
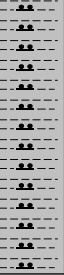


SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 3

Client: The JICA Study Team				Type of Boring: Rotary			Co-ordinate: N: 2750337		Ground Water: 3.05m		Borehole No: KCR/BH#55													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian			E: 42R296549		Geologist: Efaz Danish		Date Started: July-06-2012													
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite			Ground Elevation: +2.33		Driller: Murad Jamali		Date Completed: July-11-2012													
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				Brown, very dense, fine to coarse, Silty SAND , trace to little Gravels.																				
11.00	CRS-11													10.00	11.00	80	NA	10.05	10.20	Sample Waxed 15cm				
12.00	CRS-12 SPT-8						24	24	35/5cm						11.00	12.00	70	NA						
13.00	CRS-13 SPT-9	5.5					40	20/3cm							12.00	13.00	70	NA						
14.00	CRS-14 SPT-10						39	32	30	20/2cm					13.00	14.00	75	NA						
15.00	CRS-15 SPT-11				31	30	30/3cm						14.00	15.00	80	NA	14.50	14.70	Sample Waxed 20cm					
16.00	CRS-16 SPT-12			Brown, very hard, Silty CLAY.	10	20	26	28	74				15.00	16.00	80	NA	15.55	15.70	Sample Waxed 15cm					
17.00	CRS-17 SPT-13	3.5					11	22	23	20				16.00	17.00	90	NA	16.50	16.65	Sample Waxed 15cm				
18.00	CRS-18 SPT-14						20	21	30/5cm					17.00	18.00	90	NA	17.80	18.00	Sample Waxed 20cm				
19.00	CRS-19 SPT-15						10	17	29	33/5cm				18.00	19.00	88	NA							
20.00	CRS-20	1.0													19.00	20.00	86	NA	19.85	19.95	Sample Waxed 10cm			

APP-2-2-120

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 3 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2750337		Ground Water: 3.05m		Borehole No: KCR/BH#55																	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R296549		Geologist: Efaz Danish		Date Started: July-06-2012																			
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +2.33		Driller: Murad Jamali		Date Completed: July-11-2012																			
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							
20.00	SPT-16	2.8		Brown, very dense, fine to medium, Silty Clayey SAND, trace to little Silt	10	17	25	40	82																				
21.00	CRS-21				16	19	30	20/5cm	R																				
22.00	SPT-17				30/8cm	R																							
23.00	CRS-22	7.2		Brown, highly fractured, very poor, medium to coarse grained, loosely cemented, CONGLOMERATE, with Clayey SAND as matrix (interbedded with coarse grained, SANDSTONE b/w 25-26m)	30/5cm				R																				
24.00	SPT-18					R																							
25.00	CRS-23																												
26.00	CRS-24																												
27.00	SPT-19																												
28.00	CRS-25																												
29.00	CRS-26																												
30.00	CRS-27																												
30.00	CRS-28																												
30.00	CRS-29																												
30.00	CRS-30																												
				END OF BOREHOLE AT 30.0m Depth																									

APP-2-2-121

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 3

Client: The JICA Study Team				Type of Boring: Rotary				Co-ordinate:		N: 2749858	Ground Water: 2.70m		Borehole No: KCR/BH#56	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian				E: 42R296760		Geologist: Jawad		Date Started: July-07-2012		
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite				Ground Elevation: +3.36		Driller: Misbah		Date Completed: July-11-2012		

