1.0 AUGER BORING

Auger boring is carried out at 14 locations for the project corridor. Bore log chart for all the bore hole locations is given in Figure 1-1 through Figure 1-14 below. The following conclusions are drawn based on field and laboratory investigations.

- The sub soil varies from top (nil / 0 depth) to 1.5m depth loose soil was observed followed by medium dense to dense strata up to refusal stage.
- During the time of investigation water table was not encountered up to the refusal stage; however the same may be subjected to seasonal fluctuations.
- Liquid limit and Plastic limit indicates that, soil is of low compressibility in nature.

The Net Safe Bearing Capacity (SBC) values obtained for the bore holes are presented in Table 1-1 below.

Table 1-1 SBC of Soil by Auger Boring

Dawa Mala	SBC (kN/m ²)							
Bore Hole No.	1.5m below NGL	2.0m below NGL	3.0m below NGL					
BH-1	120	150	200					
BH-2	120	150	200					
BH-3	120	150	200					
BH-4	120	150	200					
BH-5	120	150	200					
BH-6	120	150	200					
BH-7	120	150	200					
BH-8	120	150	200					
BH-9	150	180	220					
BH-10	150	180	220					
BH-11	150	180	250					
BH-12	150	180	250					
BH-13	150	180	240					
BH-14	150	180	240					

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	DS		r table nation
Yellowish brown silty Sand with gravel		1.5	SPT DS	15	At the time of investigation water table was not encountered up to termination depth.
Yellowish red silty Sand		3.0	SPT DS	22	of investig countered u depth.
Greyish to whitish yellow		4.5	SPT DS	30	the time s not enc
sandy Silt		6.0	SPT DS	34	Atwa

DS: Disturbed sample

Figure 1-1 Bore Log at BH-01

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Yellowish brown sandy Silt		0.0	DS		ter table ination
		1.5	SPT DS	15	At the time of investigation water table was not encountered up to termination depth.
Brownish yellow sandy Silt		3.0	SPT DS	17	e of investig ncountered u depth.
		4.5	SPT DS	22	the tim s not er
Greyish to whitish yellow sandy Silt		6.0	SPT DS	30	At 1 wa

SPT: Standard penetration test

Figure 1-2 Bore Log at BH-02

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	DS		r table nation
Yellowish brown sandy Silt		1.5	SPT	05	ition wate p to termin
		3.0	DS SPT DS	14	At the time of investigation water table was not encountered up to termination depth.
Reddish yellow sandy Silt		4.5	SPT DS	29	the time o s not enco
		6.0	SPT DS	43	At

DS: Disturbed sample

Figure 1-3 Bore Log at BH-03

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Brownish sandy Silt		0.0	DS		r table nation
Reddish brown sandy Silt		1.5	SPT DS	06	At the time of investigation water table was not encountered up to termination depth.
Brownish yellow sandy Silt		3.0	SPT DS	09	of inve counter de
		4.5	SPT DS	15	he time s not en
Greyish yellow sandy Silt		6.0	SPT DS	27	Att

SPT: Standard penetration test

Figure 1-4 Bore Log at BH-04

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	DS		me of gation ble was untered to
Yellowish red silty Sand		1.5	SPT	>50	At the time investigation water table not encount up to terminatic depth.
(Refusal Strata)		1.5	DS		

DS: Disturbed sample

Figure 1-5 Bore Log at BH-05

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	DS		At the time of investigation water table was not encountered up to termination depth.
(Refusal Strata)		1.5	SPT DS	>50	At the time investigati water table not encount up to terminatic depth.

SPT: Standard penetration test

Figure 1-6 Bore Log at BH-06

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Brownish sandy Silt		0.0	DS		table
Yellowish brown sandy Silt		1.5	SPT	08	At the time of investigation water table was not encountered up to termination depth.
Whitish brown silty Sand with gravel		3.0	DS SPT	13	nvestigat itered up depth.
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			DS		ne of ii
Greyish yellow sandy Silt		4.5	SPT DS	10	the tin
with clay binder		6.0	SPT DS	14	At

DS: Disturbed sample

Figure 1-7 Bore Log at BH-07

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
		0.0			ble
		0.5	DS		At the time of investigation water table was not encountered up to termination depth.
Filled up soil					ı wat term
		1.5	SPT DS	05	atior up to
					ivestig ered u depth.
		3.0	SPT DS	17	f inv ounte d
Brownish yellow sandy Silt					me o
		4.5	SPT DS	30	he tij i not
		6.0	74,000	>50	At t was
(Refusal Strata)		6.0	SPT DS	>50	

SPT: Standard penetration test

Figure 1-8 Bore Log at BH-08

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
		0.0			on was d up ion
Filled up soil		0.5	DS		At the time of investigation water table wand to encountered up to termination depth.
(Refusal Strata)		1.5	SPT DS	>50	inv inv wate ence to t

