

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary	Co-ordinate:	N: 2757523	Ground Water: 6.50m	Borehole No: KCR/BH#29													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian	E: 42R302370		Geologist: Sajid	Date Started: June-06-2012													
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite	Ground Elevation: +22.51		Driller: Yusuf	Date Completed: June-08-2012													
Depth (m)	Sample No.	Thick. thickness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks						
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)		
										10	20	30	40	50					From	To	From
0.00			∇.....∇ .....∇ .....∇ .....∇	Brownish Grey, dense, medium to coarse, Gravely SAND, with boulders & Solid Waste (as filled material)																	
1.00	CRS-1	3.0	∇.....∇ .....∇ .....∇ .....∇																		
2.00	CPT-1		∇.....∇ .....∇ .....∇ .....∇		15	10	10	15	35						0.00	1.00	90	NA	-	-	
3.00	CRS-2	4.0	∇.....∇ .....∇ .....∇ .....∇																		
4.00	CPT-2		∇.....∇ .....∇ .....∇ .....∇	17	12	11	19	42						1.00	2.00	85	NA	-	-		
5.00	CRS-3	4.0	∇.....∇ .....∇ .....∇ .....∇	Brown, very dense, medium to coarse, Silty SAND, trace Clay, some Gravels.																	
6.00	SPT-1		∇.....∇ .....∇ .....∇ .....∇		16	15	15	30	60						2.00	3.00	70	NA	-	-	
7.00	CRS-4	4.0	∇.....∇ .....∇ .....∇ .....∇																		
8.00	SPT-2		∇.....∇ .....∇ .....∇ .....∇	30	21	22	35	78						3.00	4.00	60	NA	-	-		
9.00	CRS-5	4.0	∇.....∇ .....∇ .....∇ .....∇																		
10.00	SPT-3		∇.....∇ .....∇ .....∇ .....∇	52				R						4.00	5.00	50	NA	-	-		
11.00	CRS-6	4.0	∇.....∇ .....∇ .....∇ .....∇																		
12.00	SPT-4		∇.....∇ .....∇ .....∇ .....∇	51				R						5.00	6.00	70	NA	5.85	6.0	Sample Waxed 15cm	
13.00	CRS-7	4.0	∇.....∇ .....∇ .....∇ .....∇																		
14.00	SPT-5		∇.....∇ .....∇ .....∇ .....∇	50/9cm				R						6.00	7.00	65	NA	-	-		
15.00	CRS-8	4.0	∇.....∇ .....∇ .....∇ .....∇																		
16.00	SPT-6		∇.....∇ .....∇ .....∇ .....∇	50				R						7.00	8.00	45	NA	-	-		
17.00	CRS-9	4.0	∇.....∇ .....∇ .....∇ .....∇																		
18.00	SPT-7		∇.....∇ .....∇ .....∇ .....∇	50	18/2cm			R						8.00	9.00	75	NA	-	-		
19.00	CRS-10	1.0	∇.....∇ .....∇ .....∇ .....∇	Brown, very hard, Sandy CLAY, little GRAVELS																	
20.00	SPT-8	1.0	∇.....∇ .....∇ .....∇ .....∇																		
21.00	CRS-11	1.0	∇.....∇ .....∇ .....∇ .....∇																		
22.00	SPT-9	1.0	∇.....∇ .....∇ .....∇ .....∇																		
23.00	CRS-12	1.0	∇.....∇ .....∇ .....∇ .....∇																		
24.00	SPT-10	1.0	∇.....∇ .....∇ .....∇ .....∇																		
25.00	CRS-13	1.0	∇.....∇ .....∇ .....∇ .....∇																		
26.00	SPT-11	1.0	∇.....∇ .....∇ .....∇ .....∇																		
27.00	CRS-14	1.0	∇.....∇ .....∇ .....∇ .....∇																		
28.00	SPT-12	1.0	∇.....∇ .....∇ .....∇ .....∇																		
29.00	CRS-15	1.0	∇.....∇ .....∇ .....∇ .....∇																		
30.00	SPT-13	1.0	∇.....∇ .....∇ .....∇ .....∇																		

SPT: Standard Penetration Test   CRS : Core Sample   CR: Core Recovery   RQD: Rock Quality Designation, DS: Disturb Sample, SL: Sample Length

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### SUBSURFACE EXPLORATION LOG FIELD DATA

