

## WORK AUTHORIZATION

WORK AUTHORIZATION NO. 1

PROJECT: Geotechnical Engineering Services for Williamson County North Campus Facilities

This Work Authorization is made pursuant to the terms and conditions of the Williamson County Contract for Engineering Services, being dated December 3, 2015 and entered into by and between Williamson County, Texas, a political subdivision of the State of Texas, (the "County") and Balcones Geotechnical PLLC (the "Engineer").

Part 1. The Engineer will provide the following Engineering Services set forth in Attachment "B" of this Work Authorization.

Part 2. The maximum amount payable for services under this Work Authorization without modification is \$65,000.00.

Part 3. Payment to the Engineer for the services established under this Work Authorization shall be made in accordance with the Contract.

Part 4. This Work Authorization shall become effective on the date of final acceptance and full execution of the parties hereto and shall terminate on September 30, 2016. The Engineering Services set forth in Attachment "B" of this Work Authorization shall be fully completed on or before said date unless extended by a Supplemental Work Authorization.

Part 5. This Work Authorization does not waive the parties' responsibilities and obligations provided under the Contract.

Part 6. County believes it has sufficient funds currently available and authorized for expenditure to finance the costs of this Work Authorization. Engineer understands and agrees that County's payment of amounts under this Work Authorization is contingent on the County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to continue to make payments under this Contract. It is further understood and agreed by Engineer that County shall have the right to terminate this Contract at the end of any County fiscal year if the governing body of County does not appropriate sufficient funds as determined by County's budget for the fiscal year in question. County may effect such termination by giving written notice of termination to Engineer.

Part 7. This Work Authorization is hereby accepted and acknowledged below.

EXECUTED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

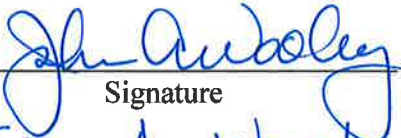
ENGINEER:

Balcones Geotechnical PLLC

COUNTY:

Williamson County, Texas

By: \_\_\_\_\_



Signature

John A. Wooley

Printed Name

Principal

Title

By: \_\_\_\_\_

Signature

Printed Name

Title

## LIST OF ATTACHMENTS

Attachment A - Services to be Provided by County

Attachment B - Services to be Provided by Engineer

Attachment C - Work Schedule

Attachment D - Fee Schedule

### **Attachment A - Services to be Provided by County**

1. County will provide project management.
2. County will provide a single point of contact, to be identified upon Notice to Proceed.

## **Attachment B - Services to be Provided by Engineer**

The Project will include construction of multiple new small service buildings, sheds and awnings on the existing Central Maintenance facility. The new buildings will include an EMS vehicle support center, vehicle sheds, vehicle inspection building, radio shop, impound yard, facilities storage shed, and modifications to the existing fuel station and awning addition to the existing maintenance building.

The geotechnical investigation for the Project will include field, laboratory, and Geotechnical Engineering phases. The scope of services is set out in the three study phases, a cost estimate, and an estimated schedule.

### **Field Investigation**

Based on available geologic information and previous work in the area, the Project site is underlain by Eagle Ford shale. Surficial soils likely consist of highly plastic, potentially expansive clay. Engineer will perform the following drilling scope:

- 17 borings to depths of 25 to 35 feet within proposed structure footprints;
- 9 borings to 10 foot depth within the proposed parking and driveway areas;
- 2 borings to 15 ft. depth at the detention pond location north of Southeast Inner Loop;
- and
- As many as 4 deep confirmatory borings should any structure locations change dramatically.

A site plan showing the proposed boring locations is attached on Plate I. Total drilling footage will be about 770 feet.

### **Laboratory Testing**

Laboratory index tests (natural water contents, Atterberg limits, and partial gradation analyses) will be performed to classify soil strata and evaluate plasticity. Unconfined compression and triaxial compression tests will be conducted on selected undisturbed clay or rock specimens to evaluate the compressive and shear strength of the subsurface strata. Swell tests will also be performed on high plasticity soils to develop an understanding of soil swell potential. Soluble sulfate tests will be performed on soils from proposed parking areas.

