

MUHAMMAD SHOAIB CONTRACTOR

CIVIL | ARCHITECTURAL | STRUCTURAL | GEOTECHNICAL

GEOTECHNICAL INVESTIGATION REPORT

MR. SHEIKH FIAZ AHMAD

GHANI TOWER, PARIS ROAD, SILAKOT

HEAD OFFICE: HOUSE # 75, STREET # 03, NEW CITY PHASE I WAH CANTT |

MUHAMMAD SHOAIB CONTRACTOR CONCRETING RELATIONS

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SUBMISSION LETTER

Date: August 11, 2023 Ref: MSCGI/C/22/014

To,

Design/Building Control Department,

Sir/Madam,

We are pleased to submit the Geotechnical Investigation Report of the Site "GHANI TOWER, PARIS ROAD, SILAKOT".

The Report is contingent upon our final approval of the Project Plans, Observations, Laboratory Testing, as necessary for foundation, drainage, and earthwork aspects of the construction. Scope of this geotechnical investigation report is limited to assess subsoil safe bearing capacity point of view. It does not include site visits by the undersigned to confirm any aspects during construction phase.

The Undersigned, on behalf of M/S MUHAMMAD SHOAIB CONTRACTOR confirm that this document and all attached Drawings, Logs and Test Results have been checked and reviewed for Errors, Omissions and Inaccuracies.

Rev #	Electronic	Paper	Issued to	Author Sign & Stamp	Date
1	Yes	Yes	Sheikh Fiaz Ahmad	(<mark>ENGR. KASHIF ALI</mark>) M.SC. GEOTECH. ENGG.	11/08/23

1 INTRODUCTION

The Client "SHEIKH FIAZ AHMAD", is intending to construct the site "GHANI TOWER, PARIS ROAD, SIALKOT". The proposed development consists of "Basement, Ground Plus 05 Storey Commercial Building". In order to place the foundation at suitable depth, a comprehensive understanding of the engineering properties of soil and evaluation of engineering parameters is prerequisite. The assignment to carryout subsoil investigation was entrusted to Muhammad Shoaib Contractor.

Execution of Geotechnical Investigations aimed at ascertaining the subsoil conditions prevailing at the project site i.e., Generalized Lithology, Geotechnical Characteristics of each encountered stratum, and the corresponding design of foundation system.

2 SCOPE OF REPORT

This report presents the details of investigations including soil exploration, in-situ testing, sampling, laboratory testing, interpretation of in-situ and laboratory testing, site characterization and evaluation of Geotechnical Design Parameters & Foundation Systems. Considerations regarding construction of subsurface structures have also been made part of this report.

3 SCOPE OF SERVICES

Geotechnical investigation is conducted for the purposes of characterizing geotechnical, geologic and seismic conditions and providing geotechnical engineering recommendations in support of the Project conceptual design.

Scope of activities performed by Muhammad Shoaib Contractor are summarized below;

Reviewed geologic and seismic conditions in the site vicinity and commented on the geologic hazards that could potentially impact the site.

- Performed a reconnaissance of the site in the area of the proposed construction.
- > To select the suitable construction technique.
- > To predict potential foundation problems.
- To perform laboratory testing and analyses on selected soil samples for soil classification and evaluated engineering properties of the subsurface materials.
- To perform geotechnical engineering analyses to develop geotechnical bearing capacity for the proposed construction.
- Recommendations for soil-related construction conditions such as site preparation, earthwork construction & excavations.

4 SITE DESCRIPTION AND GEOLOGY

4.1 **PROJECT OVERVIEW**

Proposed project site can be accessed through multiple roads. During the investigation, land allocated for the proposed project was found to be mainly surrounded with existing Commercial Buildings/Residential Buildings. The mainly area of site is covered up with demolished material. Pictorial view of the foremost site is shown on Figure A-1(Appendix-A).

Proposed project site is located in "SIALKOT" and is accessible through "PARIS ROAD". Google Earth imagery showing from 2012 to present of project site are appended in Fig. A-4 (Appendix-A).

4.2 TOPOGRAPHY AND GEOLOGY

The topography of proposed project site is plain terrain. Sub-surface soils existing at site mainly underlain by Clay, Silty Sand / Sand with Silt (CL, SM & SP-SM). Stratigraphy of the various layers has been analyzed through the information data gathered from field and laboratory testing of boreholes

samples Details showing sub-surface conditions are presented in digitized logs appended in Appendix-D.

5 SUBSURFACE EXPLORATION

5.1 GENERAL

The subgrade investigation of the proposed site was carried out in following sequence:

- \blacktriangleright Excavation of Five (05) boreholes till a target depth of 40.0 Feet.
- > Determination of water table depth if encountered.
- > Collection of disturbed and composite soil samples for laboratory testing.
- > Preparation of field log and record of information.

Field investigations for this project were carried out on August 3, 2023 to August 5, 2023. Field works were performed under the full-time supervision of qualified Engineer who was responsible for field coordination, logging and handling of the collected samples.

Location plan of project site has been shown on Fig. A-1. A general layout plan indicating the locations of investigated points is presented as Fig. A-2. Both figures have been appended in Appendix-A. whereas site photographs taken during the performance of field activities are presented in Appendix-F.

5.2 DRILLING OF BOREHOLES

As per scope of work, Five (05) boreholes were required to be drilled up to a depth of 40.0 Feet from existing ground level. All boreholes were drilled using hand auger cum light percussion drilling technique. Diameter of these boreholes was 4.0 inches.

5.3 STANDARD PENETRATION TEST

Following the ASTM 1586, a Standard penetration test was carried out on-site in each Borehole. The split spoon was driven with the 140 lb. hammer falling from 30 in height and the numbers of blows were counted, applied in each increment until the full penetration of 18 in (450 mm) was achieved. Several blows for each 6-inch (150 mm) penetration were recorded. The blows for the last 300 mm of penetration (12 inch) were added to compute the penetration resistances "N". Details are shown in the borehole log. The number of blows was later corrected for 70% efficiency for a hand-operated US Donut hammer, for the computation of bearing capacity. Profiles of observed SPT (N) values are presented as (Appendix-B).

5.4 DISTURBED / UNDISTURBED SAMPLING

Disturbed soil samples were obtained using a Split Spoon sampler while performing the SPTs in the boreholes. Undisturbed soil samples were obtained by undisturbed tube/samplers. Specimens collected were carefully placed in polythene bags which were then stored in plastic jars.

To check the suitability of natural in-situ soils to be used as pavement subgrade material, composite bulk soil samples were collected from each test pit. These bulk samples were preserved and stored in standard bags. All soil samples were clearly labelled identifying Project name, borehole designation, depth, and sample number.

5.5 GROUND WATER OBSERVATIONS

Groundwater table was not encountered up to the maximum explored depth of 40.0 Feet below the existing ground level in the boreholes drilled at the site at the time of this geotechnical investigation.

6 LABORATORY TESTING

Material testing in the laboratory was conducted to determine the engineering characteristics such as nature, type, behavior of soil on increasing and decreasing the moisture content, when subject to dynamic loading. Soil samples were tested in the laboratory for index and strength properties of the soils. These tests were carried out in geotechnical laboratory as per ASTM Standards. Following engineering tests were conducted in the laboratory and their results are annexed to this report as Appendix-D.

*Samples remaining after testing will be placed in storage for a period of one week after issuance of the final report. After this period, the samples will be discarded.

Sr. No.	Test Description / A	STM Standard	No. of Test performed
1.	Grain Size Analysis (ASTM D-421, 422)	10
2.	Atterberg Limits	Liquid Limits	05
	(ASIM D-4318)	Plastic Limits	05
3.	Soil Classification (A	STM D-2487)	10
4.	Natural Moisture Con	tent (ASTM D-2216)	15

6.1 GRAIN SIZE ANALYSIS

This test is performed to determine the percentage of different grain sizes contained within a soil. The mechanical or sieve analysis is performed to determine the distribution of the coarser, larger-sized particles, and the hydrometer method is used to determine the distribution of the finer particles. Soil consists of an assembly of ultimate soil particles (discrete particles) of various shapes and sizes. The object of a particle size analysis is to group these particles into separate ranges of sizes and so determine the relative proportion by weight of each size range. The method employs sieving and sedimentation of a soil/water/dispersant suspension to separate the particles. The sedimentation technique is based on an application of Stokes' law to a soil/water suspension and periodic measurement of the density of the suspension. The grain size distribution curves give the exact idea regarding the gradation of the soils. In non-cohesive soils, it is very important to identify whether a soil is well graded, uniformly graded or poorly graded. For this particle size is determined against 10%, 30% and 60% passing, which may be denoted D10, D30 and D60 respectively. The gradation curves are exhibited in **Appendix "E"**.

6.2 ATTERBERG LIMITS

Consistency is a term frequently used to describe the degree of firmness (e.g. soft, firm, stiff and hard) of the cohesive soil samples. The Atterberg Limits determination is an empirical method developed and widely used procedure for establishing and describing the consistency of soils. The consistency of cohesive soils is greatly affected by the water content of the soil. The Liquid Limit is the water content at the point of transition of the clay sample from a liquid state to the plastic state whereby it acquires a certain Shearing Strength (ASTM D-4318).



Behavior Conditions

Atterberg's limits were also performed to further assist in classifying the soils. These tests were carried out in accordance with relevant ASTM standards. The results of these tests are attached in **Appendix "E"**.

6.3 NATURAL MOISTURE CONTENT

The natural water content also called the natural moisture content is the ratio of the weight of water to the weight of the solids in a given mass of soil. This ratio is usually expressed as percentage. In almost all soil tests natural moisture content of the soil is to be determined. The knowledge of the natural moisture content is essential in all studies of soil mechanics. To sight a few, natural moisture content is used in determining the bearing capacity and settlement. The natural moisture content will give an idea of the state of soil in the field. The results of these tests are attached in **Appendix "E"**.

