



NOTIFICACIÓN NÚM. 3

**SUBASTA FORMAL 22J-04401
PARA ADQUIRIR E INSTALAR GENERADOR ELÉCTRICO DE 2000KW/2500KVA
PARA EL DEPARTAMENTO DE LA VIVIENDA
DEL GOBIERNO DE PUERTO RICO**

ASUNTO: RESPUESTAS A PREGUNTAS

Se notifica a los licitadores interesados en participar en la subasta de referencia, de las siguientes preguntas y contestaciones:

Licitador: Antilles Power Depot

1. Favor de confirmar si el generador tiene que cumplir:

- a. Certificación UL-2200
- b. IBC Certificación sísmica
- c. El tanque certificación UL-142
- d. El transfer switch UL-1008a

Respuesta:

- a. **Sí, ver incisos 5 de “One Line Diagram Equipment Legend” en hoja E-201.**
- b. **Sí, ver incisos 6 de “One Line Diagram Equipment Legend” en hoja E-201.**
- c. **Sí, debe cumplir con certificaciones PRBC, IBC 2018 y ASCE 7-16.**
- d. **Sí, ver especificaciones sección 2.4.**

2. Favor de confirmar la capacidad del tanque sub-base.

Respuesta: 5,000 galones, ver incisos 6 de “One Line Diagram Equipment Legend” en hoja E-201.

3. Indicar donde se va a instalar el remote annunciator.

Respuesta: Dentro de la Oficina de Monitoreo de las manejadoras, sótano, al lado de los elevadores.

4. Confirmar si el generador va a trabajar *standby*.

Respuesta: Sí.

5. Confirmar ¿por qué necesitan que la *temperature rise* la solicitan a 105 grados? Ya que para esta capacidad de generador y voltaje por lo regular es a 130 grados.

Respuesta: Sí, según especificación sección 2.7.

6. Confirmar si hay que cumplir con *Buy American*.

Respuesta: Se confirma.

7. Confirmar si hay que incluir los *testing* de la página 14-16.

Respuesta: Sí, hay que incluirlos.



8. Favor de confirmar si hay que incluir los arbitrios de construcción y patente al Municipio.

Respuesta: Es correcto, hay que incluirlos.

9. Favor de confirmar si este Proyecto se puede facturar por certificaciones.

Respuesta: Es correcto, se puede facturar por certificaciones.

10. ¿Favor de confirmar los niveles de sonido de la cabina en *dba*? ¿Y a qué distancia?

Respuesta: 72 dba, 7 metros.

11. ¿Favor de confirmar si hay que solicitar permisos para remover los árboles?

Respuesta: El licitador agraciado tendrá que solicitar el permiso aplicable.

12. Para cumplir con certificaciones sísmicas favor de indicar si tenemos que montar entre el generador y el tanque los esprines sísmicos.

Respuesta: Sí. Ver especificación sección 2.8.

13. Están solicitando un tiempo de entrega de 8 meses, por la disponibilidad de los equipos y materiales, entiendo que este tiempo es muy poco, por tal motivo estoy solicitando de ustedes una extensión de tiempo de entrega de este Proyecto de 110 semanas a partir de la orden de comienzo.

Respuesta: Ver Enmienda Núm. 4.

14. Favor de extender la apertura dos semanas más, ya que los planos que tenemos no se pueden leer bien.

Respuesta: Los planos en su formato original fueron compartidos en la Notificación Núm. 2 emitida el 2 de mayo de 2023.

15. Favor de hacernos llegar los planos que se puedan leer bien, ya están borrosos.

Respuesta: Ver respuesta de la pregunta núm. 14.

16. Están solicitando que el tanque existente supla al tanque de 5000 galones del generador de forma automática, ya que, si un sensor de eso falla, de seguro va a tener un derrame de *diésel* de grandes proporciones, ya que el tanque del generador por los respiraderos se derramara.

Respuesta: El generador especificado trae una bomba de transferencia para abastecer al “*day tank*” y este debe traer un panel con los sensores y controles para hacer la transferencia automatizada y alarma de nivel bajo y alto de diésel.

Licitador: Bonneville Group

17. ¿La compra de los materiales deberán cumplir con la cláusula *Buy American Act*?

Respuesta: Ver respuesta de la pregunta núm. 6.



ADMINISTRACIÓN DE SERVICIOS GENERALES
Gobierno de Puerto Rico
PO Box 41249
San Juan, PR 00940
(787) 759-7676
administracion@asg.pr.gov

18. ¿Los fondos para este Proyecto son estatales o federales?

Respuesta: Estatales.

19. ¿Cuál es el salario mínimo para pagarle a un empleado si el Proyecto utiliza fondos estatales?

Respuesta: Salario mínimo por ley estatal.

20. ¿Cuál es el mínimo para pagarle a un empleado si el proyecto utiliza fondos federales?

Respuesta: No aplica fondos federales.

21. Favor de indicar los permisos requeridos en el Proyecto que son responsabilidad del licitador.

Respuesta: Se requiere todo permiso necesario para realizar el proyecto. Ver Sección VII del pliego de Subasta.

22. El plano no está endosado por LUMA, esto es parte de los trabajos del diseñador y debe estar endosado antes de la reunión pre-construcción.

Respuesta: Sí es parte del trabajo del diseñador y debe estar en proceso de endoso.

23. ¿El licitador es responsable de los costos de vías libres por parte de LUMA? De ser así, sugerimos se ponga en la table de ofertar un *allowance*.

Respuesta: No aplican costos de vía libre.

24. ¿El tiempo que tarda la Oficina de Gerencia de Permisos en otorgarlos, fue considerado?

Respuesta: Considerar un tiempo estimado, tomando como base su experiencia en trabajos similares.

25. ¿La agencia realizó un estudio de suelo?, pueden enviarlo?

Respuesta: Ver documentos adjuntos.

26. El tiempo que otorga la agencia para realizar este Proyecto es de 8 meses. Le solicitamos que aumente el tiempo de construcción.

Respuesta: Ver Enmienda Núm. 4.