DS: Disturbed sample

Figure 1-9 Bore Log at BH-09

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	 DC		n water up to
		0.5	DS		gatior tered tpth.
Yellowish brown silty Sand with gravel		1.5	SPT DS	10	At the time of investigation water table was not encountered up to termination depth.
Brownish yellow sandy Silt		3.0	SPT	24	ne of i s not rmina
		3.0	DS	24	he tin le wa te
Whitish yellow silty Sand		4.5	SPT	>50	At tl tab
(Refusal Strata)			DS		

SPT: Standard penetration test

Figure 1-10 Bore Log at BH-10

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
P. I.F. I. II. II. II. II. II. II. II. II		0.0	1		H 6 .
Reddish yellow sandy Silt		0.5	DS		e of wate not up to depth
Yellowish red sandy Silt		1.5	SPT	04	At the time of investigation wate table was not encountered up to termination depth.
Brownish yellow silty Sand			DS		A inve
		3.0	SPT	>50	
(Refusal Strata)			DS		

DS: Disturbed sample

Figure 1-11 Bore Log at BH-11

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
		0.0			ь .
Yellowish red sandy Silt		0.5	DS		me of on wate as not ed up to n depth
-		1.5	SPT DS	06	At the time of nvestigation wate table was not encountered up to termination depth
Whitish yellow sandy Silt					inv
(Defugal Strata)		3.0	SPT	>50	
(Refusal Strata)			DS		

SPT: Standard penetration test

DS: Disturbed sample

Figure 1-12 Bore Log at BH-12

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks		
		0.0			on was ered		
Filled up soil		0.5	DS		time igati igati ible ount ount ount ountice natice natice oth.		
(Refusal Strata)		1.5	SPT DS	>50	At the invest water tanot ence up termi		

SPT: Standard penetration test

Figure 1-13 Bore Log at BH-13

DESCRIPTION	Legend	Depth (m)	Sample	N – Value	Remarks
Filled up soil		0.0	DS		n water I up to
Yellowish brown silty Sand with gravel		1.5	SPT	09	At the time of investigation water table was not encountered up to termination depth.
Whitish yellow silty Sand		3.0	DS SPT DS	26	time of ir was not er terminat
Greyish yellow sandy Silt (Refusal Strata)		4.5	SPT DS	>50	At the table

DS: Disturbed sample

Figure 1-14 Bore Log at BH-14

1.1.1 Laboratory Testing

Samples procured were transported to laboratory for obtaining Index and Engineering properties. In the laboratory, samples were visually classified by Geotechnical Engineer. Laboratory tests are being carried out as per relevant IS: 2720 guidelines. Generally, Soil Samples were tested for following parameters,

- Particle Size analysis
- Bulk Density
- Natural Moisture Content
- · Atterberg's limits

The test results are tabulated in Table 1-2 and Grain Size Analysis chart for all the bore hole locations is given in Figure 1-15 through Figure 1-28 below.

Table 1-2 Grain Size Analysis Results

	Depth	Water	Atterberg's Limit			Grain Size Distribution					
Bore			Limit)	Limit) city (PI)			Sand (%)				
Hole No.	(m)	Content (%)	Liquid Liı (%)	Plastic Li (%)	Plasticity Index (PI)	Gravel (%)	Coarse	se Medium Fine	Silt & Clay		
	1.5	10.3				1.0	4.7	22.8	34.0	37.5	
01	3.0	13.0	36.5	19.0	17.5	0.0	1.3	17.3	19.3	62.1	
	6.0	16.0	1			5.3	3.9	23.3	14.6	52.9	
02	1.5	11.8	33.6	14.3	19.3	0.0	0.0	17.7	24.3	58.0	

