

May 4, 2021

Cindy Alexopoulos, LCAM Sentry Management, Inc. 2605 Enterprise Road, East, Suite 200 Clearwater, Florida 33759

## Re: Privacy Wall Geotechnical Investigation Huntington HOA Safety Harbor Florida FGE Project Number 201452

Dear Ms. Alexopoulos:

At your request, Florida Geotechnical Engineering, Inc (FGE) completed a geotechnical investigation at the referenced property. The purpose of this investigation was to assess subsurface conditions and relatively quantify the strength characteristics of the soils supporting the privacy wall generally located along the perimeter of the Huntington HOA property. Enclosed herein is a summary of the investigative activities performed by FGE and our recommendations regarding the wall.

As part of the investigation, FGE was provided quote from Mott's Contracting Services to repair damages to the wall. In the quote, various damage mechanisms were discussed that mainly centered around moisture entering the wall. In general, FGE agrees with the assessments of Mott's Contracting Services although no geotechnical evaluations were provided. This report provides geotechnical context to the evaluation of the wall damages and repair.

## GEOTECHNICAL ASSESSMENT

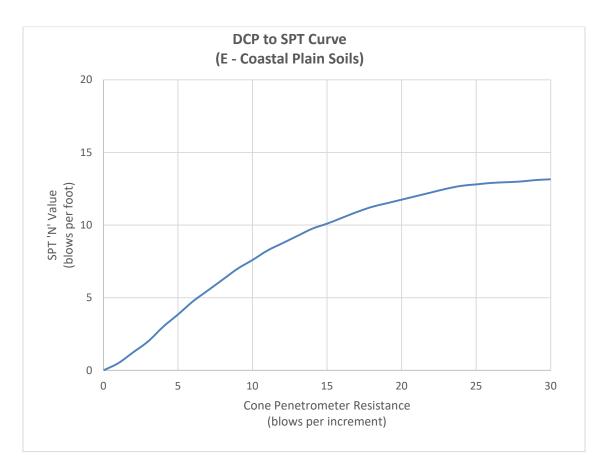
FGE performed a field investigation at the subject property that consisted of a visual damage assessment of the wall, ten (10) hand auger borings, five (8) foundation test pits, and laboratory analysis of nine (9) soil samples.

#### HAND CONE PENETROMETER MEASURMENTS

The single mass dynamic cone penetrometer consists of a measuring instrument, a probing rod and a cone tip. The penetrometer is pushed perpendicular into the soil and provides a method of assessing soil strength via relative density. The penetrometer is equipped with a 45-degree conical tip and a 15-lb slide hammer that free falls 20-inches. Dynamic cone penetrometer readings were collected during the hand

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auger borings to estimate the relative density and/or consistency of the surficial soils. The relative density designations are calculated based on soil type and the below graph.



Source: Humboldt Mfg. Co. Dynamic Cone Penetrometer Manual H-4202A

SANDY	SOILS	CLA	LAYEY & SILTY SOILS
'N' Value (Blows per foot)	Relative Density	'N' Va (Blows pe	Relative Consistency
0 - 4	Very Loose	0	- 2 Very Soft
5 - 10	Loose	3 –	-4 Soft
11 - 30	Medium Dense	5 –	- 8 Firm
31 - 50	Dense	9 – 1	15 Stiff
50+	Very Dense	16 –	- 30 Very Stiff
		30-	)+ Hard

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Based on the cone penetrometer readings, the equivalent SPT 'N' values range from 1 to 13 blows per foot. These measurements indicate primarily very loose to medium dense relative densities for the shallow sandy soils and soft to stiff consistencies for the shallow clayey soils.

#### HAND AUGER BORINGS

The hand auger borings were completed using a stainless-steel bucket type auger that allows samples to be collected and visually classified at approximate 12-inch intervals. Dynamic hand cone penetrometer data was also gathered from the hand auger borings which were completed adjacent to the privacy wall.

Ten (10) hand auger borings were performed as part of the investigation to determine the soil types adjacent to, and below, the wall foundation(s). The soil descriptions are based on visual inspection of the hand auger samples, and the soil classifications were performed in general accordance with the Unified Soil Classification System (USCS). The hand auger borings were performed to a maximum depth of seven (7) feet and the groundwater table was only encountered in two (2) borings at approximately 6.5 feet below land surface (ft-bls). The hand auger boring logs are presented in **Attachment A**.

The HA borings encountered sand, clayey sand, and sandy clay. The layering of the soil types is significantly variable. The majority of the shallow sandy soil is very loose to loose, and the majority of the clayey soils is firm.

## Laboratory Analysis

Nine (9) soil samples from the soil borings were submitted for laboratory testing. The samples were collected and tested in accordance with the American Society for Testing and Materials (ASTM) specifications and processed to verify the Unified Soil Classification System (USCS) soil descriptions and properties. The complete analytical results are presented in **Attachment B**.

Eight (8) clayey soil samples were analyzed for liquid and plastic limits and moisture content, and one sample was analyzed for organic content. The soil samples were analyzed in accordance with ASTM D-1140 and ASTM 2974-07a.

The laboratory analysis of the clayey soil samples shows that the shallow clayey soils have the ability to shrink and swell in response to moisture changes. The organic analysis of one sample from HA-9 contained an organic content of 9.2%. Soils with organic contents greater than 5% are generally considered unsuitable as foundation bearing soils.

### **Test Pit Excavations**

Eight (8) test pit excavations were performed to evaluate the construction, adequacy and dimensions of the wall foundation(s). The results of test pit excavations generally show that the wall is supported on a

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shallow strip foundation, although the foundation construction is highly variable. While the variable foundations are not ideal, the variability is common given the length of the wall. The test pits show the foundation embedment ranged from 7 to 31 inches, the width ranged from 8 to 29 inches, and the thickness from 4 to 7.5 inches.

