5 Other Relevant Data

5.1 Memorandum of Agreement

1st Site Survey (08/Sep/2010)

Memorandum of Agreement
between
Preparatory Survey Team (Outline Design Study) and Road Development Authority
on
the Project for the Construction of a Bridge across the Batticaloa Lagoon

Both Parties agreed the following items based on the discussion on 8th September 2010.

(1) The approach road at the western side of the Manmunai bridge shall be adjusted not to create any involuntary resettlement of the local shop.

(2) Bridge length shall be at least 200m.

(3) The vertical clearance of the bridge shall be equal to the vertical clearance of the New Kallady Bridge.

(4) The span length of the main bridge and the side bridge shall be equal or longer than that of the Paddiruppu bridge.

(5) Bridge design condition are as follows:

1. Design Standard
   - RDA Bridge Design Manual 1997
   - RDA Geometric Design Standards of Road 1998
   - British Standard (BS5400)
2. Bridge Width
   The width of the bridge and approach road shall be determined based on the agreement between JICA and MOH.
3. Basic Concept for Design
   - High Water Level
     High water level will be determined based on the hydrological study done by the outline design study team.
   - Bridge Type
     Pre-stressed concrete bridge and /or Reinforced Concrete bridge will be adopted for the Project.

4. Design Load

➢ Dead Load

Item	Unit	Weight
Reinforced Concrete	kN/m3	25.0
Asphalt Pavement	kN/m3	23.0
Plain Concrete	kN/m3	24.0
Structural Steel	kN/m3	78.5
Earth for embankment	kN/m3	18.0

Ducts to accommodate Public Utilities shall also be taken into account in the design.

5. Live Load

HA, HB-30 live load of the BS5400 shall be applied.

6. Other Load

Other load including seismic coefficient, wind shall be in accordance with the RDA Bridge Design Manual.

7. Material Strength

The strength of material shall be based on the Sri Lankan Standard.

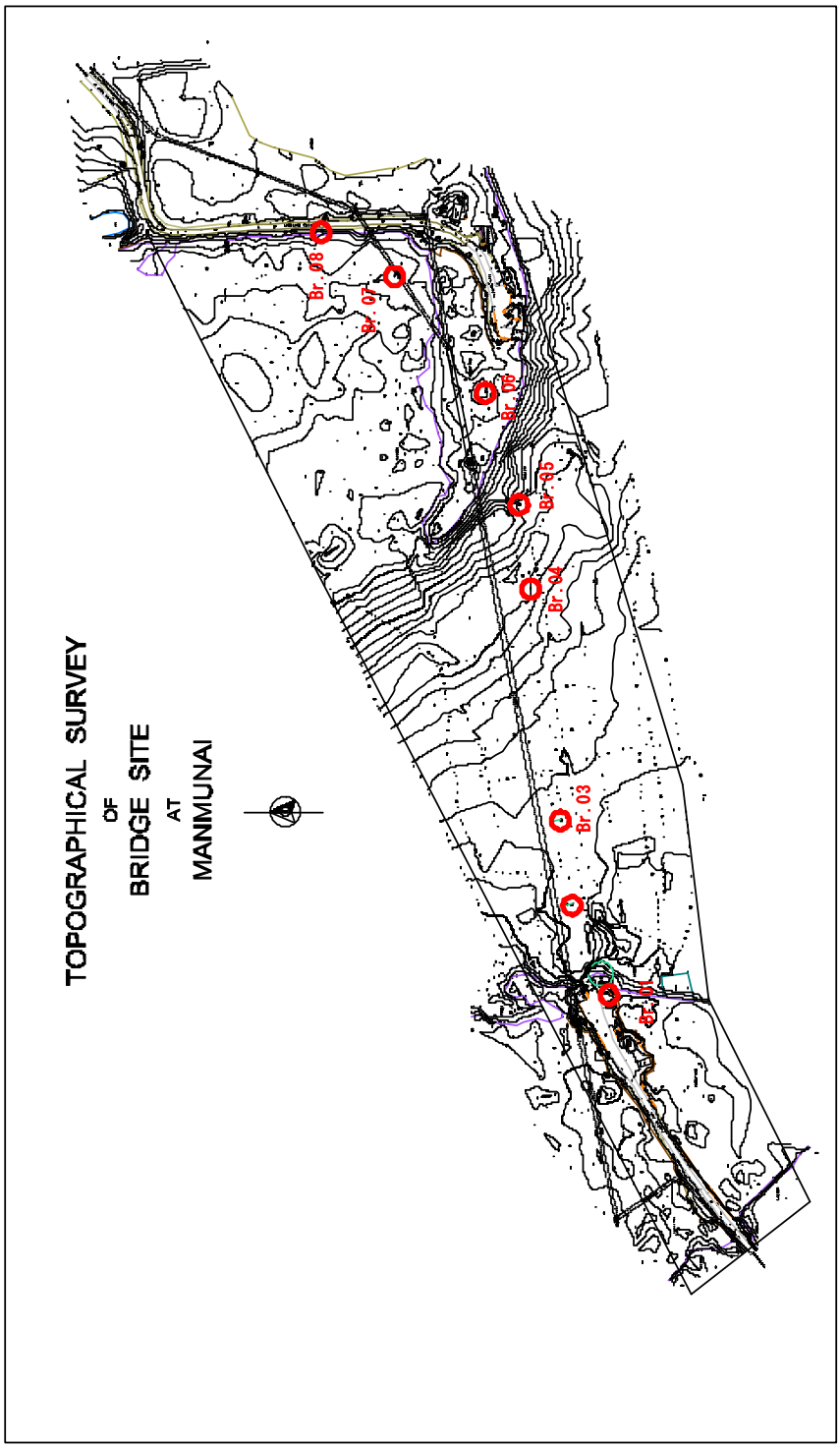
安井淳治

Mr. Junji Yasui
Chief Consultant
JICA Preparatory Survey Team
(Outline Design Study)