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2757523		Ground Water: 6.50m		Borehole No: KCR/BH#29																	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R302370		Geologist: Sajid		Date Started: June-06-2012																	
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +22.51		Driller: Yusuf		Date Completed: June-08-2012																	
Depth (m)	Sample No.	Thick. kness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks												
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (C,m)	R.Q.D (%)	Core Waxed for Testing (m)								
										10	20	30	40	50					From	To	From	to					
10.00	SPT-8	6.0	▽	Brown, very hard, Sandy CLAY, little to some Gravels, trace concretion.	31	35/5cm																					
11.00	CRS-11		▽																	10.00	11.00	75	NA	10.40	10.57	Sample Waxed 17cm	
	SPT-9		▽				44/8cm																				
12.00	CRS-12		▽																								
	SPT-10		▽				50/10cm																				
13.00	CRS-13		▽																								
	SPT-11		▽				55																				
14.00	CRS-14		▽																								
	SPT-12	▽			52																						
15.00	CRS-15	▽																									
	SPT-13	▽			50/8cm																						
16.00	CRS-16	▽																									
	SPT-14	▽			50/10cm																						
17.00	CRS-17	▽		Brown, very hard, Clayey SILT, some SAND, little Gravels.																							
		▽																									
18.00	CRS-18	▽																									
		▽																									
19.00	CRS-19	▽																									
		▽																									
20.00	CRS-20	▽		Brown, very dense, Sandy GRAVELS, little Silty CLAY.																							
<b>END OF BOREHOLE AT 20.0m Depth</b>																											

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2757672		Ground Water: 0.20m		Borehole No: KCR/BH#30										
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R301654		Geologist: Efaz Danish		Date Started: May-26-2012										
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +22.45		Driller: Misbah		Date Completed: May-28-2012										
Depth (m)	Sample No.	Thick kness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks					
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (C,m)	R.Q.D (%)	Core Waxed for Testing (m)	
										10	20	30	40	50					From	To
0.00			■■■■	Brown, loose, fine to medium Silty SAND, with little to some pieces of Stone/ Gravels (as filled material)																
1.00	CRS-1	2.0	■■■■		5	3	3	4	10	○										
2.00	SPT-1		■■■■		8	12	17	19	48		○									
3.00	CRS-2	1.0	■■■■	Brown, dense, medium to coarse, Silty SAND, with some Gravels																
4.00	SPT-2		■■■■		2	1	10	25	36		○									
5.00	CRS-3		■■■■	Brown, dense to very dense, medium to coarse, Clayey Silty SAND, some Gravels	40	30/cm				R										
6.00	SPT-3		■■■■		36	40	12/2cm			R										
7.00	CRS-4	4.0	■■■■		26	53/8cm				R										
8.00	SPT-4		■■■■	21	20	40/5cm			R											
9.00	CRS-5		■■■■	Brown, very dense, fine to medium, Clayey SAND, trace to little Gravels	40	30/5cm				R										
10.00	SPT-5		■■■■		30	35/5cm				R										
10.00	CRS-6	1.0	■■■■	Brown, very hard, Silty CLAY, trace Sand																
9.00	SPT-6		■■■■														9.70	9.87		
8.00	CRS-7	2.0	■■■■																	
7.00	SPT-6		■■■■																	
6.00	CRS-6		■■■■																	
5.00	SPT-5		■■■■																	
4.00	CRS-5		■■■■																	
3.00	SPT-3		■■■■																	
2.00	CRS-2		■■■■																	
1.00	SPT-1		■■■■																	
0.00	CRS-1		■■■■																	

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team			Type of Boring: Rotary		Co-ordinate:		N: 2757672		Ground Water: 0.20m		Borehole No: KCR/BH#30																
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi			Machine Make: Russian		E: 42R301654		Geologist: Efaz Danish		Date Started: May-26-2012																		
Contractor: Consolidated Engineering Services (Pvt) Ltd			Drilling Fluid: Bentonite		Ground Elevation: +22.45		Driller: Misbah		Date Completed: May-28-2012																		
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT								CORE RUN				Remarks										
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)		R.Q.D (%)	Core Waxed for Testing (m)								
										10	20	30	40	50					From	To	From	to					
10.00	SPT-10	7.4		Brown, very hard, Sandy CLAY.	35	25	31	40/3cm	R																		
11.00	CRS-11																										
	SPT-11						40	20/10			R																
12.00	CRS-12																										
	SPT-12						7	12	14	20	46																
13.00	CRS-13																										
	SPT-13						20	22	23	30/5cm	R																
14.00	CRS-14																										
	SPT-14						25	35	30/5cm		R																
15.00	CRS-15																										
	SPT-15				26	36	34	34/5cm	R																		
16.00	CRS-16																										
	SPT-16				40	50	28/5cm		R																		
17.00	CRS-17																										
	SPT-17				35	25/5cm			R																		
18.00	CRS-18	1.6		Brownish grey, very dense, Silty SAND, with embedded Gravels	35/5cm					R																	
19.00	CRS-19	1.0		Brown, dense, fine to medium, Clayey Silty SAND																							
	SPT-19							20	11	10	11	32															
20.00	CRS-20			<b>END OF BOREHOLE AT 20.0m Depth</b>																							