## CONCLUSIONS

Based on the subsurface data and our visual inspection of the privacy wall, the wall has sustained settlement-related damage. The settlement related damage is due to the shallow soil conditions primarily, with a minor degree of damage being the result of variable wall support based on the foundation(s) construction, which is highly variable.

One significant issue is the prominent presence of very loose shallow sandy soil. This soil is susceptible to densification due to environmental factors such as traffic vibrations and water infiltration. The wide presence of very loose shallow soil below the wall indicates very little, if any, vibratory compaction was performed at the time the foundation(s) was poured and the wall was constructed. This condition can only be addressed by compacting the soils below the wall (remove and replace wall) or stabilizing the soils below and adjacent to the wall in situ using chemical grout injection.

The other significant factor in the wall stability is the presence of shallow clayey soils with the ability to shrink and swell in response to changes in moisture. The soils shrink during dry periods (settle) and expand during wet periods (swell); both conditions can move the wall and cause damage. This condition can be addressed by removal of the shallow clayey soil (remove and replace wall) or via the installation of pier supports.

The result of this investigation is that the wall has damage because of movement, because of the way the wall foundation(s) was constructed, and normal aging of the building materials. The damages that are the result of aging building materials is normal and can be maintained via normal maintenance. The damages that are the result of soil conditions will require more than normal maintenance and should be expected to continue.

#### RECOMMENDATIONS

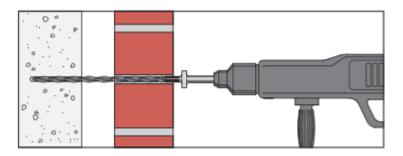
Based on the subsurface conditions and considering the age of the wall structure, it is recommended that the Board budget for replacement of the wall in the next 5-10 years. Considering the subsurface conditions that caused a majority of the damages, we would recommend the Board consider a more flexible style of wall system, often referred to as a Post-and-Panel wall type. It consists of a pre-cast concrete post that is set into a shallow caisson (cylindrical concrete shaft ~36" in diameter and 8 feet deep). The fence panels are also pre-cast with decorative concrete formed sides that can look quite decorative depending on the design. The panels are lowered into a concrete track on the post for placement. This type of wall, while rigid in construction and able to withstand hurricane force winds, the

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track connection allows for flexibility when it comes to localized differential movement. Additionally, the panels are rigid enough to withstand any localized heaving of the shallow soils in response to the clay.

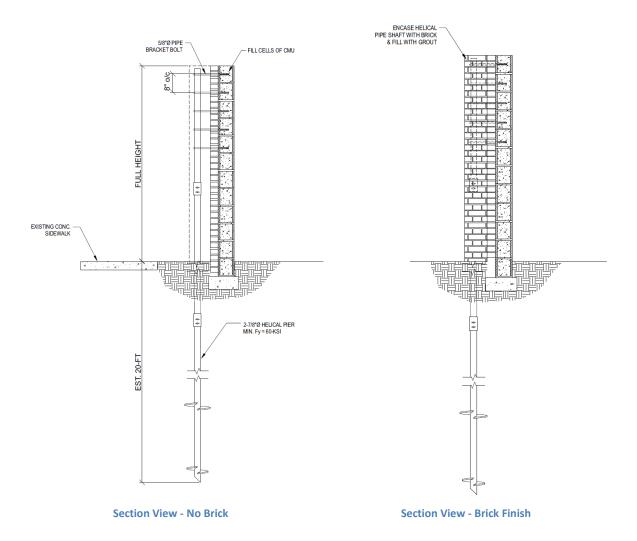
In the interim, some temporary repairs can be made to allow the existing wall to safely operate while funds for a new wall are procured. Generally there are three (3) grades of damage that have been observed. The first is the least significant, and generally is comprised of cosmetic cracks. These can be filled with a flexible elastomeric filler and repainted.

The second are primarily where the brick fascia is detaching from the wall (likely to water intrusion). This can be repaired by installing a retrofit brick repair tie. A good quality and readily available type is the Simpson Heli-Tie<sup>TM</sup> Helical Wall Tie. The ties are simply drilled into the mortar bed of the existing brick and epoxied in-place to reconnect the brick to the wall structure.



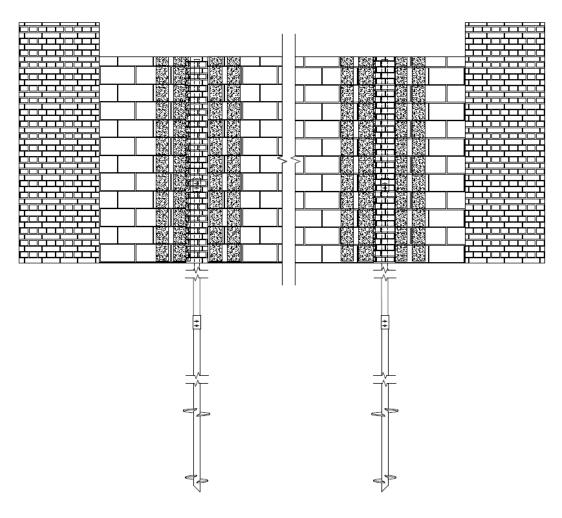
The third type of damage is a little more severe where the walls are leaning out of plumb. Two options to repair this are available. The first requires at least 10-ft of land directly next to the wall, and is referred to as a butress. The second, can be installed in limited access areas. It is a customized repair method designed by FGE for your situation. See below.

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The Helical pile would be installed to a design depth, then mechanically fastened to the wall as shown above. Then can be encased in a brick finish for ascetics. This will provide the wall adequate lateral stability to be safely operated while funds for a new wall are procured.