Mr. D.K. Rohitha Swarna
Director Engineering Services
Road Development Authority

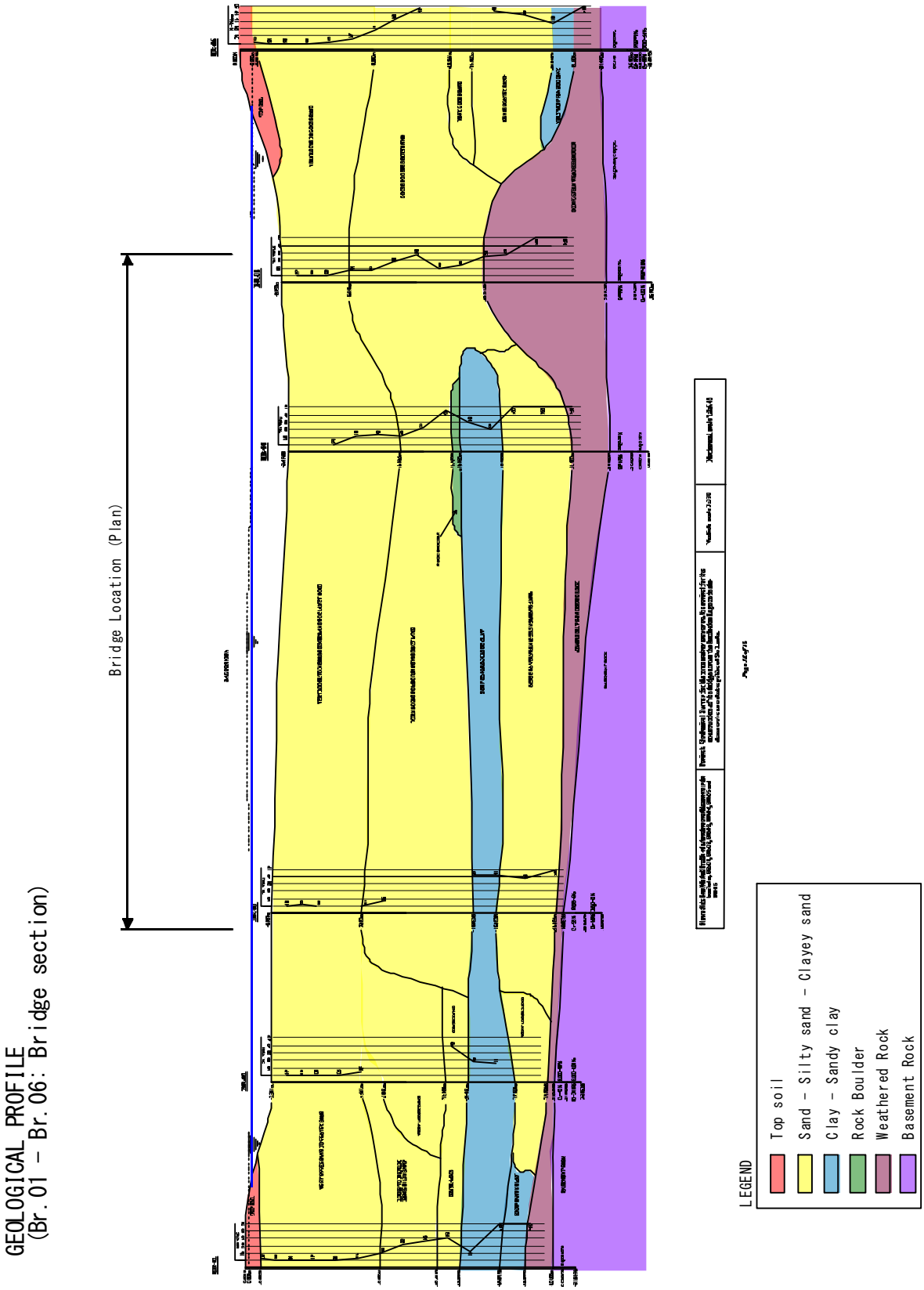
5.2 Geological Survey Result

5.2.1 Location of Boreholes

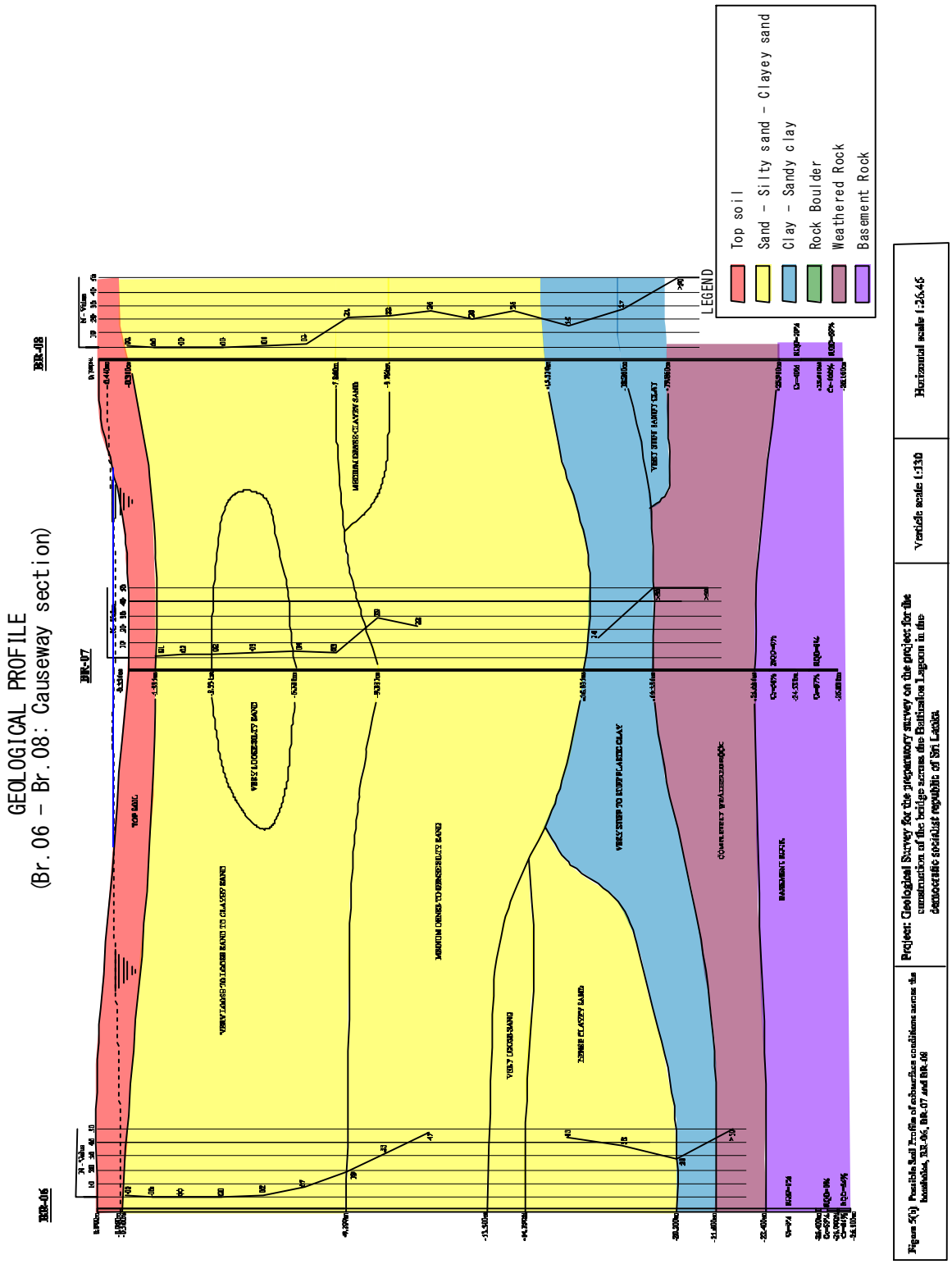


5.2.2 Geological Profile

Br.01～Br.06



Br.06～Br.08


GEOLOGICAL PROFILE
(Br.06 - Br.08: Causeway section)
BH-06
BH-07
BH-08
LEGEND
Top soil
Sand - Silty sand - Clayey sand
Clay - Sandy clay
Rock Boulder
Weathered Rock
Basement Rock
Horizontal scale 1:2500
Vertical scale 1:250
Project: Geological Survey for the preparatory survey on the project for the construction of the bridge across the Batticaloa Lagoon in the democratic socialist republic of Sri Lanka.
Figure 5(3) Possible Soil Profile of subsurface conditions across the boreholes, BH-06, BH-07 and BH-08

5.2.3 Boring Logs

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

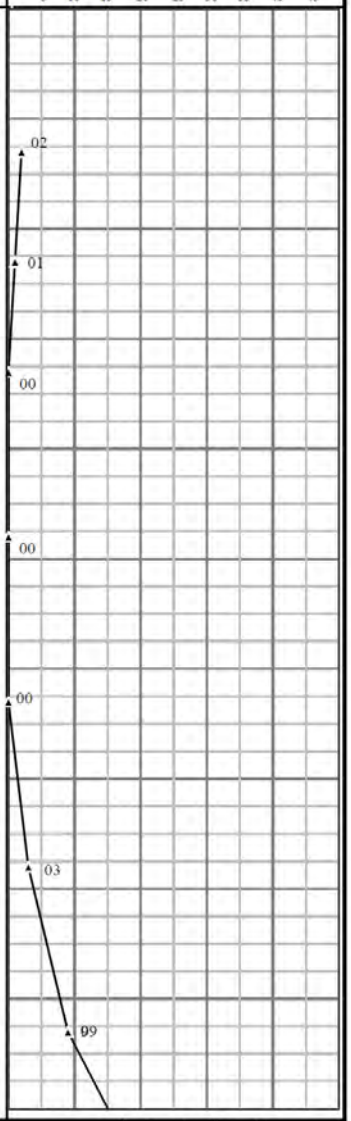
NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-01
Client	**M/s. JICA Study Team**					Sheet	1 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm	Ground Water level	0.20m
Date of Started	02.09.2010	Drilling Method	Rotary	Casing depth	22.00m	Coordinates	
Date of Finished	05.09.2010	Casing Diameter	62mm	Elevation	+ 0.40m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				+0.40			Ground level				
			WS	+0.20	GWL at 0.20m		Whitish grey, light brownish white fine angular to subrounded SAND				
1.00							TOP SOIL				
		D1	SS	-0.60	1.00		Very loose grey, brownish grey fine to medium angular to subrounded SAND	1	1	1	2
			WS								
2.00		D2	SS					1	0	1	1
			WS								
3.00		D3	SS					0	0	0	0
			WS				Coarse fraction increased with the depth				
4.00											
		D4	SS	-4.10	4.50			1	0	0	0
5.00			WS								
6.00		D5	SS				Very loose dark grey, grey sightly clayey fine to coarse angular to subrounded SAND	0	0	0	0
			WS								
7.00											
		D6	SS	-7.10	7.50			1	2	1	3
8.00			WS				Very loose dark grey, grey CLAYEY fine to coarse angular to subrounded SAND				
9.00		D7	SS	-8.60	9.00			1	4	5	9
			WS				Loose whitish grey, light grey SILTY fine angular to subrounded SAND				
10.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



Sample Key / Test Key

SPT Where full 0.3m penetration has not been achieved the number of blows for the quoted penetratiou is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation	Remarks
GWL Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression	Existing ground level considered as the zero level
	W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained	
	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained	
	UD- Undisturbed Sample	B - Bulk Density	pH - Chemical	
	CS- Core Sample	V - Vane Shear Test	O - Organic content	
HB -Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content	
FD - Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content	

Logged By:
G.G.N.N.Amarakoon
Supervised By:
Chandana
Drilled By:
Nishantha

Made Ground | Silt | Gravel | Laterite Nodules | Completely Weathered Rock
Clay | Sand | Organic Matter | Silty Sand | Highly Weathered Rock | Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

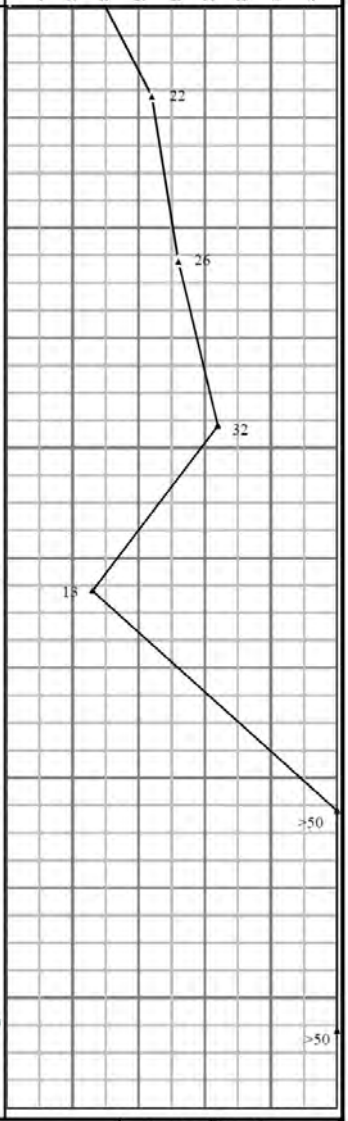
NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-01
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	02.09.2010	Drilling Method	Rotary	Casing depth	22.00m
Date of Finished	05.09.2010	Casing Diameter	62mm	Elevation	+ 0.40m

Ground Water level 0.20m
Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-9.60			Continue from Page1				
							Same as previous description				
11.00		D8	SS	-10.10	10.50		Medium dense light greenish white, whitish grey SILTY fine angular to subrounded SAND	6	10	12	22
			WS								
12.00		D9	SS					8	12	14	26
13.00			WS	-12.40	12.80		Dense light brown, brown fine to coarse angular to subrounded SAND with rock fragments				
14.00		D10	SS					6	20	12	32
			WS	-13.90	14.30		Stiff yellowish brown, grey slightly silty PLASTIC CLAY				
15.00		D11	SS					4	5	8	13
16.00			WS								
17.00		D12	SS	-16.60	17.00		Hard yellowish brown, grey fine to medium angular to subrounded SANDY CLAY with some sand	20	30	20	50
18.00			WS								
19.00		D13	SS	-18.30	18.70		Light brown, grey, yellowish brown fine to coarse angular to subrounded SAND with weathered rock fragments	50	HB		>50
20.00							COMPLETELY WEATHERED ROCK				



Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-01
Client	**M/s. JICA Study Team**	Sheet	3 of 3
Location	Baticoloa	Rig	JOY
Date of Started	02.09.2010	Drilling Method	Rotary
Date of Finished	05.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Ground Water level	0.20m
Casing depth	22.00m	Coordinates	
Elevation	+ 0.40m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-19.60			Continue from Page 2				
							Same as previous description **ROCK LEVEL**				
				-20.10	20.50						
21.00			CS				Pinkish brown, blackish grey medium grained, highly fractured, discoloured GRANITIC GNEISS	Cr=100%		RQD=95%	
22.00				21.60	22.00		The borehole was terminated at a depth of 22.00m				
23.00											
24.00											
25.00											
26.00											
27.00											
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

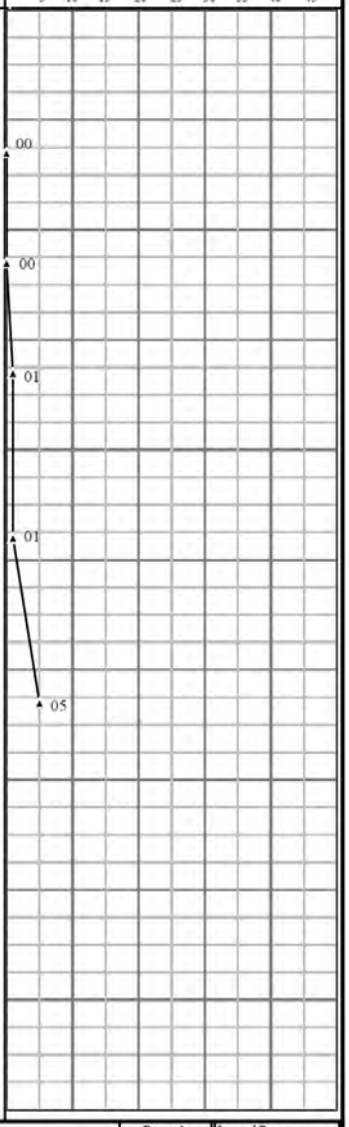
NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-02
Client	**M/s. JICA Study Team**	Sheet	1 of 3
Location	Baticoloa	Rig	JOY
Date of Started	17.09.2010	Drilling Method	Rotary
Date of Finished	18.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	1.50m
Casing depth	18.00m	Coordinates	
Elevation	-1.361m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				-1.361			Ground level				
			WS				Grey, brownish grey fine to coarse SAND with some shell fragments				
1.00							TOP SOIL				
		D1	SS	-2.261	0.90			0	0	0	0
			WS				Very loose blackish grey, grey, brownish grey slightly clayey fine to coarse angular to subrounded SAND				
2.00		D2	SS					1	0	0	0
			WS								
3.00		D3	SS					1	0	1	1
								NO SAMPLE			
			WS				(3.45-4.50)m sample colour changed to greenish grey, grey colour				
4.00											
		D4	SS					1	1	0	1
5.00							(4.50-4.95)m sample consisted with shell fragments				
			WS								
6.00											
		D5	SS	-7.361	6.00		Loose grey, brownish grey slightly clayey SILTY fine to coarse angular to subrounded SAND	3	1	4	5
			WS								
7.00											
				-8.861	7.50		**Washed Sample:**	SAND BOILED			
8.00											
			WS				Very loose whitish grey, light grey fine to coarse angular to subrounded SAND				
9.00								SAND BOILED			
			WS								
10.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
GWL – Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
HB – Hammer Bounce	W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
FD – Free Down	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
	UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
	CS- Core Sample	V - Vane Shear Test	O - Organic content
	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground | Silt | Gravel | Laterite Nodules | Completely Weathered Rock
Clay | Sand | Organic Matter | Silty Sand | Highly Weathered Rock | Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

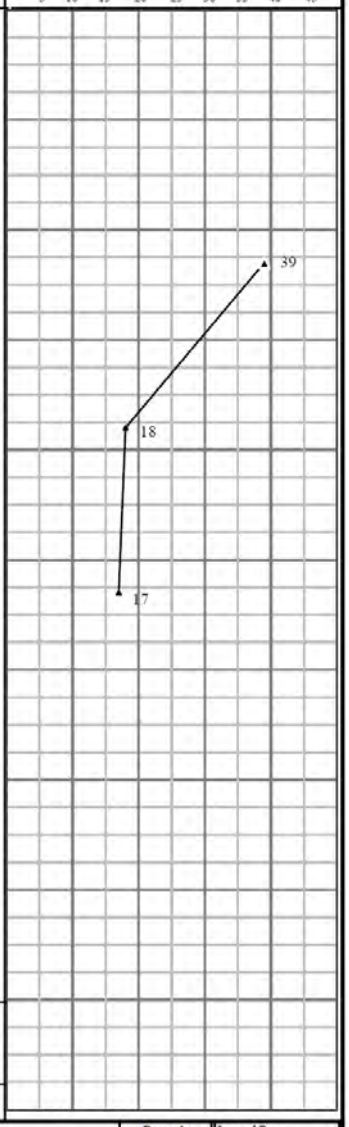
Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-02
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	17.09.2010	Drilling Method	Rotary	Casing depth	18.00m
Date of Finished	18.09.2010	Casing Diameter	62mm	Elevation	-1.361m