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				Greyish brown to brown, medium dense, Silty Clayey SAND, little fine to coarse, Gravels (as filled material)																							
1.00	CRS-1 SPT-1	2.4			5	3	9	7	19								0.00	1.00	85	NA							
2.00	CRS-2 SPT-2				16	9	9	8	26								1.00	2.00	85	NA							
3.00	CRS-3 SPT-3	1.6		Grey, very stiff to stiff, Silty CLAY, little organic material	3	3	4	6	13								2.00	3.00	75	NA							
4.00	CRS-4 SPT-4				7	5	4	3	12								3.00	4.00	85	NA							
5.00	CRS-5 SPT-5	1.5		Grey, medium dense, Silty Clayey SAND, little organic material	5	5	7	8	20								4.00	5.00	85	NA							
6.00	CRS-6 SPT-6	0.5		Grey, very stiff, Silty CLAY, trace of organic material													5.00	6.00	70	NA							
7.00	CRS-7 SPT-7	0.5		Grey, medium dense, medium to coarse, Silty SAND	8	5	8	8	21								6.00	7.00	70	NA							
8.00	CRS-8 SPT-8	1.0		Greenish grey, very stiff, Silty CLAY	5	7	6	8	21								7.00	8.00	75	NA			7.50	7.70	Sample Waxed 20cm		
9.00	CRS-9 SPT-9	0.5		Greenish grey, medium dense, Clayey SAND, little fine Gravels, trace calcarious nodules	12	14	18	16	48								8.00	9.00	60	NA							
10.00	CRS-10	1.5		Greenish grey, hard, Sandy Clayey SILT, trace calcarious nodules	12	30	40/5cm		R								9.00	10.00	65	NA							

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

APP-2-2-122

SUBSURFACE EXPLORATION LOG FIELD DATA

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749858		Ground Water: 2.70m		Borehole No: KCR/BH#56												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R296760		Geologist: Jawad		Date Started: July-07-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.36		Driller: Misbah		Date Completed: July-11-2012														
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	1.0	▽▽	Brown, very dense, medium to coarse, Sandy GRAVELS	40/10cm					R														
11.00	CRS-11	1.0	▽▽	Brown, very dense, medium to coarse, Silty SAND.	45	55/6cm				R						10.00	11.00	80	NA	10.70	10.82	Sample Waxed 12cm		
12.00	SPT-11		■																					
13.00	CRS-12	4.0	■	Brown, very hard, Silty CLAY, little to some Sand.	18	20	26	40	86							11.00	12.00	70	NA					
14.00	SPT-12		■																					
15.00	CRS-13		■				16	20	25	35	80							12.00	13.00	70	NA			
16.00	SPT-13		■				20	30	30	25	85							13.00	14.00	70	NA	13.00	13.15	Sample Waxed 15cm
17.00	CRS-14		■				18	17	25	38	80							14.00	15.00	75	NA			
18.00	SPT-14		■				30	18	18	20	56							15.00	16.00	70	NA			
19.00	CRS-15	4.0	●●●●	Greyish brown, very dense, fine to medium, SAND, trace to little Silt	18	20	20	24	64							16.00	17.00	70	NA					
20.00	SPT-15		●●●●				20	18	24	24	66						17.00	18.00	70	NA				
19.00	CRS-16		●●●●				25	25	22	28	75						18.00	19.00	50	NA				
20.00	SPT-16		●●●●														18.00	19.00	50	NA				
20.00	CRS-17		●●●●														19.00	20.00	65	NA				

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

APP-2-2-123

SUBSURFACE EXPLORATION LOG FIELD DATA

Client: The JICA Study Team		Type of Boring: Rotary		Co-ordinate:		N: 2749858		Ground Water: 2.70m		Borehole No: KCR/BH#56														
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi		Machine Make: Russian		E: 42R296760		Geologist: Jawad		Date Started: July-07-2012		Date Completed: July-11-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd		Drilling Fluid: Bentonite		Ground Elevation: +3.36		Driller: Misbah																		
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		
20.00	SPT-20	5.0		Greyish brown, very dense, fine to medium, SAND, little Silt, trace Gravels	28	25	25	30	80															
21.00	CRS-21																							
	SPT-21						18	40	30	25	95													
22.00	CRS-22						55/13cm					R												
	SPT-22						60/15cm					R												
23.00	CRS-23	1.0		Brown, highly fractured, very poor, loose cemented, CONGLOMERATE																				
	SPT-23												R											
24.00	CRS-24							45/15cm					R											
	SPT-24				60/10cm					R														
25.00	CRS-25	3.2		Brown, highly fractured, very poor, loosely cemented, medium to coarse grained, Clayey SANDSTONE, with embeded Gravels																				
	SPT-25												R											
26.00	CRS-26							55	40/2cm				R											
	SPT-26				40/5cm					R														
27.00	CRS-27	0.8		Brown, moderately fractured, fair, hard, SHALE																				
	SPT-27																							
28.00	CRS-28																							
	SPT-28																							
29.00	CRS-29																							
	SPT-29																							
30.00	CRS-30																							
	SPT-30																							
					END OF BOREHOLE AT 30.0m Depth																			