7 GEOTECHNICAL DATA ANALYSIS

7.1 GENERAL

Geotechnical investigations were planned in such a manner to effectively explore geotechnics of the project site. This Chapter mainly discusses our evaluations for subsoil lithology/ stratigraphy, seismicity, soil seismic profile, and other geotechnical characteristics of the soils prevailing at the project site.

7.2 STRATIGRAPHY

During these investigations, sub-surface soils were explored down to the maximum depth of 40.0 Feet below EGL. General stratigraphy of the project area, as deduced from the field investigations duly corrected in the light of laboratory test results indicates the presence of following stratigraphic units;

Layers		Stratigraphy
Layer-1	0.0 – 19.0 ft	Light Brown, Soft to Stiff, Lean Clay, Wet to Moist
Layer-2	19.0 – 27.0 ft	Light Brown, Medium Stiff to Stiff, Lean Clay, Moist, traces of Concretions
Layer-3	27.0 – 40.0 ft	Grey, Medium Dense, Medium Grained to Coarse Grained, Silty Sand / Sand with Silt
		Ground Water
	Ground Water v	vas not encountered in any borehole.

7.3 SEISMICITY OF THE AREA

The project site lies in Zone 2B as per "Seismic Provisions-2007" of Building Code of Pakistan (BCP: SP, 2007). Keeping in view the seismotectonic set up of the project area and the degree of importance of the structures, it is recommended that the structures should be designed to withstand horizontal peak ground acceleration (PGA) of $0.16 \ g - 0.24 \ g$. This PGA has 10 % probability of exceedance in 50 years.

7.4 SEISMIC SOIL PROFILE CHARACTERIZATION

Seismic profile of subsoils present at site has been characterized by using the guidelines provided in "Seismic Provisions-2007" of Building Code of

Pakistan (BCP: SP, 2007). Chapter 4, of this code describes the procedure for determining Soil Profile types (BCP: SP, 2007; Section 4.4).

According to the analysis results, Soil profile " S_E " is recommended to be used for this site as per Section 4.4.2 of BCP: SP (2007).

8 FOUNDATION RECCOMMENDATION & SITE CONSIDERATIONS

8.1 GENERAL

The considerations for the foundation design have been made keeping in view the topography of the area, type of structure, types of loads, settlement in foundation and the subsoil characteristics. A safe and an economical design of foundations of the structures have to be ensured.

8.2 ENGINEERING DESIGN CONSIDERATION

Keeping in view the load from the structure and subsurface soil characteristics, the analysis for foundations is considered on following criteria:

- The Allowable Bearing Capacity is calculated at shear failure and settlement analysis on the basis of subsurface profile of Borehole.
- ➤ Factor of Safety is taken as 3.0 for both shear and settlement analysis.
- The maximum allowable settlement of 25 mm is considered for strip/isolated footing and 50 mm for mat/raft footing. The angular distortion between two adjacent foundations should not exceed 1/500.
- ➢ For settlement analysis Timoshenko and Goodier Theory is used.
- For shear failure analysis, Terzaghi bearing capacity formula used for calculation of net bearing capacity of foundation.

8.3 ALLOWABLE BEARING CAPACITY

MAT FOUNDATION:

The Mat Foundation can be placed at a minimum depth of 10.0 Feet below Existing Ground Level (EGL). The Foundation excavation base soil should be proof-rolled prior to the placement of Mat Foundation.

The recommended allowable bearing capacities for 30 to 100 Feet wide Mat Foundation are provided in *Chart-1 (Appendix-C)*.

It is recommended that the foundation excavation base soil should be proofrolled prior to the placement of mat foundation. Moreover, A 150mm PCC blinding concrete layer is recommended before placing the foundation.

8.4 MODULUS OF SUB-GRADE REACTION

Modulus of subgrade reaction (K_s) is a conceptual relationship between contact pressure and foundation settlements. It is required for modelling the structure in a computer program and to account for soil-structure interaction and the settlement-induced stresses. A simplified relationship for the determination of modulus of sub-grade reaction (K_s) for shallow foundation is as follows:

> $K_s (kN/m^3) = Net Allowable Bearing Pressure x F.O.S$ Permissible Settlement

Factor of safety in above equation depends upon the allowable bearing capacity to be shear controlled or settlement controlled. The recommended values of modulus of sub-grade reaction (K_s) for structural design of mat foundations are appended as *Chart. 2* (*Appendix – C*).

8.5 EARTHWORK

All existing fill and any other soft/loose, disturbed or otherwise deleterious materials should be removed from beneath the footprints of the foundations for the generator, electrical panel and box, and transformer. The thickness of the fill materials was determined at a single location and may vary across the development area. Therefore, the prepared subgrade surfaces should be inspected by experienced geotechnical personnel to confirm all fill materials have been removed and the subgrade should be surface compacted/proof-rolled prior to placement of fill material or foundation construction.

8.6 TEMPORARY EXCAVATION

All temporary excavations should be carried out in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects and care should be taken to direct surface water away from the open excavations.

Excavations at the site are anticipated to extend through fill materials and compact silty sand soils. Conventional hydraulic excavating equipment is considered suitable for developing excavations in these materials. Excavated materials should not be stockpiled adjacent to excavations. The side slopes of the excavations should be inspected for signs of instability and flattened as required.

8.7 DAMP PROOFING MEASURES

Proper damp proofing measures should be taken to prevent the ingress of water in foundations. This becomes super critical considering the swelling nature of top stratum. Besides, adequate provision should be kept to prevent the excavation slopes against rains by tarpaulins. Emergency arrangements of dewatering pumps for pumping rain water from excavations should also be provided.

9 CONCLUSION & RECCOMMENDATIONS

Conclusions and recommendations based on the field data obtained from the site and laboratory test results, visual assessment of the site, professional judgements and opinions, are as follow:

- It is concluded that RAFT/MAT Foundation may be adopted at minimum depth of "10.0 Feet Below Existing Ground Level". The Recommended Allowable Bearing Capacities for 30 to 100 feet wide Mat Foundation are provided Chart-1 (Appendix-C)
- Any Soft / Weak Soil or Loose Fill Material, if encountered at Foundation placement level should be completely removed and backfilled with Select Fill Material. The Select Fill Material should be at least A-3 material as per AASHTO Soil Classification. The Select Fill Material should be placed in layers and compacted to at least 95% of modified AASHTO maximum density.
- As the site is situated in seismic zone 2B therefore it is recommended to design the structure which fulfill the requirements of seismic zone 2B.
- Proper Plinth protection at-least 3.28 ft. (or 1.0m) wide should be provided all around the building.
- It is highly recommended to cater to the issue of drainage/seepage during design before starting construction.
- Moisture content is likely to rise in monsoons, it is strongly recommended to provide effective drainage under the Foundation.
- It is recommended to contact the Geotechnical Engineer if any changes in strata are observed during excavation.
- The open areas surrounding the structures and enclosed within the structures should properly drain away from the built-up areas. Moreover, proper drainage should be provided to the project area.

10 LIMITATIONS

The conclusions and recommendations given in this report are based on information determined at the borehole locations. The information contained herein in no way reflects on the environmental aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. It is recommended practice that the Geotechnical Engineer be retained during the construction to confirm that the subsurface conditions across the site do not deviate materially from those encountered in the boreholes.

The design recommendations given in this report are applicable only to the project described in the text, and then only if constructed substantially in accordance with the details stated in this report.

The comments made in this report relating to potential construction problems and possible methods of construction are intended only for the guidance of the designer. This work has been undertaken in accordance with normally accepted geotechnical engineering practices. No other warranty is expressed or implied.

Muhammad Shoaib Contractor should be retained for a general review of the final design and specification to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, Muhammad Shoaib Contractor will assume no responsibility for interpretation of the recommendations in the report.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

11 REFERENCES

- Building Code of Pakistan, Seismic Provisions 2007.
- Bowles, J. E., (1996). "Foundation Analysis and Design, (5th Edition)", McGrawHill, New York.
- Das, B. M. (2010). "Principles of Geotechnical Engineering", 7th Edition, Cengage Learning, CT, USA.
- NAVFAC, D. M. 7.02, (1986), "Foundations & Earth Structures", Department of Naval Facilities and Engineering Command, Alexandria.
- Burt Look, "Handbook of Geotechnical Investigations & Design Tables".
- ACI-318 Building Code Requirements for Structural Concrete.