Water Column Height 1.50m

Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-11.361			Continue from Page1				
11.00			WS	-12.961			Same as previous description	SAND BOILED			
12.00		D6	SS		11.60		Dense whitish grey, light grey fine to coarse angular to subrounded SAND with coral rock parts	8	16	23	39
13.00			WS	-14.461							
14.00		D7	SS		13.10		Very stiff yellowish brown, grey, brownish grey slightly silty PLASTIC CLAY	1	6	12	18
			WS				**Washed Sample:**				
15.00		D8	SS				Very loose yellowish brown, light brown fine to coarse angular to subrounded SAND	5	8	9	17
16.00			WS	-17.661							
17.00		D9	SS		16.30		**Washed Sample:** Blackish grey, brown fine to coarse angular to subrounded SAND with mica traces and weathered rock fragments COMPLETELY WEATHERED EOCK	SAND BOILED			
18.00			WS	-19.761			**ROCK LEVEL** Black, blackish grey medium grained, fractured, fairly discoloured BIOTITE GNEISS				
19.00			CS	-20.261	18.40						
20.00				-21.061	18.90		Black, blackish grey medium grained, fractured, fairly discoloured BIOTITE GNEISS	Cr= 41%		RQD= 41%	
					19.70			Cr=100%		RQD=100%	

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Dsturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-02
Client	**M/s. JICA Study Team**	Sheet	3 of 3
Location	Baticoloa	Rig	JOY
Date of Started	17.09.2010	Drilling Method	Rotary
Date of Finished	18.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	1.50m
Casing depth	18.00m	Coordinates	
Elevation	-1.361m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-21.361			Continue from Page 2				
			CS				Same as previous description				
21.00				-22.061	20.70		The borehole was terminated at a depth of 20.70m				
22.00											
23.00											
24.00											
25.00											
26.00											
27.00											
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

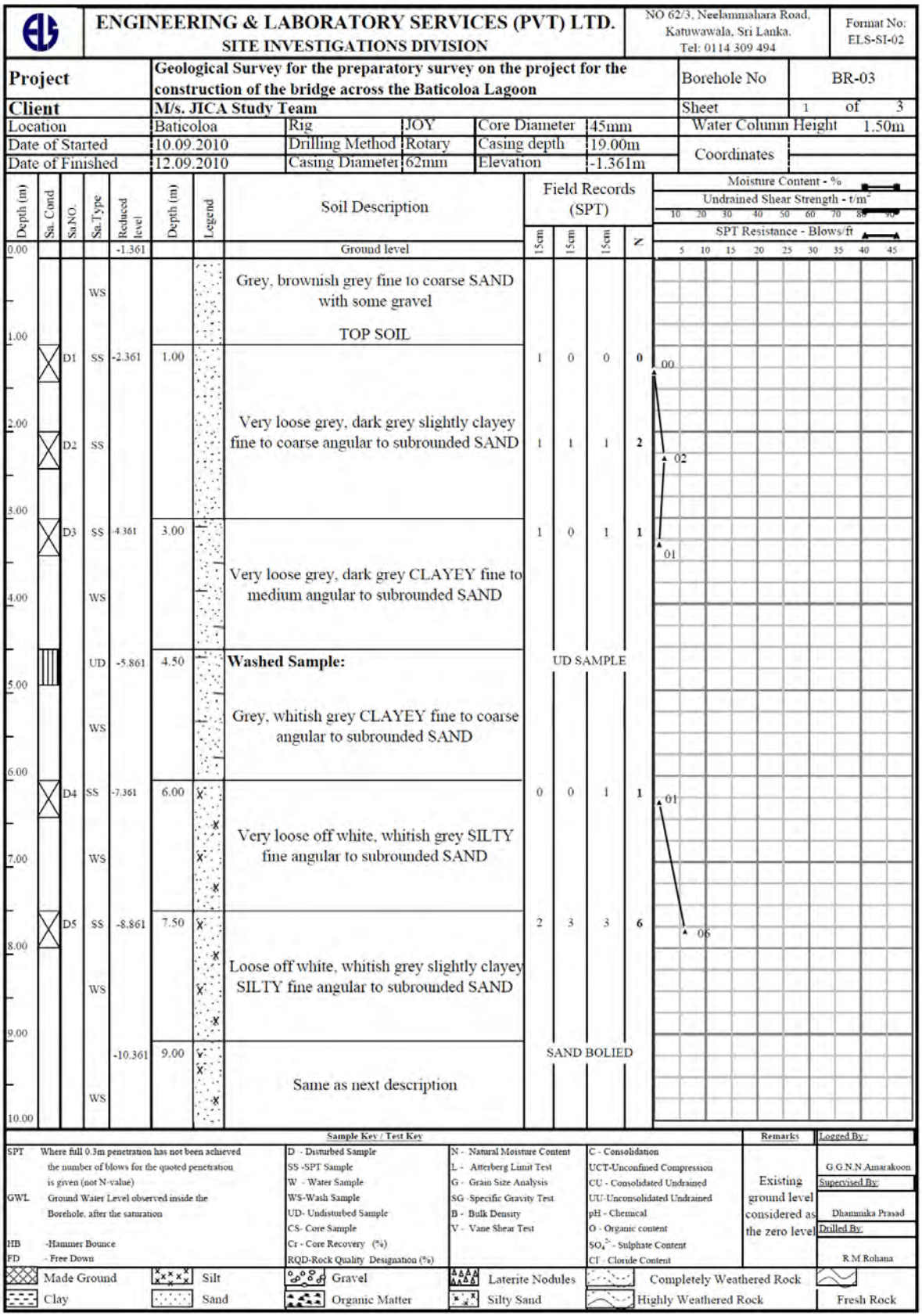
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample SS -SPT Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample CS- Core Sample Cr - Core Recovery (%) RQD-Rock Quality Designation (%)	N - Natural Moisture Content L - Atterberg Limit Test G - Grain Size Analysis SG -Specific Gravity Test B - Bulk Density V - Vane Shear Test	C - Consolidation UCT-Unconfined Compression CU - Consolidated Undrained UU-Unconsolidated Undrained pH - Chemical O - Organic content SO_4^{2-} - Sulphate Content Cl - Cloride Content
GWL	Ground Water Level observed inside the Borehole, after the saturation			
HB	-Hammer Bounce			
FD	- Free Down			

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-03
Client	**M/s. JICA Study Team**	Sheet	1 of 3
Location	Baticoloa	Rig	JOY
Date of Started	10.09.2010	Drilling Method	Rotary
Date of Finished	12.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	1.50m
Casing depth	19.00m	Coordinates	
Elevation	-1.361m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				-1.361			Ground level				
			WS				Grey, brownish grey fine to coarse SAND with some gravel TOP SOIL				
1.00		D1	SS	-2.361	1.00		Very loose grey, dark grey slightly clayey fine to coarse angular to subrounded SAND	1	0	0	0
2.00		D2	SS					1	1	1	2
3.00		D3	SS	-4.361	3.00		Very loose grey, dark grey CLAYEY fine to medium angular to subrounded SAND	1	0	1	1
4.00			WS								
			UD	-5.861	4.50		**Washed Sample:**		UD SAMPLE		
5.00			WS				Grey, whitish grey CLAYEY fine to coarse angular to subrounded SAND				
6.00		D4	SS	-7.361	6.00		Very loose off white, whitish grey SILTY fine angular to subrounded SAND	0	0	1	1
7.00			WS								
		D5	SS	-8.861	7.50		Loose off white, whitish grey slightly clayey SILTY fine angular to subrounded SAND	2	3	3	6
8.00			WS								
9.00				-10.361	9.00		Same as next description		SAND BOLIED		
10.00			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
GWL – Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
	W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
HB – Hammer Bounce	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
FD – Free Down	UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
	CS- Core Sample	V - Vane Shear Test	O - Organic content
	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

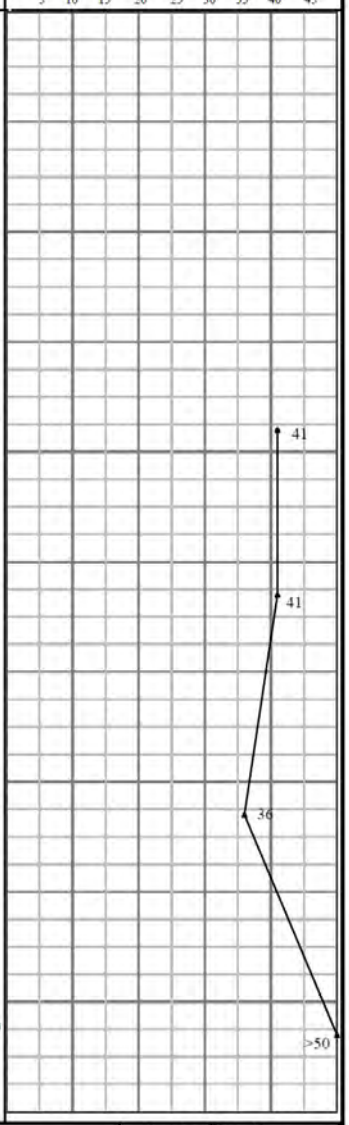
NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-03
Client	**M/s. JICA Study Team**					Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm	Water Column Height	1.50m
Date of Started	10.09.2010	Drilling Method	Rotary	Casing depth	19.00m	Coordinates	
Date of Finished	12.09.2010	Casing Diameter	62mm	Elevation	-1.361m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-11.361			Continue from Page1				
11.00			WS				**Washed Sample:**		SAND BOILED		
12.00							Very loose light grey, whitish grey SILTY fine angular to subrounded SAND with some mica traces		SAND BOILED		
13.00			WS								
14.00		D6	SS	-14.861	13.50		Hard yellowish brown, brownish grey, grey slightly silty PLASTIC CLAY	18	20	21	**41**
15.00			WS								
16.00		D7	SS	-16.361	15.00		Dense yellowish brown, grey slightly clayey SILTY fine to medium angular to subrounded SAND	18	19	22	**41**
17.00			WS								
18.00		D8	SS	-18.361	17.00		**Washed Sample:** Dense whitish grey, light grey fine to medium angular to subrounded SAND with some mica traces	17	18	18	**36**
19.00			WS				**Washed Sample:** Yellowish brown, brownish grey fine to medium angular to subrounded sand with large amount of mica traces		NO SAMPLE		
20.00		D9	SS	-20.361	19.00		COMPLETELY WEATHERED ROCK	10	HB		**>50**
				-20.861	19.50		**ROCK LEVEL**		NO SAMPLE		
							Same as next description				

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-03
Client	**M/s. JICA Study Team**	Sheet	3 of 3
Location	Baticoloa	Rig	JOY
Date of Started	10.09.2010	Drilling Method	Rotary
Date of Finished	12.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	1.50m
Casing depth	19.00m	Coordinates	
Elevation	-1.361m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-21.361			Continue from Page 2				
			CS				Pinkish brown, whitish yellow, greenish grey medium grained, highly fractured, strongly discoloured GRANITIC GNEISS	Cr=50%		RQD=6%	
21.00				-22.361	21.00		Pinkish brown, whitish yellow, greenish grey medium grained, highly fractured, strongly discoloured GRANITIC GNEISS	Cr=85%		RQD=0%	
			CS								
22.00				-23.361	22.00		The borehole was terminated at a depth of 22.00m				
23.00											
24.00											
25.00											
26.00											
27.00											
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

