Nutting Engineers
of Florida Inc. | Established 1967
*Your Project is Our Commitment*

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April 1, 2016

Mr. Devin Burress
Hufcor Florida Group
2800 South Congress Avenue, Suite 1
Boynton Beach, Florida 33426
Phone: 561-436-2509 Email: dburress@hufcorfl.com

Subject: Addendum No. 1 to Report of Geotechnical Exploration
**Foundation Pile Analysis**
**Proposed Scoreboard Relocation - Hester Community Center**
1901 Seacrest Boulevard
Boynton Beach, Florida

Dear Mr. Burress:

Nutting Engineers of Florida, Inc. has completed additional engineering analysis for the proposed scoreboard at the above referenced subject site in Boynton Beach, Florida. This report presents the engineering analysis and conclusions.

## BACKGROUND INFORMATION

Nutting Engineers provided a Report of Geotechnical Exploration for the proposed scoreboard dated May 19, 2016. The report noted that if foundation analysis was desired, our office was to be notified in order to provide recommendations. Based on recent discussions with Mr. Paul King, P.E., the project structural engineer from King Structural Group, we understand that a driven pile design was needed and we were also requested to provide a lateral analysis for the piles. We were provided a plan detailing two pile conditions, with two sets of maximum moments at the foundation level. We understand that it is planned to use a 14" x 14" driven precast concrete pile for the project. Based on this information, we were requested to provide a pile depth analysis. Based on our discussions, we provide our driven pile recommendations and lateral pile analysis results below.

## DRIVEN PILE ANALYSIS

Pile capacities on the order of 8 tons could be attained with 14-inch by 14-inch driven pre-cast concrete pile with pile tips ranging from 18 to 20 feet below the existing ground surface. The capacity shall be verified during driven operations utilizing The Florida Department of Transportation (FDOT) dynamic formula. The piles should be installed and capacity determined in the field under the full-time observation of a Nutting representative.

The Florida Building Code (FBC) requires that any piles designed for greater than 40 tons should be load tested in order to verify the pile capacity. Therefore, a pile load test will not be required for this project as described in the FBC.

## DRIVEN PRECAST PILE TABLE

| *Pile Size (inches)* | *Depth Below Exist. Ground (feet)* | *All. Compr. Capacity (tons)* | *All. Tension Capacity (tons)* |
|---|---|---|---|
| 14 | 18 to 20 | 8 | 2 |

## LATERAL PILE ANALYSIS AND CONCLUSIONS

The lateral pile capacity analysis was performed utilizing the All Pile version 7.13g computer software program. The analysis was performed assuming that the piles were installed vertically, with a pile length of 20-feet, per our recommendations. The piles were then modeled with moment force of 60 kip-ft or 130 kip-ft at the ground surface based on structural plans provided to our office. Based on the soil boring results, we provided the necessary soil information for the program to reflect the subsurface conditions. Our analysis was performed to calculate the deflection based on these moment forces and to locate the point of fixity. Our calculations were performed for a free head condition.

Our analysis determined that the pile may be designed utilizing a moment force of 130 kip-ft with a maximum lateral deflection approaching 0.78 inches. Our analysis also determined that the pile may be designed utilizing a moment force of 60 kip-ft with a maximum lateral deflection approaching 0.33 inches. The point of fixity for both conditions was reached at a pile length of approximately 7.5 feet below the ground surface. We have included a printout of the information with a graph depicting the deflection of the pile.

Our client for this geotechnical evaluation was:

Mr. Devin Burress
Hufcor Florida Group
2800 South Congress Avenue, Suite 1
Boynton Beach, Florida 33426

The contents of this report are for the exclusive use of the client, the client's design & construction team and governmental authorities for this specific project exclusively. Information conveyed in this report shall not be used or relied upon by other parties or for other projects without the expressed written consent of Nutting Engineers of Florida, Inc. This report discusses geotechnical considerations for this site based upon observed conditions and our understanding of proposed construction for foundation support. Environmental issues including (but not limited to), soil and/or groundwater contamination are beyond our scope of service for this project. As such, this report should not be used or relied upon for evaluation of environmental issues.

We appreciate the opportunity to provide these services for you. If you have any questions or need additional information, please feel free to contact us.

