UNIVERSAL ENGINEERING SCIENCES

PRELIMINARY SUBSURFACE EXPLORATION

Proposed Crossroads Industrial Park
Crossroads Parkway
Fort Pierce, St. Lucie County, Florida
UES Project No. 190222-001-01G

October 3, 2007

PREPARED FOR:

Mr. Gregory Toepp
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Lake Mary, Florida 32746

PREPARED BY:

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October 3, 2007

Mr. Gregory Toepp
801 International Parkway
Lake Mary, Florida 32746

Reference: **Preliminary Subsurface Exploration**
Proposed Crossroads Industrial Park
Crossroads Parkway
Fort Pierce, St. Lucie County, Florida
UES Project No. 190222-001-01G

Dear Mr. Toepp:

Universal Engineering Sciences, Inc. (Universal) has completed a preliminary subsurface exploration at the above referenced site in St. Lucie County, Florida. Our exploration was authorized by you and was conducted as outlined in Universal Proposal No. P07-0608G. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

The following report presents the results of our field exploration with a geotechnical engineering interpretation of those results with respect to the project characteristics as provided to us. We have included our estimates of the typical wet season groundwater level at the boring locations, general comments concerning anticipated soil support characteristics for typical low-rise commercial buildings, the anticipated infiltration characteristics of the site subsoils and the suitability of excavated materials for use as fill.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Sincerely yours,
UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization No. 549

Kathryn E. West *for*
Project Manager

Richard E. Hoaglin, P.E.
Regional Manager
Florida Registration No. 48796

RICHARD E. HOAGLIN LICENSE No. 48796 STATE OF FLORIDA PROFESSIONAL ENGINEER

10/12/11

1 – Client
1 – Mr. Jason Matson
Kimley-Horn & Associates, Inc., 10521 SW Village Center Drive, Port St. Lucie, Florida 34987
1 – Ms. Katie McKay
Horton, Harley & Carter, Inc., 715 South Howard Avenue, Suite 200, Tampa, Florida 33606

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1.0 INTRODUCTION

Universal Engineering Sciences, Inc. (Universal) has completed the preliminary subsurface exploration for the proposed Crossroads Industrial Park in Fort Pierce, St. Lucie County, Florida. This exploration was authorized by Mr. Gregory Toepp and was conducted as outlined in Universal Proposal No. P07-0608G. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

2.0 PROJECT DESCRIPTION

Universal understands from review of a preliminary site plan provided by the client that the proposed project will include the construction of an industrial park development with total building footprints covering an area of approximately 1,183,000 square feet (option 5) on an 84.65 acre site in Fort Pierce, Florida. The project is designed to include five (5) one-story buildings and associated parking/drive areas. We understand that the stormwater runoff from the new impervious surfaces will be retained on-site within a proposed "wet" retention basin to be located south of the proposed buildings. Note that there is an alternative building design that would include 1,423,000 square feet of buildings (option 4).

Please note that our subsurface exploration was preliminary in nature and conducted to acquire general subsurface information only. Once specified site configuration, building detail and structural and traffic loading information are available a final subsurface exploration will be required.

3.0 PURPOSE

The purposes of this exploration were:

- to explore the subsurface conditions at general locations and depths as requested by the client and
- to provide our estimates of the typical wet season groundwater levels at the boring locations and
- to provide general comments concerning the anticipated soil support characteristics for typical low-rise commercial buildings, the anticipated infiltration characteristics of the site subsoils and the suitability of excavated materials for use as fill.

4.0 SITE DESCRIPTION

The subject site is an approximate 84.65 acre undeveloped parcel located within Section 25, Township 35 South, Range 39 East in St. Lucie County, Florida. More specifically, the site is located at the south end of Crossroads Parkway, between Interstate 95 and the Florida Turnpike, in Fort Pierce, Florida. At the time of drilling, the site was relatively level with vegetative cover consisting mostly of trees and brush. Dirt paths meandered across the property. Existing office complexes are located to the north of the property.

4.1 SOIL SURVEY

The majority of the site soils are mapped as Ankona sand (2), Fluvaquents (14), and Wabasso sand (48) according to the St. Lucie County Soil Survey (SLCSS), dated 1980. Ankona and Wabasso sands are described as a nearly level, poorly drained soils on broad flatwood areas. Fluvaquents is described as very poorly drained, nearly level soil found on flood plains of rivers and creeks. A copy of a portion of the SLCSS is included as Figure 1.

4.2 TOPOGRAPHY

According to information obtained from the teraserver website (www.terraserver.microsoft.com), ground surface elevation across the site area is approximately +5 to +15 feet National Geodetic Vertical Datum (NGVD). A copy of a portion of the USGS Map is included as Figure 2.

5.0 SCOPE OF SERVICES

The services conducted by Universal during our preliminary subsurface exploration program are as follows:

- Drill fourteen (14) Standard Penetration Test (SPT) borings within accessible areas of the site to a depth of 20 feet below existing land surface (bls).
- Perform two (2) South Florida Water Management District (SFWMD) Open Hole Exfiltration Tests within the proposed retention area
- Obtain one (1) remolded tube samples of the near surface soils within the proposed retention area for subsequent laboratory permeability tests
- Secure samples of representative soils encountered in the soil borings for review, laboratory analysis and classification by a Geotechnical Engineer.
- Measure the existing site groundwater levels and provide an estimate of the typical wet season groundwater level.
- Conduct soil gradation tests on selected soil samples obtained in the field to determine their engineering properties.
- Assess the existing soil conditions with respect to the proposed construction.
- Prepare a geotechnical engineering report which documents the results of our preliminary subsurface exploration and laboratory testing program with analysis and general comments.