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

APP-2-2-124

SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 1 of 3

Client: The JICA Study Team			Type of Boring: Rotary			Co-ordinate:		N: 2749449		Ground Water: 3.0m		Borehole No: KCR/BH#57									
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi			Machine Make: Russian			E: 42R297036		Geologist: Jawad		Date Started: June-21-2012											
Contractor: Consolidated Engineering Services (Pvt) Ltd			Drilling Fluid: Bentonite			Ground Elevation: +1.85		Driller: Misba		Date Completed: June-24-2012											
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, Clayey Sandy SILT, trace, coarse, Gravels (as filled material)																	
1.00	CRS-1 SPT-1		.....	Brown, loose, Silty SAND, little, fine to coarse, Gravels	1	1	2	2	5	o						0.00	1.00	70	NA		
2.00	CRS-2 SPT-2		.....		3	2	2	2	6	o						1.00	2.00	80	NA		
3.00	CRS-3 SPT-3	4.0	.....		3	3	3	4	10	o						2.00	3.00	75	NA		
4.00	CRS-4 SPT-4		.....		3	3	2	2	7	o						3.00	4.00	80	NA		
5.00	CRS-5 SPT-5		.....		3	2	2	2	6	o						4.00	5.00	78	NA		
6.00	CRS-6 SPT-6	3.0	.....	Grey, firm to stiff, Sandy CLAY, little organic material	3	3	2	2	7	o					5.00	6.00	70	NA			
7.00	CRS-7 SPT-7		.....	Grey, firm to stiff, Sandy CLAY, little organic material	4	4	5	5	14	o					6.00	7.00	74	NA	6.53	6.68	Sample Waxed 15cm
8.00	CRS-8 SPT-8		.....		12	12	13	25	50	o					7.00	8.00	77	NA			
9.00	CRS-9 SPT-9	2.0		Brown, very dense, medium to coarse, Silty SAND, little fine Gravels	12	13	13	28	54	o					8.00	9.00	74	NA	8.55	8.75	Sample Waxed 20cm
10.00	CRS-10		.....							o					9.00	10.00	75	NA			

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

APP-2-2-125

SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 2 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749449		Ground Water: 3.0m		Borehole No: KCR/BH#57												
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297036		Geologist: Jawad		Date Started: June-21-2012														
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +1.85		Driller: Misba		Date Completed: June-24-2012														
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	1.0	.....	Brown, dense, Clayey SAND.	15	12	10	13	35															
11.00	CRS-11	2.0	.....	Brown, very dense, medium to coarse, Clayey SAND, little Gravels	10	10	15	20	45						10.00	11.00	75	NA						
12.00	CRS-12			12	15	25	35	75							11.00	12.00	74	NA					
13.00	CRS-13	4.0	.....	Brown, very dense, medium to coarse, SAND, trace Silt, little Gravels	22	22	28	22	72						12.00	13.00	60	NA						
14.00	CRS-14			28	30	30	32	92							13.00	14.00	50	NA					
15.00	CRS-15	.....	28	28	30	30	88							14.00	15.00	50	NA							
16.00	CRS-16	1.0	.....	Brown, very dense, Silty SAND	18	20	22	28	70						15.00	16.00	75	NA						
17.00	CRS-17		.....		14	16	20	20	56							16.00	17.00	70	NA	16.48	16.65	Sample Waxed 17cm		
18.00	CRS-18	2.0	.....	Brown, hard to very hard, Silty CLAY, little Sand	12	14	15	20	49						17.00	18.00	70	NA	17.45	17.65	Sample Waxed 20cm			
19.00	CRS-19		.....		9	10	16	31	57							18.00	19.00	80	NA					
20.00	CRS-20		.....											19.00	20.00	70	NA							

