

WORK AUTHORIZATION NO. 1

PROJECT: Smith Branch Flood Control and Drainage Engineering Services – Williamson County Juvenile Justice Center

This Work Authorization is made pursuant to the terms and conditions of the Williamson County Contract for Engineering Services, being dated February 27, 18 and entered into by and between Williamson County, Texas, a political subdivision of the State of Texas, (the "County") and Doucet & Associates, Inc. (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 \$114,250.00.

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, 2018. 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 27 day of Feb, 2018.

ENGINEER:

Doucet & Associates, Inc.

By: Duke G. Altman

Signature

Duke G. Altman

Printed Name

Principal

Title

COUNTY:

Williamson County, Texas

By: Valerie Covey

Signature

Valerie Covey

Printed Name

Williamson County Residing Officer

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

Williamson County will provide a Project Manager and any requested data that is in the County's control.

Attachment B - Services to be Provided by Engineer

The proposed scope of services is presented in the following work tasks which will result in a PER-level evaluation of flooding conditions in the JJC's vicinity.

- Field Surveying
- Project Meetings
- Preliminary H&H Modeling
- Preliminary Alternative Analysis
- Preliminary Engineering Report
- Refined H&H Modeling
- Refined Alternative Analyses
- Refined Engineering Report
- Grant Opportunities

Following is an explanation of each service for the presently proposed work:

1. **Field Surveying** – This task will include refined field topographic surveying for the Juvenile Justice Center, a portion of Maple St. ROW, and select channel cross-sections in proximity to the project area including the Zone A tributary along the Maple Street ROW. Will prepare a topographic survey of the area specified on *Wilco Juvenile Justice Center Survey Limits*, dated 2/7/18. Ground survey will be limited to one cross-section extending from the west building corner of the main facility out approximately 1,200' perpendicular and centered on the nearby creek crossing within the survey limits, periodic limited cross-sections in heavily vegetated areas, 100' square limited topo measurements centered along the Maple St. ROW bisecting the survey limits at the creek crossing, utility manholes covers, existing drainage culvert flowlines as encountered during time of survey, various spot elevations in vegetative areas and various spot elevations on hard surfaces throughout the survey limits for use in county-wide LiDAR validation.

The topographic survey will be prepared based on LIDAR point cloud RMSE reporting compared against ground-surveyed validation measurements and will incorporate topographic measurements to generate 1-foot contours. The survey will be performed in accordance with TSPS Standards for a Category 6 Condition II Topographic survey and will be based on NAD 83 (2011) using NAVD88 vertical datum. Deliverables will include Civil3D .dwg file and .XML export of the prepared digital terrain model. Survey will be scheduled to be delivered 12 business days from receipt of the signed proposal. Client is to coordinate right-of-entry access prior to issuance of notice to proceed and provide County-wide LiDAR dataset tiles respective to the survey limits. This proposal includes one field mobilization for ground surveying activity. Subsequent mobilizations for additional ground survey requests can be performed on a supplemental hourly as-needed basis. *Additional survey data may be necessary in future final design efforts, once design recommendations are made.*

2. Project Meetings – Our staff will attend meetings with Williamson County and the City of Georgetown during the project. This task assumes a total of six meetings with Williamson County, two meetings with City of Georgetown, and internal team meetings during the course of this project. If additional meetings are needed, then additional services may be required.
3. Preliminary H&H Modeling - This task effort will specifically utilize the H&H modeling recently developed for Smith Branch in the above-referenced FPPS. Since this modeling will be performed on a short timeframe, the Task 1 (Field Surveying) above in close proximity to the Juvenile Justice Center will not be available and not used. Existing as well as ultimate watershed development conditions will be considered. The modeling/analyses will include the Zone A tributary along Maple St. ROW. Modeling/analyses will focus on identifying the potential flooding risk associated with those two waterways only. Existing and ultimate watershed development 100-yr and 500-yr flood risks will be identified. In addition to the design storm rainfall amounts typically used in the Georgetown area, this analysis will additionally consider the design storm rainfall amounts associated with the preliminary NOAA Atlas 14 precipitation frequency estimates.
4. Preliminary Alternative Analysis – This task will include preliminary/general alternative solution analyses for the reduction of Smith Branch and the Zone A tributary (parallels the Maple Street ROW) potential flooding sources to the JJC. The goal is to have the JJC facilities (existing building finished floor elevations) to be outside of the ultimate 500-year floodplain with one foot of freeboard (excluding any underground facilities that would have to be flood proofed). Alternatives may include (but are not limited to):
 - Channel Improvements to Smith Branch, coupled with a general estimate of needed upstream regional detention to mitigate any loss of floodplain storage due to the channel improvements including the elimination of flow constrictions/bottlenecks;
 - Regional detention upgradient of Maple St. ROW embankment, coupled with improvements to this ROW embankment and Smith Branch flow opening;
 - Levee or floodwall improvements along Smith Branch, possibly coupled with sump areas and/or an internal swale outfalling downstream;
 - Levee or floodwall improvements along the Zone A tributary; and

This task will also include preliminary cost estimates and a map generally locating improvements areas.

