

**EXHIBIT A
RSQ 12-0005, ON CALL GEOTECHNICAL ENGINEERING SERVICES
TESTING AND INSPECTION SERVICES**

I. SOIL INVESTIGATIONS, TESTING AND MONITORING WELLS				
A.	Subsurface Soil Investigation			
	1.	Mobilization of Drilling Equipment:		
	a.	Standard drilling equipment (site accessible)		
	b.	Bombadier		
	c.	Barge, small, not off-shore		
	d.	Mudbug		
	2.	Soil Borings:		
	a.	Shallow manual auger borings		
	b.	Power auger borings		
	c.	Standard penetration test (SPT) borings:		
		0 to 50 foot depths		
		50 to 100 foot depths		
		100 to 150 foot depths		
		additional SPT samples		
	d.	Rock coring:		
		0 to 50 foot depths		
		50 to 100 foot depths		
		100 to 150 foot depths		
	e.	Grout and seal boreholes		
		0 to 50 foot depths		
		50 to 100 foot depths		
		100 to 150 foot depths		
	f.	Install casing (4-inch):		
		0 to 50 foot depths		
		50 to 100 foot depths		
		100 to 150 foot depths		
	g.	Premium for drilling done with Bombadier, Barge, holiday, weekends or night work time (x) the normal rate		
	h.	Support water truck		

	3.	Muck Probes/Wash Borings, Manual:		
		2-man party		
		3-man party		
	4.	Undisturbed Samples (Shelby Tube):		
		0 to 50 foot depths per sample		
		50 to 100 foot depths per sample		
	5	Drill Rig Crew (time basis):		
		2-man crew		
		3-man crew		
	B.	Environmental Drilling and Groundwater Monitoring Wells		
		10-foot screen, 20/30 silica, bentonite, grout		
	1.	2-inch and 4-inch Drilled Wells:		
		0 to 20 foot depths, per linear foot		
		20 to 50 foot depths, per linear foot		
		50 to 100 foot depths, per linear foot		
		100 to 150 foot depths, per linear foot		
	2.	Temporary Groundwater Level Monitoring Wells, PVC Casing:		
		0 to 20 foot depths, per linear foot		
		20 to 50 foot depths, per linear foot		
		50 to 100 foot depths, per linear foot		
		100 to 150 foot depths, per linear foot		
	3.	Six inch Surface Casing Prices: 6-inch diameter schedule 40 PVC, grouted in place:		
		0 to 20 foot depths		
		20 to 50 foot depths		
		50 to 100 foot depths		
	4.	Manhole or Riser-type Well Cover with 2 ft. x 2 ft. Concrete Pad		
	5.	Direct Push Groundwater Sampling		
	6.	Decontamination of Equipment for Wells		
	7.	Special Covers and Equipment for Wells		
	8.	Abandonment of Wells		
	9.	Recovery Well Installation:		
		4-inch PVC		
		6-inch PVC		
		8-inch PVC		

		10.	Field Permeability Testing:		
		a.	Slug injection/withdrawal permeability test		
		b.	Double-ring infiltrometer test (DIT)		
		11.	General Field Equipment:		
		a.	Data logger (includes 1 transducer)		
		b.	Organic vapor analyzer		
		c.	Photo ionizaiton detector		
		d.	Methane detector		
		e.	Generator (5 KW)		
		f.	Steam cleaner		
		g.	Surveying equipment for groundwater elevations		
		h.	Centrifugal development pump		
		i.	Submersible development pump		
		j.	Peristaltic purging pump		
		k.	Magnetometer		
		l.	Product/water interface probe		
		m.	pH meter		
		n.	Conductivity meter		
		o.	Water level indicator		
		p.	Visqueen, max. 20-foot x 100-foot roll		
		q.	Storage drums, 55-gallon, reconditioned		
	C.		Laboratory and Field Analysis for Geotechnical and Hydro Environmental		
		1.	Identification:		
		a.	Natural moisture content, ASTM D-2216		
		b.	Unit weight and moisture content (undistrubed sample)		
		c.	Void ratio determination, additional		
		d.	Open shelby tubes		
		e.	Liquid and plastic limit, ASTM D-324 and ASTM D-424		
		f.	Shrinkage limit		
		g.	Specific gravity, ASTM D-854		
		2.	Grain Size Determinations:		
		a.	Sieve analysis, ASTM D-421, ASTM D-424		
		b.	Percent fines, ASTM D-1140		
		c.	Hydrometer analysis		

		3. Consolidation Testing of Undisturbed Samples:		
		a. Incremental consolidation test, ASTM D-2435:		
		up to 10 load-unload increments		
		more than 10 load-unload increments, per add'l increment		
		b. Constant rate of strain consolidation, ASTM D-4186		
		4. Strength Tests:		
		a. Strength index tests (torvane, penetrometer, etc.)		
		b. Vane shear tests (field)		
		c. Unconfined compression test, ASTM D-2166:		
		strength only		
		with stress-strain curve		
		d. Triaxial test:		
		unconsolidated-undrained, ASTM D28-50		
		unconsolidated-undrained (with pore pressure response)		
		consolidated-undrained (with pore pressure measure)		
		consolidated-drained on sands		
		consolidated-drained on fine grained sands		
		use of fluids other than water, additional per test		
		e. Direct shear test (coarse grained soils):		
		conventional 3-inch box shear		
		with stress reversals		
		conventional 12-inch box shear		
		set-up charge for geosynthetics (add'l per normal load)		
		angle of repose		
		f. Splitting tensile for rock cores		
		5. Permeability Tests:		
		a. Permeability test of sand		
		b. Permeability test on fine grained soil:		
		$k > 10^{-8}$ cm/sec		
		$k < 10^{-8}$ cm/sec		
		c. Permeation with fluids other than water, add'l per test		
		6. Geosynthetics:		
		a. Geomembrane thickness, ASTM D-1593		
		b. Geomembrane density, ASTM D-792		

