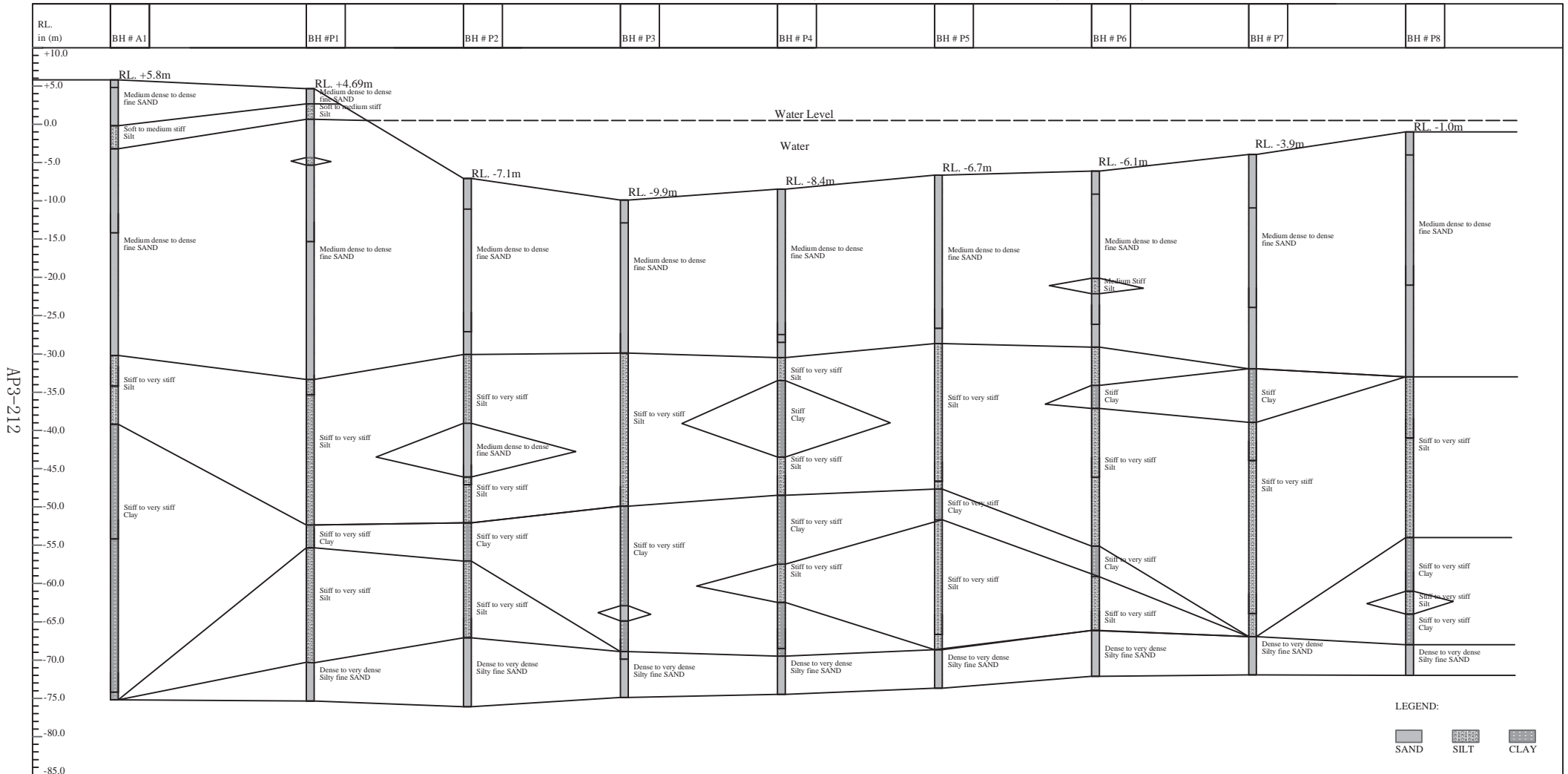


## **GEOLOGICAL PROFILE**

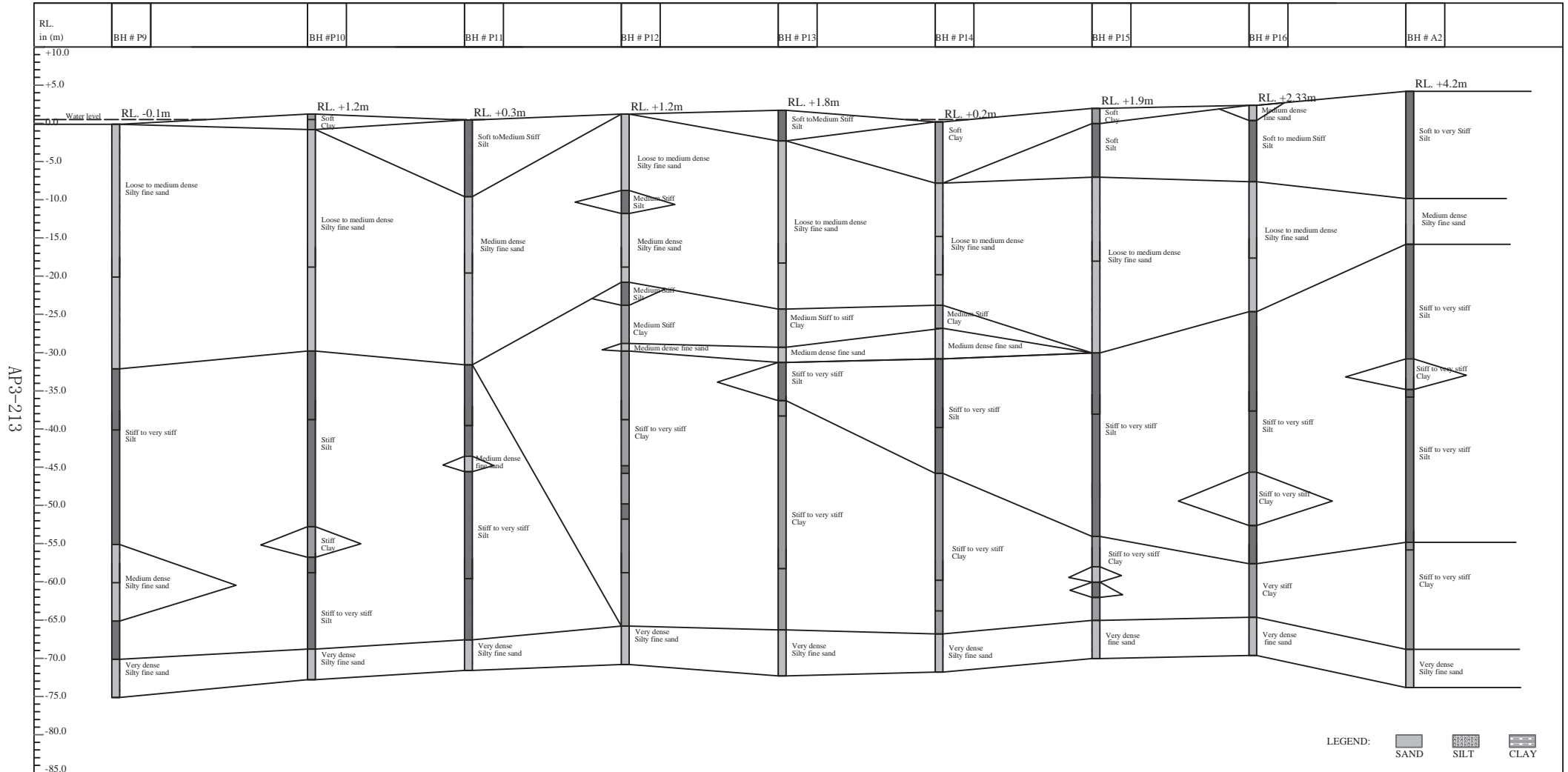
SURVEY 2000

GEOLOGICAL PROFILE ALONG THE BOREHOLE A1, P1 TO P8 AT MEGHNA-GUMTI BRIDGE, DAUDKANDI, COMILLA



SURVEY 2000

GEOLOGICAL PROFILE ALONG THE BOREHOLE P9 TO P16 & A2 AT MEGHNA-GUMTI BRIDGE, DAUDKANDI, COMILLA



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# **PRESSURE METER TEST**

**PRESSUREMETER TEST DATA RESULTS**

No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	1.83	2.06	-0.23	-1.62	-1.62	-1.62	-1.62	0.00	2.19	3.55
2	2.14	2.28	-0.14	-1.61	-1.59	-1.50	-1.42	0.17	2.21	3.57
3	2.45	2.52	-0.07	1.39	-1.35	-1.30	-1.26	0.09	2.22	3.58
4	2.75	2.74	0.01	-1.24	-1.12	-1.08	-1.06	0.06	2.24	3.59
5	3.06	2.96	0.10	-1.03	-0.94	-0.89	-0.85	0.09	2.27	3.60
6	3.36	3.14	0.23	-0.78	-0.69	-0.57	-0.52	0.17	2.30	3.62
7	3.67	3.36	0.31	-0.37	-0.35	-0.33	-0.30	0.05	2.32	3.64
8	3.98	3.64	0.33	-0.26	-0.26	-0.24	-0.24	0.02	2.33	3.64
9	4.38	4.01	0.37	-0.19	-0.19	-0.18	-0.14	0.05	2.34	3.65
10	4.79	4.37	0.42	-0.06	-0.04	-0.02	0.00	0.04	2.35	3.66
11	5.20	4.75	0.45	0.04	0.06	0.07	0.08	0.02	2.36	3.66
12	5.61	5.12	0.49	0.15	0.16	0.17	0.18	0.02	2.37	3.67
13	6.12	5.57	0.55	0.30	0.31	0.33	0.35	0.04	2.39	3.68
14	6.63	6.00	0.63	0.50	0.52	0.53	0.57	0.05	2.41	3.69
15	7.14	6.41	0.73	0.81	0.85	0.86	0.88	0.03	2.44	3.71
16	7.65	6.80	0.84	1.16	1.19	1.20	1.22	0.03	2.47	3.73
17	8.15	7.19	0.97	1.56	1.58	1.61	1.63	0.05	2.51	3.76
18	9.17	7.94	1.23	2.47	2.50	2.52	2.55	0.05	2.61	3.82
19	10.19	8.71	1.48	3.39	3.46	3.49	3.54	0.08	2.70	3.89
20	11.21	9.46	1.75	4.60	4.68	4.72	4.76	0.08	2.83	3.98
21	12.23	10.20	2.04	6.07	6.20	6.25	6.35	0.15	2.99	4.09
22	13.25	10.95	2.30	7.97	8.12	8.16	8.23	0.11	3.17	4.23
23	14.27	11.74	2.53	9.80	10.05	10.19	10.35	0.30	3.39	4.39
24	15.29	12.54	2.75	12.36	12.74	12.81	12.90	0.16	3.64	4.59
25	16.31	13.33	2.98	14.62	14.96	15.34	15.95	0.99	3.95	4.84
26	17.33	14.14	3.19	17.63	18.00	18.24	18.25	0.25	4.18	5.03

REMARKS:				TIME TAKEN :			
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> <span style="margin-left: 200px;"><u>Hard Rubber</u></span> $R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10$ for P <= 10 <span style="margin-left: 100px;"><math>R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10</math> for P &lt;= 20</span> $R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-10]/666\} / 10$ for P > 10 <span style="margin-left: 100px;"><math>R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-20] / 400\} / 10</math> for P &gt; 20</span>				TEST LOCATION: <b>P-1 MEGHNA_GUMUTI</b>		TEST DEPTH: <b>15m</b>	
				TEST NO.: <b>1</b>		TEST DATE: <b>26/03/2012</b>	
				PAGE: <b>1/3</b>		N - VALUE: <b>25</b>	
RUBBER TYPE: <b>MIDIUM</b>		GROUND WATER LEVEL: <b>25</b>		N VALUE: <b>25</b>		SOIL TYPE: <b>SANDY SILT</b>	
PROJECT:				SPECIALIST SUB-CONTRACTOR: <b>SURVEY2000</b>			
				TEL: 8818386 Email: survey2k@yahoo.com			
CLIENT: <b>ROADS &amp; HIGHWAY DEPARTMENT</b>				CONSULTANT: <b>ORIENTAL COSULTANTS CO. LTD</b>			

**PRESSUREMETER TEST DATA RESULTS**

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.18	-1.62	-1.62	-1.62	-1.62
2	0.21	-1.61	-1.59	-1.50	-1.42
3	0.24	1.39	-1.35	-1.30	-1.26
4	0.27	-1.24	-1.12	-1.08	-1.06
5	0.30	-1.03	-0.94	-0.89	-0.85
6	0.33	-0.78	-0.69	-0.57	-0.52
7	0.36	-0.37	-0.35	-0.33	-0.30
8	0.39	-0.26	-0.26	-0.24	-0.24
9	0.43	-0.19	-0.19	-0.18	-0.14
10	0.47	-0.06	-0.04	-0.02	0.00
11	0.51	0.04	0.06	0.07	0.08
12	0.55	0.15	0.16	0.17	0.18
13	0.60	0.30	0.31	0.33	0.35
14	0.65	0.50	0.52	0.53	0.57
15	0.70	0.81	0.85	0.86	0.88
16	0.75	1.16	1.19	1.20	1.22
17	0.80	1.56	1.58	1.61	1.63
18	0.90	2.47	2.50	2.52	2.55
19	1.00	3.39	3.46	3.49	3.54
20	1.10	4.60	4.68	4.72	4.76
21	1.20	6.07	6.20	6.25	6.35
22	1.30	7.97	8.12	8.16	8.23
23	1.40	9.80	10.05	10.19	10.35
24	1.50	12.36	12.74	12.81	12.90
25	1.60	14.62	14.96	15.34	15.95
26	1.70	17.63	18.00	18.24	18.25

REMARKS:

TIME TAKEN :

(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG  
 (3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.  
 (8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.  
 (9) ... R<sub>s</sub> inside radius obtained by the following equations:  
Medium Rubber  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P <= 10  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  
 (10) ... R<sub>o</sub> outside radius, obtained by using R<sub>o</sub> = (R<sub>s</sub><sup>2</sup> + A/π)<sup>1/2</sup>, where A = 24.63cm<sup>2</sup>.

TEST LOCATION:

TEST DEPTH:

**P-1**  
**MEGHNA\_GUMUT**

**15m**

TEST NO.:

TEST DATE:

**1**

**26/03/2012**

PAGE:

N - VALUE:

**25**

RUBBER TYPE:

SOIL TYPE:

**M**

**Silty Fine Sand**

SPECIALIST SUB-CONTRACTOR:

**SURVEY2000**

PROJECT:

**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION**

TEL: 8818386

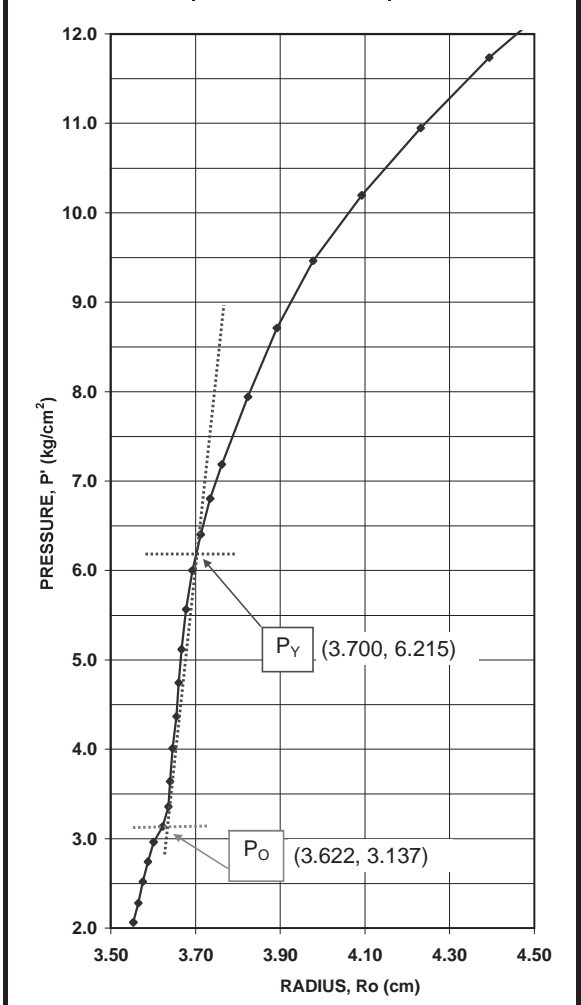
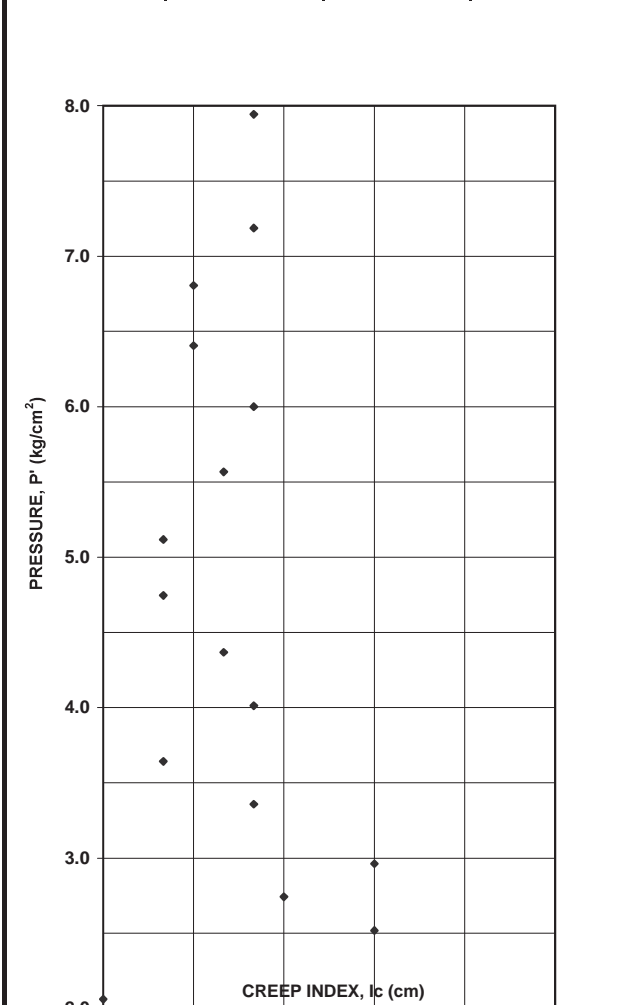
Email: survey2k@yahoo.com

CLIENT:

**ORIENTAL CONSUTANS CO.LTD**

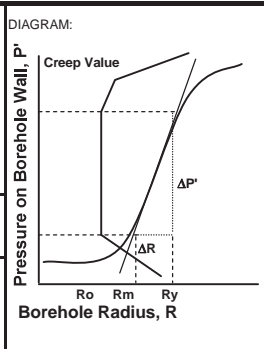
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	$P_o$ (kg/cm <sup>2</sup> )	$P_y$ (kg/cm <sup>2</sup> )	$P_f$ (kg/cm <sup>2</sup> )	$K_m$ (kg/cm <sup>3</sup> )	$E_m$ (kg/cm <sup>2</sup> )	$R_m$ (cm)
1st	3.137	6.215	-	39.462	187.809	3.661



REMARKS: 0.00 0.03 0.06 0.09 0.12 0.15

$P_o, P_o'$  ..... Earth Pressure at Rest  
 $P_y, P_y'$  ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P-1 MEGHNA_GU</b>	TEST DEPTH: <b>15m</b>
TEST NO.: <b>1</b>	TEST DATE: <b>26/03/2012</b>

RUBBER TYPE: <b>MEDIUM</b>	N VALUE: <b>25</b>	SOIL TYPE: <b>SILTY FINE SAND</b>
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PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**

**PRESSUREMETER TEST DATA RESULTS**

No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	2.14	2.67	-0.53	-2.30	-2.30	-2.30	-2.29	0.01	2.12	3.51
2	2.45	2.84	-0.40	-2.03	-2.02	-2.02	-2.00	0.02	2.15	3.53
3	2.75	2.98	-0.23	-1.88	-1.70	-1.65	-1.62	0.08	2.19	3.55
4	3.06	3.23	-0.17	1.59	-1.56	-1.54	-1.50	0.06	2.20	3.56
5	3.36	3.48	-0.12	-1.49	-1.45	-1.40	-1.37	0.08	2.21	3.57
6	3.67	3.72	-0.05	-1.30	-1.27	-1.24	-1.21	0.06	2.23	3.58
7	3.98	3.96	0.01	-1.15	-1.10	-1.08	-1.06	0.04	2.24	3.59
8	4.28	4.25	0.03	-1.05	-1.04	-1.01	-1.01	0.03	2.25	3.59
9	4.59	4.52	0.07	-0.99	-0.98	-0.96	-0.92	0.06	2.26	3.60
10	4.89	4.80	0.09	-0.91	-0.90	-0.88	-0.86	0.04	2.26	3.60
11	5.30	5.18	0.12	-0.86	-0.84	-0.81	-0.80	0.04	2.27	3.60
12	5.71	5.55	0.16	-0.75	-0.74	-0.72	-0.70	0.04	2.28	3.61
13	6.12	5.94	0.18	-0.69	-0.68	-0.66	-0.64	0.04	2.29	3.61
14	6.52	6.32	0.21	-0.60	-0.60	-0.58	-0.57	0.03	2.29	3.62
15	6.93	6.69	0.24	-0.53	-0.50	-0.49	-0.49	0.01	2.30	3.62
16	7.44	7.14	0.30	-0.39	-0.36	-0.35	-0.34	0.02	2.32	3.63
17	7.95	7.59	0.36	-0.22	-0.20	-0.18	-0.16	0.04	2.33	3.65
18	8.46	8.01	0.45	-0.02	0.04	0.06	0.08	0.04	2.36	3.66
19	9.17	8.60	0.57	0.43	0.42	0.44	0.42	0.00	2.39	3.68
20	10.19	9.44	0.75	0.90	0.91	0.94	0.94	0.03	2.44	3.72
21	11.21	10.27	0.94	1.44	1.49	1.49	1.54	0.05	2.50	3.76
22	12.23	11.06	1.17	2.21	2.25	2.28	2.34	0.09	2.58	3.81
23	13.25	11.87	1.39	2.96	3.05	3.08	3.15	0.10	2.67	3.87
24	14.27	12.59	1.68	4.08	4.10	4.37	4.42	0.32	2.79	3.95
25	15.29	13.36	1.93	5.36	5.50	5.60	5.70	0.20	2.92	4.05
26	16.31	14.09	2.22	7.13	7.30	7.41	7.59	0.29	3.11	4.18
27	17.33	14.80	2.53	9.49	9.90	10.10	10.30	0.40	3.38	4.39
28	18.35	15.61	2.74	11.90	12.33	12.48	12.74	0.41	3.62	4.58
29	19.37	16.41	2.95	14.40	14.92	15.20	15.60	0.68	3.91	4.81
30	20.39	17.25	3.14	16.85	17.19	17.40	17.75	0.56	4.12	4.99

TIME TAKEN :

(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG

(3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.

(8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.

(9) ... R<sub>s</sub> inside radius obtained by the following equations:

Medium Rubber

Hard Rubber

$$R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10 \text{ for } P \leq 10$$

$$R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10 \text{ for } P \leq 20$$

$$R_s(\text{cm}) = \{Rn(120) + 23.5 \cdot [P-10]/666\} / 10 \text{ for } P > 10$$

$$R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-20] / 400\} / 10 \text{ for } P > 20$$

(10) ... R<sub>o</sub> outside radius, obtained by using  $R_o = (R_s^2 + A/\pi)^{1/2}$ , where A = 24.63cm<sup>2</sup>.

TEST LOCATION:

TEST DEPTH:

**P-1**

**19m**

TEST NO.:

TEST DATE:

**2**

**26/03/2012**

PAGE:

N - VALUE:

**2/3**

**17**

RUBBER TYPE: <b>MEDIUM</b>	GROUND WATER LEVEL:	N VALUE: <b>17</b>	SOIL TYPE: <b>SANDY SILT</b>
PROJECT:			
CLIENT:			
CONSULTANT:			

MEGHNA-GUMUTI

SPECIALIST SUB-CONTRACTOR:

**SURVEY2000**

TEL: 8818386

Email: survey2k@yahoo.com

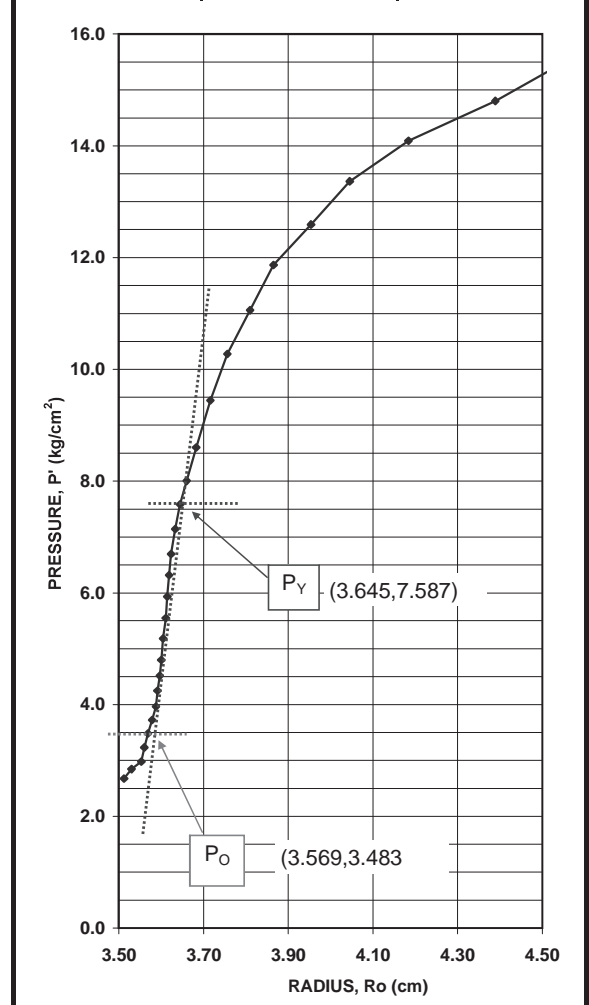
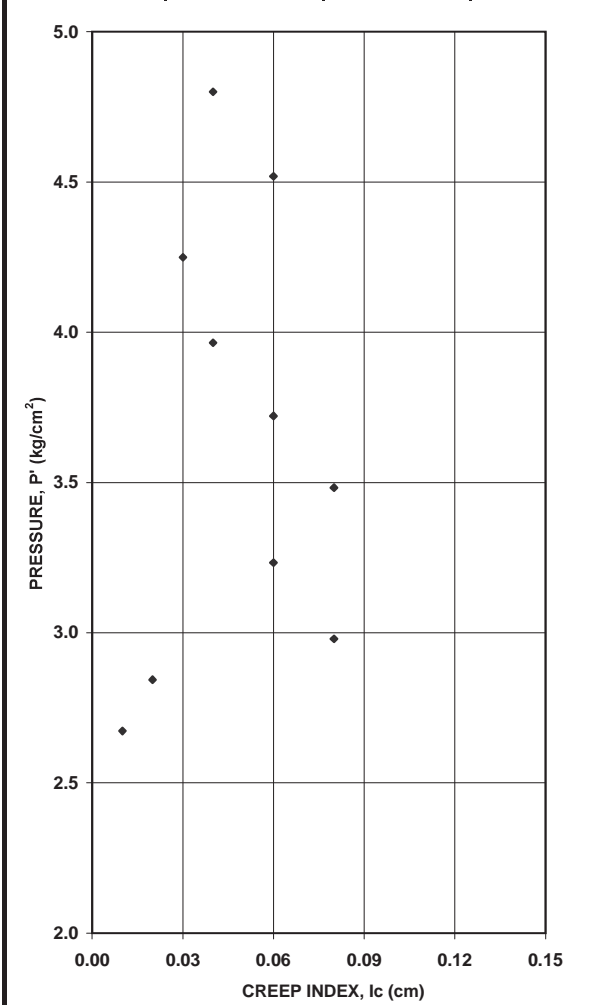


