FINAL REPORT

SUBSURFACE INVESTIGATION PROPOSED MAYON EVACUATION CENTER (2-STOREY) STO. DOMINGO CENTRAL SCHOOL BRGY. NAGSYA, PROVINCE OF ALBAY

MOHRI, ARCHITECT & ASSOCIATES, INC.

OCTOBER 2010 JOB NO. 2209-10.R1





FINAL REPORT

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Geotechnical Contractor

119 Sauyo Road, Novaliches Quezon City, Philippines

Business development Customer Service Fax Homepage Email

FINAL REPORT

SUB-SURFACE INVESTIGATION FOR THE PROPOSED MAYON EVACUATION CENTER (2-STOREY) LOCATED AT STO. DOMINGO CENTRAL SCHOOL BRGY. NAGSYA, PROVINCE OF ALBAY

L0 INTRODUCTION

Geotechnics Philippines, Incorporated (GPI) completed the subsurface soil investigation for the Proposed Mayon Evacuation Center. The proposed site explored is located at Sto. Domingo Central School, Brgy. Nagsya, Province of Albay.

Two (2) boreholes were drilled at the proposed site from October 20 to October 22, 2010, Borings were undertaken down to 8.45m to8.25m respectively for both BH-1 and BH-2 below existing natural ground line. Borehole locations are as indicated on the accompanying Boring Plan and Soil Profile Sheets.

The subsurface soil exploration was undertaken upon the request of Mohri, Architect & Associates, Inc. in order to gain information on the subsurface conditions and bearing characteristics of the underlying soils at site.

The undersigned was tasked to evaluate the results of the completed subsurface soil exploration and to recommend a suitable foundation solution for the proposed structure.

This report embodies the undersigned's engineering analysis and recommendations based mainly on the results of the geotechnical soil borings and pertinent laboratory tests performed on extracted samples.

The results of geotechnical soil borings and laboratory tests can be referred to in the Attachments accompanying this report.

2.0 OBJECTIVES

The geotechnical investigation aims to determine the following:

- Soil Profile
- Engineering properties of the Soil Strata
- Bearing Capacities and Foundation Types
 - Settlement conditions of critical areas
 - · Comment on ground stability and liquefaction potential of the site
 - Recommend ground improvement when necessary
 - Provide Excavation and Fill Guidelines

In addition to the above mentioned items, matters on implementation and construction shall be given as required.

3.0 FIELD EXPLORATION AND INVESTIGATION

The field exploration implored continuous was boring as the Standard Penetration Test (SPT) was performed at the last 45cm of every change strata or 1.0 meter intervals. The blow counts (N value or NB) were recorded as disturbed samples from the split spoon sampler were retrieved for laboratory testing. The recovered samples were described semi qualitative in terms of extracted length. The extracted soil samples were wrapped in double plastiv bags for moisture and sample protection and were transported to the laboratory for further testing of engineering properties.

Advancing through the hard strata, the same technique was implored. Hard strata are defined over a series of high blow count layers of more than 50 blows or the inability of driving the hammer to penetrate at high blow counts termed as refusal.

3.1 Standard Penetration Test

The Standard Penetration Test (SPT) is a field test used in determining the shear strength of soils from an established correlation. The SPT requires the count of the number of blows that it would take a standard split spoon sampler to penetrate its last 30.5cm (12inches) of the sampler. The standard mass is 63.5 kilograms and the height of the drop is 76.2cm specified as a free drop.

3.2 Hard Strata and Soft Strata Sampling

Hard strata are defined as a consecutive ground resistance of refusal to the standard penetration test of blow counts of 50 with a penetration less than or equal to 25.4mm. This is in accordance to the American Standard for Testing Materials (ASTM) Designated D 1586. Coring techniques were applied in this investigation. Sampling of undisturbed samples for soft cohesive soils was not conducted via pressing the sampler.

3.3 Ground Water Table

The ground water table (GWT) elevation was observed at least 4 hours from the completion of the borehole up to demobilization.

4.0 LABORATORY INVESTIGATION

The retrieved samples were brought to the laboratory in Sauyo Road, Novaliches, Quezon City. Various tests were conducted on all extracted samples with test procedures conforming to the American Standards for Testing Materials (ASTM). The following are the laboratory tests conducted on the soil samples.

Type of Test	ASTM Designation	Description of Test
Soil Classification for Engineering Purposes – Unified Soil Classification System	ASTM D 2487-05	 Standard in classifying the type of soil based on composition and physical properties These were classified in accordance to grain size, composition, percentage of size in the distribution
Particle Size Distribution – Sieve Analysis	ASTM D 422-63 (Reapproved 2002)	 The test allows the dried or wet soil to pass through a series of sieves in order to determine the distribution of grain sizes. The distributions of the particles are graphed on a semi log scale This test aids the previous test in classification
Moisture Content	ASTM D 2216-05	 The test aims to determine the natural content of water in the soil This is taken as the ratio of water to the ratio of the soil particles The test uses a weighing scale measuring the initial weight of the soil and the final weight of the soil after drying it in the oven
Atterberg Limits Liquid Limit, Plastic Limit and Plasticity Index	ASTM D4318-05	 Tests determining the limits of cohesive soils in behaving as a plastic or a flowing medium by incrementally changing the water content The plastic limit is determined by rolling a clay sample to around 1/8 of an inch or 3mm The liquid limit uses the liquid limit device and determines the number of blows it would take for the slit to close Correlative values can be used for settlement relations

The results of the laboratory investigation are appended.

5.0 BOREHOLE STATIGRAPHY

Two (2) boreholes were driven to investigate the subsurface. The following are the findings:

5.1 Borehole BH-1

Borehole BH-1 extends 8.45 meters obtaining the following stratification: Medium dense silty sand at 0-1 meter, very dense poorly graded sand at 1-1.85 meters, sludge at 1.85-2.85 meters, very dense poorly graded sand at 2.85-3 meters, very dense gravel to cobbles at 3-4 meters, no recovery at 4-5 meters, very dense well graded sand at 5-5.15 meters, very dense cobble at 5.15-6.15 meters, sludge at 6.15-7.15 meters, very dense well graded sand at 7.15-7.3 meters, sludge at 7.3-8.3 meters, very dense well graded sand at 8.3-8.45 meters, the extent of the borehole.

The ground water was detected at 2.31 meters from the existing grade.

5.2 Borehole BH-2

Borehole BH-2 extends 8.25 meters obtaining the following subsurface stratification: Medium deuse silty sand at 0-0.85 meters, very dense gravel to cobble at 0.85-1.35 meters, sludge at 1.35-2.35 meters, very dense poorly graded sand at 2.35-2.45 meters, sludge at 2.45-3.5 meters, very dense poorly graded sand at 3.5-6.85 meters, very dense well graded sand at 6.85-8.1, very dense well graded sand at 8.1-8.25 meters, the extent of the borehole.

The ground water table was detected at 0.73 meters from the existing grade.

6.0 SOIL PROPERTIES

The following are the adapted soil properties for the investigated strata:

Soil Parameters			
Gravels, Sands, Silty S	ands and Clayey Sand	s (No	n-cohesive)
Sands	c	φ	γ (kcf)
Very Loose	0	26	0.085
Loose	0	28	0.100
Medium Dense	0	30	0.110
Dense	0	32	0.120
Very Dense	0	35	0,130
Silts Silts and Clays	and Clays (Cohesive)	φ	γ (kcf)
Very Soft		0	0.100
As the second		σ	
Soft	0.161.01.02	0	0.105
Soft Firm	=(N*10)/2	0	0.105
- 37F	from		
Firm		0	0.115

7.0 LIQUEFACTION POTENTIAL

The two (2) boreholes showed no potential for liquefaction due to dense and stiff layer layers found until the end of boreholes.

8.0 BEARING CAPACITY AND FOUNDATION TYPE

Shallow Foundations have good bearing capacities. The following are the allowable net bearing capacities based on Terzaghi's Bearing Capacity Equation:

BH-1:

Depth	Bearing Capacity (kPa)
1.0	96

BH-2:

Depth	Bearing Capacity (kPa)
1.0	96

The associated settlement on the other hand is within the tolerable engineering settlement of 25mm.

9.0 EXCAVATION AND FILL

Fill for the excavation for footings may utilize the same materials. On the other hand, grade and subgrade materials should be sandy frictional materials.

Fill should be compacted at 95% its maximum dry density. Should the amount of soil be inept, sandy fill may be utilized and should be compacted in the same degree. In both cases, the height of fill should be reviewed and adjusted accordingly to adapt minimal settlements.

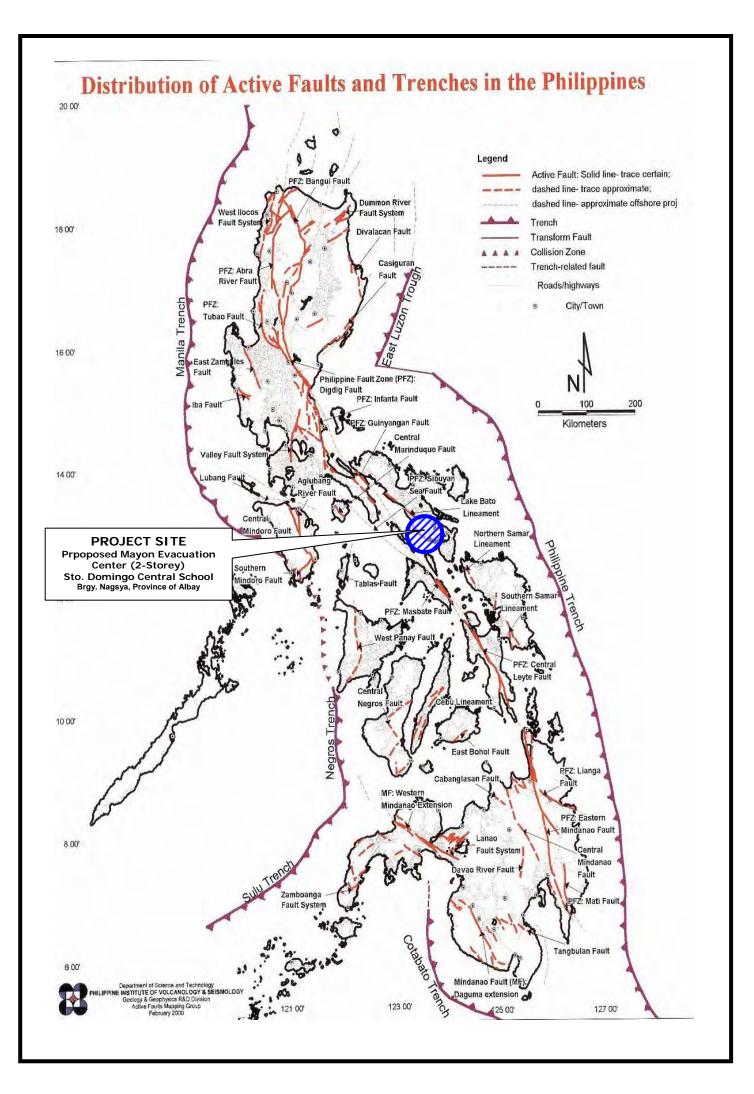
Borehole Conclusions and Recommendations

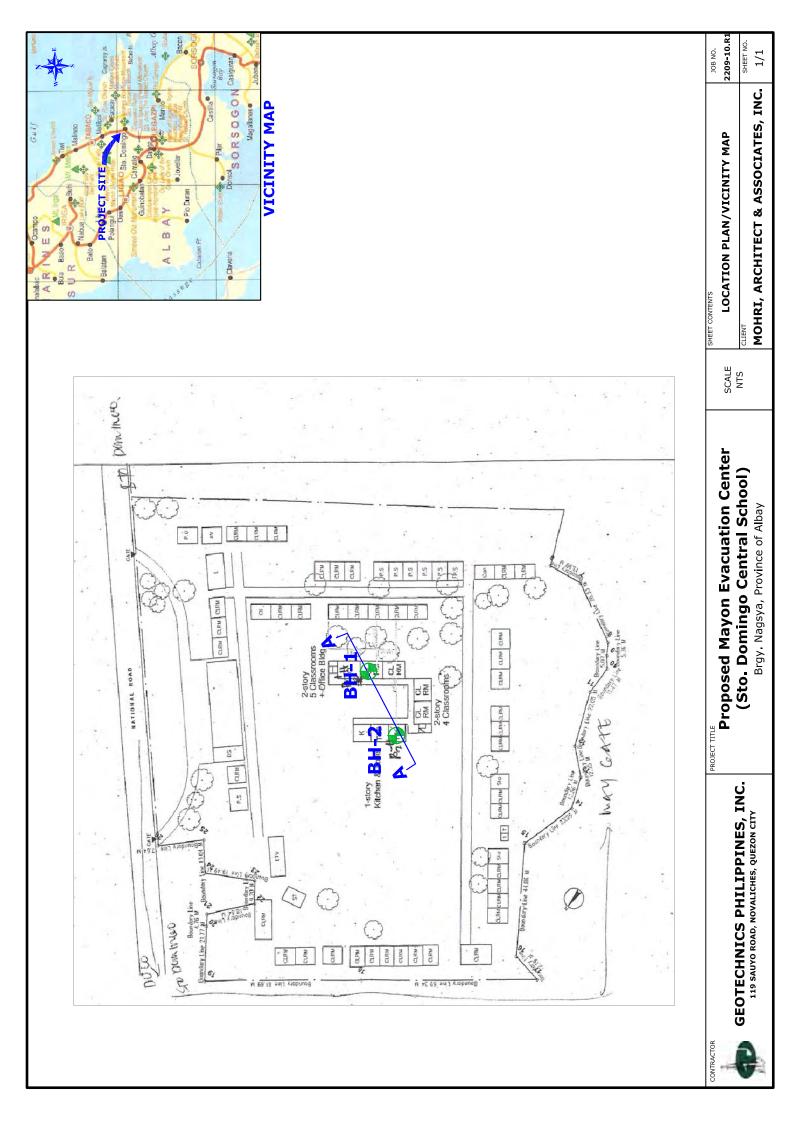
The conclusions and recommendations are based on the data of two (2) boreholes and the geologic map. Deviations from these are expected and should be minimal as the boreholes are typical of an alluvial formation. Should there be any major deviation in the substrata be detected during the excavation phase, may the undersigned through Geotechnics Philippines Inc (02-930-6555) be approached immediately for proper reassessment.

