WORK AUTHORIZATION NO. 5

PROJECT: Professional Engineering Design Services for Roadway Reconstruction and Drainage Improvements on Baker Ln, Jennifer Ln, Hawkins Dr, Mikes Wy and Norwood Dr in South San Gabriel Ranches Subdivision

This Work Authorization is made pursuant to the terms and conditions of the Williamson County Contract for Engineering Services, being dated **January 17, 2017** and entered into by and between Williamson County, Texas, a political subdivision of the State of Texas, (the "County") and **Steger Bizzell Engineering, Inc.** (the "Engineer").

Part1. 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 **$145,000.00**

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 **December 31, 2020**. 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 _____, 2019.

ENGINEER:

Steger Bizzell

By: _____
Signature

Perry Steger
Printed Name

President
Title

COUNTY:

Williamson County, Texas

By: _____
Signature

Bill Gravell, Jr.
Printed Name

Williamson County Judge
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

Prepared by:
STEGER BIZZELL

April 18, 2019

Attachment A

Services to be Provided by County

Work Authorization #5

Professional Engineering Design Services for Roadway Reconstruction and Drainage Improvements

General Description of Project:

This project consists of reconstruction of existing roadways in the South San Gabriel Ranches subdivision in Williamson County and accompanying drainage improvements.

Services to be Provided by County:

1. Coordinate meetings with public officials, if necessary.
2. Provide survey data adequate for roadway redesign and hydraulic & hydrologic analysis and culvert replacement design.
3. Provide geotechnical report and proposed pavement design.
4. Provide timely review of materials submitted.
5. Assist with coordination between Engineer and County's other subconsultants, particularly with respect to survey data, geotechnical, utility coordination, and public involvement.
6. Provide County's current General Notes, specifications, and special provisions.
7. Provide data necessary for roadway design including design speeds and traffic counts, if available.
8. Post and maintain project information for general public consumption, such as on the County website.
9. Provide fees for government agency reviews, if any.
10. Provide fees for public notices submitted to newspapers and/or other media, if any.
11. Assist with obtaining signatures from community officials, as required.

Prepared by:
STEGER BIZZELL

April 18, 2019

Attachment B

Services to be Provided by Engineer

Work Authorization #5

Professional Engineering Design Services for Roadway Reconstruction and Drainage Improvements

General Description of Project:

This project consists of reconstruction of existing roadways in the South San Gabriel Ranches subdivision in Williamson County and accompanying drainage improvements.

TASK 1: PROJECT MANAGEMENT

1. Schedule and conduct a project kick-off meeting between Engineer and County Road & Bridge staff. Review and discuss preliminary design parameters such as design storm, traffic control methods, roadway design criteria, environmental issues, and landowner coordination.
2. Schedule up to 2 additional milestone review meetings.
3. Update project design schedule monthly.

TASK 2: PRELIMINARY ENGINEERING

1. Collect and review available data relevant to the project including as-built drawings.
2. Conduct field reconnaissance to document existing conditions and collect data including a photographic record.
3. Receive field surveying (topographic) and property boundary information from the County's surveying consultant. Files shall contain, at a minimum, linework representing edge of pavement, roadway centerline, culvert flowlines, headwalls/wingwalls, fencing, topographic contour lines at 1-foot intervals (including a separate surface file), above-ground utility appurtenances or markings (County's surveying consultant to coordinate 811 locates), and any other existing features pertinent to this project. Files shall be in Microstation DGN, Geopak GPK, and surface TIN formats.
4. Determine horizontal alignments based on survey and as-built drawings if available.
5. Determine proposed vertical profiles for each road.
6. Design typical sections based on County-provided geotechnical report.
7. Traffic Control
8. Model proposed corridor and grading including roadside ditches and cross sections.
9. Perform an "existing-conditions" hydrologic study of the watershed of each drainage basin within the project area. Determine land use types, soil types, slope ranges, and other parameters of the watersheds. Calculate peak storm water runoff rates for the 2-, 5-, 10-, 25-, 50-, and 100-year storms using rational method calculations.
10. Perform an "existing-conditions" hydraulic study of each cross culvert and driveway culvert. Existing culvert and roadway survey data will be provided by others. Non-bridge-class culverts will be modeled using FHWA HY-8 or similar software.
11. Determine preliminary potential replacement structure configurations (size, quantity, material, inlet/headwall style, slope, cover) for roadway channel, driveway culverts, and cross culverts,
12. Perform a "proposed-conditions" hydraulic study of the replacement structures using the same methodology as the "existing-conditions" study. Compare the results of the two models and identify any adverse impacts in the proposed conditions. Adverse impacts may include a water surface elevation increase greater than an accepted tolerance value, increased downstream