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#### **Elevation View**

FGE will be providing additional detail regarding these repaires, but wanted to provide this information for the purposes of the Boards meeting.

We greatly appreciate the opportunity to support you with this effort and we are available to provide additional assistance regarding the recommendations presented herein upon request.

Sincerely,

#### FLORIDA GEOTECHNICAL ENGINEERING, INC.

Cindy Alexopoulos, LCAM June 16, 2021 Page 8 of 8 *Florida Geotechnical Engineering, Inc.* Privacy Wall Geotechnical Investigation

John R. Edwards, P.E. Senior Geotechnical Engineer FL License No. 46584

Attachments (2)

ATTACHMENT A

8		P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248- Fax: 813-248-4835	5 4720					BORING HA- PAGE 1 OF
	En	ngineering, Inc.						
		Sentry Management	PROJECT NA					
		<b>NUMBER</b> <u>201452</u> 23/21						L
1			GROUND ELE					
			SHGWT LEVE					
		METHOD ASTM D-1452 OCATION See Figure 2 - Site Plan and Testing Locations	GROUND	WA	ΤE	R LEV		ncountered to 7 ft-bls
				_			L	OGGED BY _D. Penkava
Ξ	DEPTH	MATERIAL DESCRIPTION	GRAPHIC	COG CMT		SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
20.0	0.0	SAND (SP) Very Loose, slightly silty, fine grained, brown		•	Τ	T		
_					$\left \right\rangle$	НА	3	
5.0	-	CLAYEY SAND (SC) Loose, fine grained, brown to light brown			$\left  \right\rangle$	НА	10	
17.5	2.5	SANDY CLAY (CL) Soft, brown to light brown to grey			$\wedge$	на	4	
-	_				$\wedge$	HA	4	
5.0	5.0	CLAYEY SAND (SC) Very Loose to Loose, fine grained, grey			$\wedge$	на	1	
+	_				$\wedge$	НА	1	
-	_				$\mathbb{N}$	НА	6	
		Bottom of borehole at 7.0 feet.	1.11					

4		P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248- Fax: 813-248-4835	; 4720					BORING HA-2 PAGE 1 OF 1
		prida Geotechnical Fax: 813-248-4835 Ingineering, Inc.						
CLI	ENT	Sentry Management	PROJECT NAM	1E _	Hu	ntingt	on Privacy W	all
1		NUMBER _201452						L
		23/21	GROUND ELEV					
		CONTRACTOR FGE						
		METHOD ASTM D-1452 OCATION See Figure 2 - Site Plan and Testing Locations		NAT	ER	LEVE		ncountered to 7 ft-bls
				1			L	OGGED BY _D. Penkava
ELEVATION (ft)		MATERIAL DESCRIPTION	GRAPHIC I OG	GWT		SAMPLE IYPE NUMBER	BLOW COUNTS (N VALUE)	EQUIVALENT     SPT N VALUE     5     10     15
20.0	0.0	SAND (SP) Very Loose to Loose, slightly silty, fine grained, bro	own					
					$\wedge$	HA	4	•
		Minor rocks from 0 to 2 ft-bls			$\wedge$	HA	7	
	2.5	SANDY CLAY (CL) Soft, light brown SAND (SP) Very Loose, slightly silty, fine grained, brown			Λ	НА	4	
	-	CLAYEY SAND (SC) Loose, fine grained, brown to light brown			/ \			
					$\wedge$	HA	8	
	5.0				$\mathbb{A}$	НА	10	
		SANDY CLAY (CL) Medium Stiff, grey-green to light brown			$\mathbb{A}$	НА	6	
-				/		НА	7	
		Bottom of borehole at 7.0 feet.	Sum.		_			

Ŷ	Ş	P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248- Fax: 813-248-4835	5 4720					BORING HA- PAGE 1 OF
	En	ngineering, Inc.	4720					
1		Sentry Management	PROJECT	NAME	Е_Н	lunting	ton Privacy W	/all
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	E_3/		GROUND E	LEVA	TIO	N _20	ft	
		METHOD ASTM D-1452	GROU	ND W	ATE	R LEV	EL Not E	ncountered to 7 ft-bls
BOH		OCATION See Figure 2 - Site Plan and Testing Locations					I	LOGGED BY D. Penkava
b ELEVATION (ft)	0.0	MATERIAL DESCRIPTION		GRAPHIC LOG	GWT	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
20.0		SAND (SP) Very Loose, slightly silty, fine grained, brown						
		Minor rocks and roots from 0 to 1 ft-bls				НА	3	
		CLAYEY SAND (SC) Loose, fine grained, brown to light brown			/	НА	9	
17.5	2.5	SAND (SP) Medium Dense, slightly silty, fine grained, light brov	wn		/	НА	13	
_		SANDY CLAY (CL) Soft ot Medium Stiff, dark grey to pale green brown to orange	n to light		$\wedge$	НА	3	
5.0	5.0				$\wedge$	НА	6	
-	_				$\wedge$	НА	6	
	_				$\wedge$	HA	5	
17.5		Bottom of borehole at 7.0 feet.						