5. Preliminary Engineering Memo – This task constitutes the development of a preliminary engineering memo to document the analyses, alternative solutions, and recommendations.
6. Refined H&H Modeling – This effort will include refined H&H modeling using the surveying information outlined above in Task 1 (Field Surveying) above in close proximity to the Juvenile Justice Center. Existing as well as ultimate watershed development conditions will be considered. This effort will specifically focus on refinements to the recently developed Smith Branch model (the modeling used in the preliminary H&H modeling above). Additionally, modeling/analyses will include the Zone A tributary along Maple Street ROW as well as additional small channels within, and adjacent to, the Juvenile Justice Center's property. Modeling/analyses will focus on identifying

all potential sources of flood risk to this facility and mapping of the existing and ultimate watershed development 100-yr and 500-yr flood risks. In addition to the design storm rainfall amounts typically used in the Georgetown area, this analysis will additionally consider the design storm rainfall amounts associated with the preliminary NOAA Atlas 14 precipitation frequency estimates.

7. Refined Alternative Analysis – This task will include an alternative solution analyses for reduction of all significant potential flooding sources to this facility. Alternatives may include (but are not limited to):
- Channel Improvements to Smith Branch, coupled with enough upstream regional detention to mitigate any loss of floodplain storage due to the channel improvements;
 - Regional detention upgradient of Maple St. ROW embankment, coupled with improvements to this ROW embankment and Smith Branch flow opening;
 - Levee or floodwall improvements along Smith Branch, possibly coupled with sump areas and/or an internal swale outfalling downstream;
 - Levee or floodwall improvements along the Zone A tributary; and
 - On-site, or near site, channel improvements, diversions, or detention to mitigate on-site sources of flood risk.
 - Protection of any important underground spaces (e.g. basements), facilities, equipment, etc. will also be developed.

This task will also include preliminary cost estimates and schematic layout for each alternative recommended.

8. Refined Engineering Report – This task constitutes the development of a refined engineering report to document the analyses, alternative solutions, recommendations, and any additional effort needed.
9. Grant Opportunities – Grant opportunities to study and/or implement the needed flood control solutions will be investigated. Recommendations will be provided along with the requirements and effort needed to obtain such grants.

ASSUMPTIONS

1. Reimbursables - Printing, reproduction, and other non-labor charges that are directly related to this project will be billed at cost. In-house printing charges will be based on competitive rates of local reproduction companies.
2. Services excluded from this proposal are, but not limited to, structural design (including Site Retaining Walls, embankments, foundations, breakaway wall design, and anchoring analysis); Geotechnical Investigations; Pavement Design; easement designation; OSSF (Septic) Design; Civil Site design services; construction staking; Permit Fees; SWPPP; Zoning; Site Electrical Design; Site Landscape Design; Architectural Elevations; Traffic Impact Analysis (TIA); FEMA CLOMR/LOMR Submittal; environmental assessments including endangered species investigation, wetland determination, archeological investigation, 404 Permitting, and Phase 1 ESAs; and unanticipated engineering services associated with issues that may arise during construction. Should any of these services be desired or required, an additional scope and fee proposal may be necessary.

3. All permit, license, inspection, testing fees, etc., shall be the responsibility of the Owner or Client and are not included in this agreement.
4. Should the Owner request changes to the above defined SCOPE OF SERVICES after an agreement is developed or if additional services are requested, the additional work shall be billed on a time and materials basis. An estimate of additional costs will be provided and approved prior to proceeding with the additional project work.
5. The fees associated with this proposal do not include fees to the City, County, TCEQ, USACE, FEMA, or other review or permitting authorities.
6. Once our project report and/or concept layouts are reviewed and all comments addressed, further modifications to the document will be considered additional services.

Figure 1 - Wilco Juvenile Justice Center Survey Limits



Attachment C - Work Schedule

Upon receiving authorization to proceed from the County, the team will complete Tasks 3 (Preliminary H&H Modeling), Task 4 (Preliminary Alternative Analyses), and Task 5 (Preliminary Engineering Report) within 6 weeks. Task 1 (Field Surveying) will be completed within two weeks from Notice to Proceed and access to all needed properties is granted. After receiving the field surveying results, the team anticipates completion of Task 1 and Tasks 6 through 9 and the delivery of a draft report within 3 months.

Attachment D - Fee Schedule

Description	Basis of Payment	Estimated Fee
I. PER Evaluation		
1. Field Surveying	Rate Schedule	\$ 8,000.00
2. Project Meetings	Rate Schedule	\$ 15,000.00
3. Preliminary H&H Modeling	Rate Schedule	\$ 23,000.00
4. Preliminary Alternative Analyses	Rate Schedule	\$ 23,000.00
5. Preliminary Engineering Memo	Rate Schedule	\$ 5,000.00
6. Refined H&H Modeling	Rate Schedule	\$ 15,000.00
7. Refined Alternative Analyses	Rate Schedule	\$ 15,000.00
8. Refined Engineering Report	Rate Schedule	\$ 7,500.00
9. Grant Opportunities	Rate Schedule	\$ 2,000.00
Reimbursables Expenses	(at cost-estimate)	\$ 750.00
Total Cost:		\$114,250.00