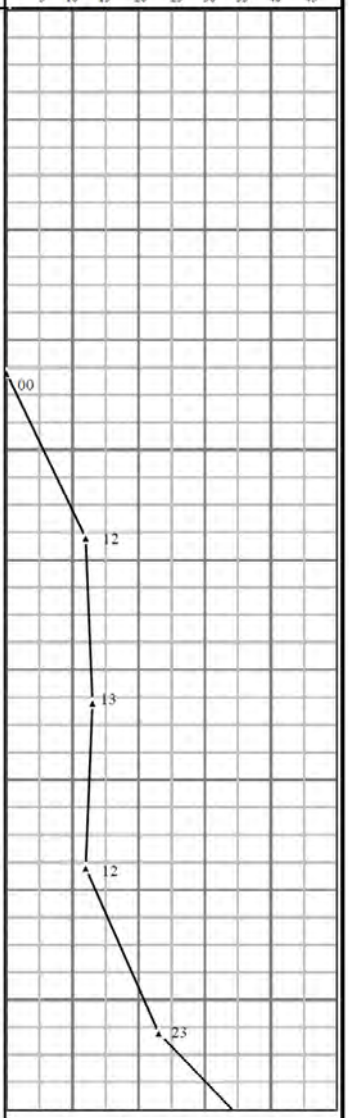
Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-04
Client	**M/s. JICA Study Team**			Sheet	1 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	05.09.2010	Drilling Method	Rotary	Casing depth	21.00m
Date of Finished	08.09.2010	Casing Diameter	62mm	Elevation	-2.481m

Water Column Height 2.40m
Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				-2.481			Ground level				
			WS				**Whashed Sample:**				
1.00											
2.00							Very loose whitish grey, whitish brown fine to coarse angular to subrounded SAND				
3.00		D1	SS					0	0	0	**0**
								FREE DOWN			
4.00			WS								
		D2	SS	-6.981	4.50			4	4	8	**12**
5.00							Medium dense whitish grey, light brown fine to coarse SAND				
			WS								
6.00		D3	SS					7	6	7	**13**
							(6.45-7.50)m sample colour changed to whitish brown, light whitish grey colour				
7.00			WS								
		D4	SS	-9.981	7.50			5	7	5	**12**
8.00							Medium dense whitish grey, light grey SILTY fine angular to subrounded SAND with shell fragments				
			WS								
9.00		D5	SS					5	10	13	**23**
							(9.00-9.45)m sample consisted with some mica traces				
10.00			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



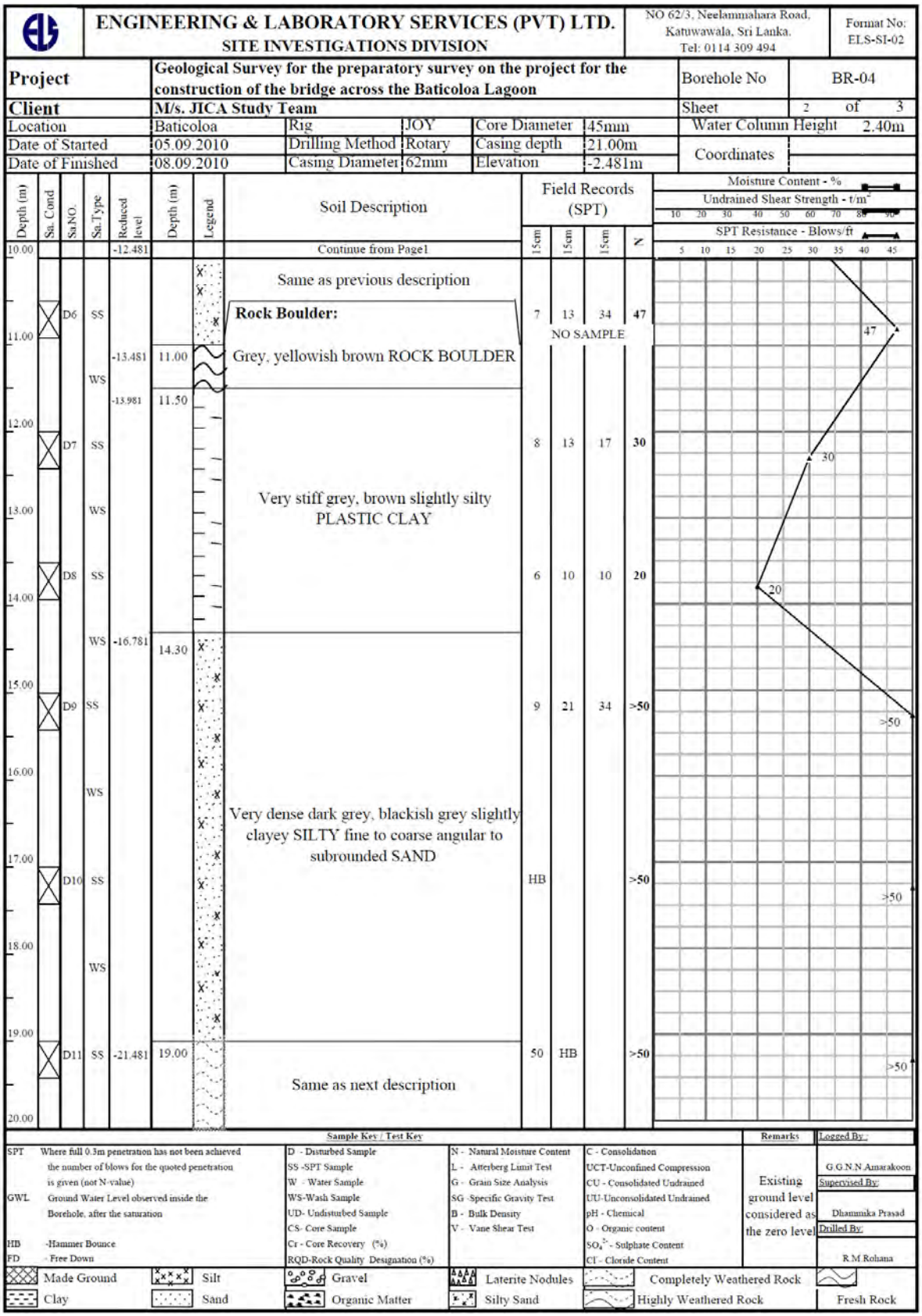
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-04
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	145mm
Date of Started	05.09.2010	Drilling Method	Rotary	Casing depth	21.00m
Date of Finished	08.09.2010	Casing Diameter	162mm	Elevation	-2.481m

Water Column Height 2.40m

Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-12.481			Continue from Page1				
							Same as previous description				
11.00		D6	SS				**Rock Boulder:**	7	13	34	47
									NO SAMPLE		
				-13.481	11.00		Grey, yellowish brown ROCK BOULDER				
			WS	-13.981	11.50						
12.00		D7	SS					8	13	17	30
13.00			WS				Very stiff grey, brown slightly silty PLASTIC CLAY				
14.00		D8	SS					6	10	10	20
			WS	-16.781	14.30						
15.00		D9	SS					9	21	34	>50
16.00			WS				Very dense dark grey, blackish grey slightly clayey SILTY fine to coarse angular to subrounded SAND				
17.00		D10	SS					HB			>50
18.00			WS								
19.00		D11	SS	-21.481	19.00			50	HB		>50
							Same as next description				
20.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation	
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression	
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained	
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained	
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical	
		CS- Core Sample	V - Vane Shear Test	O - Organic content	
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content	
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content	

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-04
Client	**M/s. JICA Study Team**	Sheet	3 of 3
Location	Baticoloa	Rig	JOY
Date of Started	05.09.2010	Drilling Method	Rotary
Date of Finished	08.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	2.40m
Casing depth	21.00m	Coordinates	
Elevation	-2.481m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-22.481			Continue from Page 2				
21.00			WS				Yellowish brown, grey medium to coarse angular to subrounded sand with mica and weathered rock fragments Mica content increased with the depth COMPLETELY WEATHERED ROCK **ROCK LEVEL**				
22.00			CS	-23.981	21.50		Yellowish brown, whitish grey, blackish grey medium grained, highly fractured, strongly discoloured BIOTITE GNEISS	Cr=35%		RQD=0%	
23.00			CS	-25.481	23.00		Yellowish brown, whitish grey, blackish grey medium grained, highly fractured, strongly discoloured BIOTITE GNEISS	Cr=60%		RQD=0%	
24.00				-26.481	24.00		The borehole was terminated at a depth of 24.00m				
25.00											
26.00											
27.00											
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)
GWL – Ground Water Level observed inside the Borehole, after the saturation
HB – Hammer Bounce
FD – Free Down

D - Disturbed Sample
SS -SPT Sample
W - Water Sample
WS-Wash Sample
UD- Undisturbed Sample
CS- Core Sample
Cr - Core Recovery (%)
RQD-Rock Quality Designation (%)

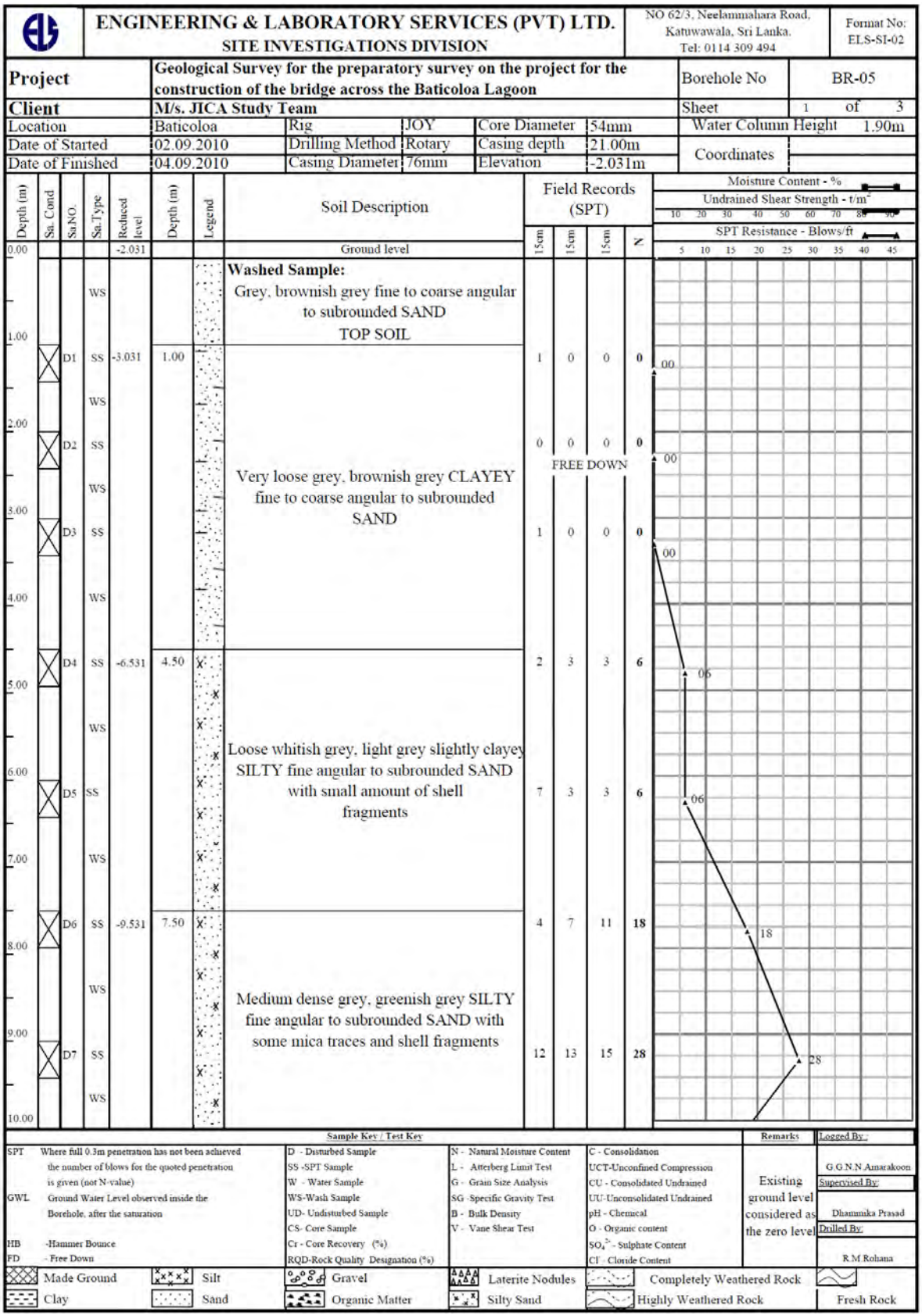
N - Natural Moisture Content
L - Atterberg Limit Test
G - Grain Size Analysis
SG -Specific Gravity Test
B - Bulk Density
V - Vane Shear Test