6.0 LIMITATIONS

Please note that this report is based on a preliminary subsurface exploration program with the scope of services, general boring locations and depths as directed by client. The information submitted in this report is based on data obtained from the soil borings performed at the locations indicated on the Exploration Location Plan and from other information as referenced. This report has not been prepared to meet the full needs of design professionals, contractors, or any other parties, and any use of this report by them without the guidance of the soil and foundation engineer who prepared it constitutes improper usage which could lead to erroneous assumptions, faulty conclusions, and other problems.

This report does not reflect any variations which may occur across the site. The nature and extent of such variations may not become evident until the course of future explorations or actual construction. If variations then become evident, it will be necessary for re-evaluation of the recommendations in this report after performing on-site observations during the construction period and noting the characteristics of any variations.

Our field exploration did not find unsuitable or unexpected materials at the time of occurrence. However, borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within Exhibit 1 "Important Information About Your Geotechnical Engineering Report" prepared by ASFE/Professional Firms Practicing in the Geosciences.

7.0 FIELD METHODOLOGIES

7.1 STANDARD PENETRATION TESTS

The fourteen (14) SPT borings, designated B1 through B14 on the attached Figure 3, were performed in general accordance with the procedures of ASTM D 1586 (Standard Method for Penetration Test and Split-Barrel Sampling of Soils). The SPT drilling technique involves driving a standard split-barrel sampler into the soil by a 140 pound hammer, free falling 30 inches. The number of blows required to drive the sampler 1 foot, after an initial seating of 6 inches, is designated the penetration resistance, or N-value, an index to soil strength and consistency. The soil samples recovered from the split-barrel sampler were visually inspected and classified in general accordance with the guidelines of ASTM D 2487 (Standard Classification of Soils for Engineering Purposes [Unified Soil Classification System]).

The SPT soil borings were performed with an ATV mounted drilling rig. Universal located the test borings in the field using the provided site plan and measuring from the existing on-site landmarks shown on an aerial photograph using a cloth tape. No survey control was provided on-site, and our boring locations should be considered only as accurate as implied by the methods of measurements used. The approximate boring locations are shown on the attached Figure 3.

7.2 SFWMD Exfiltration Test

Universal performed one SFWMD Open-Hole exfiltration test, at boring location B14, as indicated on the Boring Location Plan. The total depth of the boring for the exfiltration test was 15 feet bls.

7.3 Shelby Tube Samples

We obtained two (2) remolded shelby tube samples of the near surface soils for subsequent laboratory permeability tests. These specimens were obtained at depths of approximately 2 to 2½ feet bls according to ASTM D 1587 (Thin-Wall Tube Sampling of Soils) procedure. This procedure includes manually excavating a pit and hand driving a 2.82-inch inside diameter shelby tube horizontally and vertically into the soil mass.

8.0 LABORATORY METHODOLOGIES

8.1 Particle Size Analysis

We completed #200 sieve particle size analyses on nine (9) representative soil samples. These samples were tested according to the procedures listed ASTM D 1140 (Standard Test Method for Amount of Material in Soils Finer than the No. 200 Sieve). In part, ASTM D 1140 requires a thorough mixing the sample with water and flushing it through a No. 200 sieve until all of the particles smaller than the sieve size leave the sample. The percentage of the material finer than the No. 200 sieve helps determines the textural nature of the soil sample and aids in evaluating its engineering characteristics. The percentage of materials passing the #200 sieve is shown on the attached boring logs.

8.2 Permeability Tests

Constant head permeability tests were performed on the shelby tube samples by measuring the water flow through the sample for time versus flow volume. The tests were performed without extracting or otherwise disturbing the shelby tube contents. This data was used to calculate the coefficient of permeability (K) of the soils. Results of these tests are found in the laboratory results section of this report.

9.0 SOIL STRATIGRAPHY

The results of our field exploration and laboratory analysis, together with pertinent information obtained from the SPT borings, such as soil profiles, penetration resistance and stabilized groundwater levels are shown on the boring logs included in Appendix A. The Key to Boring Logs, Soil Classification Chart is also included in Appendix A. The soil profiles were prepared from field logs after the recovered soil samples were examined by a Geotechnical Engineer. The stratification lines shown on the boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our boring locations is presented below in Table I. For detailed soil profiles, please refer to the attached boring logs.

TABLE I
GENERALIZED SOIL PROFILE

Depth Encountered (feet, bls)	Approximate Thickness (feet)	Soil Description
Surface	20+	Interlayered strata of fine sands [SP], fine sands with silt [SP-SM], fine sand with clay [SP-SC], and clayey fine sands [SC], loose to dense.

NOTE: [ ] denotes Unified Soil Classification system designation.
\+ indicates strata encountered at boring termination, total thickness undetermined.

10.0 GROUNDWATER CONDITIONS

10.1 Existing Groundwater Conditions

We measured the water levels in the boreholes on September 13, 2007 after the groundwater was allowed to stabilize. The groundwater levels are shown on the attached boring logs. The groundwater level depths ranged from 4.0 to 10.1 feet bls at the boring locations. Fluctuations in groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

10.2 Typical Wet Season Groundwater Level

The typical wet season groundwater level is defined as the highest groundwater level sustained for a period of 2 to 4 weeks during the "wet" season of the year, for existing site conditions, in a year with average normal rainfall amounts. Based on historical data, the rainy season in St. Lucie County, Florida is between June and October of the year. In order to estimate the wet season water level at the boring locations, many factors are examined, including the following:

a. Measured groundwater level
b. Drainage characteristics of existing soil types
c. Season of the year (wet/dry season)
d. Current & historical rainfall data (recent and year-to-date)
e. Natural relief points (such as lakes, rivers, swamp areas, etc.)
f. Man-made drainage systems (ditches, canals, etc.)
g. Distances to relief points and man-made drainage systems
h. On-site types of vegetation
i. Area topography (ground surface elevations)