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SPT: Standard Penetration Test    CRS : Core Sample    CR: Core Recovery    RQD: Rock Quality Designation, DS: Disturb Sample, SL: Sample Length

**SUBSURFACE EXPLORATION LOG FIELD DATA**

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2757832		Ground Water: 9.70m		Borehole No: KCR/BH#31												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R301257		Geologist: Yasir		Date Started: May-26-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +25.51		Driller: Allah Bux		Date Completed: May-28-2012														
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks									
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)					
										10	20	30	40	50					From	To	From	to		
0.00		1.0	█ █ █ █	Brown, fine to medium, Silty SAND, little Gravels, (as filled material)																				
1.00	CRS-1		█ █ █ █	Brown, medium dense to dense, medium to Coarse, Silty SAND, with Some Gravels and trace concretion	4	3	5	8	16							0.00	1.00	85	NA	-	-			
	SPT-1		█ █ █ █																					
2.00	CRS-2		█ █ █ █		9	7	11	14	32							1.00	2.00	90	NA	-	-			
	SPT-2	2.0	█ █ █ █																					
3.00	CRS-3		█ █ █ █	Brown, very dense, Gravely SAND, some SILT	14	16	17	19	52							2.00	3.00	80	NA	-	-			
	SPT-3	1.0	▽ █ █ █ █																					
4.00	CRS-4		█ █ █ █	Brown, very dense, medium to coarse, Clayey Silty SAND, with little Gravels & Concretion	25	27	50/4cm		R							3.00	4.00	60	NA	-	-			
	SPT-4		█ █ █ █																					
5.00	CRS-5		█ █ █ █		50/13cm				R							4.00	5.00	65	NA	-	-			
	SPT-5		█ █ █ █																					
6.00	CRS-6		█ █ █ █		50/10cm				R							5.00	6.00	76	NA	-	-			
	SPT-6	4.0	█ █ █ █																					
7.00	CRS-7		▽ █ █ █ █		35	40/3cm			R							6.00	7.00	78	NA	-	-			
	SPT-7		█ █ █ █																					
8.00	CRS-8		█ █ █ █	Brown, very dense, medium to coarse, Clayey SAND, some Gravels	32	17	13	17	47							7.00	8.00	65	NA	-	-			
	SPT-8	1.0	▽ █ █ █ █																					
9.00	CRS-9		▽ █ █ █ █		50/10cm				R							8.00	9.00	70	NA	-	-			
	SPT-9		█ █ █ █																					
10.00	CRS-10		▽ █ █ █ █	Brown, very dense, medium to coarse, Sandy CLAY, little Gravels												9.00	10.00	88	NA	-	-			

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

### SUBSURFACE EXPLORATION LOG FIELD DATA

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2757832		Ground Water: 9.70m		Borehole No: KCR/BH#31												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R301257		Geologist: Yasir		Date Started: May-26-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +25.51		Driller: Allah Bux		Date Completed: May-28-2012														
Depth (m)	Sample No.	Thick-ness of Layer (m)	Lithology	Stratum Description	SPT										CORE RUN				Remarks					
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)		Core Recovery (Cm)	R.Q.D (%)		Core Waxed for Testing (m)				
										10	20	30	40	50	From	To				From	to			
10.00	SPT-10			Brown, very dense, medium to coarse, Gravely SAND, little Clay	20	24	14	16	54															
11.00	CRS-11	2.0																						
	SPT-11				30	50/5cm			R															
12.00	CRS-12																							
	SPT-12	1.0		Brown, very dense, medium to coarse, Gravely SAND, with little Clay	51/15				R															
13.00	CRS-13																							
	SPT-13			Brown, very dense, medium to coarse, Sandy GRAVLES, little Clayey SILT	51/14cm				R															
14.00	CRS-14	2.0			14	38	50/2cm		R															
	SPT-14																							
15.00	CRS-15																							
	SPT-15	1.0		Brown, very dense, medium to coarse, Clayey SAND, little Gravels	50/10cm				R															
16.00	CRS-16				35	50/2cm			R															
	SPT-16																							
17.00	CRS-17	2.0																						
	SPT-17			Brown, highly fractured, very poor, weathered, medium hard, SHALE, with embeded Gravels and trace Sand	33	50/3cm			R															Sample Waxed 11cm
18.00	CRS-18																							
	SPT-18			Brown, highly fractured to fractured, poor, closely jointed, friable SANDSTONE, with lenses of Clay	52/5cm				R															Sample Waxed 13cm
19.00	CRS-19	2.0																						
	SPT-19																							
20.00	CRS-20																							
	SPT-20																							Sample Waxed 15cm
<b>END OF BOREHOLE AT 20.0m Depth</b>																								