FIGURE A-1 {PROJECT SITE PLAN}



FIGURE A-2 {BOREHOLE LAYOUT PLAN}



*Borehole Location/Points were given by client



"FIGURE A-4" {SATELLITE IMAGES} "YEAR - 2023"



"FIGURE A-4" {SATELLITE IMAGES} "YEAR - 2020"



"FIGURE A-4" {SATELLITE IMAGES} "YEAR - 2018"



"FIGURE A-4" {SATELLITE IMAGES} "YEAR - 2016"



"FIGURE A-4" {SATELLITE IMAGES} "YEAR - 2013"



"FIGURE A-4" {SATELLITE IMAGES} "YEAR – 2012"





SPT & SOIL PROFILE

				S	PT & SOIL PRO	FILE				
Depth	BH	-01	BH-	02	BH-C)3	BH-0	4	BH-0	5
(ft)	Strata	N Values	Soil	N Values	Soil	N Values	Soil	N Values	Soil	N Values
0										
3		2		3		4		2		2
5		5		5		5		4		4
8		10		8		11		12		11
12		9		11		12		11		10
15		12		12		15		12		11
20		6		7		7		8		9
25		14		15		12		15		14
30		13		14		13		12		12
35		14		16		18		15		15
40		17		19		16		18		18
	<u>Legends</u>									
			LEAN CLAY					9	Silty Sand / Sand	with Silt



BEARING CAPACITY CHARTS

GHANI TOWER, PARIS ROAD, SILAKOT



Allowable Bearing Pressure for Raft Footing Placed at 10.0 feet depth below Existing Ground Level

GHANI TOWER, PARIS ROAD, SILAKOT

Modulus of Subgrade Recation for Mat Foundations



Allowable Bearing Pressure for Raft Footing Placed at 10.0 feet depth below Existing Ground Level



MS CONT	TRACTOR	Ι	MUHAMMA	D SHOAIB (CONT	RACTOR		BOR	EHO	LE]	L <mark>OG</mark>]	BH	-01		
PROJE	ECT:		GEOTECHNICAI	L SITE INVESTIG	ATION	FOR GHANI TOWER							В	H Dril	ling	Start	ed o	n:
LOCA	TION:		PARIS ROAD, SI	ALKOT.									1	6	3/3/	2023		
CLIEN	T:		SHEIKH FIAZ AI	HMAD									BH I	Drillin	g Co	mple	eted	on:
		Ľ) rilling Informati	on		SAM	IPLING M	1ETHO	DS				1	8	3/3/	2023		
Drillin	g Methoo	l:	Hand Auger	Dia of Bore:	4 "	Hammer Weight:	63.5 kg		Dı	ор	30 In	nch		L	ogge	ed By:	:	
Site In	<u>formati</u>	on		CO-ORDINATES	<u>.</u>	North: 32.502375	ί	East:	<u> </u>	74.	53857	70			Tar	ıvir		
GWT:		Not Enc	ountered	Borehole Level:		Plot Level is 1.0 fee	t higher v	w.r.t ad	jacen	t Roa	d Lev	el		Final	Dep	th: 40) feet	t
Depth (ft)	Soil Profile	% JMN	DI	ESCRIPTION	SAMPLE NO.	SAMPLE TYPE	SPT	BLC	ows	N VALUES	Std.	Penetr Data I SPT Bl	atior Repro	ı Test (esenta (N Va	Grapi ition	hical)		
0.0								•.	6"	6"	6"		0	10 2	0 3	i0 40) 5() 00-
-			CLAY:-															-
- 3.0			Light Brown, Ver	y Soft, Low Plastic	c, Clay, V	Vet	S-1	SPT	1	1	1	2	9					-
- 5.0		15.48	Light Brown, Meo	lium Stiff, Low Pla	astic, Cla	ıy, Moist	S-2	SPT	1	2	3	5	ł					5.0 -
- 8.0			Light Brown, Stift	f, Low Plastic, Clay	7, Moist		S-3	SPT	3	4	6	10						
- 10.0																		10.0
12.0			Light Brown, Stif	f, Low Plastic, Clay	7, Moist		S-4	SPT	4	4	5	9						
15.0		19.93	Light Brown, Stif	f, Low Plastic, Clay	7, Moist		S-5	SPT	4	5	7	12						15.0 - -
20.0			Light Brown, Stif	f, Low Plastic, Cla <u>y</u>	7, Trace	of Concretion, Moist	S-6	SPT	5	3	3	6						20.0
25.0			Light Brown, Stifi Moist	f, Low Plastic, Clay	7, Trace	of Concretion & Gravel,	S-7	SPT	6	6	8	14						25.0
30.0		18.23	SILTY SAND:- Light Grey, Mediu Trace Mica, Mois	ım Dense, Mediur t	n to Coa	rse Grained, Silty Sand,	S-8	SPT	4	6	7	13		•				- 30.0- -
35.0			Light Grey, Medit Trace Mica, Mois	ım Dense, Mediur t	n to Coa	rse Grained, Silty Sand,	S-9	SPT	4	6	8	14		•				35.0
40.0			Light Grey, Mediu Trace Mica, Mois	um Dense, Mediur t End of B	n to Coa orehole	rse Grained, Silty Sand,	S-10	SPT	6	7	10	17	_					40.0
Ē				· · , –														-
45.0																		45.0
50.0																		50.0-

MS CONT	TRACTOR	N	UHAMMA	D SHOAIB (CONT	'RACT	OR		BOR	EHC	DLE	LOG			BI	H-02	
PROJE	ECT:		GEOTECHNICAI	L SITE INVESTIO	ATION	FOR GHA	ANI TOWER							BH	Drillin	ig Starte	d on:
LOCA	TION:		PARIS ROAD, SL	ALKOT.										1	8/3	3/2023	
CLIEN	(T:		SHEIKH FIAZ AI	HMAD										BH Dr	illing (Complete	ed on:
		D	rilling Informati	on			SAM	IPLING N	иетно	DS					8/4	4/2023	
Drillin	g Method	l:	Hand Auger	Dia of Bore:	4 "	Hammer	r Weight:	63.5 kg		D	rop	30 In	ich		Log	ged By:	
Site In	formati	on		CO-ORDINATES	:	North:	32.502460	 	East:	<u>i</u>	74.	53854	42		Т	anvir	
GWT:		Not Enc	ountered	Borehole Level		Plo	ot Level is 1.0 fee	t higher	w.r.t ac	ljacer	nt Roa	ld Lev	el	Fi	nal De	pth: 40 f	ieet
Depth (ft)	Soil Profile	% JMN	DESCRIPTION OF MATERIAL SPT BLOWS 6" 6" 6" 6" 6"										N VALUES	Std. Pe	enetrati Data Rep T Blow	on Test Gr presentati 75 (N Valu	raphical on 1es)
0.0										0	0	0			20	30 40	0.0 -
Ē			CLAY:-														
3.0			Light Brown, Soft	, Low Plastic, Cla	y with P	ieces of B	ricks	S-1	SPT	1	1	2	3	٩			3
5.0			Light Brown, Meo	lium Stiff, Low Pl	astic, Cla	ay, Moist		S-2	SPT	2	2	3	5				5.0 -
- 8.0		17.50	Light Brown, Mec	lium Stiff, Low Pl	astic, Cla	ay, Moist		S-3	SPT	3	3	5	8				
- 10.0 - 12.0			Light Brown Stiff	t Drown Stiff Low Diastic Clay Maist							5	6	11				10.0
-			Light Di own, Stin	, LOW I lastic, Cla	y, 1013t			5-4	51 1	т	5	0	11	Ī			-
15.0			Light Brown, Stiff	f, Low Plastic, Cla	y, Moist			S-5	SPT	3	5	7	12				15.0
20.0		18.33	Light Brown, Me Moist	dium Stiff, Low I	Plastic, (Clay, Trac	e of Concretion,	S-6	SPT	4	3	4	7				20.0
25.0			Light Brown, Stifi Moist	f, Low Plastic, Cla	y, Trace	of Concre	etion & Gravel,	S-7	SPT	6	7	8	15				- 25.0- -
30.0			SILTY SAND:- Light Grey, Mediu Trace Mica, Moist	ım Dense, Mediuı t	n to Coa	nrse Grain	ed, Silty Sand,	S-8	SPT	5	6	8	14	•			30.0-
35.0		20.17	Light Grey, Mediu Trace Mica, Moist	um Dense, Mediui t	n to Coa	arse Grain	ed, Silty Sand,	S-9	SPT	6	7	9	16				35.0 - -
40.0			Light Grey, Mediu Trace Mica, Moist	um Dense, Mediun t End of R	n to Coa	nrse Grain	ed, Silty Sand,	S-10	SPT	6	8	11	19				40.0
Ē				Lite of D													-
45.0																	45.0
- - - 50.0																	50.0-

MS CONT	TRACTOR	ľ	MUHAMMA	AD SHOAIB	CONT	'RACT	OR		BOR	EHO	LE I	L <mark>OG</mark>			B	H-03	;	
PROJE	ECT:		GEOTECHNIC	AL SITE INVESTIO	GATION	FOR GHA	ANI TOWER							BH	l Drillir	ıg Star	rted o	on:
LOCA	TION:		PARIS ROAD, S	SIALKOT.											8/4	1/202	3	
CLIEN	T:		SHEIKH FIAZ	AHMAD										BH D	rilling	Compl	leted	on:
-		D	willing Informa	tion			CAN		IETHO	DC					0 / /	1/202	2	•
Duillin	a Mothod	L.		Dia of Poro	4 "	Uamma	- Woight:	62 E kg	IE I HU	D 3	on	20 In	ch		0/4 Log	r/2023	<u> </u>	
Sito In	g Method formati	i:	naliu Auger	CO-OPDINATES	4	North	22 502255	<u>оз.</u> э к <u></u>	Fact	וע	74 I	30 III	1011		год	geu b	y:	
GWT.	<u>IOI IIIau</u>	Not Enc	ountered	Borehole Level		pl		t higher y	wrtad	iacon	+ Roa	d I ov	<u>ما</u>	F	inal De	anth.	10 foo	at.
uw 1.		NOULIIC	Juntered	Borenoie Level.		11	5t Level 13 1.0 lee		W.I.L au	Jacen	t Roa	u Lev		-	mai D	pui.	roice	ι <u></u>
Depth (ft)	Soil Profile	NMC %	DESCRIPTION OF MATERIAL SPT BLOWS											Std. P	'enetrati Data Rej PT Blow	on Tes present vs (N V	t Grap tation /alues	hical
									S	6"	6"	6"		0 1	.0 20	30 4	10 5	0
0.0			CLAV-															0.0 -
- 30		24.13	Light Brown So	oft Low Plastic Cla	w with T	race of Co	ncretion Wet	S-1	SPT	1	2	2	4					-
- 3.0		24.15	Light Drown, 30	nt, Low Flastic, Cla	y with I		nici etion, wet	5-1	51 1	1	2	2	4	T				-
<u> </u>			Light Brown, M	edium Stiff, Low Pl	lastic, Cla	ay, Moist		S-2	SPT	1	2	3	5					5.0 -
. 8.0			Light Brown, St	iff, Low Plastic, Cla		S-3	SPT	3	5	6	11							
- 10.0																		10.0
. 12.0			Light Brown, St	iff, Low Plastic, Cla	ıy, Moist			S-4	SPT	4	5	7	12					
. 15.0		17.08	Light Brown. St	iff. Low Plastic. Cla	ıv. Moist			S-5	SPT	3	6	9	15					15.0
- -			8 ,	,	<i>,</i>						_							
20.0			Light Brown, M Moist	ledium Stiff, Low	Plastic, (Clay, Trac	ce of Concretion,	S-6	SPT	2	3	4	7					20.0
25.0		15.13	Light Brown, St Moist	iff, Low Plastic, Cla	ıy, Trace	of Concre	etion & Gravel,	S-7	SPT	4	5	7	12					- - 25.0- - -
- - - - -			SILTY SAND:- Light Grey, Med Trace Mica, Moi	lium Dense, Mediu ist	m to Coa	rse Grain	ed, Silty Sand,	S-8	SPT	4	6	7	13		•			-
- - - 35.0			Light Grey, Med Trace Mica, Moi	lium Dense, Mediu ist	m to Coa	rse Grain	ed, Silty Sand,	S-9	SPT	5	8	10	18					- - 35.0- - -
40.0			Light Grey, Med Trace Mica, Moi	lium Dense, Mediu ist End of E	m to Coa Borehole	rse Grain	ed, Silty Sand,	S-10	SPT	4	7	9	16	-				40.0
45.0																		45.0
50.0																		50.0-

