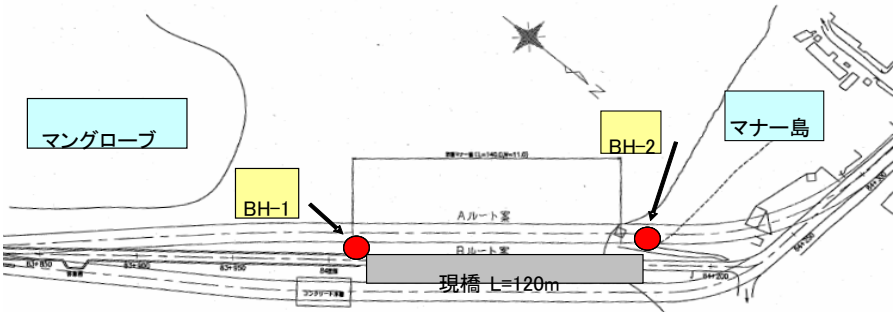
8.　その他の資料・情報

8-1　地質調査

1)　地質調査位置図



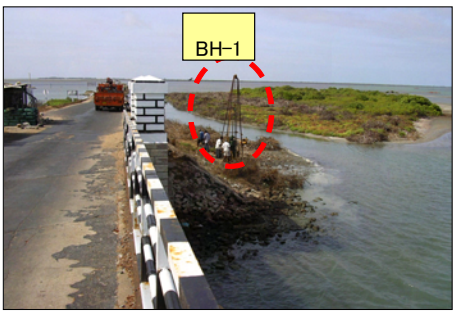


図 8-1 ボーリング実施箇所

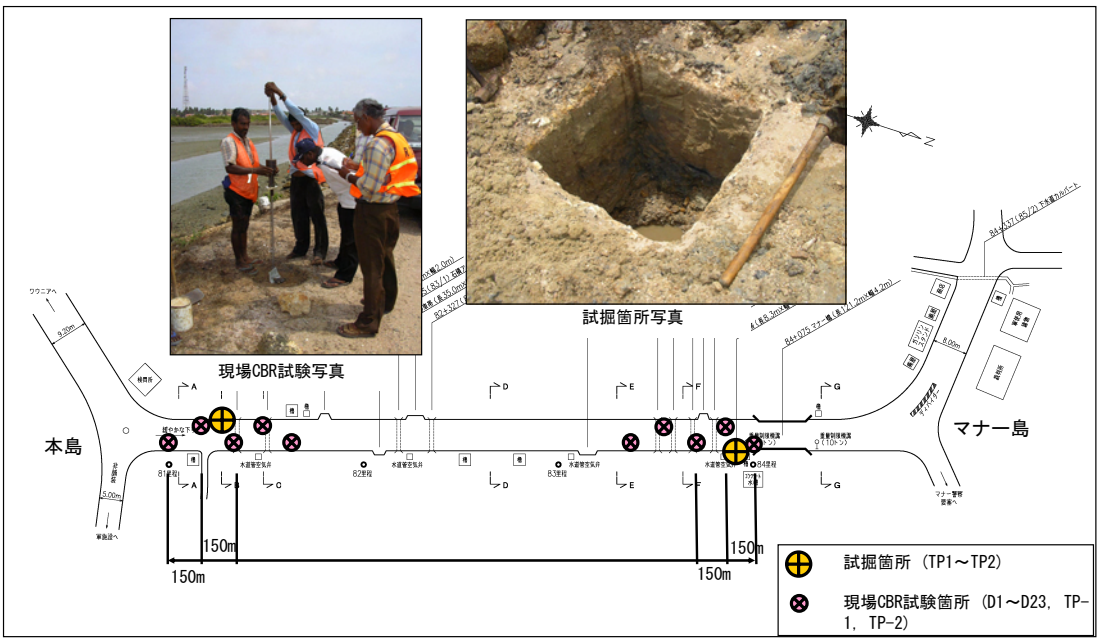


図 8-2 路床 CBR 調査箇所

2)　新橋付近の地質状況

今調査で新橋計画線形上に実施したボーリング(2 箇所)結果、及びＲ＆Ｄが過年度に実施したボーリング結果を基に推測した、当該箇所の地質分類を下記に示す（深さは柱状図標尺読み)。