Sincerely,
**NUTTING ENGINEERS OF FLORIDA, INC.**

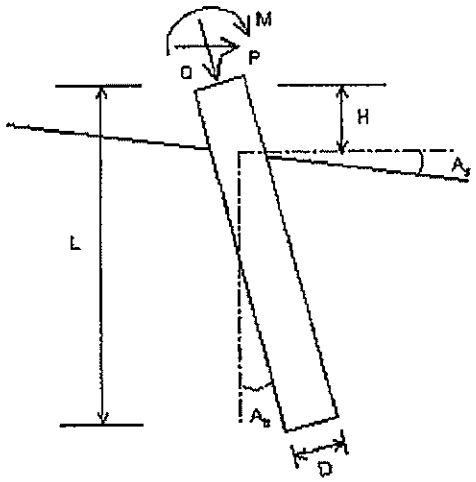
6/13/16

Christopher E. Gworek, P.E. #69947
Senior Engineer

Attachments: AllPile7 Results and Graphs
LTR L-PILE HUFCOR HESTER CENTER SCOREBOARD BOYNTON CEG

# LATERAL ANALYSIS

Figure 2




Drilled Pile (dia <=24 in. or 61 cm)

**Loads:**
Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)
Vertical Load, Q= 0.0 -kp
Shear Load, P= 0.0 -kp
Moment, M= 60.0 -kp-f

**Profile:**
Pile Length, L= 20.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0

**Soil Data:**

| Depth -ft | Gamma -lb/f3 | Phi | C -kp/f2 | K -lb/i3 | e50 or Dr % | Nspt |
|---|---|---|---|---|---|---|
| 0 | 110.4 | 31.1 | 0.00 | 24.9 | 25.82 | 7 |
| 10 | 46.7 | 30.6 | 0.00 | 17.4 | 23.30 | 6 |
| 18 | 53.1 | 33.3 | 0.00 | 34.8 | 36.28 | 11 |

**Pile Data:**

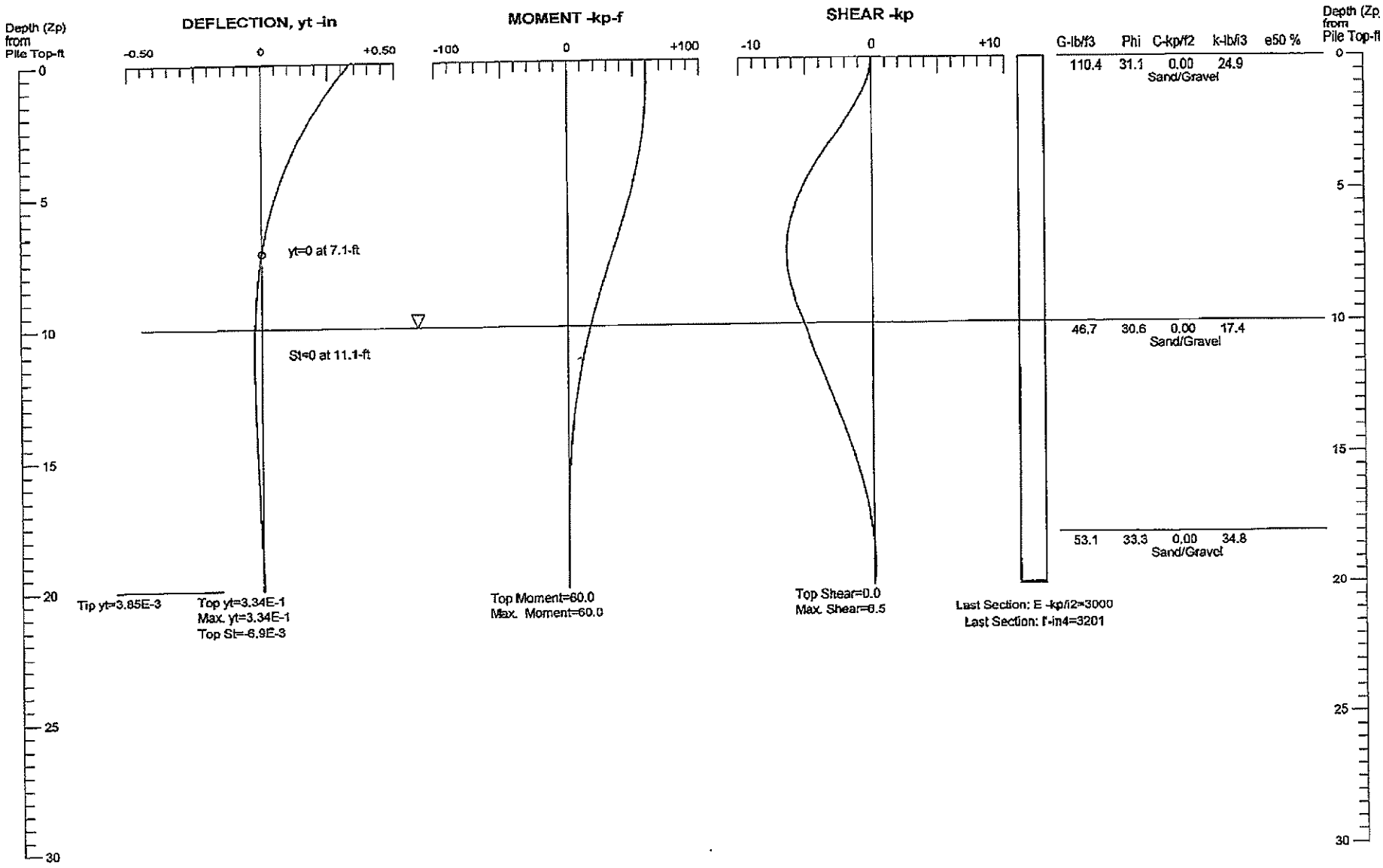
| Depth -ft | Width -in | Area -in2 | Per. -in | I -in4 | E -kp/i2 | Weight -kp/f |
|---|---|---|---|---|---|---|
| 0.0 | 14 | 196.0 | 56.0 | 3201.3 | 3000 | 0.204 |
| 20.0 | | | | | | |

