



# UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences  
Geophysical Services • Construction Materials Testing • Threshold Inspection  
Building Inspection • Plan Review • Building Code Administration

#### LOCATIONS:

- Atlanta
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- Fort Myers
- Fort Pierce
- Gainesville
- Jacksonville
- Kissimmee
- Leesburg
- Miami
- Ocala
- Orlando (Headquarters)
- Palm Coast
- Panama City
- Pensacola
- Rockledge
- Sarasota
- Tampa
- West Palm Beach

April 15, 2022

Mr. Mitchell Reilly  
LIV Development  
2204 Lakeshore Drive, Suite 450  
Birmingham Alabama 35209

Reference: **PRELIMINARY SUBSURFACE INVESTIGATION**  
***Regal Multi-Family***  
***Ormond Beach, Volusia County, Florida***  
**UES Project No. 0730.2200046.0000 and UES Report No. 1934118P**

Dear Mr. Reilly,

Universal Engineering Sciences (UES) has completed a portion of the subsurface evaluation for the proposed multifamily development located in Ormond Beach, Florida. The purpose of this report is to discuss the findings of the portion of work we have currently performed and to provide a preliminary evaluation of the underlying subsurface conditions based on our soil borings performed thus far and knowledge of the soil conditions on adjacent projects.

### **PROJECT INFORMATION**

Project information was provided to us during correspondence with you. We understand the proposed project will consist of demolishing the existing development and constructing two (2) three to four story apartment structures with associated asphalt parking and drive areas. We also understand two (2) stormwater management facilities will be constructed within the development. As discussed in our proposal, we anticipate that the maximum wall and column loads will not exceed 10 kips per linear foot and 50 kips, respectively. Since the site is currently developed, we anticipate minimal fill will be placed within the structure and pavement areas.

### **FIELD EXPLORATION**

At this time, we have performed one (1) Standard Penetration Test Boring, B-7, advanced to 40 feet below existing grade within the proposed building footprint and two (2) auger borings, P-1 and P-2, advanced to 20 feet each below existing grade within the proposed storm water management facilities. We performed the SPT and auger boring according to the procedures of ASTM D-1586 and ASTM D-1452, respectively.

### **FINDINGS**

The results of the SPT Boring generally indicated approximately 12-inches of topsoil underlain by medium dense and dense fine sand with silt (SP-SM) to approximately 18.5 feet below existing grade. These layers are further underlain by very loose silty fine sand (SM) to approximately 28.5 feet below existing grade. The very loose layer is further underlain by medium dense to very dense fine sand (SP) and silty fine sand (SM) to the boring termination depth of approximately 40.0 feet below existing grade.

The results of the auger borings, P-1 indicated approximately 12-inches of topsoil and P-2, generally indicated approximately 1.5 inches of asphalt underlain by approximately 8.5-inches of crushed concrete base. The pavement and topsoil is further underlain by intermittent layers of fine sand (SP), fine sand with silt (SP-SM) and silty fine sand (SM) to the boring termination depth of approximately 20.0 feet below existing grade.

We recorded groundwater subsequent to drilling at depths varying between approximately 3.0 and 4.5 feet below existing grade at the borings we have performed. Based on available published literature, existing site features, and the results of the borings, we estimate the normal seasonal high groundwater level to be approximately one foot above measured levels. We can provide detailed seasonal high information once

topographic information is available and the remaining borings are complete. It should be noted the estimated seasonal high water level does not provide any assurance that groundwater level will not exceed these estimated levels during any given year in the future. Should impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels might once again exceed our seasonal high estimates. The depth of the groundwater level encountered at the boring location is presented on the Subsurface Profiles.

**PRELIMINARY RECOMMENDATIONS**

**FOUNDATION**

Based on our understanding of the proposed construction, the anticipated soil conditions, the subsurface soil conditions will likely be suitable for support of the structures on a post-tensioned shallow foundation. A maximum soil bearing pressure between 2,000 and 3,000 pounds per square foot should be obtainable. Clearing and stripping of pavement section on the order of 12-inches should be anticipated for the existing development.