## PRESSUREMETER TEST DATA RESULTS

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.21	-2.30	-2.30	-2.30	-2.29
2	0.24	-2.03	-2.02	-2.02	-2.00
3	0.27	-1.88	-1.70	-1.65	-1.62
4	0.30	1.59	-1.56	-1.54	-1.50
5	0.33	-1.49	-1.45	-1.40	-1.37
6	0.36	-1.30	-1.27	-1.24	-1.21
7	0.39	-1.15	-1.10	-1.08	-1.06
8	0.42	-1.05	-1.04	-1.01	-1.01
9	0.45	-0.99	-0.98	-0.96	-0.92
10	0.48	-0.91	-0.90	-0.88	-0.86
11	0.52	-0.86	-0.84	-0.81	-0.80
12	0.56	-0.75	-0.74	-0.72	-0.70
13	0.60	-0.69	-0.68	-0.66	-0.64
14	0.64	-0.60	-0.60	-0.58	-0.57
15	0.68	-0.53	-0.50	-0.49	-0.49
16	0.73	-0.39	-0.36	-0.35	-0.34
17	0.78	-0.22	-0.20	-0.18	-0.16
18	0.83	-0.02	0.04	0.06	0.08
19	0.90	0.43	0.42	0.44	0.42
20	1.00	0.90	0.91	0.94	0.94
21	1.10	1.44	1.49	1.49	1.54
22	1.20	2.21	2.25	2.28	2.34
23	1.30	2.96	3.05	3.08	3.15
24	1.40	4.08	4.10	4.37	4.42
25	1.50	5.36	5.50	5.60	5.70
26	1.60	7.13	7.30	7.41	7.59
27	1.70	9.49	9.90	10.10	10.30
28	1.80	11.90	12.33	12.48	12.74
29	1.90	14.40	14.92	15.20	15.60
30	2.00	16.85	17.19	17.40	17.75
REMARKS:			TIME TAKEN :		
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> R <sub>s</sub> (cm) = {Rn(120) + 23.5} / 10 for P <= 10 R <sub>s</sub> (cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  (10) ... R <sub>o</sub> outside radius, obtained by using R <sub>o</sub> = (R <sub>s</sub> <sup>2</sup> + A/π) <sup>1/2</sup> , where A = 24.63cm <sup>2</sup> .			TEST LOCATION:	TEST DEPTH:	
			<b>P-1</b>	<b>19m</b>	
			TEST NO.:	TEST DATE:	
			<b>2</b>	<b>26/03/2012</b>	
PAGE:	N - VALUE:				
<b>1/3</b>	<b>17</b>				
RUBBER TYPE:	SOIL TYPE:	SPECIALIST SUB-CONTRACTOR:			
<b>M</b>	<b>SILTY FINE SAND</b>	<b>SURVEY2000</b> TEL: 8818386 Email: survey2k@yahoo.com			
PROJECT:					
CLIENT:	ORIENTAL CONSUTANS CO.LTD				

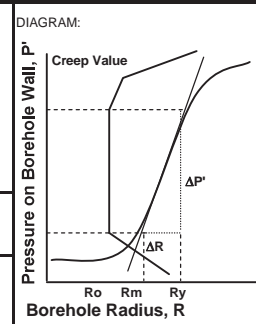
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	Po (kg/cm <sup>2</sup> )	Py (kg/cm <sup>2</sup> )	Pf (kg/cm <sup>2</sup> )	Km (kg/cm <sup>3</sup> )	Em (kg/cm <sup>2</sup> )	Rm (cm)
1st	3.483	7.587	-	54.000	253.211	3.607



REMARKS:

Po, Po' ..... Earth Pressure at Rest  
 Py, Py' ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P2</b>	TEST DEPTH: <b>19M</b>
TEST NO.: <b>2</b>	TEST DATE: <b>26/3/2012</b>
PAGE: <b>3/3</b>	N - VALUE: <b>17</b>
<b>MEGHNA-GUMUTI</b>	
SPECIALIST SUB-CONTRACTOR: <b>SURVEY2000</b>	
TEL: 8818386	
Email: survey2k@yahoo.com	

RUBBER TYPE: <b>MEDIUM</b>	N VALUE: <b>17</b>	SOIL TYPE: <b>SILTY FINE SAND</b>
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PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**

**PRESSUREMETER TEST DATA RESULTS**

No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	1.83	2.46	-0.62	-2.54	-2.54	-2.52	-2.48	0.06	2.10	3.50
2	2.14	2.52	-0.37	-2.26	-2.07	-2.03	-1.95	0.12	2.16	3.53
3	2.45	2.59	-0.14	-1.83	-1.63	-1.52	-1.43	0.20	2.21	3.57
4	2.75	2.74	0.02	-1.37	-1.17	-1.10	-1.05	0.12	2.25	3.59
5	3.06	2.96	0.10	-1.02	-0.95	-0.91	-0.84	0.11	2.27	3.60
6	3.36	3.23	0.14	-0.83	-0.85	-0.82	-0.75	0.10	2.28	3.61
7	3.67	3.52	0.15	-0.78	-0.76	-0.75	-0.72	0.04	2.28	3.61
8	4.08	3.88	0.20	-0.69	-0.65	-0.60	-0.60	0.05	2.29	3.62
9	4.49	4.27	0.22	-0.57	-0.56	-0.56	-0.55	0.01	2.30	3.62
10	4.89	4.65	0.24	-0.52	-0.50	-0.48	-0.48	0.02	2.30	3.62
11	5.30	5.02	0.28	-0.43	-0.40	-0.39	-0.39	0.01	2.31	3.63
12	5.71	5.39	0.32	-0.33	-0.31	-0.31	-0.29	0.02	2.32	3.64
13	6.12	5.76	0.36	-0.20	-0.19	-0.18	-0.18	0.01	2.33	3.64
14	6.63	6.20	0.43	0.00	0.01	0.01	0.01	0.00	2.35	3.66
15	7.14	6.66	0.48	0.11	0.13	0.14	0.15	0.02	2.37	3.66
16	7.65	7.07	0.57	0.33	0.38	0.40	0.41	0.03	2.39	3.68
17	8.46	7.72	0.74	0.81	0.85	0.87	0.90	0.05	2.44	3.71
18	9.17	8.28	0.90	1.28	1.33	1.39	1.40	0.07	2.49	3.75
19	10.19	9.06	1.13	2.05	2.12	2.15	2.19	0.07	2.57	3.80
20	11.21	9.83	1.39	3.05	3.10	3.12	3.15	0.05	2.67	3.87
21	12.23	10.54	1.69	4.19	4.36	4.43	4.49	0.13	2.80	3.96
22	13.25	11.24	2.01	5.92	6.04	6.12	6.19	0.15	2.97	4.08
23	14.27	11.96	2.31	7.76	8.04	8.12	8.25	0.21	3.18	4.23
24	15.29	12.76	2.53	9.80	10.00	10.15	10.32	0.32	3.38	4.39
25	16.31	13.56	2.75	12.31	12.58	12.70	12.94	0.36	3.64	4.60
26	17.33	14.42	2.91	14.62	14.81	14.90	14.98	0.17	3.85	4.76
27	18.35	15.31	3.04	15.80	16.35	16.54	16.64	0.29	4.01	4.89
28	19.37	16.28	3.09	16.75	17.20	17.20	17.22	0.02	4.07	4.94

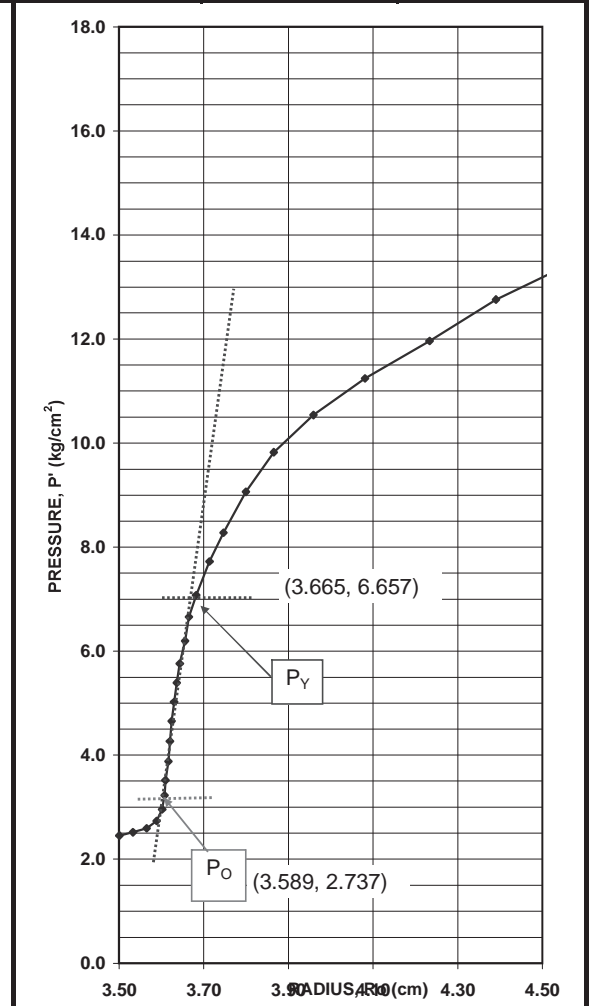
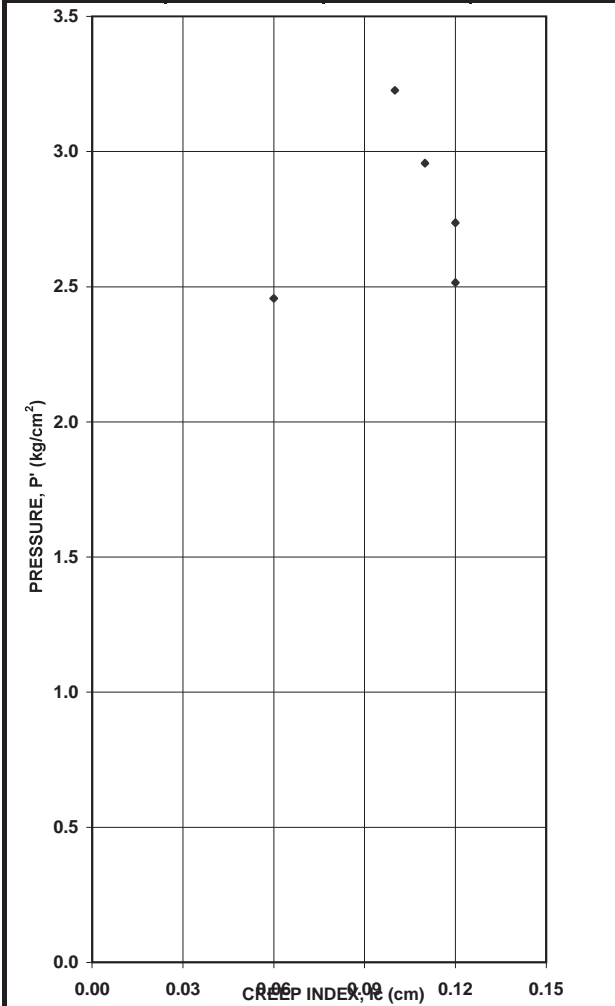
REMARKS:				TIME TAKEN :					
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> <span style="margin-left: 200px;"><u>Hard Rubber</u></span> $R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10$ for P <= 10 <span style="margin-left: 100px;"><math>R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10</math> for P &lt;= 20</span> $R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-10]/666\} / 10$ for P > 10 <span style="margin-left: 100px;"><math>R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-20] / 400\} / 10</math> for P &gt; 20</span> (10) ... R <sub>o</sub> outside radius, obtained by using $R_o = (R_s^2 + A/\pi)^{1/2}$ , where A = 24.63cm <sup>2</sup> .				TEST LOCATION:		TEST DEPTH:			
				<b>P-8</b>		<b>13m</b>			
				TEST NO.:		TEST DATE:			
<b>1</b>		<b>27/03/2012</b>							
PAGE:		N - VALUE:							
<b>1/3</b>		<b>21</b>							
RUBBER TYPE:	GROUND WATER LEVEL:	N VALUE:	SOIL TYPE:	SPECIALIST SUB-CONTRACTOR: <b>SURVEY2000</b> TEL: 8818386 Email: survey2k@yahoo.com					
<b>MIDIUM</b>		<b>21</b>	<b>FINE SAND</b>						
PROJECT:									
<b>PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO. 1</b> <b>BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>									
CLIENT:			CONSULTANT:						
BANGLADESH ROADS & HIGHWAY DEPARTMENT			ORIENTAL CONSULTANTS CO.LTD						

## PRESSUREMETER TEST DATA RESULTS

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.18	-2.54	-2.54	-2.52	-2.48
2	0.21	-2.26	-2.07	-2.03	-1.95
3	0.24	-1.83	-1.63	-1.52	-1.43
4	0.27	-1.37	-1.17	-1.10	-1.05
5	0.30	-1.02	-0.95	-0.91	-0.84
6	0.33	-0.83	-0.85	-0.82	-0.75
7	0.36	-0.78	-0.76	-0.75	-0.72
8	0.40	-0.69	-0.65	-0.60	-0.60
9	0.44	-0.57	-0.56	-0.56	-0.55
10	0.48	-0.52	-0.50	-0.48	-0.48
11	0.52	-0.43	-0.40	-0.39	-0.39
12	0.56	-0.33	-0.31	-0.31	-0.29
13	0.60	-0.20	-0.19	-0.18	-0.18
14	0.65	0.00	0.01	0.01	0.01
15	0.70	0.11	0.13	0.14	0.15
16	0.75	0.33	0.38	0.40	0.41
17	0.83	0.81	0.85	0.87	0.90
18	0.90	1.28	1.33	1.39	1.40
19	1.00	2.05	2.12	2.15	2.19
20	1.10	3.05	3.10	3.12	3.15
21	1.20	4.19	4.36	4.43	4.49
22	1.30	5.92	6.04	6.12	6.19
23	1.40	7.76	8.04	8.12	8.25
24	1.50	9.80	10.00	10.15	10.32
25	1.60	12.31	12.58	12.70	12.94
26	1.70	14.62	14.81	14.90	14.98
27	1.80	15.80	16.35	16.54	16.64
28	1.90	16.75	17.20	17.20	17.22
REMARKS:			TIME TAKEN :		
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> R <sub>s</sub> (cm) = {Rn(120) + 23.5} / 10 for P <= 10 R <sub>s</sub> (cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  (10) ... R <sub>o</sub> outside radius, obtained by using R <sub>o</sub> = (R <sub>s</sub> <sup>2</sup> + A/π) <sup>1/2</sup> , where A = 24.63cm <sup>2</sup> .			TEST LOCATION:	TEST DEPTH:	
			<b>P-8</b>	<b>13m</b>	
			TEST NO.:	TEST DATE:	
			<b>1</b>	<b>27/03/2012</b>	
PAGE:	N - VALUE:	<b>21</b>			
RUBBER TYPE:	SOIL TYPE:	MEGHNA-GUMUTI			
<b>M</b>	<b>FINE SAND</b>				
PROJECT:			SPECIALIST SUB-CONTRACTOR:		
<b>PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>			<b>SURVEY2000</b>		
CLIENT: ORIENTAL CONSULTANTS CO.LTD			TEL: 8818386		
			Email: survey2k@yahoo.com		

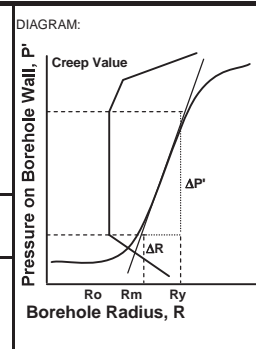
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	P <sub>o</sub> (kg/cm <sup>2</sup> )	P <sub>y</sub> (kg/cm <sup>2</sup> )	P <sub>f</sub> (kg/cm <sup>2</sup> )	K <sub>m</sub> (kg/cm <sup>3</sup> )	E <sub>m</sub> (kg/cm <sup>2</sup> )	R <sub>m</sub> (cm)
1st	2.737	6.657	-	51.579	243.200	3.627



REMARKS:

P<sub>o</sub>, P<sub>o</sub>' ..... Earth Pressure at Rest  
 P<sub>y</sub>, P<sub>y</sub>' ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P-8</b>	TEST DEPTH: <b>13m</b>
TEST NO.: <b>1</b>	TEST DATE: <b>27/03/2012</b>
SPECIALIST SUB-CONTRACTOR: <b>SURVEY2000</b> TEL: 8818386 Email: survey2k@yahoo.com	

RUBBER TYPE: <b>MEDIUM</b>	N VALUE: <b>21</b>	SOIL TYPE: <b>FINE SAND</b>
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PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**

### PRESSUREMETER TEST DATA RESULTS

No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	2.04	2.62	-0.58	-2.48	-2.47	-2.42	-2.40	0.07	2.11	3.51
2	2.45	2.85	-0.40	-2.34	-2.20	-2.10	-2.01	0.19	2.15	3.53
3	2.85	3.14	-0.29	-1.95	-1.82	-1.80	-1.76	0.06	2.17	3.54
4	3.26	3.42	-0.16	-1.56	-1.52	-1.50	-1.46	0.06	2.20	3.56
5	3.67	3.78	-0.11	-1.42	-1.38	-1.36	-1.35	0.03	2.22	3.57
6	4.08	4.15	-0.08	-1.34	-1.31	-1.29	-1.27	0.04	2.22	3.58
7	4.59	4.63	-0.04	-1.24	-1.22	-1.20	-1.18	0.04	2.23	3.58
8	5.10	5.09	0.01	-1.14	-1.10	-1.08	-1.06	0.04	2.24	3.59
9	5.61	5.54	0.06	1.01	-0.98	-0.95	-0.93	0.05	2.26	3.60
10	6.12	6.01	0.11	-0.87	-0.85	-0.84	-0.82	0.03	2.27	3.60
11	6.63	6.44	0.19	-0.70	-0.67	-0.65	-0.62	0.05	2.29	3.62
12	7.14	6.83	0.31	-0.46	-0.40	-0.36	-0.31	0.09	2.32	3.64
13	7.65	7.28	0.37	-0.22	-0.20	-0.18	-0.15	0.05	2.34	3.65
14	8.15	7.67	0.48	0.07	0.13	0.14	0.16	0.03	2.37	3.67
15	8.66	8.07	0.59	0.39	0.42	0.44	0.48	0.06	2.40	3.69
16	9.38	8.60	0.78	0.94	0.98	1.00	1.04	0.06	2.45	3.72
17	10.09	9.11	0.98	1.64	1.65	1.67	1.68	0.03	2.52	3.77
18	10.91	9.69	1.21	2.30	2.37	2.44	2.49	0.12	2.60	3.82
19	11.72	10.24	1.48	3.37	3.42	3.46	3.53	0.11	2.70	3.89
20	12.54	10.80	1.74	4.38	4.55	4.63	4.72	0.17	2.82	3.98
21	13.35	11.34	2.01	6.01	6.08	6.13	6.21	0.13	2.97	4.08
22	14.27	11.98	2.29	7.59	7.82	7.93	8.12	0.30	3.16	4.22
23	15.29	12.72	2.57	9.95	10.22	10.40	10.73	0.51	3.42	4.42
24	16.31	13.50	2.81	12.55	13.03	13.30	13.77	0.74	3.73	4.66
25	17.33	14.27	3.05	16.10	16.38	16.55	16.80	0.42	4.03	4.91
26	17.33	14.14	3.19	17.63	18.00	18.24	18.25	0.25	4.18	5.03

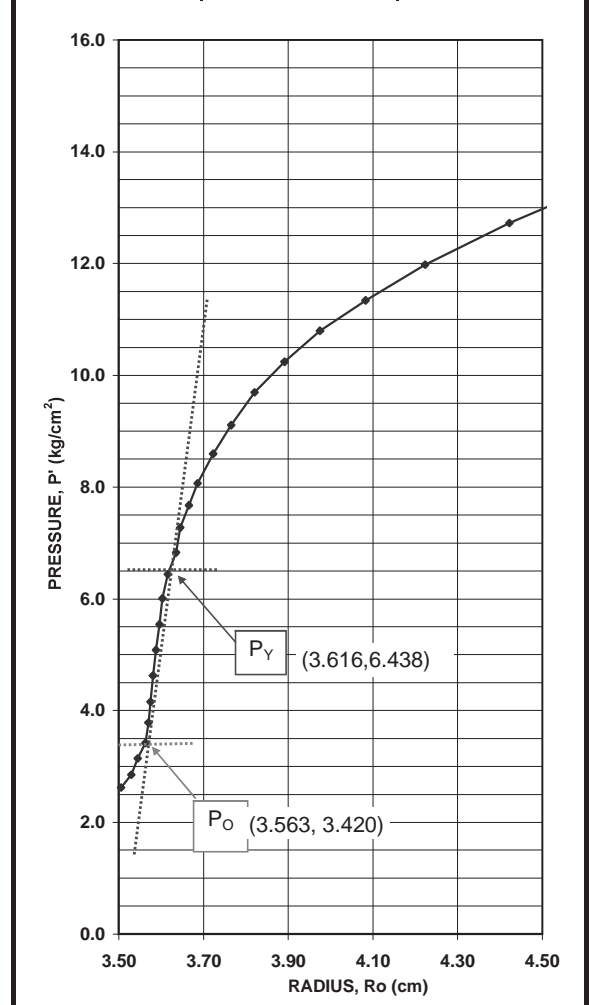
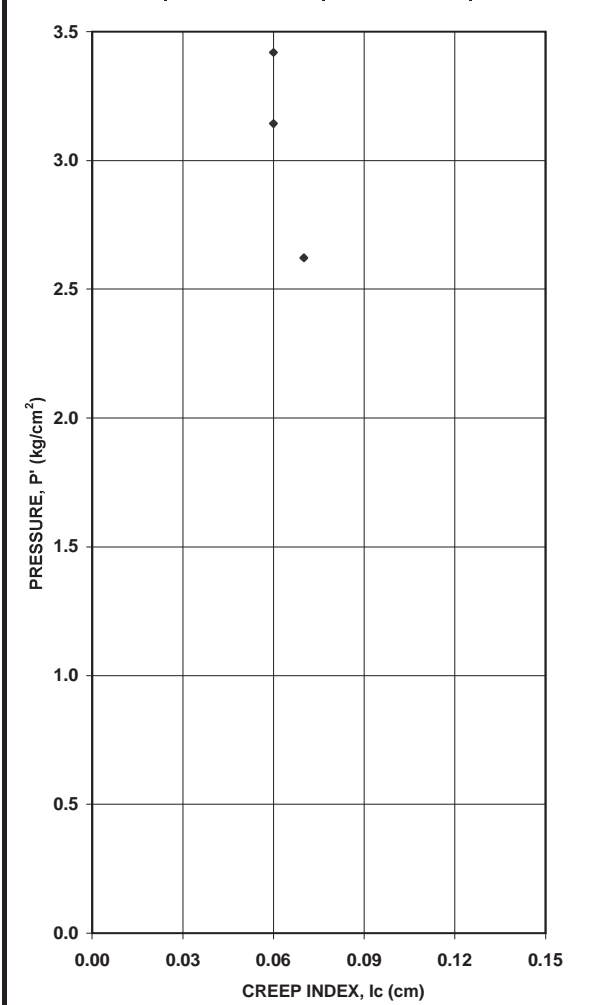
REMARKS:				TIME TAKEN :			
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> <span style="margin-left: 200px;"><u>Hard Rubber</u></span> R <sub>s</sub> (cm) = {Rn(120) + 23.5} / 10 for P <= 10 <span style="margin-left: 100px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P &lt;= 20</span> R <sub>s</sub> (cm) = {Rn(120) + 23.5-[P-10]/666} / 10 for P>10 <span style="margin-left: 100px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5 - [P-20] / 400} / 10 for P&gt;20</span>				TEST LOCATION: <b>P8</b>		TEST DEPTH: <b>18M</b>	
(10) ... R <sub>o</sub> outside radius, obtained by using R <sub>o</sub> = (R <sub>s</sub> <sup>2</sup> + A/π) <sup>1/2</sup> , where A = 24.63cm <sup>2</sup> .				TEST NO.: <b>2</b>		TEST DATE: <b>27/3/2012</b>	
RUBBER TYPE: <b>MEDIUM</b> GROUND WATER LEVEL:     N VALUE: <b>17</b> SOIL TYPE: <b>SANDY SILT</b>				PAGE: <b>1/3</b>		N - VALUE: <b>17</b>	
PROJECT: <b>PREPERATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT.</b>				SPECIALIST SUB-CONTRACTOR: <b>SURVEY2000</b> TEL: 8818386 Email: survey2k@yahoo.com			
CLIENT: <b>BANGLADESH ROADS &amp; HIGHWAY Department</b>				CONSULTANT: <b>ORIENTAL CONSULTANTS CO. LTD</b>			

## PRESSUREMETER TEST DATA RESULTS

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.20	-2.48	-2.47	-2.42	-2.40
2	0.24	-2.34	-2.20	-2.10	-2.01
3	0.28	-1.95	-1.82	-1.80	-1.76
4	0.32	-1.56	-1.52	-1.50	-1.46
5	0.36	-1.42	-1.38	-1.36	-1.35
6	0.40	-1.34	-1.31	-1.29	-1.27
7	0.45	-1.24	-1.22	-1.20	-1.18
8	0.50	-1.14	-1.10	-1.08	-1.06
9	0.55	1.01	-0.98	-0.95	-0.93
10	0.60	-0.87	-0.85	-0.84	-0.82
11	0.65	-0.70	-0.67	-0.65	-0.62
12	0.70	-0.46	-0.40	-0.36	-0.31
13	0.75	-0.22	-0.20	-0.18	-0.15
14	0.80	0.07	0.13	0.14	0.16
15	0.85	0.39	0.42	0.44	0.48
16	0.92	0.94	0.98	1.00	1.04
17	0.99	1.64	1.65	1.67	1.68
18	1.07	2.30	2.37	2.44	2.49
19	1.15	3.37	3.42	3.46	3.53
20	1.23	4.38	4.55	4.63	4.72
21	1.31	6.01	6.08	6.13	6.21
22	1.40	7.59	7.82	7.93	8.12
23	1.50	9.95	10.22	10.40	10.73
24	1.60	12.55	13.03	13.30	13.77
25	1.70	16.10	16.38	16.55	16.80
REMARKS:				TIME TAKEN :	
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> R <sub>s</sub> (cm) = {Rn(120) + 23.5} / 10 for P <= 10 R <sub>s</sub> (cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  (10) ... R <sub>o</sub> outside radius, obtained by using R <sub>o</sub> = (R <sub>s</sub> <sup>2</sup> + A/π) <sup>1/2</sup> , where A = 24.63cm <sup>2</sup> .				TEST LOCATION:	TEST DEPTH:
				<b>P-8</b>	<b>18m</b>
				TEST NO.:	TEST DATE:
				<b>2</b>	<b>27/03/2012</b>
PAGE:	N - VALUE:				
	<b>17</b>				
RUBBER TYPE:	SOIL TYPE:	SPECIALIST SUB-CONTRACTOR:			
<b>M</b>	<b>FINE SAND</b>	SPECIALIST SUB-CONTRACTOR:			
PROJECT:		<b>SURVEY2000</b>			
<b>PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1                      BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>		TEL: 8818386			
		Email: survey2k@yahoo.com			
CLIENT:	ORIENTAL CONSULTANTS CO.LTD				

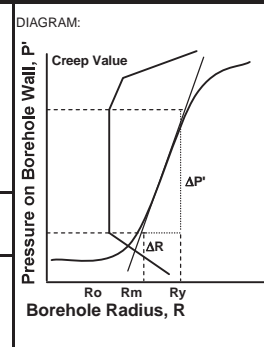
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	Po (kg/cm <sup>2</sup> )	Py (kg/cm <sup>2</sup> )	Pf (kg/cm <sup>2</sup> )	Km (kg/cm <sup>3</sup> )	Em (kg/cm <sup>2</sup> )	Rm (cm)
1st	3.420	6.438	-	56.943	265.718	3.590



REMARKS:

Po, Po' ..... Earth Pressure at Rest  
 Py, Py' ..... Yield Pressure  
 $E = (1 + \nu) \cdot Rm \cdot Km$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P8</b>	TEST DEPTH: <b>18M</b>
TEST NO.: <b>2</b>	TEST DATE: <b>27/3/2012</b>
PAGE:	N - VALUE: <b>17</b>