	分　　類	深 さ
(i)	砂礫混り粘土質砂（粗～細砂）(SC)	: 0m(地表)～2m
(ii)	シルト～粘土質砂（粗～細砂）(SM-SC)	: 2m～10m
(iii)	粘土質砂（粗～細砂）(SC)	: 10m～20m
(iv)	粘土質砂岩（Ss)	: 20m 以深

標準貫入試験結果(N 値)によると、(ii)層までは数値にばらつきが見られるが、(iii)層以深は比較的締め固まった層、(iv)は杭基礎地盤として信頼のおける層であると推測できる。

3)　推定地質縦断図

今調査により作成したマナー橋周辺ボーリング柱状図（BH-01，BH-02)及び R&D の過年度成果である柱状図（BH-RD2～BH-RD5)を基にして、図 8-3 に新橋計画線形上の推定地質縦断図を作成した。また、コーズウェイ周辺にて RDA が過去に実施したボーリング柱状図を図 8-4 に示す。

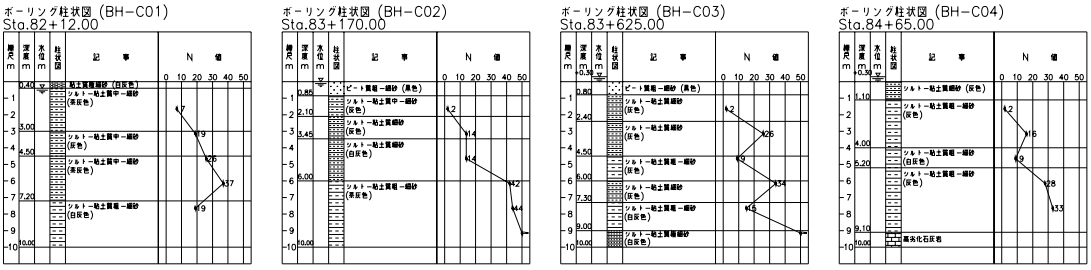


図 8-4 ボーリング実施箇所

4)　室内試験結果

試掘調査を実施した 2 箇所の室内試験結果を表 8-1 に示す。ここで、各調査箇所を代表する地点 CBR は、下記方程式により求めた。

$$CBRm = \left(\frac{h1*CBR1^{1/3}+h2*CBR2^{1/3}+\cdots\cdot hn*CBRn^{1/3}}{h1+h2+\cdots\cdot hn} \right)^3$$

CBRm: m 地点の CBR (%)

CBRm: m 地点の各層の CBR (%)

hn: m 地点の各層の厚さ (cm)

-「アスファルト舗装要綱」より-

表 8-1 路床部室内試験結果

調査箇所	深さ (m)	層厚 (cm)	各層CBR	地点CBR	液性限界 (LL)	塑性限界 (PL)	塑性指数 (PI)	最適含水比 (%)	最大乾燥密度 (g/cm3)
TP-1 (Sta.84+100)	0.00-0.15	15.0	21	23.9	NA	NA	NA	5.5	1.97
	0.15-0.90	75.0	26		NA	NA	NA	9.8	1.90
	0.90-1.00	10.0	15		NA	NA	NA	10.0	1.90
TP-2 (Sta.80+985)	0.00-0.30	30.0	10	11.2	40	16	24	12.0	1.80
	0.30-0.67	37.0	8		35	15	20	11.0	1.69
	0.67-1.00	33.0	17		28	18	10	10.8	1.87

4)　室内試験値による現場 CBR 値の補正

計 25 箇所(D1－D23 及び DTP-1、DTP-2)で実施した現場 CBR 試験(DCP 方式)結果を、1)で求めた試掘箇所(TP-1, TP-2)の地点 CBR により補正を行う。補正方法は以下のとおり。