27. Los planos enviados en día 2 de mayo, no están claros. Al utilizar el *zoom* se distorsionan. Favor revisar y enviar.

Respuesta: Ver respuesta de la pregunta núm. 14.

28. En la tabla de Ofertar, ¿en cuál partida quieren incluir la construcción de bases de hormigón, tuberías eléctricas, alambrado primario y de control y trabajos en el tanque de *diésel* y la tubería *diésel*?

Respuesta: Esto se deberá incluir en la línea de trabajos de instalación, partida 2.



ADMINISTRACIÓN DE SERVICIOS GENERALES
Gobierno de Puerto Rico
PO Box 41249
San Juan, PR 00940
(787) 759-7676
administracion@asg.pr.gov

29. ¿Favor de confirmar que el *diésel* utilizado para las pruebas y el llenado inicial y final de los tanques de *diésel* es por Vivienda?

Respuesta: El *diésel* para el *daytank* será provisto por el Departamento de la Vivienda.

30. La sección de la especificación 1.6.1 mostrada a continuación indica:

Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

Hay representantes de fábrica autorizados que no instalan como lo son *RIMCO (Caterpillar)*, *KHOLER* y *CUMMINS*, solo suplen, certifican, inspeccionan, dan el arranque inicial, hacen pruebas y dan garantía. Favor de indicar si la intención de esta parte de la especificación es que suplidores de generadores, que son representantes autorizados de fábrica de alguna línea de generadores sean los únicos que liciten en la misma, y por consiguiente contratistas bonafides incorporados bajo las leyes de Puerto Rico se excluyen de participar.

Respuesta: La intención es que se instale por un contratista cualificado y que la instalación sea certificada por el representante de fábrica autorizado.

31. La especificación solicita un *load bank test* al 100%. Este equipo de esta capacidad y a 4.16KV no se encuentra localmente, requiere rentarse en USA y el costo es sumamente alto. ¿Favor de confirmar si lo van a requerir considerando que el generador será probado en fábrica?

Respuesta: Estas pruebas deben realizarse en fábrica y certificados por el manufacturero.

Licitador: D.I Generator Electric Power Services

32. Se puede coordinar con el edificio para realizar las pruebas del *start up* entre sábado o domingo, ¿ya que hacer pruebas con un *Low Band* no es costo efectivo?

Respuesta: Sí, se puede coordinar.

33. ¿Será un requerimiento que los equipos cumplan con el *Buy American Act*?

Respuesta: Ver respuesta de la pregunta núm. 6.

34. Solicitamos que se extienda el plazo de culminación del Proyecto al menos 1 año y 4 meses, ya que el fabricante estima tiempo de entrega de 52 semanas aproximadas (1 año).

Respuesta: Ver Enmienda Núm. 4.

35. Considerando que en este Proyecto se requiere la eliminación de 2 árboles, lo cual conlleva solicitar un permiso de mitigación de árboles con el Departamento de Recursos Naturales y Ambientales (DRNA), solicitamos que el Departamento de la Vivienda nos indique el área para la mitigación de los árboles, la cual entendemos será un requisito del DRNA. Esta mitigación puede ser de 1 a 3 árboles a sembrar por cada árbol eliminado, esto lo determina el DRNA.

Respuesta: Se proveerá la información al contratista agraciado.



ADMINISTRACIÓN DE SERVICIOS GENERALES
Gobierno de Puerto Rico
PO Box 41249
San Juan, PR 00940
(787) 759-7676
administracion@asg.pr.gov

36. Solicitamos que se confirme si la transferencia de combustible será manual o automatizada, ya que la transferencia de combustible automatizada conlleva un riesgo de derrame mayor.

Respuesta: Ver respuesta de la pregunta núm. 16.

37. Solicitamos que se confirme si el tanque de 5,000 galones *Day Tank* del generador puede ser instalado al lado del *trailer* del generador nuevo.

Respuesta: El generador especificado trae el tanque contenido como parte del equipo.

38. En la página E-101 del plano, específicamente en las siguientes notas que se enumeran abajo, se hace referencia a varios paneles de distribución:

FOR ATS FAN & SPACE HEATERS. PROVIDE & INSTALL IN EXISTING SPACE OF PANELBOARD TWO (2) NEW 120V-20A-1P CIRCUIT BREAKERS EQUAL TO EXISTING

Respuesta: Proveer e instalar un *breaker* de 50 amp-480V-3P en el panel de 480 voltios con capacidad más cercano. Proveer e instalar un transformador seco de 30KVA, 480V-208/120V-3PH dentro del edificio con un *breaker* secundario de 100amp-250V-3P en cubierta Nema 1 a su lado. Proveer e instalar un alimentador secundario soterrado de 4#2/0-1#6GND-2.5"C y un tubo 2.5" (*spare*), desde este nuevo *breaker* hasta el panel de distribución eléctrica dentro de la caseta del generador. Estas *enclosures* de generadores traen un panel de distribución desde donde se alimentan las necesidades de iluminación y *heaters* del equipo. La distancia entre los paneles y el generador donde será la instalación es de 166'.

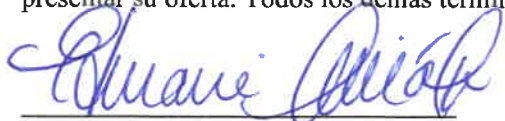
39. *FOR GENERATOR SPACE HEATER & BATTERY CHARGER. TO NEAREST 208/120V PANELBOARD. PROVIDE & INSTALL IN EXISTING SPACE OF PANELBOARD TWO (2) NEW 120V-20A-1P CIRCUIT BREAKERS EQUAL TO EXISTING.*

Respuesta: Ver respuesta de la pregunta núm. 38.

40. *FOR GENERATOR WATER JACKET HEATER. 480/277V PANELBOARD. PROVIDE & INSTALL IN EXISTING SPACE OF PANELBOARD A NEW 480V, 30A, 3P BREAKER EQUAL TO EXISTING.* La pregunta es la siguiente, ¿dónde están ubicados los paneles que se está haciendo referencia?