RUBBER TYPE: **MEDIUM**      N VALUE: **17**      SOIL TYPE: **FINE SAND**

PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**



PRESSUREMETER TEST DATA RESULTS										
No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	1.12	1.64	-0.52	-2.29	-2.29	-2.28	-2.27	0.02	2.12	3.51
2	1.43	1.76	-0.33	-1.90	-1.88	-1.87	-1.85	0.03	2.17	3.54
3	1.73	1.76	-0.03	-1.23	-1.20	-1.17	-1.15	0.05	2.24	3.58
4	2.04	1.76	0.28	-0.48	-0.45	-0.42	-0.39	0.06	2.31	3.63
5	2.34	1.86	0.48	0.00	0.10	0.14	0.16	0.06	2.37	3.67
6	2.65	2.02	0.63	0.42	0.49	0.54	0.59	0.10	2.41	3.69
7	2.96	2.22	0.74	0.80	0.84	0.87	0.90	0.06	2.44	3.71
8	3.36	2.53	0.83	1.11	1.13	1.17	1.19	0.06	2.47	3.73
9	3.77	2.87	0.90	1.34	1.37	1.39	1.40	0.03	2.49	3.75
10	4.18	3.21	0.97	1.59	1.60	1.63	1.65	0.05	2.52	3.76
11	4.59	3.50	1.09	1.96	2.00	2.01	2.03	0.03	2.55	3.79
12	5.10	3.85	1.24	2.51	2.55	2.56	2.60	0.05	2.61	3.83
13	5.61	4.17	1.44	3.22	3.27	3.31	3.35	0.08	2.69	3.88
14	6.12	4.47	1.64	4.12	4.18	4.21	4.26	0.08	2.78	3.94
15	6.63	4.72	1.90	5.37	5.48	5.52	5.56	0.08	2.91	4.04
16	7.14	4.99	2.15	6.80	6.93	7.01	7.09	0.16	3.06	4.15
17	7.65	5.25	2.39	8.51	8.76	8.83	9.00	0.24	3.25	4.29
18	8.15	5.51	2.65	11.00	11.29	11.40	11.65	0.36	3.52	4.49
19	8.66	5.80	2.87	13.11	13.80	14.07	14.47	0.67	3.80	4.72
20	9.17	6.15	3.03	15.77	16.08	16.33	16.50	0.42	4.00	4.88
21	9.68	6.60	3.09	17.15	17.16	17.17	17.17	0.01	4.07	4.94
REMARKS:								TIME TAKEN :		
<p>(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG</p> <p>(3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.</p> <p>(8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.</p> <p>(9) ... R<sub>s</sub> inside radius obtained by the following equations:</p> <p><u>Medium Rubber</u> <span style="margin-left: 150px;"><u>Hard Rubber</u></span></p> <p>R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P &lt;= 10 <span style="margin-left: 100px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P &lt;= 20</span></p> <p>R<sub>s</sub>(cm) = {Rn(120) + 23.5-[P-10]/666} / 10 for P&gt;10 <span style="margin-left: 50px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5 - [P-20] / 400} / 10 for P&gt;20</span></p> <p>(10) ... R<sub>o</sub> outside radius, obtained by using R<sub>o</sub> = (R<sub>s</sub><sup>2</sup> + A/π)<sup>1/2</sup>, where A = 24.63cm<sup>2</sup>.</p>								TEST LOCATION:	TEST DEPTH:	
								<b>P-13</b>	<b>10m</b>	
								TEST NO.:	TEST DATE:	
								<b>1</b>	<b>28/03/2012</b>	
								PAGE:	N - VALUE:	
RUBBER TYPE:	GROUND WATER LEVEL:	N VALUE:	SOIL TYPE:	SPECIALIST SUB-CONTRACTOR:						
<b>MEDIUM</b>		<b>11</b>	<b>FINE SAND</b>	<b>SURVEY2000</b>						
PROJECT:				TEL: 8818386						
<b>PREPERATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>				Email: survey2k@yahoo.com						
CLIENT:			CONSULTANT:							
<b>BANGLADESH ROADS &amp; HIGHWAY Department</b>			<b>ORIENTAL COSULTANTS CO. LTD</b>							

## PRESSUREMETER TEST DATA RESULTS

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.11	-2.29	-2.29	-2.28	-2.27
2	0.14	-1.90	-1.88	-1.87	-1.85
3	0.17	-1.23	-1.20	-1.17	-1.15
4	0.20	-0.48	-0.45	-0.42	-0.39
5	0.23	0.00	0.10	0.14	0.16
6	0.26	0.42	0.49	0.54	0.59
7	0.29	0.80	0.84	0.87	0.90
8	0.33	1.11	1.13	1.17	1.19
9	0.37	1.34	1.37	1.39	1.40
10	0.41	1.59	1.60	1.63	1.65
11	0.45	1.96	2.00	2.01	2.03
12	0.50	2.51	2.55	2.56	2.60
13	0.55	3.22	3.27	3.31	3.35
14	0.60	4.12	4.18	4.21	4.26
15	0.65	5.37	5.48	5.52	5.56
16	0.70	6.80	6.93	7.01	7.09
17	0.75	8.51	8.76	8.83	9.00
18	0.80	11.00	11.29	11.40	11.65
19	0.85	13.11	13.80	14.07	14.47
20	0.90	15.77	16.08	16.33	16.50
21	0.95	17.15	17.16	17.17	17.17
22					
23					
24					
25					
26					

REMARKS:

TIME TAKEN :

(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG  
 (3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.  
 (8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.  
 (9) ... R<sub>s</sub> inside radius obtained by the following equations:  
Medium Rubber  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P <= 10  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  
 (10) ... R<sub>o</sub> outside radius, obtained by using R<sub>o</sub> = (R<sub>s</sub><sup>2</sup> + A/π)<sup>1/2</sup>, where A = 24.63cm<sup>2</sup>.

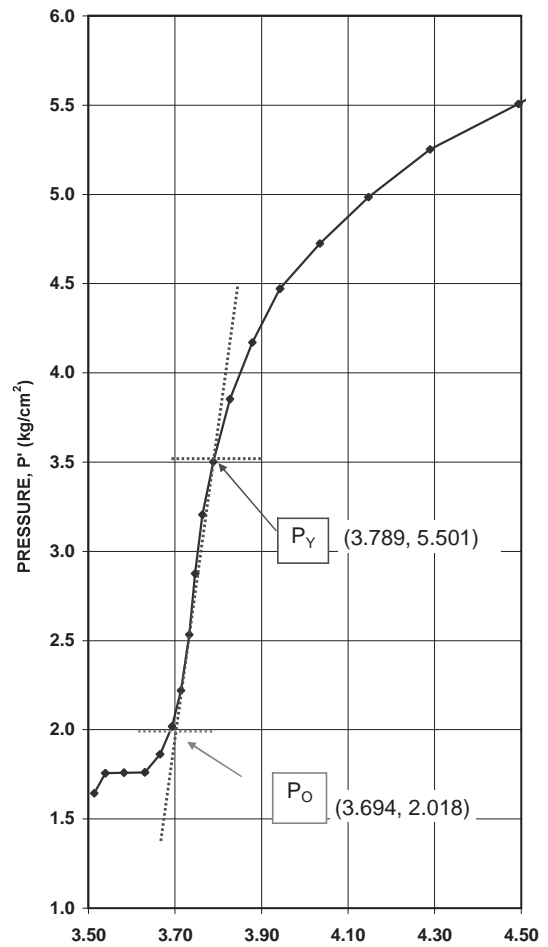
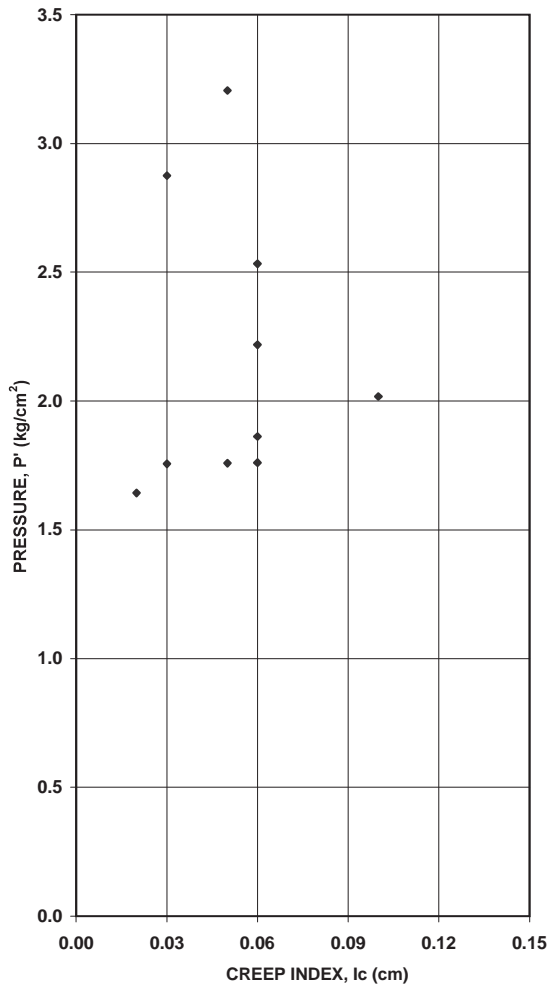
TEST LOCATION: <b>P-13</b>	TEST DEPTH: <b>10m</b>
TEST NO.: <b>1</b>	TEST DATE: <b>28/03/2012</b>
PAGE:	N - VALUE: <b>11</b>

RUBBER TYPE: <b>M</b>	SOIL TYPE: <b>FINE SAND</b>
PROJECT: <b>PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>	
CLIENT: <b>ORIENTAL CONSULTANTS CO.LTD</b>	

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

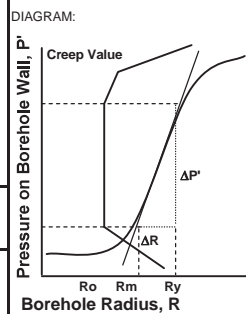
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	$P_o$ (kg/cm <sup>2</sup> )	$P_y$ (kg/cm <sup>2</sup> )	$P_f$ (kg/cm <sup>2</sup> )	$K_m$ (kg/cm <sup>3</sup> )	$E_m$ (kg/cm <sup>2</sup> )	$R_m$ (cm)
1st	2.018	5.501	-	36.663	178.328	3.742



REMARKS:

$P_o, P_o'$  ..... Earth Pressure at Rest  
 $P_y, P_y'$  ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: **P-13**      TEST DEPTH: **10m**

TEST NO.: **1**      TEST DATE: **28/03/2012**

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

RUBBER TYPE: **MEDIUM**      N VALUE: **11**      SOIL TYPE: **FINE SAND**

PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**

**PRESSUREMETER TEST DATA RESULTS**

No.	(1) P kg/cm <sup>2</sup>	(2) P' = P - RG kg/cm <sup>2</sup>	(3) RG kg/cm <sup>2</sup>	(4) Rn <sub>0</sub> mm	(5) Rn <sub>30</sub> mm	(6) Rn <sub>60</sub> mm	(7) Rn <sub>120</sub> mm	(8) Creep Index, I <sub>c</sub> mm	(9) Rs cm	(10) Ro cm
1	1.22	2.13	-0.90	-3.07	-3.06	-3.06	-3.05	0.01	2.05	3.47
2	1.53	2.15	-0.62	-2.54	-2.50	-2.49	-2.48	0.02	2.10	3.50
3	1.83	2.20	-0.37	-1.99	-1.95	-1.94	-1.93	0.02	2.16	3.53
4	2.14	2.22	-0.08	-1.38	-1.33	-1.30	-1.28	0.05	2.22	3.57
5	2.45	2.30	0.15	-0.85	-0.79	-0.75	-0.72	0.07	2.28	3.61
6	2.75	2.46	0.29	-0.44	-0.40	-0.38	-0.35	0.05	2.32	3.63
7	3.06	2.63	0.43	-0.17	-0.08	-0.02	0.02	0.10	2.35	3.66
8	3.36	2.83	0.53	0.18	0.22	0.26	0.30	0.08	2.38	3.67
9	3.77	3.13	0.64	0.58	0.60	0.60	0.62	0.02	2.41	3.70
10	4.18	3.50	0.68	0.68	0.70	0.71	0.73	0.03	2.42	3.70
11	4.59	3.85	0.74	0.83	0.86	0.89	0.91	0.05	2.44	3.71
12	5.10	4.28	0.82	1.05	1.09	1.12	1.15	0.06	2.47	3.73
13	5.61	4.67	0.94	1.48	1.52	1.52	1.54	0.02	2.50	3.76
14	6.12	5.04	1.08	1.85	1.93	1.98	2.00	0.07	2.55	3.79
15	6.63	5.38	1.24	2.49	2.55	2.56	2.59	0.04	2.61	3.83
16	7.14	5.71	1.42	3.09	3.21	3.24	3.30	0.09	2.68	3.88
17	7.65	6.01	1.63	3.91	4.10	4.16	4.21	0.11	2.77	3.94
18	8.36	6.46	1.90	5.18	5.40	5.52	5.57	0.17	2.91	4.04
19	9.17	6.93	2.25	7.15	7.48	7.65	7.78	0.30	3.13	4.20
20	10.19	7.59	2.60	9.67	10.40	10.75	11.10	0.70	3.46	4.45
21	11.01	8.10	2.91	13.33	14.03	14.45	15.01	0.98	3.85	4.76
22	11.82	8.74	3.09	16.40	16.98	17.16	17.16	0.18	4.07	4.94

REMARKS:				TIME TAKEN :			
(2) ... P' (kg/cm <sup>2</sup> ) effective pressure obtained by (1) - (3) : P' = P - RG (3) ... RG (kg/cm <sup>2</sup> ) obtained from Rn (120) using Rg Calibration Chart. (8) ... Creep Index, I <sub>c</sub> Obtained by (7) - (5); I <sub>c</sub> = Rn (120) - Rn (30) in mm. (9) ... R <sub>s</sub> inside radius obtained by the following equations: <u>Medium Rubber</u> <span style="margin-left: 150px;"><u>Hard Rubber</u></span> R <sub>s</sub> (cm) = {Rn(120) + 23.5} / 10 for P <= 10 <span style="margin-left: 150px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P &lt;= 20</span> R <sub>s</sub> (cm) = {Rn(120) + 23.5-[P-10]/666} / 10 for P>10 <span style="margin-left: 150px;">R<sub>s</sub>(cm) = {Rn(120) + 23.5 - [P-20] / 400} / 10 for P&gt;20</span>				TEST LOCATION: <b>P-13</b>	TEST DEPTH: <b>14m</b>		
				TEST NO.: <b>2</b>	TEST DATE: <b>28/03/2012</b>		
				PAGE:	N - VALUE:		
(10) ... R <sub>o</sub> outside radius, obtained by using R <sub>o</sub> = (R <sub>s</sub> <sup>2</sup> + A/π) <sup>1/2</sup> , where A = 24.63cm <sup>2</sup> .				SPECIALIST SUB-CONTRACTOR:			
RUBBER TYPE: <b>MIDIUM</b>	GROUND WATER LEVEL:	N VALUE: <b>13</b>	SOIL TYPE: <b>FINE SAND</b>	<b>SURVEY2000</b> TEL: 8818386 Email: survey2k@yahoo.com			
PROJECT: <b>PREPERATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT.</b>							
CLIENT: <b>BANGLADESH ROADS &amp; HIGHWAY Department</b>			CONSULTANT: <b>ORIENTAL CONSULTANTS CO. LTD</b>				

## PRESSUREMETER TEST DATA RESULTS

No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.12	-3.07	-3.06	-3.06	-3.05
2	0.15	-2.54	-2.50	-2.49	-2.48
3	0.18	-1.99	-1.95	-1.94	-1.93
4	0.21	-1.38	-1.33	-1.30	-1.28
5	0.24	-0.85	-0.79	-0.75	-0.72
6	0.27	-0.44	-0.40	-0.38	-0.35
7	0.30	-0.17	-0.08	-0.02	0.02
8	0.33	0.18	0.22	0.26	0.30
9	0.37	0.58	0.60	0.60	0.62
10	0.41	0.68	0.70	0.71	0.73
11	0.45	0.83	0.86	0.89	0.91
12	0.50	1.05	1.09	1.12	1.15
13	0.55	1.48	1.52	1.52	1.54
14	0.60	1.85	1.93	1.98	2.00
15	0.65	2.49	2.55	2.56	2.59
16	0.70	3.09	3.21	3.24	3.30
17	0.75	3.91	4.10	4.16	4.21
18	0.82	5.18	5.40	5.52	5.57
19	0.90	7.15	7.48	7.65	7.78
20	1.00	9.67	10.40	10.75	11.10
21	1.08	13.33	14.03	14.45	15.01
22	1.16	16.40	16.98	17.16	17.16
23					
24					
25					

REMARKS:

TIME TAKEN :

(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG  
 (3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.  
 (8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.  
 (9) ... R<sub>s</sub> inside radius obtained by the following equations:  
Medium Rubber  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5} / 10 for P <= 10  
 R<sub>s</sub>(cm) = {Rn(120) + 23.5-[P-10]/666} /10 for P>10  
 (10) ... R<sub>o</sub> outside radius, obtained by using R<sub>o</sub> = (R<sub>s</sub><sup>2</sup> + A/π)<sup>1/2</sup>, where A = 24.63cm<sup>2</sup>.

TEST LOCATION: <b>P-13</b>	TEST DEPTH: <b>14m</b>
TEST NO.: <b>2</b>	TEST DATE: <b>28/03/2012</b>
PAGE:	N - VALUE: <b>13</b>

RUBBER TYPE: **M**      SOIL TYPE: **FINE SAND**

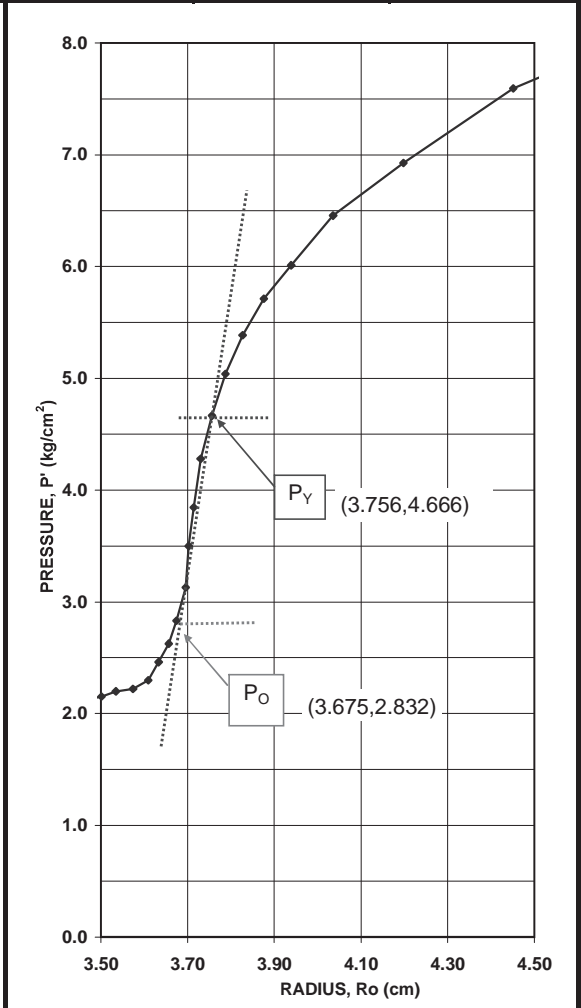
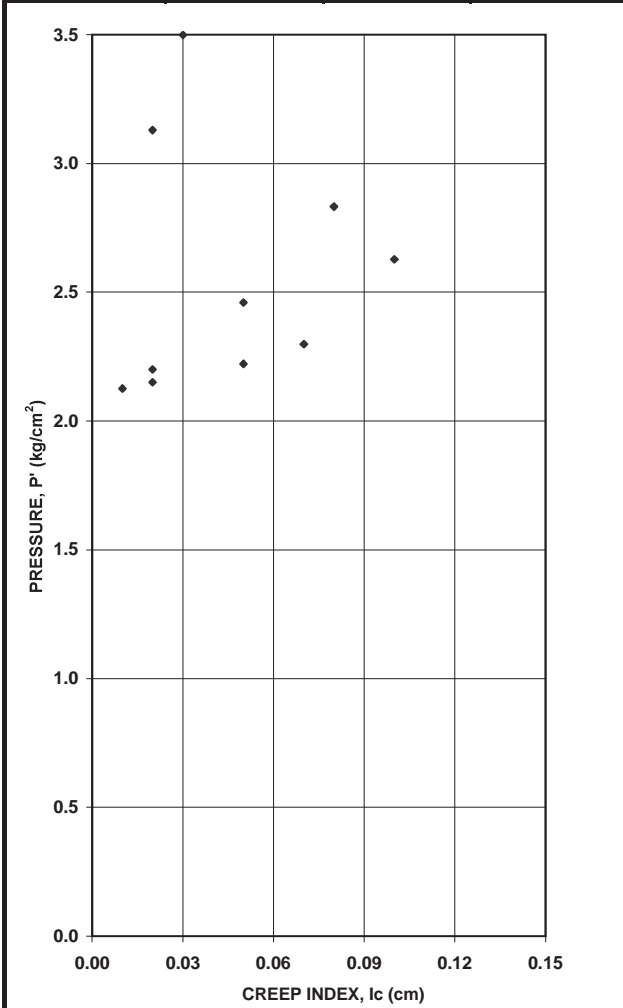
PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1  
 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

CLIENT: **ORIENTAL CONSULTANTS CO.LTD**

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

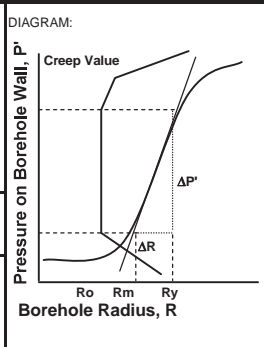
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	$P_o$ (kg/cm <sup>2</sup> )	$P_y$ (kg/cm <sup>2</sup> )	$P_f$ (kg/cm <sup>2</sup> )	$K_m$ (kg/cm <sup>3</sup> )	$E_m$ (kg/cm <sup>2</sup> )	$R_m$ (cm)
1st	4.666	2.832	-	22.642	109.364	3.716



REMARKS:

$P_o, P_o'$  ..... Earth Pressure at Rest  
 $P_y, P_y'$  ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P-13</b>	TEST DEPTH: <b>14m</b>
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TEST NO.: <b>2</b>	TEST DATE: <b>28/03/2012</b>
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RUBBER TYPE: <b>MEDIUM</b>	N VALUE: <b>13</b>	SOIL TYPE: <b>FINE SAND</b>
-------------------------------	-----------------------	--------------------------------

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
 TEL: 8818386  
 Email: survey2k@yahoo.com

PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

CLIENT:  
**BANGLADESH ROADS & HIGHWAY DEPARTMENT**

CONSULTANT:  
**ORIENTAL COSULTANTS CO. LTD**



### PRESSUREMETER TEST DATA RESULTS

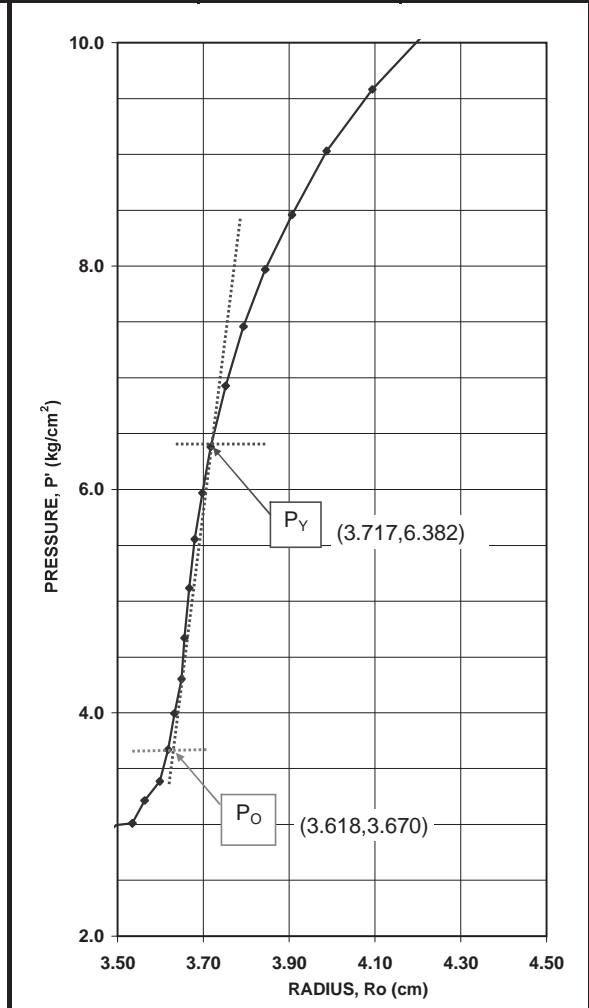
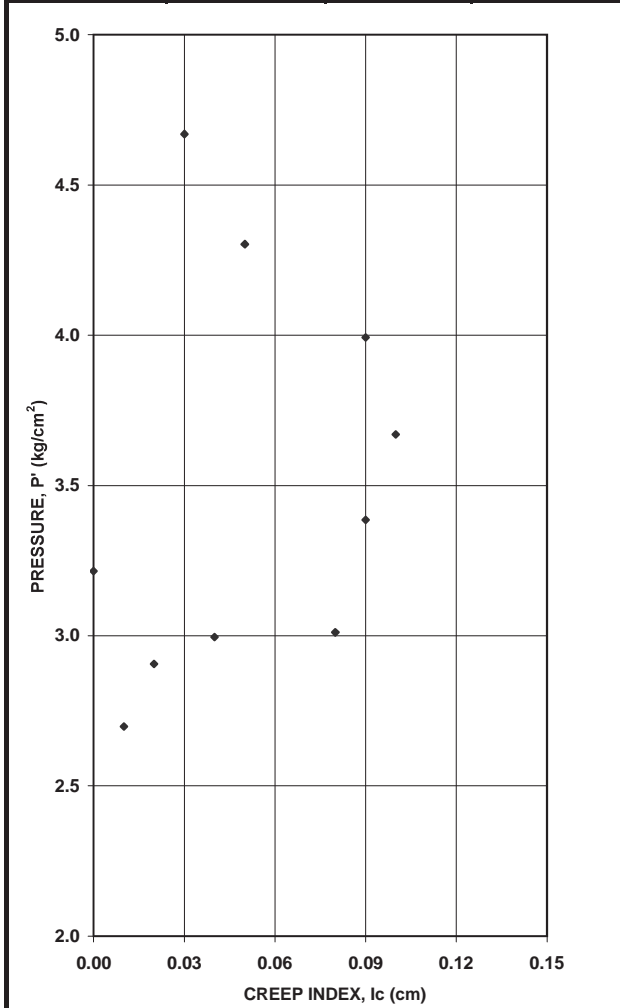
No.	(1) P Mpa	(2) Rn <sub>0</sub> mm	(3) Rn <sub>30</sub> mm	(4) Rn <sub>60</sub> mm	(5) Rn <sub>120</sub> mm
1	0.17	-3.19	-3.18	-3.18	-3.17
2	0.20	-3.00	-3.00	-3.00	-2.98
3	0.23	-2.65	-2.58	-2.55	-2.54
4	0.26	-2.14	-2.00	-1.94	-1.92
5	0.30	-1.60	-1.46	-1.42	-1.46
6	0.34	-1.08	-0.98	-0.92	-0.89
7	0.38	-0.79	-0.68	-0.65	-0.58
8	0.42	-0.52	-0.45	-0.40	-0.36
9	0.46	-0.23	-0.15	-0.13	-0.10
10	0.50	-0.08	-0.02	0.00	0.01
11	0.55	0.11	0.15	0.17	0.18
12	0.60	0.32	0.35	0.36	0.38
13	0.65	0.62	0.64	0.65	0.66
14	0.70	0.91	0.92	0.94	0.95
15	0.77	1.46	1.47	1.47	1.48
16	0.84	2.03	2.05	2.09	2.10
17	0.91	2.70	2.77	2.79	2.84
18	0.98	3.56	3.62	3.68	3.75
19	1.06	4.71	4.77	4.82	4.89
20	1.14	6.09	6.18	6.26	6.37
21	1.22	7.84	7.99	8.09	8.20
22	1.30	9.81	10.04	10.14	10.33
23	1.38	12.20	12.47	12.60	12.75
24	1.46	15.21	15.52	15.75	16.15
25	1.50	16.06	16.98	17.03	17.14
26	1.55	17.12	17.15	17.15	17.15

REMARKS:		TIME TAKEN :	
<p>(2) ... P' (kg/cm<sup>2</sup>) effective pressure obtained by (1) - (3) : P' = P - RG                  (3) ... RG (kg/cm<sup>2</sup>) obtained from Rn (120) using Rg Calibration Chart.                  (8) ... Creep Index, I<sub>c</sub> Obtained by (7) - (5); I<sub>c</sub> = Rn (120) - Rn (30) in mm.                  (9) ... R<sub>s</sub> inside radius obtained by the following equations:  <u>Medium Rubber</u>  <math>R_s(\text{cm}) = \{Rn(120) + 23.5\} / 10</math> for P &lt;= 10  <math>R_s(\text{cm}) = \{Rn(120) + 23.5 - [P-10]/666\} / 10</math> for P &gt; 10                   (10) ... R<sub>o</sub> outside radius, obtained by using <math>R_o = (R_s^2 + A/\pi)^{1/2}</math>, where A = 24.63cm<sup>2</sup>.</p>		TEST LOCATION:	TEST DEPTH:
		<b>P13</b>	<b>19m</b>
		<b>MEGHNA_GUMUT</b>	
		TEST NO.:	TEST DATE:
<b>3</b>	<b>28/03/2012</b>		
PAGE:	N - VALUE:		
	<b>21</b>		
RUBBER TYPE:	SOIL TYPE:	SPECIALIST SUB-CONTRACTOR:	
<b>M</b>	<b>FINE SAND</b>	<b>SURVEY2000</b>	
PROJECT:		TEL: 8818386	
<b>PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1</b>		Email: survey2k@yahoo.com	
<b>BRIDGE CONSTRUCTION AND REHABILITATION PROJECT</b>			
CLIENT:	ORIENTAL CONSULTANTS CO.LTD		



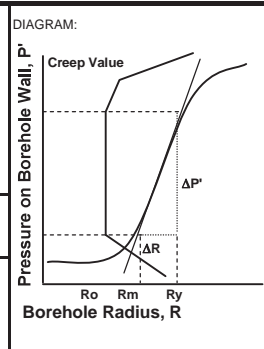
### PRESSUREMETER TEST DATA RESULTS

	EARTH PRESSURE AT REST	YIELD PRESSURE	FAILURE PRESSURE	COEFFICIENT OF SOIL REACTION	MODULUS OF ELASTICITY	MEAN RADIUS OF K VALUE CALCULATION
NO. OF CYCLE	$P_o$ (kg/cm <sup>2</sup> )	$P_y$ (kg/cm <sup>2</sup> )	$P_f$ (kg/cm <sup>2</sup> )	$K_m$ (kg/cm <sup>3</sup> )	$E_m$ (kg/cm <sup>2</sup> )	$R_m$ (cm)
1st	6.382	3.670	-	27.394	130.607	3.668



REMARKS: ..