4	Ş	P.O. Box 76006 Tampa, Florida 33674 Telephone: 813-248- Fax: 813-248-4835	5 -4720					BORING HA-4 PAGE 1 OF 1
		orida Geotechnical Fax: 813-248-4835 Ingineering, Inc.						
		Sentry Management	PROJECT I	NAME	E <u>H</u>	untingt	on Privacy W	all
		NUMBER _201452					ety Harbor, Fl	-
		23/21	GROUND E	LEVA		201	t	
		CONTRACTOR FGE						
		METHOD ASTM D-1452	GROUI	ND W	ATE	R LEVI		ncountered to 7 ft-bls
BUR		OCATION See Figure 2 - Site Plan and Testing Locations					L	OGGED BY D. Penkava
S ELEVATION (ft)				GRAPHIC LOG	GWT	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	EQUIVALENT     SPT N VALUE     5     10     15
		SAND (SP) Very Loose, slightly silty, fine grained, brown			/	НА	2	
		CLAYEY SAND (SC) Very Loose to Loose, slightly silty, fine g brown	rained,			НА	6	
-17.5-	2.5	-			Λ	НА	2	
					$\wedge$	НА	2	
15.0-	5.0	SANDY CLAY (CL) Soft to Medium Stiff, light brown to brown to orange	o grey to		$\wedge$	НА	5	
	_				$\wedge$	на	4	
-	_				$\wedge$	НА	5	
		Bottom of borehole at 7.0 feet.		111	11			

8		P.O. Box 76006 Tampa, Florida 3367 Telephone: 813-248- Fax: 813-248-4835	5 4720				BORING HA-5 PAGE 1 OF
CLIE	ENT _	Sentry Management	PROJECT NAME	EH	untingt	on Privacy W	all
PRC	JECT	NUMBER 201452	PROJECT LOCA				
DAT	E _3/	23/21	GROUND ELEVA				
DRIL	LING.	CONTRACTOR FGE	SHGWT LEVEL				
DRIL	LING	METHOD ASTM D-1452			RLEV	EL Not Er	ncountered to 7 ft-bls
BOR	ing l	OCATION See Figure 2 - Site Plan and Testing Locations				L	OGGED BY D. Penkava
ELEVATION	0.0 (ft) (ft)		GRAPHIC LOG	GWT	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
		SAND (SP) Very Loose, slightly silty, fine grained, brown			HA	1	
		CLAYEY SAND (SC) Loose to Medium Dense, fine grained, b light brown	rown to		НА	5	
17.5	2.5	-		/	НА	9	
-				$\wedge$	НА	8	
15.0	-			$\wedge$	HA	12	
	_	SAND (SP) Loos, slightly silty, fine grained, brown		$\wedge$	НА	6	
-	_	SANDY CLAY (CL) Medium Stiff, grey		$\wedge$	на	6	
		Bottom of borehole at 7.0 feet.					

e e		P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248- Fax: 813-248-4835	5 4720						BORING HA-6 PAGE 1 OF 1
CLIE	ENT .	Sentry Management	PROJECT NA	ME _	Hu	Intingt	on Privacy W	all	
PRC	JEC	NUMBER _201452	PROJECT LO	CATI	ON	Safe	ety Harbor, F	L	
DAT	E _3/	23/21	GROUND ELE	VATI	ON	201	ït		
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		METHOD ASTM D-1452					EL Not E	ncountere	ed to 7 ft-bis
BOR	ING I	OCATION See Figure 2 - Site Plan and Testing Locations					L	OGGED	BY _D. Penkava
S ELEVATION (ft)		MATERIAL DESCRIPTION	GRAPHIC	GWT		SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)		● EQUIVALENT SPT N VALUE ● 5 10 15
		CLAYEY SAND (SC) Loose, light brown			$\wedge$	НА	9		
		SANDY CLAY (CL) Stiff, light brown to grey			$\wedge$	НА	13		
-17.5-	2.5				$\wedge$	HA	11		
-17.5-		CLAYEY SAND (SC) Medium Dense, light brown to grey to ora	nge		$\wedge$	HA	13		
-15.0	5.0	-			$\wedge$	HA	13		
					$\wedge$	НА	13		
_	_	SAND (SP) Medium dense, slightly silty, fine grained, brown			$\mathbb{A}$	HA	12		
		Bottom of borehole at 7.0 feet.	b			I			i I

\$	Fic	P.O. Box 76006 Tampa, Florida 3367 Telephone: 813-248 Fax: 813-248-4835	5 -4720					BORING HA-7 PAGE 1 OF
		Sentry Management	PROJECT N		н	untinate	on Privacy W	all
		NUMBER _201452	PROJECT LO					
1	E _3/2		GROUND EL					
DRIL	LING	CONTRACTOR FGE						
DRIL	LING	METHOD ASTM D-1452						ncountered to 7 ft-bls
BOR	ING L	OCATION See Figure 2 - Site Plan and Testing Locations					L	OGGED BY D. Penkava
S ELEVATION (ft)		MATERIAL DESCRIPTION	GRAPHIC		GWT	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
		SAND (SP) Loose, slightly silty, fine grained, brown			/	НА	5	
		CLAYEY SAND (SC) Loose, brown to grey to red Minor rocks from 1 to 2 ft-bls			$\wedge$	НА	10	
17.5	2.5	SAND (SP) Lose, slightly silty, fine grained, brown			$\wedge$	НА	8	
	_			***	$\wedge$	HA	5	
	_	CLAYEY SAND (SC) Loose, fine grained, light brown SANDY CLAY (CL) Medium Stiff, light brown to brown to grey t	o red		$\wedge$	НА	5	
-	_				$\wedge$	НА	6	
					$\wedge$	НА	6	
		Bottom of borehole at 7.0 feet.						

¢	Ş	P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248-4 Fax: 813-248-4835	720				BORING HA-
		prida Geotechnical Fax: 813-248-4835 gineering, Inc.	720				
	ENT _	Sentry Management	PROJECT NAME _	Hu	ntingto	on Privacy W	/all
		NUMBER _ 201452	PROJECT LOCATI	ION	Safe	ety Harbor, F	Ľ
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		CONTRACTOR FGE					
		METHOD ASTM D-1452	GROUND WAT	TER		L Not E	ncountered to 7 ft-bls
BOR	ING L	OCATION See Figure 2 - Site Plan and Testing Locations				L	OGGED BY D. Penkava
B ELEVATION (ft)	o (ft) (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG GWT		SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
		SAND (SP) Loose, slightly silty, fine grained, brown		$\left  \right $	НА	6	•
		SANDY CLAY (CL) Soft to Medium Stiff, grey to red to green to brown	ight	$\wedge$	HA	6	
17.5-	2.5	_		$\wedge$	на	6	
+	_			$\wedge$	HA	8	
5.0	5.0			$\wedge$	НА	4	
-	-			$\wedge$	НА	5	
17.5	_			$\mathbb{A}$	HA	5	
		Bottom of borehole at 7.0 feet.					