Respuesta: Ver respuesta de la pregunta núm. 38.

Esta notificación forma parte del pliego de subastas y quienes interesen licitar, tendrán que considerarla al presentar su oferta. Todos los demás términos, condiciones y especificaciones permanecerán sin alterar.



Edmarie Avilés Almenas
Secretaria
Junta de Subastas

Emitido hoy, 24 de mayo de 2023
San Juan, Puerto Rico



ADMINISTRACIÓN DE SERVICIOS GENERALES
Gobierno de Puerto Rico
PO Box 41249
San Juan, PR 00940
(787) 759-7676
administracion@asg.pr.gov



**Geotechnical Investigation for
Proposed Generator Pad
Puerto Rico Housing Department
Hato Rey, P.R.**

Job No. E-347

May 22, 2018

Prepared for:

Arch. Fernando Pagán
Fase 3 Arquitectura, CSP
D-15 Yunquecito St.
Lomas de Carolina Development
Carolina, PR 00987

Prepared by:

**SUPER FOUNDATION SPECIALIST, CORP.
ENGINEERING DEPARTMENT
PMB 3 Box 2020
Barceloneta, PR 00617-2020**



**Geotechnical Investigation for
Proposed Generator Pad
Puerto Rico Housing Department
Hato Rey, P.R.**

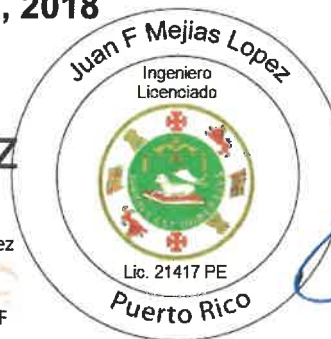
Job No. E-347

May 22, 2018

**Juan F
Mejias Lopez**

Prepared by:

Digitally signed by Juan F Mejias Lopez
DN: c=US, st=Puerto Rico, o=Colegio
de Ingenieros y Agrimensores de
Puerto Rico, title=21417 PE, cn=Juan F
Mejias Lopez,
email=jfmejiasl@bioesign.com
Date: 2018.05.23 13:47:23 -04'00'



Fecha de Expiración: 2021-07-07

Juan F. Mejías López, P.E., Lic. #21417
Chief Engineer – Super Foundation Specialist, Corp.

05/22/18

Date

This report consists of 23 pages

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	SITE & PROJECT DESCRIPTION	1
2.1	Location	1
2.2	Topography.....	2
2.3	Project Description	2
3.	GEOLOGIC SETTING	2
3.1	Review of USGS Geologic Map	2
4.	FIELD EXPLORATION	3
5.	LABORATORY TESTING.....	4
6.	SUBSURFACE CONDITIONS	4
6.1	Soil Conditions	4
6.2	Groundwater conditions	5
7.	GEOTECHNICAL CONCLUSIONS AND RECOMMENDATIONS	5
7.1	Earthquake Recommendations	5
8.	GENERAL CONDITIONS	7
8.1	Post-Investigation Services.....	7
8.2	Uncertainties and Limitations.....	8
9.	REFERENCES	9
9.1	Standards, Codes, and Procedures Cited	9

Appendix A	-	Figures
1.		Site Location Map
2.		Geologic Map
3.		Site Aerial View
4.		Boring Location Plan

Appendix B	-	Boring Log
------------	---	------------

Appendix C	-	CIAPR Stamp
------------	---	-------------

**Geotechnical Investigation for
Proposed Generator Pad
Puerto Rico Housing Department
Hato Rey, P.R.**

Job No. E-347

1. INTRODUCTION

The construction of an electrical power generator concrete pad has been proposed within the Puerto Rico Housing Department. This in the Municipality San Juan, Puerto Rico. This report summarizes the current geotechnical data obtained during the subsoil exploration for the proposed project based on the information submitted to this office by Arch. Fernando Pagán, authorized representative of Fase 3 Arquitectura, CSP. The investigation presents a discussion on the geologic setting, subsoil conditions found, field and laboratory test results, and our geotechnical recommendations for the intended project.

The exploration follow instructions from Arch. Pagán, as per our signed proposal 2018-17, dated April 25, 2018.

2. SITE & PROJECT DESCRIPTION

2.1 Location

The project site is located at 606 Barbosa Ave. in the Municipality of San Juan, Puerto Rico. The Site Location Map taken from the USGS 7.5 Minutes San Juan Topographic Map is included as **Figure 1** in Appendix A depicting the approximate site location.

2.2 Topography

Information obtained from the aforementioned topographic quadrangle shows that the site elevation is in the order of 9 meters above mean sea level. The site topography is relatively flat.

2.3 Project Description

The proposed project consists in the construction of a reinforced concrete pad to support a power generator. Pad dimensions will be 60 feet long by 12 feet wide.

Based on submitted information and observed conditions, no significant changes in grading are anticipated.

The designer and owner are alerted that if any of the considerations herewith mentioned are not in accordance with project true conditions we shall be alerted in order to verify submitted recommendations. In addition, we also shall be alerted in case the designer notes conditions and/or aspects of the project that were overlooked in this report.

3. GEOLOGIC SETTING

The information concerning the soils and geologic setting of the study area was obtained from a review of readily available published literature.

3.1 Review of USGS Geologic Map

The site has been mapped as part of the Geologic Map of the San Juan Quadrangle. According to this map, the project site is mostly covered by Pliocene to Pleistocene-aged Older Alluvial Deposits (QTt). The aforementioned map describes the unit as follows:

“QTt, Older Alluvial Deposits – Clay, silty and Sandy, mainly red or mottled red and light gray. Includes Mucarabones Sand and San Sebastian Formation in area east of the Río Piedras. Thickness variable but probably greater than 100 meters in places”

Figure 2 included in Appendix A is a fragment of the Geologic Map of the area with the site marked and the boundaries of the geological unit delineated on it.

4. FIELD EXPLORATION

One (1) geotechnical test boring was drilled as part of this investigation on May 11, 2018. The boring was drilled to a maximum depth of about twenty-five (25) feet below existing ground surface. A more in depth discussion with a general description of the subsurface conditions is further presented in Section 6 of this report.