C - Consolidation
UCT-Unconfined Compression
CU - Consolidated Undrained
UU-Unconsolidated Undrained
pH - Chemical
O - Organic content
SO_4^{2-} - Sulphate Content
Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-05
Client	**M/s. JICA Study Team**	Sheet	1 of 3
Location	Baticoloa	Rig: JOY	Core Diameter: 54mm
Date of Started	02.09.2010	Drilling Method: Rotary	Casing depth: 21.00m
Date of Finished	04.09.2010	Casing Diameter: 76mm	Elevation: -2.031m
Water Column Height	1.90m	Coordinates	

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				-2.031			Ground level				
			WS				**Washed Sample:** Grey, brownish grey fine to coarse angular to subrounded SAND TOP SOIL				
1.00											
		D1	SS	-3.031	1.00			1	0	0	0
			WS								
2.00											
		D2	SS					0	0	0	0
			WS				Very loose grey, brownish grey CLAYEY fine to coarse angular to subrounded SAND	FREE DOWN			
3.00											
		D3	SS					1	0	0	0
4.00			WS								
		D4	SS	-6.531	4.50			2	3	3	6
5.00											
			WS								
6.00							Loose whitish grey, light grey slightly clayey SILTY fine angular to subrounded SAND with small amount of shell fragments				
		D5	SS					7	3	3	6
7.00			WS								
		D6	SS	-9.531	7.50			4	7	11	18
8.00											
			WS				Medium dense grey, greenish grey SILTY fine angular to subrounded SAND with some mica traces and shell fragments				
9.00											
		D7	SS					12	13	15	28
10.00			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

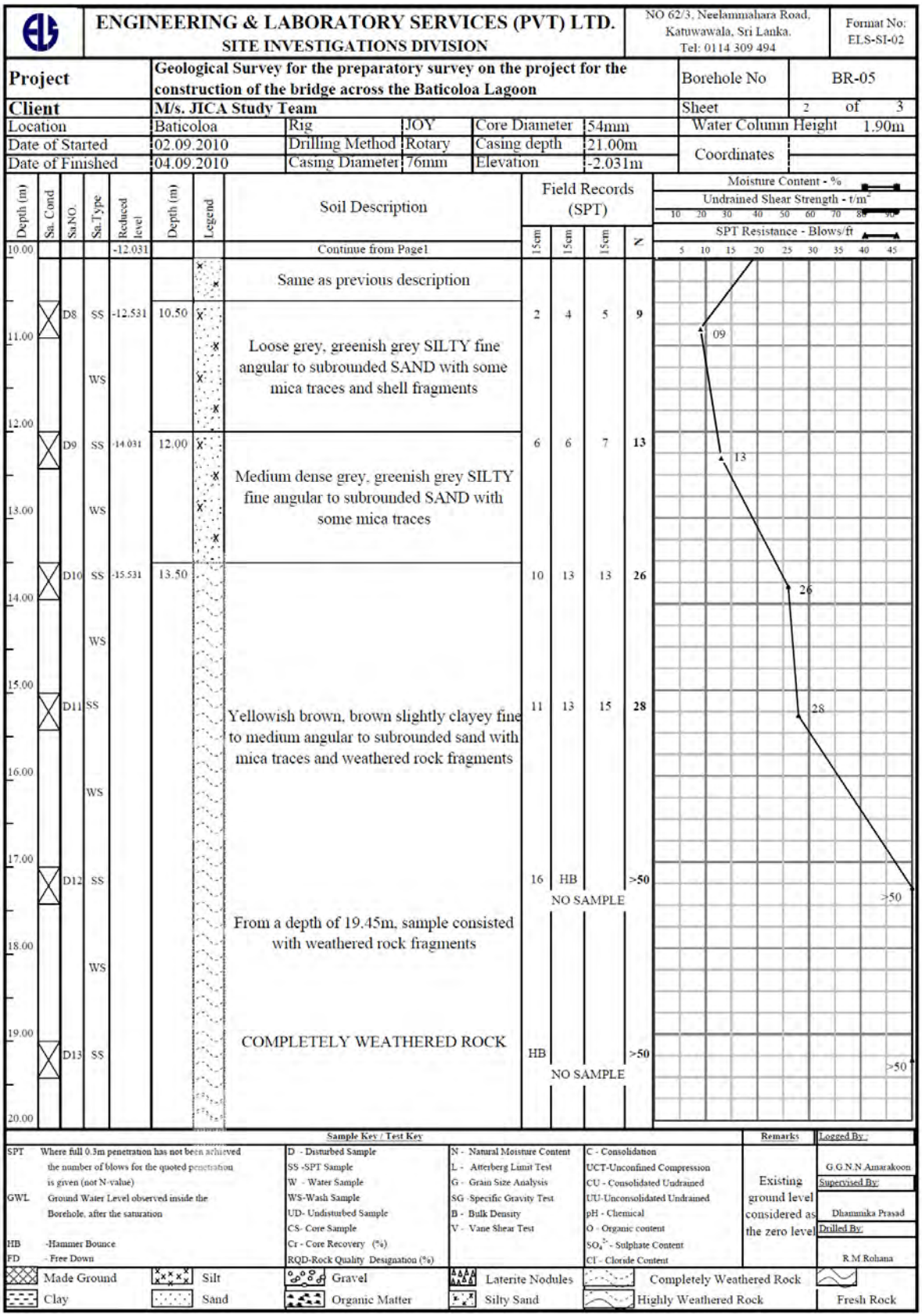
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
GWL	Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
		WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-05
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	54mm
Date of Started	02.09.2010	Drilling Method	Rotary	Casing depth	21.00m
Date of Finished	04.09.2010	Casing Diameter	76mm	Elevation	-2.031m

Water Column Height 1.90m

Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-12.031			Continue from Page1				
							Same as previous description				
11.00		D8	SS	-12.531	10.50		Loose grey, greenish grey SILTY fine angular to subrounded SAND with some mica traces and shell fragments	2	4	5	9
			WS								
12.00		D9	SS	-14.031	12.00		Medium dense grey, greenish grey SILTY fine angular to subrounded SAND with some mica traces	6	6	7	13
13.00			WS								
14.00		D10	SS	-15.531	13.50		Yellowish brown, brown slightly clayey fine to medium angular to subrounded sand with mica traces and weathered rock fragments	10	13	13	26
			WS								
15.00		D11	SS					11	13	15	28
16.00			WS								
17.00		D12	SS					16	HB		>50
								NO SAMPLE			
							From a depth of 19.45m, sample consisted with weathered rock fragments				
18.00			WS								
19.00		D13	SS				COMPLETELY WEATHERED ROCK	HB			>50
								NO SAMPLE			
20.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-05
Client	**M/s. JICA Study Team**					Sheet	3 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	54mm	Water Column Height	1.90m
Date of Started	02.09.2010	Drilling Method	Rotary	Casing depth	21.00m	Coordinates	
Date of Finished	04.09.2010	Casing Diameter	76mm	Elevation	-2.031m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N	Moisture Content - % / Undrained Shear Strength - t/m² / SPT Resistance - Blows/ft
20.00				-22.031			Continue from Page 2					
21.00			WS				Same as previous description **ROCK LEVEL**					
22.00			CS	-23.711	21.68		Black, whitish grey medium grained, highly fractured, discoloured BIOTITE GNEISS	Cr=50%		RQD=15%		
24.00			CS	-25.711	23.68		Black, whitish grey medium grained, highly fractured, discoloured BIOTITE GNEISS	Cr=100%		RQD=22%		
25.00				-26.711	24.68		The borehole was terminated at a depth of 24.00m					
26.00												
27.00												
28.00												
29.00												
30.00												

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample SS -SPT Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample CS- Core Sample Cr - Core Recovery (%) RQD-Rock Quality Designation (%)	N - Natural Moisture Content L - Atterberg Limit Test G - Grain Size Analysis SG -Specific Gravity Test B - Bulk Density V - Vane Shear Test	C - Consolidation UCT-Unconfined Compression CU - Consolidated Undrained UU-Unconsolidated Undrained pH - Chemical O - Organic content SO_4^{2-} - Sulphate Content Cl - Cloride Content
GWL	Ground Water Level observed inside the Borehole, after the saturation			
HB	-Hammer Bounce			
FD	- Free Down			

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

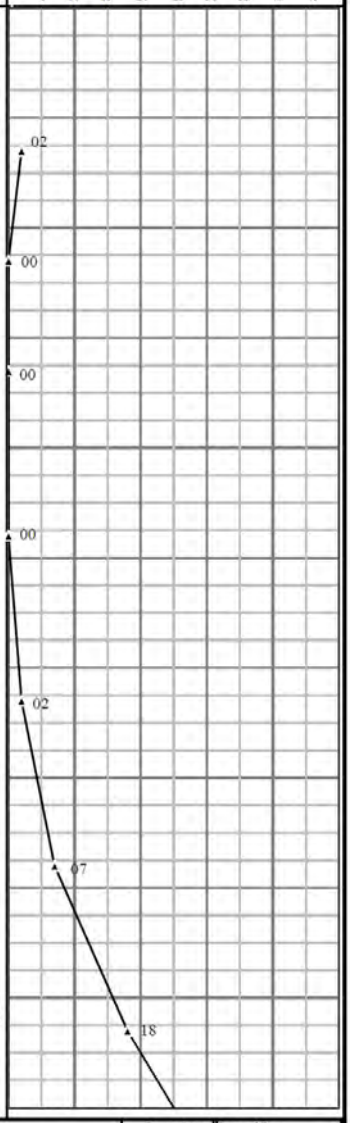
Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-06
Client	**M/s. JICA Study Team**			Sheet	1 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	08.09.2010	Drilling Method	Rotary	Casing depth	18.00m
Date of Finished	15.09.2010	Casing Diameter	62mm	Elevation	+ 0.80m

Ground Water level 0.85m
Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				+0.80			Ground level				
			WS	-0.05	GWL at 0.85m		Whitish grey, light brownish white fine to coarse SAND with some coral rock fragments TOP SOIL				
1.00		D1	SS	-0.10	0.90			3	2	0	2
			WS								
2.00		D2	SS				Very loose grey fine to medium angular to subrounded SAND with some coral rock fragments	0	0	0	0
			WS								
3.00		D3	SS					1	0	0	0
			WS								
4.00		D4	SS	-3.80	4.60			1	0	0	0
5.00			WS								
6.00		D5	SS				Very loose whitish grey, off white fine to coarse angular to subrounded SAND with some coral rock parts	1	1	1	2
			WS								
7.00		D6	SS	-6.70	7.50			2	3	4	7
8.00			WS				Loose whitish grey, off white fine to coarse angular to subrounded SAND				
9.00		D7	SS	-8.20	9.00		Medium dense whitish grey, off white SILTY fine angular to subrounded SNAD with some mica traces	7	9	9	18
10.00			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