			Atterberg's Limit			Grain Size Distribution					
Bore	Depth (m)	Water Content (%)	nit nit		> -						
Hole No.			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (PI)	Gravel (%)	Coarse	Medium	Fine	Silt & Clay	
	3.0	11.9				0.6	2.9	21.2	18.5	56.8	
	6.0	14.9				2.3	6.9	25.2	13.3	52.3	
	1.5	12.4	34.5	16.0	18.5	5.8	8.3	19.0	25.2	41.7	
03	4.5	17.5				0.0	0.2	19.0	20.3	60.5	
	6.0	16.3				0.2	0.8	15.4	14.3	69.3	
	1.5	11.5	32.5	11.3	21.2	14.2	8.4	17.8	28.6	31.0	
04	3.0	13.6	34.1	14.9	19.2	0.0	0.8	26.0	24.8	48.4	
	6.0	16.3				0.1	5.2	35.1	25.4	34.2	
	1.0	7.0	29.0	14.3	14.7	1.8	18.1	41.1	13.4	25.6	
05	1.5	11.8	33.0	17.4	15.6	2.8	10.2	42.0	17.5	27.5	
06	1.5m	6.5				4.5	5.1	27.1	19.4	43.9	
	1.5	11.8	38.6	19.7	19.0	0.0	0.0	17.6	30.4	52.0	
07	4.5	14.2				0.1	1.4	25.8	31.4	41.3	
	6.0	16.7				1.8	1.9	28.4	33.4	34.5	
	1.5	12.3	33.5	16.2	17.3	5.0	7.8	18.8	29.2	39.2	
08	4.5	13.3	41.8		NP	0.0	0.0	17.0	23.0	60.0	
	6.0	16.9				0.9	0.0	19.2	15.9	63.9	
09	1.5	8.3				11.5	13.0	33.0	24.3	18.2	
40	1.5	12.6	29.1	17.7	11.3	1.6	4.4	28.2	30.7	35.1	
10	4.5	7.2				6.1	9.4	30.2	25.0	29.3	
44	1.5	11.6	37.1	19.0	18.0	0.0	2.2	16.8	25.5	55.5	
11	3.0	17.8	46.8		NP	0.0	0.0	18.0	19.4	62.6	
10	1.5	16.0				1.0	3.7	20.8	17.1	57.4	
12	3.0	17.8	46.1		NP	0.0	0.0	16.3	18.0	65.7	
13	1.5	20.6	29.0		NP	34.3	8.5	24.0	18.0	15.2	
	1.5	12.0	30.7	16.1	14.6	3.0	9.2	33.8	22.8	31.2	
14	3.0	5.8				1.4	8.8	39.0	26.2	24.6	
	4.5	10.8				1.8	3.0	30.3	32.3	32.6	