The groundwater level readings were taken on September 13, 2007. According to data from the Southeast Regional Climate Center and the National Weather Service, the total rainfall in the previous month of August for St. Lucie County was 2.3 inches, approximately 3.8 inches below the normal level for August. The year to date rainfall through September 18, 2007 was approximately 29.5 inches, roughly 8.9 inches below normal. Based on this information and factors listed above, we estimate that the typical wet season groundwater levels at the boring locations will be 2 feet above the existing measured levels or roughly 2 to 8 feet bls. Please note, however, that peak stage elevations immediately following various intense storm events, may be somewhat higher than the estimated typical wet season levels

11.0 LABORATORY RESULTS

11.1 Particle Size Analysis

The soil sample submitted for analysis was classified as fine sands [SP] and fine sands with silt [SP-SM], clayey fine sands [SC], and fine sand with clay [SP-SC]. The percentage of soil sizes passing the #200 sieve size are shown on the boring logs at the approximate depth sampled.

11.2 Permeability Tests

Soil permeability is a measure of the soil's ability to allow water flow though it under saturated conditions. Permeability is a function of the grain size and sorting of the entire soil mass. According to the National Soil Survey Handbook, 1993 Edition, published by the U.S. Department of Agriculture, permeability rates can be expressed in the following classes:

Permeability Class	Permeability K (in/hr)
Extremely Slow	0.0 – 0.01
Very Slow	0.01 – 0.06
Slow	0.06 – 0.2
Moderately Slow	0.2 – 0.6
Moderate	0.6 – 2.0
Moderately Rapid	2.0 – 6.0
Rapid	6.0 – 20.0
Very Rapid	> 20.0

Most "clean" fine sands [SP] typically exhibit moderately rapid to very rapid permeabilities. Fine sands with silt or clay [SP-SM or SP-SC] can usually be considered to have slow to moderately slow permeabilities; while silty sand [SM], clayey sands [SC], silts [ML] and clays [CL] are typically within the extremely slow to slow class.

The result obtained from our laboratory remolded permeability test, where K is the coefficient of permeability, is displayed in Table II below:

TABLE II
PERMEABILITY TEST RESULTS

Boring Location	Soil Type	Sample Depth (feet)	Permeability Rate K (in/hr)	Permeability Class
B13	Clayey fine sands [SC]	Remolded @ 2½ to 3	2.0	Moderately Rapid

It should be noted that the coefficient of permeability is not an infiltration rate. The actual infiltration rate is influenced by the coefficient of permeability as well as several factors, including the elevation of the pond bottom, water level in the pond, the elevation of the wet season water table, and the confining layer.

12.0 ANALYSIS AND GENERAL COMMENTS

12.1 Proposed Building Areas

The removal of site vegetation and root mats, along with other construction activities, will further loosen surficial soils to various depths. To provide a homogeneous, compacted, sandy soil system underneath the proposed foundations and floor slabs, densification of at least the upper 2 feet of the surficial, loose soils and subsequent fill soils will be necessary. This will create a soil mat capable of dissipating the building loads over any remaining loose strata at depth.

We believe that this can be effectively accomplished using conventional site preparation procedures including a comprehensive root raking and stripping procedure to remove vegetation, root mats and organic topsoils; and then an extensive proof-rolling and densification program for the surficial soils and subsequent structural fill. Assuming that such procedures are properly performed, we anticipate that conventional, shallow spread footing foundations may be used to support conventional one to two story construction with an allowable bearing pressure of 3,000 psf. Minimum footings should be 16 inches deep and 16 inches wide for wall footings and 30 inches wide for column footings.

After final building configurations and anticipated structural loadings are better known, additional test borings should be performed so that specific recommendations for foundation design parameters can be formulated and our preliminary recommendations can be confirmed.

12.2 Proposed Pavement Areas

An extensive stripping of surficial roots and vegetation, and a densification of the loose surficial sands, along with subsequent select fill necessary to reach final grade levels, will be required in all parking and drive areas, in order to both increase subgrade capacity and to limit subsequent settlements due to traffic vibrations. Any local zones of soft or yielding surficial soil should be compacted or removed and replaced with structural fill prior to adding any new fill in the pavement areas.

Standard duty pavement areas are defined as having car and pickup truck loading conditions. Heavy duty areas are defined as having delivery, storage, and garbage truck loading conditions along with service drives. Assuming a) the subgrade soils are compacted to 95 percent of Modified Proctor test maximum dry density (ASTM D 1557) with a design LBR value of 40 (After stabilization), b) a 20 year design life, c) terminal serviceability index (P_t) of 2, d) reliability of 85 percent, and e) total equivalent 18 kip single axle loads ($E_{18}SAL$) of 13,000, we recommend the design shown in the following Table III, for a standard duty asphalt pavement.

TABLE III
STANDARD DUTY ASPHALT/LIMEROCK PAVEMENT

Pavement Layer	Thickness	Minimum Requirements
Asphalt Wearing Surface FDOT Type S-I or S-III	1.5 Inch Minimum	95% Laboratory Marshall Density, Mix to be approved by Universal.
Limerock, Cemented Coquina, or Recycled Concrete Base	6 Inch Minimum	98% Modified Proctor test maximum dry density, Limerock Bearing Ratio (LBR) of at least 100.
Stabilized Subbase Course	8 Inch Minimum	98% Modified Proctor test maximum dry density, stabilized to a Limerock Bearing Ratio (LBR) of at least 40.