4		P.O. Box 76006 Tampa, Florida 33679 Telephone: 813-248- Fax: 813-248-4835	5 4720					BORING HA-S
СП	ENT	Sentry Management	PROJECT NAM	NE .	Н	untingt	on Privacy W	all
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DAT	E _3	23/21		/AT	101	N _201	ft	
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S ELEVATION (ft)		MATERIAL DESCRIPTION	GRAPHIC	GMT		SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
		SAND (SP) Very Loose to Medium Dense, slightly silty, fine gr brown to light brown	ained,		/	НА	8	
					$\wedge$	НА	4	
17.5-	2.5				$\wedge$	на	1	
_					$\wedge$	НА	9	
15.0-	5.0	_		•	$\wedge$	HA	11	
_		Organics			$\wedge$	НА	8	
		CLAYEY SAND (SC) Very Loose, fine grained, brown to light bo grey SANDY CLAY (CL) Soft, brown to light brown to grey	prwn to	Ā	$\wedge$	НА	3	
		Bottom of borehole at 7.0 feet.			V			

8		P.O. Box 76006 Tampa, Florida 33675 Telephone: 813-248-4 Fax: 813-248-4835	1720					BORING HA-10 PAGE 1 OF
CLIE	INT _	Sentry Management	PROJECT NAN		Hu	ntingto	on Privacy W	all
PRO	JECT	NUMBER _ 201452	PROJECT LOC	ATI	ON	Safe	ety Harbor, Fl	
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DRIL	LING	METHOD ASTM D-1452	${\underline{ abla}}$ ground (	NAT	ER		EL_6.50 ft / E	Elev 13.50 ft
BOR	ING L	OCATION See Figure 2 - Site Plan and Testing Locations					L	OGGED BY D. Penkava
S ELEVATION (ft)	o DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GWT		SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	● EQUIVALENT SPT N VALUE ● 5 10 15
		SAND (SP) Very Loose to Loose, slightly silty, fine grained, bro	wn		$\wedge$	НА	3	
					$\wedge$	HA	7	
-17.5	2.5	CLAYEY SAND (SC) Medium Dense, fine grained, brown			$\wedge$	HA	11	
		SANDY CLAY (CL) Medium Stiff, brown to grey to red CLAYEY SAND (SC) Loose, fine grained, brown to red			$\wedge$	на	8	
	5.0	SANDY CLAY (CL) Medium Stiff, brown to grey to red			$\wedge$	на	6	
17.5	_	CLAYEY SAND (SC) Very Loose, fine grained, brown to grey to green	pale		$\overline{\mathbf{A}}$	НА	3	
-	_			⊻	$\mathbb{N}$	на	3	
		Bottom of borehole at 7.0 feet.	1.1.1.1		_			