試掘箇所(地点 CBR 実施箇所)を含む前後 3 箇所の現場 CBR 値の平均値と地点 CBR 値の比較により、補正係数 M を決定する。補正係数算出結果を表 8-2 に示す。

補正係数 M = CBRm ÷ $DCP_{Ave.}$

CBRm: 各試掘箇所の地点 CBR

$DCP_{Ave.}$: 各試掘箇所を含む前後 3 箇所の現場 CBR の平均値

表 8-2 現場 CBR 補正係数 M の算出結果

試掘箇所	CBRm	$DCP_{Ave.}$	補正係数 M	M 平均
TP-1	23.9	40.1	0.598	0.841
TP-2	11.2	10.3	1.084	

現場 CBR 試験結果を補正係数 M の平均値を用いて算出した各地点の補正 CBR 値を表 8-3 に示す。なお、TP-1 及び TP-2 を代表する CBR 値は、室内試験結果により求めた地点 CBR を採用する。

表 8-3 現場 CBR 値の補正結果

調査箇所	深さ (m)	層厚 (cm)	各層 CBR	地点 CBR	補正 CBR
D-1 (Sta.84+200)	0.00-0.17	17.0	182	76.3	64.1
	0.17-0.37	20.0	141		
	0.37-0.90	53.0	40		
DTP-1 (TP-1) (Sta.84+100)	0.00-0.50	50.0	29	21.0	23.9
	0.50-0.77	27.0	8		
	0.77-0.91	14.0	30		
D-2 (Sta.84+000)	0.00-0.12	12.0	121	22.9	19.3
	0.12-0.91	79.0	16		
D-3 (Sta.83+900)	0.00-0.78	78.0	11	15.1	12.7
	0.78-0.91	13.0	62		
D-4 (Sta.83+700)	0.00-0.26	26.0	54	19.8	16.7
	0.26-0.57	31.0	26		
	0.57-0.89	32.0	4		
D-5 (Sta.83+650)	0.00-0.19	19.0	21	20.9	17.6
	0.19-0.57	38.0	30		
	0.57-0.86	29.0	12		
D-6 (Sta.83+500)	0.00-0.31	31.0	60	28.4	23.9
	0.31-0.67	36.0	24		
	0.67-0.92	25.0	11		
D-7 (Sta.83+300)	0.00-0.35	35.0	72	43.5	36.6
	0.35-0.90	55.0	30		
D-8 (Sta.83+150)	0.00-0.20	20.0	104	33.9	28.5
	0.20-0.40	20.0	46		
	0.40-0.87	47.0	15		
D-9 (Sta.83+000)	0.00-0.15	15.0	136	25.4	21.3
	0.15-0.45	30.0	45		
	0.45-0.87	42.0	5		
D-10 (Sta.82+900)	0.00-0.23	23.0	36	17.2	14.5
	0.23-0.54	31.0	16		
	0.54-0.88	34.0	10		