Assuming the above factors for standard duty pavements apply to heavy duty pavements, with total equivalent 18 kip single axle loads ($E_{18}SAL$) increased to 150,000, we recommend using the following design in Table IV for heavy duty pavement areas.

TABLE IV
HEAVY DUTY ASPHALT/LIMEROCK PAVEMENT

Pavement Layer	Thickness	Minimum Requirements
Asphalt Wearing Surface FDOT Type S-I or S-III	2 Inch Minimum	95% Laboratory Marshall Density, Mix to be approved by Universal.
Limerock, Cemented Coquina, or Recycled Concrete Base	8 Inch Minimum	98% Modified Proctor test maximum dry density, Limerock Bearing Ratio (LBR) of at least 100.
Stabilized Subbase Course	8 Inch Minimum	98% Modified Proctor test maximum dry density, stabilized to a Limerock Bearing Ratio (LBR) of at least 40.

We recommend designing pavements with at least 18 inches of clearance between the bottom of the pavement concrete or base courses and the estimated typical wet season groundwater level. A thorough testing and inspection program should be incorporated during the pavement construction.

After parking/drive configurations, and anticipated traffic loadings are better known, additional test borings should be performed so that specific recommendations for pavement sections can be formulated and our preliminary recommendations can be confirmed.

12.3 Proposed Retention Areas

We assume that stormwater runoff is assumed to be retained on site within proposed retention basins to be located on the southernmost portion of the site.

Based on the test results, the hydraulic conductivity or "K"-value was measured at 3.7×10^{-6} 3.8×10^{-6} cubic feet per second per square foot-foot of head (cfs/ft^2 - ft head) at B13 and B14, respectively. Please refer to the test result sheet as Exhibit 2 for further details.

The hydraulic capacity of stormwater retention areas is principally a function of the ability of the surface soil to receive and percolate the storm water runoff. Upon reaching the groundwater table or a restrictive layer, the stormwater runoff begins to mound. The amount and rate of rise in the recharge mound depends on several factors, including the thickness and permeability of the receiving stratum, the elevation of the groundwater table, and the geometry of the loaded area.

Portions of the near surface soils at the site appear to be relatively permeable fine sands [SP]. However, the underlying fine sands with silt [SP-SM], fine sands with clay [SP-SC], and clayey fine sands [SC] are relatively impermeable and should be considered aquicludes, or confining layers, in retention pond design. If dry retention basins are to be used at this project, we recommend that the site be filled/contoured to allow pond bottom levels of at least 1 to 2 feet above the estimated wet season groundwater levels.

After the configuration of the proposed retention basins are defined, Universal should be allowed to review the proposed plans, so that recommendations for any necessary additional borings and/or laboratory testing can be formulated.

12.4 Suitability of the Site Soils For Use as Fill Materials

Structural fill should be densified to at least 95 percent of the Modified Proctor test maximum dry density of the soil (ASTM D 1557) and tested for compaction and approved before the placement of subsequent lifts. A discussion of the types of soil typically encountered within the general area of the site and their requirements for reuse as fill is provided below. Please note that the soil type designations listed below (e.g. A, B, C, D, E) are based on guidelines developed by Universal and should not be confused with similar type designators used by other entities.

TYPE A - "Clean" fine sands [SP] which have less than 5 percent soil fines are the most desirable for as engineered fill because they drain freely when excavated from beneath the groundwater table, and they are not as susceptible to moisture related instability. These soils may be placed and compacted as structural fill for support of any proposed foundations, floor slabs, or pavement areas. Please note that considerable raking of these materials may be necessary in many areas to remove roots, stumps and other deleterious matter.

TYPE B - Fine sands with silt/clay [SP-SM, SP-SC] which contain between 5 and 12 percent fines are good sources of engineered fill, but require some extra care during placement and compaction. The moisture content of these soils should not be higher than optimum during placement and compaction in order to avoid problems caused by moisture related instability. These soils drain fairly well, but may require dewatering prior to excavation or some stockpiling and aeration time when excavated from below the groundwater level. These soils may be placed and compacted similarly to "clean" fine sands.

TYPE C – Clayey/silty fine sands [SC, SM] which contain between 12 and 35 percent fines may also be used as structural fill, however, when encountered below the water table, these soils are very difficult to use due to their extreme sensitivity to water. Extensive/excessive efforts may be required to dry these materials to near optimum moisture content, as determined by the modified proctor test (ASTM D-1557), prior to compactive efforts becoming effective. Moisture control and densification is typically very difficult when using these soils; therefore, alternate methods may be necessary to achieve the required compaction.

TYPE D – Clays [SC-CH] and silts [SM-MH] which contain over 35 percent fines are not recommended for use as structural fill in this geographical region. If desired, special considerations can be made if use of these soils is absolutely necessary.

TYPE E – Organic (muck) [OH] soils are not recommended for structural fill due to their compressibility and extreme sensitivity to high moisture conditions. However, these materials might be useful as fill in non-structural areas and as "topsoils" within landscaping areas after being adjusted for pH and other factors.

If materials at this site are to be used as sources of borrow fill, then we recommend that the existing layers of Type A soils be stockpiled for later use as structural fill in areas that are difficult to compact or require a higher permeability rate. The Type B and C soils can also be used as structural fill but may require considerable drying before use. Such materials are much more moisture sensitive and much less permeable than clean fine sands and will also require a more rigid monitoring and testing program during placement and compaction.

Type A, B, and C soils were encountered from the surface to the termination depth of the borings, 20 feet bls.