APP-2-2-126

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 3 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749449		Ground Water: 3.0m		Borehole No: KCR/BH#57																
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297036		Geologist: Jawad		Date Started: June-21-2012																		
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +1.85		Driller: Misba		Date Completed: June-24-2012																		
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							
20.00	SPT-20	2.0		Brown, very hard, Silty CLAY, trace Sand, little Gravels	9	10	16	31	57							0												
21.00	CRS-21				20.00	21.00	85	NA																				
	SPT-21				10	12	16	32	60						0													
22.00	CRS-22	1.0		Brown, very dense, Clayey SAND, trace Gravels	10	15	18	28	61						0													
	SPT-22				21.00	22.00	78	NA																				
23.00	CRS-23	3.0		Brown, very dense, fine to coarse, Silty SAND, little Gravels	14	18	20	22	60						0													
	SPT-23				22.00	23.00	84	NA	22.35	22.54	Sample Waxed 19cm																	
24.00	CRS-24				14	20	20	22	62						0													
	SPT-24				14	20	20	22	62						0													
25.00	CRS-25														0													
26.00	CRS-26														0													
27.00	CRS-27	4.0		Brown, highly fractured, very poor, loosely cemented, CONGLOMERATE, with Clay matrix											0													
	SPT-25				23.00	24.00	75	NA	23.47	23.60	Sample Waxed 13cm																	
25.00	CRS-25				24.00	25.00	78	Nil																				
26.00	CRS-26				25.00	26.00	60	Nil																				
27.00	CRS-27														0													
28.00	CRS-28														0													
29.00	CRS-29														0													
30.00	CRS-30														0													
END OF BOREHOLE AT 30.0m Depth																												

APP-2-2-127

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 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749453		Ground Water: 4.20m		Borehole No: KCR/BH#58	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297585		Geologist: Efaz		Date Started: June-21-2012			
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.51		Driller: M. Murad		Date Completed: June-24-2012			

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			.....	Brown, medium dense to dense, fine to medium, Silty SAND, trace to little Gravels. (Filled Material)																								
1.00	CRS-1	3.0		5	6	8	9	23						0.00	1.00	90	NA											Dry Coring
2.00	CRS-2			10	11	12	14	37						1.00	2.00	90	NA											Dry Coring
3.00	CRS-3	3.0	.....	Brown, firm to very stiff, Sandy CLAY, trace Gravels. trace organic material	3	2	2	4	8						2.00	3.00	88	NA										Dry Coring
4.00	CRS-4		.....		4	5	6	7	18						3.00	4.00	80	NA										
5.00	CRS-5		.....		2	1	2	2	5						4.00	5.00	80	NA										
6.00	CRS-6	2.0	.....	Grey, medium dense, Clayey SAND.	3	8	7	7	22						5.00	6.00	85	NA										
7.00	CRS-7		.....		4	6	8	9	23						6.00	7.00	70	NA										
8.00	CRS-8		.....		6	12	13	14	39						7.00	8.00	70	NA										
9.00	CRS-9	1.0	.....	Grey, dense, medium to coarse, SAND, little Silt, little Gravels	11	12	11	11	34						8.00	9.00	65	NA										
10.00	CRS-10	1.0	.....		Greyish brown, dense, Silty SAND, trace mica											9.00	10.00	70	NA									

APP-2-2-128

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 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749453		Ground Water: 4.20m		Borehole No: KCR/BH#58														
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297585		Geologist: Efaz		Date Started: June-21-2012																
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.51		Driller: M. Murad		Date Completed: June-24-2012																
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	1.0	■■■■■ ■■■■■ ■■■■■	Brown, dense, fine to medium to coarse, Silty SAND, little Gravels, trace Clay.	8	10	11	24	45																	
11.00	CRS-11	1.0	■■■■■ ■■■■■	Brown, hard, Silty CLAY, trace Sand.	17	9	11	12	32																	
12.00	SPT-11		■■■■■ ■■■■■			10	9	10	11	30																
13.00	CRS-12	2.0	■■■■■ ■■■■■ ■■■■■	Brown, dense, Sandy CLAY	10	9	10	11	30																	
13.00	SPT-12		■■■■■ ■■■■■			9	13	14	18	45																
14.00	CRS-13		■■■■■ ■■■■■			23	20	26	40	86																
15.00	SPT-13	3.0	■■■■■ ■■■■■ ■■■■■ ■■■■■	Brown, very dense, fine to coarse, Clayey SAND, (slightly cemented between 15-16m)	50/10cm					R																
15.00	CRS-14		■■■■■ ■■■■■			14.00	15.00	75	NA																	
16.00	SPT-14		■■■■■ ■■■■■			30/5cm					R															
16.00	CRS-15		■■■■■ ■■■■■			15.00	16.00	55	NA																	
17.00	SPT-15	3.0	■■■■■ ■■■■■ ■■■■■ ■■■■■	Brown, very hard, Silty CLAY.	15	19	26	39	84																	
17.00	CRS-16		■■■■■ ■■■■■			16.00	17.00	60	NA																	
18.00	SPT-16		■■■■■ ■■■■■			17.00	18.00	70	NA	17.35	17.55														Sample Waxed 20cm	
18.00	CRS-17		■■■■■ ■■■■■			18.00	19.00	70	NA	18.25	18.40														Sample Waxed 15cm	
19.00	SPT-17	3.0	■■■■■ ■■■■■ ■■■■■		10	10	13	16	39																	
19.00	CRS-18		■■■■■ ■■■■■			19.00	20.00	85	NA	19.45	19.60														Sample Waxed 15cm	
20.00	SPT-18		■■■■■ ■■■■■																							
20.00	CRS-19	■■■■■ ■■■■■																								
20.00	SPT-19	■■■■■ ■■■■■																								
20.00	CRS-20	■■■■■ ■■■■■																								