調査箇所	深さ（m）	層厚（cm）	各層 CBR	地点 CBR	補正 CBR
D-11	0.00-0.43	43.0	7	6.3	5.3
(Sta.82+700)	0.43-0.71	28.0	6		
	0.71-0.88	17.0	5		
D-12	0.00-0.28	28.0	16	14.4	12.1
(Sta.82+600)	0.28-0.62	34.0	4		
	0.62-0.88	26.0	41		
D-13	0.00-0.27	27.0	55	21.1	17.8
(Sta.82+400)	0.27-0.49	22.0	28		
	0.49-0.89	40.0	7		
D-14	0.00-0.28	28.0	18	10.2	8.6
(Sta.82+300)	0.28-0.44	16.0	9		
	0.44-0.87	43.0	7		
D-15	0.00-0.25	25.0	49	20.4	17.2
(Sta.82+150)	0.25-0.45	20.0	18		
	0.45-0.77	32.0	9		
D-16	0.00-0.53	53.0	18	8.6	7.3
(Sta.82+000)	0.53-0.91	38.0	2		
D-17	0.00-0.20	20.0	45	12.5	10.5
(Sta.81+900)	0.20-0.64	44.0	8		
	0.64-0.90	26.0	7		
D-18	0.00-0.25	25.0	55	16.0	13.4
(Sta.81+700)	0.25-0.51	26.0	12		
	0.51-0.79	28.0	4		
D-19	0.00-0.28	28.0	23	8.5	7.2
(Sta.81+600)	0.28-0.52	24.0	9		
	0.52-0.91	39.0	3		
D-20	0.00-0.30	30.0	35	19.3	16.3
(Sta.81+400)	0.30-0.62	32.0	15		
	0.62-0.89	27.0	12		
D-21	0.00-0.72	72.0	35	35.0	29.4
(Sta.81+300)					
D-22	0.00-0.30	30.0	26	10.9	9.2
(Sta.81+100)	0.30-0.45	15.0	7		
	0.45-0.68	23.0	4		
	0.68-0.91	23.0	9		
DTP-2 (TP-2)	0.00-0.16	16.0	20	4.8	11.2
(Sta.80+985)	0.16-0.45	29.0	5		
	0.45-0.85	40.0	2		
D-23	0.00-0.25	25.0	47	15.2	12.8
(Sta.80+925)	0.25-0.40	15.0	28		
	0.40-0.88	48.0	5		