**STORMWATER MANAGEMENT**

For a dry bottom retention facility, performance will be significantly influenced by the soil permeability and the vertical separation between the bottom and the seasonal high groundwater level. A wet retention facility should be excavated to a depth necessary to obtain a sufficient water depth to limit growth of aquatic vegetation.

The silty fine sand (SM) as encountered at Boring Location P-1 should be considered to have poor drainage characteristics. Partial removal of these soils may be necessary for pond recovery purposes. All pond backfill material should be clean sandy soils having 5 percent or less fines passing the No. 200 sieve.

If requested, UES can assist in evaluating the facility design exfiltration rates, underdrains and/or groundwater baseflow as pond geometry and storm water volume requirements become available.


**CLOSURE**

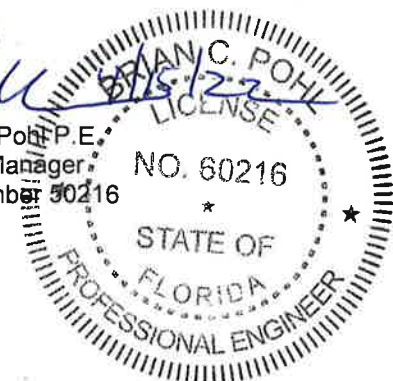
The recommendations in this letter are based on the soil conditions that we anticipate to encounter during the remained of our field evaluation. These recommendations are not intended for design of the proposed development. These recommendations are subject to change based on the results of our geotechnical evaluation and laboratory test results. We appreciate the opportunity to have provided these services to you. If you have any questions, or if we may be of further service, please do not hesitate to call.

Respectfully submitted,

**UNIVERSAL ENGINEERING SCIENCES**

  
Cody Wilson, E.I.  
Project Engineer

  
Brian C. Pohk, P.E.  
Branch Manager  
P.E. Number 60216



Attachments

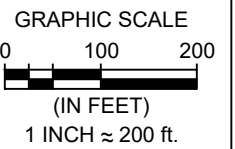
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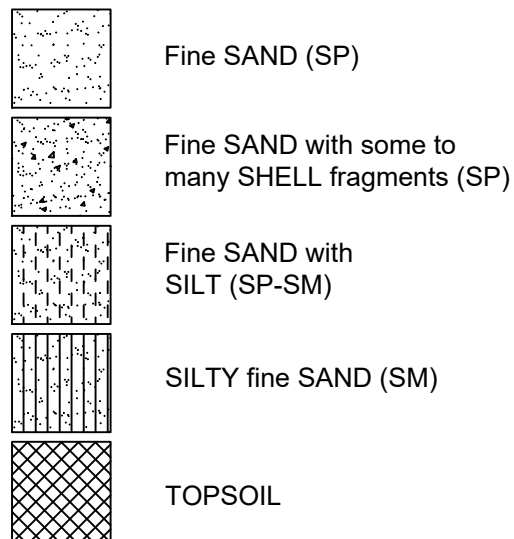
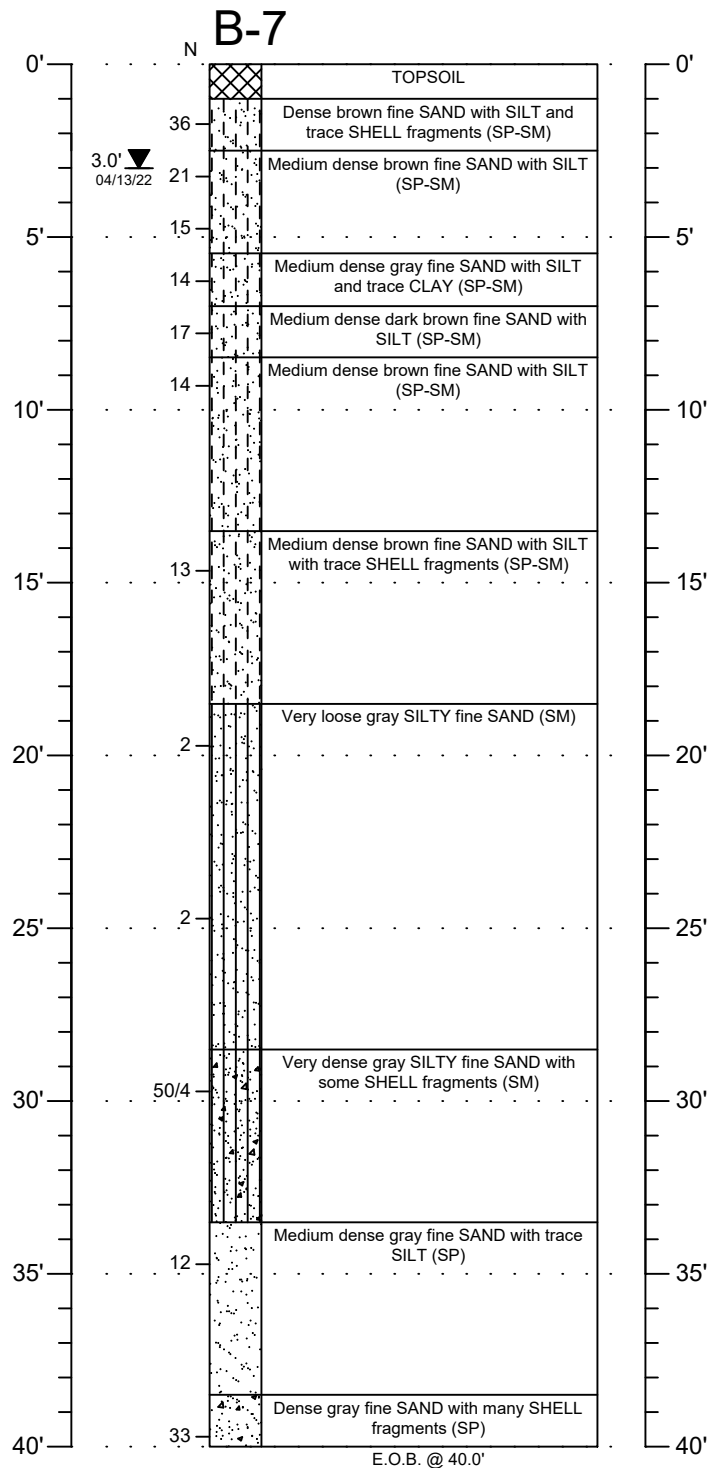