A test hole was performed using a Truck-Mounted Drilling Rig, CME¹–45 Model. The hammer used for the Standard Penetration Testing was a 140-lb. Safety hammer. The Standard Penetration Test (SPT) as described in ASTM D 1586 was used to determine the “N_{SPT}” value and disturbed soil sampling for visual-manual descriptions in accordance with ASTM D 2488. A standard configuration consisting of a 1.375” ID split barrel (sampler) is used as testing probe and for sample recuperation in this sampling method. The sampler attached at the end of a solid string of drill rods is advanced for an 18-in. or 24-in. interval, depending on the sampler length, using a 140-lb hammer dropped through a 30-in. free fall. The sampler used during this investigation was 24-in. in length. The blows required to advance the hole for each 6-in. are recorded in a field-boring log. The standard penetration resistance, or “N_{SPT}” value, is the sum of the blows required for the second and third 6-in. drives. The hole is then cleaned to the top of the next interval to be sampled and the procedure is repeated.

The samples and field logs, were collected, secured and transported to our laboratory for routine testing. Samples are secured and transported according to the practice described in ASTM D4220. Routine testing includes natural moisture content and unconfined compressive strength on cohesive samples when samples condition allows it.

¹ Central Mine Equipment.

Figure 3 included in Appendix A, shows the location of the exploration boring on a portion of a site plan provided by the client.

5. LABORATORY TESTING

Laboratory testing consisted of natural water content determination and manual-visual description. Unconfined compressive strength values were also obtained from some of the cohesive samples by means of penetrometer.

The water content tests were performed in accordance with ASTM D 2216 *Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*.

Manual-visual description of samples was performed in accordance with ASTM D 2488 *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*.

Laboratory results together with the material description and lithologic changes with depth were recorded on a soil boring log as part of the Appendix B.

6. SUBSURFACE CONDITIONS

6.1 Soil Conditions

The general subsoil conditions observed from the soil samples correspond to those discussed earlier in the geologic setting. Basically, subsoil conditions detected consists of cohesive material from Older Alluvial Deposits.

Samples were predominantly described as Fat Clay. The Standard Penetration Test (SPT) showed “N” values ranging from 22 to 51 blows per foot (bpf), predominantly higher than 30 bpf. The unconfined compressive strength, measured by pocket penetrometer, was of more than

4.5 tons per square foot on all tested samples. The moisture content ranged from 23 to 29 percent.

The above given soil characteristics correspond to a general description of the subsoil conditions prevailing at the project site. On account of the generalized form that the subsoil profile has been presented above, we encourage the reader to refer to the boring log for detailed information on the soil characteristics at the borings locations.

6.2 Groundwater conditions

The groundwater table (GWT) at the site was not encountered during drilling operations within the maximum explored depth. However, it should be noted that the groundwater table is always being affected by natural factors such as the distance from water sources, the permeability of the subsoil, the topography of the area, and the amount of precipitation. Moreover, it should be taken into account that whenever changes in the topography of a site are made, changes in the groundwater characteristics of the region frequently occur. Such conditions are difficult to detect within the normal scope of time of the exploration. Usually, springs are detected during the construction period, when excavations or ground surface stripping are made.

7. GEOTECHNICAL CONCLUSIONS AND RECOMMENDATIONS

7.1 Earthquake Recommendations

According to the International Building Code (2009) Table 1613.5.2, the soils at the site fall into the Soil Profile Type S_D . For the Municipality of San Juan, the Spectral Response Accelerations are 0.90 and 0.31 at periods of 0.2 seconds and 1.0 seconds, respectively. These values consider a 5% critical damping, recurrence of 2,475 years (probability of exceedance of 2% in 50 years).

7.2 Foundation Recommendations

In view of the results and conditions of this exploration, the following recommendations will be discussed presenting the procedures to be followed for the design and construction of the proposed concrete pad, regarding its geotechnical aspects.

7.2.1 Replacement Program

The earthwork operations constitute a very important aspect of the geotechnical design of the project. Therefore, it is strongly recommended that our services, or the services of a qualified Geotechnical Engineer, are retained during the earthwork operations in order to supervise them in a full time basis.

Prior to cast the foundations, a replacement program shall be executed over the entire pad footprint plus three (3) feet beyond its periphery. The material from surface down to one (1) foot, measured from ground surface, shall be removed and replaced with engineering compacted fill. Once the removal operations are completed, the exposed surface shall be proof rolled using a 25-ton non-vibratory roller. Any soft spot disclosed during the proof rolling operations shall be removed and replaced with select engineering fills, as recommended below. This procedure shall be performed over the entire exposed excavation area. The roller shall be applied over any given area at least 30 times, or 15 round trips, at a velocity not exceeding 1.5 miles per hour.

The excavation shall be always kept in dry conditions.

The material to be used as backfill shall resemble the characteristics of an A-2-4, or better, according to the AASHTO Soil Classification System. Every layer shall be compacted so that the dry unit weight of the material is equal to or greater than 95 percent of its maximum dry unit weight as obtained in the laboratory under a Modified Proctor Compaction Test (ASTM D1557). Moisture content shall be kept within a range of +2% to -3% of optimum moisture as per Modified Proctor. It should be the responsibility of the Resident Engineer to instruct the Soils

Engineer retained by the owner on a consultative basis to determine the optimum moisture and corresponding dry density of the fill to be used in this project.

Over the fill material the contractor should employ the proper equipment to obtain the required percentage of compaction. He shall not place any additional fill until the preceding compacted layer has been found to fulfill the aforementioned compaction criteria.

Regarding the compaction operations, each successive pass should overlap the preceding adjacent pass by ten (10) percent. Roller passes made on material in unsuitable condition will not be considered in judging compliance with our recommendations. In case the Contractor fails to obtain the required compaction energy, he must get the appropriate type of equipment to comply with these compaction criteria.

