

WORK AUTHORIZATION

WORK AUTHORIZATION NO. 1

PROJECT: Geotechnical Engineering Services for Williamson County Sheriff's Office Training Center

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 **\$38,000.00**.

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: John A. Wooley

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 a new single-story 22,175 sf building structure, with associated parking and driveway areas. The project site parcel is located on Chandler Road, just east of the existing Sheriff's Office complex. In addition, plans call for installation of a 12- to 16-inch diameter water line totaling about 4,000 linear feet in length. Further, it is desired to investigate foundation conditions along the CMU block wall that fronts the property, for input to possible reconstruction of the wall.

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 surficial clay soils and limestone of the Austin formation. Surficial soils likely consist of highly plastic, potentially expansive clay. Groundwater and surface water drainage are also known to be present. Engineer will perform the following drilling scope:

- 6 borings to 30 feet within the proposed building footprint;
- 5 borings to 10 foot depth within the proposed parking and driveway areas ;
- 2 auger borings to 10 feet depth to evaluate On-Site Sanitary Facility (OSSF);
- 5 borings to 20 ft. and 3 borings to 30 ft. depth along the proposed water line and CMU wall alignments, and
- Up to 2 provisional borings should building location be shifted significantly.

A site plan showing the proposed boring locations is attached as Plate 1. Total drilling footage will be about 500 feet, including provisional borings. We will install groundwater piezometers if we encounter significant groundwater and it is deemed important to our investigation.

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 structure, pavements, and the

detention pond. If warranted, we can compile a preliminary report with preliminary findings before finalizing our recommendations. Engineer 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 for the single story structure;
4. Recommendations for construction of slab on ground foundations including any special procedures that might be required to mitigate foundation heave;
5. Recommendations for design of drilled shaft foundations for support of a replacement wall fronting the project;
6. Classification and sulfate test results for use by the County in performing pavement thickness designs;
7. Soil, gravel and groundwater analyses for evaluation of On-Site Sanitary Facility (OSSF) requirements;
8. Recommendations for detention pond construction including foundation recommendations for discharge structures, permanent slope configurations, and lateral earth pressure parameters;
9. Recommendations for site preparation and site work necessary to Geotechnical Engineering Services for Williamson County Georgetown Annex properly construct the foundations including selection and compaction of select fill material(s); and
10. Other recommendations as outlined in the structural engineer's (Datum) letter of October 7, 2015.

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

Construction Phase Services

As requested, Engineer will provide limited construction phase services by making at least one site visit during installation of foundation elements. The purpose of these site visits will be to assure that the foundation bearing material(s) are in conformance with our final recommendations. In addition, as requested by the structural engineer, final plans and specifications developed by the structural engineer will be reviewed to assure proper interpretation and implementation of pour recommendations.

Attachment C - Work Schedule

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

Attachment D - Fee Schedule

FEE SCHEDULE FOR GEOTECHNICAL FIELD, LABORATORY AND ENGINEERING SERVICES

1. Field Investigation		
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 drill rig, 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	\$ 185.00/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
2. Laboratory Tests		
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.	Engineering and Technical Personnel	
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.	Report Reproduction and Miscellaneous	
4.1.	Outside services, printing, reproduction, etc.	Cost
4.2.	Outside technical assistance	Cost
4.3.	Transportation	\$ 0.55/mile