Single Pile Lateral Analysis:
Top Deflection, yt= 0.33400-in
Max. Moment, M= 60.00-kp-f
Top Deflection Slope, St= -0.00690
OK! Top Deflection, 0.3340-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.

# PILE DEFLECTION & FORCE vs DEPTH

Single Pile, Khead=3, Kbc=1

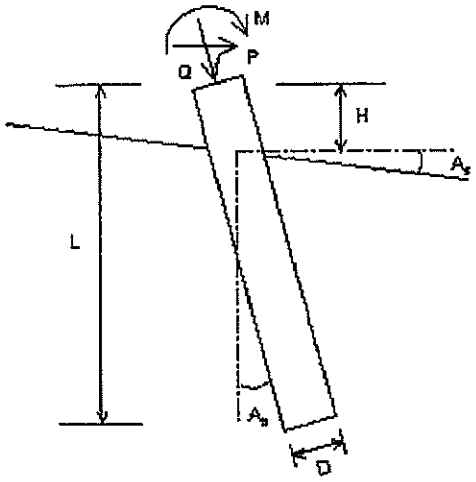



CivilTech Software

Figure 2

# LATERAL ANALYSIS

Figure 2




Drilled Pile (dia <=24 in. or 61 cm)

**Loads:**
Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)
Vertical Load, Q= 0.0 -kp
Shear Load, P= 0.0 -kp
Moment, M= 130.0 -kp-f

**Profile:**
Pile Length, L= 20.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0

**Soil Data:**

| Depth -ft | Gamma -lb/f3 | Phi | C -kp/f2 | K -lb/i3 | e50 or Dr % | Nspt |
|---|---|---|---|---|---|---|
| 0 | 110.4 | 31.1 | 0.00 | 24.9 | 25.82 | 7 |
| 10 | 46.7 | 30.6 | 0.00 | 17.4 | 23.30 | 6 |
| 18 | 53.1 | 33.3 | 0.00 | 34.8 | 36.28 | 11 |

