

CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)	c' (Kg/cm ²)	σ (kg)		Compressibility Index (Cc)	qu (Kg/cm ²)					
530	KCRBH-41	SPT-1	1.0	SC	SAND 1	35	26	10	2.69	19.82														
531	KCRBH-41	SPT-2	2.0	SC	SAND 1	42	22	9	2.66	9.14										6.5	0.066	0.065		
532	KCRBH-41	SPT-3	3.0	SC	SAND 1	32	23	10	2.64	12.86														
533	KCRBH-41	SPT-4	4.0	CL	CLAY 1	68	24	10	2.68	8.40														
534	KCRBH-41	SPT-5	5.0	SC	SAND 2	20	25	11	2.63	5.96														
535	KCRBH-41	SPT-6	6.0	GW	SAND 2	1	Non-Plastic		2.66	13.09														
536	KCRBH-41	CRS-10	9.0 - 10.0	GW-GM	SAND 2	11	Non-Plastic			1.15														
537	KCRBH-41	CRS-13	12.0 - 13.0	SM	SAND2	24	Non-Plastic			2.67														
538	KCRBH-41	CRS-17	16.0 - 17.0	ROCK	CONGLOMERATE	2	Non-Plastic			0.28														
539	KCRBH-41	Water																					239	181
540	KCRBH-42	SPT-1	1.0	SM	SAND 2	47	Non-Plastic		2.70	3.70					0.0	30				6.5				
541	KCRBH-42	SPT-2	3.0	ML	SAND 2	58	Non-Plastic		2.65	4.65					0.0	30				6.0	0.111	0.043		
542	KCRBH-42	SPT-3	4.0	SM	SAND 2	18	Non-Plastic		2.71	3.54					0.0	32								
543	KCRBH-42	SPT-4	5.0	SM	SAND 2	19	Non-Plastic		2.71	3.79					0.0	32								
544	KCRBH-42	SPT-5	6.0	SM	SAND 2	36	Non-Plastic		2.70	8.72					0.0	31								
545	KCRBH-42	SPT-6	7.0	SC	SAND 2	22	26	12	2.66	10.58					3.0	30								
546	KCRBH-42	CRS-8	7.57-7.75	SC	SAND 2	45	Non-Plastic			8.73	2.18	2.00					1.2	4.3						
547	KCRBH-42	SPT-7	8.0	SC	SAND 2																			
548	KCRBH-42	SPT-8	9.0	SC	SAND 2	34	25	12	2.72	12.42					5.0	30								
549	KCRBH-42	SPT-9	10.0	SC	SAND 2	26	24	11	2.68	11.19					5.0	30								
550	KCRBH-42	CRS-14	13.0-14.0	ROCK	CONGLOMERATE	21	Non-Plastic			7.52	2.16	1.84					0.7	4.7						
551	KCRBH-42	CRS-19	18.50-18.62	ROCK	MUDSTONE 1	96	27	12		17.02												185	317	
552	KCRBH-42	Water																						
553	KCRBH-43	SPT-1	1.0	CL	CLAY 2	91	34	13	2.65	7.89										6.5				
554	KCRBH-43	SPT-2	2.0	CL	CLAY 2	90	37	13	2.67	13.87										6.0	0.539	0.128		
555	KCRBH-43	SPT-3	3.0	CL	CLAY 2	99	38	15	2.71	15.48														
556	KCRBH-43	SPT-4	4.0	CL	CLAY 2	91	33	12	2.69	13.25														
557	KCRBH-43	CRS-7	6.78 - 6.95	ROCK	MUDSTONE 1	98	34	12	3.70	2.50	2.41						17.6	2.5						
558	KCRBH-43	CRS-10	9.33 - 9.50	ROCK	MUDSTONE 1	95	39	16	17.72	2.16	1.84						0.7	4.9						
559	KCRBH-43	CRS-13	12.50 - 12.75	ROCK	MUDSTONE 1	95	36	14	7.14	2.26	2.11						31.9	3.7						
560	KCRBH-43	CRS-18	17.40 - 17.55	ROCK	SANDSTONE 1					2.14	2.07						93.3	4.1						
561	KCRBH-43	CRS-20	19.65 - 19.80	ROCK	MUDSTONE 1	92	37	15		14.19	2.26	1.98					1.5	3.9						
562	KCRBH-43	Water																					144	240

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SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
563	KCRBH-44	SPT-1	1.0	ML	SAND 1	57	Non-Plastic		2.65	11.10													
564	KCRBH-44	SPT-2	2.0	CL	CLAY 1	88	26	10	2.68	14.54									6.5	0.102	0.322		
565	KCRBH-44	SPT-3	3.0	CL	CLAY 1	87	29	9	2.70	18.69													
566	KCRBH-44	SPT-4	4.0	ROCK	MUDSTONE 1	91	27	10	18.83														
567	KCRBH-44	CRS-5	4.20 - 4.40	ROCK	MUDSTONE 1	91	36	14	15.26								0.8	4.0					
568	KCRBH-44	CRS-7	6.85 - 7.0	ROCK	MUDSTONE 1	93	34	12	8.92	2.32	2.13						15.1	2.1					
569	KCRBH-44	CRS-11	10.81 - 10.95	ROCK	MUDSTONE 1	94	40	17	11.21	2.25	2.02						4.4	6.7					
570	KCRBH-44	CRS-14	13.83 - 13.95	ROCK	MUDSTONE 1	96	39	16	17.95	2.11	1.79						1.0	3.8					
571	KCRBH-44	CRS-17	16.82 - 16.92	ROCK	MUDSTONE 1				1.68	2.42	2.38						90.1	0.9					
572	KCRBH-44	CRS-20	19.31 - 19.55	ROCK	MUDSTONE 1	98	32	10	6.75	2.39	2.24						28.9	3.1					
573	KCRBH-44	Water																6.8			687	1040	
574	KCRBH-45	SPT-1	1.0	ML	CLAY 1	57	29	11	2.72	20.04													
575	KCRBH-45	SPT-2	2.0	CL	CLAY 1	79	31	16	2.68	18.29													
576	KCRBH-45	CRS-3	2.50-2.75		CLAY 1										0.21								
577	KCRBH-45	SPT-3	3.0	CL	CLAY 1	72	37	16	2.63	20.19								6.0	0.186	0.081			
578	KCRBH-45	CRS-4	3.36 - 3.50	CL	CLAY 1	96	39	18	18.44	2.18	1.84						2.9	8.1					
579	KCRBH-45	SPT-4	4.0	CL	CLAY 2	99	43	18	2.66	21.25					0.20								
580	KCRBH-45	SPT-5	5.0	ROCK	MUDSTONE 1	91	41	17	2.70	27.43													
581	KCRBH-45	CRS-6	5.46 - 5.66	ROCK	MUDSTONE 1	90	37	15	12.88	2.39	2.11						2.8	2.8					
582	KCRBH-45	SPT-6	6.0	ROCK	MUDSTONE 1																		
583	KCRBH-45	SPT-7	7.0	ROCK	MUDSTONE 1																		
584	KCRBH-45	SPT-8	8.0	ROCK	MUDSTONE 1	99	45	19	2.65	12.72													
585	KCRBH-45	SPT-9	9.0	ROCK	MUDSTONE 1	98	44	14	2.66	7.97													
586	KCRBH-45	CRS-12	11.37 - 11.51	ROCK	MUDSTONE 1	97	38	14	12.72	2.17	1.93						6.6	2.5					
587	KCRBH-45	CRS-15	14.76 - 14.87	ROCK	MUDSTONE 1	98	36	12	8.73	2.23	2.05						8.3	1.5					
588	KCRBH-45	CRS-18	17.50 - 17.70	ROCK	MUDSTONE 1	96	34	13	4.36	2.46	2.35						60.1	2.3					
589	KCRBH-45	Water																6.8			1572	1550	
590	KCRBH-46	SPT-1	1.0	CL	CLAY 1	72	32	14	2.65	14.89								6.5	0.668	0.161			
591	KCRBH-46	SPT-2	2.0	SC	SAND 2	37	26	11	2.65	13.53				3.0	28								
592	KCRBH-46	SPT-3	3.0	ML	SAND 2	51	Non-Plastic		2.61	21.05				0.0	30								
593	KCRBH-46	SPT-4	4.0	CL	CLAY 2	93	35	13	2.69	13.06													
594	KCRBH-46	CRS-5	4.76 - 5.0	CL	CLAY 2	88	36	20	13.41	2.10	1.85				0.25		1.0	4.1					
595	KCRBH-46	CRS-8	7.20 - 7.35	ROCK	SANDSTONE 1	34	Non-Plastic		8.13	2.21	2.05						15.2	2.7					
596	KCRBH-46	CRS-11	10.68 - 10.85	ROCK	SANDSTONE 1	36	Non-Plastic		8.42	2.06	1.90						14.7	2.8					
597	KCRBH-46	CRS-17	16.45 - 16.65	ROCK	SANDSTONE 1	40	Non-Plastic		10.79	2.19	1.98						22.6	2.0					
598	KCRBH-46	CRS-20	19.45 - 19.65	ROCK	SANDSTONE 1	31	Non-Plastic		11.69	2.20	1.97						37.7	2.2					
599	KCRBH-46	Water																7.5			148	280	

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SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter			
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			c _u (Kg/cm ²)	Strain %								
600	KCRBH-47	SPT-1	1.0	SM	SAND 1	22	Non-Plastic		2.71	9.62																
601	KCRBH-47	SPT-2	2.0	SM	SAND 1	13	Non-Plastic		2.65	15.73																
602	KCRBH-47	SPT-3	3.0	CL	CLAY 2	78	29	17	2.71	20.22									6.5	0.119	0.081					
603	KCRBH-47	SPT-4	4.0	CL	CLAY 2	95	28	7	2.68	18.06																
604	KCRBH-47	SPT-5	5.0	ML	SAND 3	97	Non-Plastic		2.68	18.57																
605	KCRBH-47	CRS-6	5.40 - 5.52	ML	SAND 3	97	Non-Plastic		10.69		2.16	1.95					2.4	1.8								
606	KCRBH-47	SPT-6	6.0	ROCK	MUDSTONE 1	98	29	7	2.71	19.46																
607	KCRBH-47	CRS-9	8.45 - 8.65	ROCK	MUDSTONE 1	96	34	13	7.46	2.23	2.07						15.8	3.3								
608	KCRBH-47	CRS-12	11.35 - 11.60	ROCK	MUDSTONE 1	91	35	16	7.62	2.24	2.08						27.7	3.3								
609	KCRBH-47	CRS-16	15.25 - 15.40	ROCK	MUDSTONE 1	99	39	15	7.72	2.39	2.22						22.9	2.4								
610	KCRBH-47	CRS-20	19.45 - 19.60	ROCK	MUDSTONE 1	85	37	17	3.10	2.25	2.19						16.9	3.5								
611	KCRBH-47	Water																	7.7			123	120			
612	KCRBH-48	SPT-1	1.0	SM	BACK FILLED	20	Non-Plastic		2.69	2.25									6.5	0.239	0.043					
613	KCRBH-48	SPT-2	2.0	SM	BACK FILLED	20	Non-Plastic		2.67	5.90																
614	KCRBH-48	SPT-3	3.0	SC	BACK FILLED	13	25	10	2.68	21.00																
615	KCRBH-48	CRS-4	3.45 - 3.65	CL	CLAY 2	73	37	19	11.77		2.15	1.93			0.25		3.5	9.8								
616	KCRBH-48	SPT-4	4.0	CL	CLAY 2	99	35	18	2.69	14.65																
617	KCRBH-48	SPT-5	5.0	CL	CLAY 2	91	32	13	2.63	17.51																
618	KCRBH-48	SPT-6	6.0	CL	CLAY 2	95	33	15	2.71	20.47																
619	KCRBH-48	SPT-7	7.0	ROCK	MUDSTONE 1	96	35	16	2.66	19.94																
620	KCRBH-48	SPT-8	8.0	ROCK	MUDSTONE 1	98	34	10	2.68	16.82																
621	KCRBH-48	SPT-9	9.0	ROCK	MUDSTONE 1	87	36	14	2.66	20.58																
622	KCRBH-48	CRS-12	11.50 - 11.70	ROCK	MUDSTONE 1	88	36	15	8.38	2.18	2.01						12.0	2.0								
623	KCRBH-48	CRS-20	19.58 - 19.75	ROCK	MUDSTONE 2	99	40	18	13.49	2.04	1.79						0.6	4.6								
624	KCRBH-48	CRS-23	22.32 - 22.47	ROCK	MUDSTONE 2	95	29	10	5.01	2.39	2.28						33.6	2.7								
625	KCRBH-48	CRS-28	27.35 - 27.55	ROCK	MUDSTONE 2	90	33	12	7.18	2.32	2.17						36.1	2.9								
626	KCRBH-48	Water																	6.5			247	199			
627	KCRBH-49	SPT-1	1.0	SM	SAND 1	27	Non-Plastic		2.65	12.54																
628	KCRBH-49	SPT-2	2.0	SM	SAND 1	42	Non-Plastic		2.61	15.03									6.5	0.372	0.349					
629	KCRBH-49	SPT-3	3.0	SM	SAND 1	21	Non-Plastic		2.71	18.92																
630	KCRBH-49	SPT-4	4.0	SM	SAND 1	22	Non-Plastic		2.66	18.19																
631	KCRBH-49	SPT-5	5.0	CL	CLAY 1	92	31	13	2.65	17.15																
632	KCRBH-49	SPT-6	6.0	ML	SAND 2	70	Non-Plastic		2.67	20.78																
633	KCRBH-49	SPT-7	7.0	CL	CLAY 2	74	33	11	2.68	13.76																
634	KCRBH-49	SPT-8	8.0	ROCK	MUDSTONE 1	60	Non-Plastic		2.66	20.65																
635	KCRBH-49	CRS-10	9.65 - 9.80	ROCK	MUDSTONE 1	98	34	15	16.05	2.17	1.87						5.2	2.5								
636	KCRBH-49	CRS-13	12.57 - 12.75	ROCK	MUDSTONE 1	86	31	11	9.55	2.21	2.01						10.2	2.7								
637	KCRBH-49	CRS-15	14.28 - 14.50	ROCK	MUDSTONE 2	95	39	17	9.35	2.09	1.91						3.3	1.9								
638	KCRBH-49	CRS-20	19.35 - 19.60	ROCK	MUDSTONE 2	92	32	11	7.09	2.28	2.13						16.7	2.9								
639	KCRBH-49	CRS-23	22.45 - 22.75	ROCK	MUDSTONE 2	91	28	8	6.12	2.33	2.20						25.5	2.2								
640	KCRBH-49	CRS-29	28.40 - 28.66	ROCK	MUDSTONE 2	90	30	9	5.98	2.39	2.26						30.9	2.1								
641	KCRBH-49	Water																	6.5			198	269			