**LEGEND**

- △ APPROXIMATE LOCATION OF AUGER BORING
- ⊕ APPROXIMATE LOCATION OF STANDARD PENETRATION TEST (SPT) BORING



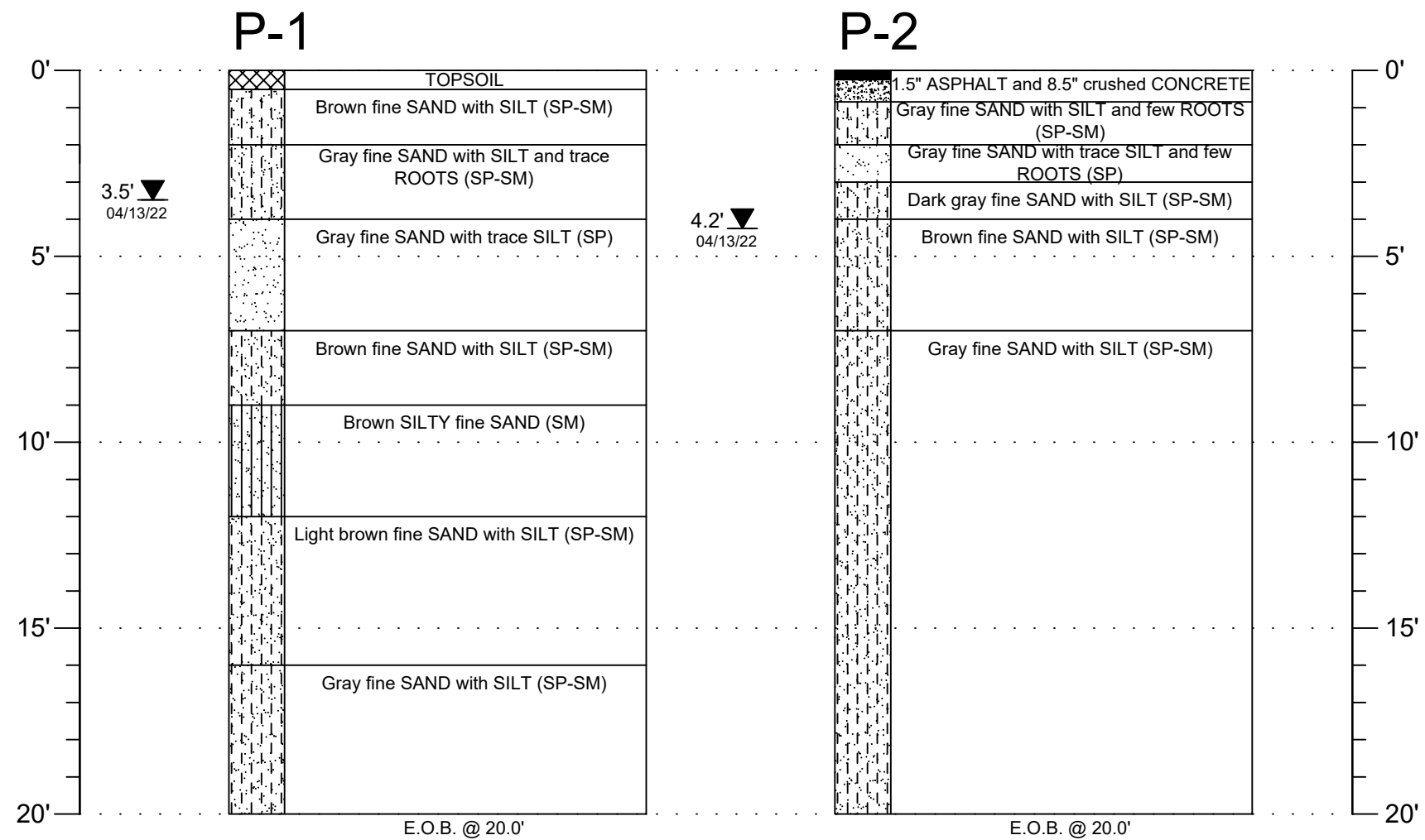
 <b>UNIVERSAL</b> ENGINEERING SCIENCES	TITLE: <b>BORING LOCATION PLAN</b>		SCALE: 1" ≈ 200'
	PROJECT: GEOTECHNICAL EVALUATION REGAL MULTI-FAMILY ORMOND BEACH, FLORIDA		PAGE/FIG. NO.:
	DRAWN BY: MKL	DATE: 04/15/22	PROJECT NO.: 0730.2200046.0000
	CHECKED BY: BP	DATE: 04/15/22	REPORT NO.: 1948196
			A-1



**NOTES:**

- ▼ Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
- (SP) Unified Soil Classification System
- EOB End of Boring
- N Penetr. Resistance, Blows/ft.
- Kv Coefficient of Permeability, (ft/day)
- 200 % Passing No. 200 Sieve
- NE Groundwater not Encountered

<p>UNIVERSAL ENGINEERING SCIENCES</p>	PROJECT: GEOTECHNICAL EVALUATION REGAL MULTI-FAMILY ORMOND BEACH, FLORIDA			TITLE: SUBSURFACE PROFILES	
	DRAWN BY: MKL CHECKED BY: BP	DATE: 04/15/22 DATE: 04/15/22	PROJECT NO.: 0730.2200046.0000 REPORT NO.: 1948496	SCALE: NA (in feet)	PAGE/FIG. NO.: A-2



- Fine SAND (SP)
- Fine SAND with some to many SHELL fragments (SP)
- Fine SAND with SILT (SP-SM)
- SILTY fine SAND (SM)
- TOPSOIL
- ASPHALT
- Crushed CONCRETE

**NOTES:**

- ▼ Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
- (SP) Unified Soil Classification System
- EOB End of Boring
- N Penetr. Resistance, Blows/ft.
- Kv Coefficient of Permeability, (ft/day)
- 200 % Passing No. 200 Sieve
- NE Groundwater not Encountered