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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 3 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749453		Ground Water: 4.20m		Borehole No: KCR/BH#58															
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297585		Geologist: Efaz		Date Started: June-21-2012																	
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.51		Driller: M. Murad		Date Completed: June-24-2012																	
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						
20.00	SPT-20	3.7		Brown, moderately fractured, fair to good, moderately weathered, moderately to slightly jointed, Sandy SHALE	10	11	14	18	43																		
21.00	CRS-21																										
	SPT-21																										
22.00	CRS-22																										
	SPT-22																										
23.00	CRS-23	1.3		Brown, highly fractured, poor, medium hard, Sandy SHALE	36	30/5cm			R																		
	SPT-23																										
24.00	CRS-24							12/2cm			R																
	SPT-24																										
25.00	CRS-25	5.0		Brown, moderately fractured, loosely cemented, fair, coarse grained, Clayey SANDSTONE																							
26.00	CRS-26																										
	SPT-25																										
27.00	CRS-27																										
	SPT-26																										
28.00	CRS-28																										
	SPT-27																										
29.00	CRS-29																										
	SPT-28																										
30.00	CRS-30																										
END OF BOREHOLE AT 30.0m Depth																											

APP-2-2-130

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: 2749500		Ground Water: 4.25		Borehole No: KCR/BH#59													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi		Machine Make: Russian		E: 42R297897		Geologist: Jawad		Date Started: June-17-2012															
Contractor: Consolidated Engineering Services (Pvt) Ltd		Drilling Fluid: Bentonite		Ground Elevation: +3.55		Driller: Misbah		Date Completed: June-19-2012															
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			V..... V..... V..... V..... V.....	Brown to Redish Brown, very loose , Sandy GRAVELS, little Silt (Filled Material)																			
1.00	CRS-1 SPT-1	2.0	V..... V..... V..... V..... V.....		2	1	1	1	3	o						0.00	1.00	75	NA				
2.00	CRS-2 SPT-2		V..... V..... V..... V..... V.....							o						1.00	2.00	70	NA				
3.00	CRS-3 SPT-3	1.0	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Redish Brown, loose, Silty SAND, little fine to coarse, Gravels (Filled Material)	5	5	2	2	9	o						2.00	3.00	60	NA				
4.00	CRS-4 SPT-4	1.0	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Redish Brown, medium dense, Sandy Clayey SILT, trace Gravels	6	6	3	3	12	o						3.00	4.00	70	NA				
5.00	CRS-5 SPT-5	0.7	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Redish Brown, medium dense, Silty SAND, trace Gravels	3	4	5	7	16	o						4.00	5.00	80	NA				
6.00	CRS-6 SPT-6	1.3	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Brown, dense medium to coarse, SAND, little Gravels, trace Silt	8	8	12	16	36	o						5.00	6.00	71	NA				
7.00	CRS-7 SPT-7	1.0	V..... V..... V..... V..... V.....	Brown, hard, Gravely SAND, trace Silt	10	12	15	18	45	o						6.00	7.00	78	NA				
8.00	CRS-8 SPT-8	2.0	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Brown, very hard, Sandy Clayey SILT	16	12	18	20	50	o						7.00	8.00	82	NA	7.0	7.1	Sample Waxed 10cm	
9.00	CRS-9 SPT-9		*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*		13	17	20	20	57	o						8.00	9.00	70	NA				
10.00	CRS-10	1.0	*.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.* *.*.*.*.*	Brown, dense, fine to medium, Silty SAND, little Gravels	8	12	14	20	46	o						9.00	10.00	80	NA				