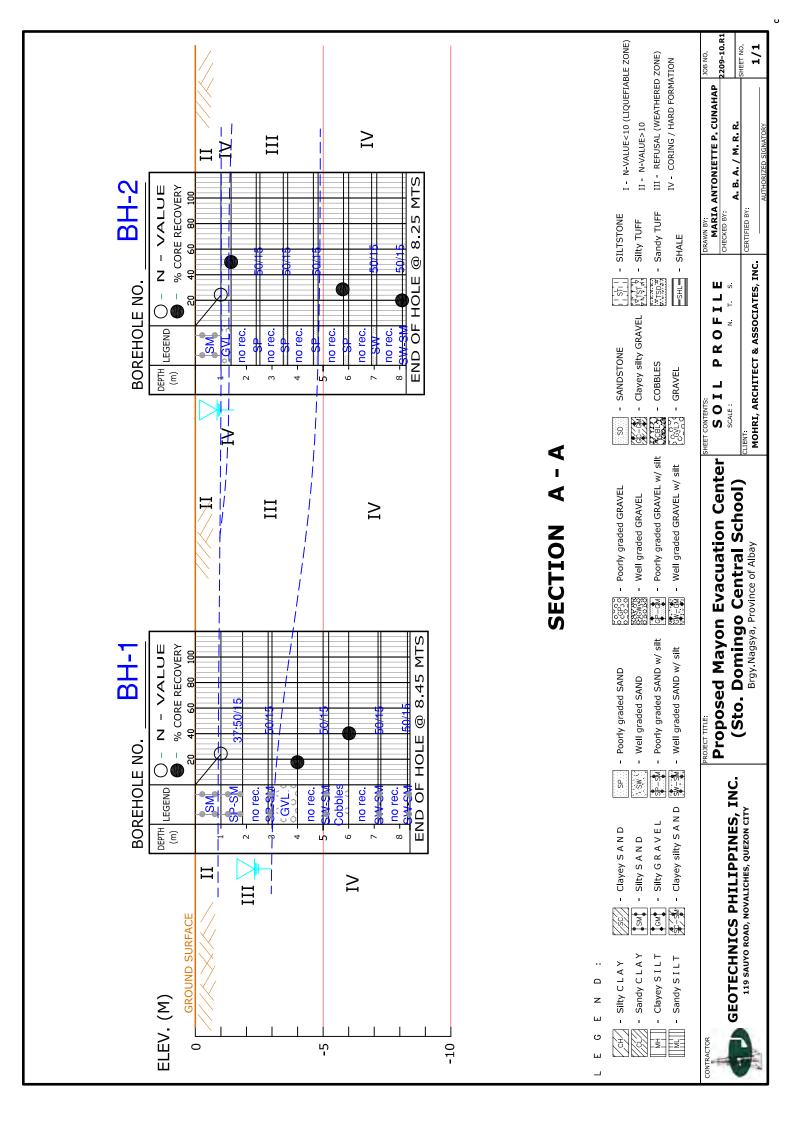
DIOSDADO A. UREÑA CE REG No. 053884 PTR No. 3228274 Issued on January 8, 2010 Issued at Quezon City













GEOTECHNICS PHILIPPINES, INCORPORATED SOILS AND MATERIALS TESTING LABORATORY 119 SAUYO ROAD, NOVALICHES, QUEZON CITY



						P	ny.	-				119 SAUYO R TEL. NO. 93									DPWH-BR	RS Accredited			
CLIE	NT	MOHR	I, ARC	HITECT	& ASS	SOCI/	ATE	S, 1												BOREHOLE NO.	BH- 1				
PROJ	IECT	Propos	sed Ma	yon Eva	acuatio	on Ce	ente	er (S	Sto	Do	ming	o Central Sci	100l)							JOB NO. 22	09-10.R1-FBL-(01			
LOCA	ATION	Brgy.	Nagsy	a, Provi	nce of	Alba	y						DRILLE	D			I	R.F	POLIDAN	SHEET	1 of 1				
RIG		KSK S	MALL										LOGGE	D			ł	R.F	POLIDAN	0.00) to 8.45 meters				
		Hamme	r We i ght	63.50 Kg).								DATE S					Oct	. 20, 2010	GROUND LEVEL	- m.				
		Fall Heig	ght 76.2	0 cm.									DATE (TED	<u>'</u>	Oct	. 20, 2010	WATER LEVEL 2.31 m.					
METH	HOD	WASH	I BORI	NG									NORTH	ING			-	-		EASTING	-				
											FI	NAL BOR	ING	ìL	.0	G									
DE	PTH	SOIL	SAMPLE	TYPE O	F REC	RQD	PL		мс о —		PI	CONSISTENCY	0						S	OIL DESCRIPTION		OTHER TEST DATA			
(m)	SYMBOL	NUMBER	SAMPLIN	IG (cm)	(%)	20	40	60 80) 100			_	0 2	0 40	60	80	100							
-	- 1.00 -	- 1.00 - S-1 SPT 45 - NP MEDI									MEDIUM DENS	E 25		6				little amount o NB: (10)(12)(ray, very moist	-				
	- 2.00 -		S-2	SPT	30	_					NP				37 !!	50/	15		little amount o NB: (22)(37)(y graded SAND of gravel, dark g 50/15) ered, fine to coa	ray, moist	_			
¥	· · ·	C-1 CRG 0 0 -											0						sand, (pyrocla cemented, hig drilling, dark g	weakly andy tuff, hard					
-																0/1	5		vith silt, dark	-					
-	- 4.00 -		C-2	CRG	50	0					-		17	•	•				rock fragments	BBLES, high stre s ranges:1.0cm- silt on rough su					
F	 		C-3	CRG	\mathbb{N}_{\circ}	0					-		0												
-	- 5.00 -		<u>S-4</u>	SPT	10	-	0				NP	VERY DENSE			_ 5(0/1	5			graded SAND with silt and little avel, dark gray, moist					
	- 6.00 -		C-4	CRG	40	0					_		40						COBBLE, range	es:9.6cm-10.4cr	n				
	- 7.00 -		C-5	CRG	× .	0							0		-9				sand, (pyrocla	ered, fine to coar stic materials), v hly weathered s ray	weakly				
	• •	- `. ⊕ ⊕ -		SPT			•				NP				5	0/1	5		amount of gra NB: (50/15)	graded SAND w vel, dark gray, n	noist				
-	- 8.00 -	··••••••••••••••••••••••••••••••••••••	C-6 S-6	CRG SPT	0 15	0					- NP		0		5(0/1	5		(pyroclastic ma cemented sand	iterials), hard dr ly tuff, brownish	dark gray				
-	- 9.00 -	-																	amount of gra NB: (50/15)	graded SAND w vel, dark gray, n ORING AT 8.45	noist	-			
Тур	e of Sar	mpling			Type of S	Soil						СС	DNSI	STE	INC	CY			Ν	IOISTURE	PERCENTA	AGE			
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					30 cn	n.>#	2>	10c	m.		3 c	m. >#4>1cr	n.							Certified by :					
		RQD =	= Rock	Quality	' Desig	natic	n	S	CR	= 5	Solid	Core Recove	ry								JTHORIZED SIGNATO	ORY			
Desc	cription	of Strata	a is acco	ording to	Unified S	Soil Cl	assi	ficat	tion	Syst	em									Date Issued :					



Description of Strata is according to Unified Soil Classification System

GEOTECHNICS PHILIPPINES, INCORPORATED SOILS AND MATERIALS TESTING LABORATORY 119 SAUYO ROAD, NOVALICHES, QUEZON CITY TEL. NO. 938-2124 \ 456-1140 \ 930-6555



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	Fall Heig	ght 76.20) cm.									DATE	СОМ	PLET	TED	(Ct	. 22, 20	10	WATER LEVEL 0.73 m.						
OD	WASH	BORI	NG									NORTHING								EASTING	-					
										FI		IN	GL	.0	G					*						
РТН	SOIL	SAMPLE	TYPE O	F RE	C RQ	DF			LL	PI	CONSISTENCY		- N - - %				verv		S	OIL DESCRIPTION						
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-				M														to moder Sludge: I	rately we recovere	eathered, dark gray						
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Date Issued :

SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



CLIENT...... MOHRI, ARCHITECT & ASSOCIATES, INC.

PROJECT..... Proposed Mayon Evacuation Center (Sto. Domingo Central School)

LOCATION....Brgy. Nagsya, Province of Albay

JOB NUMBER...... 2209-10.R1-SUM-1 DATE OF RECIEPT.... October 27, 2010

DATE OF TEST..... Oct. 27-Nov. 2, 2010

SUMMARY OF LABORATORY TESTS

SAMPLE	ATTERBERG LIMIT (%)		LIMIT,	USCS	SIEVE ANALYSIS (% FINER) PASSING SIEVE NO.												
NUMBER	(m)	(%)	LL	PL	ΡI	Class.	1	³ / ₄	³ /8	4	10	20	40	60	140	200	
BH-1																	
1	0.55 - 1.00	30	-	NP	-	SM		100	92	84	76	64	49	39	27	24	-
2	1.55 - 1.85	19	-	NP	-	SP-SM		100	89	84	77	60	31	17	6	5	-
3	2.55 - 3.00	21	-	NP	-	SP-SM				100	98	75	48	28	9	7	-
4	5.00 - 5.15	19	-	NP	-	SW-SM		100	85	80	79	63	42	25	8	6	-
5	7.15 - 7.50	20	-	NP	-	SW-SM		100	89	86	83	64	41	25	9	6	-
6	8.30 - 8.45	20	-	NP	-	SW-SM		100	83	80	79	60	38	22	8	6	-
BH-2													ļ				
1	0.55 - 0.85	30	-	NP	-	SM			100	96	86	72	53	37	21	18	-
2	2.36 - 2.41	23	-	NP	-	SP				100	94	70	35	17	6	4	-
3	3.41 - 3.56	17	-	NP	-	SP		100	88	83	62	46	24	11	4	3	-
4	4.65 - 4.80	21	-	NP	-	SP			100	90	42	13	9	6	4	3	-
5	5.80 - 5.95	14	-	NP	-	SP		100	82	65	44	28	17	11	5	4	-
6	6.95 - 7.10	15	-	NP	-	SW		100	85	65	38	19	12	9	4	4	-
7	8.10 - 8.25	19	-	NP	-	SW-SM		100	86	72	55	27	17	12	7	6	_
		ļ															
MPLE SUB Walk-in (POLIDAI		GPI Fiel	d Oper	ator						<u> </u>	REM	ARKS:		* witl	h hydr	ometer	-
OMPUTER	PRINT-OUT IA ANTONIETTE I Encoder by:ABA / M		AHAP														

AUTHORIZED SIGNATORY

This report should not be copied, divulged or reproduced, in full or in part, without prior advice to and written approval from GPI-SMTL.

Quality Assurance

Date Issued



BOREHOLE NO...BH-1



GEOTECHNICS PHILIPPINES, INC.

SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Location...... Brgy. Nagsya, Province of Albay

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05

Test Method 🗹 A 🗌 B

SAMPLE NUMBER	DEPTH (m)	WET SOIL DISH (g)		WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS
					NATURAL N	MOISTURE	CONTENT	
1	0.55-1.00	90.00	71.51	18.49	9.99	61.52	30	
2	1.55-1.85	104.20	88.82	15.38	9.47	79.35	19	
3	2.55-3.00	98.10	82.61	15.49	9.56	73.05	21	
4	5.00-5.15	99.58	85.28	14.30	9.72	75.56	19	
5	7.15-7.50	100.30	85.43	14.87	9.61	75.82	20	
6	8.30-8.45	101.90	86.77	15.13	9.87	76.90	20	

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE		DLOWC	WET SOIL	DRY SOIL	WATER	DISH	DRY SOIL	% Retained	ATTERBE	RG LIMIT	
NUMBER	DEPTH (m)	BLOWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	REMARKS
		L	L		LI		Г	I	1	1 1	
					PL	ASTIC LIMI	Т				
Uncertainty I	Results: ported expanded u		tent (%) =			uid Limit =			stic Limit =		onco of
approximate		ncertainty	s based on				-		-		D.:NMC-10-506
	MITTED BY :					DEWADKS.					
Walk-in (PI Field Op	erator			REMARKS.					
R. POLIDAN											
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<i>By:</i> N			AP								
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Final Report Form - 1



BOREHOLE NO...BH-2



GEOTECHNICS PHILIPPINES, INC.

SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client......MOHRI, ARCHITECT & ASSOCIATES, INC. Job Number. Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Date of Rece

Location...... Brgy. Nagsya, Province of Albay

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05 Test Method A B

Sample Number	DEPTH (m)	WET SOIL DISH (g)		WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS
					NATURAL N	IOISTURE	CONTENT	
1	0.55-0.85	90.20	71.48	18.72	9.50	61.98	30	
2	2.36-2.41	106.00	88.15	17.85	9.77	78.38	23	
3	3.41-3.56	101.56	88.36	13.20	9.56	78.80	17	
4	4.65-4.80	103.29	86.86	16.43	10.40	76.46	21	
5	5.80-5.95	102.49	90.91	11.58	9.60	81.31	14	
6	6.95-7.10	105.10	92.94	12.16	9.25	83.69	15	
7	8.10-8.25	129.15	109.82	19.33	9.48	100.34	19	

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE	DEPTH (m)	BLOWS	WET SOIL	DRY SOIL	WATER	DISH	DRY SOIL	% Retained	ATTERBE	RG LIMIT	REMARKS	
NUMBER		DLUWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	REIVIARNO	
					LI		Г					
					DI	ASTIC LIMI	т					
					ΓL		1					
Uncertainty	Results:	Water Con	tent (%) =	± 0.0322	Liq	uid Limit =		Plas	stic Limit =			
Note: The re	eported expanded u	incertainty	is based on	a combine	d uncertair	nty by a cov	verage factor	of k=2, pro	oviding a le	vel of confid	lence of	
approximate	ly 95%.								I	_AB.FILE NO	D.:NMC-10-507	
SAMPLE SUE	BMITTED BY :					REMARKS:					·····	
Walk-in	Clients 🔽 G	PI Field Op	erator									
R. POLIDAN												
COMPUTER												
By:N	MARIA ANTONIETT Encode		IAP									
	Encou				IE	STED BY :			FURO Q. AC			
Data Check	ked by: AE							LABOR	ATORY TE	HNICIAN		
	Qua	ality Assura	nce		CEDT							
Date Issue	od:			CERTIFIED BY : AUTHORIZED SIGNATORY								
This report sh	ould not be copied, di	vulged or rep	produced, in	full or in part	, without pri	or advice to a	and written app	proval from G	GPI-SMTL.			
Final Repo	rt Form - 1									Rev	/.6 / Oct. 2010	





SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client.......MOHRI, ARCHITECT & ASSOCIATES, INC.Job NumberProject.......Proposed Mayon Evacuation Center (Sto. Domingo Central School)Date of RecLocation......Brgy. Nagsya, Province of AlbayDate of Tes

TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007) BH / SAMPLE NO..... <u>BH-1</u> <u>01</u> **D** 2 <u>∆</u> 3 0.55-1.00 1.55-1.85 2.55-3.00 DEPTH (m)..... SOIL DESCRIPTION...... Silty SAND Poorly graded SAND with silt Poorly graded SAND with silt SIEVE SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Finer inches Retained (g) Retained Finer Retained (q) Retained Finer Retained (g) Retained mm 2 1/2 62.5 2 50.0 1 1/2 37.5 25.0 1 100 100 3/4 19.0 3/8 4 70 11.04 95 7.64 92 8 76 89 4.75 9.80 15 93 12.55 15.82 84 100 Δ 84 23.86 22.89 10 2.0 14.68 18.16 77 1.12 1.53 98 76 40.09 18.50 25.33 20 0.8 22.29 36.23 31.81 75 64 60 31.33 54.75 0.425 50.93 49 69 00 37.65 51.54 40 31 48 37.52 52.29 0.25 60.99 39 83 44 71.58 28 60 66.21 17 140 0.105 27 93.89 90.72 44 80 72.82 74.50 66.27 9 6 0.075 200 46.70 24 95.39 68.10 7 75.91 75.69 5 93.22 OVEN DRIED MASS 79.35 gms 73.05 gms 61.52 gms 1 1/2 #140 #200 #10 #20 #40 2 1/2" ÷ 3/4 3/8 4 09# 2 HYDROMETER 100 i. 90 i. 80 i. 70 į ļ Percent Passing 60 i 50 40 ŝ 30 i. 20 ŝ 10 0 COARSE COARSE MEDIUM FIN FINE Particle Size (mm) 100 10 01 0.01 0.001 COBBLES GRAVEL SAND FINES (SILT OR CLAY) REMARKS Cc = 1.33- with Hydrometer S-2: Cu =5.37 SAMPLE SUBMITTED BY: S-3: Cu = 5.13 Cc = 1.12Walk-in Clients ✓ GPI Field Operator R. POLIDAN **TESTED BY** : ARTURO Q. AQUINO COMPUTER PRINT-OUT MARIA ANTONIETTE P. CUNAHAP LABORATORY TECHNICIAN By: Encoder CERTIFIED BY : Data Checked by: ABA/MRR AUTHORIZED SIGNATORY **Quality Assurance** Uncertainty Results: % Finer = ± 0.0501 LAB.FILE NO .: GSA-10-406 Note: The reported expanded uncertainty is based on a combined uncertainty by a coverage Date Issued: factor of k=2, providing a level of confidence of approximately 95%. This report should not be copied, divulged or reproduced, in full or in part, without prior advice to and written approval from GPI-SMTL.



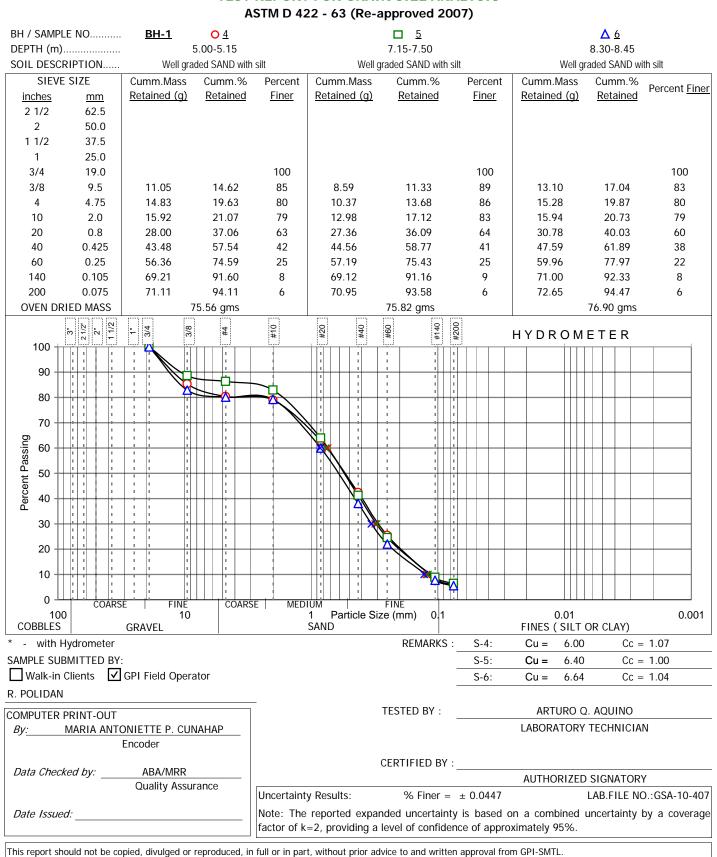


SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC. Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Location...... Brgy. Nagsya, Province of Albay

TEST REPORT FOR GRAIN SIZE ANALYSIS







SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC. Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Location...... Brgy. Nagsya, Province of Albay

	DF WIT-DK5 Accieutieu
Job Number	2209-10.R1-GSA-02-1
Date of Receipt	October 27, 2010
Date of Test	November 2, 2010

TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007) BH / SAMPLE NO..... <u>BH-2</u> <u>01</u> **D** 2 <u>Δ</u> <u>3</u> 0.55-0.85 2.36-2.41 3.41-3.56 DEPTH (m)..... SOIL DESCRIPTION...... Silty SAND Poorly graded SAND Poorly graded SAND SIEVE SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Retained (g) Retained Finer Retained (g) Retained Finer Retained (g) Retained Finer inches mm 2 1/2 62.5 50.0 2 1 1/2 37.5 25.0 1 3/4 19.0 100 3/8 100 9 40 11 93 95 88 4 75 0.40 100 13.74 2.18 3.52 96 0.31 17.44 83 4 13.76 5.52 29.98 38.05 10 2.0 8.53 86 4.33 94 62 28.03 23.58 30.08 70 20 0.8 17.37 72 42.93 54.48 46 76.46 0.425 29 25 47 19 64.84 60.25 40 53 50.82 35 24 82.95 0.25 39.06 63.02 70 14 89 01 60 37 65.02 17 11 140 0.105 79.25 94.03 75.80 49 12 21 73.70 96.19 4 6 200 0.075 51.11 95.51 76.57 97.17 3 82.46 18 74.86 4 OVEN DRIED MASS 61.98 gms 78.38 gms 78.80 gms #140 #200 1 1/2 #10 2 1/2" 3/8 #20 #40 2 3/4 # 09# HYDROMETER 100 i. 90 80 ŝ 70 ŝ Percent Passing 60 50 40 ł 30 ÷ 20 10 0 COARSE FINE COARSE MEDIUM 0.01 100 10 Particle Size (mm) 0. 0.001 COBBLES SAND GRAVEL FINES (SILT OR CLAY) REMARKS - with Hydrometer S-2: Cc = 1.34Cu = 4.27 SAMPLE SUBMITTED BY: S-3: Cu = 7.83 Cc = 0.64R. POLIDAN **TESTED BY :** ARTURO Q. AQUINO COMPUTER PRINT-OUT MARIA ANTONIETTE P. CUNAHAP LABORATORY TECHNICIAN By: Encoder CERTIFIED BY : Data Checked by: ABA/MRR AUTHORIZED SIGNATORY **Quality Assurance** Uncertainty Results: % Finer = ± 0.0514 LAB.FILE NO.:GSA-10-408 Note: The reported expanded uncertainty is based on a combined uncertainty by a coverage Date Issued: factor of k=2, providing a level of confidence of approximately 95%.

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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC. Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Location...... Brgy. Nagsya, Province of Albay

	DF WIT-DK3 Accieutieu
Job Number	2209-10.R1-GSA-02-2
Date of Receipt	October 27, 2010
Date of Test	November 2, 2010

TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007) ~ 4

_E NO		<u>O 4</u> 4.65-4.80			□ <u>5</u> 5.80-5.95			<u>∆</u> <u>6</u> 6.95-7.10	
)	F			W		
						Percent		-	Percent
mm	Retained (g)	Retained	Finer	Retained (g)		Finer	Retained (g)	Retained	Finer
62.5									
50.0									
37.5									
25.0									
19.0						100			100
9.5			100	14.59	17.94	82	12.83	15.33	85
4.75	7.87	10.29	90	28.61	35.19	65	29.05	34.71	65
2.0	44.26	57.89	42	45.82	56.35	44	52.06	62.21	38
0.8	66.49	86.96	13	58.70	72.19	28	67.70	80.89	19
0.425	69.96	91.50	9	67.10	82.52	17	73.72	88.09	12
0.25	71.60	93.64	6	72.64	89.34	11	76.09	90.92	9
0.105	73.50	96.13	4	77.10	94.82	5	80.00	95.59	4
0.075	74.08	96.89	3	77.83	95.72	4	80.62	96.33	4
IED MASS		76.46 gms			81.31 gms			83.69 gms	
3" 21/2" 2" 11/2	3/8	#4	#10	#20	#140	#200	HYDROM	ETER	
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COARS			SE MED	IUM 1 Particle S	FINE Size (mm) 01		0.01		0.00
	GRAVEL			SAND				OR CLAY)	0.00
lydrometer					REMARKS	S-4:	Cu = 3.94	Cc =	1.17
BMITTED BY:						S-5:	Cu = 15.31	Cc =	0.91
Clients 🔽	GPI Field Oper	ator				S-6:	Cu = 12.74	Cc =	1.63
PRINT-OUT			_		TESTED BY :		ARTURO C	2. AQUINO	
	DNIETTE P. CU	NAHAP					LABORATORY	TECHNICIAN	
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ked by:								SIGNATORY	
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	SIZE <u>mm</u> 62.5 50.0 37.5 25.0 19.0 9.5 4.75 2.0 0.8 0.425 0.25 0.105 0.075 BED MASS <u>b</u> <u>b</u> <u>c</u>	RIPTION Pool SIZE Cumm.Mass mm 62.5 50.0 37.5 25.0 19.0 9.5 4.75 4.75 7.87 2.0 44.26 0.8 66.49 0.425 69.96 0.25 71.60 0.105 73.50 0.075 74.08 RED MASS Retained (g) Retained Retained (g) Retained Retained (g) Retained Retained Retaine Retained <	RIPTION Poorly graded SANI SIZE Cumm.Mass Cumm.% mm Retained (g) Retained 62.5 50.0 37.5 25.0 19.0 9.5 4.75 7.87 10.29 4.75 7.87 10.29 2.0 44.26 57.89 0.8 66.49 86.96 91.50 0.25 71.60 93.64 0.105 73.50 96.13 0.075 74.08 96.89 NED MASS 76.46 gms 76.46 gms 76.46 gms 76.46 gms 10 1	RIPTION Poorly graded SAND SIZE Curm.Mass Retained (g) Retained Percent Finer 62.5 50.0 37.5 25.0 100 37.5 25.0 100 100 100 9.5 7.87 10.29 90 2.0 44.26 57.89 42 0.8 66.49 86.96 13 0.425 69.96 91.50 9 0.25 71.60 93.64 6 0.105 73.50 96.13 4 0.075 74.08 96.89 3 NED MASS 76.46 gms 1 No 1 1 1 1 No 1 1	RIPTION Poorly graded SAND F SIZE Cumm.Mass Retained (g) Cumm.% Retained Percent Finer Cumm.Mass Retained (g) 62.5 50.0 37.5 100 14.59 25.0 100 14.59 28.61 19.0 9.5 100 14.59 9.5 7.87 10.29 90 28.61 2.0 44.26 57.89 42 45.82 0.8 66.49 86.96 13 58.70 0.425 69.96 91.50 9 67.10 0.25 71.60 93.64 6 72.64 0.005 73.50 96.13 4 77.83 IED MASS 76.46 gms 1 1 1 5 5 5 9 2 2 2 6 1 1 1 1 1 1 1 6 1 1 1 1 1 1 1 10 GRAVEL 1 1 1 1 1 1 <td< td=""><td>RIPTION Poorly graded SAND Poorly graded SAND Poorly graded SAND SIZE Cumm. Mass Retained (q) Cumm. % Retained (q) Percent Retained (q) Cumm. Mass Retained (q) Cumm. % Retained (q) Retained 37.5 50.0 71.5 100 14.59 17.94 4.75 7.87 10.29 90 28.61 35.19 2.0 44.26 57.89 42 45.82 56.35 0.8 66.49 86.96 13 58.70 72.19 0.425 69.96 91.50 9 67.10 82.52 0.075 74.08 96.89 3 77.83 95.72 IED MASS 76.46 gms 81.31 gms 81.31 gms 81.31 gms 5 5 8 3 9 77.83 95.72 IED MASS 76.40 gms MEDIUM Particle Size (rm) 0.1 9 9 9 5 8 3 9 9 1 1 1 1 1</td><td>RIPTION Poorly graded SAND Poorly graded SAND SIZE Cumm.Mass Retained (g) Retained (g) Retained</td><td>RIPTION Poorly graded SAND Poorly graded SAND WW SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.Mass Einer Einer Einer Einer</td><td>RIPTION Poorly graded SAND Well graded SAND Well graded SAND SIZE Cumm.Mass <td< td=""></td<></td></td<>	RIPTION Poorly graded SAND Poorly graded SAND Poorly graded SAND SIZE Cumm. Mass Retained (q) Cumm. % Retained (q) Percent Retained (q) Cumm. Mass Retained (q) Cumm. % Retained (q) Retained 37.5 50.0 71.5 100 14.59 17.94 4.75 7.87 10.29 90 28.61 35.19 2.0 44.26 57.89 42 45.82 56.35 0.8 66.49 86.96 13 58.70 72.19 0.425 69.96 91.50 9 67.10 82.52 0.075 74.08 96.89 3 77.83 95.72 IED MASS 76.46 gms 81.31 gms 81.31 gms 81.31 gms 5 5 8 3 9 77.83 95.72 IED MASS 76.40 gms MEDIUM Particle Size (rm) 0.1 9 9 9 5 8 3 9 9 1 1 1 1 1	RIPTION Poorly graded SAND Poorly graded SAND SIZE Cumm.Mass Retained (g) Retained	RIPTION Poorly graded SAND Poorly graded SAND WW SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.Mass Einer Einer Einer Einer	RIPTION Poorly graded SAND Well graded SAND Well graded SAND SIZE Cumm.Mass Cumm.Mass <td< td=""></td<>





SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC. Project...... Proposed Mayon Evacuation Center (Sto. Domingo Central School) Date of Receipt..... October 27, 2010 Location...... Brgy. Nagsya, Province of Albay Date of Test..... November 2, 2010 **TEST REPORT FOR GRAIN SIZE ANALYSIS**

ASTM D 422 - 63 (Re-approved 2007)

BH / SAMPLE			<u>o</u> <u>7</u>								Δ	
DEPTH (m)			8.10-8.25	- 10								
SOIL DESCR		•	ided SAND with		0	0		Demonst	0		0	Demonst
SIEVE inches		Cumm.Mass <u>Retained (q)</u>	Cumm.% <u>Retained</u>	Percent <u>Finer</u>	Cumm.Mass <u>Retained (g</u>			Percent <u>Finer</u>	Cumm. <u>Retaine</u>		Cumm.% <u>Retained</u>	Percent <u>Finer</u>
2 1/2	<u>mm</u> 62.5	<u>Retained (g)</u>	Retained	<u>r incr</u>	<u>ittetaineu (g</u>	<u>neta</u>	neu		<u>Itetaine</u>	<u>,u (y)</u>	Retained	
2 1/2	50.0											
1 1/2	37.5											
1	25.0											
3/4	19.0			100								
3/8	9.5	14.00	13.95	86								
4	4.75	27.73	27.64	72								
10	2.0	45.14	44.99	55								
20	0.8	73.68	73.43	27								
40	0.425	83.32	83.04	17								
60	0.25	88.10	87.80	12								
140	0.105	93.40	93.08	7								
200	0.075	94.46	94.14	6								
OVEN DRI			00.34 gms	Ū								
Ċ	3" 21/2" 2" 11/2	1" 3/4 3/8	#	#10	#20 #40	09#	#140		HYDR	ОМЕ	ETER	
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100		10	COAKS		1 Particle	Size (mm)	0.1			0.01		0.00
COBBLES		GRAVEL			SAND						OR CLAY)	
- with Hy						REM	IARKS :	S-7:	Cu =	13.09	Cc =	1.87
							-					
	lients 🔽	GPI Field Opera	ator				-					
R. POLIDAN				_								
OMPUTER P	RINT-OUT					TESTED	BY : _				AQUINO	
<i>By:</i> N		ONIETTE P. CUI	NAHAP						LABOR	ATORY ⁻	TECHNICIA	N
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Date Issuea	1:				reported exp			is based c ce of appro			ncertainty I	oy a coveraç

FINAL REPORT

SUBSURFACE INVESTIGATION PROPOSED MAYON EVACUATION CENTER (2-STOREY) GOGON CENTRAL SCHOOL BRGY. GOGON, PROVINCE OF ALBAY

MOHRI, ARCHITECT & ASSOCIATES, INC.

OCTOBER 2010 JOB NO. 2209-10.R1





FINAL REPORT

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	tterberg Limit
• G	rain Size Analysis





Geotechnical Contractor

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9306555 9382124/9353730 4561140 www.geophil.com jmcgpi@gmail.com

FINAL REPORT

SUB-SURFACE INVESTIGATION FOR THE PROPOSED MAYON EVACUATION CENTER (3-STOREY) LOCATED AT BRGY. GOGON, PROVINCE OF ALBAY

1.0 Introduction:

Geotechnics Philippines, Incorporated (GPI) completed the subsurface soil investigation for the Proposed Mayon Evacuation Center. The proposed site explored is located at Brgy. Gogon, Province of Albay.

Two (2) boreholes were drilled at the proposed site on October 23, 2010. Borings were undertaken down to 10m for both BH-1 and BH-2 below existing natural grade line. Borehole locations are as indicated on the accompanying Boring Plan and Soil Profile Sheets.

The subsurface soil exploration was undertaken upon the request of Mohri, Architect & Associates, Inc. in order to gain information on the subsurface conditions and bearing characteristics of the underlying soils at site.

The undersigned was tasked to evaluate the results of the completed subsurface soil exploration and to recommend a suitable foundation solution for the proposed structure.

This report embodies the undersigned's engineering analysis and recommendations based mainly on the results of the geotechnical soil borings and pertinent laboratory tests performed on extracted samples.

The results of geotechnical soil borings and laboratory tests can be referred to in the Attachments accompanying this report.

2.0 Objectives:

The geotechnical investigation aims to determine the following:

- Soil Profile
- Engineering properties of the Soil Strata
- Bearing Capacities and Foundation Types
- Settlement conditions of critical areas
- Comment on ground stability and liquefaction potential of the site
- Provide Excavation and Fill Guidelines

In addition to the above mentioned items, matters on implementation and construction shall be given as required.

3.0 Field Exploration and Investigation

The field exploration implored continuous was boring as the Standard Penetration Test (SPT) was performed at the last 45cm of every change strata or 1.0 meter intervals. The blow counts (N value or NB) were recorded as disturbed samples from the split spoon sampler were retrieved for laboratory testing. The recovered samples were described semi qualitative in terms of extracted length. The extracted soil samples were wrapped in double plastic bags for moisture and sample protection and were transported to the laboratory for further testing of engineering properties.

GEOTECHNICAL & GEOLOGICAL SURVEY / SEISMIC REFRACTION / MENARD PRESSUREMETER / CONE PENETRATION TEST / GROLIND PENETRATING RADAR / PILE DVNAMIC & INTEGRITY ANALYSIS / CORE DRILLING / GROLIND IMPROVEMENTS

Advancing through the hard strata, the same technique was implored. Hard strata are defined over a series of high blow count layers of more than 50 blows or the inability of driving the hammer to penetrate at high blow counts termed as refusal.

3.1 Standard Penetration Test

The Standard Penetration Test (SPT) is a field test used in determining the shear strength of soils from an established correlation. The SPT requires the count of the number of blows that it would take a standard split spoon sampler to penetrate its last 30.5cm (12inches) of the sampler. The standard mass is 63.5 kilograms and the height of the drop is 76.2cm specified as a free drop.

3.3 Ground Water Table

The ground water table (GWT) elevation was observed at least 4 hours from the completion of the borehole up to demobilization.

4.0 Laboratory Investigation

The retrieved samples were brought to the laboratory in 119 Sauyo Road, Novaliches, Quezon City. Various tests were conducted on all extracted samples with test procedures conforming to the American Standards for Testing Materials (ASTM). The following are the laboratory tests conducted on the soil samples.

Type of Test	ASTM Designation	Description of Test
Soil Classification for Engineering Purposes – Unified Soil Classification System	ASTM D 2487-05	 Standard in classifying the type of soil based on composition and physical properties These were classified in accordance to grain size, composition, percentage of size in the distribution
Particle Size Distribution – Sieve Analysis	ASTM D 422-63 (Reapproved 2002)	 The test allows the dried or wet soil to pass through a series of sieves in order to determine the distribution of grain sizes. The distributions of the particles are graphed on a semi log scale This test aids the previous test in classification
Moisture Content	ASTM D 2216-05	 The test aims to determine the natural content of water in the soil This is taken as the ratio of water to the ratio of the soil particles The test uses a weighing scale measuring the initial weight of the soil and the final weight of the soil after drying it in the oven
Atterberg Limits Liquid Limit, Plastic Limit and Plasticity Index	ASTM D4318-05	 Tests determining the limits of cohesive soils in behaving as a plastic or a flowing medium by incrementally changing the water content The plastic limit is determined by rolling a clay sample to around 1/8 of an inch or 3mm The liquid limit uses the liquid limit device and determines the number of blows it would take for the slit to close Correlative values can be used for settlement relations

The results of the laboratory investigation are appended.

5.0 Borehole Statigraphy

Two (2) boreholes were driven to investigate the subsurface. The following are the findings:

5.1 Borehole - BH-1

Depth (m)	Soil Classification	Consistency	N-Value
0.00 - 4.00	Silty SAND	Firm	11~19
4.00 - 5.00	Poorly graded SAND	Loose	8
5.00 - 6.00	Elastic SILT	Firm	13
6.00 - 9.00	SAND	Firm	12~17
9.00 - 10.00	SAND	Dense	>50

The ground water was measured at 0.81 meters from the existing ground.

5.2 Borehole - BH-2

Depth (m)	Soil Classification	Consistency	N-Value
0.00 - 2.00	Silty SAND	Loose	8
2.00 - 4.00	SAND	Firm	13~28
4.00 - 5.00	Clayey SAND	Loose	8
5.00 - 6.00	Elastic SAND	Very Stiff	27
6.00 - 7.00	Silty SAND	Firm	16
7.00 - 8.00	SAND	Dense	32
8.00 - 10.00	SAND	Firm	10~17

The ground water table was measured at 0.8 ~ 0.83 meters from the existing ground.

6.0 Soil Properties

The following are the adapted soil properties for the investigated strata:

Gravels, Sands, Silty Sand	s and Clayey Sands (No	n-coh	esive)
Sands	с	φ	y (kcf)
Very Loose	0	26	0.085
Loose	Q	28	0.100
Medium Dense	0	30	0.110
Dense	0	32	0.120
Very Dense	0	35	0.130
Silts and Clays (Cohesive)		_	-
Silts and Clays	C	φ	y (kcf)
Very Soft		0	0.100
Soft		0	0.105
Firm	=(N*10)/2 from Braja	0	0.115
Stiff	Das	0	0.120
Very Stiff		0	0.125
Hard		0	0.130

7.0 Liquefaction Potential

The two boreholes showed thin layered of potentially liquefiable materials between 4~5 m. The effect would be minimal due to the presence of dense layer in between loose formation.

8.0 Bearing Capacity and Foundation Type

Shallow Foundations

Shallow Foundation is suggested to the proposed 2-storey building. The following are the allowable net bearing capacities based on Terzaghi's Bearing Capacity Equation:

BH-1:

Depth (m)	Bearing Capacity (kPa)
0.5	48
1.0	72

BH-2:

Depth (m)	Bearing Capacity (kPa)
0.5	24
1.0	48

The associated settlement on the other hand is within the tolerable engineering settlement of 25mm. Structural tie beam is suggested to hold the foundation rigid and minimize the effect of differential settlement due to different soil bearing capacity.

9.0 Excavation and Fill

The contractor of the proposed structure is advised to rail the excavation at night and during break times so as to ensure the general safety of the students within school premises. Existing structures, whether temporary or permanent that are adjacent, the excavation should be protected from damages. Dewatering shall be necessary as the water table is shallow.

Fill for the excavation for footings may utilize the same materials. On the other hand, grade and subgrade materials should be sandy frictional materials.

Fill should be compacted at 95% its maximum dry density. Should the amount of soll be inept, sandy fill may be utilized and should be compacted in the same degree. In both cases, the height of fill should be reviewed and adjusted accordingly to adapt minimal settlements.