$P_o, P_o'$  ..... Earth Pressure at Rest  
 $P_y, P_y'$  ..... Yield Pressure  
 $E = (1 + \nu) \cdot R_m \cdot K_m$  ..... Modulus of Elasticity  
 $\nu = 0.3$



TEST LOCATION: <b>P-13</b> MEGHNA_GUMUTI	TEST DEPTH: <b>19m</b>
TEST NO.: <b>3</b>	TEST DATE: <b>28/03/2012</b>

RUBBER TYPE: <b>MEDIUM</b>	N VALUE: <b>21</b>	SOIL TYPE: <b>SANDY SILT</b>
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PROJECT:  
**PREPARATORY SURVEY FOR DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT**

SPECIALIST SUB-CONTRACTOR:  
**SURVEY2000**  
TEL: 8818386  
Email: survey2k@yahoo.com

CLIENT: <b>BANGLADESH ROADS &amp; HIGHWAY DEPARTMENT</b>	CONSULTANT: <b>ORIENTAL COSULTANTS CO. LTD</b>
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# **CBR TEST**

**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**  
**LOCAL GOVERNMENT ENGINEERING DEPARTMENT**  
**CENTRAL QUALITY CONTROL UNIT**  
Agargaon, Sher-e-Bangla Nagar, Dhaka-1207

**PROCTOR DENSITY TEST FOR MDD & OMC DETERMINATION**

Client : Md. Mahabubul Islam, Geologist, SURVEY 2000	Ref.No.&Date: Survey/Soil-141-2012,03.04.2012
Scheme Const. New Meghna-Gumti Bridge	Location : <b>Daudkandi (TP-A1)</b>
Quantity Collected from Field : 40 Kg	Quantity represented : Not Informed
Sample No : <b>D1</b>	Sampled By : Mahabubul Islam, Geologist.
Description of Sample : Soil	Sampled Date : 10.03.2012
Lab. Registration No. : LGED/C-Lab/07/04-05/16	Date of Test : 21.05.2012
Type of Test : MDD	Method of Test : Standard
Mold Dia : 101.4 mm	No. of Layer : 3
Wt. of rammer : 5.5 lbs	Blow/Layer : 25

Determination no.	01	02	03	04	05
Assumed Moisture Content (%)	10	12	14	16	18

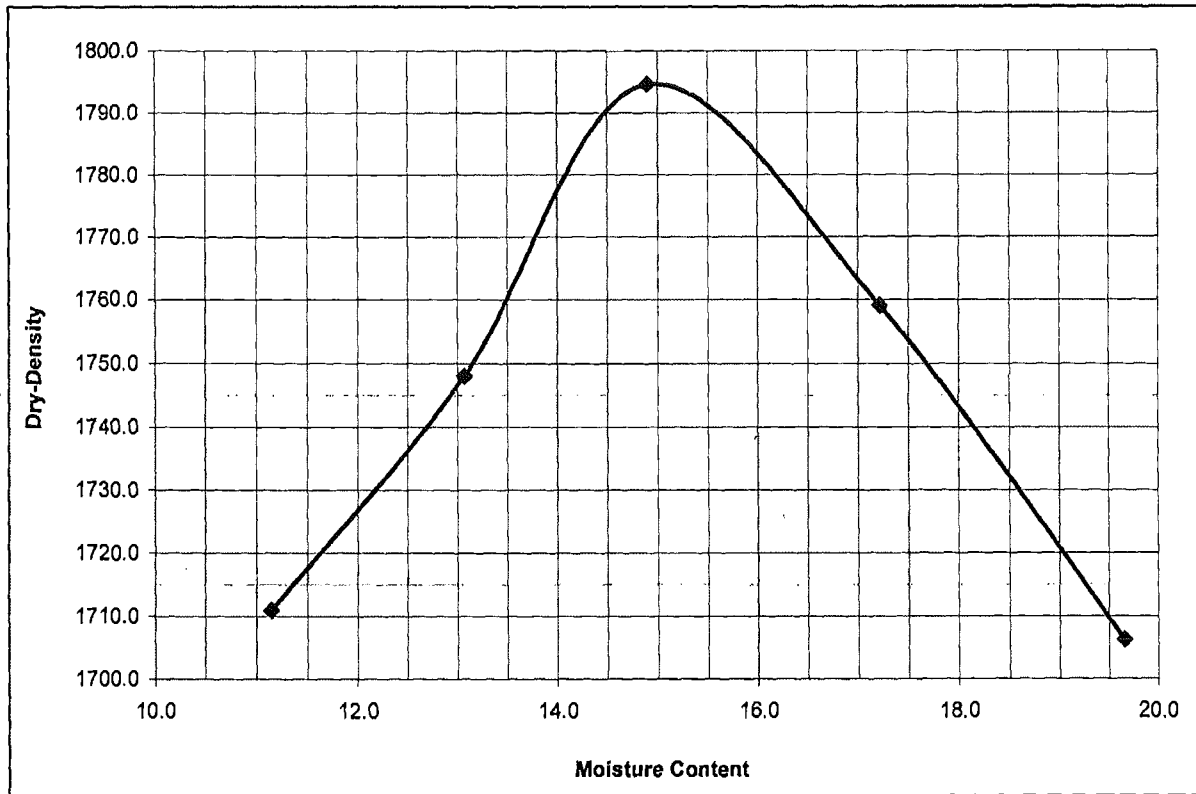
**Moisture Content Determination**

Moisture Can No.	17	1	8	*	3
Wt. of Can + Wet of specimen (A), gm	278.5	255.7	303.0	325.2	250.7
Wt. of Can + dry of specimen (B), gm	253.0	229.2	267.9	281.8	214.0
Wt. of Water (A-B), gm	25.5	26.5	35.1	43.4	36.7
Wt. of Can (C) gm	24.2	26.5	32.4	29.7	27.3
Wt. of dry Specimen (B-C), gm	228.8	202.7	235.5	252.1	186.7
Moisture Content $m = (A-B)/(B-C)$ , %	11.2	13.1	14.9	17.2	19.7
Average Moisture Content %	11	13	15	17	20

**Density Determination**

Wt. of Wet Material + Mold (X), Kg	3.820	3.882	3.970	3.962	3.995
Wt. of Mold (Y), Kg	2.036	2.036	2.036	2.036	2.036
Wt. of Material in Mould (W=X-Y), Kg	1.78	1.85	1.93	1.93	1.96
Volume of Mould (V), m <sup>3</sup>	0.000936	0.000936	0.000936	0.000936	0.000960
Wet Density ( $\gamma_{WET} = W/V$ ) Kg/m <sup>3</sup>	1901.71	1976.5	2061.97	2061.97	2041.67
Dry Density ( $\gamma_{DRY} = (\gamma_{WET})/(1+m/100)$ , kg/m <sup>3</sup> )	1710.9	1748.0	1794.6	1759.1	1706.2

NOTE : 1 kg/m<sup>3</sup> = 0.06243 lb/cft, 1 Kg = 2.2046 lb, 1m<sup>3</sup> = 35.3147 cft.



ZERO-AIR-VOID LINE' calculation (optional) to check the accuracy of Testing :--

Specific Gravity ( $G_s$ ) =

(Note: For normal soil, Sp.Gr. May be assumed 2.68, for short-cut check, For soil containing aggregates, use combined Sp. Gr.)

Assumed Moisture Content (Starting from OMC) in %, w									
Corresponding Dry Density at 'Zero-Air-Void' in $\text{kg/m}^3 = G_s \times 100 / (1 + w \times G_s / 100)$									

Maximum-Dry-Density (MDD) : 1794.6  $\approx$  1795  $\text{kg/m}^3$  Optimum-Moisture-Content (OMC) : 15 %

( NOTE ; it is recommended to express MDD ( $\text{kg/m}^3$ ) and OMC (%) by rounding to the nearest whole number)

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md.Tarikuzzaman, Sr. AE(QC)

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 (Rabiul Haque)  
 Sub-Assistant Engineer (QC)  
 Central Quality Control Unit, LGED.

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**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**  
**LOCAL GOVERNMENT ENGINEERING DEPARTMENT**  
**CENTRAL QUALITY CONTROL UNIT**  
Agargaon, Sher-e-Bangla Nagar, Dhaka-1207  
**CALIFORNIA BEARING RATIO (CBR) TEST**

Client : Md. Mahabubul Islam, Geologist, SURVEY 2000 Ref. No. & Date : Survey/Soil-141-2012, 03.04.2012  
 Scheme : Const. New Meghna-Gumti Bridge Location : **Daudkandi (TP-A1)**  
 Sample No. : D 1 Sampled by & Date : Mahbubul Islam, Geologist, 10.3.12  
 Quantity Collected from Field 40 kg Quantity Represented : Not Mentioned  
 Quantity Represented : Not Mentioned Test Date : 27.05.2012  
 Lab. Reg. No. : LGED/C-Lab/07/04-05/16 Description of Test Specimen : Soil  
 Type of Test : **Three point CBR Test (Specimen Compacted at different density)**  
 Designation of CBR Test : Soaking Condition : **Soaked (4 days) / Unsoaked / At Field Moisture**

**Moisture Content Determination**

Moisture Can No.		02		48		56	
Wt. of Can + Wet Specimen	( A ) gm	341.6	341.6	291.8	291.8	341.3	341.3
Wt. of Can + Dry Specimen	( B ) gm	298.8	298.8	257.1	257.1	300.0	300.0
Wt. of Water	( A-B ) gm	42.8	42.8	34.7	34.7	41.3	41.3
Wt. of Can	( C ) gm	26.7	26.7	32.4	32.4	40.9	40.9
Wt. of dry Specimen	( B-C ) gm	272.1	272.1	224.7	224.7	259.1	259.1
Moisture Content	( % )	15.7	15.7	15.4	15.4	15.9	15.9
Average Moisture Content	m ( % )	15.7		15.4		15.9	
Optimum Moisture Content ( OMC ) =				15 %			

**DENSITY DETERMINATION**

Mould No.		Mold No. - 09*	Mold No. - 05	Mold No. -03
Compacting	Undisturbed Specimen	----	----	----
Effort	In-Situ Test ( Truck-Mounted Machine)	----	----	----
	Blows Applied (in each of _3_ Layer)	18	36	56
Specimen	Av. Diameter of CBR Mold (D), mm	152.4	152.4	152.4
Volume	Av. Height Excluding Spacer (H), mm ( Spacer Disc #2 Av. Height 61.48mm)	116.5 ( = 178-61.5 )	117.5 ( = 179-61.5 )	116.5 ( = 178-61.5 )
	Volume V= .785 X D <sup>2</sup> X H / (1000) <sup>3</sup> m <sup>3</sup>	0.002124	0.002142	0.002124
Wt. of Wet Material + Mold	( X ) Kg	8.350	8.450	8.650
Wt. of Mold	( Y ) Kg	4.290	4.197	4.210
Wt. of Material in Mold	( W = X - Y ) Kg	4.060	4.253	4.440
Wet-Density	= W / V (kg/m <sup>3</sup> )	1911	1985	2090
Dry density	(kg/m <sup>3</sup> )	1652	1720	1803
Compaction %		92	96	100
( MDD and Type of Proctor Density test )		( MDD = 1795 Method -A of AASHTO T-99 ( Standard Proctor)		

NOTE: 1 Kg/m<sup>3</sup> = 0.06243 lb / cft, 1 m<sup>3</sup> = 35.3147 cft, 1 lb / cft = 1 Kg/m<sup>3</sup>, 1 KN / m<sup>2</sup> = 0.145038psi.

**SWELL DATA**

Time	Date ( Elapsed Time )	Mold-	H= mm	Mold-	H= mm	Mold-	H= mm
		Reading	Swell	Reading	Swell	Reading	Swell
Submerged At--							
Final Reading--							

Load Cell No : **CM-9-1624**

Maximum Capacity : **10 KN**

Load Determination :

Area of penetration Plunger : A 0.001935 m<sup>2</sup>

Date of Penetration : 27.05.2012

**CBR 'LOAD-PENETRATION' DATA**

Penetration Reading	Proving Ring Reading and Stress								
	Mold No. - 09*			Mold No. - 05			Mold No. -03		
		Load, P	Stress, P/A		Load, P	Stress, P/A		Load, P	Stress, P/A
in (mm)	( KN )	( Kpa )		( KN )	( Kpa )		( KN )	( Kpa )	
0.000	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.025	0.64	0.10	51.68	0.12	62.02	0.26	134.37		
0.050	1.27	0.19	98.19	0.30	155.04	0.58	299.74		
0.075	1.91	0.30	155.04	0.50	258.40	0.91	470.28		
0.100	2.54	0.46	237.73	0.74	382.43	1.23	635.66		
0.125	3.18	0.63	325.58	1.02	527.13	1.53	790.70		
0.150	3.81	0.82	423.77	1.30	671.83	1.80	930.23		
0.175	4.45	1.04	537.47	1.59	821.71	2.06	1064.60		
0.200	5.08	1.26	651.16	1.87	966.41	2.31	1193.80		
0.225	5.72	1.52	785.53	2.16	1116.28	2.54	1312.66		
0.250	6.35	1.77	914.73	2.46	1271.32	2.77	1431.52		
0.275	6.99	2.02	1043.93	2.74	1416.02	2.98	1540.05		
0.300	7.62	2.29	1183.46	3.02	1560.72	3.19	1648.58		
0.325	8.25								
0.350	8.89								
0.400	10.16								

**CBR CALCULATION ( From the graph of above data, as shown in next page )**

CBR	Calculation	a) Stress at 2.54 mm = 350 Kpa	a) Stress at 2.54mm = 550 Kpa	a) Stress at 2.54mm = 636 Kpa
	Ratio (in %) =	5	8	9
	b) Stress at 5.08 mm = 850 Kpa		b) Stress at 5.08 mm = 1150 Kpa	b) Stress at 5.08 mm = 1194 Kpa
	Ratio (in %) =	8	11.2	12
	CBR =	8 %	11 %	12 %
	At Dry-Density	1652	1720	1803
	( % Compaction )	92	96	100
Remark ( if any )				

NOTE : --- When stress is in KPa, use standard load (stress) 6900 KPa & 10300 Kpa for 0.100 in. and 0.200 in. penetration respectively.  
 --- When stress is in Psi, use standard load (stress) 1000 Psi & 1500 Psi for 0.100 in. and 0.200 in. penetration respectively.

**CBR AT PARTICULAR COMPCION FROM ' Dry-Density versus CBR' GRAPH ( APLICABLE FOR 3-POINT CBR TEST ONLY)**

CBR at particular Degree of Compaction	At 100 % Copaction ( or 1795 kg/m <sup>3</sup> Dry-Density ) ; the soaked CBR = 12 %  ( MDD = 1795 Kg/m3 , Standard Proctor Test)
--	---

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md.Tarikuzzaman, Sr. AE(QC)

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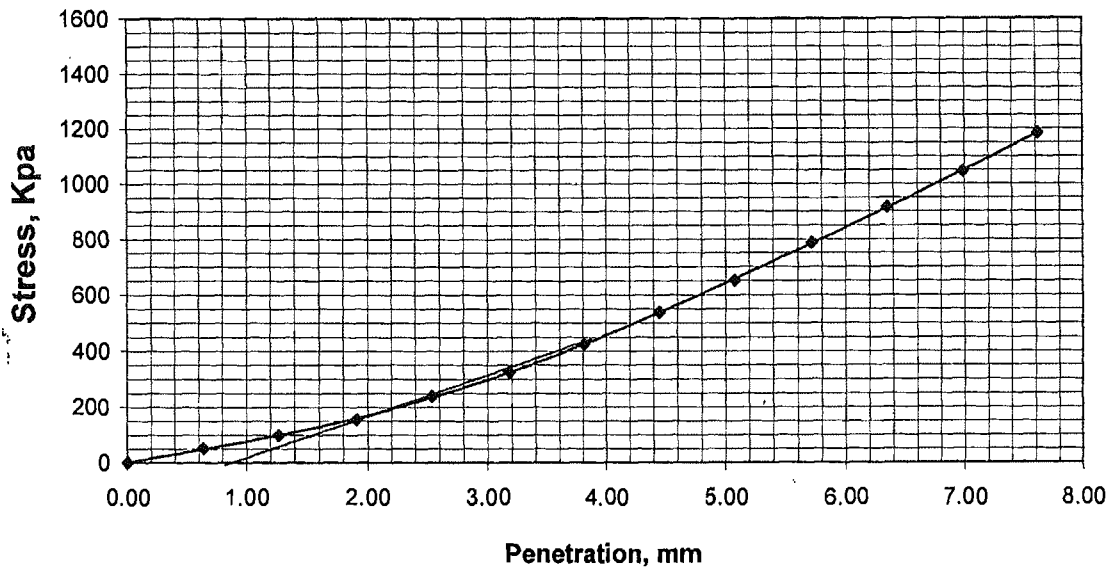
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CBR LOAD-PENETRATION CURVE ( Mold No. - 09\* )

Dry-Density 1652 kg/m<sup>3</sup> or 97 % Compaction

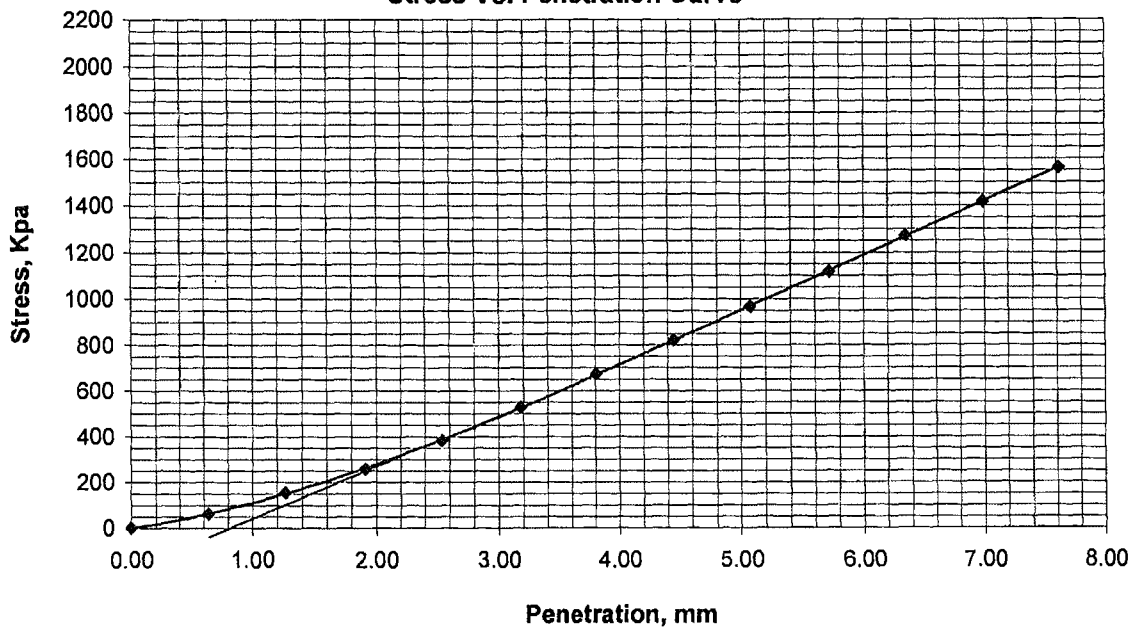
**Stress Vs Penetration Curve**



CBR LOAD-PENETRATION CURVE ( Mold No. - 05)

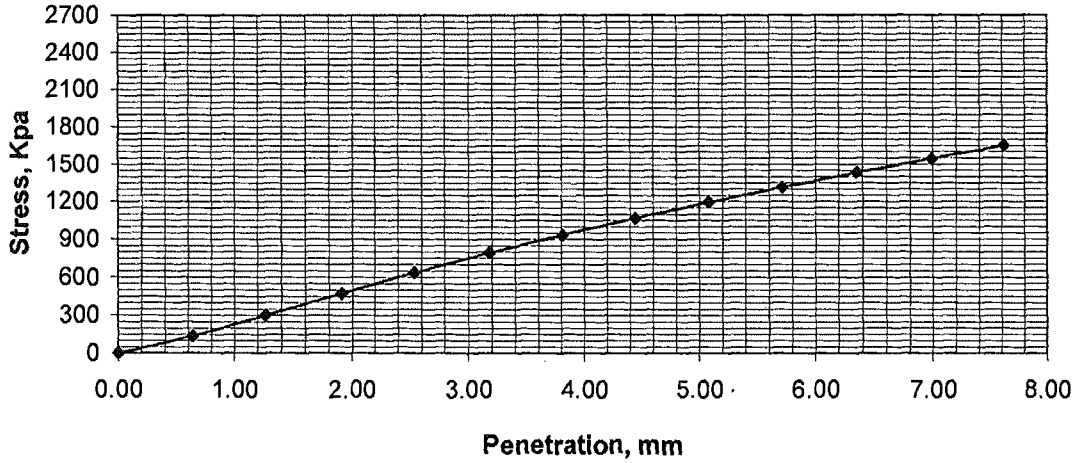
Dry-Density 1679 kg/m<sup>3</sup> or 99 % Compaction

**Stress Vs. Penetration Curve**

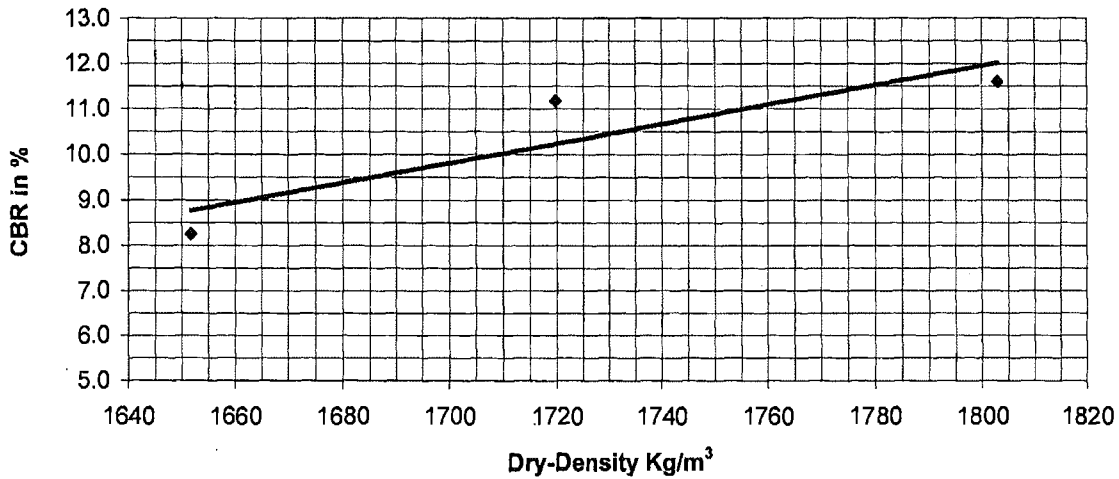


**CBR LOAD-PENETRATION CURVE ( Mold No. -03)**  
 Dry-Density 1752 kg/m<sup>3</sup> or 103 % Compaction

**Stress Vs. Penetration Curve**



**Dry Density Versus CBR Curve**



CBR (Soaked) = 12 % at 100 % Compaction (Standard Proctor) or at 1795 Kg/m<sup>3</sup> Dry-Density

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md. Tarikuzzaman, Sr. AE(QC)

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**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH  
LOCAL GOVERNMENT ENGINEERING DEPARTMENT**

**CENTRAL QUALITY CONTROL UNIT**

Agargaon, Sher-e-Bangla Nagar, Dhaka-1207

**PROCTOR DENSITY TEST FOR MDD & OMC DETERMINATION**

Client : Md. Mahabubul Islam, Geologist, SURVEY 2000

Ref. No. & Date: Survey/Soil-141-2012, 03.04.2012

Scheme Const. New Meghna-Gumti Bridge

Location : **Daudkandi (TP-A2)**

Quantity Collected from Field : 40 Kg

Quantity represented : Not Informed

Sample No : D1

Sampled By : Mahbubul Islam, Geologist.