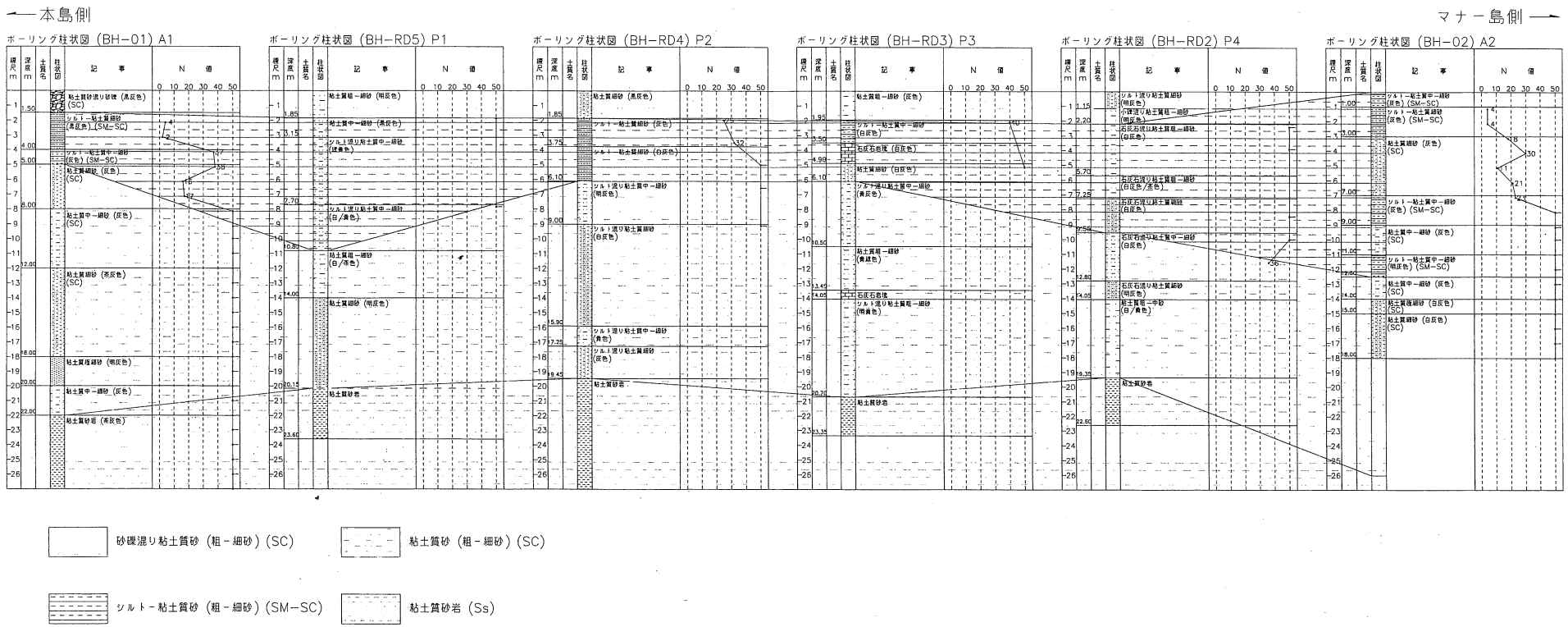


図 8−3 新橋計画線形上の推定地質縦断図

MINISTRY OF HIGHWAYS - SRI LANKA

ROAD DEVELOPMENT AUTHORITY

RESEARCH AND DEVELOPMENT DIVISION

Bore Hole No : 01

Sheet No : 03

Date:16.August.2006.

TYPE OF BORING / DRILLING :

DESCRIPTION OF MATERIAL	LEGEND	DEPTH / M	STANDARD PENETRATION TEST (SPT) DEPTH & THICKNESS IN METERS	TEST	SAMPLE TYPE	SAMPLE NO	REMARKS
Boulders with sandy clay. (blackish grey)	S/8339	1.50					Ground elevation 3.00m below from the existing road surface level.
	S/8340		2.15 2.45	SPT-04			
Silty clayey fine sand with sea shels.(blackish grey)	S/8341		3.15 3.45	SPT-02			Water table 3.00m below from the top of road surface level.
Silty medium to fine sand. (grey)	S/8342	4.00	4.15 4.45	SPT-37			
		5.00	5.15 5.45	SPT-38			
Fine sandy silty clay. (grey)	S/8343		6.15 6.45	SPT-16			
	S/8344	7.00	7.15 7.45	SPT-17			
Fine sandy silty clay. (grey)	S/8345	8.00	8.15 8.45	SPT-66			
Silty clayey medium to fine sand. (grey)	S/8346	9.00	9.15 9.35	SPT-67			
Silty clayey medium to fine sand. (grey)	S/8347	10.00	10.00 10.10	40/0.10 1st 0.15m no further penetration.			
Silty clayey medium to fine sand. (grey)	S/8348	11.00	11.00 11.12	45/0.12 1st 0.15m no further penetration.			
Silty clayey medium to fine sand. (grey)		12.00	12.00 12.05	52/0.05 1st 0.15m no further penetration.			
Sandy clay with sea shells. (brownish grey)	S/8349			(drilled sample)			
		14.00		no further penetration.			
Sandy clay with sea shells. (brownish grey)			15.00	no further penetration. (drilled sample.)			
	S/8350		16.00	no further penetration. (drilled sample.)			
			17.00	no further penetration. (drilled sample.)			
		18.00		no further penetration.			

MINISTRY OF HIGHWAYS - SRI LANKA

ROAD DEVELOPMENT AUTHORITY

RESEARCH AND DEVELOPMENT DIVISION

Bore Hole No : 01

Sheet No : 04

Date: 16.August.2006.

TYPE OF BORING / DRILLING :

DESCRIPTION OF MATERIAL	LEGEND	DEPTH / M	STANDARD PENETRATION TEST (SPT) DEPTH & THICKNESS IN METERS	TEST	SAMPLE TYPE	SAMPLE NO	REMARKS
Very fine sandy silty clay. light grey)			19.00	no further penetration.			
		20.00		no further penetration.			
Silty clayey medium to fine sand. (grey) (Sandstone)			21.00	no further penetration.			
		22.00		no further penetration.			
			23.00	no further penetration.			
Silty clayey medium to fine sand. (brownish grey) (Sandstone)			24.00	no further penetration.			
			25.00	no further penetration.			
			26.00	no further penetration.			
		27.00					

NOTE:
Stopped at 27.00m, as per instruction given by Mr.Hiroaki Kobayshi Engineer from Jica .

All dimensions are in metres unless otherwise stated.

