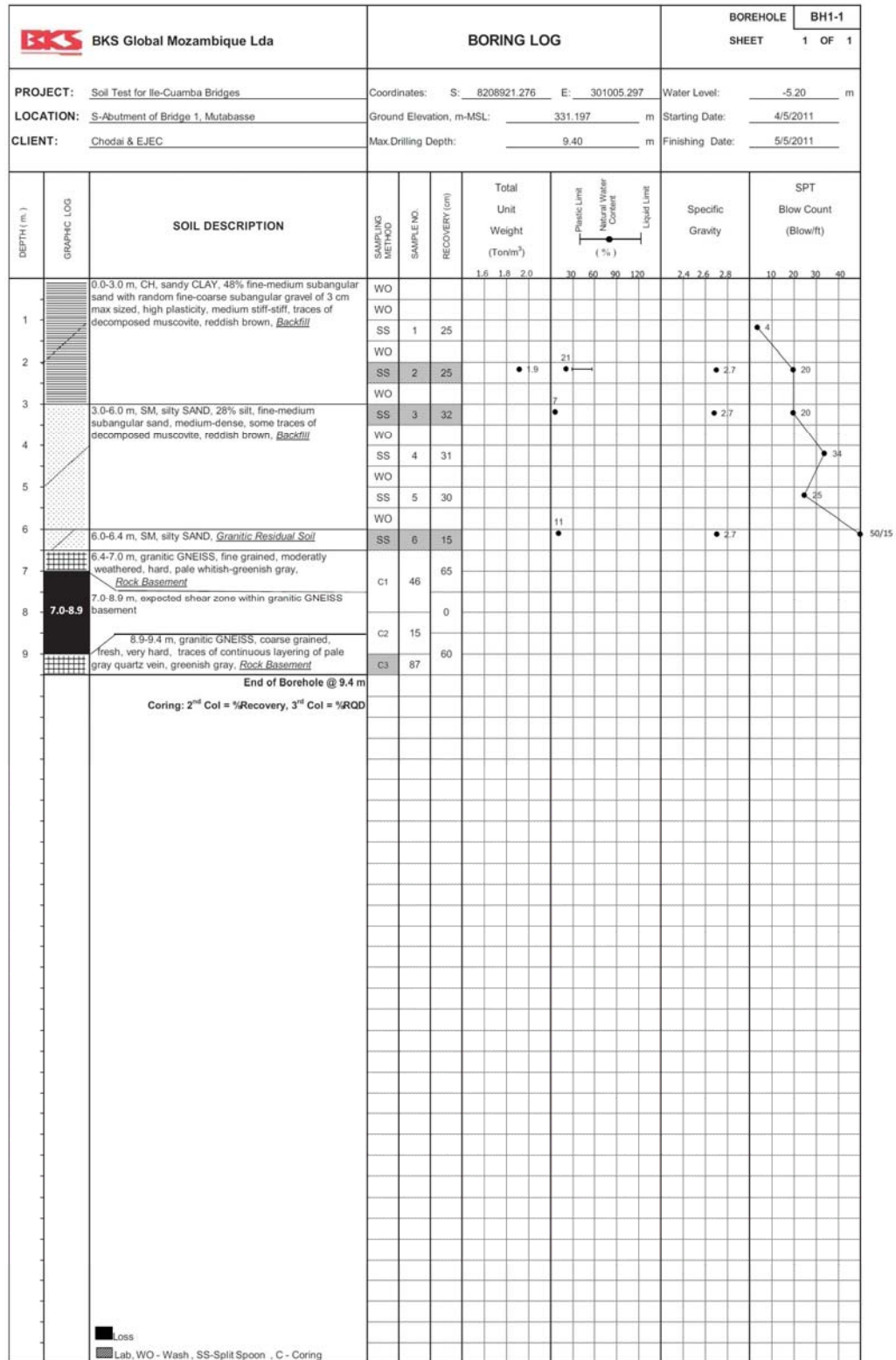








### 6.3.2 Boring Logs



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BKS Global Mozambique Lda			BORING LOG					BOREHOLE BH1-2	
								SHEET 1 OF 1	
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8209019.095 E: 300960.382					Water Level: -1.40 m	
LOCATION: N-Abutment of Bridge 1, Mutabasse			Ground Elevation, m-MSL: 328.647 m					Starting Date: 3/5/2011	
CLIENT: Chodai & EJEC			Max.Drilling Depth: 7.60 m					Finishing Date: 3/5/2011	
DEPTH ( m. )	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit (%)	Shrinkage Limit (%)	SPT Blow Count (Blow/ft)
1		0.0-2.3m, SM, silty SAND, 21% silt with random fine subangular gravel of 2 cm max sized, fine-medium subangular sand, traces of decomposed muscovite & layering, medium-very dense, striped color of yellowish brown-brown-pale grayish white, <u>Granitic Residual Soil</u>	WO			1.6 1.8 2.0	30 60 90 120	2.4 2.6 2.8	10 20 30 40
2			SS	1	38	2.0	15	2.6	21
3		2.3-5.0 m, expected shear zone within granitic GNEISS basement	WO						
4	2.3-5.0		SS	2	30				
5		5.0-7.6 m, granitic GNEISS, coarse grained, highly weathered on top 20 cm then fresh thoroughly & very hard, traces of continuous layering, greenish gray, <u>Rock Basement</u>	C1	Loss					
6			C2	Loss					
7			C3	Loss					
			C4	Loss	39				
			C4	93	89				
			C5	92	43				
End of Borehole @ 7.6 m									
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD									

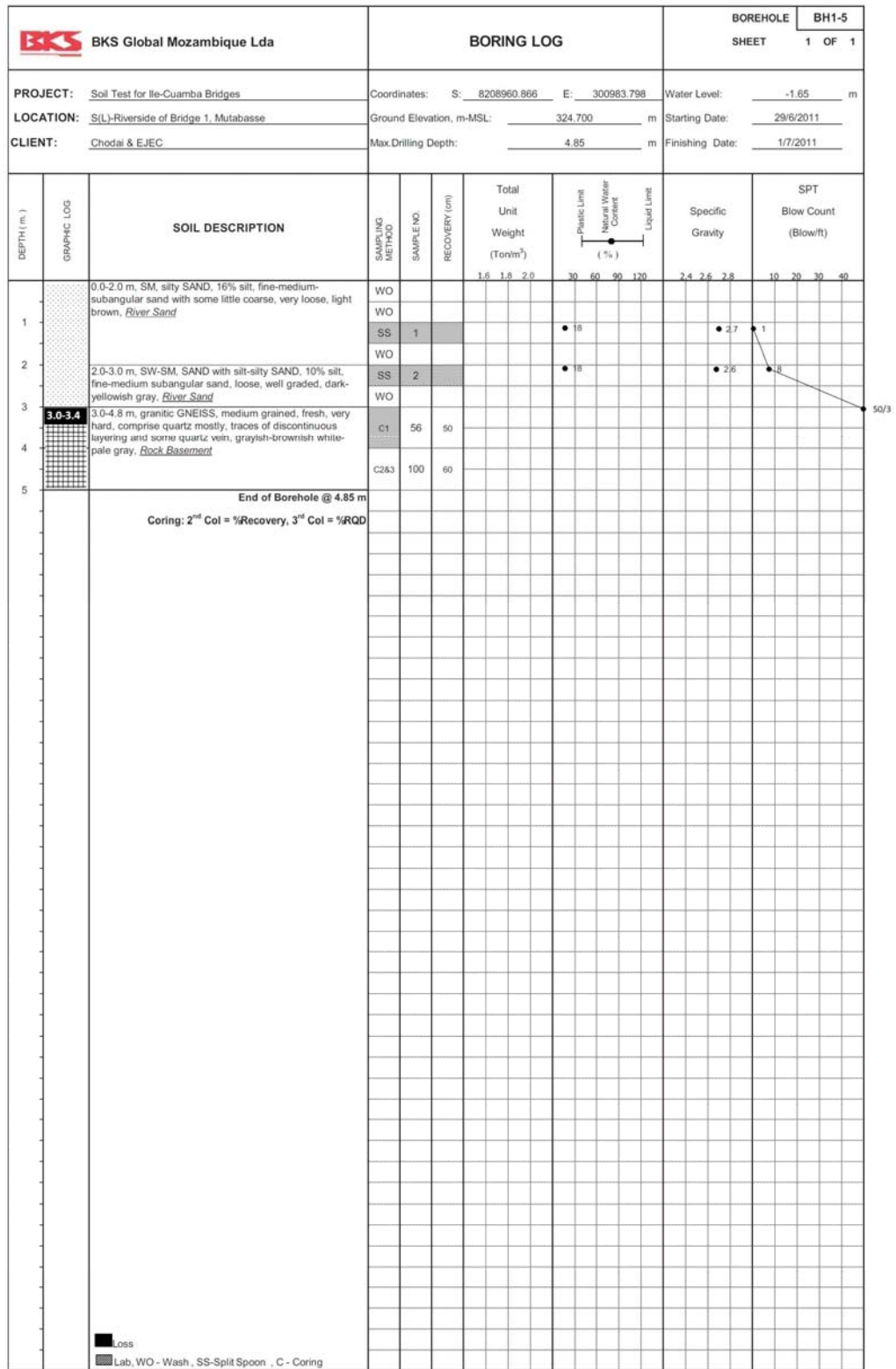
*Preparatory Survey Report (Outline Design Study)  
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 <b>BKS Global Mozambique Lda</b>			<b>BORING LOG</b>						BOREHOLE <b>BH1-3</b>		
									SHEET <b>1 OF 1</b>		
<b>PROJECT:</b> Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8208995.967 E: 300999.983						Water Level: -0.60 m		
<b>LOCATION:</b> N(R)-Riverside of Bridge 1, Mutabasse			Ground Elevation, m-MSL: 324.439 m						Starting Date: 6/5/2011		
<b>CLIENT:</b> Chodai & EJEC			Max.Drilling Depth: 4.40 m						Finishing Date: 6/5/2011		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m <sup>3</sup> )	Plastic Limit ( % )	Shrinkage Limit ( % )	Liquid Limit	Specific Gravity	SPT Blow Count (Blow/ft)
1		0.0-1.4 m, SW-SM, SAND with silt & gravel, 27% fine subangular gravel of 2 cm max sized, 10% silt, fine-medium subangular sand, well graded, very dense, brown-greenish gray, <u>River Sand</u>	WO			1.6 1.8 2.0	30 60 90 120			2.4 2.6 2.8	10 20 30 40
2		1.4-3.0 m, expected shear zone within granitic GNEISS basement	SS	1	25					2.7	50/11
3			C1	Loss							
4		3.0-4.4 m, granitic GNEISS, coarse grained, moderate-highly weathered on top 40 cm & fresh throughly, hard-very hard, traces of discontinuous layering of pink quartz vein, pale pinkish-greenish gray, <u>Rock Basement</u>	C2	Loss							
			C3	0	96						
<p align="center"><b>End of Borehole @ 4.4 m</b></p> <p align="center">Coring: 2<sup>nd</sup> Col = %Recovery, 3<sup>rd</sup> Col = %RQD</p>											
<p> Loss</p> <p> Lab, WO - Wash, SS-Split Spoon, C - Coring</p>											