Description of Sample : Fine Sand

Sampled Date : 10.03.2012

Lab. Registration No. : LGED/C-Lab/07/04-05/16

Date of Test : 21.05.2012

Type of Test : MDD

Method of Test : Standard

Mold Dia : 101.4 mm

Wt. of rammer : 5.5 lbs

No. of Layer : 3

Blow/Layer : 25

Determination no.	01	02	03	04	05
Assumed Moisture Content (%)	14	16	18	20	22

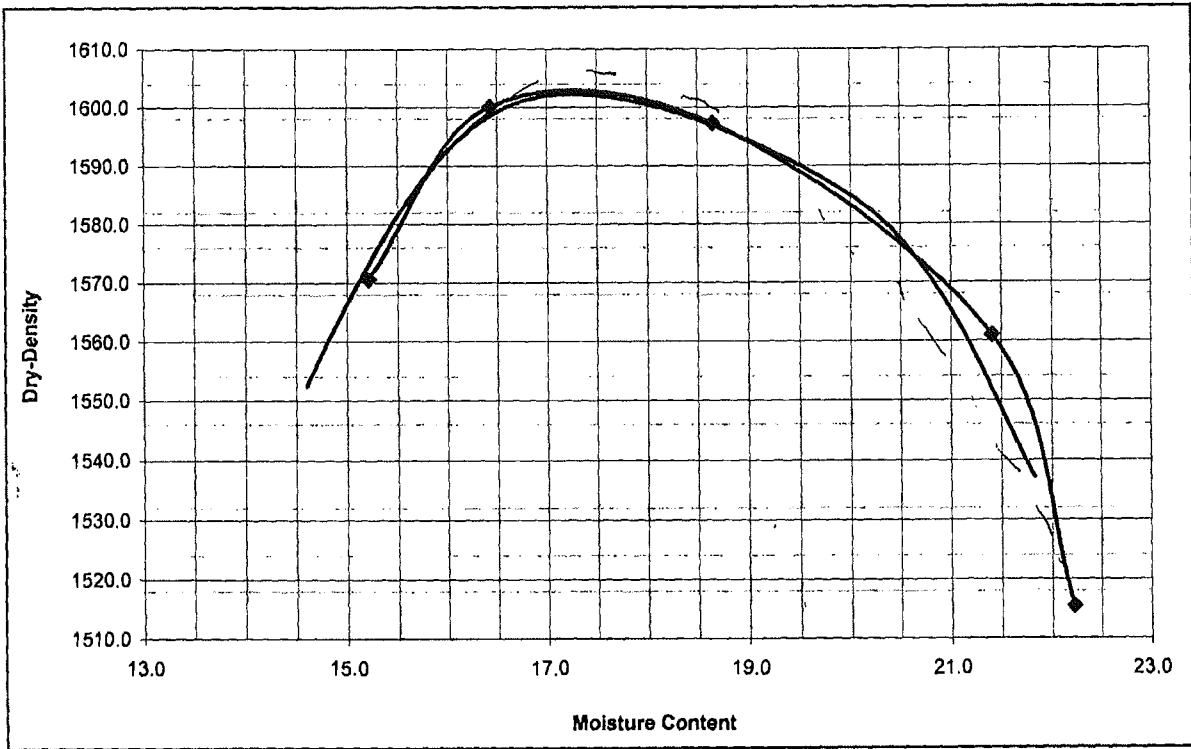
**Moisture Content Determination**

Moisture Can No.	10	5	14	4	6
Wt. of Can + Wet of specimen (A), gm	225.6	236.0	268.7	261.9	250.7
Wt. of Can + dry of specimen (B), gm	199.4	206.5	231.0	220.6	209.8
Wt. of Water (A-B), gm	26.2	29.5	37.7	41.3	40.9
Wt. of Can (C) gm	27.1	26.9	28.9	27.7	25.8
Wt. of dry Specimen (B-C), gm	172.3	179.6	202.1	192.9	184.0
Moisture Content $m = (A-B)/(B-C)$ , %	15.2	16.4	18.7	21.4	22.2
Average Moisture Content %	15	16	19	21	22

**Density Determination**

Wt. of Wet Material + Mold (X), Kg	3.713	3.768	3.798	3.795	3.750
Wt. of Mold (Y), Kg	2.025	2.025	2.025	2.025	2.025
Wt. of Material in Mould (W=X-Y), Kg	1.69	1.74	1.77	1.77	1.73
Volume of Mould (V), m <sup>3</sup>	0.000934	0.000934	0.000934	0.000934	0.000934
Wet Density ( $\gamma_{WET} = W/V$ ) Kg/m <sup>3</sup>	1809.42	1862.96	1895.07	1895.07	1852.25
Dry Density $\gamma_{DRY} = (\gamma_{WET})/(1+m/100)$ , kg	1570.5	1600.1	1597.2	1560.9	1515.4

NOTE: 1 kg/m<sup>3</sup> = 0.06243 lb/cft, 1 Kg = 2.2046 lb, 1 m<sup>3</sup> = 35.3147 cft.



ZERO-AIR-VOID LINE' calculation (optional) to check the accuracy of Testing :-

Specific Gravity ( $G_s$ ) =

(Note: For normal soil, Sp.Gr. May be assumed 2.68, for short-cut check. For soil containing aggregates, use combined Sp. Gr.)

Assumed Moisture Content (Starting from OMC) in %, w									
Corresponding Dry Density at 'Zero-Air-Void' in $kg/m^3 = G_s \times 100 / (1 + w \times G_s / 100)$									

Maximum-Dry-Density (MDD) : 1602.3  $\approx$  1602  $kg/m^3$  Optimum-Moisture-Content (OMC) : 17 %

(NOTE ; it is recommended to express MDD ( $kg/m^3$ ) and OMC (%) by rounding to the nearest whole number)

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md.Tarikuzzaman, Sr. AE(QC)

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05.06.12  
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CENTRAL QUALITY CONTROL UNIT

Agargaon, Sher-e-Bangla Nagar, Dhaka-1207

CALIFORNIA BEARING RATIO (CBR) TEST

Client : Md. Mahabubul Islam, Geologist, SURVEY 2000 Ref. No. & Date : Survey/Soil-141-2012, 03.04.2012  
 Scheme : Const. New Meghna-Gumti Bridge Location : **Daudkandi (TP-A2)**  
 Sample No D 1 Sampled by & Date : Mahbubul Islam, Geologist, 10.3.12  
 Quantity Collected from Field : 40 kg Quantity Represented : Not Mentioned  
 Quantity Represented : Not Mentioned Test Date : 27.05.2012  
 Lab. Reg. No. : LGED/C-Lab/07/04-05/16 Description of Test Specimen : Fine Sand  
 Type of Test : **Three point CBR Test** (Specimen Compacted at different density)  
 Designation of CBR Test : Soaking Condition : **Soaked (4 days) / Unsoaked / At Field Moisture**

**Moisture Content Determination**

Moisture Can No.	#	10	14	
Wt. of Can + Wet Specimen (A) gm	351.3	351.3	337.1	337.1
Wt. of Can + Dry Specimen (B) gm	305.1	305.1	291.1	291.1
Wt. of Water (A-B) gm	46.2	46.2	46.0	46.0
Wt. of Can (C) gm	29.8	29.8	27.2	27.2
Wt. of dry Specimen (B-C) gm	275.3	275.3	263.9	263.9
Moisture Content (%)	16.8	16.8	17.4	17.4
Average Moisture Content m (%)	16.8	17.4	17.5	
Optimum Moisture Content ( OMC ) = 17 %				

**DENSITY DETERMINATION**

Mould No.	Mold No. - 10	Mold No. - 01	Mold No. -04
Compacting Undisturbed Specimen	-----	-----	-----
Effort In-Situ Test ( Truck-Mounted Machine)	-----	-----	-----
Blows Applied (in each of 3 Layer)	18	36	56
Specimen Av. Diameter of CBR Mold (D), mm	152.4	152.4	152.4
Volume Av. Height Excluding Spacer (H), mm ( Spacer Disc #2 Av. Height 61.48mm)	116.5 ( = 178-61.5 )	117.5 ( = 179-61.5 )	116.5 ( = 178-61.5 )
Volume $V = .785 \times D^2 \times H / (1000)^3$ m <sup>3</sup>	0.002124	0.002142	0.002124
Wt. of Wet Material + Mold (X) Kg	11.030	11.098	11.270
Wt. of Mold (Y) Kg	7.285	7.257	7.277
Wt. of Material in Mold ( W =X-Y) Kg	3.745	3.841	3.993
Wet-Density = W / V (kg/m <sup>3</sup> )	1763	1793	1880
Dry density (kg/m <sup>3</sup> )	1510	1527	1601
Compaction %	94	95	100
( MDD and Type of Proctor Density test )	( MDD = 1602	Method -A of AASHTO T-99 ( Standard Proctor)	

NOTE: 1 Kg/m<sup>3</sup> = 0.06243 lb / cft, 1 m<sup>3</sup> = 35.3147 cft, 1 lb / cft = 1 Kg/m<sup>3</sup>, 1 KN / m<sup>2</sup> = 0.145038psi.

**SWELL DATA**

Time Date ( Elapsed Time )	Mold- Reading	H= mm Swell	Mold- Reading	H= mm Swell	Mold- Reading	H= mm Swell
	Submerged At--					
Final Reading--						

Load Cell No : **CM-9-1624**

Maximum Capacity : **10 KN**

Load Determination :

Area of penetration Plunger : A 0.001935 m<sup>2</sup>

Date of Penetration : 27.05.2012

**CBR 'LOAD-PENETRATION' DATA**

Penetration Reading	Proving Ring Reading and Stress								
	Mold No. - 10			Mold No. - 01			Mold No. -04		
	Load, P	Stress, P/A		Load, P	Stress, P/A		Load, P	Stress, P/A	
in (mm)	( KN )	( Kpa )	( KN )	( Kpa )	( KN )	( Kpa )	( KN )	( Kpa )	( Kpa )
0.000	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.025	0.64	0.12	62.02	0.17	87.86	0.32	165.37	0.32	165.37
0.050	1.27	0.36	186.05	0.42	217.05	0.98	506.46	0.98	506.46
0.075	1.91	0.87	449.61	1.03	532.30	1.54	795.87	1.54	795.87
0.100	2.54	1.14	589.15	1.27	656.33	2.17	1121.45	2.17	1121.45
0.125	3.18	1.37	708.01	1.52	785.53	2.99	1545.22	2.99	1545.22
0.150	3.81	1.98	1023.26	2.07	1069.77	3.57	1844.96	3.57	1844.96
0.175	4.45	2.17	1121.45	2.39	1235.14	4.02	2077.52	4.02	2077.52
0.200	5.08	2.42	1250.65	2.64	1364.34	4.59	2372.09	4.59	2372.09
0.225	5.72	2.69	1390.18	2.87	1483.20	4.97	2568.48	4.97	2568.48
0.250	6.35	3.02	1560.72	3.18	1643.41	5.10	2635.66	5.10	2635.66
0.275	6.99	3.27	1689.92	3.41	1762.27	5.23	2702.84	5.23	2702.84
0.300	7.62	3.34	1726.10	3.59	1855.30	5.37	2775.19	5.37	2775.19
0.325	8.25								
0.350	8.89								
0.400	10.16								

**CBR CALCULATION ( From the graph of above data, as shown in next page )**

CBR	Calculation	a) Stress at 2.54 mm = 700 Kpa	a) Stress at 2.54mm = 750 Kpa	a) Stress at 2.54mm = 1121 Kpa
	Ratio (in % ) =	10	11	18
	b) Stress at 5.08 mm = 1350 Kpa		b) Stress at 5.08 mm = 1450 Kpa	b) Stress at 5.08 mm = 2372 Kpa
	Ratio (in % ) =	13	14.1	23
	CBR =	13 %	14 %	23 %
	At Dry-Density	1510	1527	1801
	( % Compaction )	94	95	100
Remark ( if any )				

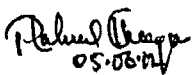
NOTE : -- When stress is in KPa, use standard load (stress) 6900 KPa & 10300 Kpa for 0.100 in. and 0.200 in. penetration respectively.  
 -- When stress is in Psi, use standard load (stress) 1000 Psi & 1500 Psi for 0.100 in. and 0.200 in. penetration respectively.

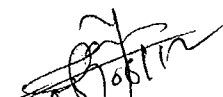
**CBR AT PARTICULAR COMPCCTION FROM ' Dry-Density versus CBR' GRAPH ( APLICABLE FOR 3-POINT CBR TEST ONLY)**


CBR at particular Degree of Compaction	At 100 % Copaction ( or 1602 kg/m <sup>3</sup> Dry-Density ) ; the soaked CBR = 23 %
	( MDD =1602 Kg/m3 , Standard Proctor Test)

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md.Tarikuzzaman, Sr. AE(QC)

  
 (Rabiul Haque)  
 Sub-Assistant Engineer (QC)  
 Central Quality Control Unit, LGED.

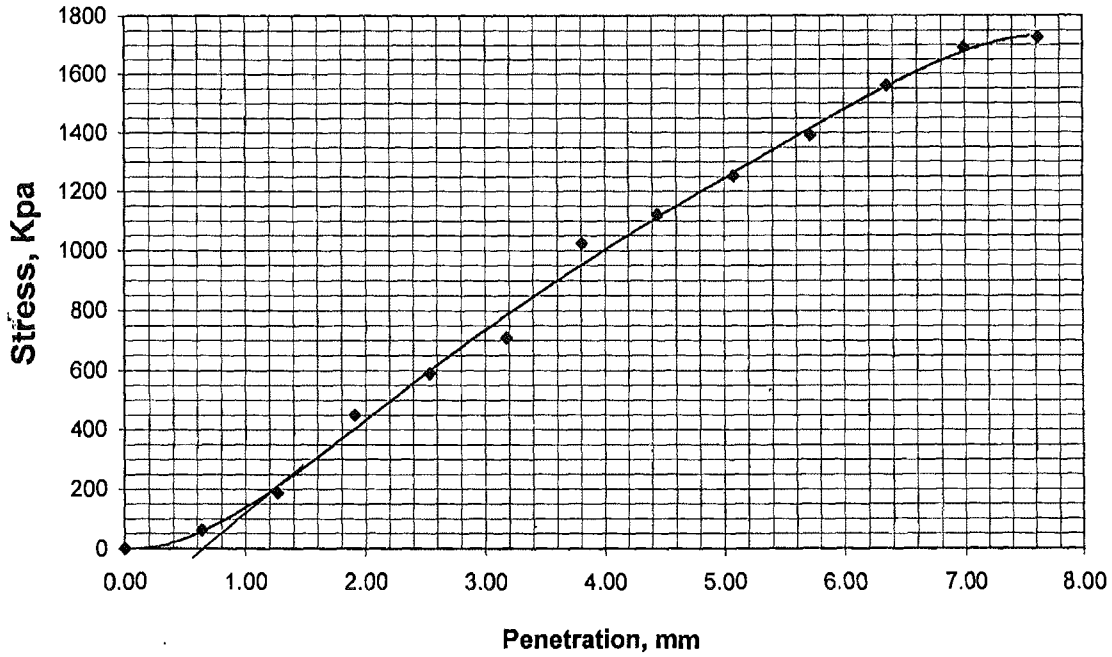
  
 (Md. Tarikuzzaman)  
 Sr. Assistant Engineer (QC)  
 Central Quality Control Unit, LGED.

  
 (Md. Abul Bashar)  
 Executive Engineer (QC)  
 Central Quality Control Unit, LGED.

CBR LOAD-PENETRATION CURVE ( Mold No. - 10 )

Dry-Density 1510 kg/m<sup>3</sup> or 94 % Compaction

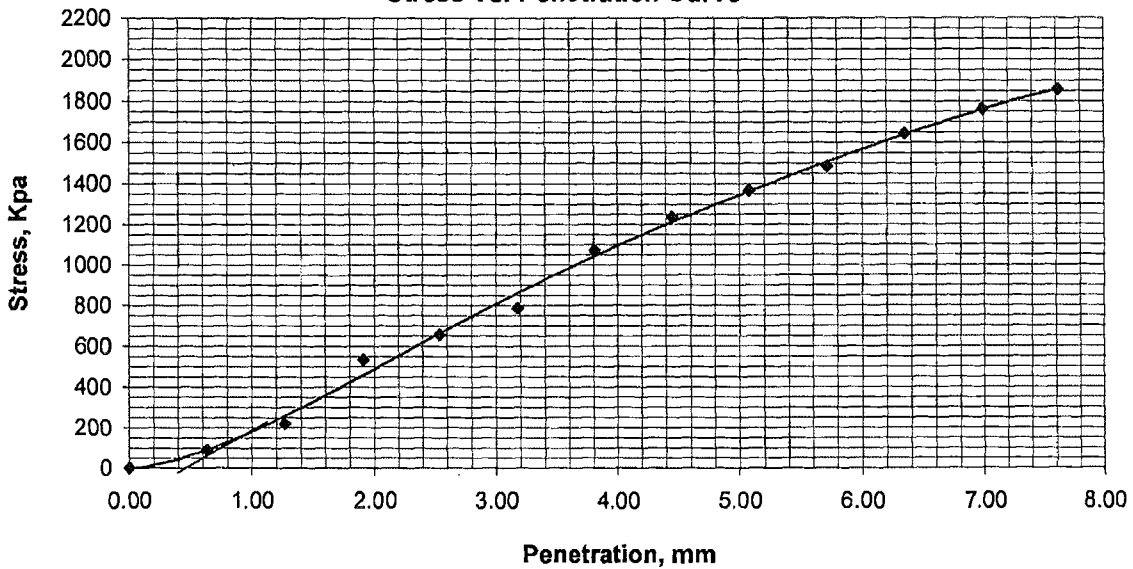
**Stress Vs Penetration Curve**



CBR LOAD-PENETRATION CURVE ( Mold No. - 01 )

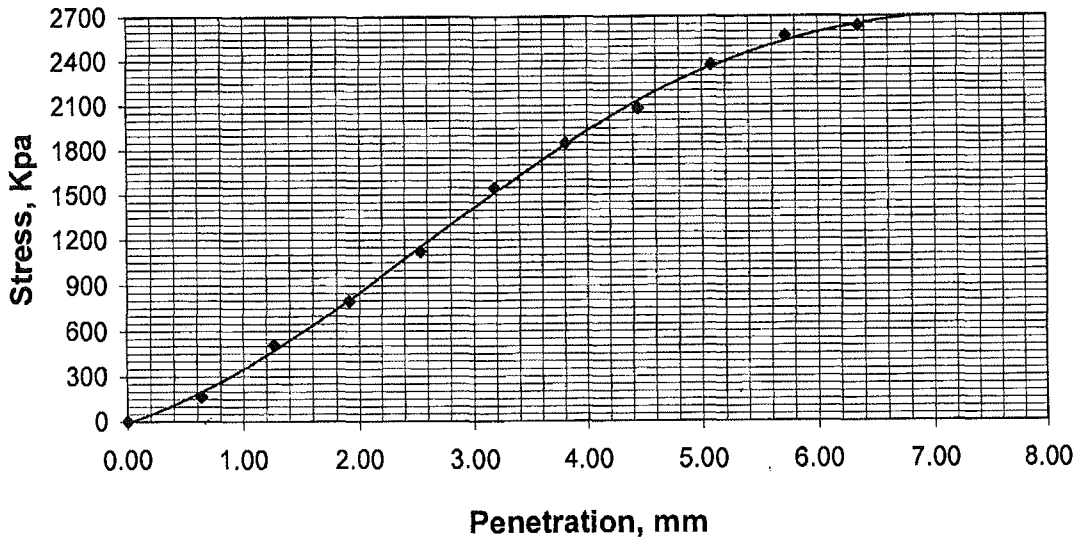
Dry-Density 1527 kg/m<sup>3</sup> or 95 % Compaction

**Stress Vs. Penetration Curve**

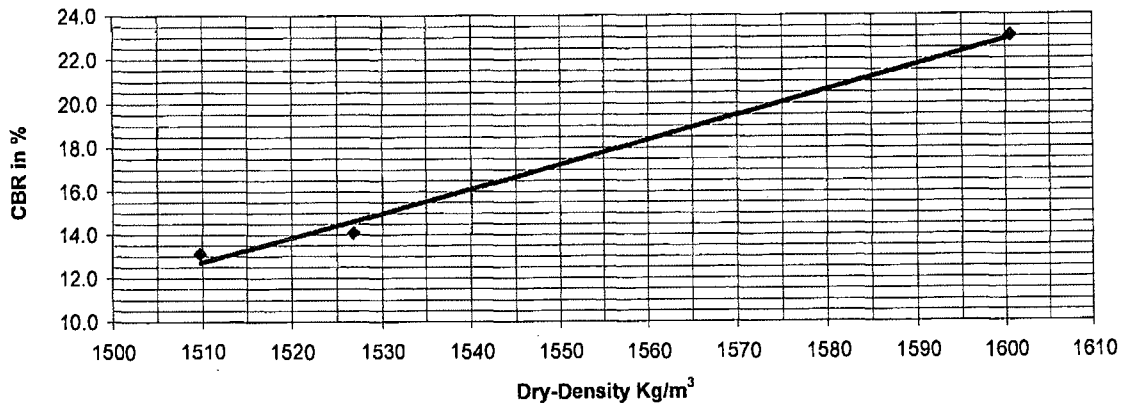


**CBR LOAD-PENETRATION CURVE (Mold No. -04)**  
 Dry-Density 1601 kg/m<sup>3</sup> or 100 % Compaction

**Stress Vs. Penetration Curve**



**Dry Density Versus CBR Curve**



CBR (Soaked) = 23.0 % at 100 % Compaction (Standard Proctor) or at 1602 Kg/m<sup>3</sup> Dry-Density

Tested by : Mr. Rabiul Haque, SAE(QC)

Supervised by : Mr. Md.Tarikuzzaman, Sr. AE(QC)

*Rabiul Haque*  
 05.06.12  
 (Rabiul Haque)  
 Sub-Assistant Engineer (QC)  
 Central Quality Control Unit, LGED.

*Md. Tarikuzzaman*  
 05/06/12  
 (Md. Tarikuzzaman)  
 Sr. Assistant Engineer (QC)  
 Central Quality Control Unit, LGED.

*Md. Abul Bashir*  
 (Md. Abul Bashir)  
 Executive Engineer (QC)  
 Central Quality Control Unit, LGED.

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**APPENDIX 4.**  
**RECORDS OF TRAFFIC SURVEY**

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# 1. PHOTO RECORDS OF TRAFFIC SURVEY



Manual Classified Counts



Manual Classified Counts



OD Interview Survey



OD Interview Survey



Traffic Movement Count Survey



## 2. SURVEY FORM

### Survey Form (Manual Classified Counts)

**DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT  
TRAFFIC COUNT TALLY SURVEY**

DATE													
LOCATION NAME	To Dhaka												
DIRECTION	To Chittagong												
SURVEYOR NAME													
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Heavy Truck	Medium Truck	Small Truck	Large Bus	Medium bus	Microbus	Utility	Car/Taxi	Babycar/Tempo	Motor Cycle	Bicycle	Cycle Rickshaw	Cart
TO													
TO													
TO													
TO													

## Survey Form (OD Interview Survey)

### DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT INTERVIEW SURVEY OF ORIGIN DISTINATION

OD Survey Form1

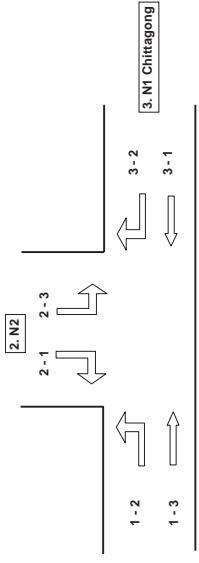
LOCATION NAMA		DATE	
DIRECTION To Dhaka or To Chittagong		<input type="text"/> / <input type="text"/> / 2 0 1 2	
SURVEYOR NAME :		WEATHER	
<b>Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Interview time</b>	hour/minute <input type="text"/> : <input type="text"/>	hour/minute	<input type="text"/> : <input type="text"/>
<b>A Address of residence</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>B Vehicle type</b>	1. Heavy Truck 2. Medium Truck 3. Small Truck 4. Large Bus 5. Medium bus 6. Microbus 7. Utility 8. Car/Taxi	9. Baby-taxi/Tempo 10. Motor Cycle 11. Bicycle 12. Cycle Rickshaw 13. Cart	1. Heavy Truck 2. Medium Truck 3. Small Truck 4. Large Bus 5. Medium bus 6. Microbus 7. Utility 8. Car/Taxi
<b>C Occupation</b>	1. Worker(Private Sector) 2. Worker(Government) 3. Student 4. House wife 5. No occupation 6. Others ( )	1. Worker(Private Sector) 2. Worker(Government) 3. Student 4. House wife 5. No occupation 6. Others ( )	
<b>D Number of passenger *including the driver</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>E Origin of trip</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>F Distination of trip</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>G Travel time</b>	hours / minutes	hours / minutes	<input type="text"/> : <input type="text"/>
<b>What is your expected travel time to distination?</b>	<input type="text"/> : <input type="text"/>	<input type="text"/> : <input type="text"/>	<input type="text"/>
<b>H What is the primary purpose of your trip</b>	1. To work 2. To school 3. To shop/market 4. To Home 5. To business 6. Others ( )	1. To work 2. To school 3. To shop/market 4. To Home 5. To business 6. Others ( )	
<b>I How frequently do you use this drive</b>	1. Everyday 2. Everyweekday 3. Two,three times a week 4. One time a week 5. Two,three times a month 6. One time a month 7. Others ( )	1. Everyday 2. Everyweekday 3. Two,three times a week 4. One time a week 5. Two,three times a month 6. One time a month 7. Others ( )	
<b>J Commodity / Loading volume *excluding deadweight</b>	<input type="text"/> tonne	<input type="text"/> tonne	<input type="text"/>
<b>K Commodity type</b>	1. Empty(no cargo) 2. Agricultur (rice, vegetable etc. ) 3. Forest (timber, wood etc. ) 4. Marine (fish, fish product etc. ) 5. Mineral (coal, copper etc. ) 6. Metal, Machine (steel, car, bike etc. ) 7. Chemical (petroleum etc. ) 8. Light Industry (machine parts etc. ) 9. Textile (garment, shoes etc. ) 10. Construction (asphalt, cement etc. ) 11. Others ( )	1. Empty(no cargo) 2. Agricultur (rice, vegetable etc. ) 3. Forest (timber, wood etc. ) 4. Marine (fish, fish product etc. ) 5. Mineral (coal, copper etc. ) 6. Metal, Machine (steel, car, bike etc. ) 7. Chemical (petroleum etc. ) 8. Light Industry (machine parts etc. ) 9. Textile (garment, shoes etc. ) 10. Construction (asphalt, cement etc. ) 11. Others ( )	
<b>L Mejor bottleneck point along the national No.1</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>M What other roads could you use to complete this trip if you could not use this route (national No.1)?</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Road and Highway Department  
\*Question(J - L) for Vehicle type (1,2,3,7)

Japan International Cooperation Agency

## Survey Form (Traffic Movement Count Survey)

**DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT  
TRAFFIC COUNT AT INTERSECTION**



DATE : \_\_\_\_\_

LOCATION NAME : \_\_\_\_\_

DIRECTION : \_\_\_\_\_

SURVEYOR NAME : \_\_\_\_\_

	MOTORISED													NON-MOTORISED		
	1 Heavy Truck	2 Medium Truck	3 Small Truck	4 Large Bus	5 Medium bus	6 Microbus	7 Utility	8 Car/Taxi	9 Baby-taxi/Tempo	10 Motor Cycle	11 Bicycle	12 Cycle Rickshaw	13 Cart			
TO																
TO																
TO																
TO																

Survey Form (Traffic speed survey)

**DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1  
BRIDGE CONSTRUCTION AND REHABILITATION PROJECT  
TRAFFIC SPEED SURVEY**

DATE \_\_\_\_\_ : \_\_\_\_\_  
 SURVEYOR NAME \_\_\_\_\_ : \_\_\_\_\_

Location	KP	passing time					
		Outbound	Outbound	Outbound	Outbound	Outbound	Outbound
N-1 (0 KP)	0 KP						
Kanchpure bridge (Dhaka side)	KP						
Meghna Bridge Toll Gate	KP						
Meghna-Gumti Bridge Toll Gate	KP						
Location	KP	Inbound	Inbound	Inbound	Inbound	Inbound	Inbound
Meghna-Gumti Bridge Toll Gate	0 KP						
Meghna Bridge Toll Gate	KP						
Kanchpure bridge (Dhaka side)	KP						
N-1 (0 KP)	KP						

Road and Highway Department

Japan International Cooperation Agency

Traffic jam point

Location, KP			
Time			
Location, KP			
Time			
Location, KP			
Time			
Location, KP			
Time			

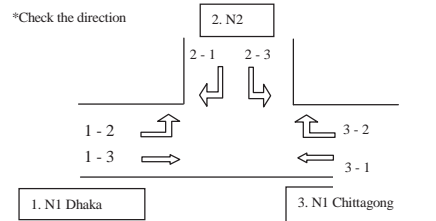
### **3. SURVEY RESULT**

No	Location	Motorized Vehicles										Non-Motorized Vehicles			Total Motor	Total Non-M	Grand Total
		1 Heavy Truck	2 Medium Truck	3 Small Truck	4 Large Bus	5 Mini bus	6 Microbus	7 Utility	8 Car/Taxi	9 Baby-taxi/ Tempo	10 Motor Cycle	11 Bicycle	12 Cycle Rickshaw	13 Cart			
1	Demra	2,107	1,468	1,245	1,002	745	1,464	1,488	1,832	2,360	770	119	367	-	14,480	486	14,966
2	Kanchpur	4,974	3,417	2,349	4,958	3,766	2,559	2,690	3,237	5,472	1,031	178	581	8	34,453	767	35,220
3	<i>Meghna, Meghna-Gumti</i>	3,337	4,944	1,797	4,138	1,986	2,929	2,740	2,937	2,509	260	-	-	-	27,578	-	27,578
4	<i>N-2:Sylhet Road</i>	3,755	1,487	1,243	2,645	1,966	1,704	1,938	1,855	4,201	1,049	220	1,698	-	21,843	1,918	23,761
5	<i>Modonpur to Bandar road</i>	760	627	587	19	217	307	235	368	1,879	324	116	1,369	-	5,323	1,485	6,808
6	<i>Modonpur to Arihazar road</i>	4,603	1,295	1,088	1,068	897	1,145	463	784	6,127	461	185	3,683	-	17,931	3,868	21,799