APP-2-2-65

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

### SUBSURFACE EXPLORATION LOG FIELD DATA




Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2757692		Ground Water: 3.10		Borehole No: KCR/BH#32										
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R300928		Geologist: Efaz Danish		Date Started: May-29-2012												
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +26.28		Driller: Misba		Date Completed: June-1-2012												
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT							CORE RUN				Remarks						
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)		Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)			
										10	20	30	40	50					From	To	From	to
0.00		0.6	.....	Brown, fine to coarse, SAND, with Stone pieces & Garbage, solid waste (as filled material)																		
1.00	CRS-1	0.4	.....	Brown, Sandy SILT																		
	SPT-1		V.....	Brown, dense to very dense, medium to coarse, Gravely SAND, little Silt, little concretion	5	12	8	11	31							0.00	1.00	92	NA	-	-	Dry Coring
2.00	CRS-2		V.....													1.00	2.00	95	NA	-	-	Dry Coring
	SPT-2		V.....																			
3.00	CRS-3	4.0	V.....																			
	SPT-3		V.....														2.00	3.00	72	NA	-	-
4.00	CRS-4		V.....																			
	SPT-4		V.....													3.00	4.00	70	NA	-	-	
5.00	CRS-5		V.....																			
	SPT-5	1.0	V.....	Brown, very dense, fine to coarse, Clayey Silty SAND, little Gravels	15	22	22	30/5cm	R							4.00	5.00	70	NA	-	-	
6.00	CRS-6		V.....	Brown, very dense, fine to coarse, Sandy GRAVELS, little Silt																		
	SPT-6	1.0	V.....													5.00	6.00	55	NA	-	-	
7.00	CRS-7		V.....	Brown, very dense, Gravely SAND, little Silt and little Clay																		
	SPT-7		V.....													6.00	7.00	65	NA	-	-	
8.00	CRS-8	2.0	V.....																			
	SPT-8		V.....														7.00	8.00	52	NA	-	-
9.00	CRS-9		V.....	Brown, very hard, Silty CLAY, little SAND, trace Gravels trace concretion																		
	SPT-9	1.0	V.....													8.00	9.00	31	NA	-	-	
10.00	CRS-10		.....													9.00	10.00	90	NA	9.70	9.85	Sample Waxed 15cm

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2757692		Ground Water: 3.10		Borehole No: KCR/BH#32																	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R300928		Geologist: Efaz Danish		Date Started: May-29-2012																	
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +26.28		Driller: Misba		Date Completed: June-1-2012																	
Depth (m)	Sample No.	Thick. kness of Layer (m)	Lithology	Stratum Description	SPT					CORE RUN				Remarks													
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)									
										10	20	30	40					50	From	To	From	to					
10.00	SPT-10	6.0		Brown, moderately fractured, fair, moderately weathered, SHALE, with lenses of SILTSTONE at places	22	30/5cm																					
11.00	CRS-11				25	33	30/5cm	R																	Sample Waxed 15cm		
12.00	CRS-12				27	40/8cm	R																				
13.00	CRS-13																										Sample Waxed 10cm
14.00	CRS-14																										Sample Waxed 15cm
15.00	CRS-15																										
16.00	CRS-16	1.0		Brown, highly fractured, poor, moderately weathered, SHALE, with lenses of SILTSTONE																				Sample Waxed 15cm			
17.00	CRS-17				16.00	17.00	90	11	-	-																	
18.00	CRS-18	3.0		Brown, moderately to slightly fractured, fair to good, moderately jointed, hard, MUDSTONE																							
19.00	CRS-19				17.00	18.00	80	52	-	-																	
20.00	CRS-20				18.00	19.00	75	31	-	-																	
<b>END OF BOREHOLE AT 20.0m Depth</b>																								Sample Waxed 15cm			