ATTACHMENT B

Project No.:201452ASTM Standard:D 1140Project Name:Inviniegon H.O.A.Test Method:Moisture - A / Passing #200 SieveProject Adress:Subdivision Location 13,Test Method:Moisture - A / Passing #200 SieveProject Adress:Subdivision Location 13,Subdivision Location 13,HA-Si (1-2)Protect Adress:Subdivision Location 14,(1) HA-Si (1-2)(1) HA-Si (1-2)Protect Adress:Township 28, Range 16, Safety Harbor, FL(1) HA-Si (1-2)(1) HA-Si (1-2)Date Tested:Township 28, Range 16, Safety Harbor, FL(1) HA-Si (1-2)(1) HA-Si (1-2)Date Tested:4/5/2021(1) HA-Si (1-2)(1) HA-Si (1-2)Date Tested:4/5/2021(1) HA-Si (1-2)(1) HA-Si (1-2)Date Tested:4/5/2021(1) HA-Si (1-2)(1) HA-Si (1-2)Date Tested:(1) HA-Si (1-2)(1) HA-Si (1-2)(1) HA-Si (1-2)Date	Florid	Florida Geotechnical Engineering, Inc.	ineering, Inc.				F	Tampa, Florida 33675 Tel: (813) 248-4720 Fax: (813) 248-4835 Fax: (813) 248-4835 www.flgeotech.com
Test Method:Molisture -A PassinSublivision located in Section 33, Township 28, Range 16 E, Safety Harbor, FL Huntington H.O.A.Test Method:Molisture -A Passin Sample Location: (1) HA-8; (4-5') (2) HA-8; (1-2') (3) HA-6; (4-5') (4) HA-1; (3')4/5/2021 $4/5/2021D. PenkavaTest Method:(3) HA-6; (4-5')(3) HA-6; (4-5')(4) HA-1; (3')Molisture Content Va/5/2021D. PenkavaMolisture Content Va/5/2021D. PenkavaWc + Swb)NMolisture Content Vb)Molisture Vb)Molisture Ab)Molisture ContentMolistureb)Molisture Vb)Molisture Vb)Molisture Ab)Molisture ContentMolisture ContentMolisture Ab)Molisture Ab)Molisture ContentMolisture ContentMolisture Ab)Molisture Ab)Molisture ContentMolisture ContentMolisture Ab)Molisture Ab)Molisture Ab)Molisture ContentMolisture ContentMolisture Ab)Molisture Ab)Molisture Ab)Molisture ContentMolisture ContentMolisture Ab)Molisture Ab)Molisture $	Project No.:	201452			AS	STM Standard:	D 1140	
Subdivision located in Section 33, Township 28 S, Range 16 E, Safety Harbor, FL Township 28 S, Range 16 E, Safety Harbor, FL Township 28 S, Range 16 E, Safety Harbor, FL To Hars, (1-2') (3) HA-E, (2') (4) HA	oject Name:	Huntington H.O.A.			Te	est Method:	Moisture - A / Passi	ing #200 Sieve
Township 28 S, Range 16 E, Safety Harbor, FLHurtington H.O.A.Hurtington H.O.A.Hurtington H.O.A.Hurtington H.O.A.Hurtington H.O.A.A/5/2021G) HaA: (12')G) Heat, (12')G) PenkavaWc+5wWcWcWcWcNoisture ContentMoisture(g)<	oject Address:		l in Section 33,		San		(1) HA-8: (4-5')	)
Huntington H.O.A. $4/5/2021$ $4/5/2021$ (3) HA-1; (3)D. PenkavaNoisture Content/Minus #200 Sieve AnalysisNoisture Content/Minus #200 Sieve AnalysisNoisture Content/Minus #200 Sieve AnalysisNoisture Content/Minus #200 Sieve AnalysisNoisture Content/Minus #200 Sieve AnalysisNoistureMoistureContentW <sub>c</sub> + S <sub>R</sub> $(g)$ $179.95$ $138.98$ $4.58$ $84.5\%$ $104.31$ $(g)$ $170.36$ $138.73$ $4.56$ $84.5\%$ $104.37$ $(g)$ $117.18$ $138.73$ $4.56$ $80.0\%$ $24.9\%$ $66.58$ $(g)$ $117.18$ $138.73$ $4.56$ $80.0\%$ $24.9\%$ $66.58$ $(g)$ $169.40$ $145.13$ $4.56$ $80.0\%$ $24.9\%$ $104.87$ $(g)$ $169.40$ $145.13$ $4.56$ $85.3\%$ $10.487$ $86.56$ $(g)$ $169.40$ $145.13$ $4.56$ <			ige 16 E, Safety Harb	or, FL			(2) HA-8: (1-2')	
4/5/2021       (4) HA-1; (3)         Penkara       (4) HA-1; (3)         D. Penkara         Moisture Content/Minus #200 Sieve Analysis         Moisture Content/Minus #200 Sieve Analysis         wc+5w       wc       Solids content       wc       5, 9, 4, 5, 8         wc       wc       solids content       moisture       wc       5, 9, 4, 5, 8         a       179.95       138.38       4, 5, 8       80.0%       24.9%       16, 9       9, 10, 31         a       172.18       138.73       4, 5, 5       84.5%       18.4%       104.87         a       169.40       145.13       4, 5, 5       85.3%       17.3%       104.87         a       169.40       145.13       4, 5, 6       85.3%       104.87       85.3%       104.87         a       169.40       145.13       4, 5, 6       85.3%       104.87       104.87         a       5       456       85.3%       104.87       104.87         a       5       85.3%       107.87       104.87       104.87         a       5       66.65       85.3%       104.87       104.87       104.87	ient:	Huntington H.O.A.					(3) HA-6. (A-5')	
D. Penkava       O. Penkava       Moisture Content/Minus #200 Sieve Analysis       Wc+5w     Wc     Solids Content     Moisture     Wc     Solids Content     Wc       e     Wc     Wc     Solids Content     Moisture     Wc     Solids Content     Wc       e     Wc     (e)     (g)     (g)     (g)     (g)     (g)     (g)       175.62     138.73     4.55     84.5%     18.4%     104.31       172.18     138.73     4.56     85.3%     17.3%     66.58       175.62     149.93     4.56     85.3%     17.3%     104.87       169.40     145.13     4.56     85.3%     17.3%     104.87       i69.40     145.13     4.56     85.3%     17.3%     104.87       i69.40     145.13     4.56     85.3%     17.3%     104.87       i69.40     145.13     4.56     85.3%     104.87     104.87       i69.40     145.13     4.56     85.3%     104.87     104.87       i69.40     146.13     4.56     85.3%     104.87     104.87       i69.40     145.13     4.56     85.3%     104.87     104.87       i69.40     149.14	ate Tested:	4/5/2021					(2) HA-1·(3')	
Moisture Content Moisture Moisture Moisture Wc + Sn (g)Moisture Content Wc + Sn (g)Wc + Sn (g)Wc + Sn (g)Wc (g)Moisture Content Content Wc + Sn (g)Moisture Content Wc + Sn (g)179.95138.984.5880.05%30.5%66.50176.62149.934.5584.5%18.4%104.31172.18138.734.5680.0%24.9%66.58176.62149.934.5685.3%17.3%104.87172.18138.734.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40145.134.5685.3%17.3%104.87169.40169.40145.134.5685.3%16.4%169.40169.40145.134.5685.3%16.4%169.40169.40145.134.5685.3%16.4%169.41<	st By: iecked By:	D. Penkava						
Wc+Sw (a)Wc + Sp (a)Wc (a)Moisture 		2	<b>Moisture Co</b>	ntent/Mi	inus #200 Sie	ve Analy	/sis	
	Sample	Wc + Sw (9)	W <sub>c</sub> + S <sub>D</sub> (g)	W <sub>c</sub> (g)	Solids Content (%)	Moisture Content (%)	W <sub>c</sub> + S <sub>R</sub> (g)	<#200 (%)
	4	179.95	138.98	4.58	76.6%	30.5%	66.50	53.9%
	2	176.62	149.93	4.55	84.5%	18.4%	104.31	31.4%
169:40145.134.5685.3%17.3%104.87104.81104.81104.81104.87104.87104.87104.81104.91104.81104.81104.81104.97104.91104.91104.81104.81104.81105.060104.91104.91104.85104.85104.85105.060104.95104.95104.95104.85104.85105.060104.95104.95104.95104.95104.95105.060104.95104.95104.95104.95104.95105.060104.95104.95104.95104.95104.95105.060104.95104.95104.95104.95104.15105.060104.95104.95104.95104.95104.15105.060104.95104.95104.95104.95104.15105.060104.95104.95104.95104.15104.15105.060104.95104.95104.95104.15104.15105.060104.95104.95104.95104.15104.15105.060104.95104.95104.95104.15104.15105.060104.95104.95 <td>£</td> <td>172.18</td> <td>138.73</td> <td>4.58</td> <td>80.0%</td> <td>24.9%</td> <td>66.58</td> <td>53.8%</td>	£	172.18	138.73	4.58	80.0%	24.9%	66.58	53.8%
Soil Description       Formulas         CL, brown, gray and red.       We - Weight of Container       Solids Content (%) =         CL, pale green, gray and light brown.       Sw - Weight of Wet Sample       Moisture Content (%) =         SC, light brown, gray and orange.       Solids Content (%) =       Moisture Content (%) =         CL, brown, light brown and gray.       Solids Content (%) =       Moisture Content (%) =	4	169.40	145.13	4.56	85.3%	17.3%	104.87	28.6%
Soil Description       Soil Description         CL, brown, gray and red.       Wc - weight of Container       Solids Content (%) =         CL, pale green, gray and light brown.       Sw - weight of wet Sample       Moisture Content (%) =         SC, light brown, light brown and gray.       Sp - Weight of Dry Sample       Moisture Content (%) =							selum	
CL, brown, gray and red.       Wc - Weight of Container       Solids Content (%) =         CL, pale green, gray and light brown.       S_w - Weight of Wet Sample       Moisture Content (%) =         SC, light brown, gray and orange.       S_b - Weight of Dry Sample       Moisture Content (%) =	Sample		Soil Description					
CL, pale green, gray and light brown.     S <sub>w</sub> - weight of wet Sample       SC, light brown, gray and orange.     S <sub>b</sub> - Weight of Dry Sample       CL, brown, light brown and gray.     S <sub>b</sub> - Weight of Dry Sample	-1	CL, brown, gray and	d red.		- Weight of	Container	Solids Content (%) =	$=\left(\frac{S_{\rm b}}{S}\right) \times 100$
SC, light brown, gray and orange.     Moisture Content (%) =       Sb - Weight of Dry Sample     CL, brown, light brown and gray.	2	CL, pale green, gray	y and light brown.		S Weight of V	Vet Sample		
CL, brown, light brown and gray.	ŝ	SC, light brown, gra	ay and orange.				Moisture Content (%) =	
	4	CL, brown, light bro	own and gray.		S <sub>b</sub> - Weight of C	Jry Sample		٦ ۶