7.2.2 Reinforced Concrete Pad Design

In order to reduce differential settlement, the concrete pad shall be designed as a rigid mat foundation. This shall be designed to withstand differential movements of about 0.75 inch between center and peripheral limits of pad. A modulus of subgrade reaction of about 125 p.c.i may be assigned to the subsoil. The pad shall be de designed with a net soil bearing pressure not exceeding 3,000 psf. A peripheral key at least 18" deep shall be provided to confine the soil under it. The replacement program was designed considering that the mat foundation will rest at least over one (1) foot of compacted engineering fill.

8. GENERAL CONDITIONS

8.1 Post-Investigation Services

During final design and during construction it may be necessary to modify recommendations made in this report to account for new information or the occurrence of situations that were not considered in preparing these recommendations. For that reason, geotechnical design cannot be considered complete until construction is complete, and the Geotechnical Engineer providing

future services must necessarily review all geological and geotechnical data, conclusions, and recommendations and either confirm the conclusions and recommendations or recommend changes to them. Future geotechnical services are an important and necessary continuation of this investigation.

Foundation and grading plans as well as specifications related to construction should be reviewed by a qualified Geotechnical Engineer to verify that the intent of the recommendations presented in this report has been properly interpreted and incorporated into the contract documents. These were not prepared to the time this exploration was performed.

A qualified Geotechnical Engineer should perform Geotechnical observation and testing during excavation, foundation construction, and concrete casting. The purposes of the geotechnical observation and testing are to correlate the findings of this and future investigations with actual subsurface conditions exposed during construction, and to provide revised or supplemental recommendations, if necessary. The geotechnical observation and testing will also confirm that foundations are founded in the recommended soils and that suitable fill and backfill soils are placed upon competent materials and properly compacted to meet the project specifications..

8.2 Uncertainties and Limitations

Only a very small portion of the subsurface conditions at the site had been observed and/or tested. The possibility of subsurface conditions differing from those assumed and developed in this investigation cannot be discounted. Conclusions and recommendations presented in this report are based upon our understanding of the subsoil conditions depicted by the borings drilled and the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the field exploration.

Professional judgments presented in this report are based on an evaluation of the technical information gathered and our general experience in the field of Geotechnical Engineering. We do not guarantee the performance of the project in any respect, only that the engineering work and judgment rendered meet the standard of care of the geotechnical profession at this time.

9. REFERENCES

- Pease, Jr., Maurice H. and Monroe, Watson H., 1977 Geologic Map of the San Juan Quadrangle: U.S. Geol. Survey Map I-1010
- USGS, 1969 San Juan Topographic Quadrangle, Puerto Rico 7.5-Minute Series (Topographic). (Photorevised 1982): U.S. Geological Survey
- Coduto, Donald P., 1994. *Foundation Design-Principles and Practices*, Prentice Hall, Inc., New Jersey.
- Das, Braja M., 1994. *Principles of Geotechnical Engineering*, 3rd Edition International Thomson Publishing, U.S.
- Peck, Ralph B., Hanson, Walter E. and Thornburn, Thomas H., 1974. *Foundation Engineering*, 2nd ed. John Wiley & Sons, New York.
- Prakash, Shamsheer and Sharma, Hari D., 1990. *Pile Foundations in Engineering Practice*, John Wiley & Sons, Inc., New York.
- Kulhawy, F.H., Mayne, P.W., 1990. *Manual on Estimating Soil Properties for Foundation Design*, Electric Power Research Institute, California, U.S.
- USACE, 1992 *Engineer Manual EM 1110-1-1905 "Bearing Capacity of Soils"*: Department of the Army, US Army Corps of Engineers, Washington, D.C.

9.1 Standards, Codes, and Procedures Cited

- ASTM D 1557 "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³)" *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I): D420 to D5779*.
- ASTM D 1586 "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils." *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I):D420 to D5779*.
- ASTM D 2216 "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass." *Annual Book of ASTM Standards. Volume 04.08 - Soil and Rock (I):D420 to D5779*.

ASTM D 2487 "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)." *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I):D420 to D5779.*

ASTM D 2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)." *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I):D420 to D5779.*

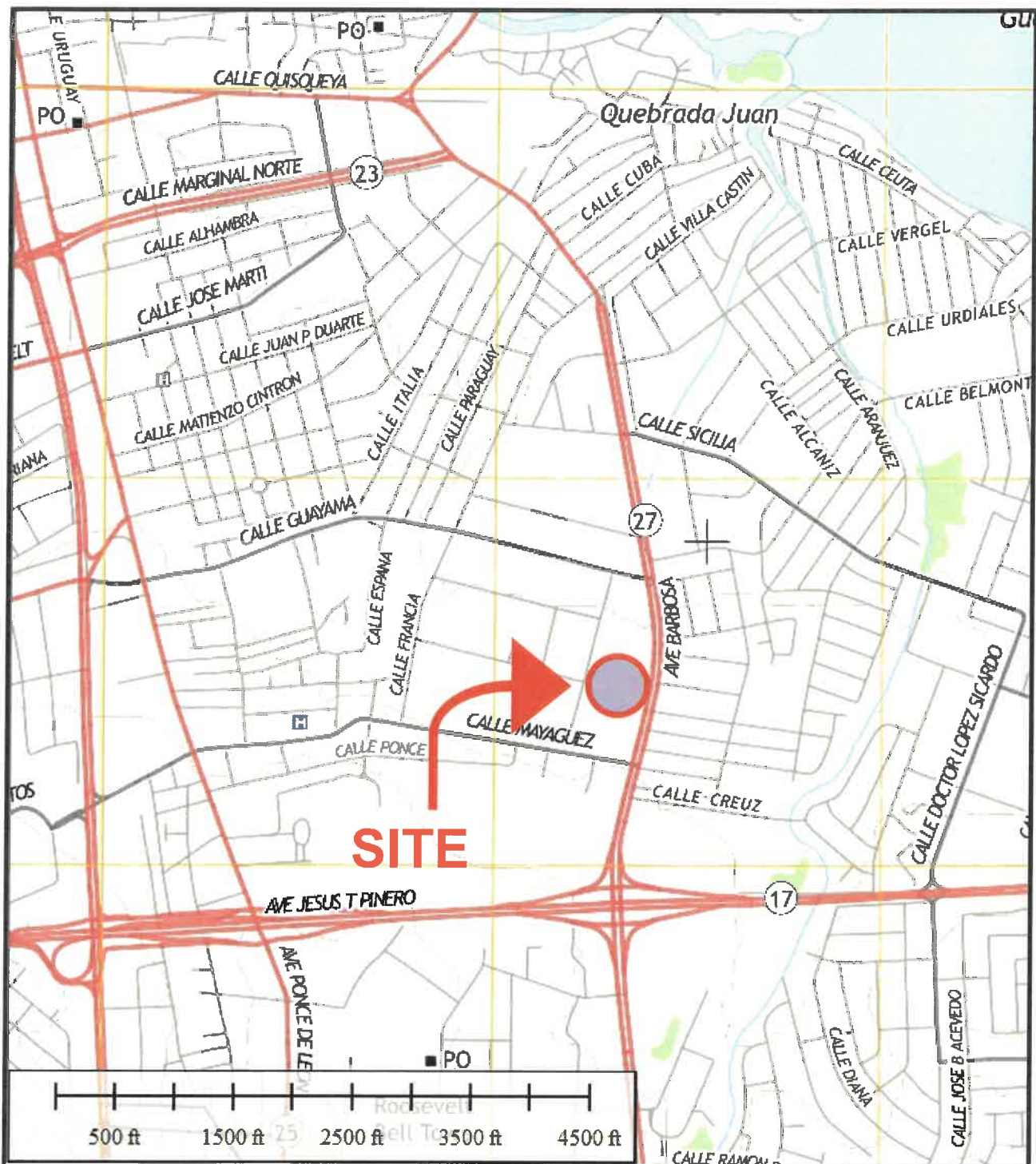
ASTM D 3282 "Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes." *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I):D420 to D5779.*