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<b>BKS Global Mozambique Lda</b>		<b>BORING LOG</b>				<b>BOREHOLE</b> <b>BH1-4</b> <b>SHEET</b> <b>1 OF 1</b>			
<b>PROJECT:</b> Soil Test for Ile-Cuamba Bridges		Coordinates:    S:    8208991.846    E:    300972.127				Water Level:    -1.20    m			
<b>LOCATION:</b> N(L)-Riverside of Bridge 1, Mutabasse		Ground Elevation, m-MSL:    326.231    m				Starting Date:    1/5/2011			
<b>CLIENT:</b> Chodai & EJEC		Max.Drilling Depth:    4.40    m				Finishing Date:    2/5/2011			
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit Liquid Limit Shrinkage Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
1		0.0-1.4 m, SM, silty SAND, 30% silt, fine-medium subangular sand, very dense, dark brown, <u>River Sand</u>	WO			1.6 1.8 2.0	30 60 90 120	2.4 2.6 2.8	10 20 30 40
2		1.4-4.4 m, granitic GNEISS, coarse grained, slightly weathered-fresh, hard, not obvious traces of discontinuous layering, pale greenish gray, <u>Rock Basement</u>	SS	1	40	2.0	17	2.7	50/25
3			C1	100	92				
4			C2	100	81				
			C3	100					
			C4	100	53				
End of Borehole @ 4.4 m Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD									
<div style="display: flex; justify-content: space-between; align-items: center;"> <div>  Loss   Lab, WO - Wash, SS-Split Spoon, C - Coring         </div> </div>									

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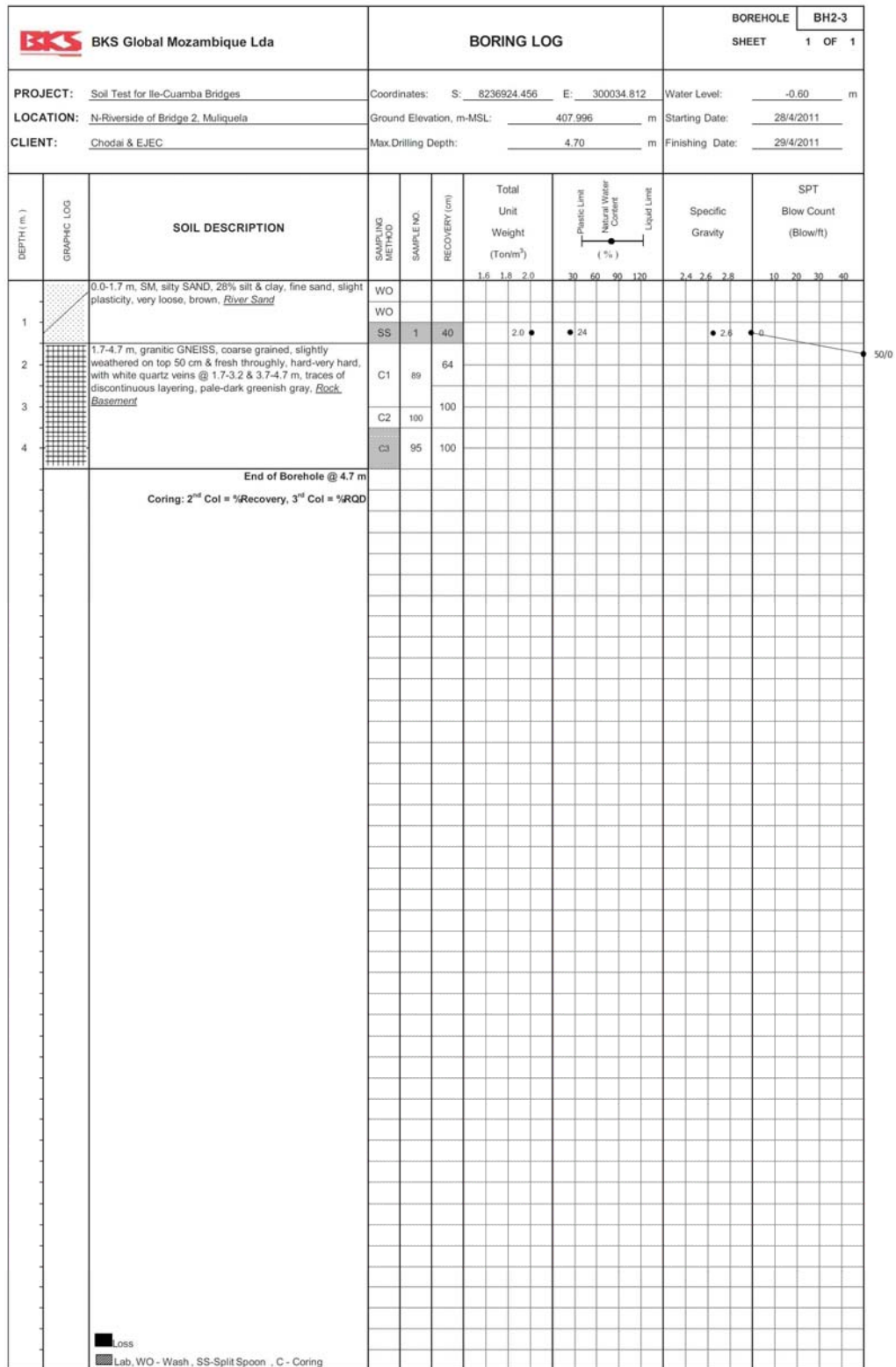


PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8236887.290 E: 30055.639			Water Level: -1.90 m					
LOCATION: S-Abutment of Bridge 2, Muliquela			Ground Elevation, m-MSL: 412.924 m			Starting Date: 30/4/2011					
CLIENT: Chodai & EJEC			Max.Drilling Depth: 9.80 m			Finishing Date: 1/5/2011					
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit (%)	Natural Water Content (%)	Liquid Limit	Specific Gravity	SPT Blow Count (Blow/ft)
0.0-2.0 m	CL, CLAY with gravel, 10% fine subangular gravel of 2 mm max sized & 20% coarse subangular gravel of 3 cm max sized, medium plasticity, medium stiff, light reddish brown, <u>Backfill</u>	WO									
1		WO									
		SS 1	23								5
2		WO									
		SS 2	20			2.0	16			2.7	5
3		WO									
		SS 3	45			1.9	36			2.6	6
4		WO									
		SS 4	26								18
5		WO									
		SS 5	30								21
6		WO									
		SS 6	28			1.9	26			2.7	
7		WO									
		C1	100	68							
8		C2	100	44							
9		C3	100	70							
10											
End of Borehole @ 9.8 m											
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD											

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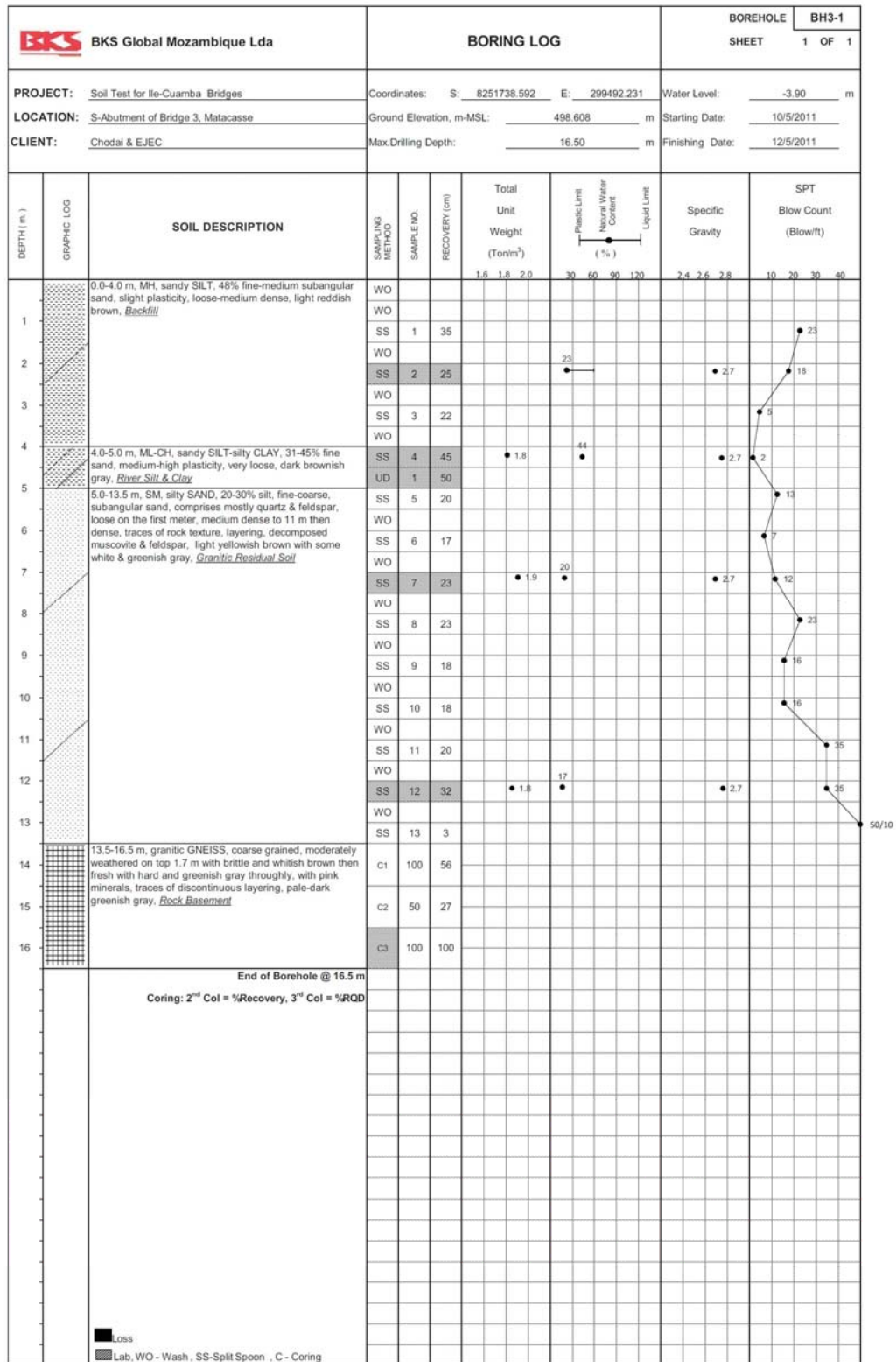