MINISTRY OF HIGHWAYS - SRI LANKA

ROAD DEVELOPMENT AUTHORITY

RESEARCH AND DEVELOPMENT DIVISION

Bore Hole No : 02

Sheet No : 05

Date:16, August. 2006

TYPE OF BORING / DRILLING :

DESCRIPTION OF MATERIAL	LEGEND	DEPTH / M	STANDARD PENETRATION TEST (SPT) DEPTH & THICKNESS IN METERS	TEST	SAMPLE TYPE	SAMPLE NO	REMARKS
Silty medium to fine sand.(grey)	S/8286						Ground elevation 3.30m below from the existing road surface level.
		1.00	1.15	SPT-04			
Silty fine sand . (grey)	S/8287		1.45				
		2.00	2.15	SPT-04			
Silty fine sand.(grey)	S/8288		2.45				
		3.00	3.15	SPT-18			
Silty sandy clay.(grey)	S/8289		3.45				Water table 3.30m below from the top of road surface level.
		4.00	4.15	SPT-30			
	S/8290		4.45				
		5.00	5.15	SPT-11			
Fine sandy silty clay. (grey)	S/8291		5.45				
		6.00	6.15	SPT-21			
Silty clayey of fine sand.(grey)	S/8292		6.45				
		7.00	7.15	SPT-23			
Silty medium to fine sand.(grey)	S/8293		7.45				
		8.00	8.15	SPT-66			
Silty medium to fine sand.(grey)	S/8294		8.45				
		9.00	9.15	*46/.02			
Silty clayey medium to fine sand.(grey)	S/8295		9.35				
		10.00	10.00	52/0.12 1st 0.15m no further penetration			
Silty clayey medium to fine sand quarts.(light grey)	S/8296		10.12				
		11.00	11.00	48/0.10 1st 0.15m no further penetration			
Silty clayey medium to fine sand sea shell.(light grey)	S/8297		11.10				
	S/8298		12.00	55/0.12 1st 0.15m no further penetration			
		12.50	12.12				
Medium to fine sand with silty clay. (grey)	S/8299		13.00	35/0.05 1st 0.15m no further penetration (Drilled sample.)			NOTE: Stopped at 18.30m, as per instruction given by Mr.Hiroaki Kobayshi Engineer from Jica .
			13.05				
		14.00	14.00	58/0.13 1st 0.15m no further penetration			
			14.13				
Medium to fine sandy silty clay & lime.(whitish grey)	S/8300	15.00	15.00	no further penetration. (Drilled sample.)			
Medium to fine sandy silty clay. (light grey)	S/8301	16.00	16.00	no further penetration. (Drilled sample.)			*This penetration value have been obtained penetration less than 0.30m depth. The no of blows & penetration are given in such cases.
Medium to fine sandy silty clay. (light grey)	S/8302						
		17.00					
Very fine sandy silty clay. (whitish grey)				no further penetration.			
		18.30					All dimensions are in metres unless otherwise stated.

ROAD DEVELOPMENT AUTHORITY
RESEARCH & DEVELOPMENT DIVISION
CENTRAL LABORATORY - RATMALANA
SOIL TEST REPORT

Project: Borehole Investigation on Bridge No. 85/1, Medawachchiya-Mannar-Talaimannar Road

Our Reference No. R&D/AT/SL

Sample sent by: A.A.Adikari,
Research Assistant
Your Ref. LRDNK - 115/2006

Lab. Sample No.	Description	Particle Size Analysis Percentage passing (BS Sieve Size)													Liquid limit	Plastic Limit	Plasticity Index	Classification
		50 mm	37.5 mm	28 mm	20 mm	14 mm	10 mm	05 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	75 µm				
S/8339	BH-01 0.00 - 1.5m	-	-	-	100	97	94	92	90	87	82	74	61	42	34	17	17	SC
S/8340	BH-01, 1.5m - 4.0m SPT at 2.0 - 2.45m	-	-	-	-	-	-	100	97	89	70	55	34	16	Sample in sufficient			-
S/8341	BH-01 1.5m - 4.0m SPT at 3.0 - 3.45m	-	-	-	-	-	-	100	99	94	76	56	34	18	Non plastic			SM-SC
S/8342	BH-01, 4.0m - 5.0m SPT at 4.0 - 4.45m	-	-	-	-	-	100	96	92	87	74	58	32	09	Non plastic			SM-SC
S/8343	BH-01 5.0m - 7.0m SPT at 5.0 - 5.45m	-	-	-	-	-	-	100	98	91	75	62	48	37	67	19	48	SC
S/8344	BH-01 5.0m - 7.0m SPT at 6.0 - 6.45m	-	-	-	-	-	100	98	96	89	76	62	47	32	56	19	37	SC