ASTM D 4220 "Standard Practices for Preserving and Transporting Soil Samples." *Annual Book of ASTM Standards - Volume 04.08 - Soil and Rock (I):D420 to D5779.*

Uniform Building Code (1997). International Conference of Building Officials, Vol.2, Whittier, California.

APPENDIX A

FIGURES



SUPER FOUNDATION SPECIALIST, CORP.
ENGINEERING DEPARTMENT

PMB 3 P.O. BOX 2020
 BARCELONETA, PR 00617-2020
 TEL/FAX (787) 846-0614

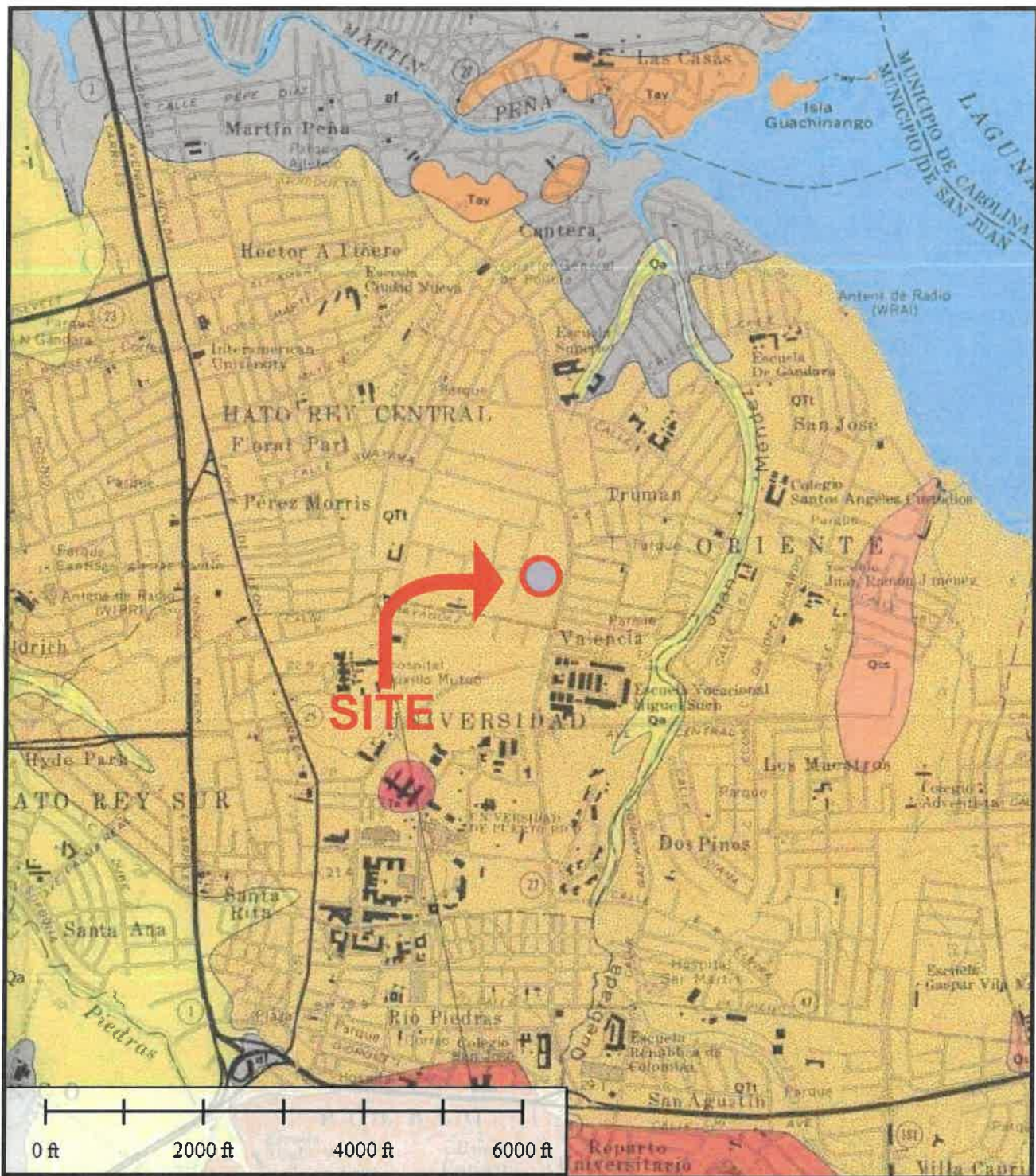


SCALE:
 AS SHOWN

**Geotechnical Investigation for
 Proposed Generator Pad at Puerto
 Rico Housing Department
 San Juan, P.R.**

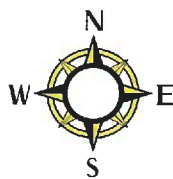
**Fig. 1 Fragment of USGS 7.5 Minutes San
 Juan Topographic Quadrangle, 2013**