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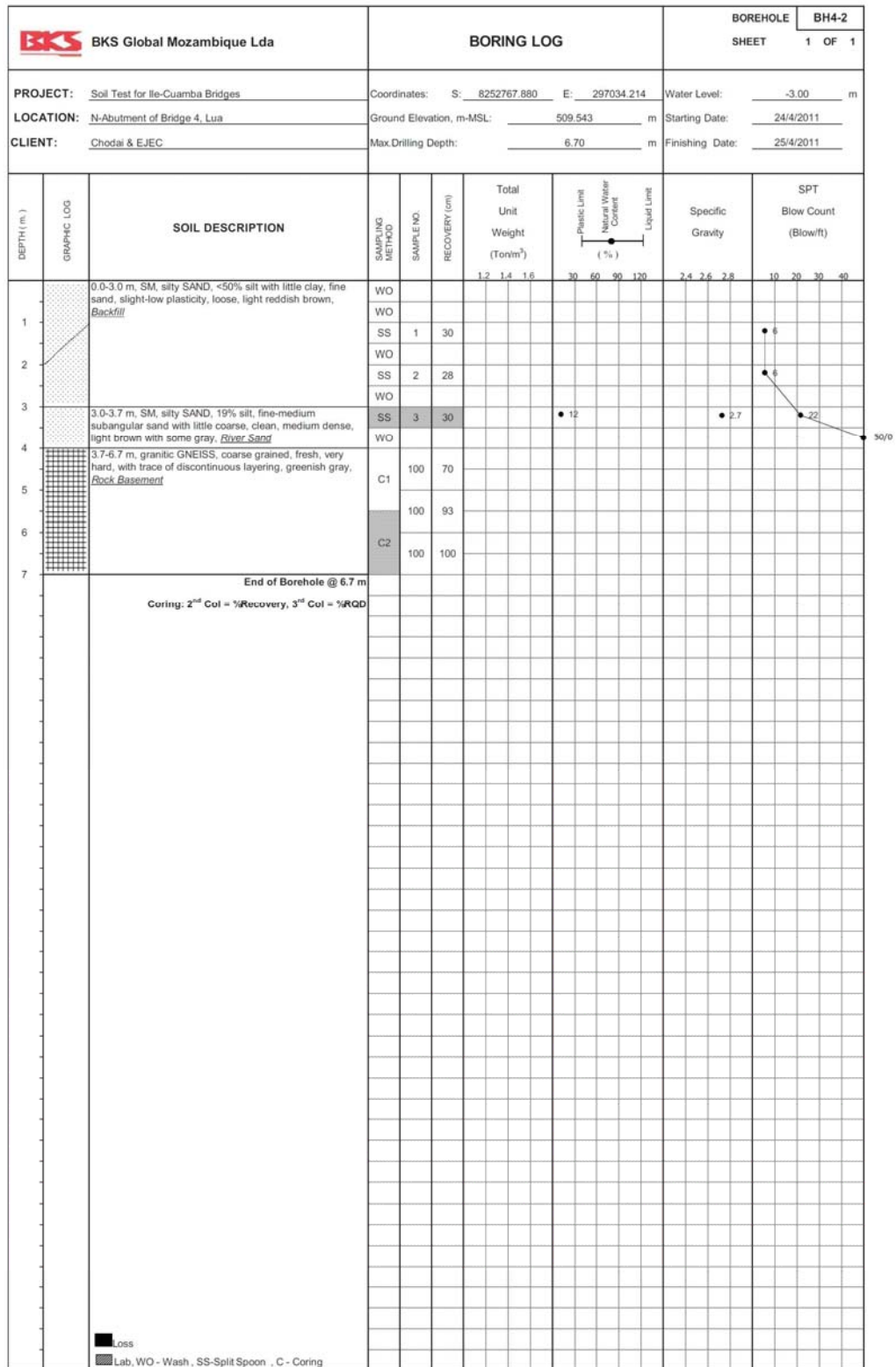


BKS Global Mozambique Lda			BORING LOG			BOREHOLE BH3-2				
						SHEET	1 OF 1			
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8251763.534 E: 299462.557			Water Level: -4.10 m				
LOCATION: N-Abutment of Bridge 3, Matacasse			Ground Elevation, m-MSL: 498.804 m			Starting Date: 7/5/2011				
CLIENT: Chodai & EJEC			Max.Drilling Depth: 16.60 m			Finishing Date: 9/5/2011				
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (mm)	Total Unit Weight (Ton/m <sup>3</sup> )	Plastic Limit Natural Water Content Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)	
0.0-4.0 m		0.0-4.0 m, ML, sandy SILT, 33% fine-coarse subangular sand, medium dense, light reddish brown. <u>Backfill</u>	WO							
1			WO							
			SS	1	30				22	
2			WO							
			SS	2	30	1.9	26	2.7	18	
3			WO							
			SS	3	29				14	
4		4.0-5.0 m, ML-CH, sandy SILT-silty CLAY, <50% fine sand, medium-high plasticity, very loose, dark brownish gray. <u>River Silt &amp; Clay</u>	SS	4	32				2	
5			WO							
		5.0-6.0 m, SM, silty SAND, 15% silt, fine-coarse subangular sand, medium dense, brownish gray. <u>Granitic Residual Soil</u>	SS	5	10				13	
6			WO							
		6.0-8.0 m, SM, silty SAND, 37% silt, fine-medium subangular sand, traces of rock texture, shiny decomposed muscovite & feldspar, very Loose, pale whitish gray. <u>Granitic Residual Soil</u>	SS	6	25	1.7	45	2.7	2	
7			WO							
		8.0-10.0 m, SM, silty SAND, 20% silt, fine-coarse, subangular sand, medium dense, yellowish brown. <u>Granitic Residual Soil</u>	SS	7	10				6	
8			WO							
			SS	8	8				22	
9			WO							
		10.0-13.6 m, SM, silty SAND, 20% silt, fine-coarse subangular sand, traces of rock texture, shiny decomposed muscovite & feldspar, medium dense-dense, dark yellowish brown-dark yellowish gray. <u>Granitic Residual Soil</u>	SS	9	15		18	2.7	22	
10			WO							
			SS	10	30				16	
11			WO							
			SS	11	32				41	
12			WO							
		13.6-16.6 m, granitic GNEISS, coarse grained, slightly weathered-fresh, very hard, greenish gray. <u>Rock Basement</u>	SS	12	35				24	
13			WO							
			SS	13	22		18	2.7	50/10	
14			C1	100	100					
15			C2	93	83					
16			C3	53	100					
End of Borehole @ 16.6 m										
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD										

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BKS Global Mozambique Lda		BORING LOG					BOREHOLE BH4-1 SHEET 1 OF 1		
PROJECT: Soil Test for Ile-Cuamba Bridges		Coordinates: S: 8252727.030 E: 297090.913					Water Level: -1.00 m		
LOCATION: S-Abutment of Bridge 4, Lua		Ground Elevation, m-MSL: 507.986 m					Starting Date: 22/4/2011		
CLIENT: Chodai & EJEC		Max.Drilling Depth: 5.00 m					Finishing Date: 23/4/2011		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m <sup>3</sup> )	Plastic Limit Liquid Limit Shrinkage (%)	Specific Gravity	SPT Blow Count (Blow/ft)
1		0.0-1.5 m, SP-SM, SAND with silt&gravel, 10% silt, 20% angular gravel of schist, fine-medium subangular sand, traces of shiny decomposed muscovite, medium dense, dark brown, <i>Crust with Schist Residual Soil</i>	WO			1.2 1.4 1.6	30 60 90 120	2.4 2.6 2.8	10 20 30 40
2		1.5-5.0 m, granitic GNEISS, coarse grained, moderately weathered on top 0.5 m then fresh throughly, very hard, with trace of discontinuous layering, greenish gray-dark gray, <i>Rock Basement</i>	WO	1	24		14	2.8	18
3			C1	100	85				
4				100	100				
5			C2	100	100				
End of Borehole @ 5.0 m									
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD									
<div> <div>Loss</div> <div>Lab, WO - Wash, SS-Split Spoon, C - Coring</div> </div>									