 <b>UNIVERSAL</b> ENGINEERING SCIENCES	PROJECT: GEOTECHNICAL EVALUATION REGAL MULTI-FAMILY ORMOND BEACH, FLORIDA			TITLE: SUBSURFACE PROFILES	
	DRAWN BY: MKL	DATE: 04/15/22	PROJECT NO.: 0730.2200046.0000	SCALE: NA (in feet)	
	CHECKED BY: BP	DATE: 04/15/22	REPORT NO.: 1948196	PAGE/FIG. NO.: A-3	

**Universal Engineering Sciences, LLC**  
**GENERAL CONDITIONS**

**SECTION 1: RESPONSIBILITIES** 1.1 *Universal Engineering Sciences, LLC*, and its subsidiaries and affiliated companies ("UES"), is responsible for providing the services described under the Scope of Services. The term "UES" as used herein includes all of UES's agents, employees, professional staff, and subcontractors. 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys, plans and specifications, and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product. 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties in writing.

**SECTION 2: STANDARD OF CARE** 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made. 2.2 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the work is to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.

**SECTION 3: SITE ACCESS AND SITE CONDITIONS** 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Scope of Services. 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 4: BILLING AND PAYMENT** 4.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications. 4.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts. 4.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

**SECTION 5: OWNERSHIP AND USE OF DOCUMENTS** 5.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES. Neither Client nor any other entity shall change or modify UES's instruments of service. 5.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose. 5.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report or completion of the Scope of Services, during which period the records will be made available to the Client in a reasonable time and manner. 5.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other entity, or used or relied upon by any other entity, without the express written consent of UES. Client is the only entity to which UES owes any duty or duties, in contract or tort, pursuant to or under this Agreement.

**SECTION 6: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS** 6.1 Client represents that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site. 6.2 Under this agreement, the term hazardous materials include hazardous materials, hazardous wastes, hazardous substances (40 CFR 261.31, 261.32, 261.33), petroleum products, polychlorinated biphenyls, asbestos, and any other material defined by the U.S. EPA as a hazardous material. 6.3 Hazardous materials may exist at a site where there is no reason to believe they are present. The discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. The discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials. 6.4 UES will notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client will make any disclosures required by law to the appropriate governing agencies. Client will hold UES harmless for all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials. 6.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

**SECTION 7: RISK ALLOCATION** 7.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission, or professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. If Client prefers a \$2,000,000.00 limit on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$2,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$800.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance. 7.2 Client shall not be liable to UES and UES shall not be liable to Client for any incidental, special, or consequential damages (including lost profits, loss of use, and lost savings) incurred by either party due to the fault of the other, regardless of the nature of the fault, or whether it was committed by Client or UES, their employees, agents, or subcontractors; or whether such liability arises in breach of contract or warranty, tort (including negligence), statutory, or any other cause of action. 7.3 As used in this Agreement, the terms "claim" or "claims" mean any claim in contract, tort, or statute alleging negligence, errors, omissions, strict liability, statutory liability, breach of contract, breach of warranty, negligent misrepresentation, or any other act giving rise to liability.

**SECTION 8: INSURANCE** 8.1 UES represents it and its agents, staff and consultants employed by UES, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 7, whichever is

less. The Client agrees to defend, indemnify, and save UES harmless for loss, damage or liability arising from acts by Client, Client's agents, staff, and others employed by Client. **8.2** Under no circumstances will UES indemnify Client from or for Client's own actions, negligence, or breaches of contract. **8.3** To the extent damages are covered by property insurance, Client and UES waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance.

**SECTION 9: DISPUTE RESOLUTION** **9.1** All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to mediation or non-binding arbitration, before and as a condition precedent to other remedies provided by law. **9.2** If a dispute arises and that dispute is not resolved by mediation or non-binding arbitration, then: (a) the claim will be brought in the state or federal courts having jurisdiction where the UES office which provided the service is located; and (b) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, expert witness fees, and other claim related expenses.

**SECTION 10: TERMINATION** **10.1** This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof, or in the case of a force majeure event such as terrorism, act of war, public health or other emergency. Such termination shall not be effective if such substantial failure or force majeure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses. **10.2** In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records, and reports.