16/8/2006

SENIOR RESEARCH ASSISTANT
Date:

RESEARCH ENGINEER
Date: 16/08/06

ROAD DEVELOPMENT AUTHORITY
RESEARCH & DEVELOPMENT DIVISION
CENTRAL LABORATORY - RATMALANA
SOIL TEST REPORT

Project: Borehole Investigation on Bridge No. 85/1, Medawachchiya-Mannar-Talaimannar Road

Our Reference No. R&D/AT/SL

Sample sent by: A.A.Adikari,
Research Assistant
Your Ref. LRDNK - 115/2006

Lab. Sample No.	Description	Particle Size Analysis Percentage passing (BS Sieve Size)													Liquid limit	Plastic Limit	Plasticity Index	Classification
		50 mm	37.5 mm	28 mm	20 mm	14 mm	10 mm	05 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	75 µm				
S/8345	BH-01 7.0m - 8.0m SPT at 7.0 - 7.45m	-	-	-	-	-	-	100	99	95	82	68	50	34	51	18	33	SC
S/8346	BH-01, 8.0m - 12.0m SPT at 8.0 - 8.45m	-	-	-	-	-	100	95	91	84	76	69	45	23	28	15	13	SC
S/8347	BH-01 8.0m -12.0m SPT at 9.0 - 9.45m	-	-	-	-	-	100	97	95	91	83	69	44	33	35	18	17	SC
S/8348	BH-01, 8.0m - 12.0m SPT at 10.0 - 10.10m	-	-	-	100	99	97	95	93	89	81	72	55	36	45	18	27	SC
S/8349	BH-01 12.0m - 14.0m	-	-	-	-	-	100	99	95	86	74	58	45	34	52	18	34	SC
S/8350	BH-01 14.0 -18.0m	-	-	-	-	-	-	100	96	87	78	64	51	38	57	19	38	SC

16/8/2006

SENIOR RESEARCH ASSISTANT
Date:

RESEARCH ENGINEER
Date: 16/08/06

ROAD DEVELOPMENT AUTHORITY
RESEARCH & DEVELOPMENT DIVISION
CENTRAL LABORATORY - RATMALANA
SOIL TEST REPORT

Project: Borehole Investigation on Bridge No. 85/1, Medawachchiya-Mannar-Talaimannar Road

Our Reference No. R&D/AT/SL

Sample sent by: A.A.Adhikari,
Research Assistant
Your Ref. LRDNK - 115/2006

Lab. Sample No.	Description	Particle Size Analysis Percentage passing (BS Sieve Size)													Liquid limit	Plastic Limit	Plasticity Index	Classification
		50 mm	37.5 mm	28 mm	20 mm	14 mm	10 mm	05 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	75 µm				
S/8286	BH-02 0.00 - 1.0m	-	-	-	-	-	-	100	98	92	66	40	11	03	No n Plastic			SM-SC
S/8287	BH-02, 1.0 - 3.0m SPT at 1.0 - 1.45m	-	-	-	-	-	-	100	98	85	54	43	26	17	No n Plastic			SM-SC
S/8288	BH-02 1.0 - 3.0m SPT at 2.0 - 2.45m	-	-	-	-	-	-	100	100	97	80	61	40	25	No n Plastic			SM-SC
S/8289	BH-02 3.0 - 5.0m SPT at 3.0 - 3.45m	-	-	-	-	-	-	100	100	96	78	62	47	33	63	21	42	SC
S/8290	BH-02 3.0 - 5.0m SPT at 4.0 - 4.45m	-	-	-	-	-	100	86	86	81	70	59	46	32	62	29	33	SC
S/8291	BH-02 5.0 - 6.0m SPT at 5.0 - 5.45m	-	-	-	-	-	100	95	93	86	75	64	46	26	36	21	15	SC