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<div> BKS Global Mozambique Lda</div>			<div>BORING LOG</div>				<div>BOREHOLE BH5-1</div>		
							<div>SHEET 1 OF 2</div>		
<div>PROJECT: Soil Test for Ile-Cuamba Bridges</div>			<div>Coordinates: S: 8265611.369 E: 295199.796</div>				<div>Water Level: -4.40 m</div>		
<div>LOCATION: S-Abutment of Bridge 5, Ualasse</div>			<div>Ground Elevation, m-MSL: 569.957 m</div>				<div>Starting Date: 18/4/2011</div>		
<div>CLIENT: Chodai &amp; EJEC</div>			<div>Max.Drilling Depth: 26.50 m</div>				<div>Finishing Date: 22/4&amp;23/6/2011</div>		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit Shrinkage Water Content (%)	Specific Gravity	SPT Blow Count (Blow/ft)
		0.0-7.0 m, SM, silty SAND, 43% silt, fine-medium subangular sand with some coarse & little fine gravel of 0.5 cm max sized, slight plasticity, loose-medium dense, light reddish brown, <u>Backfill</u>	WO						
1			WO						
			SS	1	24				2
2			WO						
			SS	2	29	1.9	19	2.7	8
3			WO						
			SS	3	20	2.0	25	2.7	6
4			WO						
			SS	4	20				6
5			WO						
			SS	5	20				4
6			WO						
			SS	6	45				3
7			WO						
		7.0-8.0 m, SM, silty SAND, 19% silt, fine-medium, subangular sand, clean, loose, blackish brown, <u>River Sand</u>	SS	7/1	30	2.1	13	2.6	5
8			SS	7/2	33				4
		8.0-9.0 m, SM, silty SAND, <50% sil, fine sand, slight plasticity, loose, pale greenish gray, <u>Granitic Residual Soil</u>	SS	8	23				6
9			WO						
		9.0-11.0 m, SM, silty SAND, 30% silt, fine-coarse subangular sand with little fine gravel of 3 mm max sized, medium dense, whitish gray, <u>Granitic Residual Soil</u>	SS	9	43	1.9	17	2.6	15
10			WO						
			SS	10	20				15
11			WO						
			SS	11/1	32				19
12			SS	11/2	25				10
		11.5-17.0 m, SM, silty SAND, 35% silt, fine-medium sand with little coarse, loose-medium dense, traces of shiny decomposed muscovite with layering texture of schist, light brown, <u>Granitic Residual Soil</u>	SS	12	34	1.7	34	2.7	16
13			WO						
			SS	13	35				14
14			WO						
			SS	14	34				16
15			WO						
			SS	15	38				17
16			WO						
			SS	16	26				15
17			WO						
		17.0-20.0 m, SM, silty SAND, 14% silt, fine-coarse subangular sand of quartz & decomposed feldspar with some fine subangular-subround quartz gravel of 1 cm max sized, dense, pale brown with white mottle, <u>Granitic Residual Soil</u>	SS	17	30		12	2.7	43
18			WO						
			SS	18	25				36
19			WO						
			SS	19	23				31
20			WO						
		20.0-24.0 m, SM, silty SAND, 39% silt, fine-medium subangular sand, loose-medium dense, traces of shiny decomposed muscovite with layering texture of schist, light brown, <u>Granitic Residual Soil</u>	SS	20	32				25
21			WO						
			SS	21	45	1.8	24	2.7	28
22			WO						
			SS	22	30				38
23			WO						
			SS	23	38				41
24			WO						
		24.0-26.5 m, SW-SM, SAND, 12-25% silt, fine-coarse subangular sand with some fine quartz gravel of 1 cm max sized, well graded, very dense, pale-light brown, <u>Granitic Residual Soil</u>	SS	24	20		12	2.6	50/24
25			WO						
			SS	25	35		26	2.7	50/25
			WO						

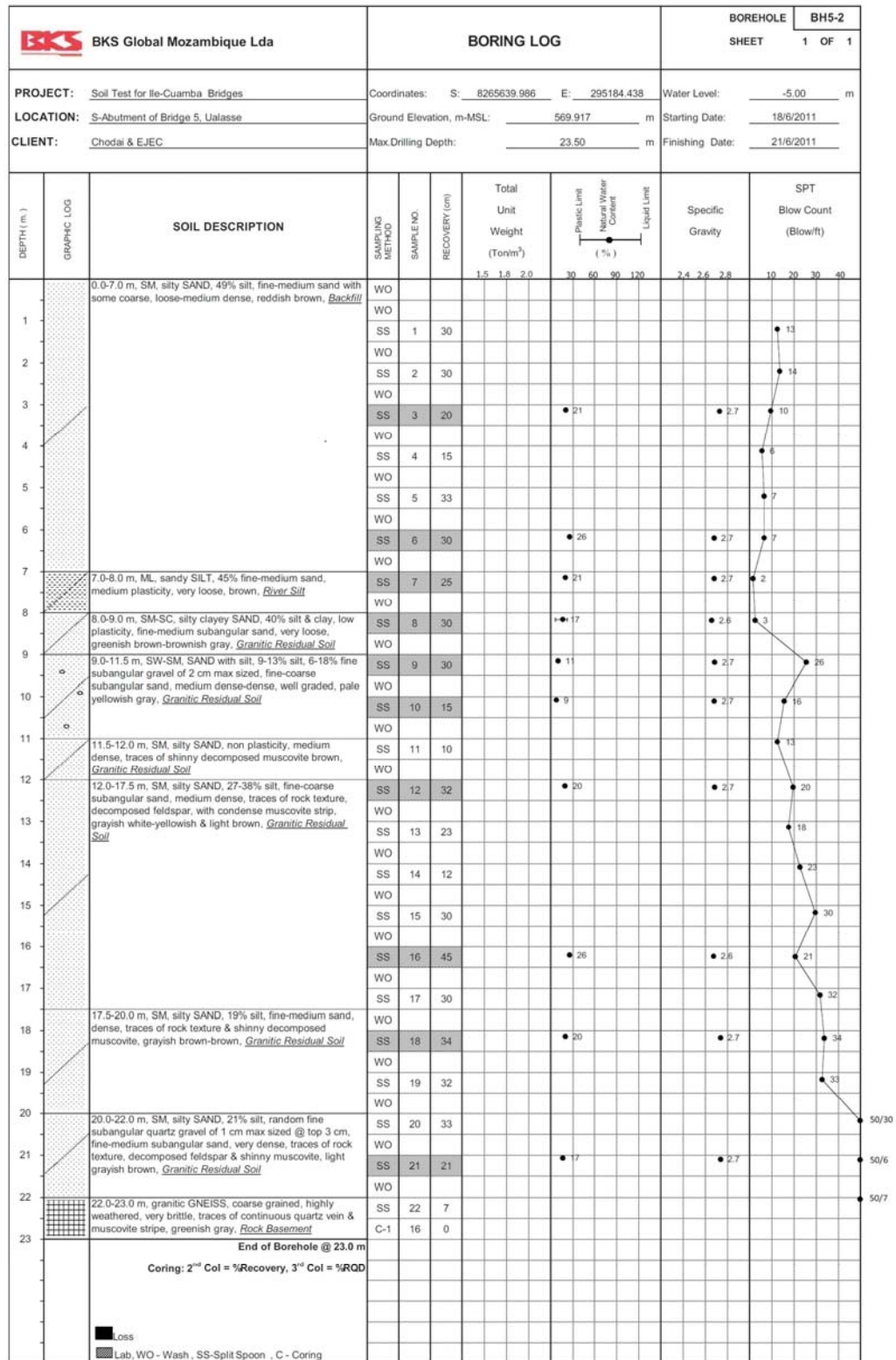


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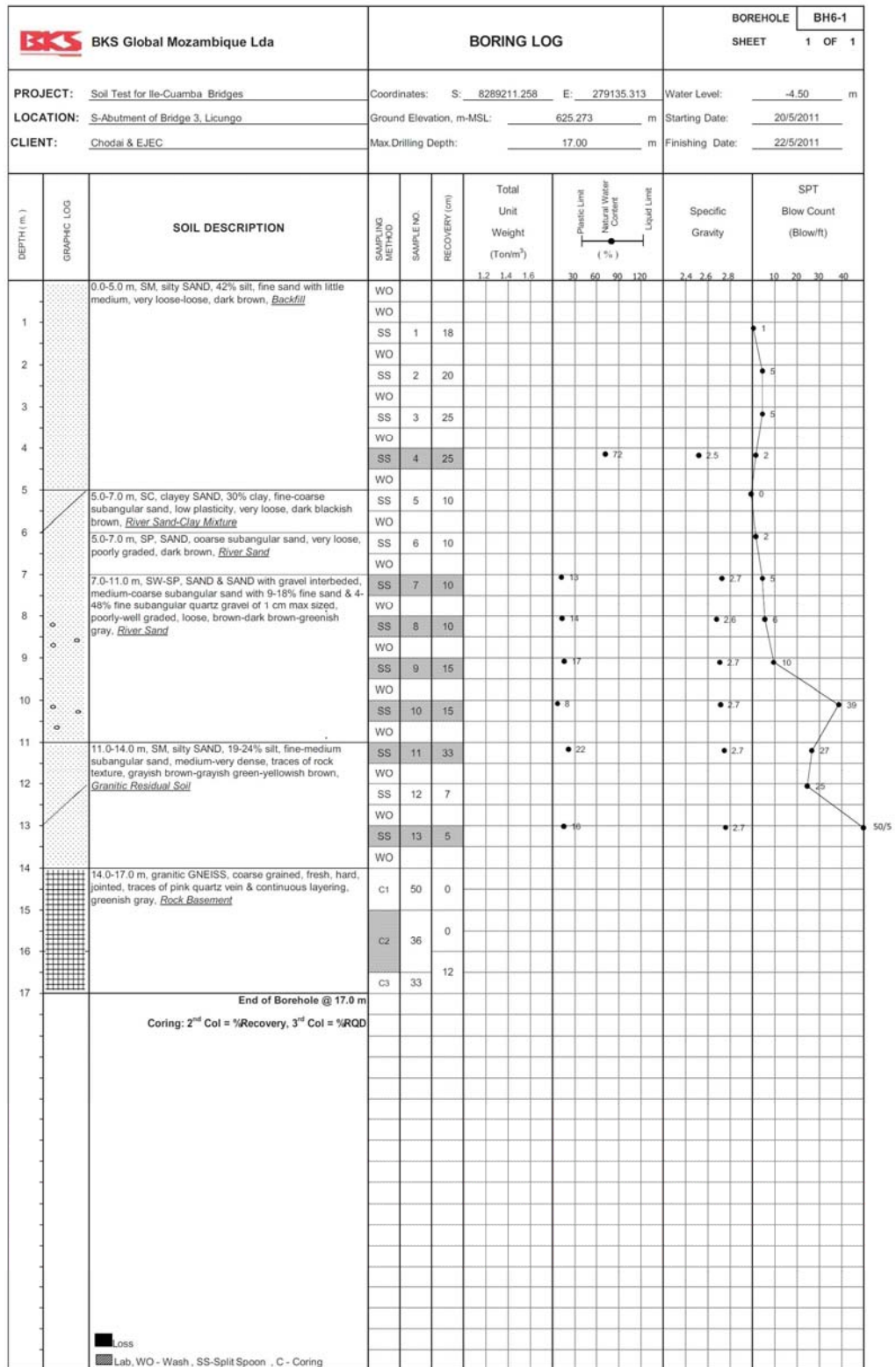
BKS Global Mozambique Lda			BORING LOG				BORING NO. BH5-1		
							SHEET 2 OF 2		
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: N: 8265611.369 E: 295199.796				Water Level: -4.40 m		
LOCATION: S-Abutment of Bridge 5, Ualasse			Ground Elevation (m-MSL): 569.957 m				Starting Date: 18/4/2011		
CLIENT: Chodai & EJEC			Max.Drilling Depth: 26.50 m				Finishing Date: 22/4&23/6/2011		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Organic Content (%)	Plastic Limit Natural Water Content Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
26		24.0-26.5 m, SW-SM, SAND, 12-25% silt, fine-coarse subangular sand with some fine quartz gravel of 1 cm max sized, well graded, very dense, pale-light brown, <u>Granitic Residual Soil</u>	SS	25	35				
		End of Borehole @ 26.5 m	WO						
		Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD	SS	20	30		19	2.7	50/21