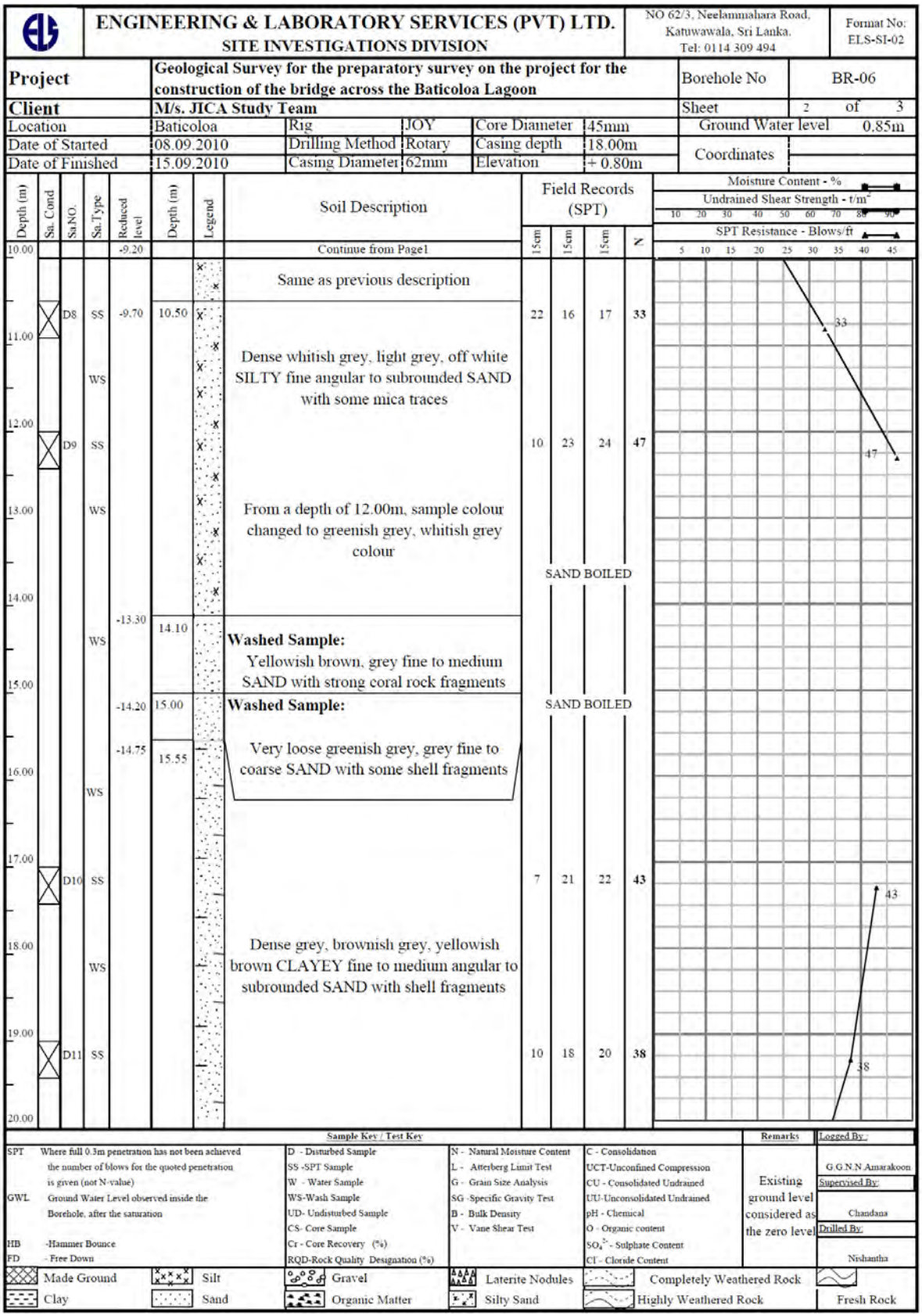
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-06
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	08.09.2010	Drilling Method	Rotary	Casing depth	18.00m
Date of Finished	15.09.2010	Casing Diameter	62mm	Elevation	+ 0.80m

Ground Water level 0.85m

Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-9.20			Continue from Page1				
							Same as previous description				
11.00		D8	SS	-9.70	10.50		Dense whitish grey, light grey, off white SILTY fine angular to subrounded SAND with some mica traces	22	16	17	33
			WS								
12.00		D9	SS					10	23	24	47
13.00			WS				From a depth of 12.00m, sample colour changed to greenish grey, whitish grey colour				
14.00									SAND BOILED		
			WS	-13.30	14.10		**Washed Sample:** Yellowish brown, grey fine to medium SAND with strong coral rock fragments				
15.00				-14.20	15.00		**Washed Sample:**		SAND BOILED		
				-14.75	15.55		Very loose greenish grey, grey fine to coarse SAND with some shell fragments				
16.00			WS								
17.00		D10	SS					7	21	22	43
18.00			WS				Dense grey, brownish grey, yellowish brown CLAYEY fine to medium angular to subrounded SAND with shell fragments				
19.00		D11	SS					10	18	20	38
20.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

33
47
43
38

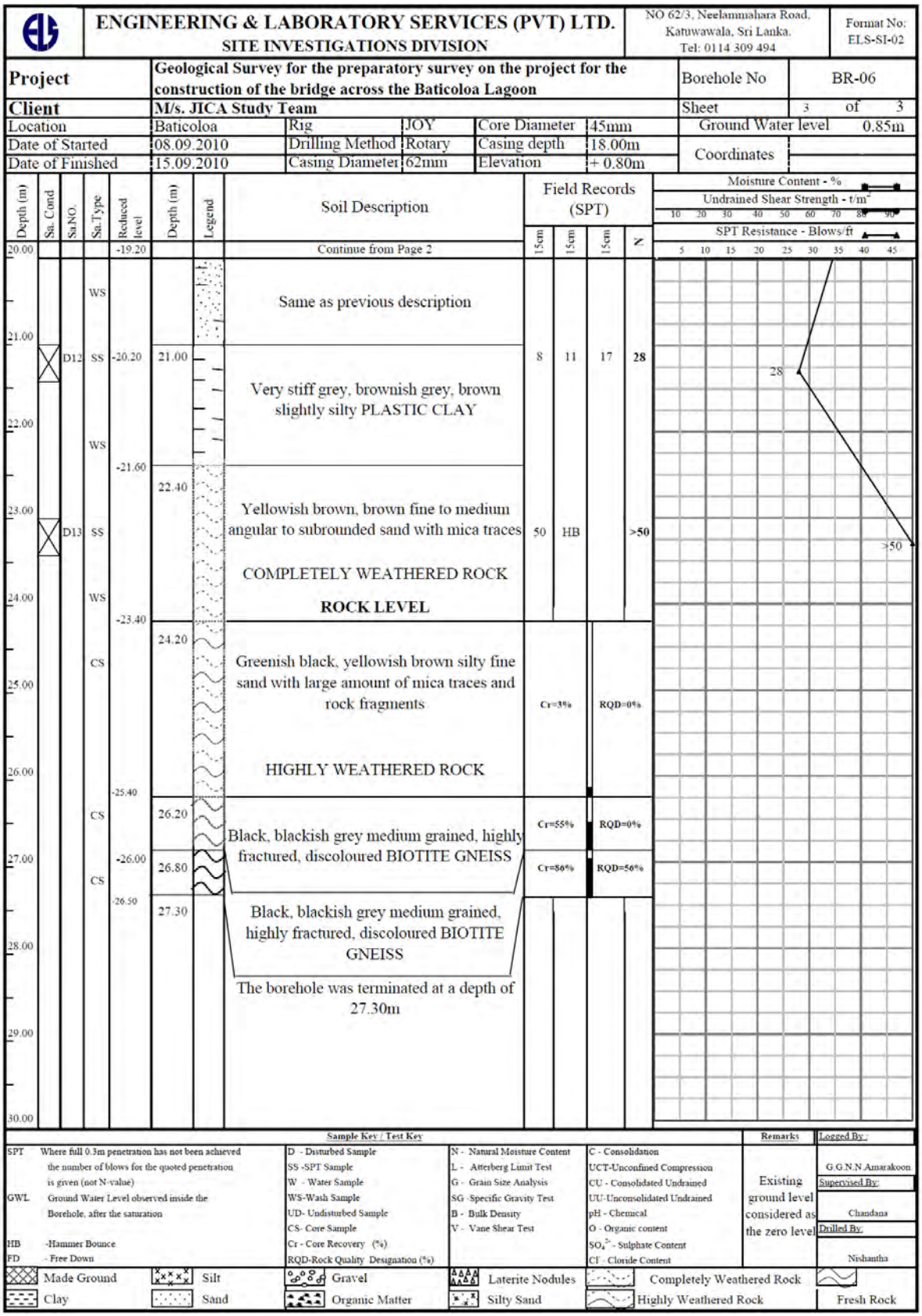
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-06
Client	**M/s. JICA Study Team**					Sheet	3 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm	Ground Water level	0.85m
Date of Started	08.09.2010	Drilling Method	Rotary	Casing depth	18.00m	Coordinates	
Date of Finished	15.09.2010	Casing Diameter	62mm	Elevation	+ 0.80m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-19.20			Continue from Page 2				
			WS				Same as previous description				
21.00											
		D12	SS	-20.20	21.00		Very stiff grey, brownish grey, brown slightly silty PLASTIC CLAY	8	11	17	28
22.00			WS	-21.60							
					22.40		Yellowish brown, brown fine to medium angular to subrounded sand with mica traces	50	HB		>50
23.00		D13	SS				COMPLETELY WEATHERED ROCK				
24.00			WS	-23.40			**ROCK LEVEL**				
					24.20		Greenish black, yellowish brown silty fine sand with large amount of mica traces and rock fragments	Cr=3%		RQD=0%	
25.00			CS								
26.00							HIGHLY WEATHERED ROCK				
				-25.40							
			CS		26.20		Black, blackish grey medium grained, highly fractured, discoloured BIOTITE GNEISS	Cr=55%		RQD=0%	
27.00				-26.00	26.80			Cr=86%		RQD=56%	
			CS	-26.50							
					27.30		Black, blackish grey medium grained, highly fractured, discoloured BIOTITE GNEISS				
28.00							The borehole was terminated at a depth of 27.30m				
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

28
>50

Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)
GWL – Ground Water Level observed inside the Borehole, after the saturation
HB – Hammer Bounce
FD – Free Down

D - Disturbed Sample
SS - SPT Sample
W - Water Sample
WS - Wash Sample
UD - Undisturbed Sample
CS - Core Sample
Cr - Core Recovery (%)
RQD - Rock Quality Designation (%)

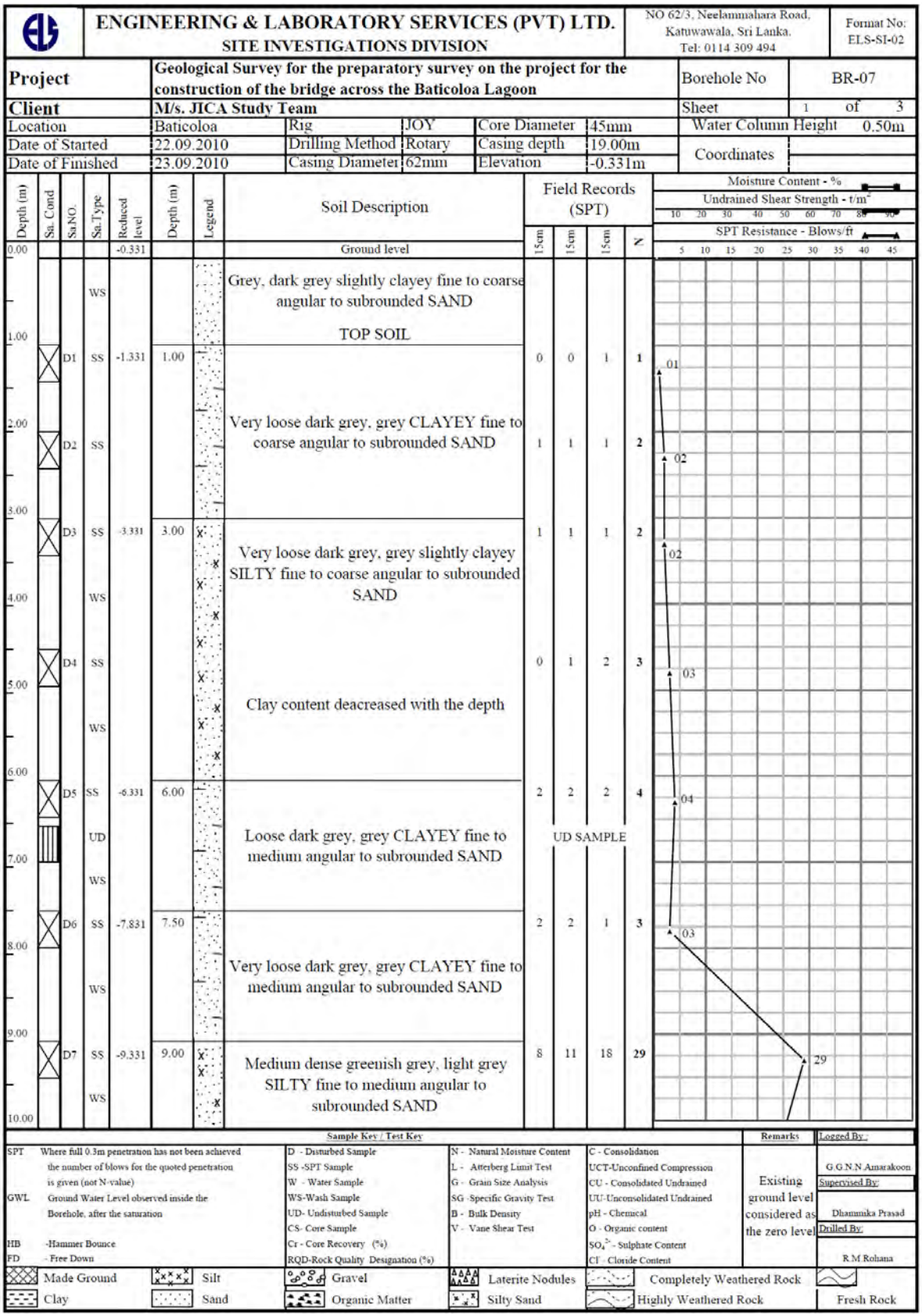
N - Natural Moisture Content
L - Atterberg Limit Test
G - Grain Size Analysis
SG - Specific Gravity Test
B - Bulk Density
V - Vane Shear Test