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SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/ Liter	Chloride Content in Water mg/ Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)	c' (Kg/cm ²)	σ (kg)		Compressibility Index (C _c)	qu (Kg/cm ²)					
642	KCRBH-50	SPT-1	1.0	CL	BACK FILLED	54	29	10	2.53	17.28														
643	KCRBH-50	SPT-2	2.0	CL	BACK FILLED	57	28	9	2.55	21.11														
644	KCRBH-50	SPT-3	3.0	CL	CLAY 1	74	31	11	2.55	26.62														
645	KCRBH-50	CRS-4	3.19 - 3.35	CL	CLAY 1																			
646	KCRBH-50	SPT-4	4.0	CL	CLAY 1	74	34	15	2.53	23.89							0.22							
647	KCRBH-50	SPT-5	5.0	SC	SAND 2	24	25	9	2.69	16.03														
648	KCRBH-50	SPT-6	6.0	SM	SAND 2	15	Non-Plastic		2.65	14.81														
649	KCRBH-50	SPT-7	7.0	SC	SAND 2	34	27	12	2.63	8.31														
650	KCRBH-50	SPT-8	8.0	SW-SM	SAND 2	10	Non-Plastic		2.71	19.32														
651	KCRBH-50	SPT-9	9.0	SC	SAND 2	26	22	10	2.81	9.96														
652	KCRBH-50	SPT-10	10.0	SM	SAND 2	27	25	10	2.72	8.96														
653	KCRBH-50	SPT-11	11.0	CL	CLAY 2	69	30	12	2.43	16.02														
654	KCRBH-50	CRS-12	11.50 - 11.65	CL	CLAY 2	82	33	16	9.17		2.18	2.00					0.19	4.2	4.5					
655	KCRBH-50	SPT-12	12.0	SM	SAND 3	28	Non-Plastic		2.71	14.21														
656	KCRBH-50	CRS-18	17.00 - 17.22	ROCK	SANDSTONE 1		Non-Plastic		11.77	2.04	1.82							12.1	1.3					
657	KCRBH-50	CRS-23	22.30 - 22.44	ROCK	MUDSTONE 1	97	36	15	10.53		2.25	2.03						3.6	3.7					
658	KCRBH-50	CRS-30	29.21 - 29.35	ROCK	SANDSTONE 2						2.06	1.95						24.4	1.8					
659	KCRBH-50	Water																		7.5			1152	1650
660	KCRBH-51	SPT-1	1.0	SW-SM	BACK FILLED	5	Non-Plastic		2.62	3.15										7.5	0.027	0.071		
661	KCRBH-51	SPT-2	2.0	SM	BACK FILLED	13	Non-Plastic		2.68	20.46														
662	KCRBH-51	SPT-3	3.0	SM	SAND 1	18	Non-Plastic		2.72	17.06														
663	KCRBH-51	SPT-4	4.0	SM	SAND 1	13	Non-Plastic		2.67	13.93														
664	KCRBH-51	SPT-5	5.0	SM	SAND 1	10	Non-Plastic		2.65	9.79														
665	KCRBH-51	CRS-6	5.25 - 5.43	CL	CLAY 1	61	31	17	16.87		2.12	1.81					0.18	1.4	10.6					
666	KCRBH-51	SPT-6	6.0	CL	CLAY 1	69	33	11	2.69	7.47														
667	KCRBH-51	SPT-7	7.0	SC	SAND 2	37	28	10	2.60	14.86														
668	KCRBH-51	SPT-8	8.0	SC	SAND 2	27	27	11	2.67	10.18														
669	KCRBH-51	SPT-9	9.0	SM	SAND 2	29	Non-Plastic		2.71	10.64														
670	KCRBH-51	SPT-10	10.0	SC	SAND 2	32	27	12	2.70	9.24														
671	KCRBH-51	SPT-11	11.0	SM	SAND 2	22	Non-Plastic		2.72	12.67														
672	KCRBH-51	SPT-12	12.0	CL	CLAY 2	98	47	22	2.65	17.69														
673	KCRBH-51	CRS-13	12.20 - 12.40	CL	CLAY 2	60	30	12	11.74		2.17	1.94					0.23	0.9	1.4					
674	KCRBH-51	SPT-13	13.0	SC	SAND 3	47	32	13	2.70	10.41														
675	KCRBH-51	SPT-14	14.0	SC	SAND 3	20	25	7	2.71	9.45														
676	KCRBH-51	CRS-16	15.46 - 15.61	SC	SAND 3	35	30	14	10.28		2.40	2.18												
677	KCRBH-51	CRS-20	19.13 - 19.31	ROCK	CONGLOMERATE				1.21	2.33	2.31								0.9	4.4				
678	KCRBH-51	CRS-25	24.0 - 25.0	ROCK	CONGLOMERATE				0.86	2.21	2.04								166.0	0.7				
679	KCRBH-51	CRS-28	27.49 - 27.71	ROCK	MUDSTONE 1	97	38	20	13.13		2.22	1.96							1.1	1.1				
680	KCRBH-51	Water																		8.0			362	1003

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 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
681	KCRBH-52	SPT-1	1.0	SM	BACK FILLED	18	Non-Plastic		2.69	5.06													
682	KCRBH-52	SPT-2	2.0	SM	BACK FILLED	26	Non-Plastic		2.69	5.65													
683	KCRBH-52	SPT-3	3.0	CL	CLAY 1	84	25	10	2.68	20.17									7.5	0.075	0.110		
684	KCRBH-52	SPT-4	4.0	CL	CLAY 1	77	34	13	2.69	22.79													
685	KCRBH-52	SPT-5	5.0	CL	CLAY 1	56	26	9	2.65	22.08													
686	KCRBH-52	CRS-6	5.80-6.00	CL	CLAY 1										0.13								
687	KCRBH-52	SPT-6	6.0	SM	SAND 2	37	Non-Plastic		2.66	14.79													
688	KCRBH-52	CRS-7	6.84-7.00	SM	SAND 2	39	Non-Plastic			11.10	2.30	2.07					1.7	9.5					
689	KCRBH-52	SPT-7	7.0	SM	SAND 2	32	Non-Plastic		2.72	17.24													
690	KCRBH-52	SPT-8	8.0	CL	CLAY 2	53	30	13	2.65	15.69													
691	KCRBH-52	SPT-9	9.0	SM	SAND 3	21	Non-Plastic		2.67	9.05													
692	KCRBH-52	SPT-10	10.0	SW-SM	SAND 3	8	Non-Plastic		2.72	7.67													
693	KCRBH-52	SPT-11	11.0	SW-SM	SAND 3	9	Non-Plastic		2.70	9.87													
694	KCRBH-52	SPT-12	12.0	SM	SAND 3	18	Non-Plastic		2.66	9.91													
695	KCRBH-52	SPT-13	13.0	CL	CLAY 3	72	43	21	2.69	16.60													
696	KCRBH-52	CRS-14	13.72-13.85	CL	CLAY 3	69	37	18		12.31	2.02	1.80					2.0	6.5					
697	KCRBH-52	SPT-14	14.0	SM	SAND 3	20	Non-Plastic		2.72	19.51													
698	KCRBH-52	SPT-15	15.0	CL	CLAY 3	61	35	17	2.66	12.22													
699	KCRBH-52	CRS-16	15.30-15.50	CL	CLAY 3	95	41	21		18.39	2.06	1.74					1.4	7.1					
700	KCRBH-52	SPT-16	16.0	CL	CLAY 3	65	38	18	2.69	16.94													
701	KCRBH-52	SPT-17	17.0	SC	SAND 4	15	27	10	2.65	11.99													
702	KCRBH-52	CRS-21	20.0-21.0	ROCK	SANDSTONE 1	7	Non-Plastic			2.93													
703	KCRBH-52	CRS-26	25.0-26.0	ROCK	CONGLOMERATE	31	33	15		11.03	2.20	1.98					2.9	9.6					
704	KCRBH-52	Water																	6.5			305	2000
705	KCRBH-53	SPT-1	1.0	ML	BACK FILLED	78	Non-Plastic		2.64	7.22													
706	KCRBH-53	SPT-2	2.0	SM	SAND 1	42	Non-Plastic		2.56	9.17													
707	KCRBH-53	SPT-3	3.0	CL	CLAY 1	78	30	12	2.65	23.18									6.0	0.052	0.098		
708	KCRBH-53	SPT-4	4.0	SM	SAND 2	21	Non-Plastic		2.66	9.38													
709	KCRBH-53	SPT-5	5.0	SM	SAND 2	36	Non-Plastic		2.66	15.36													
710	KCRBH-53	SPT-6	6.0	SC	SAND 2	13	30	14	2.72	20.16													
711	KCRBH-53	SPT-7	7.0	SM	SAND 2	27	Non-Plastic		2.68	13.64													
712	KCRBH-53	SPT-8	8.0	ML	SAND 2	65	Non-Plastic		2.64	17.16													
713	KCRBH-53	SPT-9	9.0	SC	SAND 2	32	25	8	2.69	19.62													
714	KCRBH-53	SPT-10	10.0	GW	SAND 2	3	Non-Plastic		2.67	12.80													
715	KCRBH-53	SPT-11	11.0	SM	SAND 2	39	Non-Plastic		2.66	17.18													
716	KCRBH-53	SPT-12	12.0	CL	CLAY 2	53	30	14	2.69	18.52													
717	KCRBH-53	SPT-13	13.0	CL	CLAY 2	99	47	27	2.63	20.34													
718	KCRBH-53	SPT-14	14.0	CL	CLAY 2	99	48	26	2.65	17.79													
719	KCRBH-53	CRS-15	14.58-14.95		CLAY 2										0.24								
720	KCRBH-53	SPT-15	15.0	CL	CLAY 2	99	45	29	2.64	18.21													
721	KCRBH-53	SPT-16	16.0	SC	SAND 3	45	28	13	2.69	14.47													
722	KCRBH-53	SPT-17	17.0	SC	SAND 3	43	28	13	2.65	10.84													
723	KCRBH-53	CRS-18	17.65-17.89	SC	SAND 3	56	30	19		10.60	2.25	2.04					0.7	3.0					
724	KCRBH-53	SPT-18	18.0	SC	SAND 3	53	26	13	2.63	12.51													
725	KCRBH-53	CRS-25	24.36-24.51	ROCK	SANDSTONE 1					14.50													
726	KCRBH-53	CRS-29	28.54-28.70	ROCK	MUDSTONE 1	97	40	19		12.80	2.16	1.92											
727	KCRBH-53	Water																				683	1800