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length







## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2757119		Ground Water: 18.70m		Borehole No: KCR/BH#34								
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R300124		Geologist: Yasir		Date Started: June-03-2012										
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +24.37		Driller: Allah Bux		Date Completed: June-5-2012										
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	65					CORE RUN				Remarks						
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)		
										10	20	30	40					50	From	To
0.00			V..... V..... V..... V..... V.....	Brown, medium dense, medium to coarse, Gravely SAND, trace Silt																
1.00	CRS-1 SPT-1	2.0	V..... V..... V..... V..... V.....		7	7	8	10	25						0.00	1.00	90	NA	-	-
2.00	CRS-2 SPT-2		V..... V..... V..... V..... V.....		9	12	12	20	44						1.00	2.00	90	NA	-	-
3.00	CRS-3 SPT-3		V..... V..... V..... V..... V.....	Brown, dense to very dense, medium to Coarse, Gravely SAND, little to some Silt	15	24	25	30	79						2.00	3.00	70	NA	-	-
4.00	CRS-4 SPT-4		V..... V..... V..... V..... V.....		10	13	15	17	45						3.00	4.00	70	NA	-	-
5.00	CRS-5 SPT-5	5.0	V..... V..... V..... V..... V.....		22	40/4cm			R						4.00	5.00	65	NA	-	-
6.00	CRS-6 SPT-6		V..... V..... V..... V..... V.....		50/14cm				R						5.00	6.00	70	NA	-	-
7.00	CRS-7 SPT-7		V..... V..... V..... V..... V.....		51/8cm				R						6.00	7.00	60	NA	-	-
8.00	CRS-8 SPT-8		V..... V..... V..... V..... V.....	Brown, very dense, medium to coarse, Silty Clayey SAND, some Gravels, and trace concretion	37	51/5cm			R						7.00	8.00	65	NA	-	-
9.00	CRS-9 SPT-9	3.0	V..... V..... V..... V..... V.....		29	40/5cm			R						8.00	9.00	60	NA	-	-
10.00	CRS-10		V..... V..... V..... V..... V.....												9.00	10.00	55	NA	-	-

APP-2-2-70

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2757119		Ground Water: 18.70m		Borehole No: KCR/BH#34															
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R300124		Geologist: Yasir		Date Started: June-03-2012															
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +24.37		Driller: Allah Bux		Date Completed: June-5-2012															
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT					CORE RUN				Remarks											
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)							
										10	20	30	40					50	From	To	From	to			
10.00	SPT-10	4.0		Brown, very dense, medium to coarse, Silty Clayey SAND, little to some Gravels, and trace concretion.	51/14cm					R															
11.00	CRS-11				51/4cm							R													
12.00	CRS-12				28	40/5cm						R													
13.00	CRS-13				51/14cm							R													
14.00	CRS-14																								
15.00	CRS-15	3.0		Brown, very hard, Sandy CLAY, trace Gravels.																					
16.00	CRS-16																								
17.00	CRS-17																								
18.00	CRS-18	3.0		Brown, very dense, medium to coarse, Clayey SAND, little to some Gravels.																					
19.00	CRS-19																								
20.00	CRS-20																								
END OF BOREHOLE AT 20.0m Depth																									

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

APP-2-2-11



## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2756910		Ground Water: 18.50m		Borehole No: KCR/BH#35																	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R299420		Geologist: Sajid		Date Started: June-10-2012																	
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +23.62		Driller: Yusuf		Date Completed: June-13-2012																	
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT										CORE RUN				Remarks								
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)		Core Recovery (Cm)	R.Q.D (%)		Core Waxed for Testing (m)							
										10	20	30	40	50	From	To				From	to						
10.00	SPT-10	4.5		Brown, very dense, fine to medium, Clayey SAND trace to little Gravels & Boulders.	54					R																	
11.00	CRS-11			50/10cm	R																						
12.00	SPT-11																										
13.00	CRS-12																										
14.00	SPT-12																										
15.00	CRS-13	2.5		Brown, very dense, Sandy GRAVLES & BOULDERS of LIMESTONE origin.	50/8cm					R																	
16.00	SPT-13				30/2cm	R																					
17.00	CRS-14																										
18.00	CRS-15	2.7		Brown, very dense, Gravely SAND, little to some Clay.	14.00	15.00	50	NA	-	-																	
16.00	CRS-16				15.00	16.00	50	NA	-	-																	
17.00	SPT-14				16.00	17.00	50	NA	-	-																	
18.00	CRS-17	0.3		Brown, very dense, Sandy GRAVLES & BOULDERS .	17.00	18.00	50	NA	-	-																	
19.00	SPT-15				18.00	19.00	50	NA	18.90	19.00	Sample Waxed 10cm																
20.00	CRS-18				19.00	20.00	60	NA																			
<b>END OF BOREHOLE AT 20.0m Depth</b>																											