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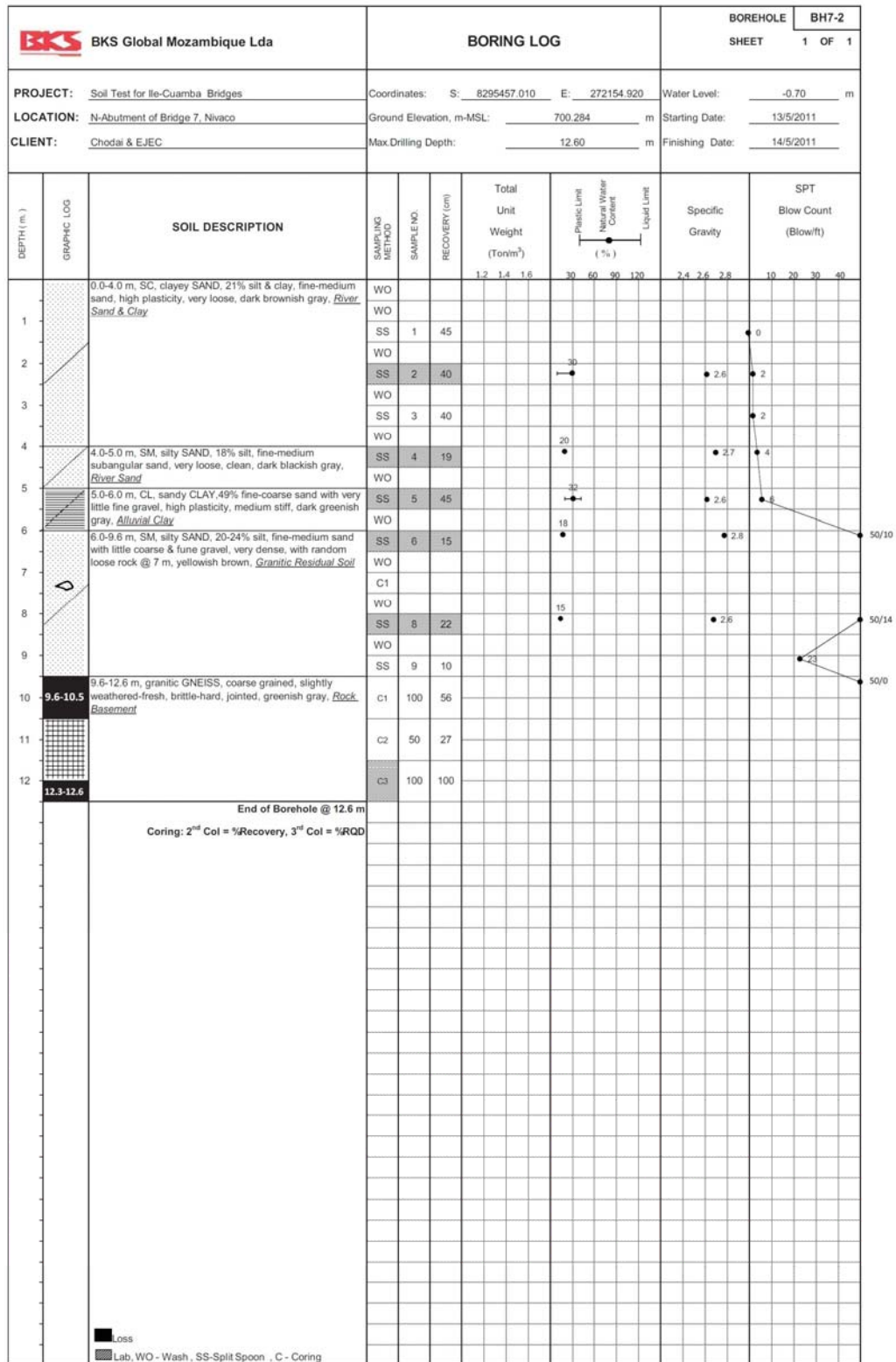


BKS Global Mozambique Lda			BORING LOG			BOREHOLE BH6-2			
						SHEET	1 OF 1		
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8289224.292 E: 279094.467			Water Level: -4.80 m			
LOCATION: N-Abutment of Bridge 3, Licungo			Ground Elevation, m-MSL: 626.000 m			Starting Date: 17/5/2011			
CLIENT: Chodai & EJEC			Max.Drilling Depth: 19.10 m			Finishing Date: 20/5/2011			
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (mm)	Total Unit Weight (Ton/m <sup>3</sup> )	Plastic Limit Natural Water Content Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
0.0-5.0 m		SM, silty SAND, 36% silt, fine sand with little medium, very loose-loose, dark brown, dry or above groundwater level, <u>Backfill</u>	WO						
1			WO						
			SS	1	30				5
2			WO						
			SS	2	30				3
3			WO						
			SS	3	35		45	2.5	5
4			WO						
			SS	4	31				5
5			WO						
			SS	5	45				0
6		5.0-8.0 m, SM, silty SAND, 22% silt, fine sand with little medium, very loose, blackish brown, submerge under groundwater table, <u>River Sand</u>	WO						
			SS	6	45				0
7			WO						
			SS	7	45		49	2.5	2
8			WO						
		8.0-9.0 m, SP, SAND with gravel, <50% fine gravel of 0.5 cm max sized, coarse subangular sand, loose, poorly graded, dark brownish gray, <u>River Sand</u>	SS	8	10				6
9			WO						
		9.0-11.0, SW, SAND with silt, 10% silt with very random of coarse subround gravel of 3 cm max sized, fine-coarse subangular sand, clean, well graded, medium dense, yellowish gray, <u>River Sand</u>	SS	9	12				11
10			WO						
			SS	10	22		10	2.7	19
11			WO						
		11.0-16.0 m, SM, silty SAND, 23% silt, fine-medium sand, traces of decomposed feldspar & shiny muscovite, medium dense-dense, yellowish gray-pale & dark brown, <u>Granitic Residual Soil</u>	SS	11	27				11
12			WO						
			SS	12	22				13
13			WO						
			SS	13	27				27
14			WO						
			SS	14	24				21
15			WO						
			SS	15	26		19	2.5	50/27
16			WO						
17		16.0-19.1 m, granitic GNEISS, coarse grained, moderately weathered on top 10 cm then fresh throughly, very hard, traces of quartz vein & continuous layering, greenish gray, <u>Rock Basement</u>	C1	30	54				
18			C2	93	86				
19			C3	100	72				
End of Borehole @ 19.1 m									
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD									

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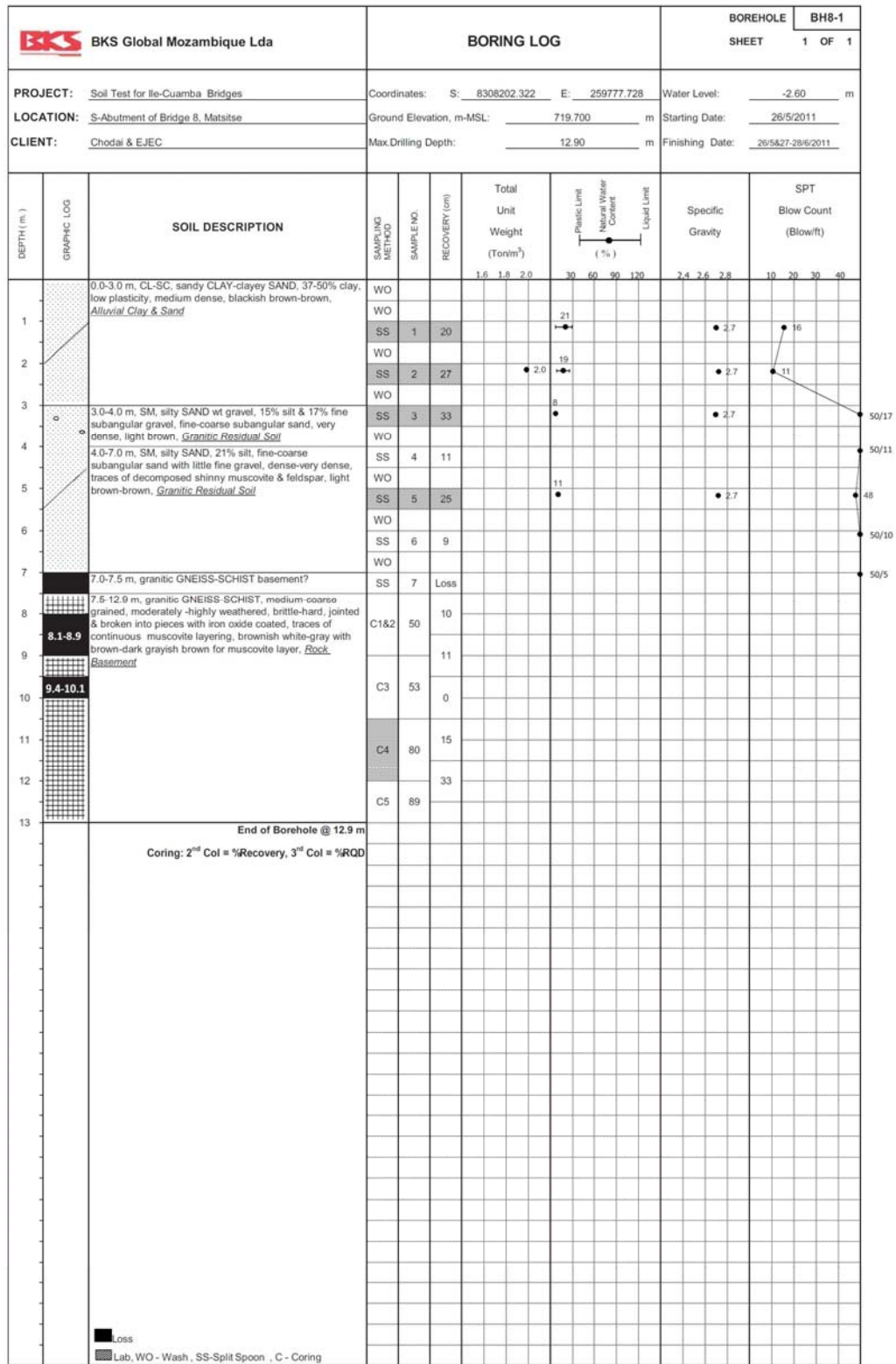
BKS Global Mozambique Lda			BORING LOG				BOREHOLE BH7-1				
							SHEET 1 OF 1				
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8295440.976 E: 272177.866				Water Level: -1.55 m				
LOCATION: S-Abutment of Bridge 7, Nivaco			Ground Elevation, m-MSL: 699.740 m				Starting Date: 15/5/2011				
CLIENT: Chodai & EJEC			Max.Drilling Depth: 8.80 m				Finishing Date: 16/5/2011				
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit (%)	Natural Water Content (%)	Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
		1.0-2.0 m, SM, silty SAND, 20% silt & clay & 10% fine subangular gravel of 0.5 cm max sized, low plasticity, very loose, reddish brown, <i>Backfill</i>	WO			1.2 1.4 1.6	30 60 90 120			2.4 2.6 2.8	10 20 30 40
1			WO								
			SS	1	7						2
2			WO								
		2.0-4.0 m, SM, silty SAND, 49% silt, fine sand, slight plasticity, very loose, dark blackish gray, <i>River Sand</i>	SS	2	45						0
3			WO								
			SS	3	35		37			2.6	0
4			WO								
		4.0-5.0 m, SW, SAND, fine-medium subangular sand with very little coarse & silt, loose, clean, well graded, dark grayish brown, <i>River Sand</i>	SS	4	30		18			2.7	4
5			WO								
		5.0-5.8 m, SM, silty SAND, 15% silt, fine-medium subangular sand with little coarse, medium dense, clean, grayish green, <i>Granitic Residual Soil</i>	SS	5	24		15			2.7	35
6			WO								
	6.0-6.6	5.8-8.8 m, granitic GNEISS, coarse grained, moderately weathered on top 2 m with pale grayish white then slightly weathered-fresh thoroughly with greenish gray, brittle-hard, jointed & iron oxide coated with some black shear plane at the bottom, <i>Rock Basement</i>	C1	30	0						
7			C2	15	10						
	7.4-7.8		C3	62	0						
8			C4	72							
9											
End of Borehole @ 8.8 m											
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD											