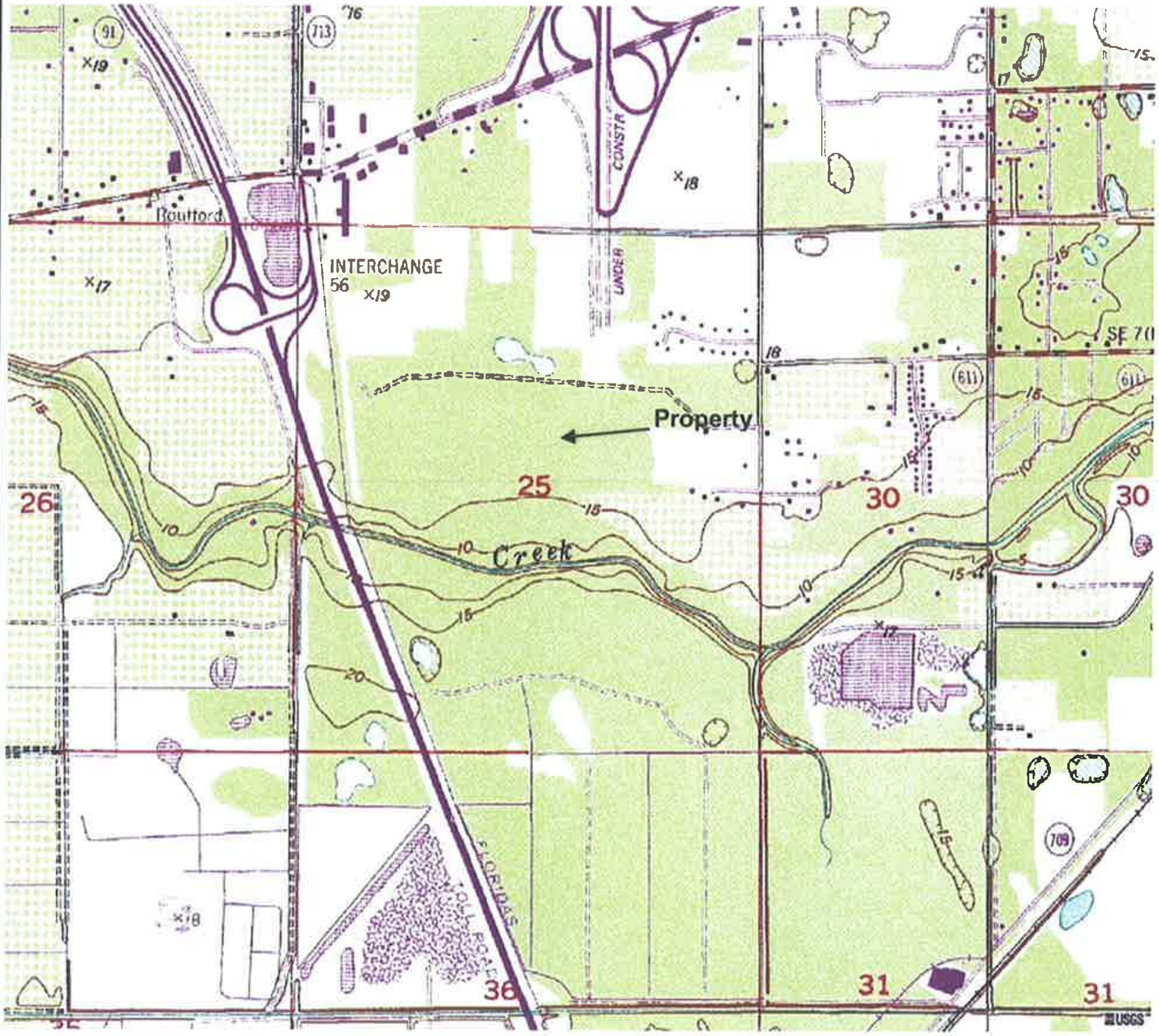
13.0 CLOSURE

We appreciate this opportunity to be of service as your geotechnical consultant on this phase of the project and look forward to providing follow up explorations and geotechnical engineering analyses as the project progresses through the design phase. If you have any questions concerning this report or when we may be of any further service, please contact us.

* * * * * * *

Figures

UNIVERSAL ENGINEERING SCIENCES	Proposed Crossroads Industrial Park Fort Pierce, St Lucie County, Florida						
	SLCSS Soil Survey						
	DRAWN BY: KW	DATE: 10/3/07	CHECKED BY: REH	DATE: 10/3/07			
	SCALE: NTS	PROJECT NO: 190222-001-01	REPORT NO:	PAGE NO: Figure No. 1			