No	Location	Motorized Vehicles										Non-Motorized Vehicles			Total Motor	Total Non-M	Grand Total
		1 Heavy Truck	2 Medium Truck	3 Small Truck	4 Large Bus	5 Mini bus	6 Microbus	7 Utility	8 Car/Taxi	9 Baby-taxi/ Tempo	10 Motor Cycle	11 Bicycle	12 Cycle Rickshaw	13 Cart			
	PCU Equivalency	3.00	3.00	3.00	3.00	3.00	3.00	1.00	1.00	0.75	0.75	0.50	2.00	3.00			
1	Demra	6,320	4,403	3,736	3,007	2,234	4,391	1,488	1,832	1,770	577	60	735	-	29,759	794	30,553
2	Kanchpur	14,921	10,252	7,046	14,875	11,297	7,676	2,690	3,237	4,104	773	89	1,163	23	76,872	1,275	78,147
3	<i>Meghna, Meghna-Gumti</i>	10,012	14,831	5,392	12,413	5,958	8,786	2,740	2,937	1,882	195	-	-	-	65,147	-	65,147
4	<i>N-2:Sylhet Road</i>	11,265	4,461	3,729	7,935	5,898	5,112	1,938	1,855	3,151	787	110	3,396	-	46,131	3,506	49,637
5	<i>Modonpur to Bandar road</i>	2,280	1,881	1,761	57	651	921	235	368	1,409	243	58	2,738	-	9,806	2,796	12,602
6	<i>Modonpur to Arihazar road</i>	13,809	3,885	3,264	3,204	2,691	3,435	463	784	4,595	346	93	7,366	-	36,476	7,459	43,935

## DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1 BRIDGE CONSTRUCTION AND REHABILITATION PROJECT

### Turning Movement Manual Traffic Count



	1-2			1-3			2-1			2-3			3-2			3-1		
	Total	Heavy vehicle	Heavy ratio	Total	Heavy vehicle	Heavy ratio	Total	Heavy vehicle	Heavy ratio	Total	Heavy vehicle	Heavy ratio	Total	Heavy vehicle	Heavy ratio	Total	Heavy vehicle	Heavy ratio
6:00 - 7:00	235	97	41.3%	347	174	50.1%	231	108	46.8%	77	20	26.0%	86	47	54.7%	1161	620	53.4%
7:00 - 8:00	237	164	69.2%	399	221	55.4%	167	99	59.3%	100	39	39.0%	137	54	39.4%	1062	543	51.1%
8:00 - 9:00	353	187	53.0%	480	225	46.9%	288	142	49.3%	88	18	20.5%	150	63	42.0%	1071	572	53.4%
9:00 - 10:00	355	195	54.9%	428	209	48.8%	293	145	49.5%	101	20	19.8%	120	33	27.5%	933	486	52.1%
10:00 - 11:00	397	187	47.1%	485	248	51.1%	382	164	42.9%	167	33	19.8%	146	42	28.8%	936	434	46.4%
11:00 - 12:00	342	164	48.0%	475	225	47.4%	352	168	47.7%	219	29	13.2%	173	59	34.1%	818	362	44.3%
12:00 - 13:00	379	170	44.9%	506	270	53.4%	345	152	44.1%	244	33	13.5%	193	60	31.1%	922	374	40.6%
13:00 - 14:00	380	174	45.8%	519	251	48.4%	377	167	44.3%	223	31	13.9%	187	55	29.4%	795	350	44.0%
14:00 - 15:00	340	158	46.5%	471	248	52.7%	329	156	47.4%	245	58	23.7%	151	45	29.8%	727	356	49.0%
15:00 - 16:00	325	164	50.5%	528	288	54.5%	328	167	50.9%	275	63	22.9%	177	46	26.0%	666	310	46.5%
16:00 - 17:00	310	176	56.8%	646	313	48.5%	318	193	60.7%	321	61	19.0%	203	62	30.5%	623	297	47.7%
17:00 - 18:00	316	160	50.6%	627	293	46.7%	324	158	48.8%	256	40	15.6%	232	60	25.9%	775	396	51.1%
18:00 - 19:00	339	161	47.5%	688	324	47.1%	444	223	50.2%	229	60	26.2%	297	99	33.3%	714	434	60.8%
19:00 - 20:00	403	216	53.6%	704	337	47.9%	411	220	53.5%	253	28	11.1%	261	55	21.1%	605	333	55.0%
20:00 - 21:00	285	175	61.4%	491	268	54.6%	283	180	63.6%	282	31	11.0%	185	59	31.9%	642	388	60.4%
21:00 - 22:00	222	141	63.5%	321	180	56.1%	273	172	63.0%	211	23	10.9%	150	55	36.7%	440	266	60.5%
<b>Total</b>	<b>5218</b>	<b>2689</b>		<b>8115</b>	<b>4074</b>		<b>5145</b>	<b>2614</b>		<b>3291</b>	<b>587</b>		<b>2848</b>	<b>894</b>		<b>12890</b>	<b>6521</b>	

**DHAKA-CHITTAGONG NATIONAL HIGHWAY NO.1  
BRIDGE CONSTRUCTION AND REHABILITATION PROJECT  
TRAFFIC SPEED SURVEY**

Location	KP	2012/3/3				2012/6/3				
		Outbound	Outbound	Outbound	average	Outbound	Outbound	Outbound	Outbound	average
N-1 (0 KP)	0 KP									
Kanchpure bridge (Dhaka side)	12KP	32.72	14.40	17.14	21.42	14.69	15.32	18.46	32.73	20.30
Meghna Bridge Toll Gate	26.5KP	45.79	37.80	48.33	43.97	43.50	43.50	36.25	48.33	42.90
Meghna-Gumti Bridge Toll Gate	41.0KP	33.22	32.22	48.33	37.92	41.49	48.33	51.17	34.80	43.95
average speed 0kp to 41kp		37.24	28.14	37.93	34.44	33.23	35.72	35.29	38.62	35.71
average speed kanchpur to Meghnagumuti		39.51	35.01	48.33	40.95	42.50	45.92	43.71	41.57	43.42
Location	KP	Inbound	Inbound	Inbound	average	Inbound	Inbound	Inbound	Inbound	average
Meghna-Gumti Bridge Toll Gate	0 KP									
Meghna Bridge Toll Gate	14.5KP	20.23	43.50	36.25	33.33	45.79	39.59	41.43	41.43	42.06
Kanchpure bridge (Dhaka side)	29.0KP	27.19	43.50	37.82	36.17	39.54	31.07	48.33	36.25	38.80
N-1 (0 KP)	41.0KP	16.36	18.00	18.46	17.61	15.32	15.32	18.46	16.74	16.46
average speed 0kp to 41kp		21.26	35.00	30.84	29.03	33.55	28.66	36.07	31.47	32.44
average speed Meghnagumuti to kanchpur		23.71	43.50	37.04	34.75	42.67	35.33	44.88	38.84	40.43
Total average speed 0kp to 41kp		29.25	31.57	34.39	31.74	33.39	32.19	35.68	35.05	34.08
Total average speed Meghnagumuti to kanchpur		31.61	39.26	42.68	37.85	42.58	40.62	44.30	40.20	41.93

Road and Highway Department

Japan International Cooperation Agency



No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodity type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	1	1	8.05	3	6	1		8	3	1	7.50	6		2						
2	1	1	8.20	2	5	1		45	9	1	7.55	6		1						
3	1	1	8.25	4	4	1		25	4	1	8.00	6		1						
4	1	1	8.30	18	4	1		38	18	1	7.20	6		1						
5	1	1	8.35	19	9	1		1	19	1	7.20	6		1						
6	1	1	8.40	2	8	1		15	2	1	8.00	6		1						
7	1	1	8.45	4	7	1		1	12	1	8.05	5		1	1.5	11				
8	1	1	8.55	4	4	1		8	4	1	8.10	6		1						
9	1	1	9.00	2	1	1		2	2	1	8.40	1		1						
10	1	1	9.10	3	10	1		2	3	1	8.50	1		1						
11	1	1	9.15	24	7	1		1	18	1	7.50	6		2						
12	1	1	9.20	25	1	1		2	25	1	8.40	6		2	15.5	11				
13	1	1	9.25	25	4	2		24	25	1	7.45	6		1						
14	1	1	9.35	2	6	1		5	2	1	8.10	1		1						
15	1	1	9.40	19	7	1		2	3	1	8.20	6		1	3.5	7				
16	1	1	9.45	4	9	1		4	4	1	8.02	6		1						
17	1	1	9.50	2	8	6		4	3	1	7.55	6		3						
18	1	1	10.00	12	5	1		50	18	1	6.20	6		1						
19	1	1	10.05	4	9	6		4	2	1	9.50	6		1						
20	1	1	10.15	24	1	6		3	24	1	6.10	6		6	14	2				
21	1	1	10.20	4	6	6		2	4	1	9.20	5		4						
22	1	1	11.00	2	7	6		3	2	1	10.40	4		1						
23	1	1	11.15	2	10	1		2	2	1	10.20	1		4						
24	1	1	12.00	3	9	6		6	3	1	11.50	4		1						
25	1	1	12.10	3	4	1		52	3	1	10.00	6		1						
26	1	1	12.15	12	4	2		40	12	1	10.20	6		1						
27	1	1	12.18	4	5	6		42	4	1	9.30	6		6						
28	1	1	12.22	12	5	1		35	12	1	10.00	6		1						
29	1	1	12.25	7	4	2		42	16	1	9.50	6		1						
30	1	1	12.30	4	4	2		40	4	1	9.30	6		1						
31	1	1	12.35	4	5	6		38	12	1	10.30	6		1						
32	1	1	12.40	18	4	6		43	18	1	3.05	6		1						
33	1	1	12.45	18	2	1		2	18	1	2.30	6		2	9.5	10				
34	1	1	12.50	12	3	1		2	12	1	11.20	1		3	1.5	2				
35	1	1	12.55	5	9	6		5	5	1	12.30	6		1						
36	1	1	1.00	4	1	6		3	4	1	9.50	6		2	15.5	11				
37	1	1	1.10	12	3	1		3	12	1	11.50	1		3	1.5	2				
38	1	1	1.15	5	4	6		49	16	1	10.30	6		3						
39	1	1	1.20	16	5	6		39	12	1	11.30	6		1						
40	1	1	1.25	18	1	6		5	18	1	2.20	6		4	20	10				
41	1	1	1.30	16	5	6		32	16	1	10.50	6		1						
42	1	1	1.35	5	6	6		5	5	1	12.15	5		2						
43	1	1	1.37	16	3	6		2	16	1	10.30	6		3	1.7	3				
44	1	1	1.40	19	3	6		4	16	1	9.30	6		3	1	2				
45	1	1	1.45	4	4	6		53	4	1	9.30	6		1						
46	1	1	1.52	18	1	6		4	18	1	12.10	6		3	21	10				
47	1	1	1.56	16	8	6		3	16	1	10.50	1		3						
48	1	1	2.00	16	2	6		2	16	1	9.20	1		1	15.5	2				
49	1	1	2.05	16	3	6		2	16	1	8.10	6		3	13.5	2				
50	1	1	2.10	12	2	6		5	12	1	10.50	6		5	13.5	2				
51	1	1	2.15	16	5	6		42	16	1	10.30	6		1						
52	1	1	2.20	16	3	6		3	16	1	11.20	6		2						
53	1	1	2.25	16	7	6		5	16	1	1.45	6		3						
54	1	1	2.30	18	4	6		53	18	1	3.15	6		1						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type ( 1 - 13 )	C Occupation ( 1 - 6 )	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose ( 1 - 6 )	H' purpose (if its 6, writ down)	I frequency ( 1 - 7 )	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type ( 1 - 11 )	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
55	1	1	2.35	2	9	6		4	2	1	1.45	1		4						
56	1	1	2.42	25	1	6		2	25	1	8.30	6		7	22	10				
57	1	1	2.50	16	6	6		6	16	1	11.20	6		7						
58	1	1	2.55	16	3	6		2	16	1	12.00	6		3						
59	1	1	3.00	12	5	1		35	12	1	12.05	6		1						
60	1	1	3.05	16	2	6		2	16	1	4.30	6		5	10	3				
61	1	1	3.10	5	10	3		1	5	1	2.30	6		3						
62	1	1	3.15	16	3	6		3	16	1	12.20	6		2	5.2	11				
63	1	1	3.22	18	5	6		41	18	1	12.50	6		1						
64	1	1	3.30	18	2	6		3	18	1	6.30	6		5	15.5	11				
65	1	1	3.35	2	5	6		44	2	1	12.15	6		1						
66	1	1	3.40	18	1	6		3	18	1	6.40	6		2						
67	1	1	3.45	18	8	6		4	18	1	6.30	6		7						
68	1	1	3.55	18	2	6		2	18	1	7.50	6		4						
69	1	1	4.10	18	9	6		5	18	1	3.10	6		1						
70	1	1	4.20	18	4	6		48	18	1	3.30	6		1						
71	1	1	4.30	5	9	6		2	5	1	3.15	4		3						
72	1	1	4.40	2	3	6		2	2	1	3.20	6		2						
73	1	1	4.50	16	7	4		4	16	1	1.30	4		6						
74	1	1	5.05	2	8	1		1	2	1	7.50	6		1						
75	1	1	5.15	1	1	1		4	4	1	6.55	1		2						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodity type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejur bottleneck point along the national No.1	M What other roads
1	2	2	8.05	1	4	1		52	1	18	7.40	5		1						
2	2	2	8.16	1	8	1		4	1	18	7.00	1		2						
3	2	2	8.23	1	6	2		4	1	1	6.00	6		5						
4	2	2	8.32	1	4			48	1	13	7.30	1		1						
5	2	2	8.43	1	4	1		50	1	12	8.00	5		1						
6	2	2	8.54	18	7	1		7	1	18	7.00	4		5						
7	2	2	9.05	1	1	1		3	1	18	8.00	5		3		20	8			
8	2	2	9.16	1	8	1		4	1	12	8.30	5		3						
9	2	2	9.26	1	6	1		7	1	18	8.30	6		6						
10	2	2	9.49	1	2	1		3	1	9	8.00	5		1		2	2			
11	2	2	10.00	12	3	1		3	1	12	9.00	1		5		3	2			
12	2	2	10.12	1	4	1		48	1	16	8.45	5		1						
13	2	2	10.32	1	1	1		3	1	18	10.00	1		3		45	10			
14	2	2	10.34	1	3	1		4	1	18	10.00	1		5		3	7			
15	2	2	10.42	1	6	1		8	1	13	10.00	4		6						
16	2	2	10.54	1	4	1		46	1	18	10.15	5		1						
17	2	2	11.00	1	9	1		3	1	12	10.40	5		3						
18	2	2	11.06	12	5	1		27	1	12	10.40	5		1						
19	2	2	11.12	1	4	1		44	1	18	10.45	5		1						
20	2	2	11.19	1	6	1		7	1	12	10.50	1		5						
21	2	2	11.25	1	4	1		41	1	18	11.00	5		1						
22	2	2	11.32	1	2	1		3	1	12	10.30	1		2		2	10			
23	2	2	11.40	1	8	1		3	1	12	11.10	5		3						
24	2	2	11.47	1	9	1		5	1	12	11.00	1		1						
25	2	2	11.55	1	10	6		2	1	12	11.15	5		2						
26	2	2	12.02	1	4	1		42	1	18	11.30	1		1						
27	2	2	12.21	1	4	1		49	1	12	11.30	1		1						
28	2	2	12.30	1	5	1		30	1	9	11.30	5		1						
29	2	2	12.40	1	6	1		12	1	18	12.00	1		5						
30	2	2	12.49	12	4	1		48	1	12	12.20	5		1						
31	2	2	12.57	1	4	1		45	1	18	12.10	5		1						
32	2	2	1.05	1	10	3		2	1	12	12.15	1		2						
33	2	2	1.13	12	9	1		4	1	12	12.30	5		3						
34	2	2	1.20	1	3	1		2	1	12	12.25	1		2		3	10			
35	2	2	1.32	1	7	1		5	1	18	12.00	1		3						
36	2	2	1.44	1	4	1		40	1	18	1.00	5		1						
37	2	2	1.54	1	4	1		46	1	18	1.20	5		1						
38	2	2	2.03	1	1	1		4	1	9	1.20	5		3		36	6			
39	2	2	2.13	1	4	1		30	1	18	1.30	5		1						
40	2	2	2.24	9	2	1		7	1	9	1.00	1		2		5	10			
41	2	2	2.33	1	3	1		2	1	12	1.30	5		3		2	2			
42	2	2	2.42	18	1	1		3	1	18	1.35	5		1		30	6			
43	2	2	2.53	12	5	1		30	1	12	2.00	5		1						
44	2	2	2.59	1	1	1		4	1	18	2.10	1		2		45	10			
45	2	2	3.07	1	6	1		6	1	18	2.00	1		5						
46	2	2	3.15	9	2	1		3	1	9	2.30	1		2		3	2			
47	2	2	3.48	1	3	1		2	1	12	2.00	5		3		2	2			
48	2	2	4.00	1	4	1		42	1	18	2.30	5		1						
49	2	2	4.12	18	1	1		2	1	18	3.00	1		3		20	11			
50	2	2	4.24	9	6	1		6	1	9	3.10	4		6						
51	2	2	4.33	1	2	1		5	1	12	3.30	5		4		10	10			
52	2	2	4.45	1	1	1		3	1	18	3.00	1		3		35	6			
53	2	2	4.54	1	4	1		43	1	18	4.15	5		1						
54	2	2	5.02	1	3	1		3	1	12	4.00	1		3		3	9			
55	2	2	5.09	1	5	1		30	1	12	4.30	5		1						

				A	B	C	C	D	E	F	G	H	H'	I	I'	J	K	K'	L	M
No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	Address of residence (Zone No.1 - 28)	Vehicle type (1 - 13 )	Occupation ( 1 - 6 )	Occupation (if its 6, writ down)	Number of passenger	Origin of trip (Zone No.1 - 28)	Distination of trip (Zone No.1 - 28)	Travel time	purpose ( 1 - 6 )	purpose (if its 6, writ down)	frequency ( 1 - 7 )	frequency (if its 7, writ down)	Loading volume	Commodit y type ( 1 - 11 )	Commodity type (if its 11, writ down)	Mejor bottleneck point along the national No.1	What other roads
56	2	2	5.19	1	4	1		46	1	18	4.20	5		1						
57	2	2	5.30	1	6	1		10	1	18	4.30	1		6						
58	2	2	5.43	12	5	1		32	1	12	4.00	1		3						
59	2	2	5.49	1	7	1		6	1	12	4.20	5		3						
60	2	2	5.40	12	6	1		7	1	12	4.45	1		2						
61	2	2	6.02	12	4	1		30	1	12	5.00	1		2						
62	2	2	6.13	1	7	1		7	1	18	5.15	5		5						
63	2	2	6.18	1	4	1		49	1	18	5.00	5		1						
64	2	2	6.24	1	2	1		3	1	12	5.20	1		3	3	2				
65	2	2	6.32	1	6	1		7	1	18	5.15	1		3						
66	2	2	6.40	18	7	1		10	1	18	5.00	1		3						
67	2	2	6.50	1	6	1		7	1	18	5.20	1		5						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	3	2	8.00	1	5	1		32	1	16	7.00	5		1						
2	3	1	8.00	1	5	1		32	1	12	7.10	5		1						
3	3	1	8.05	1	4	6		46	1	18	7.00	5		1						
4	3	2	8.05	1	8	1		2	1	12	6.00	1		2						
5	3	1	8.06	1	6	1		5	12	1	7.00	1		3						
6	3	2	8.10	12	3	1		2	1	12	7.20	1		2		3	2			
7	3	1	8.15	1	2	6		3	20	1	7.10	1		3		5	10			
8	3	2	8.15	11	1	1		4	11	12	7.30	5		1		40	2			
9	3	1	8.20	1	4	6		40	12	1	7.30	1		1						
10	3	2	8.25	1	7	1		2	1	12	6.00	5		2						
11	3	1	8.30	1	8	6		2	18	11	6.30	1		1						
12	3	1	8.37	1	5	1		28	12	1	7.00	1		1						
13	3	2	8.40	1	9	1		5	1	2	7.00	6		1						
14	3	2	8.42	1	3	1		3	1	2	7.30	1		2		3	10			
15	3	1	8.45	1	10	6		1	12	1	7.00	1		1						
16	3	1	8.50	1	7	6		5	2	1	6.40	1		1						
17	3	2	8.50	1	2	6		2	1	3	6.30	1		3		3	6			
18	3	1	9.00	1	5	1		5	12	1	7.00	1		3						
19	3	2	9.05	1	1	1		3	1	9	7.30	1		2		20	2			
20	3	1	9.08	1	8	1		2	4	1	6.30	1		1						
21	3	2	9.10	1	8	1		5	1	4	7.00	1		6						
22	3	1	9.15	1	1	6		2	2	1	7.20	5		5		45	8			
23	3	1	9.20	4	6	6		6	4	1	6.00	1		5						
24	3	2	9.20	1	2	6		3	1	12	7.20	1		3		10	10			
25	3	2	9.25	12	8	1		2	12	1	7.00	1		1						
26	3	2	9.27	1	6	1		8	1	2	7.30	1		2						
27	3	1	9.30	1	7	1		8	12	1	6.30	1		2						
28	3	1	9.35	1	3	1		4	18	1	7.20	1		3		5	6			
29	3	1	9.40	4	7	6		4	4	1	8.20	1		2						
30	3	2	9.40	1	10	6		2	1	12	8.00	1		6						
31	3	1	9.45	2	7	6		2	2	1	7.30	1		1						
32	3	2	9.50	1	9	6		4	1	2	8.20	6		3						
33	3	1	9.50	1	4	1		60	18	1	7.30	1		5						
34	3	1	9.55	3	7	1		2	3	1	8.00	5		3						
35	3	2	10.00	12	8	1		6	1	12	7.30	6		3						
36	3	1	10.00	18	1	1		3	18	1	6.00	1		5		20	10			
37	3	2	10.10	1	6	1		8	1	2	9.00	1		2						
38	3	1	10.12	1	5	1		26	12	1	7.00	1		3						
39	3	1	10.15	11	2	1		2	18	11	5.00	1		3		5	10			
40	3	1	10.20	18	4	1		40	18	1	6.00	1		1						
41	3	2	10.25	1	2	5		3	1	12	8.00	1		5		3	2			
42	3	2	10.30	1	1	1		3	1	9	7.30	5		5		45	2			
43	3	1	10.40	1	5	1		37	12	1	9.10	1		1						
44	3	2	10.45	1	4	1		48	1	18	8.30	1		3						
45	3	1	10.45	1	1	1		4	18	1	6.00	1		5		40	5			
46	3	2	10.50	1	2	1		2	1	3	8.30	1		3		10	10			
47	3	2	11.00	1	10	3		1	1	2	9.10	6		7						
48	3	2	11.05	1	8	1		2	1	2	10.00	1		3						
49	3	1	11.05	21	1	1		2	21	1	9.00	1		3		22	10			
50	3	2	11.10	1	10	6		2	1	12	9.30	1		3						
51	3	1	11.10	1	2	1		2	9	1	9.30	1		2		6	2			
52	3	1	11.15	2	5	1		45	2	1	10.00	1		2						
53	3	2	11.15	1	4	1		28	1	12	10.00	1		3						
54	3	2	11.25	1	7	1		3	1	2	10.10	1		3						
55	3	1	11.20	1	10	3		2	2	1	10.30	2		1						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
56	3	1	11.25	1	5	1		45	2	1	10.30	1		1						
57	3	2	11.30	1	2	6		4	1	4	10.30	1		3	10	10				
58	3	1	11.35	12	8	1		5	12	1	10.00	1		1						
59	3	2	11.40	4	2	1		3	1	4	10.00	1		2	15	6				
60	3	1	11.40	2	7	1		3	2	1	10.30	1		2						
61	3	1	11.45	1	10	6		2	2	1	10.30	6		3						
62	3	1	11.50	11	2	1		3	2	11	10.20	1		2	12	2				
63	3	2	11.50	1	4	1		48	1	18	10.30	1		1						
64	3	2	11.55	1	5	1		30	1	12	10.30	1		1						
65	3	1	11.55	1	8	1		5	9	1	10.30	1		3						
66	3	1	12.00	2	3	1		2	2	1	10.30	1		3	5	6				
67	3	2	12.00	1	6	1		5	1	2	10.20	1		3						
68	3	2	12.10	1	9	6		4	1	2	10.00	1		5						
69	3	1	12.05	1	4	1		50	18	1	9.30	1		1						
70	3	1	12.10	1	5	1		30	2	1	11.00	1		1						
71	3	1	12.15	1	5	1		32	21	1	10.00	1		1						
72	3	2	12.20	1	3	1		2	1	12	11.10	1		3	3	3				
73	3	1	12.25	18	4	1		60	18	1	9.00	1		1						
74	3	1	12.30	1	7	1		3	12	1	10.00	5		3						
75	3	2	12.30	1	3	1		3	1	2	11.00	1		1	5	2				
76	3	2	12.35	18	4	1		38	1	18	11.30	1		1						
77	3	1	12.35	1	6	1		5	2	1	11.00	1		1						
78	3	1	12.40	1	2	1		2	2	1	10.30	1		3	15	11				
79	3	2	12.40	1	4	1		42	1	2	11.00	1		1						
80	3	2	12.45	1	5	1		30	1	21	10.30	1		1						
81	3	2	12.50	1	5	1		32	1	12	10.50	1		1						
82	3	1	12.55	18	4	1		52	18	1	10.00	1		1						
83	3	1	12.58	12	6	1		6	12	1	11.00	1		3						
84	3	1	1.00	1	6	1		6	2	1	10.30	1		2						
85	3	2	1.00	2	1	1		3	1	2	11.30	1		3	20	10				
86	3	1	1.05	2	10	3		1	2	1	11.00	1		1						
87	3	2	1.10	1	8	1		4	1	4	11.00	1		2						
88	3	1	1.10	1	2	1		3	2	1	11.30	1		2	15	2				
89	3	1	1.15	2	6	1		6	2	1	11.20	1		3						
90	3	2	1.20	1	2	1		2	1	12	11.30	1		2	12	11				
91	3	1	1.25	9	6	1		2	9	1	10.00	1		3						
92	3	2	1.30	1	9	6		3	1	2	11.00	1		2						
93	3	2	1.35	1	1	1		2	1	12	12.00	1		3	20	10				
94	3	2	1.40	1	10	6		2	1	2	11.45	1		5						
95	3	2	1.45	1	4	1		36	1	18	12.00	1		3						
96	3	2	1.50	1	7	1		3	1	12	12.20	1		2						
97	3	1	1.55	1	7	1		3	9	1	11.00	1		2						
98	3	1	2.00	2	3	1		3	2	1	12.30	1		4	5	2				
99	3	1	2.05	1	8	1		5	16	1	12.00	1		2						
100	3	2	2.10	1	4	1		42	1	18	12.30	1		1						
101	3	1	2.15	2	7	1		6	2	1	1.00	5		3						
102	3	2	2.20	1	4	1		40	1	18	12.00	1		1						
103	3	2	2.25	12	4	1		50	1	12	12.30	1		1						
104	3	1	2.30	1	9	6		4	2	1	12.30	1		1						
105	3	2	2.35	1	4	1		50	1	16	12.30	1		1						
106	3	1	2.40	1	7	1		4	2	1	1.00	1		3						
107	3	1	2.45	1	5	1		30	1	12	1.30	1		1						
108	3	1	2.50	12	4	1		50	12	1	1.00	1		1						
109	3	2	2.50	1	6	1		6	1	9	1.20	1		3						
110	3	2	3.00	1	8	1		5	1	18	1.00	1		2						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
111	3	1	3.00	1	2	1		3	2	1	1.30	1		3		5	10			
112	3	1	3.05	2	7	1		5	2	1	2.00	1		2						
113	3	1	3.10	9	1	1		2	9	1	1.30	1		3		45	6			
114	3	1	3.15	1	8	1		3	21	1	2.00	1		3						
115	3	2	3.25	1	6	1		5	1	12	1.45	1		3						
116	3	1	3.25	1	6	1		3	2	1	2.30	5		2						
117	3	1	3.30	18	4	1		50	18	1	12.00	1		1						
118	3	2	3.35	1	3	1		2	1	12	2.00	1		3		5	2			
119	3	1	3.40	1	6	1		6	18	1	12.00	1		5						
120	3	2	3.45	1	2	1		4	1	16	1.30	1		3		10	11			
121	3	1	3.50	1	5	1		45	18	1	12.30	1		1						
122	3	2	3.50	1	1	1		3	1	22	2.00	1		3		18	10			
123	3	2	4.00	1	5	1		28	1	2	2.00	1		1						
124	3	1	4.00	1	7	1		3	2	1	2.30	1		2						
125	3	2	4.05	1	4	1		46	1	18	2.35	1		1						
126	3	1	4.05	1	6	1		10	7	1	2.45	1		3						
127	3	2	4.10	1	5	1		28	1	12	2.30	1		1						
128	3	2	4.15	1	3	1		3	1	18	2.00	1		2		12	9			
129	3	1	4.15	18	4	1		52	18	1	1.00	1		1						
130	3	1	4.25	1	8	1		4	21	1	1.30	5		3						
131	3	2	4.25	1	5	1		32	1	16	2.30	1		1						
132	3	1	4.30	2	5	1		30	2	1	3.00	1		1						
133	3	2	4.30	1	2	1		2	1	2	3.00	1		5		15	6			
134	3	2	4.40	1	8	1		5	1	12	3.15	1		3						
135	3	1	4.45	1	8	1		3	12	1	2.30	1		3						
136	3	2	4.50	1	4	1		38	1	12	3.00	1		1						
137	3	1	4.50	1	7	1		5	4	1	3.00	1		6						
138	3	1	5.00	1	8	1		3	2	1	3.30	5		3						
139	3	2	5.00	1	6	1		8	1	2	3.45	1		3						
140	3	2	5.05	1	1	1		3		9	3.30	1		2		20	11			
141	3	1	5.10	12	7	1		5	12	1	2.30	5		3						
142	3	1	5.15	1	8	1		2	2	1	3.00	1		2						
143	3	2	5.20	2	7	1		3	1	2	3.20	1		5						
144	3	1	5.25	1	5	1		30	12	1	3.30	1		1						
145	3	1	5.30	1	1	1		3	4	1	2.00	1		3		40	11			
146	3	2	5.30	1	1	1		5	1	9	3.30	1		3		25	2			
147	3	1	5.35	2	8	1		3	2	1	4.10	1		5						
148	3	2	5.40	1	4	1		52	1	18	3.40	1		1						
149	3	1	5.40	1	1	1		3	18	1	2.00	1		3		35	2			
150	3	1	5.45	2	2	1		2	2	1	3.00	1		2		5	10			
151	3	2	5.45	1	4	1		40	1	12	4.00	1		1						
152	3	2	5.50	1	3	1		2	1	2	4.10	1		5		3	6			
153	3	1	5.50	18	4	1		60	18	1	2.30	1		1						
154	3	1	5.55	12	5	1		40	12	1	3.00	1		1						
155	3	2	5.55	1	8	1		4	1	4	3.00	1		3						
156	3	1	6.00	1	1	1		2	12	1	3.30	1		2		46	6			
157	3	2	6.10	2	5	1		32	1	2	4.00	1		1						
158	3	1	6.10	1	10	6		1	2	1	3.40	1		6						
159	3	1	6.20	12	7	1		3	12	1	3.20	1		3						
160	3	2	6.20	1	10	6		2	1	2	4.20	1		4						
161	3	2	6.30	1	1	1		2	1	16	3.30	1		2		50	2			
162	3	2	6.35	1	1	1		3	1	18	3.00	1		5		36	11			
163	3	2	6.40	1	4	1		42	1	18	4.10	1		1						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	4	2	8.20	12	6	1		2	1	12	7.00	1		3						
2	4	2	8.25	2	1	1		3	1	12	7.00	1		3	12	11				
3	4	1	8.29	1	1	1		2	2	11	7.00	1		5	20	11				
4	4	1	8.30	2	4	1		35	12	1	6.30	1		1						
5	4	2	8.32	1	5	1		18	1	12	7.15	1		1						
6	4	1	8.35	2	10	6		1	9	12	7.30	1		3						
7	4	1	8.37	2	1	1		3	9	18	8.30	1		5	40	10				
8	4	1	8.40	18	3	1		3	18	1	12.00	1		3	5	2				
9	4	2	8.45	1	5	1		28	1	12	7.30	1		1						
10	4	2	8.57	1	6	1		5	1	18	8.30	5		1						
11	4	1	9.00	2	6	1		7	12	9	7.30	1		1						
12	4	1	9.05	1	1	1		4	2	1	6.00	1		1	10	8				
13	4	1	9.12	2	8	1		2	2	12	7.00	1		3						
14	4	1	9.16	2	9	1		5	12	1	7.40	1		1						
15	4	1	9.20	9	6	1		1	9	2	8.00	6		1						
16	4	1	9.30	12	5	1		27	9	12	8.15	1		1						
17	4	2	9.30	1	7	1		5	1	2	7.30	1		3						
18	4	1	9.40	2	7	1		2	2	12	8.20	1		2						
19	4	2	9.42	1	10	6		1	1	2	8.00	6		1						
20	4	1	9.45	9	8	1		4	9	18	9.00	1		3						
21	4	2	9.50	2	3	1		2	2	12	9.00	1		1	3	2				
22	4	1	9.53	2	2	1		3	12	1	7.00	1		3	5	10				
23	4	2	9.55	2	6	6		3	2	18	8.00	1		6						
24	4	1	9.58	1	4	1		37	18	1	7.00	1		3						
25	4	2	10.00	2	3	1		2	2	12	8.30	1		5						
26	4	2	10.06	2	9	6		4	2	12	9.00	1		1						
27	4	2	10.07	9	2	1		2	2	9	9.30	1		1	3	2				
28	4	2	10.12	2	3	1		2	1	2	8.00	1		3	3	9				
29	4	2	10.17	2	6	1		4	12	9	8.30	1		1						
30	4	2	10.19	1	8	1		5	1	2	7.30	1		5						
31	4	2	10.22	2	6	1		4	1	2	8.00	1		1						
32	4	2	10.28	2	4	1		40	2	9	8.30	5		1						
33	4	1	10.33	1	8	1		2	12	1	7.00	1		2						
34	4	1	10.35	9	1	1		3	9	12	7.00	1		1	35	10				
35	4	1	10.40	2	1	1		2	2	1	7.30	1		5	3	11				
36	4	2	10.42	1	7	1		8	11	12	7.00	5		3						
37	4	1	10.50	2	5	1		30	2	1	8.00	1		1						
38	4	2	10.58	1	6	1		8	1	2	8.30	1		3						
39	4	1	10.58	1	8	1		3	1	2	8.00	1		3						
40	4	2	11.00	1	6	1		2	1	2	9.00	1		5						
41	4	1	11.00	2	1	1		2	2	1	9.30	1		2	10	2				
42	4	1	11.05	1	1	1		2	2	1	9.00	1		1	20	6				
43	4	2	11.07	11	8	1		5	1	12	8.30	1		5						
44	4	1	11.10	12	6	1		4	12	1	8.00	1		3						
45	4	2	11.12	2	2	1		2	2	9	10.00	1		3	15	9				
46	4	2	11.15	1	7	1		4	1	18	7.00	1		5						
47	4	1	11.15	12	6	1		3	12	1	10.00	1		5						
48	4	1	11.20	2	5	1		19	2	1	9.30	1		1						
49	4	1	11.25	1	1	1		3	2	1	10.00	1		3	36	10				
50	4	1	11.27	2	4	1		38	12	1	9.00	1		1						
51	4	1	11.30	2	1	1		3	2	1	9.30	1		2	20	2				
52	4	1	11.35	12	6	1		8	12	1	7.00	1		5						
53	4	1	11.38	1	2	1		2	2	1	10.00	1		3	3	9				
54	4	1	11.40	2	1	1		2	2	1	10.00	1		3	40	10				
55	4	2	11.45	1	5	1		35	1	12	10.00	1		1						