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
728	KCRBH-54	SPT-1	1.0	SW	BACK FILLED	4	Non-Plastic		2.63	2.35													
729	KCRBH-54	SPT-2	2.0	CL	CLAY 1	87	36	13	2.26	32.60													
730	KCRBH-54	SPT-3	3.0	CL	CLAY 1	92	40	14	2.68	35.18													
731	KCRBH-54	SPT-4	4.0	CL	CLAY 1	95	41	17	2.61	28.01													
732	KCRBH-54	CRS-5	4.45 - 4.60		CLAY 1											0.27							
733	KCRBH-54	SPT-5	5.0	CL	CLAY 1	91	47	17	2.63	38.19													
734	KCRBH-54	SPT-6	6.0	SM	SAND 2	24	Non-Plastic		2.62	9.93				0.0	30								
735	KCRBH-54	SPT-7	7.0	SW-SM	SAND 2	10	Non-Plastic		2.62	10.38				0.0	32								
736	KCRBH-54	SPT-8	8.0	CL	CLAY 2	72	30	15	2.65	14.05													
737	KCRBH-54	SPT-9	9.0	CL	CLAY 2	55	33	17	2.73	15.16													
738	KCRBH-54	SPT-10	10.0	SM	SAND 3	13	Non-Plastic		2.70	11.60				0.0	32								
739	KCRBH-54	SPT-11	11.0	SC	SAND 3	26	44	21	2.66	13.95				5.0	30								
740	KCRBH-54	SPT-12	12.0	CL	CLAY 3	49	42	18	2.64	7.55				5.0	30								
741	KCRBH-54	CRS-13	12.55 - 12.75		CLAY 3																		
742	KCRBH-54	SPT-13	13.0	CL	CLAY 3	95	46	22	2.63	21.83													
743	KCRBH-54	SPT-14	14.0	SC	SAND 3	16	31	16	2.72	13.22				5.0	30								
744	KCRBH-54	SPT-15	15.0	CL	CLAY 3	91	49	28	2.65	18.76													
745	KCRBH-54	CRS-16	15.70 - 15.90		CLAY 3																		
746	KCRBH-54	SPT-16	16.0	CL	CLAY 3	61	31	15	2.63	14.87													
747	KCRBH-54	SPT-17	17.0	CL	CLAY 3	54	31	15	2.67	14.47													
748	KCRBH-54	CRS-18	17.20 - 17.40	ML	CLAY 3	89	Non-Plastic		13.88		2.17	1.91					5.5	4.6					
749	KCRBH-54	SPT-18	18.0	SC	SAND 4	43	29	14	2.63	12.11				5.0	30								
750	KCRBH-54	SPT-19	19.0	SC	SAND 4	43	36	16	2.67	9.38													
751	KCRBH-54	CRS-24	23.50 - 23.60	ROCK	CONGLOMERATE	35	Non-Plastic		13.49	2.26	1.99						1.1	6.4					
752	KCRBH-54	CRS-29	28.70 - 28.90	ROCK	MUDSTONE 2	98	37	14	11.65	2.29	2.06						10.6	3.9					
753	KCRBH-54	Water																				406	1500
754	KCRBH-55	SPT-1	1.0	SM	BACK FILLED	24	Non-Plastic		2.69	2.79				0.0	28								
755	KCRBH-55	SPT-2	2.0	SM	BACK FILLED	21	Non-Plastic		2.65	7.38				0.0	28				6.0	0.434	0.339		
756	KCRBH-55	SPT-3	3.0	CL	CLAY 1	78	32	11	2.68	38.21													
757	KCRBH-55	SPT-4	4.0	SC	SAND 1	19	23	10	2.67	11.67				3.0	26								
758	KCRBH-55	SPT-5	5.0	CL	CLAY 1	64	30	13	2.66	25.09													
759	KCRBH-55	CRS-6	5.60 - 5.80	CL	CLAY 1	67	33	15	14.12		2.11	1.85					2.7	11.9					
760	KCRBH-55	CRS-9	8.0 - 9.0	SC	SAND 2	20	22	12	12.40														
761	KCRBH-55	CRS-11	10.05 - 10.20	SM	SAND 2	29	Non-Plastic		11.14		2.24	2.01					0.9	4.9					
762	KCRBH-55	SPT-8	12.0	SC	SAND 2	40	26	13	2.63	15.85				8.0	30								
763	KCRBH-55	SPT-9	13.0	SM	SAND 2	31	Non-Plastic		2.65	7.01				0.0	32								
764	KCRBH-55	SPT-10	14.0	SM	SAND 2	28	Non-Plastic		2.71	19.67				0.0	32								
765	KCRBH-55	SPT-11	15.0	SM	SAND 2	20	Non-Plastic		2.68	15.07				0.0	32								
766	KCRBH-55	CRS-16	15.55 - 15.70	CL	CLAY 3	91	49	25	14.28		2.04	1.79					2.4	7.8					
767	KCRBH-55	SPT-12	16.0	CL	CLAY 3	94	47	24	2.66	17.86													

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)	σ _v (kg/cm ²)	σ _h (kg)		σ _u (kg/cm ²)	Strain %					
768	KCRBH-55	SPT-13	17.0	CL	CLAY 3	95	48	26	2.67	23.34														
769	KCRBH-55	SPT-14	18.0	CL	CLAY 3	99	46	27	2.65	20.88														
770	KCRBH-55	SPT-15	19.0	CL	CLAY 3	59	28	12	2.72	12.47														
771	KCRBH-55	CRS-20	19.85 - 19.95	CL	CLAY 3	56	29	16	12.52		2.34	2.08						1.5	9.4					
772	KCRBH-55	SPT-16	20.0	SC	SAND 4	33	16	10	2.71	15.04														
773	KCRBH-55	SPT-17	21.0	SM	SAND 4	47	Non-Plastic		2.67	16.10														
774	KCRBH-55	CRS-22	21.0 - 22.0	SC	SAND 4	48	30	17	5.11		2.05	1.95						11.3	2.0					
775	KCRBH-55	CRS-25	24.0 - 25.0	ROCK	CONGLOMERATE 2	31	49	29	7.09		2.26	2.11						3.7	3.8					
776	KCRBH-55	CRS-29	28.0 - 29.0	ROCK	CONGLOMERATE 2	45	28	14	9.65															
777	KCRBH-55	Water																		7.5			395	1150
778	KCRBH-56	SPT-1	1.0	SC	BACK FILLED	37	29	10	2.63	26.83														
779	KCRBH-56	SPT-2	2.0	SM	BACK FILLED	19	Non-Plastic		2.70	13.79														
780	KCRBH-56	SPT-3	3.0	CL	CLAY 1	94	31	12	2.66	30.04									7.5	0.772	0.150			
781	KCRBH-56	SPT-4	4.0	SM	SAND 2	17	Non-Plastic		2.65	13.55														
782	KCRBH-56	SPT-5	5.0	SM	SAND 2	21	25	12	2.66	13.74														
783	KCRBH-56	SPT-6	6.0	SM	SAND 2	17	Non-Plastic		2.68	14.79														
784	KCRBH-56	SPT-7	7.0	SC	SAND 2	17	26	11	2.71	15.14														
785	KCRBH-56	CRS-8	7.50 - 7.70	CL	CLAY 2	50	32	13	10.52		2.17	1.96												
786	KCRBH-56	SPT-8	8.0	CL	CLAY 2	56	26	10	2.68	15.16														
787	KCRBH-56	SPT-9	9.0	SM	SAND 3	14	Non-Plastic		2.69	9.06														
788	KCRBH-56	SPT-10	10.0	GW-GM	SAND 3	5	Non-Plastic		2.72	8.32														
789	KCRBH-56	SPT-11	11.0	SM	SAND 3	26	Non-Plastic		2.71	9.81														
790	KCRBH-56	SPT-12	12.0	CL	CLAY 3	63	31	14	2.66	16.86														
791	KCRBH-56	SPT-13	13.0	CL	CLAY 3	86	47	22	2.68	29.46														
792	KCRBH-56	CRS-14	13.00 - 13.15	CL	CLAY 3	94	49	25	19.81		2.04	1.70							0.7	5.4				
793	KCRBH-56	SPT-14	14.0	CL	CLAY 3	81	46	21	2.72	31.64														
794	KCRBH-56	SPT-15	15.0	CL	CLAY 3	90	31	14	2.65	19.22														
795	KCRBH-56	SPT-16	16.0	SM	SAND 4	18	Non-Plastic		2.70	24.67														
796	KCRBH-56	SPT-17	17.0	SM	SAND 4	13	Non-Plastic		2.69	25.07														
797	KCRBH-56	SPT-18	18.0	SW-SM	SAND 4	8	Non-Plastic		2.72	25.08														
798	KCRBH-56	CRS-29	18.13 - 18.27	CL	CLAY 4	59	30	11	16.82		2.20	1.89							2.0	3.3				
799	KCRBH-56	SPT-19	19.0	SM	SAND 4	27	Non-Plastic		2.67	19.22														
800	KCRBH-56	SPT-20	20.0	SM	SAND 4	13	Non-Plastic		2.69	20.35														
801	KCRBH-56	SPT-21	21.0	SW-SM	SAND 4	10	Non-Plastic		2.68	21.02														
802	KCRBH-56	SPT-22	22.0		SAND 4																			
803	KCRBH-56	SPT-23	23.0	SM	SAND 4	16	Non-Plastic		2.72	12.31														
804	KCRBH-56	Water																		7.5			568	1900

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/ Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/ Liter	Chloride Content in Water mg/ Liter
							LL	PI					Cohesion (kN/m ²)	Angle of Internal Friction (°)	σ _v (kg/cm ²)	σ _h (kg)		qu (Kg/cm ²)	Strain %					
805	KCRBH-57	SPT-1	1.0	SM	SAND 1	21	Non-Plastic		2.63	4.02					0.0	26								
806	KCRBH-57	SPT-2	2.0	SW	SAND 1	2	Non-Plastic		2.71	18.42					0.0	26			6.5	0.234	0.118			
807	KCRBH-57	SPT-3	3.0	SW	SAND 1	4	Non-Plastic		2.71	21.21					0.0	26								
808	KCRBH-57	SPT-4	4.0	SM	SAND 1	20	Non-Plastic		2.65	29.56					0.0	26								
809	KCRBH-57	SPT-5	5.0	CL	CLAY 1	53	34	12	2.63	30.55														
810	KCRBH-57	SPT-6	6.0	SC	CLAY 1	46	30	14	2.66	35.51														
811	KCRBH-57	CRS-7	6.53 - 6.68		CLAY 1											0.20								
812	KCRBH-57	SPT-7	7.0	CL	CLAY 1	58	38	14	2.72	27.56														
813	KCRBH-57	SPT-8	8.0	SM	SAND 2	18	Non-Plastic		2.65	13.99					0.0	32								
814	KCRBH-57	SPT-9	9.0	SC	SAND 2	18	27	11	2.69	17.77					3.0	28								
815	KCRBH-57	SPT-10	10.0	SC	SAND 2	47	24	9	2.63	14.97														
816	KCRBH-57	SPT-11	11.0	SC	SAND 2	15	30	13	2.53	16.62					3.0	28								
817	KCRBH-57	SPT-12	12.0	SC	SAND 2	18	24	12	2.63	10.15					5.0	30								
818	KCRBH-57	SPT-13	13.0	SM	SAND 2	6	Non-Plastic		2.65	10.06					0.0	32								
819	KCRBH-57	SPT-14	14.0	SW-SM	SAND 2	10	Non-Plastic		2.68	9.04					0.0	32								
820	KCRBH-57	SPT-15	15.0	SW	SAND 2	1	Non-Plastic		2.70	10.43					0.0	32								
821	KCRBH-57	SPT-16	16.0	SW-SM	SAND 2	9	Non-Plastic		2.65	21.10					0.0	32								
822	KCRBH-57	CRS-17	16.48 - 16.65	SM	SAND 2	30	Non-Plastic			14.80	2.15	1.87					0.6	2.8						
823	KCRBH-57	SPT-17	17.0	SM	SAND 2	33	Non-Plastic		2.68	18.22					0.0	32								
824	KCRBH-57	CRS-18	17.45 - 17.65		CLAY 2											0.27								
825	KCRBH-57	SPT-18	18.0	CL	CLAY 2	71	48	29	2.67	25.35														
826	KCRBH-57	SPT-19	19.0	CL	CLAY 2	97	46	27	2.71	28.10														
827	KCRBH-57	SPT-20	20.0	CL	CLAY 2	86	35	16	2.69	18.70														
828	KCRBH-57	SPT-21	21.0	CL	CLAY 2	89	35	17	2.71	22.99														
829	KCRBH-57	SPT-22	22.0	SC	SAND 3	42	38	14	2.63	11.10					8.0	30								
830	KCRBH-57	SPT-23	23.0	SM	SAND 3	24	Non-Plastic		2.71	16.82					0.0	32								
831	KCRBH-57	CRS-24	23.47 - 23.60	SM	SAND 3	41	Non-Plastic		11.80		2.29	2.05					0.8	1.3						
832	KCRBH-57	SPT-24	24.0	SM	SAND 3	25	Non-Plastic		2.69	16.78					0.0	32								
833	KCRBH-57	CRS-28	27.0 - 28.0	ROCK	CONGLOMERATE 1	3	Non-Plastic		8.30								Unsuitable	loosly Gravely SAND						
834	KCRBH-57	Water																6.5				474	1121	