		c.	Geomembrane tensile strength, ASTM D-638, machine and transverse direction		
		d.	Geomembrane tear resistance, ASTM D-1004, machine and transverse direction		
		e.	Weld peel and shear, ASTM D-413, ASTM D-882		
		7.	Miscellaneous Testing:		
		a.	pH (water)		
		b.	Specific conductance (water)		
		c.	Flouride		
		d.	Sulfate		
		e.	Chloride		
		f.	Soil pH		
		g.	Soil specific conductance		
		h.	Soil resistivity, ASTM G-57		
		i.	Carbonate content		
		j.	Turbidity		
		k.	Corrosion resistance (pH, R, Cl, S)		
II. LABORATORY CONSTRUCTION MATERIALS					
All listed test costs do not include costs for sampling, which will be charged at the appropriate hourly rate.					
		A.	Soils		
		1.	Standard Proctor, ASTM D-698, all methods		
		2.	Soil Cement Field Proctor, ASTM D-558		
		3.	Modified Proctor, ASTM D-1557, all methods		
		4.	Limerock Bearing Ratio, FDOT 5-515, 5 points		
		5.	California Bearing Ratio		
		6.	Florida Bearing Ratio		
		7.	Compaction Tests (minimum 3 per trip)		
		8.	Dry Preparation of Disturbed Soil and Soil Aggregate Samples		
		9.	Organic Content		
		B.	Soil Cement		
		1.	Design in Accordance with PCA "Short Cut Procedures for Sandy Soils"		
		2.	For Wet/Dry Testing Add to Item 1 for Each Cement Content		
		3.	For Freeze/Thaw Testing Add to Item 1 for Each cement content		

		4. Laboratory Testing of Compressive Strength Test Specimens for Construction Control (3 in set)		
		5. Depth Verification of Base Course and/or Stabilized Subgrade		
		6. Field Inspection		
		C. Concrete		
		1. Concrete Compressive Strength Tests:		
		Sampling fresh concrete at job site, performing slump test, molding concrete cylinders, returning to project site to pick up test		
		a. Set of 3 cylinders		
		b. Set of 4 cylinders		
		c. Additional cylinders		
		d. Air content pressure method, ASTM C-173		
		e. Extra slump test		
		f. Unit weight		
		g. Laboratory curing, capping and testing of cylinders molded at site by resident technician or sets delivered to laboratory by others (up to 5 per set)		
		h. Concrete cylinders cast by others, picked up, cured, tested and reported by laboratory (up to 5 per set)		
		i. Concrete cylinders, per cylinder (not including pickup charge)(billed at hourly rate)		
		2. Coring and Testing Hardened Concrete:		
		Concrete vertical coring of hardened concrete with ready access and for nominal size of 2-inch to 10-inch diameter cores and up		
		a. Mobilization of coring equipment:		
		with power supplied		
		without power supplied		
		b. Coring: 2-person technician crew		
		c. Curing, trimming, capping and testing cores for compressive strength		
		3. Concrete Materials:		
		a. Sieve analysis, dry, ASTM C-136, including finer than No. 200 sieve, ASTM C-177:		
		fine aggregate		
		coarse aggregate		
		b. Specific gravity, ASTM C-127 or ASTM C-128:		
		fine aggregate		
		coarse aggregate		
		c. Unit weight, ASTM C-29		
		d. Organic impurities (colorimetric, ASTM C-40)		

		e.	Effect of organic impurities, ASTM C-87			
		f.	Clay lumps in aggregate, AASHTO T-112			
		g.	Soft particles, ASTM C-851			
		h.	Friable particles, ASTM C-142			
		i.	Abrasion, Los Angeles, ASTM C-131, includes preparation of sample, if uncrushed			
	4.	Mix Design or Verification:				
		a.	Initial mix, including test of fine and coarse aggregate, 6 confirmatory cylinders per mix			
		b.	Confirmatory cylinder, one cylinder per mix			
		c.	Flexural strength mix, 6 test beams including test of aggregate, per mix			
		d.	Additional mix, 6 test beams, same aggregate, per mix			
		e.	Lightweight aggregate mixes, each			
		f.	Mix reviews and calculations, each			
	D. Asphaltic Mixtures					
	1.	Bitumen Extractions				
	2.	Gradations of Extracted Aggregates				
	3.	Marshall Stability and Flow Tests				
	4.	Field Density Determinations of Cores (not including coring costs)				
	5.	Design Mixes (Marshall design method)				
	6.	Mobilization of Coring Equipment:				
			with power supplied			
			without power supplied			
	7.	Coring for Thickness				
III ENVIRONMENTAL						
	A.		Equipment Rental			
	1.	Organic Vapor Analyzer (OVA)				
	2.	Data Logger/Pressure Transducer				
	3.	Generator				
		a.	5 KW generator			
		b.	10 KW generator			
	4.	Sediment Core				
	5.	Vibracore Sampler				
	6.	Pump - Development/Dentrifugal				