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<b>BKS Global Mozambique Lda</b>			<b>BORING LOG</b>			BOREHOLE    BH8-2 SHEET         1 OF 1			
<b>PROJECT:</b> Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8308227.682 E: 259773.500			Water Level: -1.80 m			
<b>LOCATION:</b> N-Abutment of Bridge 8, Matsitse			Ground Elevation, m-MSL: 721.500 m			Starting Date: 27/5/2011			
<b>CLIENT:</b> Chodal & EJEC			Max.Drilling Depth: 9.00 m			Finishing Date: 27/5/25-27/6/2011			
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (%)	Total Unit Weight (Ton/m³)	Plastic Limit Natural Water Content Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
						1.2 1.4 1.6	30 60 90 120	2.4 2.6 2.8	10 20 30 40
1		0.0-2.0 m, SC, clayey SAND, 45% clay, fine-medium subangular sand with very random fine angular quartz gravel of 1 cm max sized, low-medium plasticity, medium dense, grayish brown, <u>Alluvial Clay &amp; Sand</u>	WO				15	2.7	14
2		2.0-3.0 m, SM, silty SAND wt gravel, 15% silt, 15% fine subangular gravel, fine-medium sand, very dense, yellowish brown, <u>Granitic Residual Soil</u>	SS	1	30		8	2.7	50/20
3		3.0-5.0 m, SM, silty SAND, 21-28% silt, fine-medium sand, very dense, trace of granitic rock texture & decomposed feldspar to be silt, light-yellowish brown, <u>Granitic Residual Soil</u>	SS	2	25		16	2.7	50/24
4			WO				17	2.7	50/27
5		5.0-8.0 m, Granitic Residual Soil	SS	4	40				50/5
6			WO						50/4
7			SS	6	Loss				50/5
8		8.0-9.0 m, SM, silty SAND, 30% silt, fine subangular sand, very dense, traces of rock texture, greenish gray & light brown, <u>Granitic Residual Soil</u>	WO						50/6
9		8.5-11.0 m, granitic GNEISS, coarse grained, moderately - highly weathered, partly washable into sand for muscovite-rich layers with very brittle, all others brittle-hard but broken into pieces with iron oxide coated, traces of continuous layering, whitish gray-grayish brown, <u>Rock Basement</u>	C1	40	0				
10			C2	10	0				
11			C3	10	0				
End of Borehole @ 11.0 m									
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD									
12									
13									
14									
15									
16									
17									
18									
19									
20									



BKS Global Mozambique Lda		BORING LOG				BOREHOLE BH9-1	
						SHEET 1 OF 1	
PROJECT: Soil Test for Ille-Cuamba Bridges		Coordinates: S: 8308760.314 E: 259944.034				Water Level: -1.70 m	
LOCATION: S-Abutment of Bridge 9, Namisagua		Ground Elevation, m-MSL: 707.500 m				Starting Date: 23/5/2011	
CLIENT: Chodai & EJEC		Max.Drilling Depth: 8.02 m				Finishing Date: 24/5/2011	

DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit Natural Water Content Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)				
										1.2	1.4	1.6	30
0.0-2.5 m		0.0-2.5 m, SM, silty SAND, 13-39% silt, fine-coarse subangular sand with random fine subangular gravel of 2 cm max sized, slight plasticity, traces of decomposed shiny muscovite & felspar, yellowish brown-brown, <u>Granitic Residual Soil</u>	WO										
1		WO											
		SS 1	15				12		2.7	15			
2		WO											
2.5-5.0 m		2.5-5.0 m, SW, SAND, fine-medium subangular sand, very dense, well graded, traces of decomposed shiny muscovite, brown, <u>Granitic Residual Soil</u>	SS 2	34				22		2.7	22		
3		C1	Loss										
4		SS 3	15				10		2.7				
5		SS 4	7										
5.0-7.0 m		5.0-7.0 m, SM, silty SAND, 16% silt, fine-coarse subangular sand with little fine gravel, very dense, yellowish brown, <u>Granitic Residual Soil</u>	C2	Loss									
6		SS 5	Loss										
		WO											
7		SS 6	20				11		2.6				
7.0-8.0 m		7.0-8.0 m, granitic GNEISS basement	WO										
8		SS 7	Loss										
			C3	Loss									
End of Borehole @ 8.0 m													
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD													