### **Geotechnical Engineering Report**

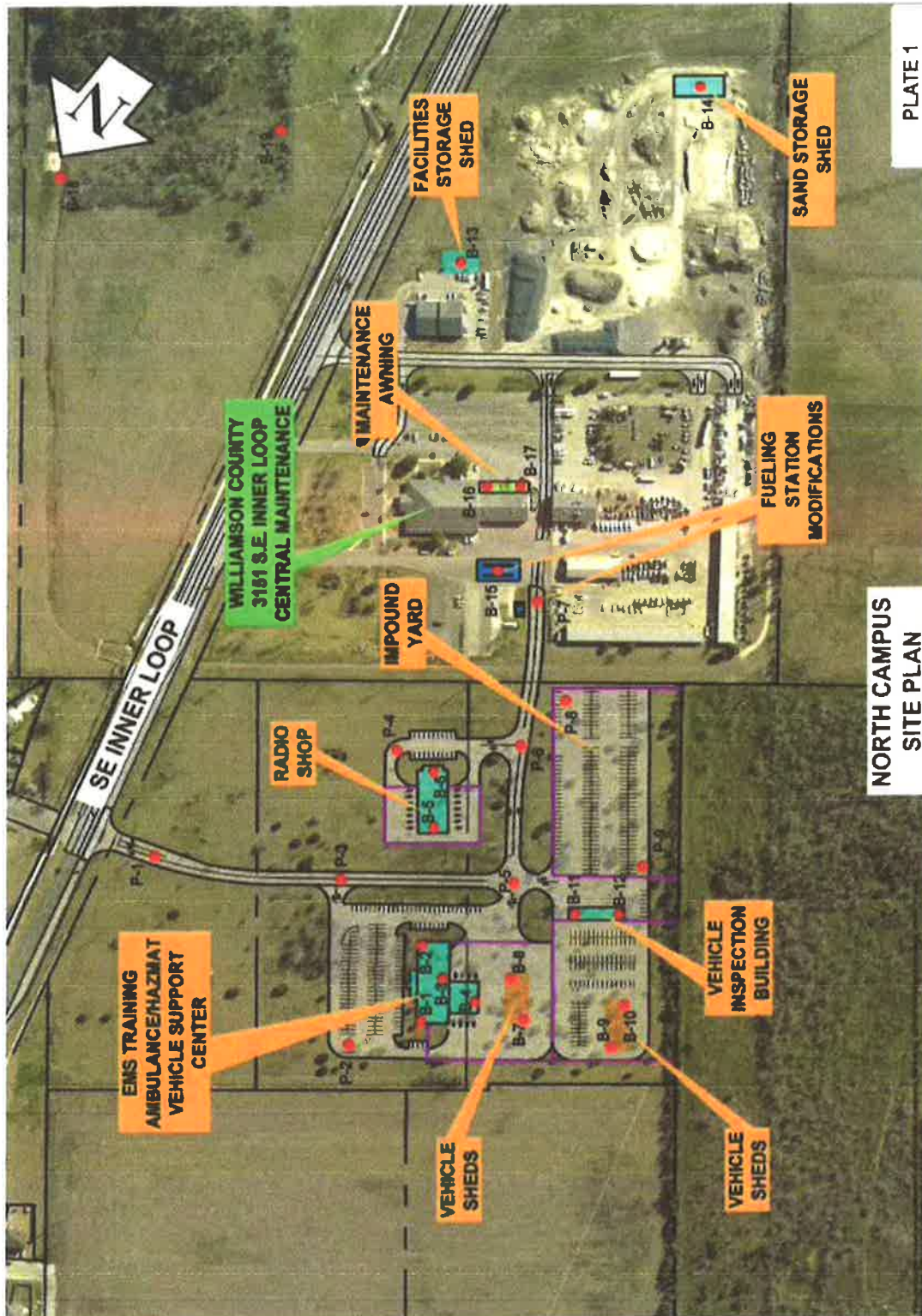
Geotechnical engineering analyses of the results of the field and laboratory data will be made to develop recommendations for design of the building and miscellaneous structures, and the detention pond. If warranted, we can compile a preliminary report with preliminary findings before finalizing our recommendations. Engineer's final report of the investigation will include the following:

1. General subsurface conditions, including boring logs with descriptions of strata, summaries of laboratory test results, and water levels obtained at the time of drilling;
2. Boring location plan;
3. Recommended foundation design type (shallow foundations option on a select fill pad and/or deep foundations) and structural design parameters to be used by the structural engineer in design of foundations;
4. Recommendations for construction of slab on ground foundations including any special procedures that might be required to mitigate foundation heave;
5. Laboratory index and sulfate test results for use by County in pavement thickness design; and
6. Recommendations for site preparation and site work necessary to properly construct the foundations, including selection and compaction of select fill materials.

One digital (PDF) copy of the report will be submitted unless otherwise requested.

### **Construction Phase Services**

As requested, Engineer will make individual site visits during foundation installation for each structural foundation. The purpose of the site visit will be to confirm proper implementation of our foundation recommendations and to assure proper penetration of required bearing stratum.



### **Attachment C - Work Schedule**

Weather and site conditions permitting, field operations can start within two weeks after formal authorization to proceed. Borings will take five or six days to complete. Under normal circumstances, laboratory testing and report preparation will take an additional four to six weeks to complete. Engineer will keep County verbally informed of our findings as they become available.