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			c _u (Kg/cm ²)	Strain %					
835	KCRBH-58	SPT-1	1.0	SM	BACK FILLED	16	Non-Plastic		2.69	4.61													
836	KCRBH-58	SPT-2	2.0	SM	BACK FILLED	31	Non-Plastic		2.68	6.89													
837	KCRBH-58	SPT-3	3.0	CL	CLAY 1	51	26	10	2.71	22.92									6.5	0.084	0.068		
838	KCRBH-58	SPT-4	4.0	CL	CLAY 1	76	28	9	2.66	20.67													
839	KCRBH-58	SPT-5	5.0	CL	CLAY 1	56	30	6	2.69	23.91													
840	KCRBH-58	SPT-6	6.0	SC	SAND 2	43	28	14	2.71	25.98													
841	KCRBH-58	SPT-7	7.0	SC	SAND 2	21	24	10	2.71	22.10													
842	KCRBH-58	SPT-8	8.0	SM	SAND 2	12	Non-Plastic		2.67	10.74													
843	KCRBH-58	SPT-9	9.0	SM	SAND 2	39	Non-Plastic		2.66	11.39													
844	KCRBH-58	SPT-10	10.0	SM	SAND 2	48	Non-Plastic		2.69	19.16													
845	KCRBH-58	SPT-11	11.0	CL	CLAY 2	86	39	11	2.69	23.79													
846	KCRBH-58	SPT-12	12.0	CL	CLAY 2	64	28	12	2.62	23.92													
847	KCRBH-58	SPT-13	13.0	CL	CLAY 2	88	27	5	2.65	20.33													
848	KCRBH-58	SPT-14	14.0	SC	SAND 3	34	25	8	2.66	16.23													
849	KCRBH-58	SPT-17	17.0	CL	CLAY 3	95	45	21	2.72	26.16													
850	KCRBH-58	CRS-18	17.35 - 17.55	CL	CLAY 3	78	35	16		10.70	2.13	1.92											
851	KCRBH-58	SPT-18	18.0	CL	CLAY 3	99	43	19	2.65	25.33						0.23	1.6	2.9					
852	KCRBH-58	SPT-19	19.0	CL	CLAY 3	99	44	27	2.70	22.61													
853	KCRBH-58	SPT-20	20.0	ROCK	MUDSTONE 1	99	40	15	2.68	26.85													
854	KCRBH-58	SPT-21	21.0	ROCK	MUDSTONE 1	93	40	15	2.64	25.71													
855	KCRBH-58	SPT-22	22.0	ROCK	MUDSTONE 1	97	41	15	2.65	23.80													
856	KCRBH-58	SPT-23	23.0	ROCK	MUDSTONE 1	51	31	15	2.71	12.22													
857	KCRBH-58	CRS-24	23.45 - 23.65	ROCK	MUDSTONE 1	99	40	14		17.00	1.94	1.66					5.1	8.1					
858	KCRBH-58	SPT-24	24.0	ROCK	MUDSTONE 1	96	41	14	2.71	11.72													
859	KCRBH-58	CRS-30	29.40 - 29.55	ROCK	CONGLOMERATE 1	13	35	12		13.00	2.13	1.88					0.6	4.5				486	1500
860	KCRBH-58	Water																	6.5				

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter		
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)	c' (kg/cm ²)	φ (deg)		qu (Kg/cm ²)	Strain %							
861	KCRBH-59	SPT-1	1.0	GW-GM	BACK FILLED	11	Non-Plastic		2.56	3.53					0.0	26										
862	KCRBH-59	SPT-2	2.0	SM	BACK FILLED	27	Non-Plastic		2.63	10.21					0.0	26				6.5	0.035	0.118				
863	KCRBH-59	SPT-3	3.0	CL-ML	SAND 1	75	22	6	2.50	18.88																
864	KCRBH-59	SPT-4	4.0	SM	SAND 1	32	Non-Plastic		2.59	18.67					0.0	28										
865	KCRBH-59	SPT-5	5.0	SW-SM	SAND 2	8	Non-Plastic		2.66	7.55					0.0	30										
866	KCRBH-59	SPT-6	6.0	SC	SAND 2	12	21	8	2.59	11.72					5.0	30										
867	KCRBH-59	SPT-7	7.0	ML	CLAY 2	70	26	4	2.48	21.89																
868	KCRBH-59	CRS-8	7.07.10		CLAY 2												0.15									
869	KCRBH-59	SPT-8	8.0	CL-ML	CLAY 2	66	27	7	2.54	23.32																
870	KCRBH-59	SPT-9	9.0	SM	SAND 2	38	Non-Plastic		2.56	12.81					0.0	30										
871	KCRBH-59	SPT-10	10.0	CL	CLAY 2	61	24	10	2.60	14.36																
872	KCRBH-59	SPT-11	11.0	SC	SAND 3	21	22	7	2.67	9.87					3.0	30										
873	KCRBH-59	SPT-12	12.0	SC	SAND 3	44	31	11	2.56	21.16					5.0	30										
874	KCRBH-59	SPT-13	13.0	SM	SAND 3	11	Non-Plastic		2.66	19.04					0.0	32										
875	KCRBH-59	SPT-14	14.0	SM	SAND 3	10	Non-Plastic		2.66	17.57					0.0	32										
876	KCRBH-59	SPT-15	15.0	CL	CLAY 3	72	34	13	2.46	17.46																
877	KCRBH-59	SPT-16	16.0	ROCK	SANDSTONE 1	10	Non-Plastic		2.60	25.94					0.0	32										
878	KCRBH-59	CRS-17	16.58 - 16.78	ROCK	SANDSTONE 1	33	Non-Plastic			18.10	2.14	1.82					4.4	3.3								
879	KCRBH-59	SPT-17	17.0	ROCK	SANDSTONE 1	19	Non-Plastic		2.56	24.21					0.0	32										
880	KCRBH-59	SPT-18	18.0	ROCK	SANDSTONE 1	20	Non-Plastic		2.69	23.32					0.0	32										
881	KCRBH-59	SPT-19	19.0	ROCK	SANDSTONE 1	11	Non-Plastic		2.70	22.48					0.0	32										
882	KCRBH-59	SPT-20	20.0	ROCK	SANDSTONE 1	12	Non-Plastic		2.78	21.79					0.0	32										
883	KCRBH-59	CRS-21	20.00 - 20.31	ROCK	SANDSTONE 1	33	25	11	10.10		2.21	2.01					0.7	6.1								
884	KCRBH-59	SPT-22	22.0	ROCK	SANDSTONE 1	11	Non-Plastic		2.70	26.59					0.0	32										
885	KCRBH-59	SPT-23	23.0	ROCK	SANDSTONE 1	38	29	12	2.58	15.62					5.0	30										
886	KCRBH-59	SPT-24	24.0	ROCK	SANDSTONE 1	27	28	10	2.58	11.56					5.0	30										
887	KCRBH-59	SPT-25	25.0	ROCK	CONGLOMERATE 1	4	Non-Plastic		2.73	11.52					0.0	32										
888	KCRBH-59	CRS-26	25.12 - 25.29	ROCK	CONGLOMERATE 1	39	Non-Plastic		19.50		2.05	1.71					0.6	4.4								
889	KCRBH-59	CRS-30	29.0 - 30.0	ROCK	CONGLOMERATE 1	1	Non-Plastic		4.07																	
890	KCRBH-59	Water																	6.5			222	29			
891	KCRBH-60	SPT-1	1.0	SM	BACK FILLED	32	Non-Plastic		2.71	4.47					0.0	28										
892	KCRBH-60	SPT-2	2.0	SM	BACK FILLED	18	Non-Plastic		2.71	20.64					0.0	28										
893	KCRBH-60	SPT-3	3.0	SC	SAND 1	13	24	10	2.68	8.09					3.0	30			6.5	0.955	0.129					
894	KCRBH-60	SPT-4	4.0	GC	SAND 1	16	38	16	2.71	30.19					5.0	30										
895	KCRBH-60	SPT-5	5.0	SM	SAND 1	37	Non-Plastic		2.68	16.27																
896	KCRBH-60	CRS-6	5.50-5.77	SC	SAND 1	48	38	14	16.05		2.08	1.79					1.8	5.3								
897	KCRBH-60	SPT-6	6.0	SM	SAND 1	43	Non-Plastic		2.67	26.86																
898	KCRBH-60	SPT-7	7.0			Quantity of Sample was not sufficient for Testing																				
899	KCRBH-60	SPT-8	8.0			Quantity of Sample was not sufficient for Testing																				
900	KCRBH-60	CRS-13	12.54 - 12.72	CL	CLAY 2	95	41	21	17.02		2.06	1.76					0.24	1.5	4.6							
901	KCRBH-60	SPT-10	17.0	SM	SAND 3	13	Non-Plastic		2.69	18.21																
902	KCRBH-60	SPT-11	18.0	SM	SAND 3	13	Non-Plastic		2.72	20.13																
903	KCRBH-60	SPT-12	19.0	SM	SAND 3	19	Non-Plastic		2.66	18.74																
904	KCRBH-60	CRS-23	22.50 - 22.68	SM	SAND 3	23	Non-Plastic		16.49		2.18	1.87					0.7	12.8								
905	KCRBH-60	CRS-27	26.65 - 26.80	CL	CLAY 3	46	48	22	15.46		2.18	1.88					0.24	0.6	8.6							
906	KCRBH-60	Water																	6.5			230	150			