Loss

Lab, WO - Wash, SS-Split Spoon, C - Coring

50/0

50/15

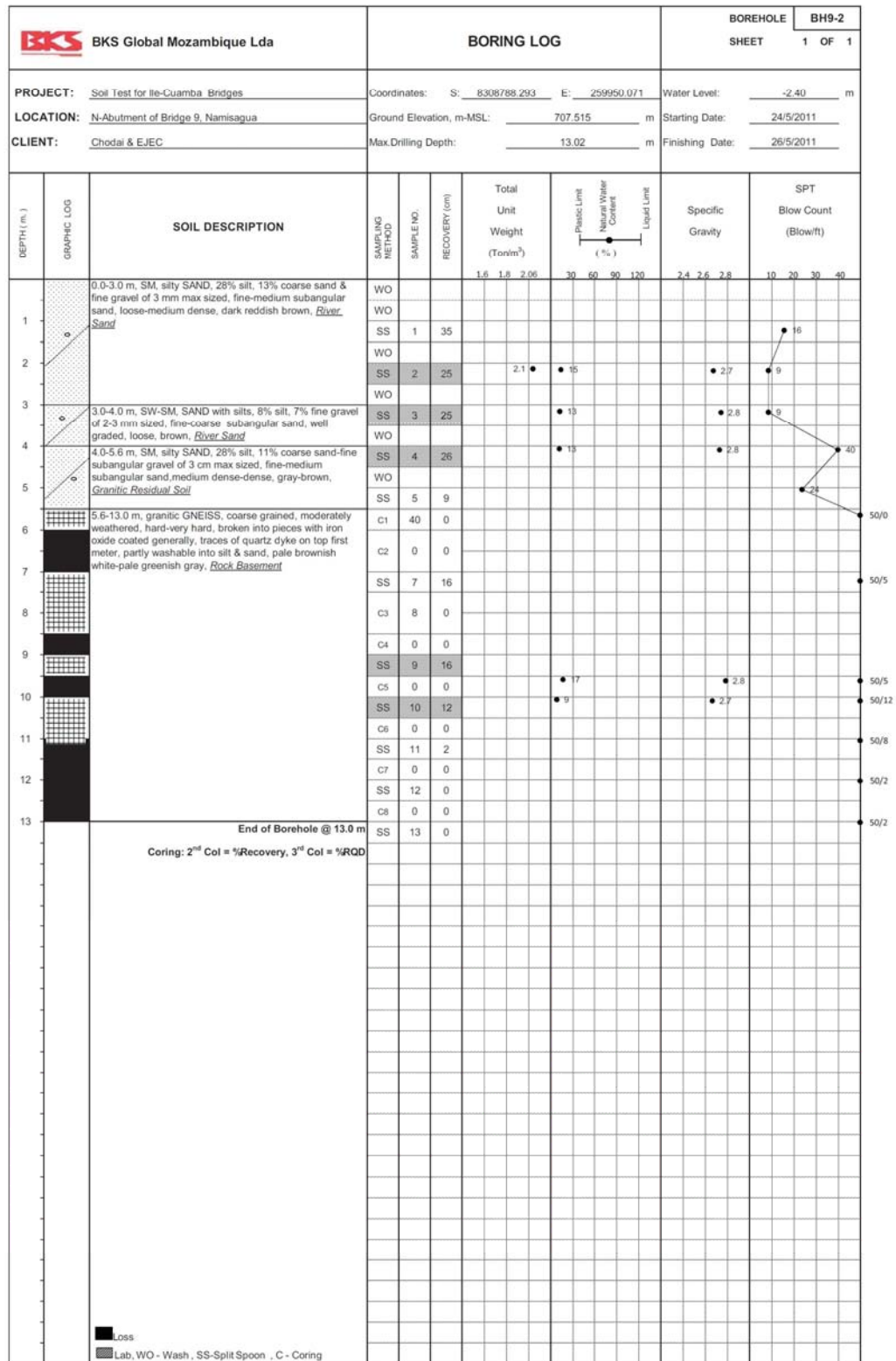
50/8

50/12

50/4

50/2

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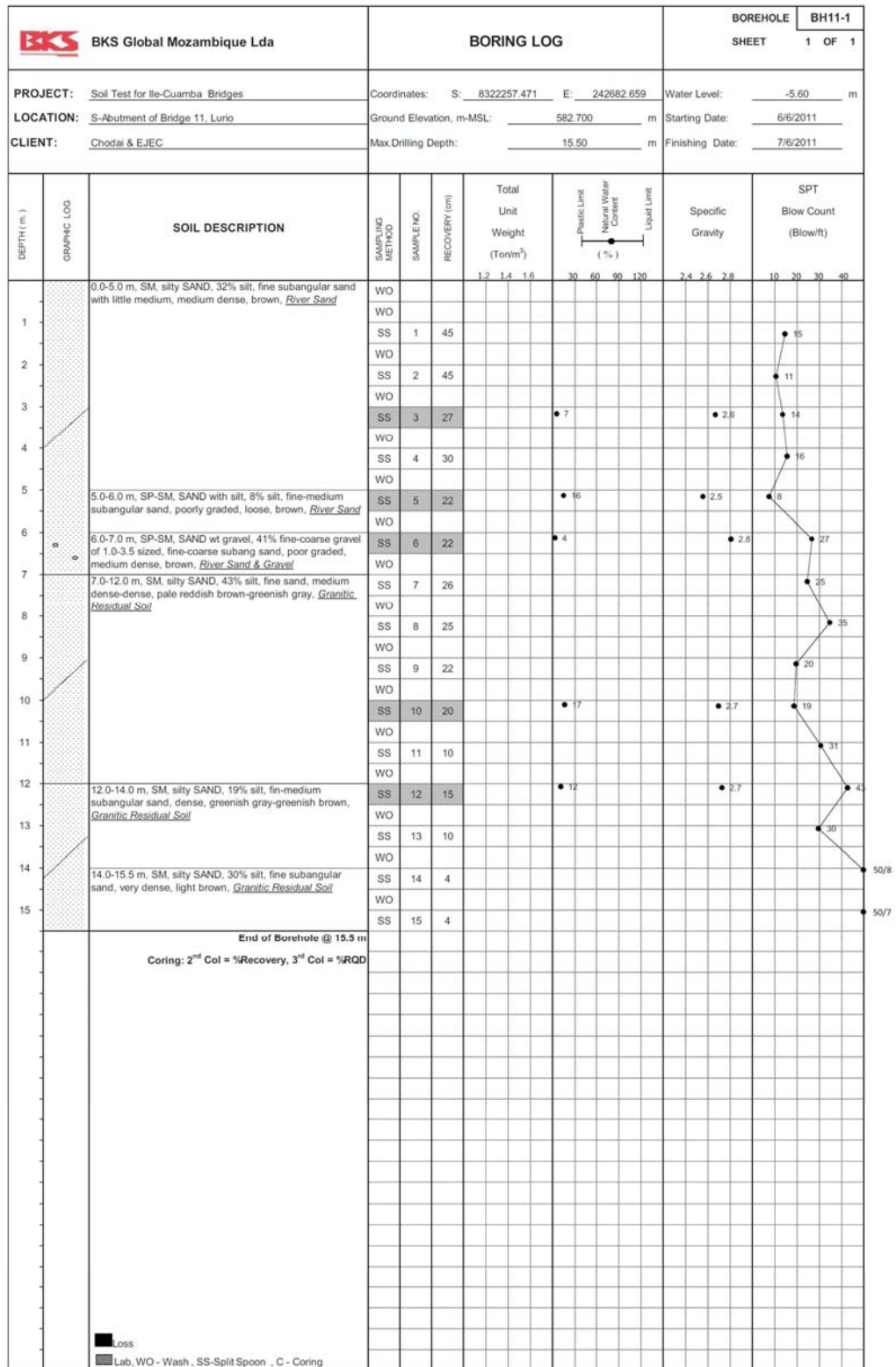
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<b>BKS Global Mozambique Lda</b>			<b>BORING LOG</b>						BOREHOLE <b>BH10-2</b>	
									SHEET <b>1 OF 1</b>	
<b>PROJECT:</b> Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8319967.221 E: 246640.890						Water Level: -0.70 m	
<b>LOCATION:</b> N-Abutment of Bridge 10, Nuhusse			Ground Elevation, m-MSL: 601.872 m						Starting Date: 30/5/2011	
<b>CLIENT:</b> Chodai & EJEC			Max.Drilling Depth: 4.30 m						Finishing Date: 31/5/2011	
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit Liquid Limit Shrinkage Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)	
1		0.0-1.3 m, ML, SILT, non plasticity, medium dense, dark brown, <u>Natural Crust</u>	WO			1.2 1.4 1.6	30 60 90 120	2.4 2.6 2.8	10 20 30 40	
2		1.3-4.3 m, granitic GNEISS, coarse grained, moderately-highly weathered, hard, broken into pieces with iron oxide coated generally, traces of some joints, continuous layering & pink quartz vein, brownish white-white, lowest 3 cm is dark greenish gray rock, <u>Rock Basement</u>	SS	1	Loss				50/2	
3			C1	10	0					
4			C2	0	0					
			C3	20	0					
			C4	0	0					
End of Borehole @ 4.3 m										
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD										
Loss Lab, WO - Wash, SS-Split Spoon, C - Coring										

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 BKS Global Mozambique Lda			BORING LOG						BOREHOLE BH10-3		
									SHEET 1 OF 1		
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8319948.254 E: 246667.478						Water Level: -1.20 m		
LOCATION: S-Riverside of Bridge 10, Nuhusse			Ground Elevation, m-MSL: 597.488 m						Starting Date: 29/5/2011		
CLIENT: Chodai & EJEC			Max. Drilling Depth: 5.50 m						Finishing Date: 29/5/2011		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m³)	Plastic Limit (%)	Shrinkage Limit (%)	Liquid Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
0.0-1.0 m		0.0-1.0 m, SM, silty SAND, slight plasticity, very dense, blackish brown, <u>River Sand</u>	WO								
1.0-4.0 m		1.0-4.0 m, SM, silty SAND with gravel, 16-19% silt, 15-19% fine subangular gravel of 2-3 mm with random 1 cm max sized of brown quartz, fine-coarse subangular sand, very dense, traces of rock texture, yellowish-light brown & greenish gray, <u>Granitic Residual Soil</u>	SS	1	40		6			2.7	50/13
2.0-3.0 m			WO								50/12
3.0-4.0 m			SS	2	10						50/12
4.0-5.5 m		4.0-5.5 m, QUARTZ dyke within granitic GNEISS basement	WO				10			2.8	50/6
5.0-5.5 m			SS	3	13						50/4
End of Borehole @ 5.5 m			WO								
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD			SS	5	Loss						
 Loss  Lab, WO - Wash, SS-Split Spoon, C - Coring											

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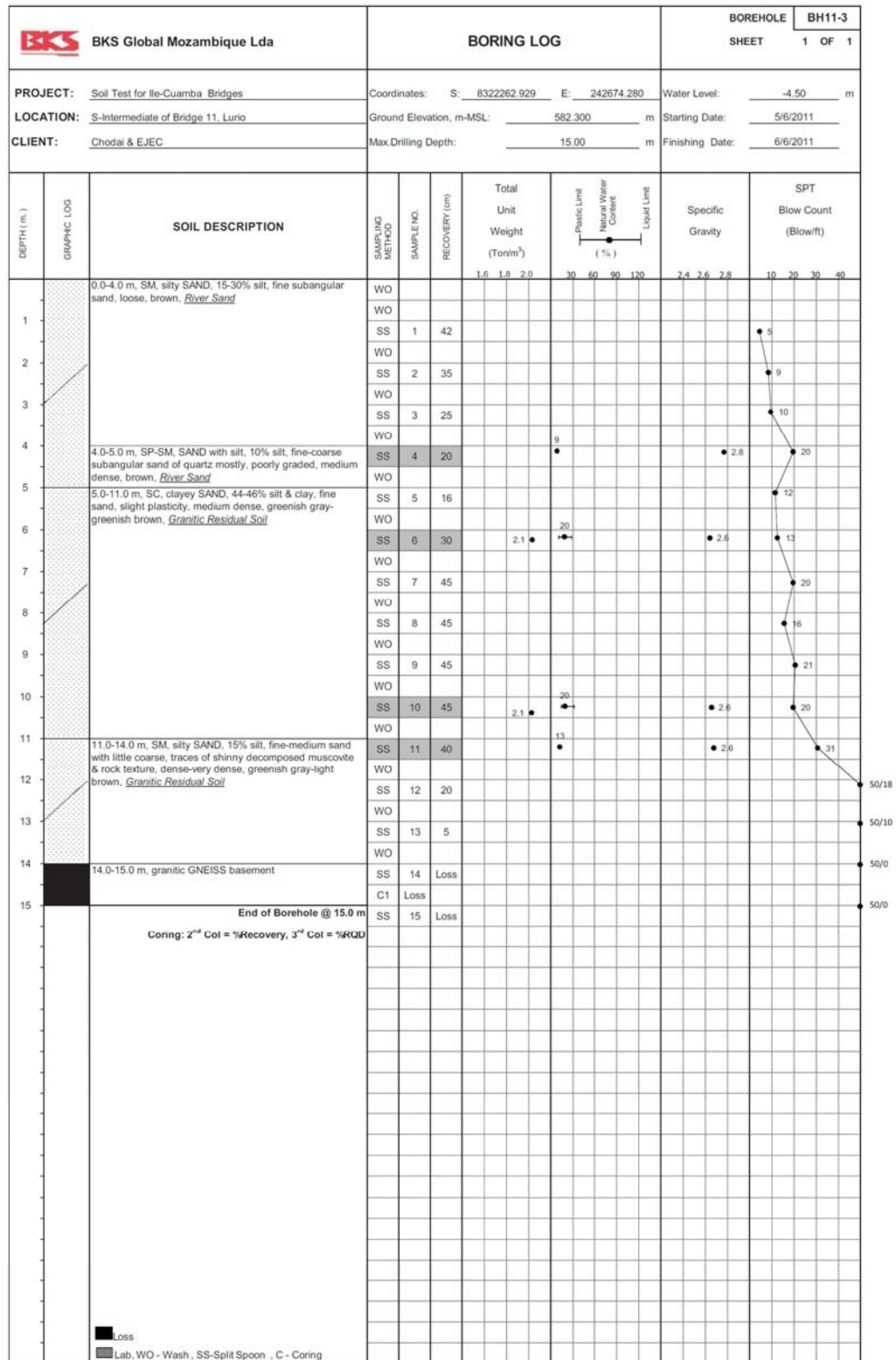