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

APP-2-2-13

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2756602		Ground Water: 12.90m		Borehole No: KCR/BH#36									
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298985		Geologist: Yasir		Date Started: June-11-2012											
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +23.12		Driller: Allah Bux		Date Completed: June-14-2012											
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT					CORE RUN				Remarks							
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)			
										10	20	30	40					50	From	To	From
0.00			[Lithology Symbols]	Brown, medium dense, medium to coarse, Silty SAND, with little Gravel & Solid waste material (as filled material)																Dry Coring	
1.00	CRS-1 SPT-1	2.5	[Lithology Symbols]		3	5	7	9	21						0.00	1.00	70	NA			
2.00	CRS-2 SPT-2		[Lithology Symbols]		4	2	2	3	7						1.00	2.00	87	NA			
3.00	CRS-3 SPT-3	0.5	[Lithology Symbols]	Brown, loose, Clayey SAND, little Gravels											2.00	3.00	74	NA			
4.00	CRS-4 SPT-4		[Lithology Symbols]	Brown, dense to very dense, medium to coarse, Gravely SAND, little to some Clayey SILT, trace calcareous nodules	18	10	10	10	30						3.00	4.00	85	NA			
5.00	CRS-5 SPT-5		[Lithology Symbols]		24	21	31/4cm		R						4.00	5.00	73	NA			
6.00	CRS-6 SPT-6	6.0	[Lithology Symbols]		22	15/8cm			R						5.00	6.00	78	NA			
7.00	CRS-7 SPT-7		[Lithology Symbols]		20	30/4cm			R						6.00	7.00	70	NA			
8.00	CRS-8 SPT-8		[Lithology Symbols]		31/8cm				R						7.00	8.00	70	NA			
9.00	CRS-9		[Lithology Symbols]		30/6cm				R						8.00	9.00	65	NA			
10.00	CRS-10	1.0	[Lithology Symbols]	Brown, medium to coarse, Clayey Gravely SAND, little Cobbles											9.00	10.00	55	NA			

APP-2-2-14

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturb Sample, SL: Sample Length





## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2756358		Ground Water: 13.50m		Borehole No: KCR/BH#37								
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298707		Geologist: Yasir		Date Started: June-22-2012										
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +20.76		Driller: Allah Bux		Date Completed: June-25-2012										
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks					
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)	
										10	20	30	40	50					From	To
0.00		1.0		Brown, medium dense, fine to medium Silty SAND, little Gravels (as fill material)																Dry Coring
1.00	CRS-1				6	4	5	3	12						0.00	1.00	95	NA		
	SPT-1																			
2.00	CRS-2			Brown, medium dense, Sandy CLAY, trace to little Gravel	6	5	4	3	12						1.00	2.00	95	NA		
	SPT-2	2.0																		
3.00	CRS-3			Brown, medium dense, Sandy SILT,	6	5	4	5	14						2.00	3.00	85	NA		
	SPT-3	1.0																		
4.00	CRS-4			Brown, very dense, medium to coarse, Sandy GRAVELS, little Silty CLAY.	10	17	22	23	62						3.00	4.00	75	NA		
	SPT-4																			
5.00	CRS-5				19	20	32/5cm		R						4.00	5.00	79	NA		
	SPT-5																			
6.00	CRS-6				51/14cm				R						5.00	6.00	70	NA		
	SPT-6	4.0																		
7.00	CRS-7				40	37/5cm			R						6.00	7.00	70	NA		
	SPT-7																			
8.00	CRS-8				45/10cm				R						7.00	8.00	60	NA		
	SPT-8	1.0		Brown, very hard, Sandy CLAY with little Gravels,																
9.00	CRS-9				51/14				R						8.00	9.00	75	NA		
	SPT-9																			
10.00	CRS-10			Brown, very dense, fine to coarse, Clayey Silty GRAVELS little SAND, trace calcareous nodules											9.00	10.00	70	NA		

APP-2-2-76




SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length





## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2756031		Ground Water: 19.00m		Borehole No: KCR/BH#38												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298310		Geologist: Sajid		Date Started: June-14-2012												
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +19.48		Driller: Yosuf		Date Completed: June-16-2012												
Depth (m)	Sample No.	Thick kness of Layer (m)	Lithology	Stratum Description	SPT										CORE RUN				Remarks			
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)		Core Recovery (Cm)	R.Q.D (%)		Core Waxed for Testing (m)		
										10	20	30	40	50	From	To				From	to	
10.00				Brown, very dense, slightly cemented, medium to coarse, Clayey SAND, trace Gravels & concretions, little oxidized																		
11.00	CRS-11				10.00	11.00	60	NA														
12.00	CRS-12				11.00	12.00	60	NA														
13.00	CRS-13	6.0			12.00	13.00	75	NA	12.36	12.48	Sample Waxed 12cm											
14.00	CRS-14				13.00	14.00	75	NA														
15.00	CRS-15				14.00	15.00	65	NA														
16.00	CRS-16		15.00	16.00	60	NA																
17.00	CRS-17	1.0		Brown, highly fractured, very poor, friable SANDSTONE interbedded Clay																		
18.00	CRS-18	1.0			16.00	17.00	80	NA														
19.00	CRS-19	2.0		Brown, very dense, slightly cemented, Clayey SAND trace Gravels	50/12cm																	
18.00	SPT-5				17.00	18.00	90	NA	17.31	17.45	Sample Waxed 14cm											
19.00	CRS-19				18.00	19.00	70	NA	18.85	19.00	Sample Waxed 15cm											
20.00	CRS-20		19.00	20.00	65	NA																
<b>END OF BOREHOLE AT 20.0m Depth</b>																						