North

Proposed Crossroads Industrial Park
Port St. Lucie, St. Lucie County, Florida

USGS Topographic Map

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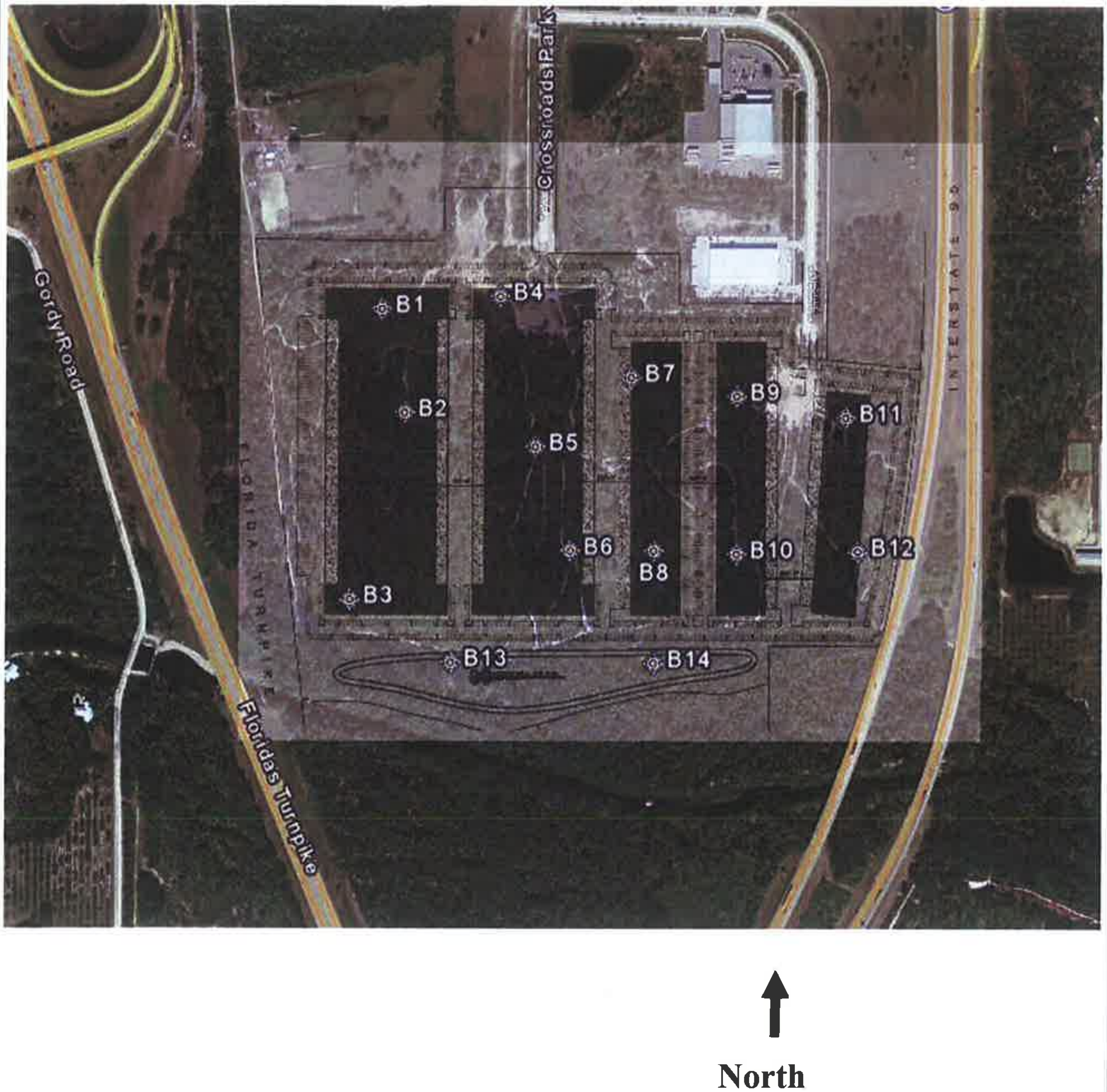
DRAWN BY: KW	DATE: 10/3/07	CHECKED BY: REH	DATE: 10/3/07
SCALE: NTS	PROJECT NO: 190222-001-01	REPORT NO:	PAGE NO: **Figure No. 2**



Boring Locations

Site Plan (Option 4) Provided by Horton, Harley & Carter, Inc.

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Proposed Crossroads Industrial Park
Fort Pierce, St Lucie County, Florida

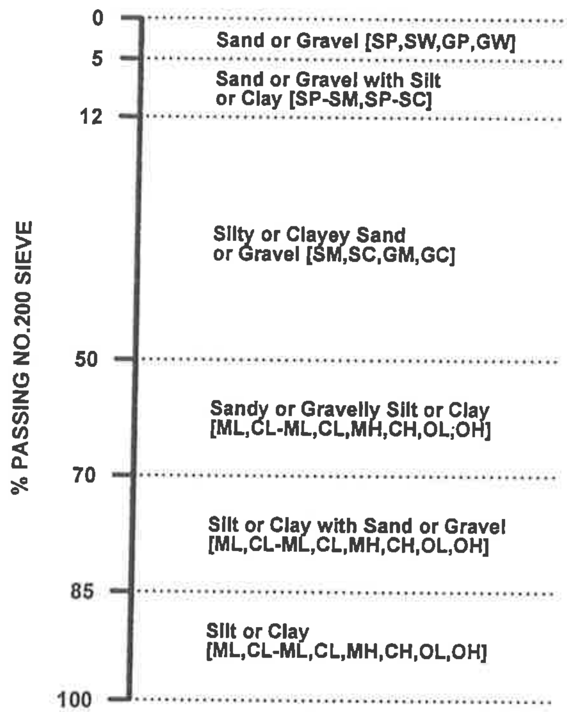
Exploration Location Map

DRAWN BY: KW	DATE: 10/3/07	CHECKED BY: REH	DATE: 10/3/07
SCALE: NTS	PROJECT NO: 190222-001-01	REPORT NO:	PAGE NO: **Figure No. 3**

Appendix A

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



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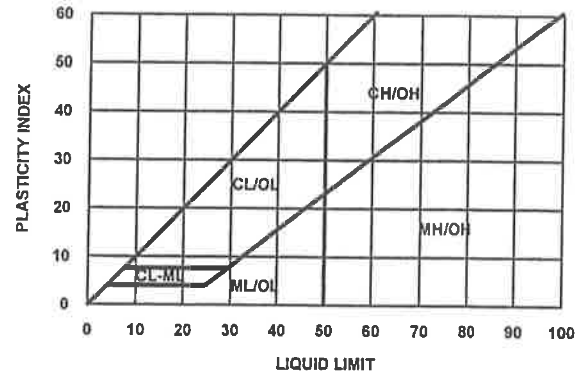