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Minus 200 & Organic Lab Report (1-4)

5/4/2021

201452 Huntington H.O.A ss: A Subdivision Par Range 16 E, Safet Huntington H.O.A 4/5/2021 D. Penkava Wc + Sw	Section 33, Townsh rbor, FL <b>oisture Co</b>	ip 28 S, ntent/Mi	ASTM Standard: Test Method: Test Method: (5) HA (6) HA (7) HA (7) HA (8) HA (7) HA (8) HA (8) HA (8) HA (8) HA (8) HA (9) HA (10) HA	ASTM Standard: Test Method: Sample Location: (5) (6) (7) (7) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8) (8	11. 0is 7 7 7	ng #200 Sieve
Huntington H.O.A A Subdivision Par Range 16 E, Safet Huntington H.O.A 4/5/2021 D. Penkava Wc + Sw	Section 33, Townsh Irbor, FL <b>Oisture CO</b>	ip 28 S, ntent/Mi wc	Te Sam <b>nus #200 Sie</b> Solids Content	st Method: ple Location: (5 (6 (7) (7) (7) (8) (8) (8) (8) (8) (8) (8) (8) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	Moisture - A / Passir HA-2; (5-6') HA-3; (3-4') HA-7; (5-6') HA-7; (5-6')	ng #200 Sieve
A Subdivision Par Range 16 E, Safet Huntington H.O.A 4/5/2021 D. Penkava Wc + S <sub>W</sub>	Section 33, Townsh Irbor, FL <b>Oisture CO</b>	ip 28 S, ntent/Mi wc	sam nus #200 Sie Solids Content	<ul> <li>ple Location: (5)</li> <li>(6)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(8)</li> <li>(8)</li> <li>(8)</li> <li>(8)</li> <li>(8)</li> <li>(8)</li> <li>(8)</li> <li>(9)</li> <li>(1)</li> <li>(1)</li></ul>	) HA-2; (5-6') ) HA-3; (3-4') ) HA-4; (6-7') ) HA-7; (5-6') <b>SiS</b>	2 7 7 7 7 7 7
Range 16 E, Safet Huntington H.O.A 4/5/2021 D. Penkava W <sub>c</sub> + S <sub>w</sub>	oisture Co	wc Wc	nus #200 Sie Solids Content	(6 (7) (8) (8) (8) (8) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	4-7	¢#200
Huntington H.O.A 4/5/2021 D. Penkava Wc+Sw	<b>oisture Co</b>	wc Wc	nus #200 Sie Solids Content	Ne Analys Moisture Content	4-7-7-	<#200
4/5/2021 D. Penkava Wc+Sw	<b>oisture Co</b>	wc Wc	nus #200 Sie Solids Content	Ve Analys Moisture Content		<#200
D. Penkava Wc + Sw	<b>oisture Co</b>	mtent/Mi wc	nus #200 Sie Solids Content	<b>Ve Analys</b> Moisture Content		<#200
W <sub>c</sub> + S <sub>w</sub>	w <sub>c</sub> + S <sub>b</sub>	wc Wc	nus #200 Sie Solids Content	We Analys Moisture Content		<#200
	$W_{c} + S_{D}$	, Wc	Solids Content	Moisture Content	- - 	<#200
	$W_c + S_D$	W <sub>c</sub>	Solids Content	Content		<#200
					WC T JR	
	(6)	(6)	(%)	(%)	(6)	(%)
5 186.10	136.85	4.64	72.9%	37.3%	41.73	71.9%
6 177.37	137.73	4.62	77.1%	29.8%	81.12	42.5%
7 192.53	146.19	4.60	75.3%	32.7%	71.85	52.5%
8 199.26	159.76	4.61	79.7%	25.5%	92.55	43.3%
alumes	Coil Docreintion			For	Formulas	
			20 142:000			/s./
5 CL, gray and green. 6 CL, dark grav.			w <sup>c</sup> – weidut of	Container	Solids Content (%) =	$\left(\frac{\overline{s}}{S_{w}}\right) \times 100$
	and orange.			vet sample	Moisture Content (%) =	= (Sw-Sp) x 100
8 CL, light brown, brown, gray and red.	n, gray and red.		S <sub>b</sub> - Weight of Dry	Jry Sample		ີ ຈິ