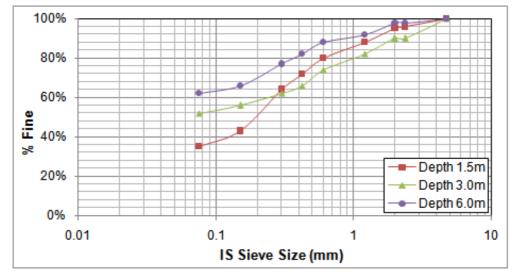


Figure 1-15 Grain Size Analysis for BH-01

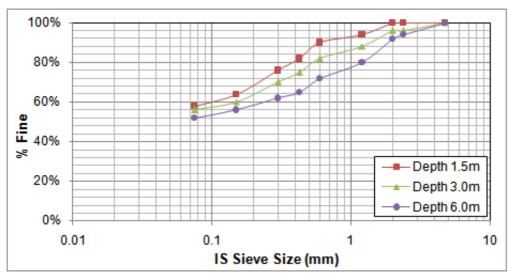


Figure 1-16 Grain Size Analysis for BH-02

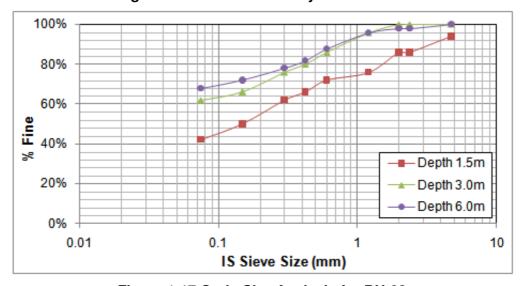


Figure 1-17 Grain Size Analysis for BH-03

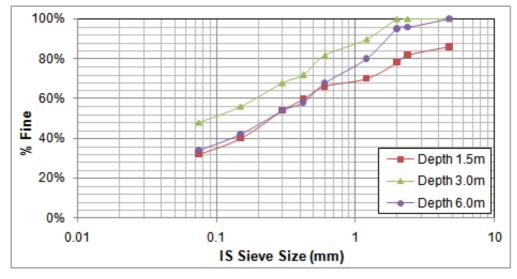


Figure 1-18 Grain Size Analysis for BH-04

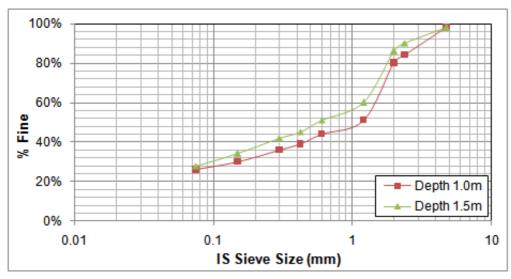


Figure 1-19 Grain Size Analysis for BH-05

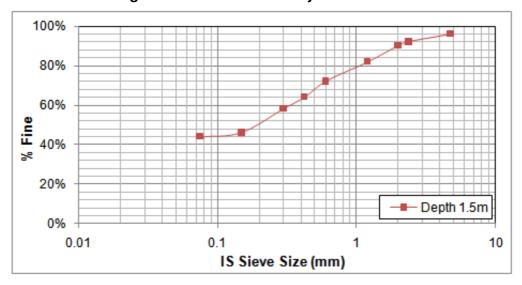


Figure 1-20 Grain Size Analysis for BH-06

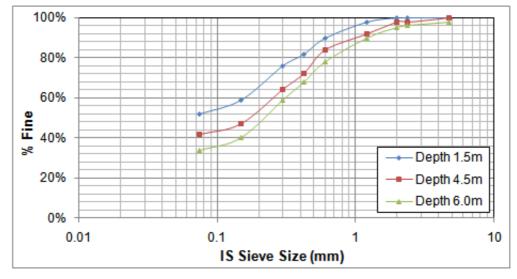


Figure 1-21 Grain Size Analysis for BH-07

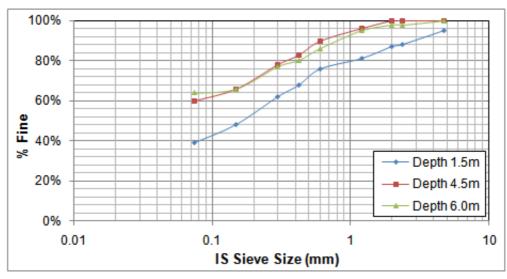


Figure 1-22 Grain Size Analysis for BH-08

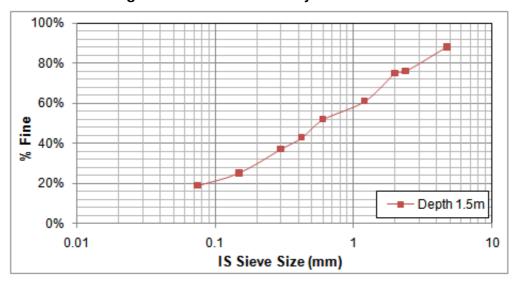


Figure 1-23 Grain Size Analysis for BH-09

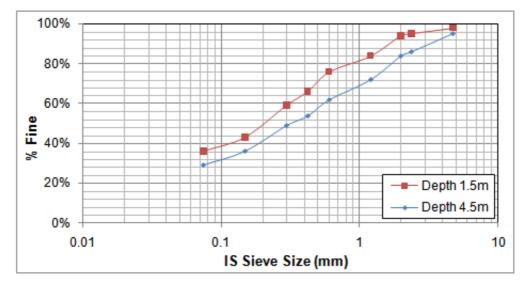


Figure 1-24 Grain Size Analysis for BH-10

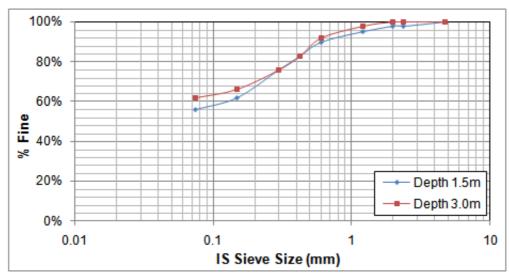


Figure 1-25 Grain Size Analysis for BH-11

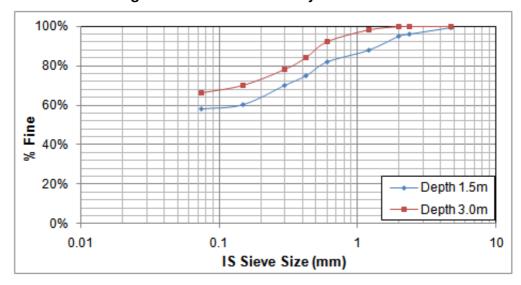


Figure 1-26 Grain Size Analysis for BH-12

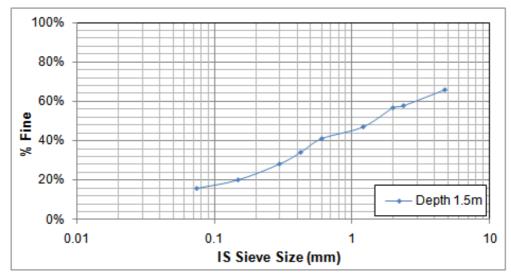


Figure 1-27 Grain Size Analysis for BH-13

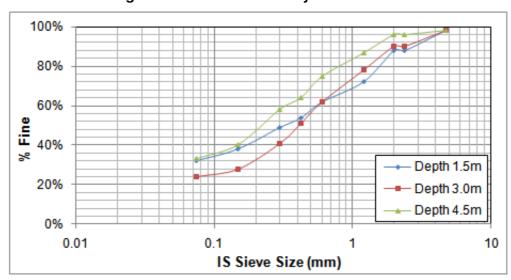


Figure 1-28 Grain Size Analysis for BH-14