MS CONT	TRACTOR	N	ИИНАММА	D SHOAIB	CONT	TRACTO	DR		BOR	EHC	DLE	LOG	ſ		BH-0	4	
PROJE	ECT:		GEOTECHNICA	L SITE INVESTI	GATION	I FOR GHA	NI TOWER							BH D	rilling St	arted c	on:
LOCA	TION:		PARIS ROAD, S	IALKOT.											8/5/20	23	
CLIEN	T:		SHEIKH FIAZ A	AHMAD										BH Drill	ing Com	pleted	on:
		D	rilling Informat	ion			SAI	MPLING N	метно	DS					8/5/20	23	
Drillin	g Methoo	1:	Hand Auger	Dia of Bore:	4 "	Hammer	Weight:	63.5 kg		Dı	op	30 In	nch		Logged	By:	
Site In	formati	on		CO-ORDINATES	:	North:	32.502240	! 	East:	L	74.	53835	55		Tanvi	r	
GWT:		Not Enc	ountered	Borehole Level:		Plot	t Level is 1.0 fe	et higher	w.r.t ac	ljacer	nt Roa	ad Lev	vel	Fina	al Depth	: 40 fee	et
Depth (ft)	Soil Profile	[°] MN DESCRIPTION OF MATERIAL [°] MAL = I days SPT = [°] MN [°] MAL = I days [°] MAL = I days SPT =											N VALUES	Std. Pend Dat SPT 0 10	etration T a Represe Blows (N 20 30	est Grap intation Values 40 5(ohical 5) D
0.0			CLAY:- Light Brown, Ve Wet	ery Soft, Low Plas	tic, Clay	with Trace	e of Concretion	, S-1	SPT	1	1	1	2	٩			0.0 -
5.0		22.35	Light Brown, So	ft, Low Plastic, Cla	ay, Wet			S-2	SPT	1	2	2	4				5.0 -
8.0 - 10.0			Light Brown, Sti	ff, Low Plastic, Cla	ay, Moist	t		S-3	SPT	3	5	7	12				- - - 10.0-
12.0		17.19	Light Brown, Sti	ff, Low Plastic, Cla	ay, Moist	t		S-4	SPT	4	5	6	11				
15.0			Light Brown, Sti	ff, Low Plastic, Cla	ay, Moist	t		S-5	SPT	4	6	6	12				15.0
20.0			Light Brown, M Moist	edium Stiff, Low	Plastic,	Clay, Trace	of Concretion	' S-6	SPT	3	3	5	8				- - 20.0- - - - -
25.0			Light Brown, Sti Moist	ff, Low Plastic, Cla	ay, Trace	e of Concret	tion & Gravel,	S-7	SPT	4	6	9	15				- 25.0- - -
- 30.0			SILTY SAND / S Light Grey, Med Trace Mica, Moi	GAND WITH SILT ium Dense, Mediu st	:- ım to Co	arse Graine	ed, Silty Sand,	S-8	SPT	3	5	7	12				-
35.0			Light Grey, Med Trace Mica, Moi	ium Dense, Mediu st	im to Co	arse Graine	ed, Silty Sand,	S-9	SPT	5	6	9	15	•			35.0- - - - - -
40.0		18.85	Light Grey, Med Trace Mica, Moi	ium Dense, Mediu st End of E	im to Co Borehole	arse Graine	ed, Silty Sand,	S-10	SPT	6	8	10	18				- 40.0
45.0																	45.0
50.0		1	1					1	1	l I	1	1					50.0-

MS CONT	TRACTOR	N	IUHAMMA	D SHOAIB	CON	FRACT	OR		BOR	EHO	DLE	LOG	}		BH	-05	
PROJE	ECT:		GEOTECHNIC	AL SITE INVEST	IGATIO	N FOR GH	ANI TOWER							BH D	rilling	Starte	d on:
LOCA	TION:		PARIS ROAD, S	SIALKOT.											8/5/	2023	
CLIEN	T:		SHEIKH FIAZ	AHMAD										BH Dril	ling Co	mplete	ed on:
		Dı	rilling Informat	tion			SAN	APLING N	иетно	DS					8/5/	2023	
Drillin	g Methoo	l:	Hand Auger	Dia of Bore:	4 "	Hammer	Weight:	63.5 kg		Dı	op	30 Ir	ich		Logg	ed By:	
Site In	formati	on		CO-ORDINATES	<u>.</u>	North:	32.502269	<u>i</u>	East:	<u>i</u>	74	5383	37		Tai	nvir	
GWT:		Not Enc	ountered	Borehole Level	:	Plo	t Level is 1.0 fee	et higher [.]	w.r.t ac	ljacer	nt Roa	ad Lev	vel	Fin	al Dep	th: 40 f	eet
Depth (ft)	Soil Profile	WMC %	D	ESCRIPTION	OF M	ATERIA	AL	SAMPLE NO.	AMPLE TYPE	SPT	F BLC	ows	N VALUES	Std. Pen Da SPT	etration ta Repr Blows	1 Test Gr esentatio (N Valu	aphical on es)
								S	S	6"	6"	6"		0 10	20 3) 40	50
0.0			CLAY:- Light Brown, Ve Wet	ery Soft, Low Plas	tic, Clay	with Trace	e of Concretion,	S-1	SPT	1	1	1	2	٩			0.0 -
5.0			Light Brown, So	oft, Low Plastic, C	lay, Mois	st		S-2	SPT	1	2	2	4				5.0 -
8.0 - 10.0		20.61	Light Brown, St	tiff, Low Plastic, C	lay, Moi	st		S-3	SPT	3	4	7	11				- - - 10.0-
12.0			Light Brown, St	tiff, Low Plastic, C	lay, Moi	st		S-4	SPT	4	4	6	10	•			
- 15.0		19.85	Light Brown, St	tiff, Low Plastic, C	lay, Moi:	st		S-5	SPT	3	5	6	11				15.0 -
20.0			Light Brown, St	tiff, Low Plastic, C	lay, Trac	ces of Conc	retion, Moist	S-6	SPT	4	3	6	9				20.0
25.0			Light Brown, St Gravel, Moist	iff, Low Plastic, C	lay, Trac	ces of Conc	retion &	S-7	SPT	4	6	8	14				- 25.0- -
- - 30.0			SILTY SAND:- Light Grey, Med Trace Mica, Mo	lium Dense, Medi ist	um to Co	oarse Grair	ned, Silty Sand,	S-8	SPT	4	5	7	12	•			- - - - - - - - - - - -
35.0		15.94	Light Grey, Mec Trace Mica, Mo	lium Dense, Medi ist	um to Co	oarse Grair	ned, Silty Sand,	S-9	SPT	6	7	8	15				- 35.0- -
- 			Light Grey, Mec Trace Mica, Mo	lium Dense, Medi ist End of I	um to Co Borehol	oarse Grair e	ned, Silty Sand,	S-10	SPT	5	7	11	18				- - 40.0- - - -
- - 45.0 -																	45.0 - - -
50.0																	50.0-

APPENDIX "E"

LABORATORY SUMMARY & TEST

RESULTS



SUMMARY OF LABORATORY RESULTS

		GH	ANI TO	WER, P	ARIS ROAL), SIALKO	т.			8/9/2023
		Atte	erberg Li	mits		Si	ieve Analys	is	Unified Soil Cl	assification
Borehole:	Depth (Feet)	LL	PL	PI	NMC (%)	Gravels %	Sand %	Fines %	Group Description	Group Symbol
	5.0	28.5	20.7	7.8	15.48	0.00	1.10	98.90	Lean Clay	CL
1	20.00				19.93					
	30.00				18.23	0.00	77.73	22.27	Silty Sand	SM
	8.0	33.3	21.3	12.0	17.50	0.00	5.07	94.93	Lean Clay	CL
2	20.00				18.33	0.00	5.90	94.10	Lean Clay	CL
	35.00				20.17					
	3.0	28.8	19.6	9.2	24.13	0.00	6.12	93.88	Lean Clay	CL
3	15.0				17.08					
	25.0				15.13	5.71	8.66	85.63	Lean Clay	CL
	5.0				22.35					
4	12.0	29.5	19.9	9.6	17.19	0.00	5.03	94.97	Lean Clay	CL
	40.0				18.85	0.00	88.40	11.60	Sand with Silt	SP-SM
	8.0				20.61					
5	15.0	29.5	19.9	9.6	19.85	0.00	11.10	88.90	Lean Clay	CL
	35.0				15.94	0.00	87.90	12.10	Silty Sand	SM
Total Num	ber of Tests Performed	5	5	5	15	10	10	10	10	10
Ма	x. Value of Test	33.3	21.3	12.0	24.13	5.71	88.40	98.90		
Mi	n. Value of Test	28.5	19.6	7.8	15.13	0.00	1.10	11.60		