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
907	KCRBH-61	SPT-1	1.0	SM	BACK FILLED	24	Non-Plastic		2.67	5.36													
908	KCRBH-61	SPT-2	2.0	SM	BACK FILLED	17	Non-Plastic		2.65	13.20													
909	KCRBH-61	SPT-3	3.0	CL	CLAY 1	74	26	10	2.71	24.18									6.5	0.637	0.097		
910	KCRBH-61	SPT-4	4.0	SC	SAND 2	18	25	12	2.70	7.58													
911	KCRBH-61	SPT-5	5.0	CL	CLAY 2	96	39	17	2.65	23.63													
912	KCRBH-61	SPT-6	6.0	CL	CLAY 2	97	39	14	2.65	21.96													
913	KCRBH-61	CRS-7	6.52 - 6.75	CL	CLAY 2										0.22								
914	KCRBH-61	SPT-7	7.0	CL	CLAY 2	78	37	12	2.66	26.23													
915	KCRBH-61	SPT-8	8.0	CL	CLAY 2	96	36	14	2.68	24.03													
916	KCRBH-61	SPT-9	9.0	SM	SAND 3	17	Non-Plastic		2.71	8.23													
917	KCRBH-61	SPT-10	10.0	SM	SAND 3	13	Non-Plastic		2.71	13.54													
918	KCRBH-61	SPT-11	11.0	SW-SM	SAND 3	9	Non-Plastic		2.71	12.73													
919	KCRBH-61	SPT-12	12.0	SW	SAND 3	3	Non-Plastic		2.71	13.54													
920	KCRBH-61	SPT-13	13.0	SW-SM	SAND 3	6	Non-Plastic		2.69	14.18													
921	KCRBH-61	SPT-14	14.0	SW	SAND 3	1	Non-Plastic		2.71	13.34													
922	KCRBH-61	SPT-15	15.0	SM	SAND 3	13	Non-Plastic		2.66	7.37													
923	KCRBH-61	SPT-16	16.0	SC	SAND 3	29	27	11	2.67	15.08													
924	KCRBH-61	SPT-17	17.0	SM	SAND 3	29	Non-Plastic		2.70	20.83													
925	KCRBH-61	SPT-18	18.0	SM	SAND 3	35	Non-Plastic		2.67	15.60													
926	KCRBH-61	CRS-19	18.40 - 18.60	SM	SAND 3	20	29	13	19.75		2.26	1.89					0.6	3.9					
927	KCRBH-61	CRS-22	21.50 - 21.70	ROCK	MUDSTONE 1	99	29	11	8.56		2.29	2.11					2.4	2.1					
928	KCRBH-61	CRS-28	27.0 - 28.0	ROCK	CONGLOMERATE 1	1	Non-Plastic		6.26														
929	KCRBH-61	CRS-30	29.0 - 30.0	ROCK	CONGLOMERATE 1	23	28	12	8.98		1.97	1.81					0.9	6.2				584	2200
930	KCRBH-61	Water																	7.5				
931	KCRBH-62	SPT-1	1.0	SM	BACK FILLED	28	Non-Plastic		2.70	10.97													
932	KCRBH-62	SPT-2	2.0	SM	BACK FILLED	33	Non-Plastic		2.66	6.86													
933	KCRBH-62	SPT-3	3.0	CL	CLAY 1	53	30	10	2.63	11.99									6.5	0.040	0.054		
934	KCRBH-62	SPT-4	4.0	CL	CLAY 1	65	30	13	2.65	20.55													
935	KCRBH-62	SPT-5	5.0	SC	SAND 2	43	25	11	2.67	13.92													
936	KCRBH-62	SPT-6	6.0	CL	CLAY 1	53	24	8	2.65	16.21													
937	KCRBH-62	SPT-7	7.0	SW-SC	SAND 2	10	22	9	2.70	14.15													
938	KCRBH-62	SPT-8	8.0	SC	SAND 2	40	24	11	2.66	15.27													
939	KCRBH-62	SPT-9	10.0	SC	SAND 2	30	26	12	2.65	10.81													
940	KCRBH-62	SPT-10	11.0	SC	SAND 2	38	28	11	2.69	16.13													
941	KCRBH-62	SPT-11	12.0	SM	SAND 2	14	Non-Plastic		2.70	13.69													
942	KCRBH-62	SPT-12	13.0	SC	SAND 2	49	28	8	2.71	14.73													
943	KCRBH-62	SPT-13	14.0	SC	SAND 2	46	27	9	2.70	14.11													
944	KCRBH-62	SPT-14	15.0	SC	SAND 2	30	29	15	2.66	7.68													
945	KCRBH-62	SPT-15	16.0	CL	CLAY 2	51	26	11	2.68	7.99													
946	KCRBH-62	SPT-16	17.0	CL	CLAY 2	48	28	13	2.69	15.87													
947	KCRBH-62	CRS-18	17.50 - 17.64	CL	CLAY 2	51	26	10	10.61		2.15	1.95											
948	KCRBH-62	CRS-22	21.00 - 21.12	ROCK	SANDSTONE 1	50	30	11	15.18														
949	KCRBH-62	CRS-29	28.38 - 28.54	ROCK	SANDSTONE 1						2.21	2.00										301	743
950	KCRBH-62	Water																	6.8				

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			σ _c (Kg/cm ²)	σ ₁ (Kg)					
951	KCRBH-63	SPT-1	1.0	SM	BACK FILLED	37	Non-Plastic		2.69	7.53									6.5	0.053	0.086		
952	KCRBH-63	SPT-2	2.0	CL-ML	CLAY 1	99	25	7	2.69	23.59													
953	KCRBH-63	CRS-3	2.37 - 2.58	CL-ML	CLAY 1										0.16								
954	KCRBH-63	SPT-3	3.0	SM	SAND 2	39	Non-Plastic		2.69	17.19													
955	KCRBH-63	SPT-4	4.0	SW-SM	SAND 2	7	Non-Plastic		2.69	7.72													
956	KCRBH-63	SPT-5	7.0	SC	SAND 3	44	22	9	2.72	14.10													
957	KCRBH-63	CRS-11	10.45 - 10.60	ROCK	SANDSTONE 1					2.32	2.17						72.7	2.6					
958	KCRBH-63	CRS-18	17.00 - 17.17	ROCK	MUDSTONE 1	96	36	14		12.10	2.04	1.82					6.6	3.5					
959	KCRBH-63	CRS-26	25.49 - 25.66	ROCK	MUDSTONE 1	96	35	13		8.95	2.27	2.08					21.1	2.0					
960	KCRBH-63	Water																	6.8			362	1000
961	KCRBH-64	SPT-1	1.0	SM	GARBAGE	20	Non Plastic		2.66	18.36													
962	KCRBH-64	SPT-2	2.0	SM	GARBAGE	19	Non Plastic		2.64	20.28									6.0	0.730	0.430		
963	KCRBH-64	SPT-3	3.0	CL	GARBAGE	61	36	14	2.71	22.93													
964	KCRBH-64	SPT-4	4.0	SM	SAND 2	25	Non Plastic		2.72	8.20													
965	KCRBH-64	SPT-5	5.0	SC	SAND 2	25	37	13	2.70	11.03													
966	KCRBH-64	SPT-6	6.0	SC	CLAY 2	54	43	17	2.71	16.49													
967	KCRBH-64	SPT-7	7.0	ROCK	MUDSTONE 1	98	38	13	2.72	21.39													
968	KCRBH-64	SPT-8	8.0	ROCK	MUDSTONE 1	99	40	14	2.72	14.09													
969	KCRBH-64	CRS-9	8.60 - 8.75	ROCK	MUDSTONE 1					14.66	2.51	2.19					4.5	5.9					
970	KCRBH-64	SPT-9	9.0	ROCK	MUDSTONE 1	83	39	12	2.72	16.38													
971	KCRBH-64	SPT-10	10.0	ROCK	MUDSTONE 1	90	38	13	2.71	15.61													
972	KCRBH-64	CRS-16	15.50 - 15.65	ROCK	SAND STONE 1					12.80	2.18	1.93					2.9	2.5					
973	KCRBH-64	CRS-18	17.80 - 17.92	ROCK	SAND STONE 1					12.96	2.13	1.89					23.0	1.8					
974	KCRBH-64	CRS-22	21.56 - 21.70	ROCK	SAND STONE 1					11.76	2.19	1.96					5.4	3.4					
975	KCRBH-64	CRS-27	26.50 - 26.68	ROCK	SAND STONE 1					11.52	2.19	1.97					3.2	2.7					
976	KCRBH-64	Water																	6.0			1300	2500
977	KCRBH-65	SPT-1	1.0	SM	SAND 2	19	Non-Plastic		2.72	7.69									6.0	0.133	0.322		
978	KCRBH-65	CRS-3	2.22 - 2.33	ROCK	CONGLOMERATE 1					4.32	2.28	2.19					166.0	1.7					
979	KCRBH-65	CRS-5	4.09 - 4.28	ROCK	SANDSTONE 1					9.21	2.17	1.99					24.8	1.9					
980	KCRBH-65	CRS-9	8.0 - 8.17	ROCK	MUDSTONE 3'	56	42	16	10.09	2.24	2.03						12.9	3.7					
981	KCRBH-65	CRS-10	9.37 - 9.55	ROCK	MUDSTONE 3'	94	40	18	16.57	2.23	1.91						1.4	4.4					
982	KCRBH-65	CRS-13	12.16 - 13.37	ROCK	MUDSTONE 3'	81	31	11	9.05	2.36	2.17						12.8	2.0					
983	KCRBH-65	CRS-17	16.32 - 16.45	ROCK	MUDSTONE 3'	99	30	10	8.71	2.24	2.06						20.4	2.5					
984	KCRBH-65	CRS-21	20.10 - 20.24	ROCK	MUDSTONE 3'	92	32	11	8.73	2.30	2.11						18.4	3.0					
985	KCRBH-65	CRS-23	22.39 - 22.55	ROCK	MUDSTONE 3'	88	24	8	11.77	2.65	2.37						19.1	3.2					
986	KCRBH-65	CRS-26	26.0 - 26.32	ROCK	MUDSTONE 3'	91	30	10	7.25	2.21	2.06						30.3	2.5					
987	KCRBH-65	Water																	7.5			107	1200

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			σ _c (Kg/cm ²)	ε (deg)					
988	KCRBH-66	SPT-1	1.0	SM	BACK FILLED	22	Non-Plastic		2.62	12.22									6.8	0.040	0.161		
989	KCRBH-66	SPT-2	2.0	CL	CLAY 2	78	33	15	2.67	9.49													
990	KCRBH-66	SPT-3	3.0	CL	CLAY 2	71	39	17	2.66	14.10													
991	KCRBH-66	SPT-4	4.0	CL	CLAY 2	57	43	19	2.66	8.07													
992	KCRBH-66	SPT-5	5.0	CL	CLAY 2	85	48	24	2.72	17.97													
993	KCRBH-66	SPT-6	6.0	CL	CLAY 2	94	42	13	2.63	4.88													
994	KCRBH-66	SPT-7	7.0	CL	CLAY 2	94	44	21	2.72	16.40													
995	KCRBH-66	CRS-7	6.35-6.55	CL	CLAY 2										0.25								
996	KCRBH-66	SPT-8	8.0																				
997	KCRBH-66	CRS-9	8.35 - 8.45	ROCK	SANDSTONE 1				5.90	2.17	2.05					3.7	5.1						
998	KCRBH-66	SPT-9	9.0		SANDSTONE 1																		
999	KCRBH-66	SPT-10	10.0	ROCK	MUDSTONE 2	97	47	22	2.68	22.27													
1000	KCRBH-66	SPT-11	11.0	ROCK	MUDSTONE 2	92	41	19	2.71	13.00													
1001	KCRBH-66	CRS-13	12.50 - 12.64	ROCK	MUDSTONE 2	88	28	9	8.74	2.15	1.98					9.5	4.6						
1002	KCRBH-66	CRS-16	15.40 - 15.52	ROCK	MUDSTONE 2	95	29	10	9.32	2.27	2.08					5.8	2.4						
1003	KCRBH-66	CRS-18	17.0 - 18.0	ROCK	MUDSTONE 2	99	32	8	6.67	2.22	2.08					24.0	3.6						
1004	KCRBH-66	CRS-20	19.50 - 19.52	ROCK	MUDSTONE 2	51	31	10	10.66	2.19	1.98					8.1	6.4						
1005	KCRBH-66	CRS-28	27.40 - 27.55	ROCK	MUDSTONE 2				4.99	2.24	2.13					35.5	2.9						
1006	KCRBH-66	Water																	6.5			839	1500
1007	KCRBH-67	SPT-1	1.0	CL	CLAY 1	72	22	9	2.71	9.95									6.5	0.044	0.269		
1008	KCRBH-67	SPT-2	2.0	CL	CLAY 1	74	22	8	2.70	12.15													
1009	KCRBH-67	SPT-3	3.0	CL	CLAY 1	67	25	8	2.71	15.00													
1010	KCRBH-67	CRS-3	2.74-2.96		CLAY 1										0.15								
1011	KCRBH-67	CRS-10	9.86 - 9.96	ROCK	SANDSTONE 2					2.73	2.29					98.3	3.9						
1012	KCRBH-67	CRS-16	15.00 - 15.19	ROCK	SANDSTONE 2					2.53	2.21					20.8	2.2						
1013	KCRBH-67	CRS-28	27.50 - 27.64	ROCK	SANDSTONE 2					2.46	2.16					32.7	2.5						
1014	KCRBH-67	Water																	6.8			16	800
1015	KCRBH-68	SPT-1	1.0	SM	SAND 1	22	Non-Plastic		2.62	13.74									6.5	0.801	0.806		
1016	KCRBH-68	SPT-2	2.0	SM	SAND 1	33	Non-Plastic		2.65	17.69													
1017	KCRBH-68	SPT-3	3.0	CL	CLAY 1	42	28	12	2.70	11.46													
1018	KCRBH-68	CRS-4	3.52-3.75		CLAY 1																		
1019	KCRBH-68	SPT-4	4.0	CL	CLAY 1	83	46	12	2.71	20.15					0.23								
1020	KCRBH-68	CRS-7	6.65 - 6.95	ROCK	MUDSTONE 2	98	32	12	9.13	2.11	1.93					21.5	2.9						
1021	KCRBH-68	CRS-9	8.80 - 8.96	ROCK	MUDSTONE 2	89	31	10	9.62	2.18	1.99					12.9	1.8						
1022	KCRBH-68	CRS-10	9.55 - 9.79	ROCK	MUDSTONE 2				10.89	2.13	1.92					38.4	2.1						
1023	KCRBH-68	CRS-11	10.11 - 10.28	ROCK	MUDSTONE 2				9.59	2.16	1.97					49.0	1.9						
1024	KCRBH-68	CRS-17	16.60 - 16.78	ROCK	MUDSTONE 2	85	30	7	7.42	2.26	2.11					27.9	2.8						
1025	KCRBH-68	CRS-26	25.24 - 25.42	ROCK	LIMESTONE 2				2.53	2.35	2.30					93.4	2.4						
1026	KCRBH-68	CRS-27	26.0 - 26.26	ROCK	LIMESTONE 2				1.93	2.39	2.34					85.4	3.1						
1027	KCRBH-68	CRS-29	28.33 - 28.43	ROCK	LIMESTONE 3				11.51	2.25	2.01					128.0	6.9						
1028	KCRBH-68	Water																	6.5			117	311