5/4/2021

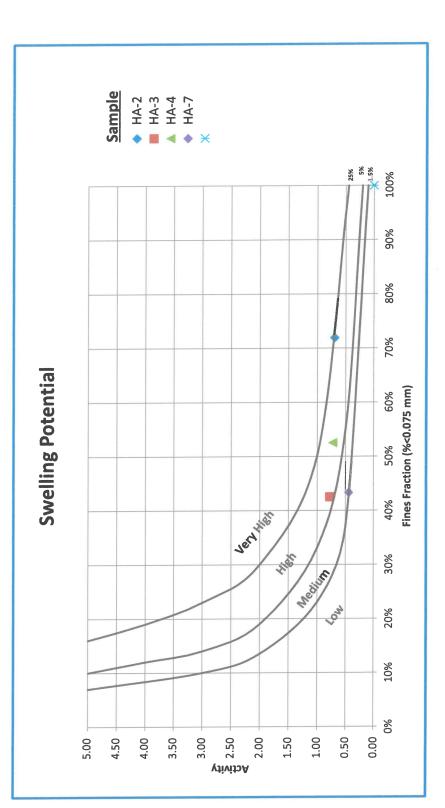
Page 1 of 1

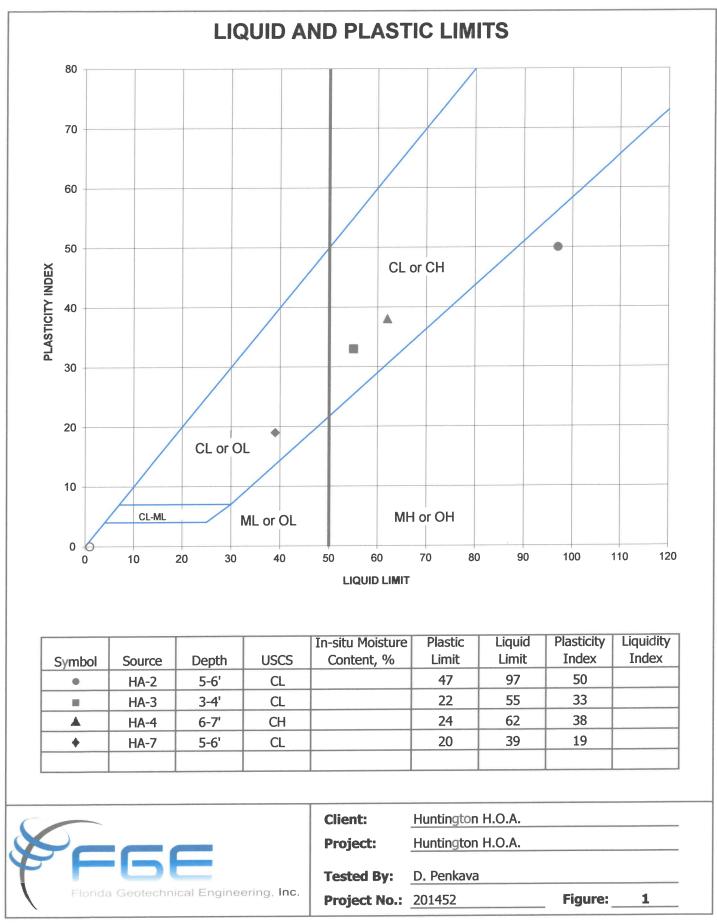
Minus 200 & Organic Lab Report (5-8)



# Laboratory Report Swelling Potential

Plasticity Index %	50	33	38	6
Liquid Limit %	97	55	62	39
Plastic Limit %	47	22	24	20
Activity	0.70	0.78	0.72	0.44
Fines Fraction % <0.075mm	72%	43%	53%	43%
USCS	СГ	СL	Ю	С
Sample	HA-2	HA-3	HA-4	HA-7







# Laboratory Report Swelling Potential

Plasticity Index %	49	19	41	18	
Liquid Limit %	78	37	72	34	
Plastic Limit %	29	18	31	16	
Activity	0.91	0.61	0.76	0.63	
Fines Fraction % <0 075mm	54%	31%	54%	29%	
uscs	сL	сГ	SC	С	
Sample	HA-8	HA-8	HA-6	HA-1	