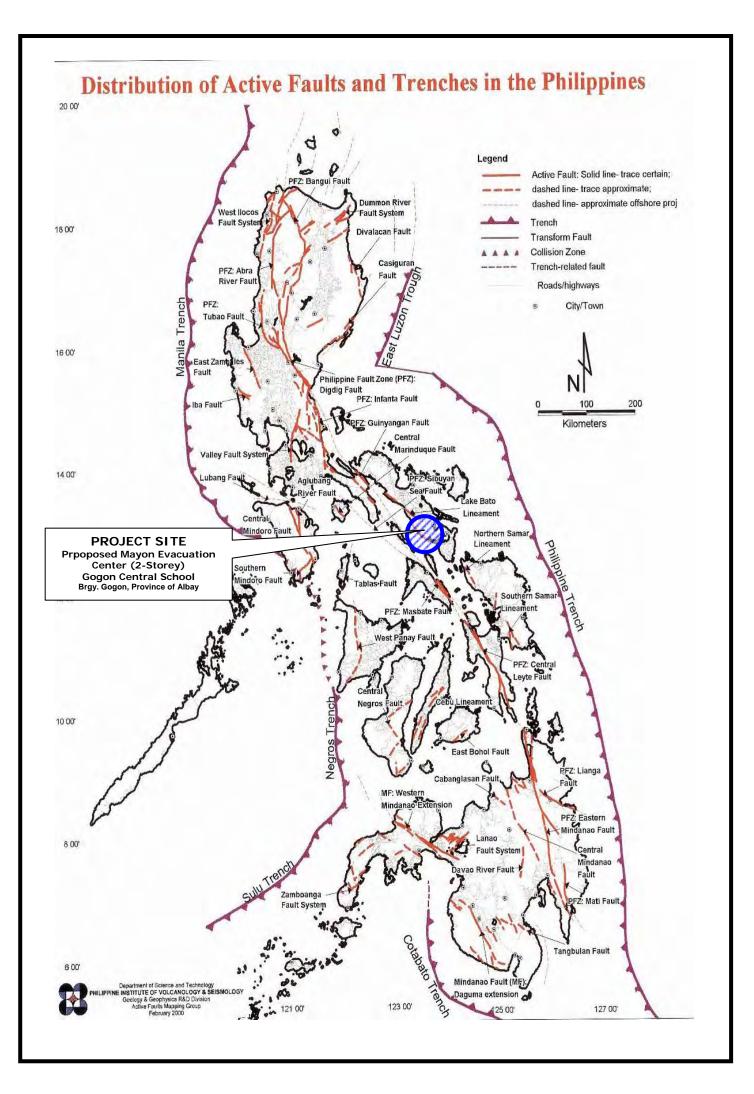
Borehole Conclusions and Recommendations

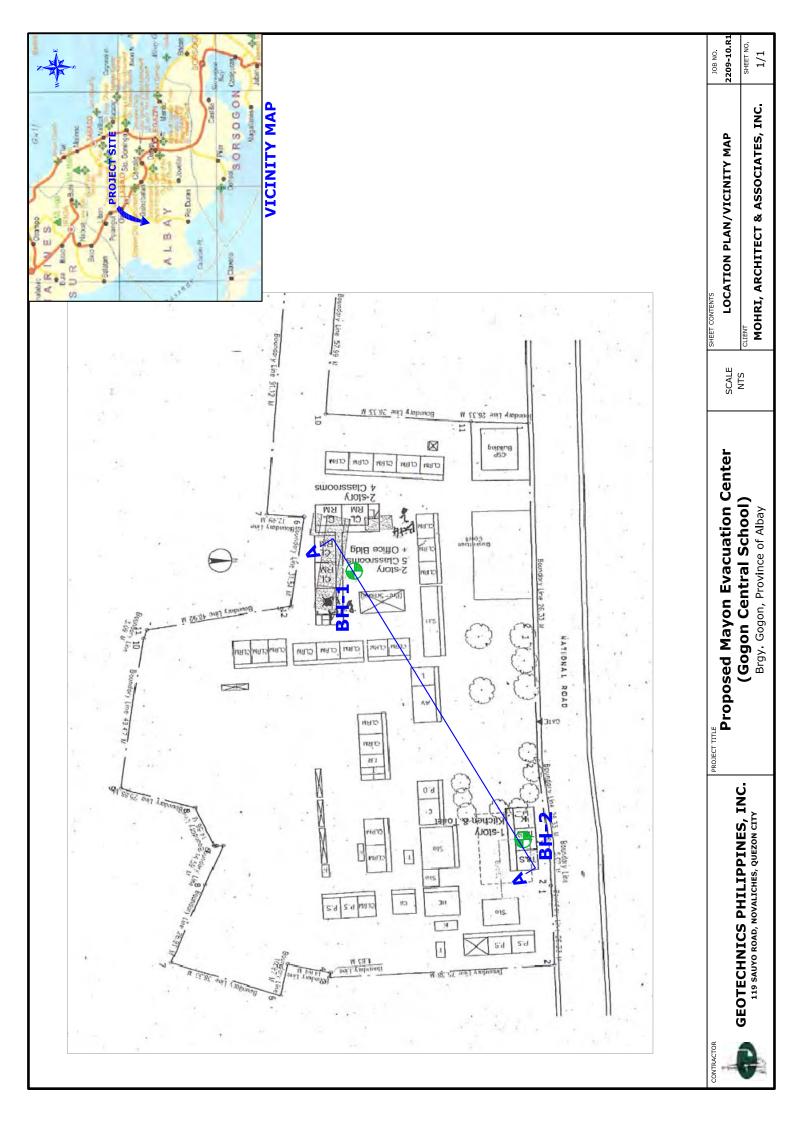
The conclusions and recommendations are based on the data of two (2) boreholes and the geologic map. Deviations from these are expected and should be minimal as the boreholes are typical of an alluvial formation. Should there be any major deviation in the substrata be detected during the excavation phase, may the undersigned thru Geotechnics Philippines Inc (02-930-6555) be contacted immediately for proper reassessment.

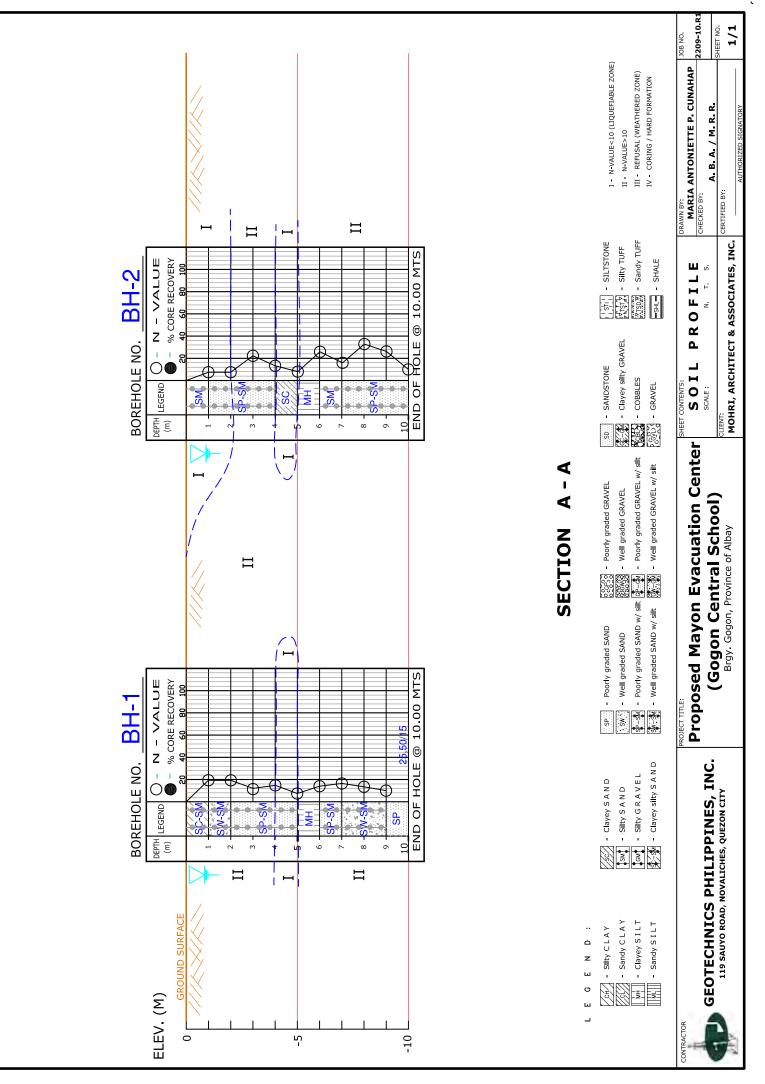
DIOSDADO A. URENA CE Reg. No. 053884 PTR No. 3228274 Issued on January 8, 2010 Issued at Quezon City













Description of Strata is according to Unified Soil Classification System

GEOTECHNICS PHILIPPINES, INCORPORATED SOILS AND MATERIALS TESTING LABORATORY 119 SAUYO ROAD, NOVALICHES, OUEZON CITY



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RQD = Rock Quality Designation SCR = Solid Core Recovery Authorized Signatory			- Pool	Quality																	·		

Date Issued :



Description of Strata is according to Unified Soil Classification System

GEOTECHNICS PHILIPPINES, INCORPORATED SOILS AND MATERIALS TESTING LABORATORY 119 SAUYO ROAD, NOVALICHES, QUEZON CITY TEL. NO. 938-2124 \ 456-1140 \ 930-6555



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	m) - -			R SAMPLIN		(%)		40	60 8	0 100					20 40			100		nount o	ID, fine to coars f gravel, dark g				
₹			S-1	SPT	40	-					NP	LOOSE	8	•						of grave	/ graded SAND el, dark gray, m				
	- 2.00 - - - - 3.00 -		<u>S-3</u>	SPT	32	_					NP	MEDIUM DENS	23							1)with 0)(10)(1	with traces of gravel 0)(13)				
	- - - 4.00 -			SPT	40	<u> </u>					NP		13						(SP-SM NB: (5)		little amount of	[:] gravel			
	- - - - 5.00 -		S-5 SPT 45 - 63							13	LOOSE	8						(SC) Clayey SAND, dark gray, very moist NB: (2)(3)(5)							
-	- - - 6.00 -							20	20 VERY STIFF 27						ay, very moist										
-	- - - - 7.00 -		S-7	SPT	45	-					NP	MEDIUM DENS	E 16						little ar		D, fine to coars f gravel, dark g				
	- - - - 8.00 -		. <u>S-8</u>	SPT	39	-					NP	DENSE	32						little an	M) Poorly graded SAND with silt and imount of gravel, dark gray, moist 12)(15)(17)					
	- 3.00 - - - - 9.00 -			SPT	37	_					NP	MEDIUM DENS	E 27						(SP-SM NB: (10		traces of grave 5)	Ι			
	- 9.00 - - -								10		Ĭ				NB: (7)	(SP-SM)very moist NB: (7)(5)(5) /END OF BORING AT 10.00 METERS\									
 vn	10.00 e of Sa	1. T. 🖢 mplina	· S-10	SPT .	45 Type of S	L Soil		ΨΠ			NP		10	Ъ		⊥⊥ ~v	Ц				10ISTURE	· · · · ·			
70		Silty CLAY Silty GRAVEL EXECUTE ATTON EST (SPT) Clayey SILT Clayey SAND Clayey SAND Silty SAND Silty SAND Silty SAND Silty SILTSTONE GRAVEL 4 - 8 - 9 Solor 8 - 15 - 15 - 30 - 530 -					COHESIVE SOIL (ALUE CONSIST - 2 - VERY SO - 4 - SOFT - 8 - FIRM - 15 - STIFF - 30 - VERY ST	ILS COHENSIONLESS SOILS MOISTURE CONTENT % of SAND and AND AND AND AND AND AND AND AND					0 - 5 - TRA 6 - 10 - FEW 11 - 25 - LITT	GRAV ALUES CES (TLE 1E											
EM,	ARKS:	Rec =	Recov	sand very in C		***						Blows HW	= Ha		mer	- W	/ei	aht			Prepared by : M	P. CUNAHAP	,		
	Refe			pacing:				11				cm. >#3>3cr			#5			-			<u> </u>	B.A. / M.R.R.			
					30 cm			100	m			cm. >#4>1cr			-			-			Certified by :	/			
		RUD		Quality								Core Recover											0.011		
		NQD	- 1000	Quanty	Desig	naut	211	3			Jonu		y								Al Date Issued :	JTHORIZED SIGNAT	URY		

Date Issued :

SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



CLIENT...... MOHRI, ARCHITECT & ASSOCIATES, INC.

PROJECT...... Proposed Mayon Evacuation Center (Gogon Central School)

LOCATION.... Brgy. Gogon, Province of Albay

JOB NUMBER...... 2209-10.R1-SUM-1 DATE OF RECIEPT.... October 27, 2010 DATE OF TEST..... October 27-29, 2010

SUMMARY OF LABORATORY TESTS

SAMPLE	DEPTH (m)	NMC	ATTERBERG (%)		LIMIT,	USCS	SIEVE ANALYSIS (% FINER) PASSING SIEVE NO.										
NUMBER		(%)	LL	PL	ΡI	Class.	1	³ / ₄	³ / ₈	4	10	20	40	60	140	200	
BH-1																	
1	0.55 - 1.00	29	37	33	4	SC-SM			100	98	92	82	65	49	37	35	-
2	1.55 - 2.00	20	-	NP	-	SW-SM			100	94	83	68	51	33	14	11	-
3	2.55 - 3.00	27	-	NP	-	SP-SM			100	97	89	70	43	22	9	7	-
4	3.55 - 4.00	29	-	NP	-	SP-SM		100	96	92	86	77	65	32	9	7	-
5	4.55 - 5.00	21	-	NP	-	SP-SM		100	97	93	85	75	49	24	9	6	-
6	5.55 - 6.00	48	62	32	30	MH					100	98	95	90	83	80	-
7	6.55 - 7.00	25	-	NP	-	SP-SM			100	97	93	72	35	15	6	5	-
8	7.55 - 8.00	30	-	NP	-	SW-SM		100	99	97	95	78	46	24	13	11	
9	8.55 - 9.00	25	-	NP	-	SW-SM		100	98	96	85	64	45	24	9	7	-
10	9.55 - 10.00	26	-	NP	-	SP				100	99	90	51	21	4	3	-
BH-2																	
1	0.55 - 1.00	29	-	NP	-	SM		100	95	80	74	63	49	36	22	20	
2	1.55 - 2.00	28	-	NP	-	SP-SM		100	99	95	90	82	68	52	14	10	
3	2.55 - 3.00	26	-	NP	-	SP-SM			100	97	92	80	61	37	11	7	
4	3.55 - 4.00	28	-	NP	-	SP-SM		100	95	87	78	68	56	42	14	10	
5	4.55 - 5.00	40	46	33	13	SC				100	97	89	75	65	52	49	
6	5.55 - 6.00	46	51	31	20	MH			100	99	98	91	80	70	59	55	
7	6.55 - 7.00	30	-	NP	-	SM		100	94	80	64	50	41	33	22	21	
8	7.55 - 8.00	27	-	NP	-	SP-SM		100	92	86	80	70	44	26	9	7	
9	8.55 - 9.00	25	-	NP	-	SP-SM			100	98	95	81	51	31	13	10	
10	9.55 - 10.00	30	-	NP	-	SP-SM				100	98	87	48	23	9	7	