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)	c' (Kg/cm ²)	φ (deg)		Compressibility Index (Cc)	qu (Kg/cm ²)					
1029	KCRBH-69	SPT-3	3.0	SM	BACKFILLED	50	Non-Plastic		2.66	16.10														
1030	KCRBH-69	SPT-4	5.0	ROCK	MUDSTONE 1	88	25	5	2.68	15.06										6.5	0.133	0.430		
1031	KCRBH-69	CRS-7	6.56 - 6.68	ROCK	MUDSTONE 1	70	35	12		10.70	2.11	1.91												
1032	KCRBH-69	CRS-9	8.23 - 8.46	ROCK	MUDSTONE 1					5.60	2.26	2.14												
1033	KCRBH-69	CRS-11	10.24 - 10.36	ROCK	MUDSTONE 1	85	33	10		9.03	2.16	1.98												
1034	KCRBH-69	CRS-13	12.52 - 12.66	ROCK	MUDSTONE 1	76	40	13		8.00	2.23	2.07												
1035	KCRBH-69	CRS-17	16.45 - 16.56	ROCK	LIMESTONE 1					0.93	2.39	2.37												
1036	KCRBH-69	Water																					66	500
1037	KCRBH-70	SPT-1	1.0	SCSM	BACKFILLED	40	20	6	2.70	19.35					5.0	26				6.8				
1038	KCRBH-70	SPT-2	2.0	ROCK	SANDSTONE 1	14	Non-Plastic		2.71	19.16										5.5	0.053	0.269		
1039	KCRBH-70	CRS-3	2.15 - 2.26	ROCK	SANDSTONE 1					16.58	2.56	2.20												
1040	KCRBH-70	SPT-3	3.0	ROCK	SANDSTONE 1	24	Non-Plastic		2.71	20.22														
1041	KCRBH-70	SPT-4	4.0	ROCK	SANDSTONE 1	40	Non-Plastic		2.71	20.31														
1042	KCRBH-70	CRS-13	13.03 - 13.13	ROCK	SANDSTONE 1					10.20	2.48	2.25												
1043	KCRBH-70	CRS-15	14.05 - 14.33	ROCK	MUDSTONE 3	82	36	9		10.42	2.47	2.23												
1044	KCRBH-70	Water																					175	288
1045	KCRBH-71	SPT-1	1.0	GW-GM	BACKFILLED	5	Non-Plastic		2.71	16.02					0.0	26								
1046	KCRBH-71	SPT-2	2.0	SC-SM	SAND 2	43	22	6	2.61	18.31					4.0	26				6.0	0.040	0.430		
1047	KCRBH-71	SPT-3	3.0	ML	SAND 2	54	Non-Plastic		2.65	19.99					0.0	30								
1048	KCRBH-71	SPT-4	4.0	ROCK	MUDSTONE 1	61	32	13	2.62	21.67														
1049	KCRBH-71	CRS-5	4.55 - 4.65	ROCK	MUDSTONE 1	60	40	11		14.87	2.33	2.03												
1050	KCRBH-71	CRS-9	8.00 - 8.23	ROCK	MUDSTONE 1		24	6		5.09	2.25	2.14												
1051	KCRBH-71	CRS-12	11.45 - 11.57	ROCK	MUDSTONE 2	75	30	8		6.99	2.21	2.06												
1052	KCRBH-71	Water																					140	800
1053	KCRBH-72	SPT-1	1.0		GARBAGE		Filled Material																	
1054	KCRBH-72	SPT-2	2.0	SM	GARBAGE	12	Non-Plastic		2.69	14.66					0.0	26				6.5	0.102	0.269		
1055	KCRBH-72	SPT-3	3.0	SM	SAND 1	33	Non-Plastic		2.66	10.61					0.0	28								
1056	KCRBH-72	SPT-4	4.0	CL	CLAY 2	94	29	9	2.66	9.33														
1057	KCRBH-72	SPT-5	5.0	CL	CLAY 2	87	28	8	2.66	11.18														
1058	KCRBH-72	CRS-7	6.35 - 6.65	ROCK	MUDSTONE 1	88	29	9		11.39	1.91	1.72										14.8	3.6	
1059	KCRBH-72	CRS-8	7.58 - 7.88	ROCK	MUDSTONE 1	90	28	10		7.77	1.94	1.80										12.1	2.2	
1060	KCRBH-72	CRS-9	9.63 - 9.80	ROCK	MUDSTONE 1					12.83	2.44	2.33										90.3	3.4	
1061	KCRBH-72	CRS-10	9.63 - 9.80	ROCK	MUDSTONE 1	91	30	10		12.83	1.96	1.74										2.8	6.9	
1062	KCRBH-72	CRS-12	11.00 - 11.12	ROCK	MUDSTONE 2	80	25	7		5.90	2.23	2.11										10.5	6.4	
1063	KCRBH-72	Water																					173	800
1064	KCRBH-73	SPT-1	1.0	SW-SM	GARBAGE	10	Non-Plastic		2.71	18.42					0.0	26								
1065	KCRBH-73	SPT-2	2.0	CL	CLAY 1	76	35	13	2.69	14.57														
1066	KCRBH-73	SPT-3	3.0	CL	CLAY 1	90	35	11	2.69	19.17												5.5	0.889	0.537
1067	KCRBH-73	SPT-4	4.0	ROCK	MUDSTONE 1	94	41	20	2.66	18.99														
1068	KCRBH-73	CRS-5	4.54 - 4.65	ROCK	MUDSTONE 1		36	13		8.55	1.89	1.74										8.3	4.6	
1069	KCRBH-73	CRS-7	6.12 - 6.24	ROCK	MUDSTONE 1		38	15		8.16	2.43	2.25										14.5	4.9	
1070	KCRBH-73	CRS-9	8.00 - 8.28	ROCK	MUDSTONE 1		35	14		7.08	2.41	2.25										48.3	3.2	
1071	KCRBH-73	CRS-11	10.58 - 10.70	ROCK	MUDSTONE 1		36	14		10.19	2.32	2.10										2.5	2.4	
1072	KCRBH-73	CRS-14	13.50 - 13.65	ROCK	MUDSTONE 1		31	9		12.14	2.03	1.81										0.3	2.8	
1073	KCRBH-73	CRS-19	18.15 - 18.26	ROCK	MUDSTONE 1		25	9		10.61	2.03	1.83										1.1	4.0	
1074	KCRBH-73	Water																					823	1000

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear		Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/ Liter	Chloride Content in Water mg/ Liter
							LL	PI					Cohesion (kN/m ²)	Angle of Internal Friction (°)	c' (Kg/cm ²)	φ (deg)		qu (Kg/cm ²)	Strain %					
1075	KCRBH-74	SPT-1	1.0	SC-SM	GARBAGE	34	26	6	2.66	12.16					3.0	26			6.0	0.221	0.649			
1076	KCRBH-74	SPT-2	2.0	ML	SAND 1	72	28	3	2.65	37.39														
1077	KCRBH-74	SPT-3	3.0	SM	SAND 1	24	Non-Plastic		2.71	16.02					0.0	28								
1078	KCRBH-74	SPT-4	4.0	CL	CLAY 2	97	42	17	2.63	17.07														
1079	KCRBH-74	SPT-5	5.0																					
Quantity of Sample was not sufficient for Testing due to the Refusal																								
1080	KCRBH-74	CRS-7	6.53 - 6.71	ROCK	MUDSTONE 1	97	34	11	10.28	2.05	1.86							9.0	4.2					
1081	KCRBH-74	CRS-8	7.35 - 7.51	ROCK	MUDSTONE 1	92	33	8	8.55	2.34	2.16							38.2	4.1					
1082	KCRBH-74	CRS-10	9.53 - 9.71	ROCK	MUDSTONE 1	93	25	8	9.96	2.15	1.95							3.8	3.3					
1083	KCRBH-74	CRS-11	10.57 - 10.71	ROCK	MUDSTONE 1	85	22	5	9.57	2.17	1.98							0.8	2.2					
1084	KCRBH-74	CRS-20	19.64 - 19.80	ROCK	MUDSTONE 1	88	29	8	9.61	1.99	1.81							6.3	4.3					
1085	KCRBH-74	Water																	6.5			346	1000	
1086	KCRBH-75	SPT-1	1.0	ROCK	MUDSTONE 1	63	34	11	2.61	10.97														
1087	KCRBH-75	SPT-2	2.0	ROCK	LIMESTONE 1	47	25	8	2.63	19.35					5.0	28								
1088	KCRBH-75	SPT-3	3.0	ROCK	LIMESTONE 1	51	27	11	2.65	20.19									6.5	0.234	0.043			
1089	KCRBH-75	SPT-4	4.0	ROCK	SANDSTONE 1	49	24	6	2.71	16.95					5.0	30								
1090	KCRBH-75	CRS-5	4.34 - 4.51	ROCK	SANDSTONE 1	12	Non-Plastic		6.97	1.80	1.68							1.7	2.2					
1091	KCRBH-75	CRS-9	8.25 - 8.39	ROCK	MUDSTONE 2	31	9		7.99	2.23	2.07							12.7	7.3					
1092	KCRBH-75	CRS-12	11.00 - 11.13	ROCK	MUDSTONE 2	32	11		8.68	2.28	2.10							44.4	3.5					
1093	KCRBH-75	CRS-16	15.07 - 15.29	ROCK	MUDSTONE 2	30	7		7.10	1.94	1.81							36.4	3.5					
1094	KCRBH-75	CRS-19	18.30 - 18.43	ROCK	MUDSTONE 2					2.49	2.41							76.1	3.8					
1095	KCRBH-75	Water																	7.5			395	800	
1096	KCRBH-76	SPT-1	1.0	SM	SAND 1	14	Non-Plastic		2.66	1.10					0.0	26			6.5	0.018	0.065			
1097	KCRBH-76	SPT-2	2.0	SM	SAND 1	37	Non-Plastic		2.71	9.66					0.0	26								
1098	KCRBH-76	SPT-3	3.0	ML	SAND 1	58	Non-Plastic		2.68	19.26					0.0	26								
1099	KCRBH-76	SPT-4	4.0	ML	SAND 1	51	Non-Plastic		2.71	15.41					0.0	26								
1100	KCRBH-76	SPT-5	5.0	ROCK	SANDSTONE 1	75	25	7	2.72	15.56														
1101	KCRBH-76	CRS-6	5.0 - 6.0	ROCK	SANDSTONE 1	28	Non-Plastic		2.88	2.30	2.24							2.0	4.3					
1102	KCRBH-76	CRS-10	9.42 - 9.65	ROCK	MUDSTONE 2	36	12		10.40	2.14	1.93							11.8	3.8					
1103	KCRBH-76	CRS-12	11.46 - 11.75	ROCK	MUDSTONE 2	38	9		10.26	2.29	2.07							22.8	4.0					
1104	KCRBH-76	CRS-17	16.00 - 16.20	ROCK	MUDSTONE 2	38	12		13.59	2.31	2.04							42.6	3.6					
1105	KCRBH-76	CRS-20	19.64 - 19.96	ROCK	MUDSTONE 2	96	36	10	8.90	2.37	2.18							5.9	4.2					
1106	KCRBH-76	Water																	7.5			420	600	
1107	KCRBH-77	SPT-1	1.0	SM	BACKFILLED	20	21	4	2.70	19.76					3.0	28								
1108	KCRBH-77	SPT-2	2.0	SM	SAND 2	48	25	8	2.67	22.42					5.0	30			6.5	0.296	0.027			
1109	KCRBH-77	CRS-4	3.88 - 4.00	ROCK	MUDSTONE 1	98	38	13	20.05	1.99	1.66							2.9	6.7					
1110	KCRBH-77	CRS-6	5.83 - 6.00	ROCK	MUDSTONE 1	77	24	6	6.53	2.23	2.09							12.6	2.8					
1111	KCRBH-77	CRS-9	8.00 - 8.20	ROCK	MUDSTONE 2	97	32	11	20.60	1.70	1.41							14.7	2.8					
1112	KCRBH-77	CRS-11	10.55 - 10.69	ROCK	MUDSTONE 2	88	25	5	5.80	2.90	2.74							24.5	6.1					
1113	KCRBH-77	CRS-16	15.54 - 15.70	ROCK	MUDSTONE 2	90	30	10	6.14	2.33	2.20							15.8	2.7					
1114	KCRBH-77	CRS-20	19.15 - 19.43	ROCK	LIMESTONE 2					2.75	2.61							72.0	0.8					
1115	KCRBH-77	Water																	6.6			82	800	