**SECTION 11: REVIEWS, INSPECTIONS, TESTING, AND OBSERVATIONS** **11.1** Plan review, private provider inspections, and building inspections are performed for the purpose of observing compliance with applicable building codes. Threshold inspections are performed for the purpose of observing compliance with an approved threshold inspection plan. Construction materials testing ("CMT") is performed to document compliance of certain materials or components with applicable testing standards. UES's performance of plan reviews, private provider inspections, building inspections, threshold inspections, or CMT, or UES's presence on the site of Client's project while performing any of the foregoing activities, is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.2** If UES is retained to provide construction monitoring or observation, UES will report to Client any observed work which, in UES's opinion, does not conform to the plans and specifications provided to UES. UES shall have no authority to reject or terminate the work of any agent or contractor of Client. No action, statements, or communications of UES, or UES's site representative, can be construed as modifying any agreement between Client and others. UES's performance of construction monitoring or observation is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.3** Neither the activities of UES pursuant to this Agreement, nor the presence of UES or its employees, representatives, or subcontractors on the project site, shall be construed to impose upon UES any responsibility for means or methods of work performance, superintendence, sequencing of construction, or safety conditions at the project site. Client acknowledges that Client or its contractor is solely responsible for project jobsite safety. **11.4** Client is responsible for scheduling all inspections and CMT activities of UES. All testing and inspection services will be performed on a will-call basis. UES will not be responsible for tests and inspections that are not performed due to Client's failure to schedule UES's services on the project, or for any claims or damages arising from tests and inspections that are not scheduled or performed.

**SECTION 12: ENVIRONMENTAL ASSESSMENTS** Client acknowledges that an Environmental Site Assessment ("ESA") is conducted solely to permit UES to render a professional opinion about the likelihood or extent of regulated contaminants being present on, in, or beneath the site in question at the time services were conducted. No matter how thorough an ESA study may be, findings derived from the study are limited and UES cannot know or state for a fact that a site is unaffected by reportable quantities of regulated contaminants as a result of conducting the ESA study. Even if UES states that reportable quantities of regulated contaminants are not present, Client still bears the risk that such contaminants may be present or may migrate to the site after the ESA study is complete.

**SECTION 13: SUBSURFACE EXPLORATIONS** **13.1** Client acknowledges that subsurface conditions may vary from those observed at locations where borings, surveys, samples, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed or provided by UES. **13.2** Subsurface explorations may result in unavoidable cross-contamination of certain subsurface areas, as when a probe or boring device moves through a contaminated zone and links it to an aquifer, underground stream, or other hydrous body not previously contaminated. UES is unable to eliminate totally cross-contamination risk despite use of due care. Since subsurface explorations may be an essential element of UES's services indicated herein, Client shall, to the fullest extent permitted by law, waive any claim against UES, and indemnify, defend, and hold UES harmless from any claim or liability for injury or loss arising from cross-contamination allegedly caused by UES's subsurface explorations. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 14: SOLICITATION OF EMPLOYEES** Client agrees not to hire UES's employees except through UES. In the event Client hires a UES employee within one year following any project through which Client had contact with said employee, Client shall pay UES an amount equal to one-half of the employee's annualized salary, as liquidated damages, without UES waiving other remedies it may have.

**SECTION 15: ASSIGNS** Neither Client nor UES may delegate, assign, sublet, or transfer its duties or interest in this Agreement without the written consent of the other party.

**SECTION 16: GOVERNING LAW AND SURVIVAL** **16.1** This Agreement shall be governed by and construed in accordance with the laws of the jurisdiction in which the UES office performing the services hereunder is located. **16.2** In any of the provisions of this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired and will survive. Limitations of liability and indemnities will survive termination of this agreement for any cause.

**SECTION 17: INTEGRATION CLAUSE** **17.1** This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein. **17.2** This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

**SECTION 18: WAIVER OF JURY TRIAL** Both Client and UES waive trial by jury in any action arising out of or related to this Agreement.

**SECTION 19: INDIVIDUAL LIABILITY PURSUANT TO FLORIDA STAT. 558.0035, AN INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**