14-8-2006

SENIOR RESEARCH ASSISTANT
Date:

RESEARCH ENGINEER
Date: 14/08/06

ROAD DEVELOPMENT AUTHORITY
RESEARCH & DEVELOPMENT DIVISION
CENTRAL LABORATORY - RATMALANA
SOIL TEST REPORT

Project: Borehole Investigation on Bridge No. 85/1, Medawachchiya-Mannar-Talaimannar Road

Our Reference No. R&D/AT/SL

Sample sent by: A.A.Adhikari,
Research Assistant
Your Ref. LRDNK - 115/2006

Lab. Sample No.	Description	Particle Size Analysis Percentage passing (BS Sieve Size)													Liquid limit	Plastic Limit	Plasticity Index	Classification
		50 mm	37.5 mm	28 mm	20 mm	14 mm	10 mm	05 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	75 µm				
S/8292	BH-02 6.0 - 7.0m SPT at 6.0-6.45m	-	-	-	-	-	100	95	93	88	77	66	51	31	47	27	20	SC
S/8293	BH-02 7.0 - 8.0m SPT at 7.0 - 7.45m	-	-	-	-	-	100	87	83	72	62	53	40	22	Non Plastic			SM-SC
S/8294	BH-02 8.0 - 9.0m SPT at 8.0 - 8.45m	-	-	-	-	-	-	100	95	83	70	52	38	30	Non Plastic			SM-SC
S/8295	BH-02 9.0 - 10.0m SPT at 9.0 - 9.35m	-	-	-	-	-	100	95	87	71	59	48	34	25	36	20	16	SC
S/8296	BH-02 10.- 11.0m SPT at 10.0 - 10.12m	-	-	-	-	-	-	100	96	90	83	73	56	39	42	22	20	SC
S/8297	BH-02 11.0 - 12.5m SPT at 11.0 - 11.10m	-	-	-	-	-	-	100	96	86	74	61	47	30	Non Plastic			SM-SC

14-8-006

SENIOR RESEARCH ASSISTANT
Date:

RESEARCH ENGINEER
Date: 14/08/06

ROAD DEVELOPMENT AUTHORITY
RESEARCH & DEVELOPMENT DIVISION
CENTRAL LABORATORY - RATMALANA
SOIL TEST REPORT

Project: Borehole Investigation on Bridge No. 85/1, Medawachchiya-Mannar-Talaimannar Road

Sample sent by: A.A.Adhikari,
Research Assistant
Your Ref. LRDNK - 115/2006

Our Reference No. R&D/AT/SL

Lab. Sample No.	Description	Particle Size Analysis Percentage passing (BS Sieve Size)													Liquid limit	Plastic Limit	Plasticity Index	Classification
		50 mm	37.5 mm	28 mm	20 mm	14 mm	10 mm	05 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	75 µm				
S/8298	BH-02 SPT 12.0 - 12.12m	-	-	-	-	-	-	100	94	82	70	58	46	28	Non Plastic			SM-SC
S/8299	BH-02 12.5 - 14.0m	-	-	-	-	-	100	96	94	86	74	59	47	36	57	24	33	SC
S/8300	BH-02 14.0 - 15.0m SPT 14.0 - 14.13m	-	-	-	-	-	-	100	99	95	89	81	70	38	28	17	11	SC
S/8301	BH-02 15.0 - 16.0m	-	-	-	-	-	-	100	96	87	77	63	49	37	54	27	27	SC
S/8302	BH-02 16.0 - 17.0m	-	-	-	-	-	-	100	98	88	76	61	47	35	62	21	41	SC

14/8/2006

SENIOR RESEARCH ASSISTANT
Date:

RESEARCH ENGINEER
Date: 14/08/06