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing#200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			σ _c (Kg/cm ²)	σ ₁ (Kg)					
1116	KCRBH-78	SPT-1	1.0	SM	SAND 2	23	Non-Plastic		2.68	16.08				0.0	30								
1117	KCRBH-78	SPT-2	2.0	SM	SAND 2	30	21	8	2.67	12.38				3.0	30								
1118	KCRBH-78	SPT-3	3.0	SM	SAND 2	22	Non-Plastic		2.69	18.67				0.0	32			6.5	0.031	0.806			
1119	KCRBH-78	CRS-4	3.48 - 3.60	ROCK	LIMESTONE 1				3.26	2.23	2.16						68.8	3.7					
1120	KCRBH-78	CRS-6	5.50 - 5.61	ROCK	MUDSTONE 2	54	26	8	12.29	2.05	1.83						4.2	2.0					
1121	KCRBH-78	CRS-14	13.70 - 13.83	ROCK	MUDSTONE 2	94	28	10	7.66	1.68	1.56						11.7	2.4					
1122	KCRBH-78	CRS-20	19.85 - 20.00	ROCK	MUDSTONE 2	39	27	9	7.51	2.23	2.08						13.6	3.3					
1123	KCRBH-78	Water																				115	1000
1124	KCRBH-79	SPT-1	1.0	SM	SAND 1	12	Non-Plastic		2.71	5.11				0.0	28								
1125	KCRBH-79	SPT-2	2.0	SM	SAND 1	24	Non-Plastic		2.70	16.36				0.0	26								
1126	KCRBH-79	SPT-3	3.0	SM	SAND 2	24	Non-Plastic		2.71	16.82				0.0	32								
1127	KCRBH-79	SPT-4	4.0	ROCK	SANDSTONE 1	30	Non-Plastic		2.67	17.99								6.5	0.345	0.645			
1128	KCRBH-79	CRS-7	6.20 - 6.33	ROCK	SANDSTONE 1	6	Non-Plastic		9.40	1.98	1.81						14.4	3.2					
1129	KCRBH-79	CRS-10	9.30 - 9.45	ROCK	MUDSTONE 2	54	40	15	11.70	2.02	1.81						1.7	4.2					
1130	KCRBH-79	CRS-14	14.0 - 14.15	ROCK	LIMESTONE 2	45	Non-Plastic		5.20	2.12	2.02						23.3	3.3					
1131	KCRBH-79	CRS-20	19.15 - 19.26	ROCK	MUDSTONE 3	59	Non-Plastic		8.30	2.26	2.09						17.2	4.4					
1132	KCRBH-79	Water																				634	1200
1133	KCRBH-80	SPT-1	1.0	SM	SAND 2	25	Non-Plastic		2.69	4.00				0.0	30								
1134	KCRBH-80	SPT-2	2.0	SW-SM	SAND 2	8	Non-Plastic		2.69	18.62				0.0	32			6.6	0.040	0.430			
1135	KCRBH-80	CRS-8	7.89 - 8.0	ROCK	LIMESTONE 1	8	Non-Plastic		6.31	1.96	1.84						91.8	5.2					
1136	KCRBH-80	CRS-15	14.15 - 14.38	ROCK	LIMESTONE 2	7	Non-Plastic		4.42	2.36	2.26						11.1	5.2					
1137	KCRBH-80	CRS-16	15.30 - 15.50	ROCK	LIMESTONE 2	52	Non-Plastic		8.12	2.14	1.98						37.4	1.2					
1138	KCRBH-80	CRS-18	17.18 - 17.48	ROCK	MUDSTONE 3	94	31	13	5.86	1.73	1.63						28.2	2.4					
1139	KCRBH-80	Water																				8211	1200
1140	KCRBH-81	SPT-1	1.0	ML	SAND 1	72	Non-Plastic		2.65	10.10				0.0	26			6.8					
1141	KCRBH-81	SPT-2	2.0	SM	SAND 1	49	Non-Plastic		2.66	12.34				0.0	26			6.5	0.008	0.268			
1142	KCRBH-81	SPT-3	3.0	SM	SAND 2	42	Non-Plastic		2.69	18.27				0.0	30								
1143	KCRBH-81	CRS-4	3.0 - 4.0	ROCK	LIMESTONE 1				2.79	2.12	2.07						150.1	2.4					
1144	KCRBH-81	CRS-18	17.00 - 17.12	ROCK	MUDSTONE 3	87	30	9															
1145	KCRBH-81	CRS-20	19.32 - 19.45	ROCK	MUDSTONE 3	82	28	9	7.45	2.21	1.80						0.7	6.2					
1146	KCRBH-81	Water																				560	1000
1147	KCRBH-82	SPT-1	1.0	SM	BACKFILLED	22	Non-Plastic		2.68	6.01				0.0	28								
1148	KCRBH-82	SPT-2	2.0	ML	BACKFILLED	66	Non-Plastic		2.71	10.40				0.0	28								
1149	KCRBH-82	SPT-3	3.0	SM	BACKFILLED	36	Non-Plastic		2.68	16.35				0.0	30								
1150	KCRBH-82	SPT-4	4.0	ROCK	MUDSTONE 1	84	26	10	2.68	14.40													
1151	KCRBH-82	SPT-5	5.0	ROCK	MUDSTONE 1	86	Non-Plastic		2.65	21.43								6.0	0.093	0.537			
1152	KCRBH-82	SPT-6	6.0	ROCK	MUDSTONE 1	87	Non-Plastic		2.70	17.12													
1153	KCRBH-82	SPT-7	7.0																				
1154	KCRBH-82	SPT-8	8.0																				
1155	KCRBH-82	CRS-10	9.5 - 9.64	ROCK	MUDSTONE 1	99	24	8	14.33	1.89	1.65						1.0	6.7					
1156	KCRBH-82	SPT-9	10.0	ROCK	MUDSTONE 1	93	Non-Plastic		2.69	16.29													
1157	KCRBH-82	CRS-16	15.27 - 15.42	ROCK	SANDSTONE 1	22	Non-Plastic		5.61	2.35	2.22						3.6	4.4					
1158	KCRBH-82	Water																				436	1000

Quantity of Sample was not sufficient for Testing due to the Refusal
 Quantity of Sample was not sufficient for Testing due to the Refusal

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			c _u (Kg/cm ²)	Strain %					
1159	KCRBH-83	SPT-1	1.0	SC-SM	CLAY 1	80	22	7	2.65	11.45													
1160	KCRBH-83	SPT-2	2.0	SC	CLAY 1	71	32	15	2.65	12.60													
1161	KCRBH-83	CRS-3	2.07 - 2.88	ROCK	LIMESTONE 1					4.40	2.36	2.26					60.5	2.6	5.5	0.301	0.645		
1162	KCRBH-83	SPT-3	4.0	ROCK	MUDSTONE 2	92	27	11	2.64	28.43													
1163	KCRBH-83	SPT-4	5.0	ROCK	MUDSTONE 2	92	24	8	2.65	18.29													
1164	KCRBH-83	SPT-5	6.0	ROCK	MUDSTONE 2	56	Non-Plastic		2.63	11.90													
1165	KCRBH-83	CRS12	11.48 - 11.62	ROCK	MUDSTONE 2	99	Non-Plastic		14.70		1.96	1.71					7.3	1.5					
1166	KCRBH-83	Water																7.5				576	800
1167	KCRBH-84	SPT-1	1.0	SM	SAND 1	14	Non-Plastic		2.67	4.00													
1168	KCRBH-84	SPT-2	2.0	SM	SAND 1	16	Non-Plastic		2.68	5.68													
1169	KCRBH-84	SPT-3	3.0	SM	SAND 1	19	Non-Plastic		2.67	10.45									6.5	0.119	0.537		
1170	KCRBH-84	CRS-4	3.84 - 4.0	CL	CLAY 1										0.24								
1171	KCRBH-84	SPT-4	4.0	CL	CLAY 1	79	41	19	2.64	15.48													
1172	KCRBH-84	SPT-5	5.0	ROCK	LIMESTONE 1	94	36	8	2.64	20.99													
1173	KCRBH-84	CRS-6	5.0 - 5.12	ROCK	LIMESTONE 1					8.70	2.25	2.07					57.2	2.5					
1174	KCRBH-84	SPT-6	6.0	ROCK	LIMESTONE 1	78	30	7	2.64	11.72													
1175	KCRBH-84	CRS-11	11.0 - 11.14	ROCK	MUDSTONE 2	93	27	12		6.01	2.39	2.25					33.3	1.7					
1176	KCRBH-84	CRS-16	15.0 - 16.0	ROCK	LIMESTONE 2					2.11	2.42	2.37					134.9	7.3					
1177	KCRBH-84	CRS-19	18.30 - 18.51	ROCK	LIMESTONE 1					8.25	2.17	2.01					38.6	1.3					
1178	KCRBH-84	Water																7.5				379	1000
1179	KCRBH-85	SPT-1	1.0	CL-ML	BACKFILLED	78	22	7	2.66	21.54													
1180	KCRBH-85	SPT-2	2.0	CL	CLAY 1	94	37	14	2.59	23.16													
1181	KCRBH-85	SPT-3	3.0	CL	CLAY 2	87	37	15	2.63	15.57													
1182	KCRBH-85	SPT-4	4.0	ROCK	MUDSTONE 1	99	41	15	2.67	14.08													
1183	KCRBH-85	CRS-5	4.79 - 4.95	ROCK	MUDSTONE 1	80	36	15	9.36		2.12	1.94					7.8	6.3					
1184	KCRBH-85	SPT-5	5.0	ROCK	MUDSTONE 1	95	30	15	2.66	23.52													
1185	KCRBH-85	SPT-6	6.0	ROCK	LIMESTONE 1																		
1186	KCRBH-85	CRS-7	6.33 - 6.51	ROCK	LIMESTONE 1					4.87	2.35	2.24					17.5	2.1					
1187	KCRBH-85	SPT-7	8.0	ROCK	MUDSTONE 2	88	35	14	2.65	22.00													
1188	KCRBH-85	SPT-8	9.0	ROCK	MUDSTONE 2	86	39	16	2.65	10.96													
1189	KCRBH-85	SPT-9	10.0	ROCK	MUDSTONE 2	68	36	10	2.63	26.67													
1190	KCRBH-85	SPT-10	11.0	ROCK	MUDSTONE 2	74	40	19	2.66	24.26													
1191	KCRBH-85	SPT-11	14.0	ROCK	LIMESTONE 1																		
1192	KCRBH-85	CRS-15	14.37 - 14.67	ROCK	MUDSTONE 3	99	35	13		7.76	2.34	2.17					15.5	2.1					
1193	KCRBH-85	CRS-17	16.56 - 16.87	ROCK	MUDSTONE 3	84	32	11	6.95	2.34	2.18						22.5	5.2					
1194	KCRBH-85	CRS-18	18.25 - 18.43	ROCK	MUDSTONE 3	95	34	13	8.15	2.25	2.08						15.5	2.3					
1195	KCRBH-85	Water																6.5				260	632