No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
56	4	2	11.48	12	6	1		3	12	9	9.30	1		1						
57	4	2	11.50	2	3	1		2	2	12	10.30	1		1		3	10			
58	4	1	11.57	2	2	1		2	2	1	10.00	1		3		5	2			
59	4	2	11.58	2	10	6		1	1	12	10.30	1		5						
60	4	1	12.00	12	1	1		3	12	1	10.00	1		2		10	9			
61	4	2	12.05	12	5	1		35	1	12	10.30	1		3						
62	4	2	12.07	9	3	1		3	12	9	9.00	1		3		2	3			
63	4	2	12.15	1	6	1		3	1	2	10.00	6		7						
64	4	1	12.19	12	6	1		5	12	1	11.00	1		2						
65	4	2	12.22	1	8	1		2	1	12	10.30	1		3						
66	4	2	12.25	2	2	1		2	12	9	10.30	1		1		5	3			
67	4	1	12.25	2	1	1		2	2	11	11.00	1		2		36	9			
68	4	2	12.30	1	5	1		29	1	2	11.15	1		1						
69	4	1	12.35	2	10	3		1	2	1	10.00	1		3						
70	4	2	12.37	1	7	1		5	1	2	10.00	1		6						
71	4	1	12.40	2	1	1		2	2	11	10.30	1		3		45	8			
72	4	1	12.43	12	5	1		27	12	1	11.00	1		3						
73	4	1	12.45	11	1	1		2	2	11	10.20	1		3		40	2			
74	4	2	12.58	9	4	1		50	18	9	8.00	1		1						
75	4	1	1.00	12	5	1		27	9	12	9.30	1		1						
76	4	2	1.05	2	1	1		3	2	12	12.30	1		5		36	10			
77	4	1	1.10	18	8	1		5	18	1	7.00	1		3						
78	4	2	1.13	1	4	1		45	1	12	11.00	1		1						
79	4	2	1.15	2	1	1		3	2	28	12.00	1		6		45	6			
80	4	2	1.25	2	8	1		3	2	12	10.00	1		1						
81	4	1	1.25	1	5	1		32	1	12	11.20	1		1						
82	4	2	1.30	1	4	1		40	16	18	6.00	1		1						
83	4	1	1.35	2	1	1		3	2	1	11.30	1		3		36	10			
84	4	2	1.40	1	5	1		30	1	12	11.00	1		1						
85	4	1	1.45	9	3	1		2	9	18	10.30	1		3		2	8			
86	4	2	1.45	12	8	1		3	12	1	11.20	1		5						
87	4	1	1.58	12	2	1		2	12	1	12.00	1		3		3	4			
88	4	1	1.49	2	10	6		1	2	1	10.45	1		5						
89	4	1	2.05	2	6	1		4	2	1	11.15	1		5						
90	4	2	2.15	2	1	1		3	2	9	12.20	1		5		10	8			
91	4	2	2.20	2	6	1		5	2	12	12.00	1		3						
92	4	1	2.25	12	6	1		6	12	1	11.30	1		3						
93	4	1	2.30	2	5	1		29	2	1	1.00	1		1						
94	4	2	2.37	1	7	1		3	1	2	12.00	1		2						
95	4	1	2.40	9	2	1		2	9	18	10.00	1		3		3	8			
96	4	2	2.43	1	3	1		2	1	12	11.00	1		1		2	2			
97	4	2	2.50	2	3	1		2	2	18	1.00	1		3		3	10			
98	4	1	2.55	1	4	1		33	12	1	11.30	1		1						
99	4	2	2.55	1	8	1		2	1	12	12.30	1		5						
100	4	1	2.59	2	1	1		3	2	1	12.20	1		2		45	6			
101	4	2	3.10	2	7	6		3	2	12	12.20	1		3						
102	4	2	3.20	1	10	6		1	1	12	1.00	1		6						
103	4	1	3.21	12	8	1		6	12	1	1.30	1		5						
104	4	2	3.32	2	2	1		2	2	9	2.00	1		5		3	2			
105	4	2	3.40	1	5	1		45	1	12	1.30	1		1						
106	4	1	3.41	1	8	1		4	12	1	12.00	1		3						
107	4	1	3.53	2	7	1		3	12	1	12.30	1		3						
108	4	2	4.00	1	6	1		4	1	12	2.00	1		5						
109	4	1	4.15	2	4	1		50	2	24	3.30	1		1						
110	4	1	4.20	12	2	1		2	12	1	2.30	1		2		4	2			

No	Location (OD-1-7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
111	4	1	4.30	2	1	1		2	2	11	3.30	1		3		35	10			
112	4	2	4.32	1	2	1		3	1	12	2.40	1		2		10	2			
113	4	1	4.48	2	8	1		5	2	1	3.00	1		3						
114	4	2	4.50	1	5	1		35	1	12	3.00	1		1						
115	4	2	5.00	1	6	1		11	1	2	3.30	1		7						
116	4	2	5.15	1	7	1		4	1	12	3.45	1		3						
117	4	2	5.30	1	4	1		50	1	18	3.30	1		1						
118	4	1	5.19	12	8	1		4	12	1	4.00	1		2						
119	4	1	5.31	9	1	1		3	12	9	3.50	1		3		35	2			
120	4	2	5.55	12	1	1		2	12	1	4.00	1		5		42	6			
121	4	1	5.57	2	4	1		35	2	1	5.00	1		2						
122	4	1	6.00	18	5	1		8	18	1	3.00	1		3						
123	4	1	6.10	1	10	6		1	2	1	4.00	1		7						
124	4	1	6.17	12	3	1		3	12	1	5.00	1		5		3	6			
125	4	2	6.20	2	9	6		4	2	12	5.00	1		3						
126	4	2	6.30	1	4	1		40	1	12	4.30	1		1						
127	4	1	6.31	9	2	1		3	9	12	4.00	1		3		3	9			

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	5	2	8.10	2	1	1		4	2	9	8.00	1		3		0	1			
2	5	2	8.20	1	6	1		5	1	12	8.40	1		1						
3	5	1	8.37	1	6	1		5	9	2	8.20	1		1						
4	5	1	9.00	1	2	1		6	12	1	6.00	1		1		5	6			
5	5	2	9.05	2	1	1		4	2	4	9.40	5		3		7	10			
6	5	2	9.10	2	5	1		15	1	12	9.00	5		1						
7	5	2	9.30	2	1	1		3	12	1	9.10	5		3		6	2			
8	5	1	9.30	2	6	1		1	12	2	10.00	5		1						
9	5	1	9.40	1	2	1		2	18	2	8.00	1		1		3	10			
10	5	2	9.45	2	4	1		30	12	2	9.10	1		1						
11	5	1	9.50	9	1	1		2	9	18	3.05	1		4		8	7			
12	5	1	10.00	12	10	1		1	18	1	11.40	1		3						
13	5	1	10.20	1	1	1		4	3	2	7.30	1		1		10	10			
14	5	1	10.30	1	6	1		5	12	2	11.05	1		6						
15	5	2	10.47	1	1	1		2	2	18	8.00	1		1		15	2			
16	5	1	10.50	2	2	1		2	4	1	11.20	1		3		5	10			
17	5	2	10.58	4	1	1		4	1	4	9.10	1		2		10	2			
18	5	2	11.00	2	9	1		5	4	2	9.00	1		1						
19	5	1	11.00	2	9	1		2	2	1	10.00	1		1						
20	5	2	11.15	1	1	1		2	1	2	9.00	1		1		20	2			
21	5	1	11.15	22	1	1		3	22	2	5.00	5		6		12	2			
22	5	2	11.17	1	4	1		25	1	2	8.00	1		1						
23	5	1	11.25	2	8	1		1	12	2	9.00	1		2						
24	5	2	11.26	1	9	6		3	2	12	10.00	1		1						
25	5	2	11.40	2	1	1		2	2	18	10.30	1		6		7	6			
26	5	1	11.40	1	2	6		3	2	1	11.05	5		7		3	10			
27	5	1	11.50	2	4	1		15	2	1	8.00	5		1						
28	5	2	12.05	2	2	1		2	2	12	10.00	1		2		8	9			
29	5	1	12.10	9	6	1		10	9	1	5.00	4		7						
30	5	1	12.30	1	4	1		25	2	1	10.00	1		1						
31	5	2	12.30	1	8	1		4	1	2	11.00	1		2						
32	5	1	12.45	2	7	1		6	2	1	10.10	5		5						
33	5	2	12.48	1	9	6		2	1	2	9.00	1		1						
34	5	2	12.55	2	1	1		2	12	2	11.10	1		3		20	11			
35	5	1	1.00	2	8	1		3	2	1	10.30	5		6						
36	5	2	1.02	1	5	1		38	1	12	12.00	1		1						
37	5	1	1.10	12	10	5		2	2	12	10.30	1		5						
38	5	2	1.20	2	1	1		2	18	2	8.00	1		4		30	2			
39	5	1	1.25	2	8	6		3	2	1	11.00	5		3						
40	5	1	1.35	9	1	1		2	9	2	10.02	1		6		6	7			
41	5	2	1.45	4	1	1		2	4	2	11.00	1		2		10	10			
42	5	1	1.50	2	7	1		15	2	1	9.38	5		1						
43	5	2	1.57	1	3	1		2	1	2	11.00	1		1		3	9			
44	5	1	2.00	1	5	1		21	2	1	11.30	5		1						
45	5	2	2.00	18	1	1		2	18	2	5.00	1		5		7	3			
46	5	1	2.10	1	6	1		6	2	1	11.45	4		7						
47	5	2	2.10	2	5	1		35	1	2	10.30	5		1						
48	5	2	2.15	1	6	1		10	1	2	9.00	4		7						
49	5	2	2.17	1	8	1		4	1	2	12.00	5		6						
50	5	1	2.20	2	1	6		3	2	1	11.30	6		7		3	9			
51	5	1	2.30	1	10	3		2	2	1	12.00	4		7						
52	5	2	2.30	2	1	1		2	2	12	12.30	1		1		20	10			
53	5	2	2.40	1	1	1		4	1	2	12.20	1		1		30	10			
54	5	1	2.40	2	1	6		3	2	1	1.00	5		5		20	11			
55	5	2	2.45	4	7	1		2	4	2	12.15	5		6						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
56	5	1	2.50	9	3	6		2	9	1	8.00	5		7		5	4			
57	5	2	2.52	2	10	6		1	1	2	1.30	4		5						
58	5	2	3.00	3	1	1		2	3	2	12.00	1		3		7	10			
59	5	1	3.02	2	6	6		3	2	1	12.30	6		1						
60	5	2	3.15	1	1	1		2	12	2	11.20	1		3		15	2			
61	5	1	3.15	1	7	6		5	2	1	1.30	1		1						
62	5	2	3.20	2	1	1		2	2	12	12.30	1		6		45	9			
63	5	2	3.25	1	3	1		1	1	2	1.30	1		2		2	2			
64	5	1	3.25	1	8	6		4	2	1	1.20	4		7						
65	5	2	3.30	1	5	1		37	1	2	1.00	5		1						
66	5	1	3.40	2	7	1		2	2	1	2.00	1		7						
67	5	2	3.46	12	2	1		2	12	2	9.00	1		1		5	5			
68	5	1	3.50	1	8	6		3	2	1	2.00	4		7						
69	5	1	4.00	2	5	1		18	2	1	2.10	6		7						
70	5	2	4.00	1	2	1		2	2	12	3.00	1		2		5	9			
71	5	1	4.05	2	7	1		2	2	1	2.10	5		5						
72	5	1	4.08	1	8	1		5	2	1	3.30	1		6						
73	5	2	4.10	1	8	1		2	2	1	2.30	1		1						
74	5	1	4.10	2	3	6		3	2	1	3.00	5		7		3	8			
75	5	2	4.13	1	3	1		3	1	2	2.30	1		2		3	2			
76	5	1	4.16	1	1	1		4	2	1	3.20	1		1		20	10			
77	5	2	4.22	1	5	1		20	1	2	1.00	1		5						
78	5	1	4.24	12	5	1		5	12	2	2.25	5		5						
79	5	2	4.25	2	2	1		3	2	18	3.00	1		1		5	10			
80	5	2	4.28	18	5	1		39	18	2	10.00	1		1						
81	5	1	4.35	2	1	6		2	2	1	3.00	6		5		45	10			
82	5	2	4.35	2	1	1		5	2	12	1.00	1		2		7	9			
83	5	2	4.36	1	2	1		4	1	2	3.00	1		2		4	3			
84	5	1	4.50	2	1	1		1	2	1	3.10	6		7		10	10			
85	5	2	4.57	1	1	1		3	2	1	2.30	1		2		36	2			
86	5	1	5.00	1	5	1		20	2	1	3.30	1		1						
87	5	2	5.08	2	5	1		39	1	2	3.00	1		1						
88	5	1	5.10	1	6	6		6	2	1	3.20	6		7						
89	5	2	5.10	1	2	1		2	11	2	3.00	1		3		6	9			
90	5	1	5.20	2	1	5		3	1	2	4.00	1		3		20	6			
91	5	2	5.20	7	6	1		7	7	2	12.15	1		7						
92	5	1	5.30	1	1	6		3	2	1	3.15	1		5		10	2			
93	5	2	5.37	2	3	1		3	2	1	4.20	1		3		3	2			
94	5	1	5.40	12	8	6		4	2	12	4.30	1		3						
95	5	2	5.40	1	8	1		5	1	2	2.30	1		2						
96	5	2	5.46	1	1	1		2	2	1	5.00	1		1		35	10			
97	5	1	5.50	1	2	1		2	2	1	5.30	5		5		3	9			
98	5	2	5.58	2	2	1		3	2	12	4.00	1		2		2	2			
99	5	1	6.00	1	7	6		3	2	1	5.10	6		1						
100	5	2	6.05	2	1	1		2	1	2	5.00	1		2		20	10			
101	5	2	6.10	1	1	2		2	1	2	5.30	1		1		10	2			
102	5	1	6.15	2	6	1		6	12	2	4.10	5		5						
103	5	1	6.20	1	8	1		4	2	1	4.30	6		2						
104	5	2	6.30	1	1	6		3	2	1	5.00	6		5		6	10			
105	5	2	6.40	18	3	1		2	18	2	10.00	1		3		5	10			

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	6	2	6.30	1	2	1		2	1	5	5.00	5		1		20	10			
2	6	2	6.36	24	2	1		2	24	9	9.00	5		3		5	2			
3	6	2	6.42	1	5	2		30	1	8	10.45	5		1						
4	6	2	6.45	1	2	1		2	1	4	5.00	5		2		20	3			
5	6	2	6.51	11	1	1		2	11	7	11.10	5		1		20	6			
6	6	2	6.55	1	4	1		45	1	4	3.00	5		1						
7	6	2	7.02	1	2	1		2	1	8	5.30	5		3		15	2			
8	6	2	7.06	11	2	1		1	11	9	4.00	5		3		20	10			
9	6	2	7.11	1	4	1		45	1	9	7.20	5		1						
10	6	2	7.15	1	1	1		2	1	7	7.30	5		2		15	6			
11	6	2	7.19	1	2	1		2	1	13	7.00	5		1		20	10			
12	6	2	7.26	1	2	1		2	1	9	7.45	5		1		10	2			
13	6	2	7.31	1	7	5		3	1	4	2.30	5		1						
14	6	2	7.35	1	2	1		2	1	9	8.09	5		1		5	11			
15	6	2	7.41	1	4	1		50	1	4	6.00	1		1						
21	6	2	7.46	1	4	1		45	1	4	9.00	4		1						
22	6	2	7.50	1	6	5		3	1	4	8.00	4		1						
23	6	2	7.55	1	2	5		2	1	7	8.45	5		2						
24	6	2	8.00	6	6	1		10	1	6	9.00	4		3						
25	6	2	8.05	4	4	1		40	1	4	9.20	4		1						
26	6	2	8.08	4	1	5		2	9	4	10.15	5		2		5	7			
27	6	2	8.16	4	7	5		4	1	4	8.30	4		1						
28	6	2	8.20	4	1	5		3	9	4	10.15	5		2		8	7			
29	6	2	8.26	9	1	6		2	1	9	10.20	5		2		10	8			
30	6	2	8.32	7	4	5		5	1	7	10.00	1		1						
31	6	2	8.36	1	2	5		2	1	4	11.20	5		1		5	10			
32	6	2	8.40	1	5	5		25	1	4	10.45	5		1						
33	6	2	8.45	1	4	5		43	1	6	10.50	1		1						
34	6	2	8.52	1	2	5		2	1	4	10.50	1		2		1				
35	6	2	8.55	1	1	1		2	1	9	11.00	5		2		10	6			
36	6	2	9.02	1	6	1		5	1	8	11.00	4		1						
37	6	2	9.10	1	7	1		2	1	4	11.50	4		2						
38	6	2	9.16	1	3	5		2	1	7	12.00	5		2		2	8			
39	6	2	9.22	1	1	5		2	1	5	12.30	5		2		1				
40	6	2	9.28	1	7	1		2	1	4	11.40	6		1						
41	6	2	9.36	1	4	1		50	1	9	12.10	5		1						
42	6	2	9.52	1	1	1		2	1	4	1.50	1		1			1			
43	6	2	10.00	1	10	3		1	1	4	1.20	1		2						
44	6	2	10.06	9	2	1		3	1	9	1.40	5		2		5	8			
45	6	2	10.10	1	5	1		25	1	4	1.45	1		1						
46	6	2	10.16	1	3	1		2	2	4	1.20	1		1		3	10			
47	6	2	10.20	4	2	1		2	1	4	2.30	1		1		3	9			
48	6	2	10.26	1	4	1		42	1	4	1.45	1		1						
49	6	2	10.31	1	2	1		2	1	9	2.50	5		2		8	11			
50	6	2	10.36	1	11	3		1	1	4	3.20	4		2						
51	6	2	10.40	1	1	1		2	1	9	3.00	5		2		9	9			
52	6	2	10.50	1	4	1		40	1	9	3.15	5		1						
53	6	2	11.02	1	2	2		2	1	9	3.40	1		1		9	11			
54	6	2	11.05	1	8	1		2	1	4	4.00	4		5						
55	6	2	11.16	1	3	1		2	1	4	5.00	5		2		4	10			
56	6	2	11.21	1	4	1		35	1	9	4.20	5		1						
57	6	2	11.30	1	2	1		2	1	9	4.25	5		2		10	6			
58	6	2	11.36	1	5	1		26	1	4	4.30	1		1						
59	6	2	11.41	1	1	1		2	1	9	4.50	5		2		10	8			
60	6	2	11.52	1	8	1		3	1	7	5.15	1		1						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
61	6	2	11.56	1	2	1		2	1	8	5.20	1		2		4	7			
62	6	2	12.00	1	10	3		1	1	7	5.40	4		6						
63	6	2	12.05	1	5	1		30	1	4	7.00	5		1						
64	6	2	12.08	1	4	1		45	1	4	7.10	5		1						
65	6	2	12.13	1	2	1		2	1	4	5.02	5		2		15	2			
66	6	2	12.17	1	4	1		40	1	7	7.00	5		2						
67	6	2	12.24	1	1	1		2	1	9	5.30	5		1		3	9			
68	6	2	12.31	1	4	2		45	1	4	7.30	5		2						
69	6	2	12.37	1	2	1		2	16	4	3.00	5		5		5	10			
70	6	2	12.46	1	4	1		45	1	4	3.35	5		1						
71	6	2	12.55	1	5	1		35	1	5	7.30	5		1						
72	6	2	1.00	1	2	1		2	1	4	7.35	5		1		8	2			
73	6	2	1.04	1	2	1		2	1	7	6.00	5		1		7	11			
74	6	2	1.09	1	2	1		2	1	9	4.30	5		1		3	9			
75	6	2	1.13	1	6	1		5	1	4	7.30	5		1						
76	6	2	1.19	1	6	1		5	1	4	8.00	5		1						
77	6	2	1.25	1	4	1		45	1	9	8.00	5		1						
78	6	2	1.31	1	6	1		2	1	4	8.00	5		1						
79	6	2	1.35	1	2	1		2	1	9	11.45	5		3		8	10			
80	6	2	1.41	16	2	1		2	16	7	1.00	5		3						
81	6	2	1.49	1	2	1		2	1	4	9.30	5		1			1			
82	6	2	1.55	1	3	1		4	1	7	9.45	5		1		1	2			
83	6	2	2.00	1	2	1		2	1	4	9.00	1		5			1			
84	6	2	2.08	1	2	1		35	1	4	9.00	5		1		2	2			
85	6	2	2.12	1	2	1		2	1	9	9.00	5		1		15	6			
86	6	2	2.19	1	5	1		35	1	2	9.10	5		1						
87	6	2	2.25	1	1	1		2	1	9	9.30	5		2		30	5			
88	6	2	2.32	1	4	1		45	1	4	9.45	5		1						
89	6	2	2.35	1	2	1		2	1	4	12.00	5		2		15	11			
90	6	2	2.40	1	5	1		35	1	7	10.00	5		1						
91	6	2	2.45	1	4	1		45	1	13	10.00	5		1						
92	6	2	2.51	1	2	1		2	1	4	10.00	5		1		10				
93	6	2	2.55	1	4	1		45	1	8	10.00	5		1						
94	6	2	3.02	1	4	1		45	1	5	10.15	5		1						
95	6	2	3.11	1	4	1		45	1	9	10.30	5		6						
96	6	2	3.16	1	2	1		2	1	13	10.15	5		1		20	10			
97	6	2	3.20	1	2	1		2	1	9	10.20	5		1		10	2			
98	6	2	3.31	1	4	1		45	1	9	10.20	5		1						
99	6	2	3.37	1	1	1		2	1	7	10.30	5		2		30	6			
100	6	2	3.42	1	2	1		2	1	8	7.00	5		3		20	2			
101	6	2	3.49	11	2	1		2	11	9	11.00	5		3		20	10			
102	6	2	4.00	11	1	1		2	11	7	11.00	5		1		20	6			
103	6	2	4.05	1	5	1		30	1	8	10.45	5		1						
104	6	2	4.09	1	2	1		2	1	4	12.00	5		2		20	3			
105	6	2	4.16	4	2	1		2	1	5	12.45	5		1		20	10			
106	6	2	4.21	25	2	1		2	24	9	9.00	5		3		5	2			
107	6	2	4.25	1	4	1		45	1	5	11.45	5		1						
108	6	2	4.30	1	4	1		45	1	5	11.50	5		1						
109	6	2	4.35	1	4	2		45	1	4	12.00	5		1						
110	6	2	4.41	11	2	1		2	1	4	12.30	5		1		6	3			
111	6	2	4.45	1	2	1		2	1	9	12.00	5		5		20	10			
112	6	2	4.50	1	2	1		2	1	4	12.00	5		2		21	10			
113	6	2	4.56	1	4	1		45	1	6	12.00	5		1						
114	6	2	5.01	1	4	1		45	1	6	12.45	5		1						
115	6	2	5.05	1	4	1		45	1	8	12.30	5		1						