	MS CON	TRACTOR	SIEVE ANALYSIS					ASTM D-421, D-422	
Proj	ject:	GEOTECHNIC	CAL INVEST	IGATION	OF GHANI	TOWER,			
Loc	ation:	PARIS ROAD, S	IALKOT.						
Dep	th (ft):	5.0	Borehole:	BH-01	Date:	August 8, 20	23		
			T	0				4.0.0	0
Tota	al Weigh	t of Dry Sample		Gms Indivi	Total Wei idual	ight of Dry Sai	mple Retain	100 Cumulate	Gms Sieve
		Sieve S	izes	Retained	Weight	Weight g	gm	d	Passing
	et	US	mm	gn	15	gms		%	%
	She	4	4.750	0.0	00	0.00	0.00 0.00		
	ata	10	2.000	0.0	00	0.00		0.00	100.00
	iis D	20	0.850	0.0	00	0.00		0.00	100.00
	alys	40	0.425	0.0)3	0.03		0.03	99.97
	An.	60	0.250	0.0)6	0.09		0.09	99.91
	ieve	100	0.150	0.3	89	0.48		0.48	99.52
	S	200	0.075	0.6	52	1.10		1.10	98.90
		Par	1	98.	90				
		•	U	.S. Standard S	ieve				
	100%	20 6 4 3		⁴ ⁸ ^{#4} ¹⁰	16 20 30 40	50 100 200			
	90%								
	80%								
ച	70%								
assin	60%								
4 % i	50%								
Sieve	40%								
	200/								
	200/								
	20%								
	10%								
	0% 1000	0 100	10)	1	0.1	(0.01	0.001
	Г		Gravele	Sieve S	ize in Millimo Sands	eters			
		Cobbles	Coarse Fir	ie Coai	se Med	ium Fine	Silts	Cl	ays
		.	· ·						
	Gravel	Sand	Fines	Silt	Clay	Clay Unified Soils Classification System		n System	
	%	%	%	%	%	% ASTM D-2487,			
	0.00 %	1.10 %	98.90 %	-	-	CL, Lean Clay			

	MS CONT	RACTOR	SIEVE ANALYSIS					A. D-422	STM 1, D-422
Proj	ject:	GEOTECHNIC	CAL INVEST	IGATION	OF GHANI	TOWER			
Loca	ation:	PARIS ROAD, S	IALKOT.						
Dep	th (ft):	30.0	Borehole:	BH-01	Date:	August	8, 2023		
Tota	al Weight	of Dry Sample		Gms	Total Wei	ight of Dr	v Sample	100	Gms
		Sieve S	izes	Indiv	idual	Comula	tive Retain	Cumulate	Sieve
			1203	Retained	Weight	Wei	ight gm	d 0/	Passing
	leet	4	4 750	gn o (15		gms	%	%0 100.00
	a Sh	10	4.750	0.0)0)0		0.00	0.00	100.00
	Dat	10	2.000	0.0)U		0.00	0.00	100.00
	ysis	20	0.850	0.3	30	0.30		0.30	99.70
	nalı	40	0.425	0.7	78	1.08		1.08	98.92
	ve A	60	0.250	6.7	/1	7.79		7.79	92.21
	Sie	100	0.150	34.	81	4	2.60	42.60	57.40
		200	0.075	35.	13	7	7.73	77.73	22.27
Sieve % Passing	100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0% 1000	20 6 4 3 	U 1 ¹ / ₂ ¹ / ₂ ¹ / ₂ ¹ / ₂ 10 Gravels	2.5. Standard S	ieve 16 20 30 40 16 20 30 40 10 20 30 10 20 10 20 30 10 20 30 1	50 100	200	0.01	0.001
	Gravel	Sand	Fines	Silt	Clay Unified Soils Classification System			n System	
	%	%	%	%	%	% ASTM D-2487,			
	0.00 %	77.73 %	22.27 %	-	-	SM, Silty Sand			

	MS CONT	RACTOR	SIEVE ANALYSIS					ASTM D-421, D-422		1 -422		
Proj	ject:	GEOTECHNI	CAL INVEST	'IGATION (OF GHANI	TOWER	,					
Loca	ation:	PARIS ROAD, S	SIALKOT.									
Dep	th (ft):	8.0	Borehole:	BH-02	Date:	August 8	3, 2023					
Tota	al Weight	of Dry Sample		Gms	Total Wei	ight of Dr	v Sample		100 Gm	S		
		Sieve	Sizes	Indiv	idual	Comulat	tive Retain	Cumu	late	Sieve		
		lis	mm	Retained	Weight	Wei	ght gm	d	F	Passing %		
	heet	4	4 750		15	<u>د</u>) 00	0.0	0 .	100.00		
	ta S	10	2.000	0.1	0	0	0.10		0	99.90		
	s Da	20	0.850	0.0	0	0	0.10		0	99.90		
	lysi	40	0.425	0.1	5	0).25	0.2	5	99.75		
	Ana	60	0.250	0.1	15	0.40		0.40		0.4	0	99.60
	eve	100	0.150	2.9	98	3.38		3.3	8	96.62		
	Si	200	0.075	1.6	59	5	5.07	5.0	7	94.93		
		Par	1	94.	93		-					
			U	.S. Standard S	ieve	I						
	100%	20 6 4 3		* #4 10	16 20 30 40	50 100 2	200					
	90%					•	U			_		
	80%									_		
ъ	70%									_		
assir	60%									_		
e % F	50%									_		
Siev	40%									_		
	30%									_		
	20%											
	10%											
	0%											
	1000	100	10) Sieve S	1 ize in Millim	0.1 eters		0.01	0	.001		
		Cobbles	Gravels Coarse Fir	ie Coai	Sands rse Med	ium Fine	Silts		Clays			
										_		
(Gravel	Sand	Fines	Silt	Clay Unified Soils Classification System		stem					
	%	%	%	%	%	% ASTM D-2487,						
	0.00 %	5.07 %	94.93 %	-	-	CL, Lean Clay						

	MS CONT	RACTOR	SIEVE ANALYSIS					ASTM D-421, D-422	
Proj	ject:	GEOTECHNIC	CAL INVEST	IGATION (OF GHANI	TOWER,			
Loca	ation:	PARIS ROAD, S	IALKOT.						
Dep	th (ft):	20.0	Borehole:	BH-02	Date:	August 8, 2	2023		
Tota	al Weight	of Dry Sample		Gms	Total Wei	ight of Dry 9	Sample	10) Gms
Iou	in the engine	Sieve S	izes	Indivi	idual	Comulativ	e Retain	Cumulate	e Sieve
			mm	Retained	Weight	Weigh	it gm	d 94	Passing 04
	ieet	4	4 750	gn 0 (15	0.00 0.00			⁷⁰
	ta Sł	10	2 000	1.4		1.4	0	1.40	00.00
	Dat	20	2.000	1.4	FU 70	2 10		1.40	98.60
	ysis	40	0.850	0.7	<u>, 0</u>	2.10		2.10	97.90
	nal	40 60	0.425	3.0	30	2.90		2.90	97.10
	ve A	100	0.250	0.2	20	3.1	.0	3.10	96.90
	Sie	200	0.150	1.4	+2	4.5		4.52	95.48
		200 Par	0.075	1.3	<u>88</u>	5.9	0	5.90	94.10
		1 11		94.	10				
	100%	20 6 4 3	U 1½ ¾ ½ ¾	.S. Standard S % #4 10	16 20 30 40	50 100 200			
	0.0%	000			•••	•••			
	90%								
	80%								
ssing	70%								
% Pas	60%								
eve 9	50%								
Si	40%								
	30%								
	20%								
	10%								
	0%								
	1000	100	10) <u>Sieve</u> S	1 ize in Millim	0.1 eters		0.01	0.001
		Cobbles	Gravels Coarse Fir	ie Coai	Sands	ium Fine	Silts	(lays
	Gravel	Sand	Fines	Silt	Clay	Clay Unified Soils Classification System			on System
	%	%	%	%	%	% ASTM D-2487,		-	
	0.00 %	5.90 %	94.10 %	-	-	CL, Lean Clay			