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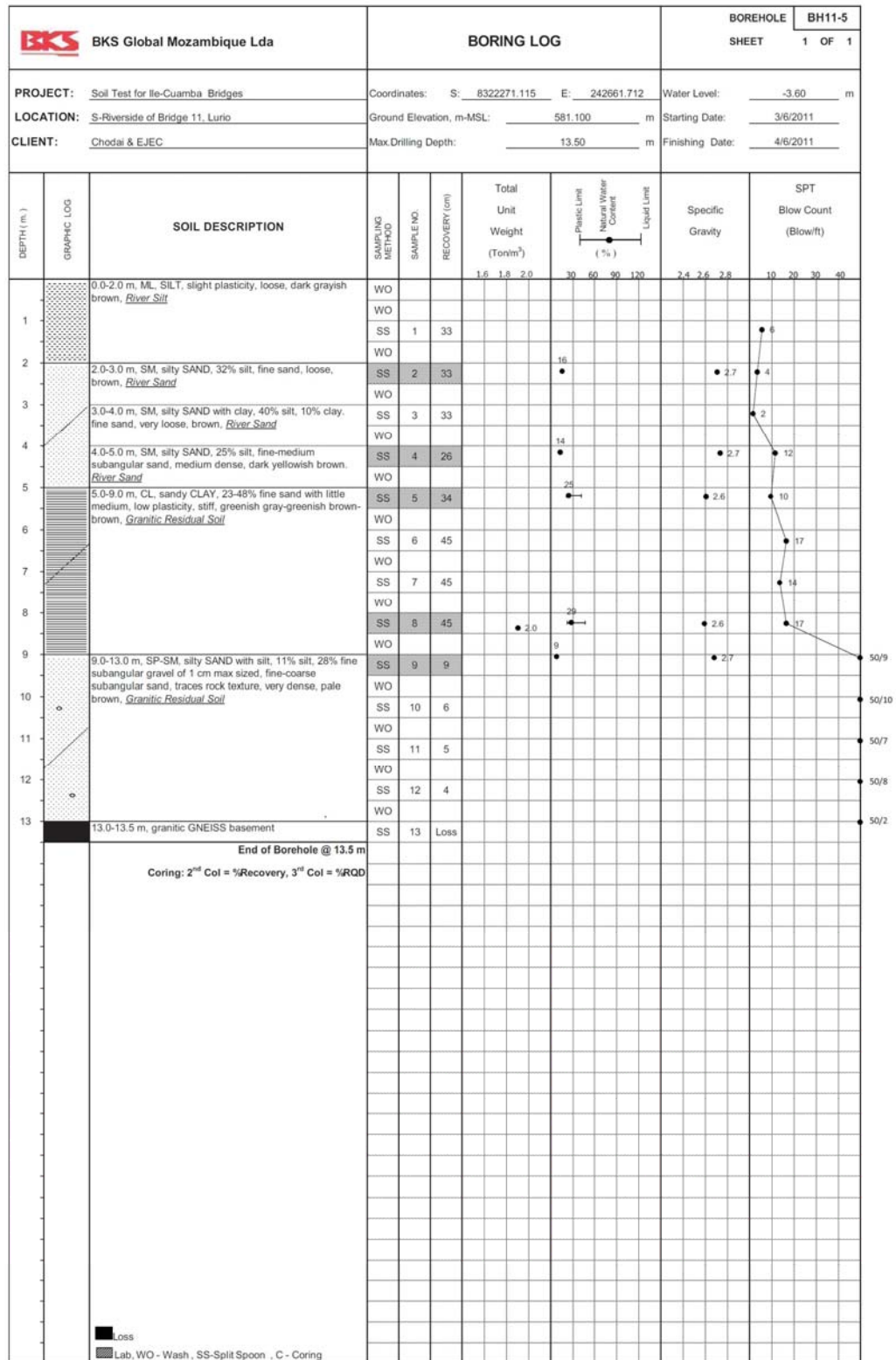


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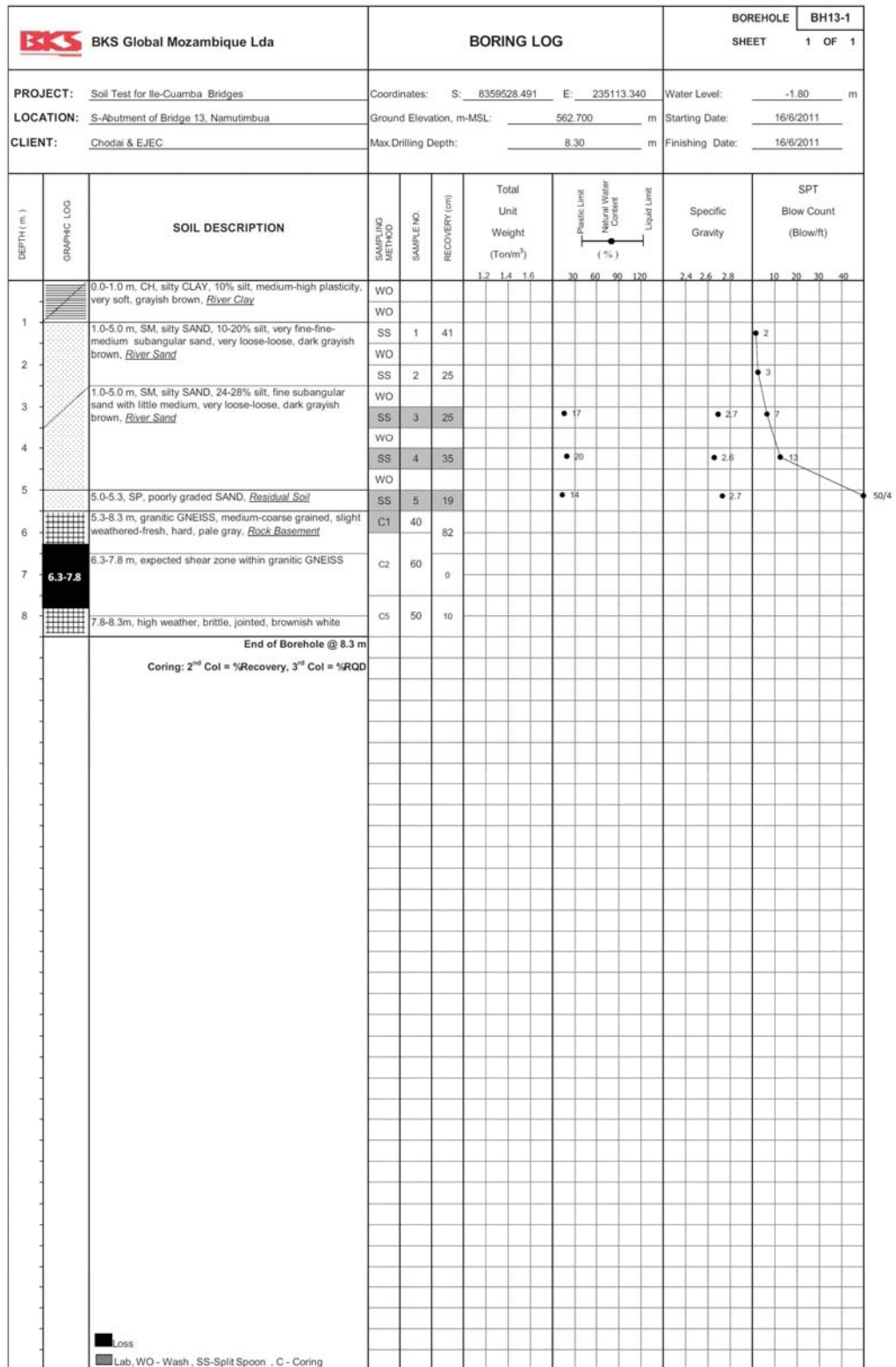
<div> BKS Global Mozambique Lda</div>			BORING LOG				BOREHOLE BH12-1	
							SHEET 1 OF 1	
PROJECT: Soil Test for Ile-Cuamba Bridges			Coordinates: S: 8327687.029 E: 244541.111				Water Level: -3.60 m	
LOCATION: S-Abutment of Bridge 12, Muassi			Ground Elevation, m-MSL: 581.052 m				Starting Date: 9/6/2011	
CLIENT: Chodai & EJEC			Max Drilling Depth: 9.00 m				Finishing Date: 10/6/2011	

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BKS Global Mozambique Lda		BORING LOG						BOREHOLE BH12-2		
								SHEET 1 OF 1		
PROJECT: Soil Test for Ile-Cuamba Bridges		Coordinates: S: 8327708.648 E: 244556.816						Water Level: -0.90 m		
LOCATION: N-Abutment of Bridge 12, Muassi		Ground Elevation, m-MSL: 581.356 m						Starting Date: 8/6/2011		
CLIENT: Chodai & EJEC		Max. Drilling Depth: 6.70 m						Finishing Date: 9/6/2011		
DEPTH (m.)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO.	RECOVERY (cm)	Total Unit Weight (Ton/m <sup>3</sup> )	Plastic Limit (%)	Shrinkage Limit (%)	Specific Gravity	SPT Blow Count (Blow/ft)
1		0.0-2.5 m, SM, silty SAND, 26% silt with random fine subangular quartz gravel of 1.5 cm max sized, fine-coarse subangular sand of decomposed feldspar mostly, very dense, traces of rock texture, pale grayish-whitish brown, <u>Granitic Residual Soil</u>	WO							
2			SS	1	40					50/27
3		2.5-5.2 m, granitic GNEISS, coarse grained, moderately-highly weathered, hard, broken into pieces generally, traces of continuous layering, pale brownish white, <u>Rock Basement</u>	SS	2	26		12		2.6	50/11
4			C1	33	0					
5			C2	Loss						
6		5.2-6.0 m, granitic GNEISS, coars grained, moderately-highly weathered, brittle-hard, broken into pieces with iron oxide coated, washable partly into sand, greenish gray, <u>Rock Basement</u>	C3	36	22					
7			SS	4	23		12		2.7	50/13
			C4	Loss						
			SS	5	10					50/15
			C5	32	0					
			SS	6	5					50/8
			C6	Loss						
End of Borehole @ 6.7 m										
Coring: 2 <sup>nd</sup> Col = %Recovery, 3 <sup>rd</sup> Col = %RQD										
<div> <div>Loss</div> <div>Lab, WO - Wash, SS-Split Spoon, C - Coring</div> </div>										



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