## Attachment D - Fee Schedule

**Balcones  
Geotechnical**

6020 Balcones Drive, Suite 230 Austin, Texas 78734 Phone: 512-386-0900  
TSPC Firm Registration F-15624



### FEE SCHEDULE FOR GEOTECHNICAL FIELD, LABORATORY AND ENGINEERING SERVICES

<b>1. Field Investigation</b>		
1.1.	Mobilization and demobilization, per mobilization	
1.1.1	Drill truck, water truck, pickup, and crew	\$ 3.75/mile
1.1.2	All-terrain drilling, pickup, and crew	\$ 6.00/mile
1.2.	All-terrain vehicle with drill rig (additional charge)	\$ 600.00/day
1.3.	Drilling and sampling	
1.3.1	Drilling and sampling with 3-inch, thin-walled tube sampler, continuous to 10.0 ft, 5.0-ft intervals thereafter	\$ 20.00/foot
1.3.2	Continuous drilling and sampling with 3-inch, thin-walled tube sampler or split-spoon sampler for environmental screening	\$ 32.00/foot
1.4.	Standard penetration tests	\$ 20.00/each
1.5.	TxDOT cone penetration tests	\$ 28.00/each
1.6.	Rock coring, NX or similar core barrel	
1.6.1	Drilling in soft rock (Austin Chalk, Eagle Ford Shale, etc.)	\$ 27.50/foot
1.6.2	Drilling in hard rock or cavitated rock (Edwards, Buda, Glen Rose, Georgetown, and Walnut Formations)	\$ 29.50/foot
1.7.	Wash or auger borings drilled and logged from cuttings:	
1.7.1	Soil	\$ 13.00/foot
1.7.2	Rock	\$ 19.00/foot
1.8.	Casing of boreholes	\$ 15.00/foot
1.9.	Hourly charges for boring layout, excessive time spent gaining access to boring locations, backfilling boreholes, cleaning up site, installing piezometers, and for other reasons beyond our control	\$ 135.00/hour
1.10.	Rental of concrete core drilling equipment or equipment to gain site access, or traffic control devices	Cost
1.11.	Materials for piezometers, grouting, etc.	Cost
1.12.	Surveying or other outside contractors	Cost
1.13.	Traffic control	Upon Request
1.14.	Per diem for out-of-town assignments, per person	\$ 125.00/night
1.15.	High-pressure steam cleaner	\$ 400.00/day
1.16.	OVA meter	Upon Request
1.17.	Steel drums for drill cuttings (delivered)	\$ 75.00/each
1.18.	Plugging boreholes with bentonite/concrete slurry	\$ 8.00/foot
1.19.	Cone penetrometer testing	\$ 3,250.00/day
<b>2. Laboratory Tests</b>		
2.1.	Natural water content and soil classification	\$ 15.00/each



2.2	Plastic and liquid limits .....	\$ 85.00/each
2.3	Free swell test .....	\$ 85.00/each
2.4	Pressure swell test .....	\$ 135.00/each
2.5	Uniaxial pressure-strain test .....	\$ 60.00/each
2.6	Sieve analysis (No. 4, 40, and 200 sieves) .....	\$ 65.00/each
2.7	Percent material passing a single sieve .....	\$ 45.00/each
2.8	Minus No. 200 sieve .....	\$ 45.00/each
2.9	Hydrometer analysis .....	\$ 200.00/each
2.10	Unit dry weight determination and natural water content .....	\$ 18.00/each
2.11	Unconfined compression test, soil .....	\$ 65.00/each
2.12	Unconfined compression test, rock .....	\$ 75.00/each
2.13	Unconsolidated-undrained triaxial compression test .....	\$ 95.00/each
2.14	Standard Proctor (ASTM D-698) compaction test .....	\$ 230.00/each
2.15	Modified Proctor (ASTM D-1557) compaction test .....	\$ 230.00/each
2.16	TxDOT (TEX-113-E) compaction test .....	\$ 240.00/each
2.17	California Bearing Ratio (CBR) .....	\$ 275.00/point
2.19	Consolidation test, 7-load increments .....	\$ 750.00/each
	Additional load increments .....	\$ 100.00/each
2.19	Permeability of silt or clay .....	\$ 250.00/each
2.20	Specific gravity .....	\$ 50.00/each
2.21	Volumetric shrinkage .....	\$ 75.00/each
2.22	Chemical and analytical testing by outside laboratory .....	Cost
3.	<b>Engineering and Technical Personnel</b>	
3.1.	Senior Consultant/Project Principal .....	\$ 225.00/hour
3.2.	Senior Project Manager .....	\$ 180.00/hour
3.3.	Project Manager .....	\$ 170.00/hour
3.4	Project Engineer .....	\$ 135.00/hour
3.5	Project Geologist .....	\$ 95.00/hour
3.6	Laboratory Manager .....	\$ 95.00/hour
3.7	Graduate Engineer .....	\$ 85.00/hour
3.8.	Senior Engineering Technician .....	\$ 75.00/hour
3.9.	Technician and Draftsperson .....	\$ 70.00/hour
3.10.	Word Processor .....	\$ 50.00/hour
4.	<b>Report Reproduction and Miscellaneous</b>	
4.1.	Outside services, printing, reproduction, etc. ....	Cost
4.2.	Outside technical assistance .....	Cost
4.3.	Transportation .....	\$ 0.55/mile

**Rates for other tests and services quoted on request.**