	MS CONTR	RACTOR		SIEVE ANALYSIS					ASTM 21, D-422
Proj	ject:	GEOTECHNI	CAL INVEST	IGATION	OF GHANI	I TOWEF	ξ,		
Loca	ation:	PARIS ROAD, S	SIALKOT.						
Dep	th (ft):	3.0	Borehole:	BH-03	Date:	August	8, 2023		
Tota	al Weight	of Dry Sample		Gms	Total Wei	ight of Di	ry Sample	1	00 Gms
100	ii weight	Siovo G	Sizos	Indiv	idual	Comula	tive Retain	Cumula	ite Sieve
		JIC		Retained	Weight	We	ight gm	d 0/	Passing
	ıeet	4	4 750	gn 0 (15			<u>%</u>	
	ta Sł	10	2 000	0.0	10		0.00	0.00	00.52
	Dat	20	2.000	0.4	+0 : =		0.40 1.02	0.40	99.52
	ysis	40	0.030	0.3)7		2 10	2 10	90.97
	Anal	60	0.425	1.0	11	3.21		2.10	97.90
	eve /	100	0.230	1.1	24		4.55	4 55	95.79
	Sie	200	0.150	1.	57		6 1 2	6 1 2	03.88
		Par	1	03	88 88		0.12	0.12	75.00
			U	.S. Standard S	ieve			•	
	100%	20 6 4 3		^{/8} #4 10	16 20 30 40	50 100	200		
	90%	-					9		
	80%								
ച	70%								
assin	60%								
е % Р	50%								
Siev	40%								
	30%								
	20%								
	10%								
	0%								
	1000	100	10) Sieve S	1 ize in Millim	0.: eters	1	0.01	0.001
		Cobbles	Gravels		Sands	ium Ein -	Silts		Clays
					l				
	Gravel	Sand	Fines	Silt	Clay Unified Soils Classification System			ion System	
	%	%	%	%	%	% ASTM D-2487,			
	0.00 %	6.12 %	93.88 %	-	-	CL, Lean Clay			,

	MS CONTRACTOR				SIEVE ANALYSIS					STM 1, D-422
Proj	ect:		GEOTECHNI	CAL INVEST	IGATION	OF GHANI	I TOWER			
Loca	ation:		PARIS ROAD,	SIALKOT.						
Dep	th (ft):		25.0	Borehole:	BH-03	Date:	August 8	3, 2023		
Tota	al Weig	ht o	f Dry Sample		Gms	Total Wei	ight of Dr	v Sample	10) Gms
100	ii ii eig		Sieve	Sizes	Indiv	idual	Comula	tive Retain	Cumulate	e Sieve
		-		mm	Retained	l Weight	Wei	ght gm	d %	Passing %
	heet		4	4.750	gn	71	<u>ک</u>	5 71	5 71	90
	ta Sl		10	2,000	2.1	11	7.82		7.82	92.18
	Da	-	20	0.850	0.3	24	8.06		8.06	91.94
	lysis	-	40	0.030	0.2	27	8.39		8 3 9	91.61
	Ana		60	0.425	0.4	16	5	3.85	8.85	91.01
	eve ,	-	100	0.150	2.8	34	1	1.69	11.69	88.31
	Sic		200	0.075	2.0	51	1	4 37	14.37	85.63
			Pa	n 0.075	85	63		4.57	14.57	03.03
Sieve % Passing	100% 90% 60% 50% 40% 20% 10% 0%	200	20 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	U 12 0 2 2 3 14 0 2 3 1	D Sieve S Coa	ieve 16 20 30 40 16 20 30 40 16 20 30 40 1 1 1 1 1 1 1 1 1 1 1 1 1	50 100 2 0.1 eters ium Fine	200 • - - - - - - - - - - - - - - - - - -	0.01	0.001 lays
							** *		: Ci	- Country
	Gravel %		Sand %	Fines %	Silt %	Clay %	Clay Unified Soils Classification System % ASTM D-2487,		n system	
4	5.71 %		8.66 %	85.63 %	-	-	CL, Lean Clay			

MS CONTRACTOR	SIEVE ANALYSIS				
Project: GEOTECHNICAL INVESTIGATIO	N OF GHAN	I TOWER,			
Location: PARIS ROAD, SIALKOT.					
Depth (ft): 12.0 Borehole: BH-0	4 Date:	August 8, 2023			
Total Weight of Day Comple	Tatal Wa	ight of Dury Comple	100	Cma	
Total weight of Dry Sample Gins	dividual	Comulative Retain	Cumulate	Sieve	
Siève Sizes Retai	ned Weight	Weight gm	d	Passing	
ta US mm	gms	gms	%	%	
4 4.750	0.00	0.00	0.00	100.00	
10 2.000	0.23	0.23	0.23	99.77	
20 0.850	0.08	0.31	0.31	99.69	
40 0.425	0.17	0.48	0.48	99.52	
60 0.250	0.19	0.67	0.67	99.33	
100 0.150	2.41	3.08	3.08	96.92	
200 0.075	1.95	5.03	5.03	94.97	
Pan	94.97				
U.S. Standa	rd Sieve				
	10 16 20 30 40	50 100 200			
90%					
80%					
ළු 70%					
SI 60%					
9 50%					
is 40%					
30%					
20%					
10%					
1070					
1000 100 10 Sie	1 ve Size in Millim	0.1	0.01	0.001	
Gravels	Sands	0:11-		ave	
Course Fine	Coarse Med	lium Fine		ays	
Gravel Sand Fines Silt	Clay	Clay Unified Soils Classification System		n System	
	%	ASTM D-2487,			

Project: GEOTECHNICAL INVESTIGATION OF GHANI TOWER, Location: PARIS ROAD, SIALKOT. Depth (ft): 40.0 Brendel: BH-04 Date: August 9, 2023 Total Weight of Dry Sample Gms Total Weight of Dry Sample Comulative Retain Cumulate Sieve Sizes US mm gms 9% % US mm Comulative Retain Weight gm Cumulate Sieve Sizes US mm gms 9% % US mm Comulative Retain Weight gm Cumulate Sieve Sizes US mm Comulative Retain Weight gm Cumulative Retain Weight gm Cumulative Retain Weight gm Cumulative Retain Weight gm Cumulative Retain Weight gm US mm Gms 9% % 40 0.425 3.11 </th <th>Proje</th> <th>MS CONTR</th> <th>ACTOR</th> <th colspan="5">SIEVE ANALYSIS</th> <th colspan="2">ASTM D-421, D-422</th>	Proje	MS CONTR	ACTOR	SIEVE ANALYSIS					ASTM D-421, D-422	
Location: PARIS ROAD, SIALKOT. Depth (ft): 40.0 Borehole: BH-04 Date: August 9, 2023 Total Weight of Dry Sample Gms Total Weight of Dry Sample Comulative Retain Retained Weight Comulative Retain Weight gm Cumulate d Sieve Passin 100 Sieve Sizes Individual Retained Weight Comulative Retain Weight gm Cumulate d Sieve Passin 101 Sieve Sizes Individual Retained Weight Comulative Retain Weight gm d Passin 102 Sieve Sizes Individual Retained Weight Comulative Retain Weight gm d Passin 101 2.000 0.11 0.11 0.11 99.89 200 0.850 0.29 0.40 0.40 99.60 400 0.425 3.11 3.51 3.51 96.44 600 0.250 7.91 11.42 18.85i 1000 0.150 32.91 44.33 44.33 55.67 200 0.075 44.07 88.40 10.61 200 <td>Loca</td> <td>ect:</td> <td>GEOTECHNIC</td> <td>CAL INVEST</td> <td>GATION</td> <td>OF GHANI</td> <td>I TOWER,</td> <td></td> <td></td> <td></td>	Loca	ect:	GEOTECHNIC	CAL INVEST	GATION	OF GHANI	I TOWER,			
Depth (ft): 40.0 Borehole: BH-04 Date: August 9, 2023 Total Weight of Dry Sample Gms Total Weight of Dry Sample Individual Retained Weight Comulative Retain Weight gm Cumulate d Sieve Passin US mm gms gms % % % 4 4.750 0.00 0.00 0.00 100.00 10 2.000 0.11 0.11 0.11 9.8% 20 0.850 0.29 0.40 0.40 99.6% 40 0.425 3.11 3.51 3.51 96.4% 60 0.250 7.91 11.42 11.42 88.5% 100 0.150 32.91 44.33 44.33 55.6% 200 0.075 44.07 88.40 88.40 11.60 US Standard Sieve 20 20 20 20 20 20 20 20 20 20	LUCCA	tion:	PARIS ROAD, S	SIALKOT.						
Total Weight of Dry Sample Gms Total Weight of Dry Sample 100 Gms sieve Sizes Individual Retained Weight US Comulative Retain Weight gm Cumulate d Sieve Passing Sieve M Sieve M Sieve M Sieve M Sieve M Sieve M Sieve M Sieve M Comulative Retain Weight gm Cumulate M Sieve M Sieve M	Dept	th (ft):	40.0	Borehole:	BH-04	Date:	August 9	, 2023		
Sieve Sizes Individual Retained Weight Comulative Retain Weight gm Cumulate d Sieve Passin US mm gms 9% % 4 4.750 0.00 0.00 0.00 100.00 10 2.000 0.11 0.11 0.11 99.84 20 0.850 0.29 0.40 0.40 99.64 40 0.425 3.11 3.51 3.51 96.44 60 0.250 7.91 11.42 11.42 88.51 100 0.150 32.91 44.33 44.33 55.6' 200 0.075 44.07 88.40 88.40 11.60 US Standard Sieve 100% 20 0.43 12.20 30.40 50 100 200 US Standard Sieve 100% 20 0.43 12.20 30.40 50 100 200 90% 90% 90% 90 90% 90 90.9	Total	l Weight (of Dry Sample		Gms	Total Wei	ight of Dry	v Samnle	10() Gms
Jorden Size Retained Weight Weight gm d Passing US mm gms gms % % 4 4.750 0.00 0.00 0.00 100.0 10 2.000 0.11 0.11 0.11 9.84 20 0.850 0.29 0.40 0.40 99.64 40 0.425 3.11 3.51 3.51 96.44 60 0.250 7.91 11.42 11.42 88.55 100 0.150 32.91 44.33 44.33 55.67 200 0.075 44.07 88.40 88.40 11.60 US Standard Sieve US Standard Sieve 0.00 90% 40% 40 10 10 20 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% </td <td>Total</td> <td>i weight (</td> <td>Siovo S</td> <td>Sizos</td> <td>Indiv</td> <td>idual</td> <td>Comulat</td> <td>ive Retain</td> <td>Cumulate</td> <td>e Sieve</td>	Total	i weight (Siovo S	Sizos	Indiv	idual	Comulat	ive Retain	Cumulate	e Sieve
US Imm gms gms gms % % % 4 4.750 0.00 0.00 0.00 100.0 10 2.000 0.11 0.11 0.11 9.84 20 0.850 0.29 0.40 0.40 99.64 40 0.425 3.11 3.51 3.51 96.44 60 0.250 7.91 11.42 11.42 88.53 100 0.150 32.91 44.33 44.33 55.67 200 0.075 44.07 88.40 88.40 11.60 US. Standard Sieve US. Standard Sieve 20 6.4.33 1% 4.4.07 88.40 10.60 90% 60% 90%<			JIC JIC		Retained	Weight	Weig	ght gm	<u>d</u>	Passing
10 2.000 0.11 0.11 0.11 9.8 20 0.850 0.29 0.40 0.40 99.6 40 0.425 3.11 3.51 3.51 96.4 60 0.250 7.91 11.42 11.42 88.53 100 0.150 32.91 44.33 44.33 55.6' 200 0.075 44.07 88.40 88.40 11.60		ieet	4	4.750	gn	15	g	00	<u>%</u>	<u>%</u>
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		a Sh	т 10	4./50	0.0	10	0	0.00 0.00 100		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		Dat	10	2.000	0.1		0	0.11 0.11 99.8		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		/sis	20	0.850	0.2	29	0.40 0.40 99			99.60
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		naly	40	0.425	3.1	1	3.51 3.51		96.49	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		ve A	60	0.250	7.9	91	11	1.42	11.42	88.58
200 0.075 44.07 88.40 88.40 11.60 Pan 11.60 U.S. Standard Sieve U.S. Standa		Sie	100	0.150	32.	91	44	4.33	44.33	55.67
Pan 11.60 U.S. Standard Sieve 100% 20 6 4 3 1% 3% 44 10 16 20 30 40 50 100 200 90% 80% 80% 90% <td< td=""><td></td><td></td><td>200</td><td>0.075</td><td>44.</td><td>07</td><td>88</td><td>3.40</td><td>88.40</td><td>11.60</td></td<>			200	0.075	44.	07	88	3.40	88.40	11.60
90% 80% 70% 60% 50% 40% 30%	1	100%	20 6 4 3	U	L.S. Standard S	<i>ieve</i> 16 20 30 40	50 100 2	00		·
80% 70% 60% 50% 40% 30%		90%	•			- 0				
80% 70% 60% 0 50% 0 40% 0 30% 0		80%					1			
60% 60% 40% 60%	60	70%								
30% 30%	assin	60%								
30%	4 % S	50%								
30%	Sieve	40%								
30/0		30%								
20%		20%								
		20%								
		10%						-		
0% 1000 100 10 1 0.1 0.01 0.001 Sique Size in Millimators		0% 1000	100	10) Siovo S	1 izo in Millim	0.1		0.01	0.001
Gravels Sands Silte Clove			Cobbles	Gravels	51676.5	Sands		Silte		lavs
Course Fine Coarse Medium Fine Clays			GODDIES	Coarse Fir	ne Coai	rse Med	lium Fine	51115		14y S
Gravel Sand Fines Silt Clay Unified Soils Classification System			. .				1			
70 70 70 70 70 ASIM D-2487, 0.00 % 88.40 % 11.60 % - - SP-SM Sand with Silt	G	Gravel	Sand	Fines	Silt	Clay	Uni	fied Soils Cla	assificatio	n System