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

APP-2-2-79

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2755612		Ground Water: 18.75m		Borehole No: KCR/BH#39											
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297774		Geologist: Yasir		Date Started: June-16-2012											
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +18.27		Driller: Allah Bux		Date Completed: June-19-2012											
Depth (m)	Sample No.	Thick. kness of Layer (m)	Lithology	Stratum Description	SPT					CORE RUN				Remarks							
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)			
										10	20	30	40					50	From	To	From
0.00			▽	Brown, dense, fine to medium, Clayey SAND, trace to little Gravels (as filled material)											0.00	1.00	90	NA			Dry Coring
1.00	CRS-1 SPT-1	2.0	▽		18	14	16	19	49							1.00	2.00	85	NA		
2.00	CRS-2 SPT-2		▽	Brown, dense to very dense, medium to coarse, Gravely SAND, little Silt & Clay trace concretion & calcarious nodules	20	18	12	12	42						2.00	3.00	70	NA			
3.00	CRS-3 SPT-3		▽		12	15	18	22	55						3.00	4.00	70	NA			
4.00	CRS-4 SPT-4	4.0	▽		13	13	24	30/3cm	R						4.00	5.00	75	NA			
5.00	CRS-5 SPT-5		▽		29	40/8cm			R						5.00	6.00	60	NA			
6.00	CRS-6 SPT-6		▽		31	30/5cm			R						6.00	7.00	70	NA			
7.00	CRS-7 SPT-7		▽		22	14	12	14	40						7.00	8.00	65	NA			
8.00	CRS-8 SPT-8	4.0	▽	20	25	30/4cm		R						8.00	9.00	65	NA				
9.00	CRS-9 SPT-9		▽	20	31	30/5cm		R						9.00	10.00	55	NA				
10.00	CRS-10		▽																		

APP-2-2-80

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length



## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2755207		Ground Water: 11.0m		Borehole No: KCR/BH#40									
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297276		Geologist: yasir		Date Started: June-28-2012											
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +15.34		Driller: Allah Bux		Date Completed: June-30-2012											
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks						
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)		
										10	20	30	40	50					From	To	From
0.00				Brown, firm, Sandy CLAY																Dry Coring	
1.00	CRS-1 SPT-1	3.8			4	3	3	2	8	o					0.00	1.00	95	NA			
2.00	CRS-2 SPT-2				1	2	2	2	6	o					1.00	2.00	95	NA			
3.00	CRS-3 SPT-3				4	3	3	3	9	o					2.00	3.00	85	NA			
4.00	CRS-4 SPT-4	1.2		Brown, very stiff, Sandy CLAY, little Gravels	14	12	8	8	28	o					3.00	4.00	85	NA			
5.00	CRS-5 SPT-5				Brown, very dense, medium to coarse, Clayey SAND, little Gravels	22	26	40/5cm		R	o				4.00	5.00	75	NA			
6.00	CRS-6 SPT-6	3.0			20	22	45/5cm		R	o				5.00	6.00	75	NA				
7.00	CRS-7 SPT-7				18	30	40/5cm		R	o				6.00	7.00	73	NA				
8.00	CRS-8										o				7.00	8.00	75	NA			
9.00	CRS-9	2.0		Brown, very dense, medium to coarse, Clayey SAND, little Gravel						o				8.00	9.00	76	NA				
10.00	CRS-10										o				9.00	10.00	78	NA			

APP-2-2-82

SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length





## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

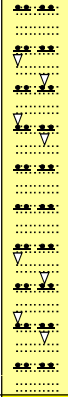
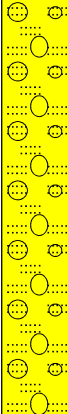
Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2754854		Ground Water: 10.65m		Borehole No: KCR/BH#41												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R296836		Geologist: Yasir		Date Started: July-02-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +14.36		Driller: Allah Bux		Date Completed: July-07-2012														
Depth (m)	Sample No.	Thickness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks									
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)					
										10	20	30	40	50					From	To	From	to		
0.00		1.0		Brown, medium to coarse, Silty SAND, little Gravels (as filled material) trace calcarious nodules at 0.8-1.0m																				
1.00	CRS-1																							
	SPT-1	1.0		Brown, loose, Clayey SAND, little Gravels	4	3	2	3	8						0.00	1.00	95	NA	-	-				
2.00	CRS-2																							
	SPT-2														1.00	2.00	90	NA	-	-				
3.00	CRS-3																							
	SPT-3	2.0		Brown, medium dense, Silty SAND, little to Gravels, trace calcarious nodules	6	4	3	4	11						2.00	3.00	80	NA	-	-				
4.00	CRS-4																							
	SPT-4	1.0		Brown, very stiff, Silty CLAY	5	6	5	6	17						3.00	4.00	70	NA	-	-				
5.00	CRS-5																							
	SPT-5	1.0		Brown, very dense, medium to coarse, Gravely Clayey SAND, trace calcarious nodules at bottom	15	20	25	30	75						4.00	5.00	75	NA	-	-				
6.00	CRS-6																							
	SPT-6	1.0		Brown, very dense, Sandy Gravels	40/10cm					R					5.00	6.00	65	NA	-	-				
7.00	CRS-7																							
	SPT-7	1.0		Brown, very dense, GRAVEL/ BOULDERS, intermix with Silty SAND											6.00	7.00	65	NA	-	-				
8.00	CRS-8																							
	SPT-8	1.0		Brown, very dense, Sandy GRAVELS/ Gravely SAND, trace calcarious nodules											7.00	8.00	60	NA	-	-				
9.00	CRS-9																							
	SPT-9	2.0		Brown, very dense, Sandy GRAVELS/ Gravely SAND, trace calcarious nodules											8.00	9.00	70	NA	-	-				
10.00	CRS-10																							
	SPT-10														9.00	10.00	65	NA	-	-				