Walk-in Clients	GPI Field Operator	REMARKS:	* with hydrometer
R. POLIDAN		_	
COMPUTER PRINT-OUT By: <u>MARIA ANTON</u> E			
,	ABA / MRR	CERTIFIED BY:	
Date Issued			AUTHORIZED SIGNATORY

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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Project...... Proposed Mayon Evacuation Center (Gogon Central School) Location...... Brgy. Gogon, Province of Albay

Date of Receipt..... October 27, 2010 Date of Test..... October 27-28, 2010

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05

BOREHOLE NO...BH-1

Test Method 🗹 A 🗌 B

ample Jmber	DEPTH (m)	WET SOIL DISH (g)	DRY SOIL DISH (g)	WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS					
NATURAL MOISTURE CONTENT													
1	0.55-1.00	98.45	78.46	19.99	9.80	68.66	29						
2	1.55-2.00	107.30	91.14	16.16	10.27	80.87	20						
3	2.55-3.00	110.90	89.59	21.31	9.64	79.95	27						
4	3.55-4.00	117.40	93.12	24.28	9.70	83.42	29						
5	4.55-5.00	103.64	87.27	16.37	9.68	77.59	21						
6	5.55-6.00	115.38	81.01	34.37	9.72	71.29	48						

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE	DEPTH (m)	BLOWS	WET SOIL	DRY SOIL		DISH	DRY SOIL	% Retained	ATTERBERG LIMIT		REMARKS				
NUMBER	DEPTH (III)	BLOWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	ΚΕΙΝΙΑΚΚΟ				
						I									
1	0.55-1.00	20	37.80	30.32	7.48	10.60	19.72		37	37	37				
1	0.33-1.00	20	37.94	30.44	7.50	10.65	19.79		37		37				
					PLA		[[
1	0.55-1.00	Р	22.74	19.46	3.28	9.53	9.93			33	33				
		Р	22.76	19.47	3.29	9.54	9.93			33					
Uncertainty I			tent (%) =			uid Limit =			stic Limit =						
	ported expanded u	ncertainty	is based on	a combined	d uncertain	ty by a cov	erage facto	r of k=2, pi	•						
approximate	-										D.:NMC-10-500				
SAMPLE SUB	MITTED BY :	PI Field Op	orator			REMARKS:									
R. POLIDAN				-											
COMPUTER I															
<i>By:</i> N	IARIA ANTONIETTE Encode		<u>AP</u>		т										
					11	LOTED BY :	ARTURO Q. AQUINO LABORATORY TECHNICIAN								
Data Check	ed by: AB	A/MRR Ility Assura						LABO							
		inty Assura	ice		CERT	IFIED BY :									
Date Issue	d:						AUTHORIZED SIGNATORY								
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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Location...... Brgy. Gogon, Province of Albay

Project...... Proposed Mayon Evacuation Center (Gogon Central School)

Job Number...... 2209-10.R1-NMC-01-2 Date of Receipt..... October 27, 2010 Date of Test..... October 27-28, 2010

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05

Test Method 🗹 A 🗌 B

Sample Number	DEPTH (m)	WET SOIL DISH (g)	DRY SOIL DISH (g)	WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS
				1	NATURAL M	OISTURE C	ONTENT	
7	6.55-7.00	108.34	88.51	19.83	9.72	78.79	25	
8	7.55-8.00	104.60	82.80	21.80	9.71	73.09	30	
9	8.55-9.00	111.40	91.31	20.09	9.88	81.43	25	
10	9.55-10.00	105.10	85.20	19.90	9.64	75.56	26	

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE	DEPTH (m)	BLOWS		DRY SOIL	WATER	DISH	DRY SOIL	% Retained	ATTERBE	RG LIMIT	REMARKS
NUMBER		BLOWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	ILLINAII IS
	-				LIC	DUID LIMIT	-				
					PI A	STIC LIMI	 Г				
					1.27						
Uncertainty			tent (%) =						stic Limit =		l lance of
	ported expanded u	ncertainty	is based on	a combined	d uncertain	ty by a cov	erage facto	r от к=2, р	•		
approximate	-					DEMARKO					D.:NMC-10-500
SAMPLE SUE	MITTED BY :	PI Field Op	orator			REMARKS:					
R. POLIDAN											
				-							
COMPUTER	PRINT-OUT IARIA ANTONIETTE	P. CUNAH	AP								
	Encode		<u> </u>		TE	ESTED BY :		AF	RTURO Q. A	QUINO	
Data Chock	ed by: AB								RATORY TE		
		lity Assura	nce								
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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Project...... Proposed Mayon Evacuation Center (Gogon Central School) Location...... Brgy. Gogon, Province of Albay

Date of Receipt..... October 27, 2010 Date of Test..... October 27-28, 2010

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05

Test Method 🗹 A 🗌 B

BOREHOLE NO...BH-2

Sample Number	DEPTH (m)	WET SOIL DISH (g)	DRY SOIL DISH (g)	WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS
				1	NATURAL M	IOISTURE C	ONTENT	
1	0.55-1.00	87.34	69.84	17.50	9.66	60.18	29	
2	1.55-2.00	116.50	93.10	23.40	9.90	83.20	28	
3	2.55-3.00	108.00	88.00	20.00	9.64	78.36	26	
4	3.55-4.00	110.10	88.39	21.71	9.52	78.87	28	
5	4.55-5.00	97.80	72.66	25.14	9.56	63.10	40	
6	5.55-6.00	90.55	65.02	25.53	9.65	55.37	46	

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE	DEPTH (m)	BLOWS		DRY SOIL	WATER	DISH	DRY SOIL	% Retained	ATTERBE	RG LIMIT	REMARKS
NUMBER		BLOWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	ILEMAINS
					LIC	DUID LIMIT					
					PLA	STIC LIMI	Г Г				
Uncertainty I	Results:	Water Con	tent (%) =	± 0.0380	Liq	uid Limit =		Plas	stic Limit =		
Note: The re	ported expanded u	incertainty	is based on	a combined	d uncertain	ty by a cov	erage facto	r of k=2, p	roviding a l	evel of conf	idence of
approximate									I	LAB.FILE NO	D.:NMC-10-501
	MITTED BY :					REMARKS:					
Walk-in	Clients ⊡ G	PI Field Op	erator								
R. POLIDAN				-							
COMPUTER I By:N	PRINT-OUT IARIA ANTONIETTI	P. CUNAH	AP								
	Encod		<u></u>		TE	ESTED BY :		AF	RTURO Q. A	QUINO	
Data Chock	ked by:AB								RATORY TE		
		ality Assura	nce								
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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Project...... Proposed Mayon Evacuation Center (Gogon Central School) Location...... Brgy. Gogon, Province of Albay

Job Number...... 2209-10.R1-NMC-02-2 Date of Receipt..... October 27, 2010 Date of Test..... October 27-28, 2010

TEST REPORT FOR LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL & ROCK BY MASS

ASTM D 2216 - 05

Test Method 🗹 A 🗌 B

SAMPLE NUMBER	DEPTH (m)	WET SOIL DISH (g)	DRY SOIL DISH (g)	WATER (g)	DISH MASS (g)	DRY SOIL (g)	WATER CONTENT (%)	REMARKS
				ſ	NATURAL M	IOISTURE C	ONTENT	
7	6.55-7.00	121.90	96.10	25.80	9.64	86.46	30	
8	7.55-8.00	121.40	97.34	24.06	9.81	87.53	27	
9	8.55-9.00	112.30	91.91	20.39	10.85	81.06	25	
10	9.55-10.00	117.00	91.99	25.01	9.58	82.41	30	

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS ASTM Designation : D 4318 - 05, Method B

SAMPLE	DEPTH (m)	BLOWS	WET SOIL	DRY SOIL	WATER	DISH	DRY SOIL	% Retained	ATTERBE	RG LIMIT	REMARKS
NUMBER		DLUWS	DISH (g)	DISH (g)	(g)	MASS (g)	(g)	on 0.425 mm	LL	PL	REWIARNS
					LIC	DUID LIMIT					
					PLA	STIC LIMIT	[[
Uncertainty	Results:	Water Con	itent (%) =	± 0.0243	Liq	uid Limit =		Plas	stic Limit =		
Note: The re	ported expanded u	incertainty	is based on	a combined	d uncertain	ty by a cov	erage facto	r of k=2, p	roviding a l	evel of conf	idence of
approximate	ly 95%.								I	LAB.FILE NO	D.:NMC-10-501
	MITTED BY :					REMARKS:					
Walk-in	Clients 🗹 G	PI Field Op	erator								
R. POLIDAN				-							
COMPUTER											
<i>By:</i> N	IARIA ANTONIETTE Encode		IAP		-						
	211000				11	LOTED BY :			RATORY TE		
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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC.

Project..... Proposed Mayon Evacuation Center (Gogon Central School)

Location....Brgy. Gogon, Province of Albay

Date of Receipt..... October 27, 2010 Date of Test..... October 28-29, 2010

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS

ASTM D 4318 - 05	ASTM	D 4318	- 05
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Method : A 🗸 Wet Preparation 🗌 Dry Preparation

BOREHOLE NO	BH-1		DEPTH (m))	5.55-6.00			SOIL DES	CRIPTION			
SAMPLE NO	S-6		USCS CLAS	S	MH			Elastic SII	T			
MOISTURE CONTENT	L	IQUID LIMI	IT	PLASTI	C LIMIT		67 _T					
DETERMINATION	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 1	TRIAL 2	~	66 -)e				
DISH NUMBER	D24	D1	D26	C23	C72	(%)	65 -	Ň	\setminus			
WET SOIL + DISH (g)	32.54	35.16	38.22	22.68	22.71	tent	64 -		\mathbf{N}			
DRY SOIL + DISH (g)	23.94	25.32	26.92	19.52	19.53	Con	63 -					
WATER (g)	8.60	9.84	11.30	3.16	3.18	ure	62 -					
DISH MASS (g)	9.62	9.70	9.80	9.54	9.55	Moistu	61 -					
DRY SOIL (g)	14.32	15.62	17.12	9.98	9.98	ž	60 -			k		
MOISTURE CONTENT	60.06	63.00	66.00	31.66	31.86		59 -					
NUMBER OF BLOWS	31	21	15	3	2		10)	No. c	of Blows		100
% RETAINED ON 0.42	5mm				5.37		LL =	62	PL =	32	PI =	30

BOREHOLE NO			DEPTH (m))				SOIL DESCRIPTION
SAMPLE NO			USCS CLAS					
MOISTURE CONTENT DETERMINATION	LIC	2UID LIMI <u>TRIAL 2</u>			C LIMIT <u>TRIAL 2</u>		2 -	
DISH NUMBER						ల్		
WET SOIL + DISH (g)						tent		
DRY SOIL + DISH (g)						Con	1 -	-
WATER (g)						ure		
DISH MASS (g)						Moisture Content (%)		
DRY SOIL (g)						Σ		
MOISTURE CONTENT							0 -	
NUMBER OF BLOWS							1	10 No. of Blows 100
% RETAINED ON 0.42	5mm						LL =	= PL = PI =
Uncertainty Results:			•	uid Limit =				Plastic Limit = ± 0.2008
	11		•	uid Limit =				Plastic Limit =
		rtainty is k	based on a	combined	uncertainty	by a c	over	erage factor of $k=2$, providing a level of confidence
of approximately 95%.								LAB.FILE NO.:AL-10-648
SAMPLE SUBMITTED B						REMA	RKS:	
Walk-in Clients	✓ GPI	Field Ope	rator					
R. POLIDAN								
COMPUTER PRINT-OU By:MARIA AN	T TONIETTE P Encoder	. CUNAHA	P		т	- CTED	DV.	
	LICOUCI				11	SIED	Ri :	: ARTURO Q. AQUINO
Data Checked by:	ABA	A / MRR						LABORATORY TECHNICIAN

CERTIFIED BY :

AUTHORIZED SIGNATORY

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ABA / MRR Quality Assurance

Date Issued:

Rev.5/ Dec.2009





SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client...... MOHRI, ARCHITECT & ASSOCIATES, INC. Project..... Proposed Mayon Evacuation Center (Gogon Central School)

Location.... Brgy. Gogon, Province of Albay

TEST REPORT FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS

ASTM D 4318 - 05

Method : A 🗹 Wet Preparation 🗌 Dry Preparation

BOREHOLE NO	BH-2		DEPTH (m))	4.55-5.00		S	OIL DESC	CRIPTION			
SAMPLE NO	S-5		USCS CLAS	S	SC		С	layey SAN	ND			
MOISTURE CONTENT <u>DETERMINATION</u> DISH NUMBER WET SOIL + DISH (g)	<u>TRIAL 1</u> C68	IQUID LIMI <u>TRIAL 2</u> C80 35.40	T <u>TRIAL 3</u> C31 38.29	PLASTI <u>TRIAL 1</u> D16 22.67	C LIMIT <u>TRIAL 2</u> D45 22.69	Content (%)	51	٦				
DRY SOIL + DISH (g) WATER (g) DISH MASS (g) DRY SOIL (g) MOISTURE CONTENT	25.49 7.15 9.60 15.89 45.00	27.12 8.28 9.70 17.42 47.53	28.80 9.49 9.82 18.98 50.00	19.42 3.25 9.45 9.97 32.60	19.42 3.27 9.47 9.95 32.86	Moisture Con	47 - 46 - 45 - 44					
NUMBER OF BLOWS	30	21	15	3	3		10		No. d	of Blows		100
% RETAINED ON 0.42	5mm				24.63		LL =	46	PL =	33	PI =	13