C - Consolidation
UCT - Unconfined Compression
CU - Consolidated Undrained
UU - Unconsolidated Undrained
pH - Chemical
O - Organic content
SO_4^{2-} - Sulphate Content
Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-07
Client	**M/s. JICA Study Team**	Sheet	1 of 3
Location	Baticoloa	Rig	JOY
Date of Started	22.09.2010	Drilling Method	Rotary
Date of Finished	23.09.2010	Casing Diameter	62mm
Core Diameter	45mm	Water Column Height	0.50m
Casing depth	19.00m	Coordinates	
Elevation	-0.331m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				-0.331			Ground level				
1.00			WS				Grey, dark grey slightly clayey fine to coarse angular to subrounded SAND TOP SOIL				
2.00		D1	SS	-1.331	1.00		Very loose dark grey, grey CLAYEY fine to coarse angular to subrounded SAND	0	0	1	1
3.00		D2	SS					1	1	1	2
4.00		D3	SS	-3.331	3.00		Very loose dark grey, grey slightly clayey SILTY fine to coarse angular to subrounded SAND	1	1	1	2
5.00			WS								
6.00		D4	SS				Clay content deacreased with the depth	0	1	2	3
7.00		D5	SS	-6.331	6.00		Loose dark grey, grey CLAYEY fine to medium angular to subrounded SAND	2	2	2	4
			UD					UD SAMPLE			
			WS								
8.00		D6	SS	-7.831	7.50		Very loose dark grey, grey CLAYEY fine to medium angular to subrounded SAND	2	2	1	3
9.00			WS								
10.00		D7	SS	-9.331	9.00		Medium dense greenish grey, light grey SILTY fine to medium angular to subrounded SAND	8	11	18	29
			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

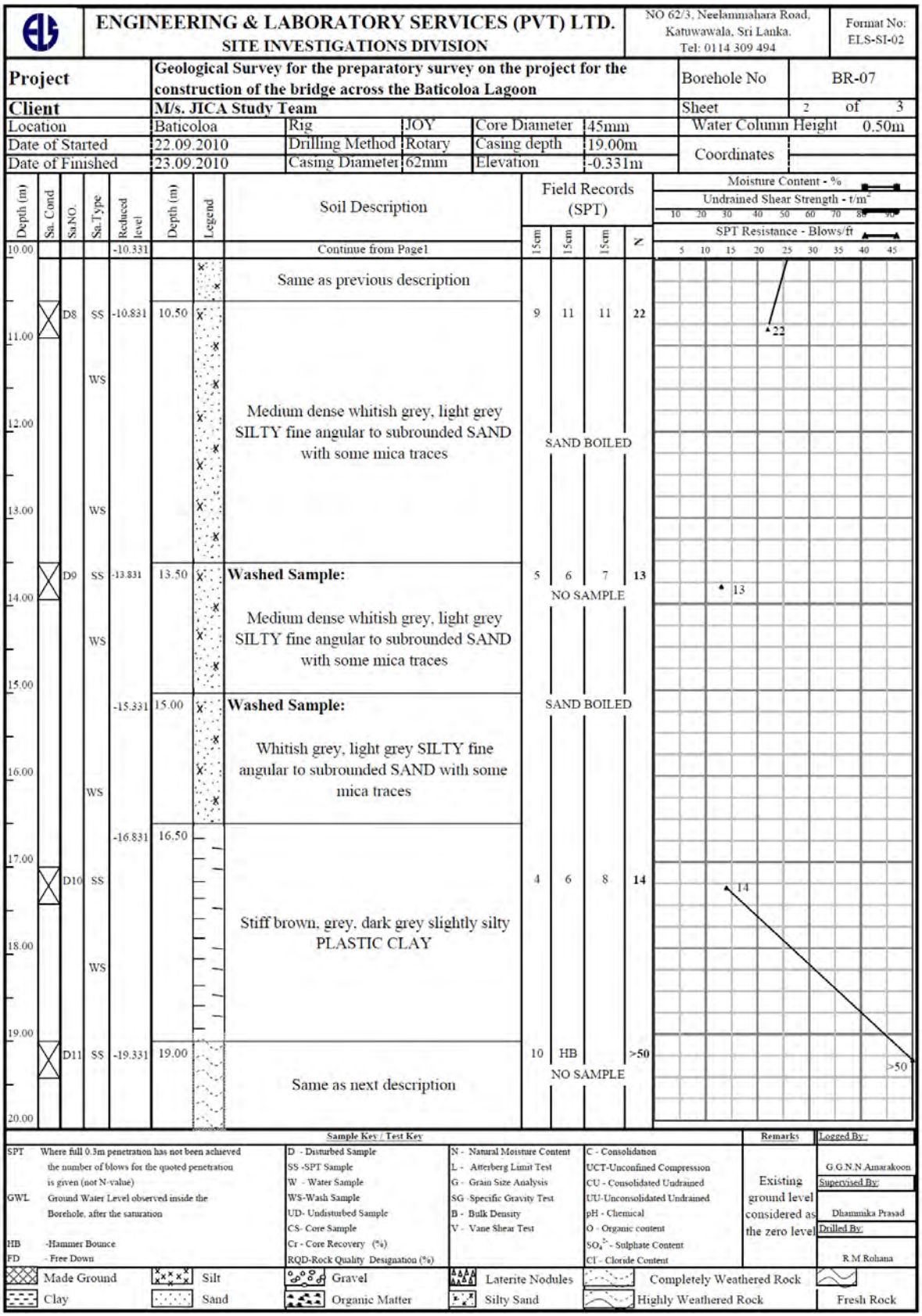
Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample SS -SPT Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample CS- Core Sample Cr - Core Recovery (%) RQD-Rock Quality Designation (%)	N - Natural Moisture Content L - Atterberg Limit Test G - Grain Size Analysis SG -Specific Gravity Test B - Bulk Density V - Vane Shear Test	C - Consolidation UCT-Unconfined Compression CU - Consolidated Undrained UU-Unconsolidated Undrained pH - Chemical O - Organic content SO_4^{2-} - Sulphate Content Cl - Cloride Content
GWL	Ground Water Level observed inside the Borehole, after the saturation			
HB	-Hammer Bounce			
FD	- Free Down			

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**			Borehole No	BR-07
Client	**M/s. JICA Study Team**			Sheet	2 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm
Date of Started	22.09.2010	Drilling Method	Rotary	Casing depth	19.00m
Date of Finished	23.09.2010	Casing Diameter	62mm	Elevation	-0.331m

Water Column Height 0.50m

Coordinates

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-10.331			Continue from Page1				
							Same as previous description				
11.00		D8	SS	-10.831	10.50			9	11	11	22
			WS				Medium dense whitish grey, light grey SILTY fine angular to subrounded SAND with some mica traces		SAND BOILED		
12.00											
13.00			WS								
		D9	SS	-13.831	13.50		**Washed Sample:**	5	6	7	13
14.00									NO SAMPLE		
			WS				Medium dense whitish grey, light grey SILTY fine angular to subrounded SAND with some mica traces				
15.00											
				-15.331	15.00		**Washed Sample:**		SAND BOILED		
16.00			WS				Whitish grey, light grey SILTY fine angular to subrounded SAND with some mica traces				
				-16.831	16.50						
17.00		D10	SS					4	6	8	14
							Stiff brown, grey, dark grey slightly silty PLASTIC CLAY				
18.00			WS								
19.00		D11	SS	-19.331	19.00			10	HB		>50
							Same as next description		NO SAMPLE		
20.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

Sample Key / Test Key

SPT Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
GWL Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
	W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
HB -Hammer Bounce	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
FD - Free Down	UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
	CS- Core Sample	V - Vane Shear Test	O - Organic content
	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-07
Client	**M/s. JICA Study Team**					Sheet	3 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm	Water Column Height	0.50m
Date of Started	22.09.2010	Drilling Method	Rotary	Casing depth	19.00m	Coordinates	
Date of Finished	23.09.2010	Casing Diameter	62mm	Elevation	-0.331m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-20.331			Continue from Page 2				
			WS				Blackish grey, dark grey, yellowish brown fine to medium angular to subrounded sand with large amount of mica traces				
21.00		D12	SS					HB			>50
			WS				COMPLETELY WEATHERED ROCK				
22.00							**ROCK LEVEL**				
				-23.031	22.70						
23.00			CS				Yellowish brown, cream, black medium grained, highly fractured, strongly fractured BIOTITE GNEISS	Cr=54%		RQD=0%	
24.00				24.531	24.20						
			CS				Yellowish brown, cream, black medium grained, highly fractured, strongly fractured BIOTITE GNEISS	Cr=67%		RQD=8%	
25.00				26.031	25.70		The borehole was terminated at a depth of 25.70m				
26.00											
27.00											
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45
>50

Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)
GWL – Ground Water Level observed inside the Borehole, after the saturation
HB – Hammer Bounce
FD – Free Down

D - Disturbed Sample
SS - SPT Sample
W - Water Sample
WS-Wash Sample
UD- Undisturbed Sample
CS- Core Sample
Cr - Core Recovery (%)
RQD-Rock Quality Designation (%)

N - Natural Moisture Content
L - Atterberg Limit Test
G - Grain Size Analysis
SG -Specific Gravity Test
B - Bulk Density
V - Vane Shear Test

C - Consolidation
UCT-Unconfined Compression
CU - Consolidated Undrained
UU-Unconsolidated Undrained
pH - Chemical
O - Organic content
SO_4^{2-} - Sulphate Content
Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Dhammika Prasad
Drilled By: R.M.Rohana

Made Ground, Clay, Silt, Sand, Gravel, Organic Matter, Laterite Nodules, Silty Sand, Completely Weathered Rock, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

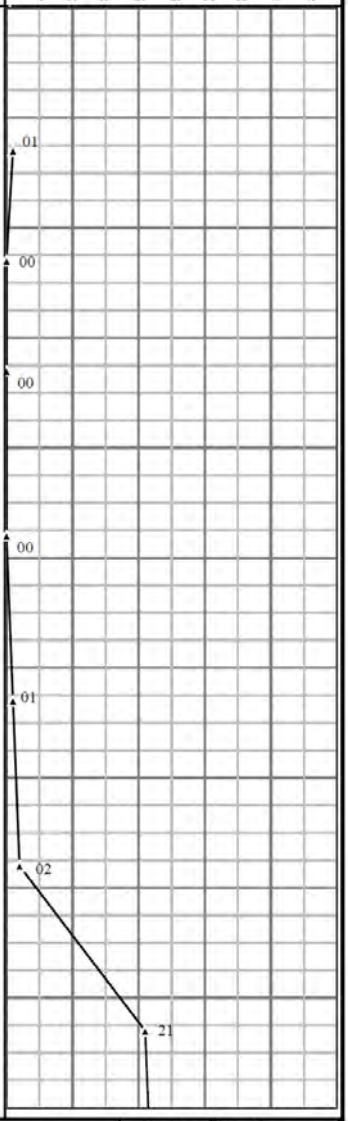
NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-08
Client	**M/s. JICA Study Team**	Sheet	1 of 3
Location	Baticoloa	Rig	JOY
Date of Started	26.08.2010	Drilling Method	Rotary
Date of Finished	27.08.2010	Casing Diameter	62mm
Core Diameter	45mm	Ground Water level	0.30m
Casing depth	22.00m	Coordinates	
Elevation	+ 0.74m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
0.00				+0.74			Ground level				
		D1	DS	+0.54	GWL at 0.20m		Dark brown, blackish brown fine to coarse anguar to subrounded SAND with some plant roots TOP SOIL				
1.00		D2	SS	-0.31	1.05			1	1	0	1
			WS								
2.00		D3	SS					1	0	0	0
			WS				Very loose grey, brownish grey slightly organic clayey fine to coarse SAND				
3.00		D4	SS					1	0	0	0
4.00			WS								
		D5	SS					1	0	0	0
5.00			WS				Clay content increased with the depth				
6.00		D6	SS					0	0	1	1
7.00			WS				(7.50-7.95)m sample colour changed to whitish grey, light grey colour				
		D7	SS					1	1	1	2
8.00			WS								
				-7.86	8.60						
9.00		D8	SS				Medium dense whitish grey, light grey CLAYEY fine angular to subrounded SAND	5	8	13	21
10.00			WS								