	MS CONTRACTOR			SIEVE ANALYSIS					ASTM 21, D-422
Proj	ject:	GEOTECHNI	CAL INVEST	IGATION	OF GHANI	I TOWER	,		
Loca	ation:	PARIS ROAD,	SIALKOT.						
Dep	th (ft):	15.0	Borehole:	BH-05	Date:	August 9	9, 2023		
Toto	al Woigh	t of Dry Sample		Cmc	Total Wa	ight of Dr	v Sampla	1()0 Cms
100	ai weigii	Ciore Ciore	21	Indiv	idual	Comulat	tive Retain	Cumula	te Sieve
		Sieve	Sizes	Retained	l Weight	Wei	ght gm	d	Passing
	eet	US	mm	gn	15	g	gms	%	%
	a Sh	4	4.750	0.0	00	0	0.00	0.00	100.00
	Data	10	2.000	0.4	14	0.44		0.44	99.56
	sis l	20	0.850	3.0	50	4.04		4.04	95.96
	ıaly	40	0.425	0.2	13	4.17		4.17	95.83
	e Ar	60	0.250	0.0	00	4	.17	4.17	95.83
	Jiev	100	0.150	4.9	96	9.13		9.13	90.87
	0,	200	0.075	1.9	€7	1	1.10	11.10	88.90
		Pa	n	88.	90				
			U	.S. Standard S	lieve				
	100%	20 6 4 3		^{/s} #4 10	16 20 30 40	50 100 2	200		
	90%						•		
	80%								
ള	70%								
assir	60%								
е % Р	50%								
Sieve	40%								
	30%								
	20%								
	20%								
	10%								
	0% 1000	100	10)	1	0.1		0.01	0.001
	Γ		Gravels	Sieve S	Sands	eleis			
		Cobbles	Coarse Fir	ne Coa	rse Med	lium Fine	Silts		Clays
					-				
(Gravel	Sand	Fines	Silt	Clay	Clay Unified Soils Classification System		on System	
	%	%	%	%	%	% ASTM D-2487,			
	0.00 %	11.10 %	88.90 %	-	-	CL, Lean Clay			

	MS CONT	TRACTOR	SIEVE ANALYSIS					ASTM D-421, D-422		
Proj	ject:	GEOTECHNI	CAL INVEST	IGATION	OF GHANI	I TOWER,				
Loca	ation:	PARIS ROAD, S	SIALKOT.							
Dep	th (ft):	35.0	Borehole:	BH-05	Date:	August 9,	2023			
Toto	Woight	of Dwy Comple		Cmc	Total Wa	abt of Dwy	Samula	1	00 Cmc	
100	ai weigin	Ciarra C		Indiv	idual	Comulati	ve Retain	Cumula	ite Sieve	
		Sieves	bizes	Retained	l Weight	Weig	ht gm	d	Passing	
	eet	US	mm	gn	15	gr	ns	%	%	
	a Sh	4	4.750	0.0	00	0.	00	0.00	100.00	
	Data	10	2.000	0.0	00	0.	00	0 0.00 100.0		
	sis l	20	0.850	1.0	02	1.	1.02 1.02 98.98			
	laly	40	0.425	2.0)6	3.	3.08 3.08 9			
	e Ar	60	0.250	10.	12	13	.20	13.20	86.80	
	jiev	100	0.150	41.	50	54	.70	54.70	45.30	
	•	200	0.075	33.	20	87	.90	87.90) 12.10	
		Pai	1	12.	10					
	100%	20 6 4 3		L.S. Standard S	16 20 30 40	50 100 20	0			
	90%					9				
	80%									
sing	70%									
% Pas	60%									
eve 9	50%									
Si	40%					-				
	30%									
	20%									
	10%									
	0%									
	1000	100	10) Sieve S	1 ize in Millim	0.1 eters	(0.01	0.001	
		Cobbles	Gravels Coarse Fir	ne Coa	Sands rse Med	ium Fine	Silts		Clays	
(Gravel	Sand	Fines	Silt	Clay Unified Soils Classification System		ion System			
	%	%	%	%	%	% ASTM D-2487,				
	0.00 %	87.90 %	12.10 %	-	-	SM, Silty Sand			1	

MS CON	TRACTOR		ATTERI		ASTM D-4318			
Project:	GEOTECHNICAL IN	VESTIGATION O	F GHANI TC	WER,				
Location:	PARIS ROAD, SIALK	OT.						
Depth [ft]:	5.0	Borehole:	BH-01	Date:		Augı	ıst 8, 2023	
Test No. Weight of M Weight of D Weight of P Weight of D Weight of M % Moisture No. of Blows	Yest No. Veight of Wet Soils + Pan: Veight of Dry Soils + Pan: Veight of Pan: Veight of Dry Soils: Veight of Moisture: 6 Moisture: No. of Blows:		Limit Det #2 17.81 16.03 9.85 6.18 1.78 28.8 % 25	erminatio #3 23.80 21.63 13.55 8.08 2.17 26.9 % 34	n	Plastic #1 14.22 13.65 10.90 2.75 0.57 20.7 %	Limit Determination	
Liquid	Limit @ 25 Blows	Plastic Limit Plasticity Inde			v Index	Unified Soils Classification System		
	28 5%	P _L 20.70	20.7% 7.8%				ASTM D-2487,	
80.0% 70.0% 60.0% 50.0% 40.0% 20.0% 10.0% 0.0%	CL-ML 20.0%	F CL or 01 % 40	Plastici	ty Char CH 60.0% iquid Limit	rt "U" Lir Lor OH MH	ne or OH 80.0%	"A" Line	
5 4 4 8 4 4 4 3 3 2 8 9 8 9 1	0% 5% 0% 5% 0% 5% 0%		Li(©	quid Lim	it ©			

25 30 NUMBER OF BLOWS, "N"

