									16.08.16				47.00	50/20					P-44	47.00 47.35				47
48													48.00	50/25					P-45	48.00 48.40				48
49													49.00	50/23					P-46	49.00 49.38				49
50	-45.93	50.30	8.30						17.08.16				50.00	50/15					P-47	50.00 50.30				50
51								This borehole is terminated at 50.00m, according to the termination criteria.					51.00											51
52													52.00											52
53													53.00											53
54													54.00											54
55													55.00											55
56													56.00											56
57													57.00											57
58													58.00											58
59													59.00											59
60													60.00											60
61													61.00											61

**NOTES**

Relative density description		Consistency description	
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)
Very loose	0 - 4	Very soft	under 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Firm	5 - 8
Dense	30 - 50	Stiff	9 - 15
Very dense	over 50	Very stiff	16 - 30
		Hard	over 30

Sample key		Planner structure		Discontinuities	
●	P-I Disturbed sample (SPT sample)	PBT	Permeability Test	Term	Spacing (mm)
○	T-I Undisturbed Sample (Piston sampler)	VS	Vane Shear Test	Very thick	> 2000
○	D-I Undisturbed Sample (Denison sampler)	PMT	Pressuremeter Test	Thick	600 - 2000
□	Rock core sample (Single core tube)			Medium	200 - 600
□	Rock core sample (Double core tube)			Thin	60 - 200
□	Rock core sample (Core Loss)			Very thin	20 - 60
□	W-I Water sample			Thickly laminated	6 - 20
				Thinly laminated	< 6

Term	Spacing (mm)	Term	Spacing (mm)
Very thick	> 2000	Very widely spaced	> 2000
Thick	600 - 2000	Widely spaced	600 - 2000
Medium	200 - 600	Medium spaced	200 - 600
Thin	60 - 200	Closely spaced	60 - 200
Very thin	20 - 60	Very closely spaced	20 - 60
Thickly laminated	6 - 20	Extremely closely spaced	< 20
Thinly laminated	< 6		

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Revision No. **Rev: 02**  
Revision Date **19.09.2016**

Remarks





PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 11.08.2016 ~ 13.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation **CLIENT**  
 GROUND LEVEL : 4.01m ORIENTATION : Vertical  
 COORDINATE : E 204341.023 ; N 1859405.546 DEPTH : 42.00m GROUND WATER LEVEL : 1.50m  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)				SAMPLING						
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	ROD (%)	SCALE (m)		
31	-26.99	31.00	14.00	XXXXXX	gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND	12.08.16 34.00			31.00	15/30									P-29
32				XXXXXX	gray	Medium dense to very dense	Clayey SAND	Medium dense to very dense, gray, moist, fine to medium grained, low plastic Clayey SAND				32.00	21/30		P-30	32.00 32.45						32
33				XXXXXX								33.00	32/30		P-31	33.00 33.45						33
34				XXXXXX								34.00	18/30		P-32	34.00 34.45						34
35				XXXXXX								35.00	50/20		P-33	35.00 35.35						35
36				XXXXXX								36.00	32/30		P-34	36.00 36.45						36
37	-32.99	37.00	6.00	XXXXXX								37.00	50/28		P-35	37.00 37.43						37
38				XXXXXX	yellowish brown	Very dense	Clayey SAND	Very dense, yellowish brown, moist, fine grained, low plastic Clayey SAND				38.00	50/20		P-36	38.00 38.35						38
39				XXXXXX								39.00	50/15		P-37	39.00 39.30						39
40				XXXXXX				GL- (37.00 ~ 37.43)m; very dense, gray, fine to medium grained, Silty SAND layer is observed at that depth				40.00	50/15		P-38	40.00 40.30						40
41				XXXXXX								41.00	50/25		P-39	41.00 41.40						41
42	-38.39	42.40	5.40	XXXXXX					13.08.16 42.00			42.00	50/25		P-40	42.00 42.40						42
43				XXXXXX				This borehole is terminated at 42.00m, according to the termination criteria.				43.00										43
44				XXXXXX								44.00										44
45				XXXXXX								45.00										45
46				XXXXXX								46.00										46
47				XXXXXX								47.00										47
48				XXXXXX								48.00										48
49				XXXXXX								49.00										49
50				XXXXXX								50.00										50
51				XXXXXX								51.00										51
52				XXXXXX								52.00										52
53				XXXXXX								53.00										53
54				XXXXXX								54.00										54
55				XXXXXX								55.00										55
56				XXXXXX								56.00										56
57				XXXXXX								57.00										57
58				XXXXXX								58.00										58
59				XXXXXX								59.00										59
60				XXXXXX								60.00										60
61				XXXXXX								61.00										61