Project No.: E-347



SUPER FOUNDATION SPECIALIST, CORP.
ENGINEERING DEPARTMENT

PMB 3 P.O. BOX 2020
 BARCELONETA, PR 00617-2020
 TEL/FAX (787) 846-0614

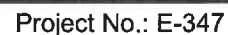


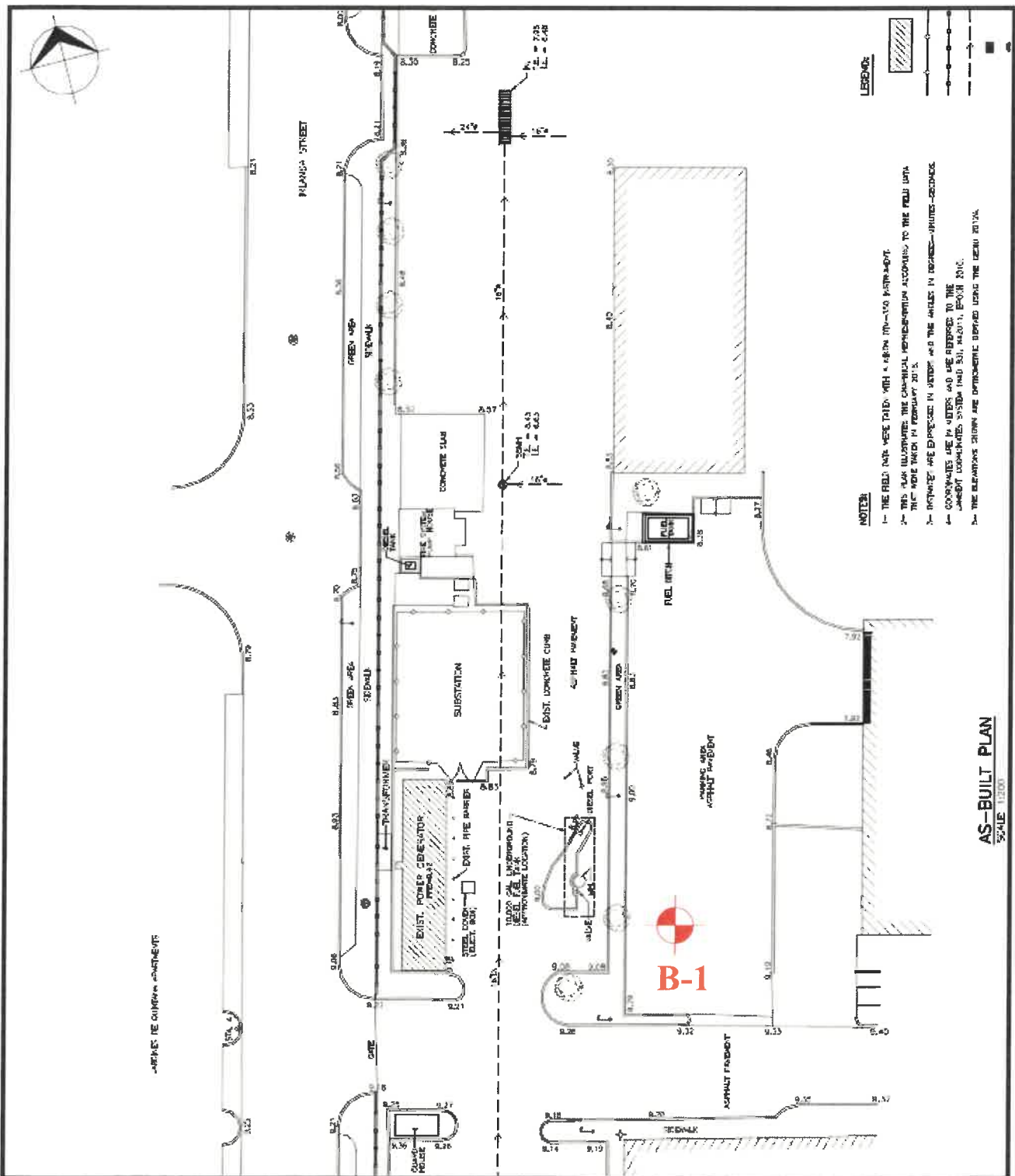
SCALE:
 AS SHOWN

**Geotechnical Investigation for
 Proposed Generator Pad at
 Puerto Rico Housing Department
 San Juan, P.R.**

**Fig. 2 Fragment of the USGS Geologic
 Map of the San Juan Quadrangle
 (M. H. Pease, Jr., W. H. Monroe, 1977)**

Project No.: E-347





SUPER FOUNDATION SPECIALIST, CORP.
ENGINEERING DEPARTMENT

PMB 3 P.O. BOX 2020
BARCELONETA, PR 00617-2020
TEL/FAX (787) 846-0614



SCALE: NTS

**Geotechnical Investigation for
Proposed Generator Pad at
Puerto Rico Housing Department
San Juan, P.R.**
**Figure 4: Approximate Boring
Location**

Project No.: E-347

APPENDIX B

BORING LOG

Project: Proposed Generator Pad at Puerto Rico Housing Department
Project Location: Hato Rey, PR
Project Number: E-347

Key to Log of Boring

Sheet 1 of 1

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	UC, tsf	Percent Fines	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11	12