,

MS CONT	RACTOR		ATTERI		ASTM D-4318		
Project:	GEOTECHNICAL INV	VESTIGATION OI	F GHANI TC)WER,			
Location:	PARIS ROAD, SIALK	ОТ.					
Depth [ft]:	8.0	Borehole:	BH-02	Date:		Augu	ıst 8, 2023
		Liauid	Limit Det	erminatio	on	Plastic	Limit Determination
Гest No.		#1	#2	#3		#1	
Veight of W	et Soils + Pan:	18.76	22.16	23.24	`	12.74	
Veight of Dr	y Soils + Pan:	16.81	19.86	20.70		12.28	
Veight of Pa	n:	11.25	13.00	12.75		10.09	
Veight of Dr	y Soils:	5.56	6.86	7.95		2.19	
Veight of Mo	oisture:	1.95	2.30	2.54		0.47	
<u>6 Moisture:</u>		35.1 %	33.5 %	32.0 %		21.3 %	
lo. of Blows	1	13	24	33			
Liquid L	imit @ 25 Blows	Plastic L	Plasticity Index		Unified S	oils Classification System	
	<i>L</i> _{<i>L</i>}	<i>P</i> _{<i>L</i>}		I _P			ASTM D-2487,
	33.3%	21 30	6	12.0%			CL Lean Clay
80.0% 70.0% 60.0% 50.0% 40.0% 30.0% 20.0% 10.0% 0.0% 0.	CL-ML 0% 20.09	P CL or 01 % 40	Plastici 	ty Cha	rt "U" I CH or OH MI	ine H or OH 80.0%	"A" Line
50 45 LN 40 LN 40	1% 5% 0%		Lie	quid Lin	nit		
35 30 30 30 30 30 30 30 30 30 30 30 30 30	9% 9% 9%		0		•		

15% 10%

NUMBER OF BLOWS, "N"

	MS CONTR	RACTOR		ATTERI	ASTM D-4318						
Proj	ect:	GEOTECHNICAL INVESTIGATION OF GHANI TOWER,									
Loca	tion:	PARIS ROAD, SIALK	ОТ.								
Dept	h [ft]:	3.0	Borehole: BH-03 Date: August				st 8, 2023				
Test Wei Wei Wei Wei % M	No. ght of We ght of Dry ght of Par ght of Dry ght of Mo oisture:	t Soils + Pan: / Soils + Pan: 1: / Soils: isture:	Liquid #1 19.69 17.64 10.90 6.74 2.05 30.4 %	Limit Det #2 19.96 18.25 12.35 5.90 1.71 29.0 %	erminati #3 24.91 22.52 13.79 8.73 2.39 27.4 %	on 、	Plastic #1 12.57 12.08 9.55 2.53 0.50 19.6 %	Limit Determination			
No. (of Blows:		15	23	34						
	Liquid Li	mit @ 25 Blows	Plastic Limit		Plasticity Index		Unified Soils Classification System				
	28.8%		19.6%		9.2%		CL, Lean Clay				
Plasticity Index	80.0% 70.0% 60.0% 50.0% 40.0% 30.0% 20.0% 10.0% 0.0%	CL-ML 9% 20.09	CL or 0	Plastici	ty Cha	rt "U" I CH or OH MI	Line H or OH 80.0%	"A" Line			
	50 ⁴ 45 ⁴ 40 ⁴ 35 ⁴	% % %		Li	quid Lin	nit					
	300 WOISTURE 250 % 200	% © %		0		Ó					

20% 15%

10% – 10

NUMBER OF BLOWS, "N"

MS CONT	RACTOR		ATTERI	AS D-4	STM 4318					
Project:	GEOTECHNICAL INVESTIGATION OF GHANI TOWER,									
Location: PARIS ROAD, SIALKOT.										
Depth [ft]:	12.0	Borehole:	BH-04	Date:	Date: August 9, 2023					
Test No. Weight of We Weight of Dry Weight of Par Weight of Dry Weight of Mo % Moisture: No. of Blows:	et Soils + Pan: y Soils + Pan: n: y Soils: isture:	Liquid #1 17.63 15.23 9.00 6.23 2.40 38.5 % 16	Limit Det #2 19.80 18.02 11.02 7.00 1.78 25.4 % 23	erminatio #3 22.32 20.56 14.11 6.45 1.76 27.3 % 32	>n >	Plastic #1 13.35 12.81 10.10 2.71 0.54 19.9 %	Limit Deter	mination		
Liquid Li	mit @ 25 Blows	Plastic Limit		Plasticity Index		Unified Soils Classification System				
	29.5%	19.9%		9.6%		CL, Lean Clay				
80.0% 70.0% 60.0% 50.0% 40.0% 30.0% 10.0% 10.0% 0.0%	CL-ML 20.09	CL or OI	Plastici 0.0%	ty Cha c c 60.09	rt "U" Li H or OH MH	ine I or OH 80.0%	"A" Line	9%		
50 45 40 35	% % %		Lie	quid Lim	nit					
₩ 30 25 ₩ 20 15	% % %	()							
10	10 15	20	25	30	35	40	45	50		

NUMBER OF BLOWS, "N"

MS CONTRACTOR				ATTERBERG LIMITS						A D-	STM 4318	
Proje	ct:	GEOTECHNICAL INVESTIGATION OF GHANI TOWER,										
Locat	ocation: PARIS ROAD, SIALKOT.											
Depth	epth [ft]: 15.0 Borehole: BH-05 Date: August 9, 2023											
				Liquid	Limit Dot	orminat	ion	D	lactic Li	imit Dotor	mination	
Fact	No			#1	#2	eriinat #2	.1011	P 1 #*			mmation	
Woig	NU. ht of Wei	t Soils + Pan		#1 17.98	#2 20 31	#3 23.92		13	35			
Neig	ht of Drv	Soils + Pan		15.83	18 16	21.92		13.	81			
Veig	ht of Pan	:		9.00	11.09	15.11		12.	10			
Veig	ht of Drv	Soils:		6.83	7.07	6.88		2.7	/1			
Neig	ht of Moi	sture:		2.15	2.15	1.93		0.5	64			
6 Mc	oisture:			31.5 %	30.4 %	28.1 %		19.9	%			
lo. o	f Blows:			11	23	32						
Liquid Limit @ 25 Blows				Plastic Limit		Plasticity Index		x Uı	Unified Soils Classification System			
L _L				P _L		I _P			ASTM D-2487,			
29.5%				19.9%			9.6%		CL, Lean Clay			
riasucity index	80.0% 70.0% 50.0% 40.0% 30.0% 20.0% 10.0% 0.0%	CL- %	ML 20.0%	CL or OI	0.0%	60.c	CH or OF	U" Line H MH or OH 80.0)%	'A" Line 100.	0%	
	500	4			Lie	quid Li	mit					
	50%											
E	43%	/0										
40 AU		/0										
		6										
L L	년 1월 309	(n) (in the second seco		(
	In I						O					
010	25%	/0										
	2 200	6										
:	≈ ²⁰⁹	0										
à	× 20% 150	/0										
ò	\$ 20% 15%	%										

NUMBER OF BLOWS, "N"

	Moisture Content of Soil {ASTM D 2216}									
Project:	GEOTECHNICAL INVESTIGATION OF GHANI TOWER,									
Location:	PARIS ROAD, SIALKOT.									
Test Date :	August 7, 2023									
]	Moisture Cont	ent Calculatio	n						
Bor	e Hole No.:	BH-01	BH-01	BH-01	BH-02	BH-02				
D	epth (ft)	5.0	20.0	30.0	8.0	20.0				
Weight of Wet S	Soil + Container (Gm)	52.45	51.50	57.80	79.10	50.98				
Weight of Dry	Soil + Container (Gm)	46.89	44.68	50.97	69.15	45.11				
Weight of	Container (Gm)	10.97	10.46	13.50	12.30	13.09				
Weight	of Water (Gm)	5.56	6.82 6.83		9.95	5.87				
Weight o	f Dry Soil (Gm)	35.92	34.22	37.47	56.85	32.02				
Moistur	e Content (%)	15.48	19.93	18.23	17.50	18.33				
Bor	e Hole No.:	BH-02	BH-03	BH-03	BH-03	BH-04				
D	enth (ft)	35.0	3.0	15.0	25.0	50				
Weight of Wet	Soil + Container (Gm)	82.45	82.88	96.97	90.92	95.30				
Weight of Dry	Soil + Container (Gm)	70.76	69.22	84.65	80.69	80.56				
Weight of	Container (Gm)	12.80	12.60	12.50	13.06	14.60				
Weight	of Water (Gm)	11.69	13.66	12.32	10.23	14.74				
Weight o	f Dry Soil (Gm)	57.96	56.62	72.15	67.63	65.96				
Moistur	e Content (%)	20.17	24.13	17.08	15.13	22.35				
Bor	e Hole No.:	BH-04	BH-04	BH-05	BH-05	BH-05				
D	epth (ft)	12.0	40.0	8.0	15.0	35.0				
Weight of Wet S	Soil + Container (Gm)	91.99	90.64	82.86	79.38	82.43				
Weight of Dry S	Soil + Container (Gm)	80.45	77.94	70.94	68.49	72.69				
Weight of	Container (Gm)	13.30	10.55	13.09	13.63	11.60				
Weight	of Water (Gm)	11.54	12.70	11.92	10.89	9.74				
Weight o	f Dry Soil (Gm)	67.15	67.39	57.85	54.86	61.09				
Moistur	e Content (%)	17.19	18.85	20.61	19.85	15.94				



SITE PHOTOGRAPHS













MUHAMMAD SHOAIB CONTRACTOR

- **O GEOTECHNICAL INVESTIGATIONS**
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 HEAD OFFICE: HOUSE # 75, STREET # 03, NEW CITY PHASE I WAH CANTT |

 □ ○ 0322-9020090 | 0332-5573750

 @ www.mscontractor.com.pk
 □ info@mscontractor.com.pk