APP-2-2-131

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



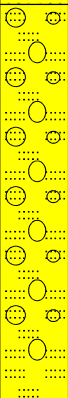
Sheet 2 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749500		Ground Water: 4.25		Borehole No: KCR/BH#59													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297897		Geologist: Jawad		Date Started: June-17-2012															
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.55		Driller: Misbah		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	to				
10.00	SPT-10	1.0		Brown, very hard, Sandy CLAY, trace Gravels	10	14	18	25	57																
11.00	CRS-11																								Sample Waxed 12cm
	SPT-11				30/15	10/2cm			R																
12.00	CRS-12			Brown, very dense, slightly cemented, Silty Clayey SAND, trace Gravels																					Sample Waxed 20cm
	SPT-12				12	15	18	22	55																
13.00	CRS-13	3.5																							
	SPT-13			(limonitic between 13-14m)	13	15	18	25	58																
14.00	CRS-14				15	18	20	30	68																
	SPT-14																								
15.00	CRS-15	1.0		Brown, very hard, Sandy CLAY.	18	22	25	32	79																
	SPT-15																								
16.00	CRS-16			Brown, moderately fractured , fair, friable SANDSTONE	15	17	16	17	50																Sample Waxed 12cm
	SPT-16																								
17.00	CRS-17				16	18	18	19	55																Sample Waxed 20cm
	SPT-17																								
18.00	CRS-18	4.5			15	17	19	20	56																
	SPT-18																								
19.00	CRS-19			Brown, highly fractured, very poor, friable SANDSTONE	12	15	19	18	52																
	SPT-19																								
20.00	CRS-20																								
	SPT-20																								

SPT: Standard Penetration Test CRS : Core Sample CR: Core Recovery RQD: Rock Quality Designation, DS: Disturbe 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: 2749500		Ground Water: 4.25		Borehole No: KCR/BH#59																	
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R297897		Geologist: Jawad		Date Started: June-17-2012																			
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.55		Driller: Misbah		Date Completed: June-19-2012																			
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								
20.00	SPT-20	2.0		Brown, highly fractured moderately fractured, very poor to fair, friable SANDSTONE.	13	17	20	18	55																		Sample Waxed 11cm		
21.00	CRS-21				19	22	26	32	80																				
22.00	CRS-22	3.0		Brown, highly fractured, poor, coarse grained, medium hard, Clayey SANDSTONE.	20	23	28	32	83																				
23.00	CRS-23				22	25	30	32	87																				
24.00	CRS-24				40	10/2cm			R																				
25.00	CRS-25				40	10/2cm			R																				
26.00	CRS-26	5.0		brown, highly fractured, very poor, loosely cemented, CONGLOMERATE																									
27.00	CRS-27																												
28.00	CRS-28																												
29.00	CRS-29																												
30.00	CRS-30																												
END OF BOREHOLE AT 30.0m Depth																													