COLUMN DESCRIPTIONS

- 1** Elevation (feet): Elevation (MSL, feet).
2 Depth (feet): Depth in feet below the ground surface.
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 Sample Number: Sample identification number.
5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6 USCS Symbol: USCS symbol of the subsurface material.
7 Graphic Log: Graphic depiction of the subsurface material encountered.
8 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
10 UC, tsf: Unconfined compressive strength, in tons per square foot.
11 Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
12 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent

PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

TYPICAL MATERIAL GRAPHIC SYMBOLS

Bentonite	Silty GRAVEL to Gravely CLAY (GC-CL)
Bentonite chips	Silty GRAVEL (GM)
Bentonite powder	Silty GRAVEL to Clayey GRAVEL (GM-GC)
Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)	Silty GRAVEL to Gravely SILT (GM-MH)
Fat CLAY/SILT (CH-MH)	Silty GRAVEL to Gravely SILT (GM-ML)
Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)	Poorly graded GRAVEL with Silt (GP-GM)
Claystone	Granite
Lean-Fat CLAY, CLAY w/SAND, SANDY CLAY	Gravel
Cuttings	Grout
Lean CLAY/PEAT (CL-OL)	Well graded GRAVEL (GW)
AF	Well graded GRAVEL with Silt (GW-GM)
Clayey GRAVEL (GC)	Poorly to Well graded GRAVEL (GW-GP)
SILTY CLAY (CL-ML)	Poorly graded GRAVEL (GP)
Boulders	Artificial Fill
Clayey GRAVEL to Gravely CLAY (GC-CH)	SILT, SILT w/SAND, SANDY SILT (MH)

SILT, SILT with SAND, SANDY SILT (ML-MH)
High plasticity PEAT (OH)
Low to High plasticity PEAT (OL-OH)
Sandstone
Clayey SAND (SC)
Clayey SAND to Sandy CLAY (SC-CH)
Clayey SAND to Sandy CLAY (SC-CL)
Shale
Silt
Siltstone
Silty SAND (SM)
Silty SAND to Sandy SILT (SM-MH)
Silty SAND to Sandy SILT (SM-ML)
Silty to Clayey SAND (SM-SC)
Poorly graded SAND (SP)

Poorly graded SAND with Clay (SP-SC)
Well graded SAND (SW)
Well graded SAND with Clay (SW-SC)
Well graded SAND with Silt (SW-SM)
SILT, SILT w/SAND, SANDY SILT (ML)
Bentonite plug
Asphaltic Concrete (AC)
Poorly graded SAND with Silt (SP-SM)
Black Rock - fine grained, exhibiting a bedding
Gray rock, large grain size
Topsoil
Clayey Sand
Low plasticity PEAT (OL)
LIMESTONE
Weathered Rock

TYPICAL SAMPLER GRAPHIC SYMBOLS

Shelby Tube (Thin-walled, fixed head)	Other sampler now modified
Shelby Tube (Thin-walled, fixed head)	Auger sampler
Bulk Sample	CME Sampler
3-inch-OD California w/ brass rings	2-inch-OD unlined split spoon (SPT)

2.5-inch-OD Modified California w/ brass liners
Grab Sample
Pitcher Sample

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting a given time)
Minor change in material properties within a stratum
Inferred or gradational contact between strata
Queried contact between strata

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: Proposed Generator Pad at Puerto Rico Housing Department
Project Location: Hato Rey, PR
Project Number: E-347

Log of Boring B-1

Sheet 1 of 1

Date(s) Drilled May 11, 2018	Logged By J. Mejias, PE	Checked By J. Mejias, P.E.
Drilling Method Hollow Stem Auger	Drill Bit Size/Type 2.5 inch soil bit	Total Depth of Borehole 25 feet bgs
Drill Rig Type CME 45	Drilling Contractor SFS Corp.	Approximate Surface Elevation 30 feet MSL
Groundwater Level and Date Measured Not Encountered ATD	Sampling Method(s) SPT	Hammer Data 140 lb, 30" in drop, safety
Borehole Backfill Cuttings and Concrete Patch		Location 606 Barbosa Ave., Hato Rey, PR

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	UC, tsf	Percent Fines	REMARKS AND OTHER TESTS
30	0		1	24	CH-MH		Silty CLAY, high plasticity, hard, brown.	23.1	>4.5		
			2	22	CH		FAT CLAY, reddish brown, else as above.	26.9	>4.5		
			3	47	CH		AS ABOVE, red and brown.	24.7	>4.5		
25	5		4	46	CH		AS ABOVE.	27.2	>4.5		
			5	40	CH		AS ABOVE, brown.	28.2	>4.5		
20	10										
			6	31	CH		AS ABOVE.	25.8	>4.5		
15	15										
			7	39	CH		AS ABOVE.	29.2	>4.5		
10	20										
			8	51	CH		AS ABOVE.	28.6	>4.5		
5	25						Bottom of Boring at 25 feet bgs				
0	30										

APPENDIX C

CIAPR STAMP



COLEGIO DE INGENIEROS Y AGRIMENSORES
DE PUERTO RICO

PO Box 363845 * San Juan, Puerto Rico * 00936-3845
Tel. 787-758-2250 * Fax. 787-758-7639

ESTAMPILLA DIGITAL ESPECIAL (EDE)

Ing. Juan F. Mejías López, PE



Práctica de: Ingeniería
Licencia: 21417
Renglón: Documento
Descripción del Trabajo: Investigaciones
Fecha de Emisión: 2018-05-22
Monto Emitido: \$6
Número de Serie: 1925-5562-4633-7039
Número de Caso: E-347
Proyecto / Unidad: Geotech Inv Generator Pad
Rol del Profesional: Consultor



Certificación:

El profesional certifica con la emisión de la estampilla digital especial del Colegio de Ingenieros y Agrimensores de Puerto Rico el haber cumplido con las disposiciones de la Sección 11 de la Ley 319 del 15 de mayo de 1938, según enmendada.

La colocación del sello profesional constituye la cancelación de la estampilla digital especial