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type ( 1 - 13 )	C Occupation ( 1 - 6 )	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose ( 1 - 6 )	H' purpose (if its 6, writ down)	I frequency ( 1 - 7 )	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type ( 1 - 11 )	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
116	6	2	5.10	4	2	1		2	1	7	12.45	5		1		20	2			
117	6	2	5.16	1	4	1		48	1	7	1.00	5		1						
118	6	2	5.20	1	2	1		2	1	4	11.00	5		1		20	7			
119	6	2	5.25	1	2	1		2	1	4	5.00	5		4		22	2			
120	6	2	5.31	24	2	1		2	24	9	1.00	5		1		7	8			
121	6	2	5.35	1	1	1		2	1	4	1.30	5		1		20	2			
122	6	2	5.42	1	2	1		2	2	4	1.00	5		1		20	2			
123	6	2	5.45	1	2	1		2	1	4	12.00	5		1		20	10			
124	6	2	5.52	1	1	1		2	1	9	1.00	5		1		18	10			
125	6	2	6.00	1	2	1		2	1	4	1.20	5		1		12	10			

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodity type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
1	7	1	6.30	7	8	1		5	5	1	5.00	5		3						
2	7	1	6.37	2	5	1		30	7	1	5.00	5		1						
3	7	1	6.40	1	4	1		50	9	1	3.00	5		1						
4	7	1	6.46	9	6	1		6	9	1	5.00	5		3						
5	7	1	6.52	1	5	1		40	4	1	4.00	5		1						
6	7	1	6.55	11	1	1		3	9	1	2.00	5		3	15	2				
7	7	1	7.02	9	1	1		2	9	24	4.30	5		2	20	2				
8	7	1	7.05	11	2	1		2	9	11	12.00	1		3	10	4				
9	7	1	7.07	9	8	1		5	9	1	4.00	1		1						
10	7	1	7.12	1	6	1		5	9	1	5.00	1		3						
11	7	1	7.18	7	1	1		3	7	1	5.00	1		1	10	3				
12	7	1	7.25	9	1	1		2	9	1	6.00	1		1	20	10				
13	7	1	7.27	6	2	1		2	6	1	5.30	5		2	5	8				
14	7	1	7.32	2	1	1		3	9	2	6.00	1		1	16	8				
15	7	1	7.42	9	4	1		55	9	1	5.00	1		1						
16	7	1	7.45	4	1	1		3	4	1	3.00	1		1	20	2				
17	7	1	7.50	7	6	1		5	7	24	12.00	1		2						
18	7	1	7.06	4	8	1		4	4	1	5.30	5		2						
19	7	1	8.10	1	2	1		2	9	1	11.00	5		1	10	10				
20	7	1	8.14	9	1	1		2	9	27	12.00	1		1	15	7				
21	7	1	8.20	1	5	1		45	9	1	11.30	5		1						
22	7	1	8.26	9	1	1		2	9	2	5.00	5		3	10	11				
23	7	1	8.31	1	4	1		50	9	1	1.00	5		1						
24	7	1	8.35	9	1	1		2	9	1	5.00	5		1	25	10				
25	7	1	8.42	1	5	1		40	4	1	6.00	5		1						
26	7	1	8.45	4	6	2		4	4	1	7.00	1		2						
27	7	1	8.52	1	4	1		52	4	1	7.20	5		1						
28	7	1	8.55	1	5	1		12	4	1	8.00	5		1						
29	7	1	9.02	4	4	1		50	4	1	6.30	5		1						
30	7	1	9.22	5	5	1		47	5	11	5.00	5		1						
31	7	1	9.27	1	6	1		7	4	1	7.30	3		3						
32	7	1	9.31	9	1	1		2	9	16	10.00	5		3	10	10				
33	7	1	9.35	4	4	1		40	4	1	7.50	5		1						
34	7	1	9.48	1	1	1		9	9	1	11.00	5		1	15	2				
35	7	1	10.02	9	8	1		5	13	1	9.00	3		3						
36	7	1	10.06	1	2	1		2	9	1	6.00	1		1	5	2				
37	7	1	10.10	4	8	1		5	4	1	8.30	4		3						
38	7	1	10.16	9	2	1		2	9	1	7.00	1		1	10	6				
39	7	1	10.20	1	4	1		48	4	1	7.30	5		1						
40	7	1	10.25	9	1	1		2	9	1	6.30	5		3	25	6				
41	7	1	10.32	4	4	1		50	4	1	8.00	5		1						
42	7	1	10.35	1	1	1		2	9	1	11.30	3		3	12	7				
43	7	1	10.40	4	6	1		7	4	1	4.00	4		3						
44	7	1	10.46	2	1	1		2	9	2	5.00	1		3	16	10				
45	7	1	10.50	8	7	1		3	8	1	7.00	3		1						
46	7	1	10.56	1	8	1		3	4	1	10.00	1		3						
47	7	1	11.00	9	1	1		2	9	1	5.00	1		1	20	9				
48	7	1	11.04	9	1	1		2	9	1	4.30	1		1	10	7				
49	7	1	11.11	1	1	1		3	9	1	6.00	1		2	20	3				
50	7	1	11.18	9	1	1		2	9	1	6.30	1		3	18	7				
51	7	1	11.25	1	4	1		50	9	1	5.00	5		1						
52	7	1	11.31	4	1	1		2	9	1	5.00	1		3	20	2				
53	7	1	11.35	9	4	1		55	9	1	5.00	5		1						
54	7	1	11.42	8	4	1		50	9	1	6.00	1		1						



No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type (1 - 13)	C Occupation (1 - 6)	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose (1 - 6)	H' purpose (if its 6, writ down)	I frequency (1 - 7)	I' frequency (if its 7, writ down)	J Loading volume	K Commodity type (1 - 11)	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
55	7	1	11.46	20	1	1		3	20	16	11.00	1		3		25	6			
56	7	1	11.50	4	8	1		5	4	1	6.00	1		1						
57	7	1	12.00	9	2	1		2	9	1	7.00	1		1		10	8			
58	7	1	12.04	1	1	1		2	9	1	5.00	5		3		20	10			
59	7	1	12.12	9	1	1		2	9	16	8.00	1		1		22	9			
60	7	1	12.20	1	1	1		3	9	1	9.00	1		1		16	10			
61	7	1	12.26	1	4	1		50	9	1	5.00	5		1						
62	7	1	12.30	4	1	1		3	4	1	8.00	1		1		12	8			
63	7	1	12.35	4	4	1		40	4	2	9.00	5		1						
64	7	1	12.41	9	1	1		3	9	1	7.30	5		3		20	7			
65	7	1	12.45	11	1	1		2	9	11	6.00	5		3		12	2			
66	7	1	12.52	9	1	1		2	9	1	9.00	1		1		25	4			
67	7	1	12.55	1	2	1		2	7	1	5.00	5		1		8	9			
68	7	1	1.02	18	4	1		45	8	1	10.00	1		1						
69	7	1	1.06	9	6	1		5	9	1	5.00	5		3						
70	7	1	1.10	1	2	1		2	9	1	5.00	1		3		12	10			
71	7	1	1.15	9	1	1		2	9	2	6.00	1		3		15	2			
72	7	1	1.18	9	1	1		4	9	1	6.20	1		2		25	2			
73	7	1	1.25	4	2	1		2	4	1	8.00	5		1		10	6			
74	7	1	1.31	1	2	1		2	9	1	8.00	1		1		10	8			
75	7	1	1.35	7	4	1		40	7	1	6.00	5		1						
76	7	1	1.42	9	2	1		2	9	1	9.30	1		1		16	11			
77	7	1	1.45	2	1	1		2	9	2	7.00	5		1		20	10			
78	7	1	1.51	9	1	1		3	9	1	8.30	5		1		12	10			
79	7	1	1.55	11	8	1		2	9	11	5.00	1		2						
80	7	1	2.02	9	3	1		2	9	1	10.10	1		1		2	3			
81	7	1	2.11	1	5	1		36	9	1	9.00	1		1						
82	7	1	2.15	6	1	1		2	6	24	6.00	1		1		20	8			
83	7	1	2.22	9	1	1		3	9	1	10.00	1		1		15	2			
84	7	1	2.26	24	1	1		2	9	24	4.00	1		1		20	2			
85	7	1	2.31	4	6	1		4	4	1	11.00	1		2						
86	7	1	2.36	9	8	1		4	9	1	6.00	5		3						
87	7	1	2.40	1	8	1		3	4	1	10.30	1		3						
88	7	1	2.45	9	1	1		2	9	1	5.00	1		3		10	11			
89	7	1	2.50	4	1	1		3	4	1	11.00	1		1						
90	7	1	3.01	7	8	1		2	4	1	11.30	1		2						
91	7	1	3.05	1	4	1		55	9	1	10.00	1		1						
92	7	1	3.09	4	8	1		5	4	1	11.30	1		3						
93	7	1	3.15	1	2	1		3	9	1	10.30	1		1		10	2			
94	7	1	3.21	9	6	1		4	9	23	11.00	1		3						
95	7	1	3.25	11	4	1		50	9	1	5.00	5		1						
96	7	1	3.31	9	1	1		3	9	1	11.30	1		1		20	6			
97	7	1	3.40	9	1	1		4	9	26	11.00	1		1		16	10			
98	7	1	3.51	24	1	1		2	9	24	6.00	1		3		16	2			
99	7	1	3.55	1	1	1		3	9	1	7.00	1		2		25	8			
100	7	1	4.02	11	8	1		6	9	11	8.30	1		3						
101	7	1	4.06	9	4	1		40	9	1	6.00	5		1						
102	7	1	4.11	1	1	1		2	9	1	7.20	1		3		10	2			
103	7	1	4.15	1	6	1		5	4	1	7.00	5		3						
104	7	1	4.22	9	1	1		2	9	3	8.00	1		3		20	6			
105	7	1	4.26	1	2	1		2	9	1	6.30	5		1		8	11			
106	7	1	4.30	24	2	1		3	9	24	6.00	1		3		10	2			
107	7	1	4.35	1	7	1		5	7	1	8.00	1		3						
108	7	1	4.42	9	2	1		2	9	1	10.00	1		3		12	4			

No	Location (OD-1 -7)	Direction 1:inbound 2:outbound	Interview time	A Address of residence (Zone No.1 - 28)	B Vehicle type ( 1 - 13 )	C Occupation ( 1 - 6 )	C Occupation (if its 6, writ down)	D Number of passenger	E Origin of trip (Zone No.1 - 28)	F Distination of trip (Zone No.1 - 28)	G Travel time	H purpose ( 1 - 6 )	H' purpose (if its 6, writ down)	I frequency ( 1 - 7 )	I' frequency (if its 7, writ down)	J Loading volume	K Commodit y type ( 1 - 11 )	K' Commodity type (if its 11, writ down)	L Mejor bottleneck point along the national No.1	M What other roads
109	7	1	4.45	9	2	1		2	9	16	7.00	1		1		10	4			
110	7	1	4.50	1	1	1		3	9	1	8.30	1		3		16	6			
111	7	1	4.55	24	1	1		4	9	24	6.00	1		1		22	2			
112	7	1	5.02	7	1	1		2	7	3	11.00	1		1		20	6			
113	7	1	5.05	2	2	1		2	9	2	8.30	5		3		10	2			
114	7	1	5.10	16	1	1		2	9	16	6.00	5		1		16	9			
115	7	1	5.16	9	1	1		2	9	11	7.00	5		1		20	2			
116	7	1	5.21	1	1	1		2	9	1	10.00	5		3		25	10			
117	7	1	5.25	5	6	1		2	5	1	11.00	1		1						
118	7	1	5.31	8	8	1		4	8	1	10.00	5		3						
119	7	1	5.35	4	4	1		50	4	1	12.00	5		1						
120	7	1	5.42	1	1	1		2	9	1	10.00	1		3		25	6			
121	7	1	5.46	1	2	1		2	4	1	12.00	5		1		5	3			
122	7	1	5.50	7	8	1		4	7	1	11.00	1		3						
123	7	1	5.55	9	1	1		2	9	1	9.00	1		3		20	9			
124	7	1	6.00	21	1	1		2	9	21	6.00	1		3		25	2			

#### **4. NUMBER OF ACCIDENTS**

## Kachpur Bridge to Meghna Gomoti Bridge: Part of N1

Distance from Zero Point (Dhaka) : 12.8 - 41.2 km

Year : 1998 - 2006; Condition: Total Accident No.  $\geq$  4 (Locations are based on IDC's road inventory 1998)

Sl. No.	Name of the Locations	Distance from Zero Point (Dhaka)	Fatal Accident No.	Non-fatal Accident No.	Total Accident No.
1	Shanarpar	10.5	5	0	5
2	Narayanganj Intersection	15	12	3	15
3	Sylhet 334/Comilla 85/Chittagong 252/Dhaka 12	12	5	0	5
4	100m after the km post of Sylhet 334/Comilla 85/Chittagong 252/Dhaka 12	12.1	9	1	10
5	Petrol Pump/Rahim Steel Mill	14.7	4	1	5
6	Comilla 82/Chittagong 249/Dhaka 15	15	6	2	8
7	Madanpur Bazar / Bus Stand	16.6	8	2	10
8	Sonargaon Intersection/Mograpara Bus Stand	24.5	8	2	10
9	Meghna Ghat Road Intersection	27.3	7	3	10
10	Toll Box of Meghna Bridge	27.4	9	1	10
11	Meghna P.E.T Industry	27.5	5	1	6
12	Bridge	34.5	3	1	4
13	Comilla 61/Chittagong 228/Dhaka 36	36	2	2	4
14	Moddhya Bausia Bus Stand	36.3	13	11	24
15	Bridge	36.4	5	2	7
16	Bridge	36.5	2	2	4
17	Daudkandi Bus Stand	42.9	3	4	7
18	Shilamandi Textiles/Mosque	46.3	4	0	4
19	Huglia Baropara Bus Stand/Baropara Madrasa	47.6	6	0	6
20	Police Line Intersection/Shaherprotap	50	4	0	4
21	Raipur Bazar/Bus Stand	53.6	4	1	5

### Kachpur Bridge to Meghna Gomoti Bridge: Part of N1

Distance from Zero Point (Dhaka) : 12.8 - 41.2 Km

**Year : 2007 - 2008; Condition: Total Accident No.  $\geq$  2** (Locations are based on IDC's road inventory 1998)

Sl. No.	Name of the Locations	Distance from Zero Point (Dhaka)	Fatal Accident No.	Non-fatal Accident No.	Total Accident No.
1	Narayanganj Intersection	11.7	4	1	5
2	100m after the km post of Sylhet 334/Comilla 85/Chittagong 252/Dhaka 12	12.1	9	3	12
3	Kanchpur Bridge	12.8	1	1	2
4	km post	16.6	4	0	4
5	Darikandi Bus Stand	21.2	2	1	3
6	Sonargaon Intersection/Mograpara Bus Stand	24.5	4	1	5
7	Daudkandi Ghat Road	41.5	4	0	4
8	Daudkandi Bridge Toll Box	41.8	2	0	2
9	Daudkandi Bus Stand	42.9	2	2	4
10	Shahidnagar Bus Stand	46.3	1	1	2
11	Huglia Baropara Bus Stand/Baropara Madrasa	47.6	2	0	2
12	km post	48	0	2	2
13	Matlab - Bashurhat - Pennai Intersection	49.1	1	1	2
14	km post	50	1	1	2
15	Culvert 52/1	51.3	2	0	2
16	Dippur Bus Stand	52.5	2	0	2
17	Raipur Bazar/Bus Stand Dippur Bus Stand	53.6	2	0	2

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## Kachpur Bridge to Meghna Gomoti Bridge: Part of N1

Distance from Zero Point (Dhaka) : 12.8 - 41.2 km

Year : 2009 - 2010; Condition: Total Accident No.  $\geq$  2 (Locations are based on IDC's road inventory 1998)

Sl. No.	Name of the Locations	Distance from Zero Point (Dhaka)	Fatal Accident No.	Non-fatal Accident No.	Total Accident No.
1	Shanarpar	10.5	2	1	3
2	Narayanganj Intersection	11.7	2	0	2
3	100m after the km post of Sylhet 334/Comilla 85/Chittagong 252/Dhaka 12	12.1	3	0	3
4	300m before Kanchpur Bridge	12.5	2	0	2
5	Kanchpur Bridge	12.8	3	0	3
6	Jangal Bus Stand	18.6	1	1	2
7	Darikandi Bus Stand	21.2	2	0	2
8	Daudkandi Bus Stand	42.9	3	1	4
9	Bus Stand/Mosque	54.1	2	0	2

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**APPENDIX 5.**  
**RECORDS OF BRIDGE SURVEY**

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# 1. Visual inspection survey



## 1. OBJECTIVE

The objective of visual survey is to figure out the present condition of existing bridges for establishing the rehabilitation plan. The visual inspection was conducted for three bridges; Kanchpur, Maghna and Gumti.

## 2. METHOD OF SURVEY

Proximity visual inspection was conducted for accessible structure such as; abutments, lower part of piers, expansion joints.

Distant visual inspection was conducted for no-accessible structure such as; superstructures, higher part of piers.

## 3. SURVEY ITEMS

As concrete damages turn to serious, steel bars will be exposed to the air. Survey items are shown in Table 3.1.1.

**Table 3.1.1 Survey Items**

Survey Items	Damage level	Survey Location	Distant Visual Inspection	Proximity Visual Inspection	Remarks
Cracks, water leakage, isolated lime	a-e	Beams Cross Beams Substructure	○	○	Shown in Table
Cracks, water leakage, isolated lime	a-e	Slab around pier	○	○	Shown in Table
Exposure of reinforcement	Exist or not exist	Beams Cross Beams Slabs Substructure	○		Shown in Table
Uneven road surface	Exist or not exist	Road		○	Shown in Table


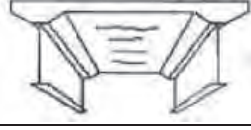



Damage diagnosis criteria from survey results are shown in Table 3.1.1 are defined in Table 3.1.2 to Table 3.1.5.

**Table 3.1.2 Damage Level**

Crack width	Condition	Damage Level
No crack	-	a
Less than 0.2mm	-	b
More than 0.2mm	Crack only	c
	Water leakage only	d
	Small amount of isolated lime	d
	Much isolated lime	e

The water penetration starts from crack width 0.2 mm. The level of crack damage level is identified crack width, water penetration.

**Table 3.1.3 Cracks in Concrete Slab**

Condition	Drawing	Damage level
No cracks or crack widths are less than 0.2mm and crack intervals are over 1.0m. Water leakage through cracks and isolated lime are not confirmed.		a
Crack width less than 0.2 mm occurs in one direction. These crack intervals are more than 0.5m. Water leakage through cracks and isolated lime are not confirmed.		b
Crack width is about 0.2mm and confined within a grid. But water leakage through cracks and isolated lime are not confirmed. Or Crack widths are about 0.2mm and confined to one direction. But water leakage through cracks and isolated lime are confirmed.		c
Crack widths are about 0.2mm and confined within a grid. Water leakage through cracks and isolated lime are confirmed. Or There exist many cracks with widths more than 0.2mm and concrete chips are spalling off. But water leakage through cracks and isolated lime are not confirmed.		d
Many concrete chips are spalling off and water leakage through cracks and isolated lime are confirmed.		e

The progress of deck cracks is shown above table to define the level of damages.

**Table 3.1.4 Damage Level and Exposure of Reinforcement**

Exposure of reinforcement	Area	Condition	Damage
No damage	-	-	No
Existence of damage	Small	Corrosion in reinforcement	No
		Decrease in reinforcing bar cross section	No
	Large	Corrosion in reinforcement	No
		Decrease in reinforcing bar cross section	Exist

The exposure of reinforcement steel bar is the final stage of concrete damage. This time the rehabilitation work will cover the damaged area so that the widely and severely corroded case for replace of damaged rebar should be identified.

**Table 3.1.5 Unevenness of Road Surface**

Condition	Damage level
Uneven less than 20mm	No
Uneven more than 20mm	Exist

The evenness of expansion joints or pavement surface should be identified from above mentioned criteria.


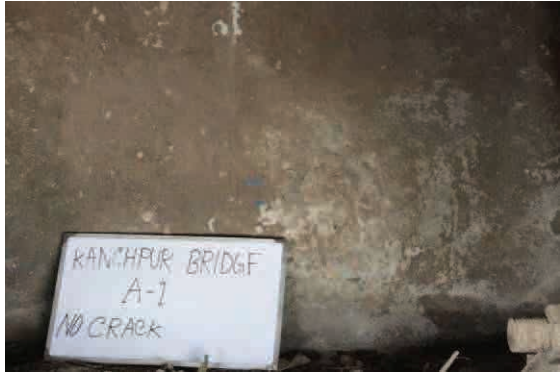
#### **4. RESULT OF VISUAL SURVEY**



Survey results are still under processing. Some results are shown from next page.



## 4.1 Kanchpur Bridge



### 4.1.1 Crack, water leakage, isolated lime



#### (1) Substructure



Abutment 01	
Damage: d	Damage: a
	
Crack width over 0.2mm Water leakage only	No crack



Pier 01	
Damage: a	Damage: a
	
No crack	No crack



Pier 02	
Damage: a	Damage: a
	
No crack	No crack



Pier 03	
Damage: a	Damage: a
	
No crack	No crack

Pier 04	
Damage: a	Damage: a
	
No crack	No crack

Pier 05	
Damage: a	Damage: a
	
No crack	No crack



Pier 06	
Damage: a	Damage: a
	
No crack	No crack



Pier 07	
Damage: a	Damage: a
	
No crack	No crack



Abutment 02	
Damage: a	Damage: c
	
No crack	Crack width over 0.2mm Crack only







(2) Superstructure



Superstructure A1-P1	
Damage: a	Damage: a
	
No crack	No crack

Superstructure P1-P2	
Damage: a	Damage: a
	
No crack	No crack

Superstructure P2-P3	
Damage: a	Damage: a
	
No crack	No crack



Superstructure P3-P4	
Damage: a	Damage: a
	
No crack	No crack



Superstructure P6-P7	
Damage: a	Damage: a
	
No crack	No crack



Superstructure P7-A2	
Damage: a	Damage: a
	
No crack	No crack



## 4.1.2 Exposure of reinforcement



### (1) Substructure



Abutment 01	
Damage: Not exist	Damage: Not exist
	
No damage	No damage



Pier 01	
Damage: Not exist	Damage: Not exist
	
No damage	No damage in reinforcement



Pier 02	
Damage: Not exist	Damage: Existence of damage
	
No damage	Corrosion in reinforcement



Pier 03	
Damage: Not exist	Damage: Existence of damage
	
No damage	Corrosion in reinforcement

Pier 04	
Damage: Not exist	Damage: Not exist
	
No damage	No damage in reinforcement

Pier 05	
Damage: Not exist	Damage: Not exist
	
No damage	No damage



Pier 06	
Damage: Not exist	Damage: Not exist
	
No damage	No damage in reinforcement


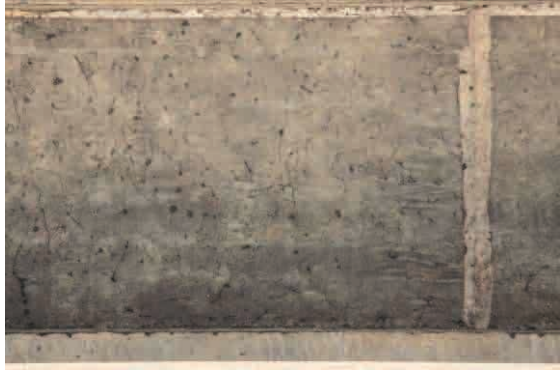
Pier 07	
Damage: Not exist	Damage: Not exist
	
No damage	No damage in reinforcement


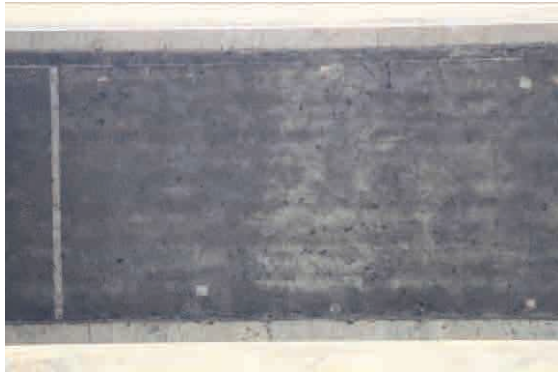
Abutment 02	
Damage: Not exist	Damage: Not exist
	
No damage	No damage







(2) Superstructure



Superstructure A1-P1	
Damage: Not exist	Damage: Not exist
	
No damage in reinforcement	No damage in reinforcement

Superstructure P1-P2	
Damage: Not exist	Damage: Not exist
	
No damage in reinforcement	No damage in reinforcement

Superstructure P2-P3	
Damage: Not exist	Damage: Not exist
	
No damage	No damage in reinforcement



Superstructure P3-P4	
Damage: Not exist	Damage: Not exist
	
No damage in reinforcement	No damage in reinforcement



Superstructure P6-P7	
Damage: Not exist	Damage: Not exist
	
No damage in reinforcement	No damage in reinforcement



Superstructure P7-A2	
Damage: Not exist	Damage: Not exist
	
No damage in reinforcement	No damage in reinforcement



### 4.1.3 Falling out damaged particle and Crack in concrete slab



(1) Slab



Slab A1-P1	
Damage: Not exist	Damage: Not exist
	
No damage	No damage

Slab P1-P2	
Damage: Not exist	Damage: Not exist
	
No damage	No damage



Slab P2-P3	
Damage: Not exist	Damage: Not exist
	
No damage	No damage

Slab P3-P4	
Damage: Not exist	Damage: Not exist
	
No damage	No damage

Slab P6-P7	
Damage: Not exist	Damage: Not exist
	
No damage	No damage

Slab P7-A2	
Damage: Not exist	Damage: Not exist
	
No damage	No damage

#### 4.1.4 Uneven on road surface

Surface	
Damage: Exist	Damage: Exist
	
Uneven more than 20mm	Uneven more than 20mm