#8-2-2-84

SPT: Standard Penetration Test    CRS : Core Sample    CR: Core Recovery    RQD: Rock Quality Designation, DS: Disturb Sample, SL: Sample Length

## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 2

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2754854		Ground Water: 10.65m		Borehole No: KCR/BH#41														
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R296836		Geologist: Yasir		Date Started: July-02-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +14.36		Driller: Allah Bux		Date Completed: July-07-2012														
Depth (m)	Sample No.	Thick-ness of Layer (m)	Lithology	Stratum Description	SPT										CORE RUN				Remarks					
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm					Depth (m)		Core Recovery (Cm)	R.Q.D (%)		Core Waxed for Testing (m)				
										10	20	30	40	50	From	To				From	to			
10.00				Brown, very dense, medium to coarse, Silty SAND, little to some Gravel, traces of oxidation and calcareous nodules																				
11.00	CRS-11	4.8																						
12.00	CRS-12																							
13.00	CRS-13																							
14.00	CRS-14																							
15.00	CRS-15			Brown, highly fractured, very poor, loosely cemented, CONGLOMERATE																				
16.00	CRS-16	5.2																						
17.00	CRS-17																							
18.00	CRS-18																							
19.00	CRS-19																							
20.00	CRS-20																							
END OF BOREHOLE AT 20.0m Depth																								

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


SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length





## SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 2

Client: The JICA Study Team		Type of Boring: Rotary		Co-ordinate:		N: 2754068		Ground Water: 6.50m		Borehole No: KCR/BH#43													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi		Machine Make: Russian		E: 42R295865		Geologist: Efaz Danish		Date Started: July-26-2012															
Contractor: Consolidated Engineering Services (Pvt) Ltd		Drilling Fluid: Bentonite		Ground Elevation: +10.45		Driller: Jamil		Date Completed: July-29-2012															
Depth (m)	Sample No.	Thick kness of Layer (m)	Lithology	Stratum Description	SPT						CORE RUN				Remarks								
					15 (cm)	10 (cm)	10 (cm)	10 (cm)	N Blows 30cm	Graph N/30 cm						Depth (m)	Core Recovery (Cm)	R.Q.D (%)	Core Waxed for Testing (m)				
										10	20	30	40	50					From	To	From	to	
0.00		1.0		Brown, medium to coarse, Silty SAND, little Gravels as filled material																			
1.00	CRS-1				8	7	7	8	22						0.00	1.00	80	NA	-	-			
	SPT-1																						
2.00	CRS-2			Brown, very stiff to hard, Silty CLAY, trace Sand	10	11	12	15	38						1.00	2.00	80	NA	-	-			
	SPT-2																						
3.00	CRS-3	4.0				9	11	12	13	36						2.00	3.00	70	NA	-	-		
	SPT-3																						
4.00	CRS-4				10	12	13	14	39						3.00	4.00	71	NA	-	-			
	SPT-4																						
5.00	CRS-5				30/10cm					R					4.00	5.00	65	NA	-	-			
	SPT-5																						
6.00	CRS-6			Brown, moderately fractured, poor, moderately Jointed (horizontal & diagonal), medium hard, MUDSTONE											5.00	6.00	70	32	-	-			
7.00	CRS-7															6.00	7.00	70	30	6.78	6.95	Sample Waxed 17cm	
8.00	CRS-8	5.0														7.00	8.00	75	50	7.60	7.70	Sample Waxed 10cm	
9.00	CRS-9														8.00	9.00	60	20	-	-			
10.00	CRS-10														9.00	10.00	70	45	9.33	9.5	Sample Waxed 17cm		

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SPT: Standard Penetration Test    CRS : Core Sample    CR:Core Recovery    RQD:Rock Quality Designation, DS: Disturbe Sample, SL: Sample Length