PLASTICITY CHART

GROUP NAME AND SYMBOL

COARSE GRAINED SOILS

- WELL-GRADED SANDS [SW]
- POORLY-GRADED SANDS [SP]
- POORLY-GRADED SANDS WITH SILT [SP-SM]
- POORLY-GRADED SANDS WITH CLAY [SP-SC]
- SILTY SANDS [SM]
- CLAYEY SANDS [SC]
- SILTY CLAYEY SANDS [SC-SM]
- WELL-GRADED GRAVELS [GW]
- POORLY-GRADED GRAVELS [GP]
- POORLY-GRADED GRAVELS WITH SILT [GP-GM]
- POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
- SILTY GRAVELS [GM]
- CLAYEY GRAVELS [GC]

FINE GRAINED SOILS

- INORGANIC SILTS SLIGHT PLASTICITY [ML]
- INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
- INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
- INORGANIC SILTS HIGH PLASTICITY [MH]
- INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

- ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
- ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
- PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.

RELATIVE DENSITY

(SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 5 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft.
DENSE - 31 to 50 Blows/ft.
VERY DENSE - more than 50 Blows/ft.

CONSISTENCY

(SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

NOTES:

8* - DENOTES DYNAMIC CONE PENETROMETER (DCP) VALUE.
R - DENOTES REFUSAL TO PENETRATION.
P - DENOTES PENETRATION WITH ONLY WEIGHT OF DRIVE HAMMER.
N/E - DENOTES GROUNDWATER TABLE NOT ENCOUNTERED.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: **CROSSROADS INDUSTRIAL PARK**
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B1** SHEET: **1 of 1**
SECTION: **25** TOWNSHIP: **35 SOUTH** RANGE: **39 EAST**

CLIENT: **IDI, INC.**
LOCATION: **SEE EXPLORATION LOCATION PLAN**
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): **7.1**
DATE OF READING: **9/13/07**
EST. W.S.W.T. (ft):

DATE STARTED: **9/5/07**
DATE FINISHED: **9/5/07**
DRILLED BY: **JN, KH**
TYPE OF SAMPLING: **ASTM D 1586**

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP], with trace of roots				
		4-7-7	14								
								3.9	14.8		
		7-8-9	17								
							fine SAND with clay gray, [SP-SC]				
5		5-7-9	16								
		12-12-12	24	▼			**clayey fine SAND** brown to gray, [SC]				
		7-8-7	15								
10		9-7-10	17								
							fine SAND, brown to gray, [SP]				
15		7-9-8	17								
20		9-12-16	28								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: **CROSSROADS INDUSTRIAL PARK**
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B2** SHEET: **1 of 1**
SECTION: **25** TOWNSHIP: **35 SOUTH** RANGE: **39 EAST**

CLIENT: **IDI, INC.**
LOCATION: **SEE EXPLORATION LOCATION PLAN**
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): **4.9**
DATE OF READING: **9/13/07**
EST. W.S.W.T. (ft):

DATE STARTED: **9/5/07**
DATE FINISHED: **9/5/07**
DRILLED BY: **JN, KH**
TYPE OF SAMPLING: **ASTM D 1586**

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP], with trace of roots				
		3-4-6	10								
							fine SAND with clay brown, [SP-SC]				
		4-5-7	12								
5		7-7-7	14	▼							
							clayey fine SAND, grey, [SC]				
		7-12-10	22								
		7-9-9	18								
							fine SAND with clay gray, [SP-SC]				
10		10-9-18	27								
							fine SAND, brown to grey, [SP]				
15		5-3-3	6								
20		2-2-3	5								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B3**
SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 10.1
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/6/07
DATE FINISHED: 9/6/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP], with trace of roots				
		2-2-2	4								
		2-2-4	6								
5		3-5-8	13								
		13-16-19	35								
							fine SAND with clay brown, [SP-SC]				
		13-9-15	24								
							fine SAND, brown, [SP]				
10		12-12-17	29	▼							
							fine SAND with silt brown to dark brown, [SP-SM]				
15		5-4-6	10								
									21.1		0.2
20		2-3-3	6								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK, CROSSROADS PARKWAY, FORT PIERCE, FL

BORING DESIGNATION: **B4** SHEET: **1 of 1**

SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.