APP-2-2-133

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 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749537	Ground Water: 4.65m		Borehole No: KCR/BH#60										
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298604		Geologist: Efaz Danish		Date Started: Apr-13-2012											
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +2.75		Driller: M.Murad		Date Completed: Apr-15-2012											
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 (C,m)	R.Q.D (%)	Core Waxed for Testing (m)		
										10	20	30	40	50					From	To	From	to
0.00			••••• ••••• ••••• ••••• •••••	Black/ Greyish brown, medium dense, Silty SAND, little to some Gravels. (as filled material)																	
1.00	CRS-1	2.8	••••• ••••• ••••• •••••		5	6	6	8	20						0.00	1.00	80	NA			Dry Coring
	SPT-1						9	9	10	10	29					1.00	2.00	75	NA		
2.00	CRS-2	1.2	••••• ••••• ••••• •••••	Brown, dense, medum to coarse, Gravely SAND, little Clay, and trace concretion										2.00	3.00	70	NA			Sample Waxed 18cm	
	SPT-2						10	10	11	14	35					3.00	4.00	72	NA		3.74
3.00	CRS-3	1.0	••••• ••••• ••••• •••••	Brown, dense, Sandy GRAVELS, little Clay										4.00	5.00	55	NA	-	-		
	SPT-3						12	13	15	15	43					5.00	6.00	80	NA		5.50	5.77
4.00	CRS-4	1.7	••••• ••••• ••••• •••••	Brown, medium dense, medium to coarse, Silty SAND, tarce to little Gravels										6.00	7.00	80	NA	6.52	6.7	Sample Waxed 18cm	
	SPT-4						7	7	8	8	23					7.00	8.00	60	NA		
5.00	CRS-5	2.3	••••• ••••• ••••• •••••	Brown, very dense, medium to coarse, Gravely SAND, little Silt										8.00	9.00	50	NA				
	SPT-5						9	10	8	10	28					9.00	10.00	65	NA		
6.00	CRS-6	1.0	••••• ••••• ••••• •••••	Brown, very dense, medium to coarse, Silty SAND, with some concretion																	
	SPT-6						30/10cm				R										
7.00	CRS-7	1.0	••••• ••••• ••••• •••••																		
	SPT-7						20/5cm				R										
8.00	CRS-8	1.0	••••• ••••• ••••• •••••																		
	SPT-8																				
9.00	CRS-9	1.0	••••• ••••• ••••• •••••																		
	SPT-9																				
10.00	CRS-10		••••• ••••• ••••• •••••																		

APP-2-2-134

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 3












Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749537		Ground Water: 4.65m		Borehole No: KCR/BH#60											
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298604		Geologist: Efaz Danish		Date Started: Apr-13-2012													
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +2.75		Driller: M.Murad		Date Completed: Apr-15-2012													
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			■■■■	Brown, very dense, coarse grained, Silty SAND, with trace concretion																			
11.00	CRS-11	2.0	■■■■																				
12.00	CRS-12		■■■■																				
13.00	CRS-13	3.0	■■■■	Greyish brown to brown, very hard, Silty CLAY, trace Sand & concretion																			
14.00	CRS-14		■■■■																				
15.00	CRS-15		■■■■																				
16.00	CRS-16 SPT-9	5.0	■■■■	Brown, very desne, loosely cemented, fine to medium, Silty SAND	10	12	16	23	51														
17.00	CRS-17 SPT-10		■■■■		10	22	26	20/5cm	R														
18.00	CRS-18 SPT-11		■■■■		14	25	29	15/3cm	R														
19.00	CRS-19 SPT-12		■■■■		16	26	36	20/5cm	R														
20.00	CRS-20		■■■■																				

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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 3

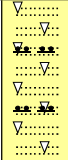
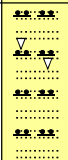
Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate: N: 2749605		Ground Water: 4.75m		Borehole No: KCR/BH#61													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298989		Geologist: Efaz Danish		Date Started: June-13-2012													
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +2.80		Driller: M.Murad		Date Completed: June-15-2012													
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				Brown, medium dense, medium to coarse, Silty SAND, some Gravels. (as filled material)																			
1.00	CRS-1	3.0			4	8	10	12	30						0.00	1.00	88	NA					Dry Coring
2.00	CRS-2				5	7	9	11	27						1.00	2.00	90	NA					Dry Coring
3.00	CRS-3				4	6	10	12	28						2.00	3.00	90	NA					
4.00	CRS-4	1.0		Brown, very stiff, Sandy CLAY..										3.00	4.00	80	NA						
5.00	CRS-5			Brown, dense, medium to coarse, Clayey SAND, trace Gravels		8	12	13	15	40						4.00	5.00	70	NA	4.44	4.6			Sample Waxed 16cm
6.00	CRS-6	3.8		Brown, very hard, Silty CLAY, trace laminaton of Sand at place.										5.00	6.00	90	NA	5.80	5.92			Sample Waxed 12cm	
7.00	CRS-7				20	20	19	25	64						6.00	7.00	80	NA	6.52	6.75			Sample Waxed 23cm
8.00	CRS-8				20	18	22	25	65						7.00	8.00	90	NA					
9.00	CRS-9				20	19	25	25	69						8.00	9.00	70	NA					
10.00	CRS-10	1.2		Brown, very dense, medium to coarse, Gravely SAND, little Silt.										9.00	10.00	65	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