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			σ _v (Kg/cm ²)	σ _h (Kg)					
1196	KCRBH-86	SPT-1	1.0	SC	SAND 2	25	24	11	2.67	4.66													
1197	KCRBH-86	SPT-2	2.0	SC	SAND 2	31	23	10	2.66	18.17													
1198	KCRBH-86	SPT-3	3.0	SM	SAND 2	36		Non-Plastic	2.68	22.95													
1199	KCRBH-86	SPT-4	4.0	SC	SAND 2	33	36	12	2.65	17.49													
1200	KCRBH-86	SPT-5	5.0	ROCK	MUDSTONE 2	75	37	11	2.62	20.56													
1201	KCRBH-86	CRS-6	5.83 - 6.0	ROCK	MUDSTONE 2	92	32	9		11.32	2.14	1.93					3.1	4.0					
1202	KCRBH-86	SPT-6	6.0	ROCK	MUDSTONE 2	90	34	11	2.63	14.04													
1203	KCRBH-86	SPT-7	7.0	ROCK	MUDSTONE 2	81	31	8	2.65	3.22													
1204	KCRBH-86	SPT-8	8.0	ROCK	MUDSTONE 2	87	34	9	2.65	18.01													
1205	KCRBH-86	CRS-9	8.85 - 9.0	ROCK	MUDSTONE 2	99	42	16		9.68	2.19	2.00					4.4	2.4					
1206	KCRBH-86	SPT-9	9.0	ROCK	MUDSTONE 2	80	36	10	2.64	17.12													
1207	KCRBH-86	SPT-10	10.0	ROCK	MUDSTONE 2	89	33	9	2.65	19.27													
1208	KCRBH-86	SPT-11	11.0	ROCK	MUDSTONE 2	95	35	14	2.65	18.14													
1209	KCRBH-86	CRS-12	11.81 - 12.0	ROCK	MUDSTONE 2	96	32	10		10.89	2.13	1.92					6.9	2.5					
1210	KCRBH-86	SPT-12	12.0	ROCK	MUDSTONE 2	83	30	9	2.65	16.94													
1211	KCRBH-86	SPT-13	13.0	ROCK	MUDSTONE 2	89	35	10	2.64	18.71													
1212	KCRBH-86	SPT-14	14.0	ROCK	MUDSTONE 2	57		Non-Plastic	2.64														
1213	KCRBH-86	SPT-15	15.0	ROCK	MUDSTONE 2	91	33	11	2.67	21.42													
1214	KCRBH-86	SPT-16	16.0	ROCK	MUDSTONE 2	65	32	10	2.66	14.32													
1215	KCRBH-86	SPT-17	17.0	ROCK	MUDSTONE 2																		
1216	KCRBH-86	CRS-18	17.75 - 17.93	ROCK	MUDSTONE 2	73		Non-Plastic		7.20	2.23	2.08					18.7	2.0					
1217	KCRBH-86	SPT-18	18.0	ROCK	MUDSTONE 2	73	33	12	2.65	12.33													
1218	KCRBH-86	SPT-19	19.0	ROCK	MUDSTONE 2	83	34	19	2.64	12.88													
1219	KCRBH-86	Water																	6.8			188	349
1220	KCRBH-87	SPT-1	1.0																				
1221	KCRBH-87	SPT-2	2.0	SC-SM	SAND 2	49	25	5	2.68	15.63													
1222	KCRBH-87	SPT-3	3.0	ML	SAND 2	74		Non-Plastic	2.65	16.60													
1223	KCRBH-87	SPT-4	4.0	SM	SAND 2	44		Non-Plastic	2.71	19.91													
1224	KCRBH-87	CRS-5	4.75 - 4.85	ROCK	SANDSTONE 1					2.26	2.19	2.14											
1225	KCRBH-87	SPT-5	5.0	ROCK	SANDSTONE 1																		
1226	KCRBH-87	SPT-6	6.0	ROCK	SANDSTONE 1	41		Non-Plastic	2.72	21.18													
1227	KCRBH-87	Water																				749	800
1228	KCRBH-88	SPT1	1.0	CL	BACKFILLED	58	29	11	2.72	15.10													
1229	KCRBH-88	SPT-2	2.0	CL	BACKFILLED	52	31	11	2.72	20.32													
1230	KCRBH-88	SPT-3	3.0	SC	SAND 1	43	27	15	2.66	14.24													
1231	KCRBH-88	SPT-4	4.0	CL	CLAY 1	91	39	14	2.72	20.17													
1232	KCRBH-88	SPT-5	5.0	SC	SAND 2	40	35	16	2.71	10.34													
1233	KCRBH-88	SPT-6	6.0	SC	SAND 2	43	28	12	2.71	9.23													
1234	KCRBH-88	SPT-7	7.0	SC	SAND 2	50	26	12	2.66	7.29													
1235	KCRBH-88	SPT-8	8.0	SC	SAND 2	35	27	13	2.68	9.53													
1236	KCRBH-88	CRS-9	8.19 - 8.31	SC	SAND 2	27	26	12		13.93	2.12	1.86											
1237	KCRBH-88	SPT-9	9.0	SM	SAND 2	34		Non-Plastic	2.69	14.48													
1238	KCRBH-88	CRS-13	12.53 - 12.68	ROCK	SANDSTONE 1	31		Non-Plastic		12.18	2.15	1.92											
1239	KCRBH-88	CRS-18	17.11 - 17.26	ROCK	MUDSTONE 1	93	38	16	13.90	2.16	1.90												
1240	KCRBH-88	CRS-24	23.54 - 23.75	ROCK	MUDSTONE 1	99	37	18	8.25	2.28	2.10												
1241	KCRBH-88	CRS-29	28.41 - 28.57	ROCK	SANDSTONE 2	17	30	14	3.79	2.49	2.40												
1242	KCRBH-88	Water																				1473	7100

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORTORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
1243	KCRBH-89	SPT-1	1.0	SM	SAND 1	31	Non-Plastic		2.68	19.10								6.5	0.124	0.645			
1244	KCRBH-89	SPT-2	2.0	SC	CLAY 1	79	24	8	2.64	19.98													
1245	KCRBH-89	SPT-3	3.0	ROCK	SANDSTONE 1	51	Non-Plastic		2.67	19.48													
1246	KCRBH-89	SPT-4	4.0	ROCK	SANDSTONE 1	14	Non-Plastic		2.68	24.78													
1247	KCRBH-89	SPT-5	5.0	ROCK	SANDSTONE 1																		
1248	KCRBH-89	SPT-6	6.0	ROCK	SANDSTONE 1	62	Non-Plastic		2.67	18.66													
1249	KCRBH-89	SPT-7	7.0	ROCK	SANDSTONE 1	24	Non-Plastic		2.67	18.68													
1250	KCRBH-89	SPT-8	8.0	ROCK	MUDSTONE 1	75	Non-Plastic		2.67	17.79													
1251	KCRBH-89	SPT-9	9.0	ROCK	MUDSTONE 1	77	Non-Plastic		2.68	20.75													
1252	KCRBH-89	CRS-12	11.32 - 11.42	ROCK	MUDSTONE 1	88	Non-Plastic		10.21		2.19	1.99					0.8	8.6					
1253	KCRBH-89	Water																6.5			330	684	
1254	KCRBH-90	SPT-1	1.0	SM	SAND 2	13	Non-Plastic		2.71	12.23													
1255	KCRBH-90	SPT-2	2.0	SM	SAND 2	16	Non-Plastic		2.68	10.76													
1256	KCRBH-90	SPT-3	3.0	SC	SAND 2	13	23	9	2.70	14.07								6.5	0.058	0.430			
1257	KCRBH-90	SPT-4	4.0	SC	SAND 2	29	24	10	2.71	5.03													
1258	KCRBH-90	SPT-5	5.0	SC	SAND 2	23	26	12	2.70	15.41													
1259	KCRBH-90	SPT-6	6.0	SC	SAND 2	39	26	11	2.67	12.77													
1260	KCRBH-90	SPT-7	7.0	SC	SAND 2	17	30	11	2.65	10.54													
1261	KCRBH-90	SPT-8	8.0	SM	SAND 2	6	Non-Plastic		2.68	11.14													
1262	KCRBH-90	SPT-9	9.0	SC	SAND 2	36	29	14	2.68	12.22													
1263	KCRBH-90	CRS-12	11.00 - 12.00	SC	SAND 2	30	30	11															
1264	KCRBH-90	Water																6.0			189	800	

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CLIENT: The JICA Study Team
 PROJECT: Preparatory Survey (II) on Karachi Circular Railway Revival Project in Karachi.

SUMMARY OF LABORATORY TEST RESULTS

Sr.No.	Borehole#	Sample#	Depth (m)	Classification of Soil/Rock	Layer Designation	Passing #200 %	Atterberg Limit		Specific Gravity of Soil	Moisture Content %	Bulk Density (gm/cc)	Dry Density (gm/cc)	UU/Triaxial Compression Test		Direct Shear	Consolidation	Unconfined Compression Strength		pH Value	Sulphate Content in Soil %	Chloride Content in Soil %	Sulphate Content in Water mg/Liter	Chloride Content in Water mg/Liter
							LL	PI					Cohesion (Mpa)	Angle of Internal Friction (°)			qu (Kg/cm ²)	Strain %					
SUMMARY OF LABORATORY TEST RESULTS ON UDS SAMPLES																							
1264	BH-24A	UDS-1	2.50 - 2.95	CL	CLAY 1	73	31	13	2.68	21.32													
1265	BH-26A	UDS-1	5.50 - 5.90	CL	CLAY 1	53	27	13	2.756	11.94													
1266	BH-45A	UDS-1	2.50 - 3.0	CL	CLAY 1	65	21	8	2.658	9.47													
1267	BH-48A	UDS-1	4.30 - 4.80	CL	CLAY 2	75	34	12	2.711	16.87			0.270	0									
1268	BH-50A	UDS-1	4.50 - 4.95	CL	CLAY 1	92	37	14	2.687	28.15			Results are awaited										
1269	BH-51A	UDS-2	6.50 - 6.95	CL	CLAY 1	77	Non-Plastic		2.704	19.17													
1270	BH-52A	UDS-1	4.0 - 4.30	CL	CLAY 1	59	Non-Plastic		2.679	17.16													
1271	BH-53A	UDS-1	3.0 - 3.47	CL	CLAY 1	75	42	16	2.813	27.15			0.00	17									
1272	BH-54A	UDS-1	3.5 - 3.95	CL	CLAY 1	60	27	12	2.765	12.94			0.005	9									
1273	BH-55A	UDS-1	2.60 - 2.91	CL	CLAY 1	76	34	11	2.713	30.2			0.015	7									
1274	BH-56A	UDS-1	3.50 - 3.95	CL	CLAY 1	73	32	13	2.688	25.8			0.020	0									
1275	BH-57A	UDS-1	5.45 - 5.95	CL	CLAY 1	60	Non-Plastic		2.513	20.38													
1276	BH-58A	UDS-1	5.5 - 5.80	CL	CLAY 1	96	36	14	2.781	9.46			0.24	0									
1277	BH-59A	UDS-1	7.0 - 7.50	CL	CLAY 2	52	Non-Plastic		2.781	14.58													
1278	BH-61A	UDS-1	5.5 - 5.91	CL	CLAY 2	68	35	16	2.895	26.87			Results are awaited										
1279	BH-62A	UDS-1	4.0 - 4.50	CL	CLAY 1	74	33	13	2.684	20.8			0.100	15									
1280	BH-63A	UDS-1	2.50 - 2.95	CL	CLAY 1	94	36	14	2.845	17.63			0.140	0									
1281	BH-64A	UDS-1	3.0 - 3.35	CL	CLAY 1	51	35	19	2.700	23.89													
1282	BH-66A	UDS-1	5.30 - 5.65	CL	CLAY 2	87	46	22	2.619	17.95			0.12	0									
1283	BH-88A	UDS-1	4.0 - 4.50	CL	CLAY 1	98	34	10	2.714	28.92			0.015	10.00									