<b>NOTES</b>				<b>Sample key</b>				<b>Planner structure</b>				<b>Discontinuities</b>				<b>FUKKEN CO., LTD.</b> Consulting Engineers (Yangon Branch) Revision No. _____ Rev: 01 Revision Date _____ 06.09.2016	
Relative density description		Consistency description		● P-1 Disturbed sample (SPT sample) □ T-1 Undisturbed Sample (Piston sampler) □ D-1 Undisturbed Sample (Denison sampler) □ Rock core sample (Single core tube) □ Rock core sample (Double core tube) □ Rock core sample (Core Loss) □ W-1 Water sample	PBT Permeability Test VS Vane Shear Test PMT Pressuremeter Test	Term Spacing (mm) Very thick > 2000 Thick 600 - 2000 Medium 200 - 600 Thin 60 - 200 Very thin 20 - 60 Thickly laminated 6 - 20 Thinly laminated < 6	Term Spacing (mm) Very widely spaced > 2000 Widely spaced 600 - 2000 Medium spaced 200 - 600 Closely spaced 60 - 200 Very closely spaced 20 - 60 Extremely closely spaced < 20										
Relative density	SPT N-Value (blows)	Consistency	SPT N-Value (blows)	ROD (%) Term 0 - 25 Very poor 25 - 50 Poor 50 - 75 Fair 75 - 90 Good 90 - 100 Excellent	Remarks												

PROJECT NAME : Geological Survey on the supplement survey for Bago River Bridge Construction Project BORING EQUIPMENT : TOHO "D1" DATE : 10.08.2016 ~ 13.08.2016  
 LOCATION : Thanlyin Chin Kat Road, Thaketa Township. BORING METHOD : Rotary Direct Circulation  
 GROUND LEVEL : 4.52m ORIENTATION : Vertical  
 COORDINATE : E 204384.785 ; N 1859326.929 DEPTH : 43.00m GROUND WATER LEVEL : 2.00m

**CLIENT**  
**NIPPON KOEI CO., LTD.**

SCALE (m)	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)	STANDARD PENETRATION TEST TEST METHOD (ASTM)					SAMPLING				SCALE (m)			
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW					SAMPLE (Type & No)	DEPTH GL - (m)		TCR (%)	SCR (%)	ROD (%)
														0	10	20	30	40	50					
1	3.52	1.00	1.00		brownish gray	Soft	CLAY	Soft, brownish gray, moist, medium to high plasticity, CLAY (Filled Soil)	10.08.16			1.00												1
2					gray	Soft	CLAY	Soft, gray, moist, low to medium plasticity, CLAY with silt	1.00	2.00	2.00	2.00	4/30											2
3												3.00												3
4												4.00												4
5	-0.48	5.00	4.00									5.00	2/30											5
6					gray	Loose to medium dense	Silty SAND	Loose to medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				6.00	12/30											6
7								GL- (11.00 ~ 11.45)m; trace of clay is observed at that depth				7.00	6/30											7
8												8.00	5/30											8
9												9.00	18/30											9
10												10.00	22/30											10
11												11.00	20/30											11
12												12.00	9/30											12
13	-8.48	13.00	8.00		gray	Stiff to very stiff	Sandy SILT	Stiff to very stiff, gray, moist, fine grained, low plasticity, Sandy SILT, with trace of mica mineral				13.00	12/30											13
14												14.00	11/30											14
15	-10.48	15.00	2.00									15.00	18/30											15
16					gray	Medium dense	Silty SAND	Medium dense, gray, moist to wet, fine grained, Silty SAND, with trace of mica mineral				16.00	22/30											16
17												17.00	21/30											17
18	-13.48	18.00	3.00									18.00	13/30											18
19					gray	Medium dense to dense	Silty SAND	Medium dense to dense, gray, moist, fine to medium grained, Silty SAND				19.00	28/30											19
20												20.00	29/30											20
21												21.00	22/30											21
22												22.00	29/30											22
23												23.00	22/30											23
24												24.00	33/30											24
25												25.00	19/30											25
26												26.00	28/30											26
27												27.00	20/30											27
28												28.00	13/30											28
29												29.00	39/30											29
30												30.00	17/30											30
31												31.00	33/30											31

Continue to next sheet

**NOTES**

Relative density description		Consistency description	
Relative density	SPT N-Value (max)	Consistency	SPT N-Value (max)
Very loose	0 - 4	Very soft	under 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Firm	5 - 8
Dense	30 - 50	Stiff	9 - 15
Very dense	over 50	Very stiff	16 - 30
		Hard	over 30

Sample key		Planner structure		Discontinuities	
● P-1	Disturbed sample (SPT sample)	PBT	Permeability Test	Term	Spacing (mm)
○ T-1	Undisturbed Sample (Piston sampler)	VS	Vane Shear Test	Very thick	> 2000
○ D-1	Undisturbed Sample (Denison sampler)	PMT	Pressuremeter Test	Thick	600 - 2000
▬	Rock core sample (Single core tube)			Medium	200 - 600
▬	Rock core sample (Double core tube)			Thin	60 - 200
▬	Rock core sample (Core Loss)			Very thin	20 - 60
W-1	Water sample			Thickly laminated	6 - 20
				Thinly laminated	< 6

ROD (%)	Term
0 - 25	Very poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

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Revision No. **Rev: 02**  
Revision Date **19.09.2016**

Remarks