Sheet 2 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749605		Ground Water: 4.75m		Borehole No: KCR/BH#61														
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R298989		Geologist: Efaz Danish		Date Started: June-13-2012																
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +2.80		Driller: M.Murad		Date Completed: June-15-2012																
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	6.0		Brown, very dense, medium to coarse, Gravely SAND, trace to little Silt.	10	15	22	25/5cm	R							0										
11.00	CRS-11				19	25	25/5cm	R							10.00	11.00	60	NA								
12.00	CRS-12				20	18	25	30/5cm	R							11.00	12.00	71	NA							
13.00	CRS-13				21	25	20/5cm	R								12.00	13.00	60	NA							
14.00	CRS-14				26	28	20/5cm	R								13.00	14.00	40	NA							
15.00	CRS-15				10	29	13/2cm	R								14.00	15.00	45	NA							
16.00	CRS-16	4.0		Brown, very dense, loosely cemented, Silty SAND, little Gravels.	13	30/7cm		R						15.00	16.00	70	NA									
17.00	CRS-17				19	25	11/cm	R							16.00	17.00	65	NA	16.68	16.85	Sample Waxed 17cm					
18.00	CRS-18				20	20/5cm		R							17.00	18.00	70	NA								
19.00	CRS-19														18.00	19.00	88	NA	18.40	18.60	Sample Waxed 20cm					
20.00	CRS-20											19.00	20.00	70	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

Sheet 3 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749686		Ground Water: 4.75		Borehole No: KCR/BH#62										
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R299543		Geologist: Jawad		Date Started: June-13-2012												
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.74		Driller: Misbah		Date Completed: June-16-2012												
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		
										10	20	30	40	50	From	To				From	to	
20.00			4.6	Brown, highly fractured, very poor, medium hard, Silty SANDSTONE												20.00	21.00	40	Nil			
21.00	CRS-21															21.00	22.00	40	Nil	21.00	21.12	Sample Waxed 12cm
22.00	CRS-22																22.00	23.00	50	Nil		
23.00	CRS-23																23.00	24.00	50	11		
24.00	CRS-24		5.4	Grey, highly fractured, very poor, friable SANDSTONE											24.00	25.00	50	15				
25.00	CRS-25															25.00	26.00	60	Nil			
26.00	CRS-26															26.00	27.00	60	Nil			
27.00	CRS-27															27.00	28.00	70	12	27.43	27.54	Sample Waxed 11cm
28.00	CRS-28															28.00	29.00	80	20	28.38	28.54	Sample Waxed 16cm
29.00	CRS-29															29.00	30.00	70	34	29.49	29.66	Sample Waxed 17cm
30.00	CRS-30			END OF BOREHOLE AT 30.0m Depth																		

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

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SUBSURFACE EXPLORATION LOG FIELD DATA

Sheet 3 of 3

Client: The JICA Study Team				Type of Boring: Rotary		Co-ordinate:		N: 2749326		Ground Water: 2.90m		Borehole No: KCR/BH#63													
Project: Preparatory Survey(II) on Karachi Circular Railway Revival Project in Karachi				Machine Make: Russian		E: 42R300118		Geologist: Jawad		Date Started: June-9-2012															
Contractor: Consolidated Engineering Services (Pvt) Ltd				Drilling Fluid: Bentonite		Ground Elevation: +3.45		Driller: Jamali		Date Completed: June-12-2012															
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				
20.00		5.0		Brown, moderately fractured, fair to poor, medium hard, SHALE																					
21.00	CRS-21																							Sample Waxed 21cm	
22.00	CRS-22																								Sample Waxed 11cm
23.00	CRS-23																								
24.00	CRS-24																								Sample Waxed 14cm
25.00	CRS-25																					Sample Waxed 21cm			
26.00	CRS-26	2.0		Brown, highly fractured, poor to very poor, medium hard, SHALE																					
27.00	CRS-27																							Sample Waxed 17cm	
28.00	CRS-28	3.0		Brown, moderately to slightly fractured, excellent to good, medium hard, SHALE																					
29.00	CRS-29																							Sample Waxed 46cm	
30.00	CRS-30																								Sample Waxed 56cm
END OF BOREHOLE AT 30.0m Depth																									

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

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