BOREHOLE NO	BH-2		DEPTH (m))	5.55-6.00	SOIL DESCRIPTION					
SAMPLE NO	S-6		USCS CLAS	SS	MH		El	astic SIL	Т		
MOISTURE CONTENT	L	IQUID LIMI	т	PLASTI	C LIMIT		56 _T				
DETERMINATION	<u>TRIAL 1</u>	TRIAL 2	TRIAL 3	<u>TRIAL 1</u>	<u>TRIAL 2</u>	0	55 -	à			
DISH NUMBER	D14	D39	D7	C50	C93	(%) I	54 -		\setminus		
WET SOIL + DISH (g)	32.50	35.28	38.20	22.66	22.68	Content	53 -				
DRY SOIL + DISH (g)	24.87	26.47	28.11	19.52	19.54		52 -				
WATER (g)	7.63	8.81	10.09	3.14	3.14	ture			×		
DISH MASS (g)	9.62	9.68	9.78	9.51	9.52	Moistu	51 -				
DRY SOIL (g)	15.25	16.79	18.33	10.01	10.02	2	50 -				
MOISTURE CONTENT	50.03	52.47	55.05	31.37	31.34		49 +				
NUMBER OF BLOWS	31	22	15	3	1		10		No. of Blows		100
% RETAINED ON 0.42	5mm				19.72	I	LL =	51	PL = 31	PI =	20

Uncertainty Results: I	Liquid Limit = ± 0.1245	Plastic Limit = ± 0.2015
II	Liquid Limit = ± 0.1301	Plastic Limit = ± 0.2000
Note: The reported expanded uncertainty is based	on a combined uncertainty by a coverage	factor of k=2, providing a level of confidence
of approximately 95%.		LAB.FILE NO.:AL-10-649
SAMPLE SUBMITTED BY :	REMARKS:	
Walk-in Clients GPI Field Operator		
R. POLIDAN		
COMPUTER PRINT-OUT		
By: MARIA ANTONIETTE P. CUNAHAP		
Encoder	TESTED BY :	ARTURO Q. AQUINO
Data Checked by: ABA / MRR		LABORATORY TECHNICIAN
Quality Assurance	—	
	CERTIFIED BY :	
Date Issued:		AUTHORIZED SIGNATORY

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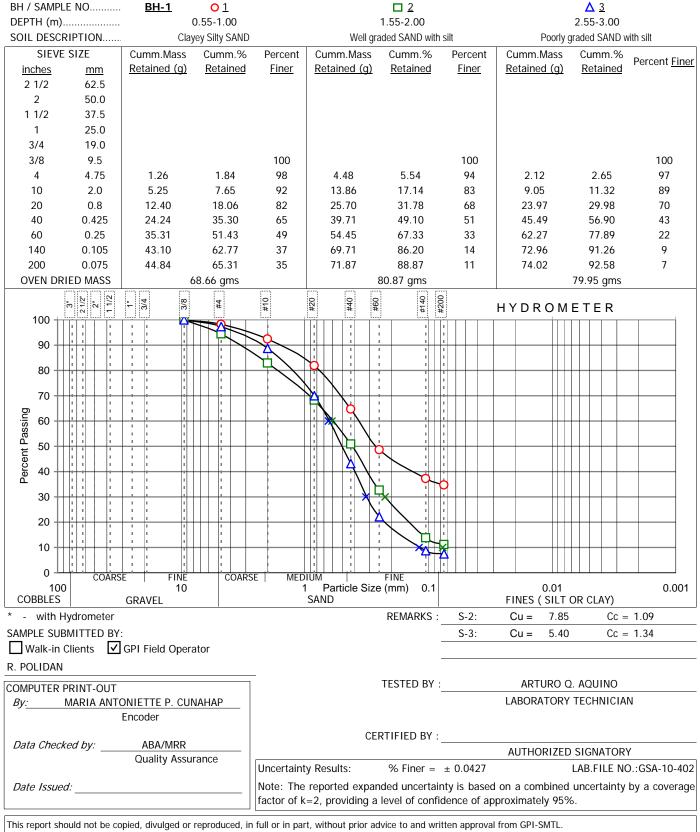
SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client.......MOHRI, ARCHITECT & ASSOCIATES, INC.Job NuProject.......Proposed Mayon Evacuation Center (Gogon Central School)Date ofLocation......Brgy. Gogon, Province of AlbayDate of

TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)



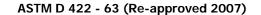




SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS



DEPTH (m)	LE NO) RIPTION	:	O <u>4</u> 3.55-4.00 aded SAND wi	th silt		□ <u>5</u> 4.55-5.00 aded SAND with	n silt		<u>∆ 6</u> 5.55-6.00 Elastic SILT	
SIEVE SIZE Cumm.Mass Cumm.%			Percent	Cumm.Mass	Cumm.%	Percent	Cumm.Ma		Percent	
inches	<u>mm</u>	Retained (q)	Retained	<u>Finer</u>	Retained (q)	Retained	Finer	Retained (
2 1/2	62.5									
2	50.0									
1 1/2	37.5									
1	25.0									
3/4	19.0			100			100			
3/8	9.5	3.48	4.17	96	2.07	2.67	97			
4	4.75	6.93	8.31	92	5.44	7.01	93			
10	2.0	11.55	13.85	86	11.39	14.68	85	0.30	0.42	100
20	0.8	18.94	22.70	77	19.71	25.40	75	1.52	2.13	98
40	0.425	29.58	35.46	65	39.69	51.15	49	3.83	5.37	95
60	0.25	57.00	68.33	32	58.83	75.82	24	6.97	9.78	90
140	0.105	75.64	90.67	9	70.94	91.43	9	11.78	16.52	83
200	0.075	77.65	93.08	7	72.82	93.85	6	14.10	19.78	80
	RIED MASS		33.42 gms			7.59 gms			71.29 gms	
	3" 2 1/2" 2" 1 1/2	3/4 3/8	#	#10	#20 #40 #60	(m) (m)		HYDRO	METER	
100 +				~						
90 -		5								
80 -		1 I I	1							
70 -						+ + + + + + + + + + + + + + + + + + + +				
90 -										
Percent Passing 0 - 09 40 -		· · · ·			1×1					
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10 -										
L 0	COARS		COAR			FINE				
10 COBBLES		10 GRAVEL		1	Particle Size SAND	(mm) 0.1		0.0 FINES (SI	LT OR CLAY)	0.001
		GRAVEL			SAND		C 4.			1.40
	Hydrometer					REMARKS :	S-4:			= 1.40
	BMITTED BY:						S-5:	Cu = 4	.72 Cc	= 1.39
Walk-in	Clients 🔽	GPI Field Opera	ator			-				
r. Polidan	J									
	PRINT-OUT]		TESTED BY :		ARTUR	o q. aquino	
<i>By:</i>		ONIETTE P. CUI	АНАР			-		LABORATC	RY TECHNICIA	N
		Encoder								
					055					
Data Chec	Pata Checked by: ABA/MRR				CEF	RTIFIED BY :				
	·	Quality Assu	rance					AUTHORIZ	ZED SIGNATOR	
				Uncertaint	y Results:	% Finer =	± 0.0434		LAB.FILE N	D.:GSA-10-402
Date Issue	ed:				reported expane =2, providing a					by a coverage
	a a culat car t t	and all a l		- -		dan 44 1 1 1				
nis report sl	nould not be co	pied, divulged or	reproduced, in	n full or in par	t, without prior ad	vice to and write	tten approva	I TROM GPI-SMT	L.	

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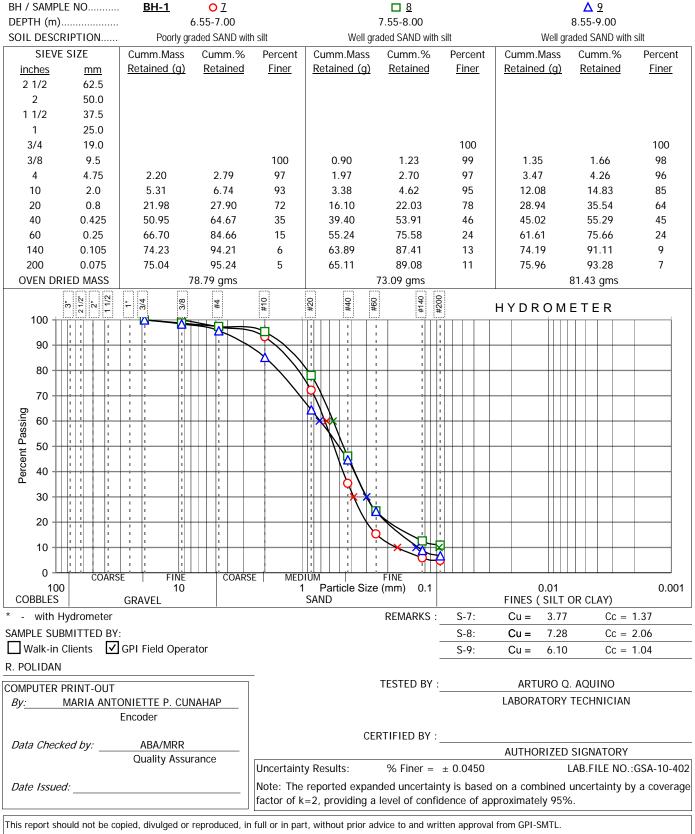


SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)







SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)

SIEVE SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Retained (g) Retained Einer 1/2 3/4 19.0 3/4 10.0 19.0	DEP1	ΓΗ (m	PLE NO n) CRIPTION		<u>010</u> 9.55-10.00 prly graded SANI)										Δ			
2 1/2 62.5 2 50.0 11/2 37.5 1 12 37.5 1 25.0 3/4 10.0 3/4 3/4 10.0 3/4 3/4 10.0 5/5 4 4.75 60.02 10 2.0 0.53 0.70 99 20 0.8 7,53 9.9 90 40 0.425 60.02 79.43 21 140 0.105 72.50 95.95 4 200 0.075 73.20 96.88 3 70 10 10 10 10 10 90 10 10 10 10 10 10 100 0 0 10 10 10 10 10 10 100 0 0 0 10 </td <td></td> <td>SIEV</td> <td>/E SIZE</td> <td>Cumm.Mass</td> <td>Cumm.%</td> <td>Percent</td> <td></td> <td>Perce</td> <td></td>		SIEV	/E SIZE	Cumm.Mass	Cumm.%	Percent												Perce	
2 50.0 11/2 37.5 1 25.0 3/4 19.0 10 20 0.0 0.53 0.70 10 20 0.53 97 10 20 0.53 9.79 10 20 0.8 7.53 9.97 20 0.8 7.53 9.97 90 20 0.8 7.53 9.97 90 20 0.05 7.2.0 9.6.88 3 OVEN DRIED MASS 75.56 gms 10 1 1 1 9 0 1 1 1 1 1 1 9 0 1 1 1 1 1 1 1 9 0 1 1 1 1 1 1 1 1 1 9 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				<u>Rotaniou (g</u>)	Rotanioa	<u>1 1101</u>	Rota		97	Retuined		<u>1 11 01</u>	rtotunie	<u>a (g)</u>	-	total	neu	<u> </u>	-
1 25.0 3/4 19.0 3/8 9.5 4 4.75 10 2.0 0.53 0.70 99 20 0.8 7.53 9.97 90 40 0.425 3.98 48.4 51 60 0.25 60.02 7.43 21 100 0.015 7.2.0 96.68 3 OVEN DRIED MASS 75.56 gms 9 9 9 90 1 1 1 1 1 90 1 1 1 1 1 1 90 1 1 1 1 1 1 1 90 1 1 1 1 1 1 1 1 90 1 1 1 1 1 1 1 1 1 1 91 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <																			
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OVEN DRIED MASS 75.56 gms 100 1	1	40	0.105	72.50	95.95	4													
100 100	2	00	0.075	73.20	96.88	3													
100 Image: Description of the last of the l	٥V	/EN D	RIED MASS		75.56 gms														
90 90 <td< td=""><td></td><td>100 -</td><td>3" 21/2" 2"</td><td>3/8</td><td># #</td><td>#10</td><td>#20</td><td>#40</td><td></td><td>#140</td><td>#200</td><td></td><td>HYDR</td><td>OM</td><td>E.</td><td>ΤE</td><td>R</td><td></td><td>⊣ </td></td<>		100 -	3" 21/2" 2"	3/8	# #	#10	#20	#40		#140	#200		HYDR	OM	E.	ΤE	R		⊣
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10 0 COARSE FINE COARSE FINE 100 COARSE FINE COARSE FINE 0.01 0 100 COARSE INE COARSE FINE 0.01 0 * - with Hydrometer SAND REMARKS : S-10: Cu = 3.09 Cc = 1.19 SAMPLE SUBMITTED BY:		20 -			1 1 1		1				1								
0 Image: Coarse intermediate interme		10 -					1			× -									
COBBLES GRAVEL SAND FINES (SILT OR CLAY) * - with Hydrometer REMARKS : S-10: Cu = 3.09 Cc = 1.19 SAMPLE SUBMITTED BY: Walk-in Clients Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator R. POLIDAN Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator By: MARIA ANTONIETTE P. CUNAHAP Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator By: MARIA ANTONIETTE P. CUNAHAP Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Data Checked by: ABA/MRR Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Data Checked by: ABA/MRR Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Data Checked by: ABA/MRR Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Data Checked by: ABA/MRR Image: GPI Field Operator Image: GPI Field Operator Image: GPI Field Operator Data Checked by: ABA/MRR Image: GPI Field Operator Image: GPI Field Operator		0 -	COARS	l a la la	COAR	SE MED		-Hil-		FINE	-2								
SAMPLE SUBMITTED BY: Walk-in Clients GPI Field Operator R. POLIDAN COMPUTER PRINT-OUT By: MARIA ANTONIETTE P. CUNAHAP Encoder Data Checked by: ABA/MRR Quality Assurance Date Issued: Computer Instruction Tested BY : ARTURO Q. AQUINO LABORATORY TECHNICIAN Bata Checked by: ABA/MRR Quality Assurance Date Issued: Computer Instruction Certified BY : AUTHORIZED SIGNATORY Uncertainty Results: % Finer = ± 0.0453 LAB.FILE NO.:GSA-10 Note: The reported expanded uncertainty is based on a combined uncertainty by a cov	CO						l Pa SAND	rticle S	Size ((mm) 0.1					OR	CLA	Y)	0.	001
Walk-in Clients ✓ GPI Field Operator R. POLIDAN TESTED BY : COMPUTER PRINT-OUT TESTED BY : By: MARIA ANTONIETTE P. CUNAHAP Encoder LABORATORY TECHNICIAN Data Checked by: ABA/MRR Quality Assurance CERTIFIED BY : Date Issued:	* -	with	Hydrometer							REMARKS	:	S-10:	Cu =	3.09)		Cc =	1.19	
R. POLIDAN TESTED BY : ARTURO Q. AQUINO COMPUTER PRINT-OUT TESTED BY : ARTURO Q. AQUINO By: MARIA ANTONIETTE P. CUNAHAP LABORATORY TECHNICIAN Encoder CERTIFIED BY : AUTHORIZED SIGNATORY Data Checked by: ABA/MRR AUTHORIZED SIGNATORY Uncertainty Results: % Finer = ± 0.0453 LAB.FILE NO.:GSA-10 Note: The reported expanded uncertainty is based on a combined uncertainty by a cov Cov											_								
By: MARIA ANTONIETTE P. CUNAHAP Encoder Encoder Data Checked by: ABA/MRR Quality Assurance CERTIFIED BY : Date Issued:				GPI Field Ope	rator														
By: MARIA ANTONIETTE P. CUNAHAP Encoder Encoder Data Checked by: ABA/MRR Quality Assurance CERTIFIED BY : Date Issued:									Т	ESTED BY	' :		ART	URO	2. A	QUIN	١O		
Data Checked by: ABA/MRR Quality Assurance AUTHORIZED SIGNATORY Date Issued: Where the control of the			MARIA ANT		JNAHAP								LABOR	ATORY	/ TE	CHN	ICIAN		
Quality Assurance Uncertainty Results: % Finer = ± 0.0453 LAB.FILE NO.:GSA-10 Date Issued:	Date	a Cho							CER	FIFIED BY	:								
Date Issued: Note: The reported expanded uncertainty is based on a combined uncertainty by a cov							V Resi	ilts:		% Finer -	= +	0.0453	AUTHC	RIZEI)-402
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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)