**Pile Data:**

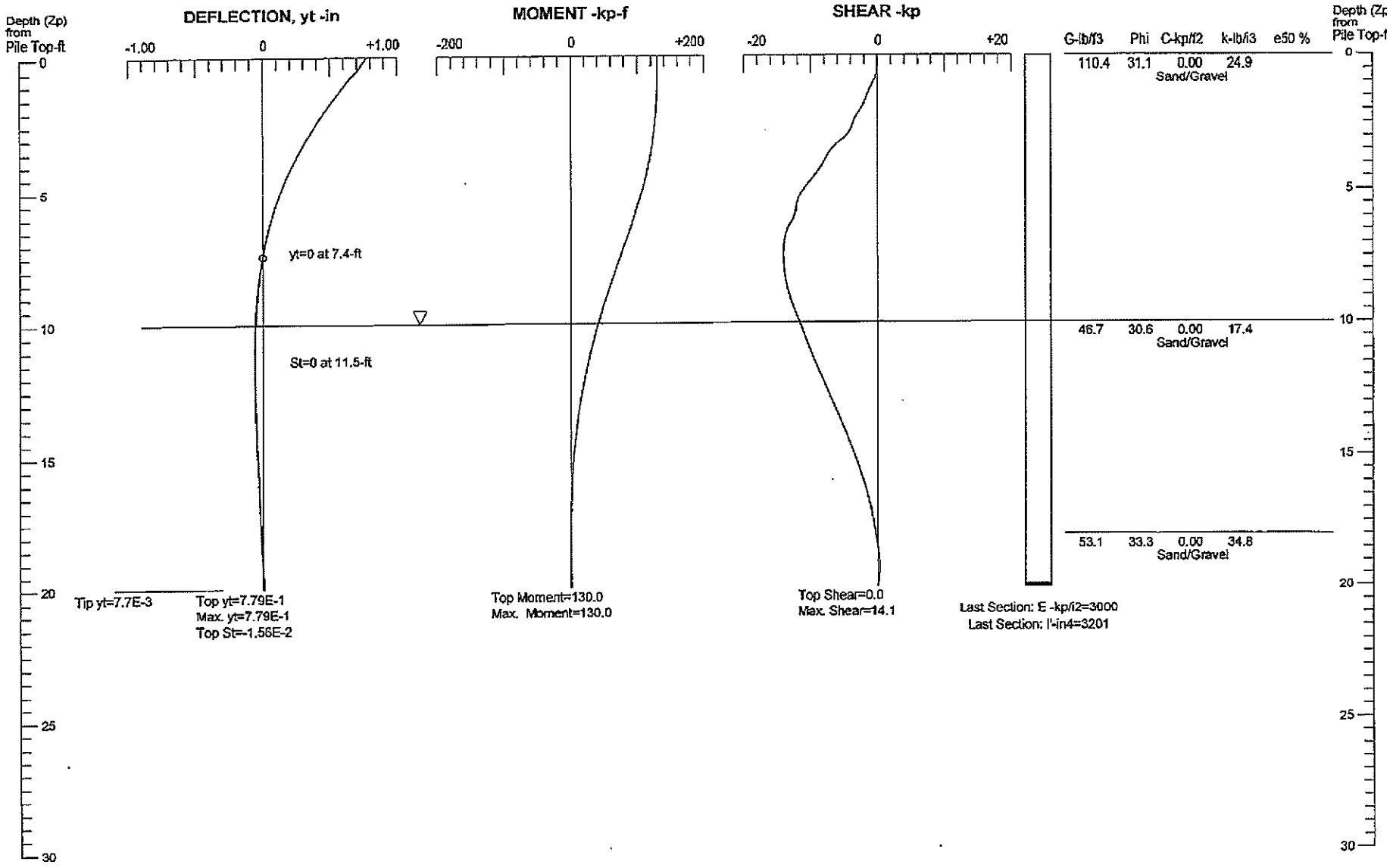
| Depth -ft | Width -in | Area -in2 | Per. -in | I -in4 | E -kp/i2 | Weight -kp/f |
|---|---|---|---|---|---|---|
| 0.0 | 14 | 196.0 | 56.0 | 3201.3 | 3000 | 0.204 |
| 20.0 | | | | | | |

Single Pile Lateral Analysis:
Top Deflection, yt= 0.77900-in
Max. Moment, M= 130.00-kp-f
Top Deflection Slope, St= -0.01560
OK! Top Deflection, 0.7790-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.

# PILE DEFLECTION & FORCE vs DEPTH

Single Pile, Khead=3, Kbc=1




CivilTech Software

Figure 2