LOCATION: SEE EXPLORATION LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 6.5
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/6/07
DATE FINISHED: 9/6/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, brown, [SP]				
							fine SAND with silt, brown, [SP-SM]				
		4-5-6	11					8.5	12.2		
		6-6-14	20				**fine SAND**, brown, [SP]				
5		10-13-11	24				**clayey fine SAND**, grey, [SC]	11.7			
				▼							
		4-5-5	10				**fine SAND with clay**, brown, [SP-SC]				
		3-4-4	8				**clayey fine SAND**, grey, [SC]				
10		2-2-5	7								
							fine SAND with silt, gray, [SP-SM]				
15		4-4-4	8								
							fine SAND, light brown, [SP]				
20		4-3-6	9								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: B5 — SHEET: 1 of 1
SECTION: 25 — TOWNSHIP: 35 SOUTH — RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.7
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/6/07
DATE FINISHED: 9/6/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							fine SAND, grey, [SP], with trace of roots				
		2-3-3	6								
		5-7-9	16								
							fine SAND with clay gray, [SP-SC]				
5		7-8-9	17								
		6-7-13	20								
				▼							
		12-10-12	22								
							fine SAND with silt brown, [SP-SM]				
10		10-10-23	33								
							fine SAND, grey to brown, [SP]				
15		5-7-10	17								
20		12-16-22	38								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: B6
SHEET: 1 of 1
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.8
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED:
DATE FINISHED:
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							fine SAND, grey, [SP]				
		5-5-7	12				fine SAND with silt, brown, [SP-SM]				
		7-10-13	23				fine SAND with clay, gray, [SP-SC]		11.8		1.0
5		10-14-16	30								
		11-12-15	27								
		16-17-14	31	▼							
10		16-19-22	41								
							fine SAND, brown, [SP]				
15		3-2-2	4								
							fine SAND with silt, dark brown, [SP-SM]				
20		4-3-2	5								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: B7
SHEET: 1 of 1
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 6.5
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/12/07
DATE FINISHED: 9/12/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP]				
		2-3-4	7								
		4-7-9	16				**fine SAND with clay** gray, [SP-SC]				
							clayey fine SAND brown to grey, [SC]				
5		8-9-14	23					13.0	30.3		
		7-9-10	19	▼							
		12-9-7	16								
10		6-9-9	18								
							fine SAND, grey to brown, [SP]				
15		3-4-7	11								
20		3-4-5	9								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B8**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.0 NS
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/12/07
DATE FINISHED: 9/12/07
DRILLED BY: BS, IH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP]				
		3-6-7	13								
		10-12-13	25				**clayey fine SAND**, brown, [SC]				
5		10-13-13	26					15.6	12.4		
		10-12-13	25				**fine SAND**, grey to brown, [SP]				
		3-4-4	8								
10		10-12-16	28								
15		4-5-7	12								
20		2-1-2	3								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK, CROSSROADS PARKWAY, FORT PIERCE, FL

BORING DESIGNATION: **B9**
SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.8
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):
DATE STARTED: 9/12/07
DATE FINISHED: 9/12/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP], with trace of roots				
		2-3-4	7								
							fine SAND with silt, dark brown, [SP-SM]		13.4		1.0
		4-7-10	17								
							clayey fine SAND, orange, [SC]				
5		8-10-10	20					19.4	18.2		
		10-8-8	16								
		7-6-6	12	▼							
10		4-4-4	8								
							fine SAND with silt, dark brown, [SP-SM]				
15		3-3-3	6								
							fine SAND, grey, [SP]	4.1	25.8		
20							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B10** SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 6.6
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/7/07
DATE FINISHED: 9/7/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP]				
		5-7-8	15				**fine SAND with clay** gray, [SP-SC]				
		8-8-12	20								
5		9-9-13	22								
		9-7-13	20	▼							
		9-9-9	18								
10		4-7-9	16								
							fine SAND, grey, [SP]				
15		5-6-5	11								
							fine SAND, grey, [SP], with broken shell				
20		5-8-4	12				BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: B11
SHEET: 1 of 1
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 6.4
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/11/07
DATE FINISHED: 9/11/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							fine SAND, grey, [SP]				
		2-3-5	8				clayey fine SAND brown to grey, [SC]	16.3	18.2		
		7-7-7	14								
5		8-10-10	20								
		9-8-9	17	▼							
		7-8-9	17								
10		7-6-7	13								
							fine SAND, grey, [SP]				
15		3-4-5	9								
							fine SAND, grey, [SP], with broken shell				
20		5-6-13	19								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B12**
SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 5.0 NS
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/13/07
DATE FINISHED: 9/13/07
DRILLED BY: BS, IH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP], with trace of roots				
		5-7-11	18				**clayey fine SAND**, brown, [SC], with trace of roots				
		7-8-13	21				**fine SAND with clay**, gray, [SP-SC]				
5		8-9-10	19								
		10-11-12	23								
		7-8-10	18				**fine SAND with silt**, gray, [SP-SM]				
10		5-6-6	12								
15		2-3-3	6								
							fine SAND, grey, [SP], with broken shell				
20		10-20-16	36				BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK, CROSSROADS PARKWAY, FORT PIERCE, FL

BORING DESIGNATION: **B13** SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.0
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/6/07
DATE FINISHED: 9/6/07
DRILLED BY: JN, KH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							**fine SAND with clay** gray, [SP-SC], with trace of broken shell				
							fine SAND, grey, [SP]				
							fine SAND with clay brown to gray, [SP-SC]				
		7-7-6	13								
										2.0	
		5-6-9	15	▼							
5		4-7-6	13								
		7-12-14	26								
		9-12-12	24								
10		12-12-10	22								
							fine SAND, brown to grey, [SP]				
15		10-7-6	13								
20		4-4-5	9								
							BORING TERMINATED AT 20'				
25											

STANDLOG

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.: 190222-001-01
REPORT NO.:
APPENDIX: A

PROJECT: CROSSROADS INDUSTRIAL PARK
CROSSROADS PARKWAY
FORT PIERCE, FL

BORING DESIGNATION: **B14**
SHEET: **1 of 1**
SECTION: 25 TOWNSHIP: 35 SOUTH RANGE: 39 EAST

CLIENT: IDI, INC.
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.1
DATE OF READING: 9/13/07
EST. W.S.W.T. (ft):

DATE STARTED: 9/7/07
DATE FINISHED: 9/7/07
DRILLED BY: JN, IH
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0							**fine SAND**, grey, [SP]				
		5-3-5	8				**fine SAND with silt**, brown, [SP-SM]				
		6-10-9	19								
5		7-6-11	17				**fine SAND with clay**, gray, [SP-SC]				
		9-8-10	18	▼							
		9-15-14	29					10.2	11.5		
10		9-12-12	24								
							fine SAND, grey, [SP], with broken shell				
15		6-4-14	18								
							fine SAND with silt, gray, [SP-SM], with trace of broken shell				
20		9-12-15	27								
							BORING TERMINATED AT 20'				
25											

STANDLOG

Exhibit

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

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