		<u>BH-2</u>	• 1			— F				۸ ۲	
BH / SAMPLE NO BH-2 O 4 DEPTH (m) 3.55-4.00			<u>04</u> 355400			□ <u>5</u> 1.55-5.00		<u>∆</u> <u>6</u> 5.55-6.00			
			Jraded SAND wi	th silt		ayey SAND				Elastic SILT	
	E SIZE	Cumm.Mass	Cumm.%	Percent	Cumm.Mass	Cumm.%	Percent	Cumm.I		Cumm.%	
inches	mm	Retained (g)		Finer	Retained (g)	Retained	Finer	Retaine		Retained	Percent Finer
2 1/2	62.5	<u>Rotaniou (g)</u>	Rotanioa		<u>rtotaniou (gr</u>	Itotanioa	<u>1 11 01</u>	<u>Itotumo</u>	<u>a (g/</u>	Itotaniou	
2	50.0										
1 1/2	37.5										
1	25.0										
3/4	19.0			100							
3/8	9.5	4.00	5.07	95							100
4	4.75	10.14	12.86	87			100	0.42	2	0.76	99
10	2.0	17.59	22.30	78	1.82	2.88	97	1.33	3	2.40	98
20	0.8	24.95	31.63	68	6.97	11.05	89	4.98		8.99	91
40	0.425	34.46	43.69	56	15.54	24.63	75	10.9		19.72	80
60	0.25	45.42	57.59	42	22.39	35.48	65	16.7	2	30.20	70
140	0.105	67.58	85.69	14	30.38	48.15	52	22.9	1	41.38	59
200	0.075	70.82	89.79	10	31.95	50.63	49	24.7	3	44.66	55
OVEN DR	RIED MASS		78.87 gms		6	3.10 gms			!	55.37 gms	
	3" 2 1/2" 2" 1 1/2	1" 3/4 3/8	#4	#10	#20 #40 #60	#140		HYDR	омі	ETER	
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	l Hydrometer	GRAVEL			SAND	REMARKS :	S-4:	Cu =	6.82	OR CLAY)	0.72
	-					KEIVIAKKS .	3-4.	Cu =	0.02	UU =	0.72
Walk-in	BMITTED BY:	GPI Field Ope	rator								
		огі гіеш оре	atui								
R. POLIDAN								. = .	10.0 -		
	PRINT-OUT					TESTED BY :				AQUINO	
Ву:		DNIETTE P. CL	JNAHAP					LABORA	TORY	TECHNICIA	N
		Encoder									
Data Char	kad bu	ABA/MRR			CEF	TIFIED BY :					
		Quality Ass	Irance					AUTHO	RIZED	SIGNATOR	Y
		Quality root		Uncertaint	y Results:	% Finer =	± 0.0486			LAB.FILE NO	D.:GSA-10-402
	al.			Note: The	reported expan	ded uncertair	nty is based	l on a com	bined	uncertainty	by a coverage
Date Issue	pa:				roportou onpun						





SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)

		E NO		<u>07</u>			□ <u>8</u>				<u><u> </u></u>	
	• •	RIPTION		6.55-7.00 Silty SAND			7.55-8.00 aded SAND with	silt	P		8.55-9.00 aded SAND with	n silt
JUIL	SIEVE		Cumm.Mass	Cumm.%	Percent	Cumm.Mass	Cumm.%	Percent	Cumm.l		Cumm.%	Percent
		Retained (q)	Retained	Finer	Retained (g)	Retained	Finer	Retaine		Retained	Finer	
	2 1/2 62.5		Retuined		<u>ittetunieu (gy</u>	Itotanioa	<u></u>	<u>itetuine</u>	<u>u (g/</u>	Rotaniou	<u></u>	
	2	50.0										
	_ 1/2	37.5										
	1	25.0										
	/4	19.0			100			100				
	/8	9.5	5.35	6.19	94	6.62	7.56	92				100
	4	4.75	17.63	20.39	80	12.64	14.44	86	1.24	1	1.53	98
	IO	2.0	31.20	36.09	64	17.54	20.04	80	4.10		5.06	95
	20	0.8	42.90	49.62	50	26.44	30.21	70	15.3		18.87	81
	10	0.425	50.87	58.84	41	48.81	55.76	44	39.4		48.61	51
	50	0.25	58.23	67.35	33	65.14	74.42	26	55.6		68.70	31
	40	0.105	67.22	77.75	22	79.85	91.23	9	70.8		87.40	13
	00	0.075	68.67	79.42	21	81.48	93.09	7	73.0		90.14	10
		IED MASS		86.46 gms	21		7.53 gms	,	75.0		31.06 gms	10
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		1	GRAVEL			SAND		6.0			OR CLAY)	1.0/
		lydrometer					REMARKS :	S-8:	Cu =	5.40		
_		BMITTED BY:					-	S-9:	Cu =	5.93	Cc =	1.32
W	alk-in	Clients 🔽	GPI Field Oper	ator			-					
PO	LIDAN											
JMP	IITER	PRINT-OUT					TESTED BY :		ARTU	IRO Q.	AQUINO	
By:			ONIETTE P. CU	NAHAP			-			TORY 1	TECHNICIAN	
- <i>y</i>			Encoder									
						055						
Data	Check	ked by:	ABA/MRR			CEF	TIFIED BY :					
		·	Quality Assu	Irance					AUTHOR		SIGNATORY	
					Uncertaint	y Results:	% Finer =	± 0.0408		LA	AB.FILE NO.:(GSA-10-4
Date	Issue	d:			Note: The	reported expand	led uncertain	ty is based	on a comb	oined u	ncertainty by	a covera
					factor of k	=2, providing a	level of config	dence of ap	proximate	lv 95%	,).	





SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



Client MOHRI, ARCHITECT & ASSOCIATES, INC.	Job Number
Project Proposed Mayon Evacuation Center (Gogon Central School)	Date of Receipt October 27, 2010
Location Brgy. Gogon, Province of Albay	Date of Test October 28, 2010

TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007)

DEPTH	MPLE NO (m)		<u>010</u> 9.55-10.00							Δ	
	SCRIPTION	50	raded SAND w		1 -						
SIEVE SIZE					Cumm.N		Cumm.%	Percent	Cumm.Mass	Cumm.%	Percent
inche:		Retained (g)	<u>Retained</u>	Finer	Retained	l (<u>g)</u>	<u>Retained</u>	Finer	<u>Retained (g)</u>	<u>Retained</u>	<u>Finer</u>
2 1/2											
2	50.0										
1 1/2											
1	25.0										
3/4	19.0										
3/8	9.5										
4	4.75			100							
10	2.0	1.73	2.10	98							
20	0.8	10.61	12.87	87							
40	0.425	42.78	51.91	48							
60	0.25	63.81	77.43	23							
140	0.105	75.23	91.29	9							
200	0.075	76.45	92.77	7							
OVEN	DRIED MASS		82.41 gms								
400	3" 21/2" 2" 11/2	3/4	#4	#10	#20	09#	#140		HYDROM	IETER	
100				$\overline{}$							
90	D						1 1				
					<u>R</u>						
80	D ++++++++++++++++++++++++++++++++++++	1 1 1			<u>H</u> NH H						
-				i i							
70											
Percent Passing											
ass				1							
<u>ب</u> 50	D	1 1 1 1	1		<u> </u>						
cen				1							
5 40	D ++++++++++++++++++++++++++++++++++++					\downarrow					
- 30						↓ :					
30				1	1	Λ :	: :				
20	D					_ \ \					
				H I		1.1					
10	D ++++++++++++++++++++++++++++++++++++	· · · ·	-	-							
C	CUARS		COAF			0.	FINE		0.01		
COBBL	100 FS	10 GRAVEL		1	Particle SAND	Size ((mm) 0.1		0.01 FINES (SILT		0.001
	th Hydrometer	GRAVEL			JAND		REMARKS :	S-10:	Cu = 4.4		1.63
	-						KEIVIAKKS .	3-10.	Cu = 4.4	5 CC =	1.03
	SUBMITTED BY										
	-in Clients 🗸	GPI Field Oper	ator								
r. Polic	DAN										
	ER PRINT-OUT			7			TESTED BY :		ARTURO (2. AQUINO	
ву:		ONIETTE P. CU	NAHAP						LABORATORY	TECHNICIAN	
J		Encoder	<u> </u>								
						OFF					
Data Cl	hecked by:				UEF	RTIFIED BY :			SIGNATORY		
	· · ·	irance				04 E:					
		Uncertaint	-		% Finer =			_AB.FILE NO.:			
Date Is.	sued:								on a combined		y a coverage
				factor of k	k=2, provid	ing a	level of confid	dence of ap	proximately 95	%.	
his repor	rt should not be co	opied, divulged or	reproduced,	in full or in par	rt, without p	rior ad	vice to and writ	ten approva	I from GPI-SMTL.		

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SOILS AND MATERIALS TESTING LABORATORY 119 Sauyo Road, Novaliches, Quezon City



TEST REPORT FOR GRAIN SIZE ANALYSIS

ASTM D 422 - 63 (Re-approved 2007) BH / SAMPLE NO..... BH-2 <u>01</u> **D** 2 <u> 3</u> 0.55-1.00 1.55-2.00 2.55-3.00 DEPTH (m)..... SOIL DESCRIPTION Silty SAND Poorly graded SAND with silt Poorly graded SAND with silt SIEVE SIZE Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent Cumm.Mass Cumm.% Percent inches Retained (g) Retained Finer Retained (g) Retained Finer Retained (g) Retained Finer mm 2 1/2 62.5 2 50.0 1 1/2 37.5 25.0 1 3/4 19.0 100 100 3/8 2 71 4.50 95 100 95 1.23 1.48 99 2.08 4.75 11.87 19.72 80 95 4.57 5.49 2.65 97 Δ 15.73 10.24 90 5.89 7.52 10 2.0 26.14 74 8.52 92 22.56 37.49 14.98 82 15.54 19.83 20 0.8 63 18.00 80 31.90 40 0.425 30.90 51.35 49 26.54 30.56 39.00 68 61 0.25 38.32 40 10 48.20 52 49.60 63.30 60 63.68 36 37 140 71 14 85.50 69.43 0.105 46.68 77.57 22 14 88.60 11 92.51 200 48.10 79.93 20 74.68 89.76 10 72.49 0.075 7 OVEN DRIED MASS 78.36 gms 60.18 gms 83.20 gms #140 1 1/2 #10 #200 #20 #40 2 1/2" 3/4 8/8 # ¢00 HYDROMETER 100 ŝ 90 80 ŝ Ľ. 70 ŝ Percent Passing 60 i i i 50 40 30 ŝ 20 ŝ 10 0 FINE COARSE FINE COARSE MEDIUM 100 Particle Size (mm) 0.1 0.01 0.001 10 COBBLES SAND GRAVEL FINES (SILT OR CLAY) - with Hydrometer **REMARKS** : S-2: Cc = 0.94Cu =4.18 SAMPLE SUBMITTED BY: S-3: Cu = 4.23 Cc = 1.03Walk-in Clients GPI Field Operator R. POLIDAN TESTED BY : ARTURO Q. AQUINO COMPUTER PRINT-OUT LABORATORY TECHNICIAN MARIA ANTONIETTE P. CUNAHAP By: Encoder CERTIFIED BY : Data Checked by: ___ ABA/MRR AUTHORIZED SIGNATORY **Quality Assurance** Uncertainty Results: % Finer = ± 0.0523 LAB.FILE NO .: GSA-10-402 Note: The reported expanded uncertainty is based on a combined uncertainty by a coverage Date Issued: factor of k=2, providing a level of confidence of approximately 95%.

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