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft



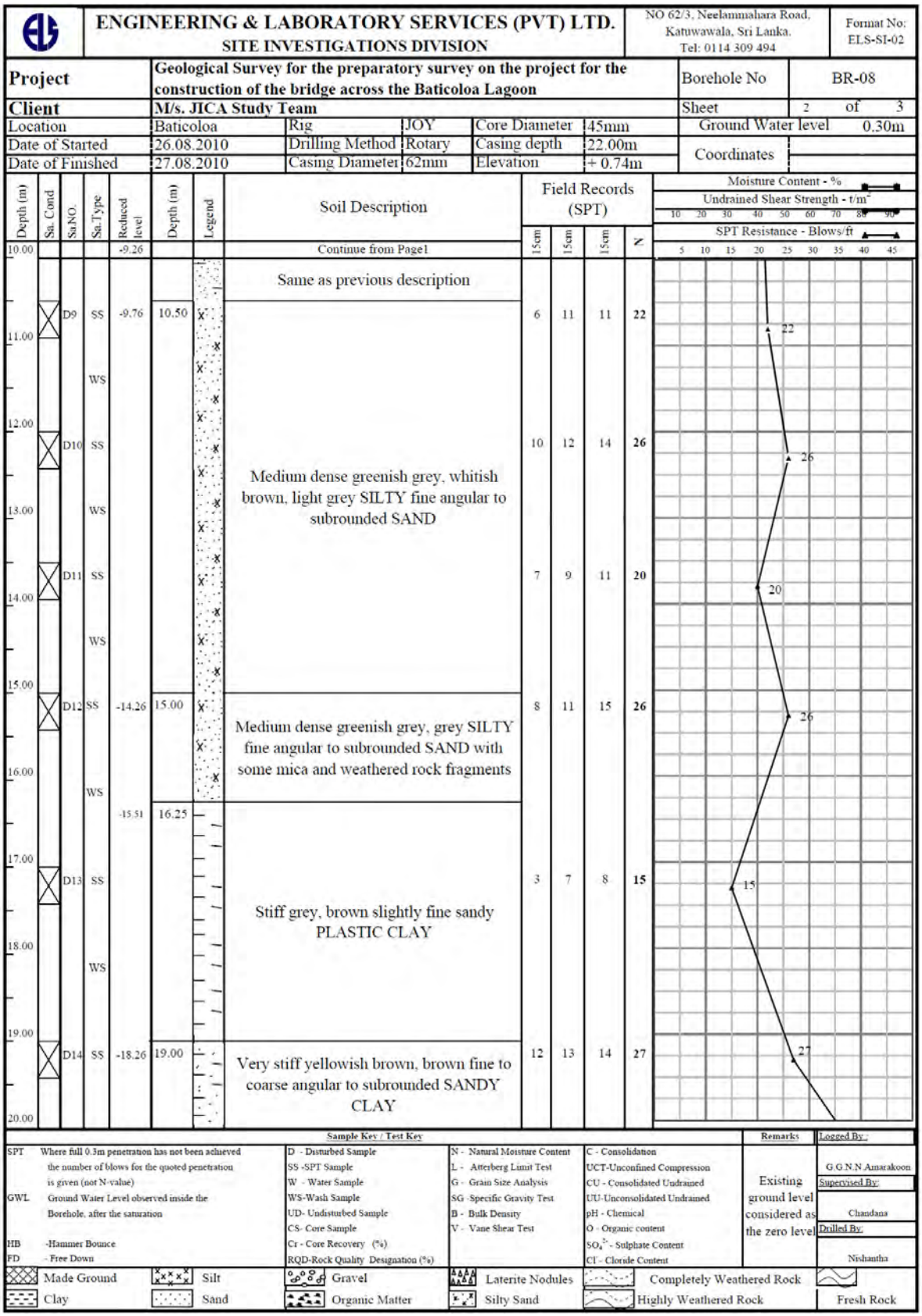
Sample Key / Test Key

SPT – Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
GWL – Ground Water Level observed inside the Borehole, after the saturation	SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
	W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
HB -Hammer Bounce	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
FD - Free Down	UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
	CS- Core Sample	V - Vane Shear Test	O - Organic content
	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground | Silt | Gravel | Laterite Nodules | Completely Weathered Rock
Clay | Sand | Organic Matter | Silty Sand | Highly Weathered Rock | Fresh Rock



ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road, Katuwawala, Sri Lanka. Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**	Borehole No	BR-08
Client	**M/s. JICA Study Team**	Sheet	2 of 3
Location	Baticoloa	Rig: JOY	Core Diameter: 45mm
Date of Started	26.08.2010	Drilling Method: Rotary	Casing depth: 22.00m
Date of Finished	27.08.2010	Casing Diameter: 62mm	Elevation: + 0.74m
Ground Water level	0.30m	Coordinates	

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
10.00				-9.26			Continue from Page1				
							Same as previous description				
11.00		D9	SS	-9.76	10.50			6	11	11	22
			WS								
12.00		D10	SS				Medium dense greenish grey, whitish brown, light grey SILTY fine angular to subrounded SAND	10	12	14	26
13.00			WS								
14.00		D11	SS					7	9	11	20
			WS								
15.00		D12	SS	-14.26	15.00		Medium dense greenish grey, grey SILTY fine angular to subrounded SAND with some mica and weathered rock fragments	8	11	15	26
16.00			WS								
				-15.51	16.25						
17.00		D13	SS				Stiff grey, brown slightly fine sandy PLASTIC CLAY	3	7	8	15
18.00			WS								
19.00		D14	SS	-18.26	19.00		Very stiff yellowish brown, brown fine to coarse angular to subrounded SANDY CLAY	12	13	14	27
20.00											

Moisture Content - %
Undrained Shear Strength - t/m²
SPT Resistance - Blows/ft

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

ENGINEERING & LABORATORY SERVICES (PVT) LTD.
SITE INVESTIGATIONS DIVISION

NO 62/3, Neelammahara Road,
Katuwawala, Sri Lanka.
Tel: 0114 309 494

Format No: ELS-SI-02

Project	**Geological Survey for the preparatory survey on the project for the construction of the bridge across the Baticoloa Lagoon**					Borehole No	BR-08
Client	**M/s. JICA Study Team**					Sheet	3 of 3
Location	Baticoloa	Rig	JOY	Core Diameter	45mm	Ground Water level	0.30m
Date of Started	26.08.2010	Drilling Method	Rotary	Casing depth	22.00m	Coordinates	
Date of Finished	27.08.2010	Casing Diameter	62mm	Elevation	+ 0.74m		

Depth (m)	Sa. Cond	Sa.NO.	Sa.Type	Reduced level	Depth (m)	Legend	Soil Description	Field Records (SPT) 15cm	15cm	15cm	N
20.00				-19.26			Continue from Page 2				
			WS	-19.86			Same as previous description				
21.00		D15	SS		20.60		Black, blackish grey medium to coarse angular to subrounded sand with weathered rock fragments	50	HB		>50
22.00			WS								
23.00		D16	SS					50	HB		>50
								NO SAMPLE			
24.00			WS				COMPLETELY WEATHERED ROCK				
				-23.91			**ROCK LEVEL**				
25.00			CS		24.65		Yellowish brown, whitish grey, blackish grey medium grained, highly fractured, dicoloured GRANITIC GNEISS	Cr=40%		RQD=20%	
26.00				-25.41							
			CS		26.15		Yellowish brown, whitish grey, blackish grey medium grained, highly fractured, dicoloured GRANITIC GNEISS	Cr=100%		RQD=65%	
27.00				-26.16	26.90		The borehole was terminated at a depth of 26.90m				
28.00											
29.00											
30.00											

Moisture Content - %
Undrained Shear Strength - t/m²
10 20 30 40 50 60 70 80 90
SPT Resistance - Blows/ft
5 10 15 20 25 30 35 40 45

Sample Key / Test Key

SPT	Where full 0.3m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	D - Disturbed Sample	N - Natural Moisture Content	C - Consolidation
		SS -SPT Sample	L - Atterberg Limit Test	UCT-Unconfined Compression
		W - Water Sample	G - Grain Size Analysis	CU - Consolidated Undrained
GWL	Ground Water Level observed inside the Borehole, after the saturation	WS-Wash Sample	SG -Specific Gravity Test	UU-Unconsolidated Undrained
		UD- Undisturbed Sample	B - Bulk Density	pH - Chemical
		CS- Core Sample	V - Vane Shear Test	O - Organic content
HB	-Hammer Bounce	Cr - Core Recovery (%)		SO_4^{2-} - Sulphate Content
FD	- Free Down	RQD-Rock Quality Designation (%)		Cl - Cloride Content

Remarks: Existing ground level considered as the zero level

Logged By: G.G.N.N.Amarakoon
Supervised By: Chandana
Drilled By: Nishantha

Made Ground, Silt, Gravel, Laterite Nodules, Completely Weathered Rock
Clay, Sand, Organic Matter, Silty Sand, Highly Weathered Rock, Fresh Rock

5.3 Topographic Survey Result

Table Temporary Bench Marks

List of Final Values of Control Points

	Control Point No.	Description	Final Values		
			Northing (m)	Easting (m)	Elevation (m)
1.	GPS – M1	Conc. Nail driven in Pier surface and painted	570,588.428	605,806.904	1.123
2.	GPS – M2	Conc. Nail driven in cemented area around Pulleyar Kovil and painted	570,524.669	605,325.452	1.199
3.	MM - 1	Iron Bolt in Concrete Block	570,782.785	605,852.242	0.747
4.	MM - 2	-do-	570,606.550	605,863.097	0.471
5.	MM - 3	Iron Bolt in Concrete Base of High Tension Electric Tower	570,550.437	605,331.517	1.157

Topographic Survey for The Preparatory Survey (Outline Design Study) on
The Project for the Construction of the Bridge across the Batticoloa Lagoon at Manmunai

SURVEY MARKER DESCRIPTION - PHOTOGRAPHS

Station No: GPS M-1	**N:** 570588.428	**Height:** 1.123	**Surveyed by:** Cha.
Type: Conc. Nail	**E:** 605806.904	**Date:** Aug. 2010	**Checked by:** Muru

Gamini B Dodanwela Associates (Pvt) Ltd.

Land Surveyors

Topographic Survey for The Preparatory Survey (Outline Design Study) on
The Project for the Construction of the Bridge across the Batticoloa Lagoon at Manmunai

SURVEY MARKER DESCRIPTION - PHOTOGRAPHS

Station No: MM - 1	**N:** 570782.785	**Height:** 0.747	**Surveyed by:** Chq.
Type: Iron Bolt	**E:** 605852.242	**Date:** Aug. 2010	**Checked by:** MMW

Gamini B Dodanwela Associates (Pvt) Ltd.

Land Surveyors

Topographic Survey for The Preparatory Survey (Outline Design Study) on
The Project for the Construction of the Bridge across the Batticoloa Lagoon at Manmunai

SURVEY MARKER DESCRIPTION - PHOTOGRAPHS

Station No: MM - 2	**N:** 570606.550	**Height:** 0.471	**Surveyed by:** Cha.
Type: Iron Bolt	**E:** 805863.097	**Date:** Aug. 2010	**Checked by:** Muthu

Gamini B Dodanwela Associates (Pvt) Ltd.

Land Surveyors

Topographic Survey for The Preparatory Survey (Outline Design Study) on
The Project for the Construction of the Bridge across the Batticoloa Lagoon at Manmunai

SURVEY MARKER DESCRIPTION - PHOTOGRAPHS

Station No: GPS M-2	**N:** 570524.669	**Height:** 1.199	**Surveyed by:** Cha.
Type: Conc. Nail	**E:** 605325.452	**Date:** Aug. 2016	**Checked by:** Muhu

Gamini B Dodanwela Associates (Pvt) Ltd.

Land Surveyors

Topographic Survey for The Preparatory Survey (Outline Design Study) on
The Project for the Construction of the Bridge across the Batticoloa Lagoon at Manmunai

SURVEY MARKER DESCRIPTION - PHOTOGRAPHS

Station No: MM – 3	**N:** 570550.437	**Height:** 1-157	**Surveyed by:** Cha.
Type: Iron Bolt	**E:** 605331.517	**Date:** Aug. 2010	**Checked by:** Mohi

Gamini B Dodanwela Associates (Pvt) Ltd.

Land Surveyors