velocity, and increased scour potential. Revise the potential replacement structure configuration to limit adverse impact(s) or determine appropriate mitigation solutions.

13. Present the preliminary results to County staff and solicit input. Revise the models as requested, if necessary. Provide hydrologic and hydraulic models to the County in an electronic format as requested.
14. Coordinate with the County's selected utility coordination consultant, such as providing design files and draft construction plan sheets as requested. Import and review files received from the utility coordination consultant. File sent to and received from the utility coordination consultant shall be in Microstation DGN format.

TASK 3: PS&E Preparation

This scope of work assumes that one set of construction contracts will be awarded. Additional bid sets may result in a change to the scope and fee of this scope of work.

1. Prepare construction plans, to be developed in 50% and 100% submittals. Wherever possible, the designs shall be based on TxDOT 2014 Specifications, and standard details shall be current TxDOT Standards at execution date of this scope of work. Plans will be prepared using Microstation V8i in DGN format. It is assumed that one plan (i.e. bid) set will be prepared. The plan set will include, but not be limited to, the following information:
    a. Cover Sheet
    b. Project Layouts
    c. General Notes and Specifications
    d. Estimates and Quantities
    e. Traffic Control
        i. Construction Sequencing Narrative
        ii. Traffic Control Narrative
        iii. Standards
    f. Roadway Plan and Profile (P&P) Sheets for Each Road
        i. Existing and Proposed Profiles
        ii. Roadside Ditch Profiles
        iii. Cross Section Sheets
        iv. Driveway Summary
        v. Standards
    g. Drainage
        i. Drainage Area Map
        ii. Existing Drainage Study
        iii. Proposed Drainage Study
        iv. Hydrologic and Hydraulic Design Data
        v. Cross-Culvert Plan and Profile Sheets
        vi. Standards
    h. Signing, Striping, and Delineation (may be combined with other sheets)
        i. Signing and Striping Layouts
        ii. Standards
    i. Erosion Control (may be combined with other sheets)
        i. Erosion and Sedimentation Control Layouts
        ii. Standards

2. Prepare estimated project quantities for each submittal. Wherever possible, bid items shall conform to TxDOT 2014 bid codes.
3. Prepare a probable cost of construction based on estimated quantities and current local bid prices, and submitted with each submittal package.
4. Prepare and compile a Project Construction Manual using the appropriate Williamson County Road & Bridge template (no federal funds, off-TxDOT system), including selection of relevant and required technical specifications, with the 100% submittal.
5. Prepare submittal packages and send to County Road & Bridge staff for review. (The County's General Engineering Consultant will not participate in this project.) Meet with County staff to discuss comments. Prepare responses to review comments.

TASK 4: CONSTRUCTION PHASE SERVICES

1. County staff shall coordinate the construction phase processes. Engineer's scope of work during these phases shall be limited to the following: Review and process Requests for Information. Limited to 4 RFI's.

DELIVERABLES

The following is a list of deliverables to be provided under this scope of work.

1. Two PS&E submittal packages (referred to as 50% and 100%)
2. Electronic H&H models (HEC-HMS and HEC-RAS or HY-8)
3. Project Construction Manual

EXCLUSIONS

The following services are specifically excluded from this scope. These services may be included in future projects.

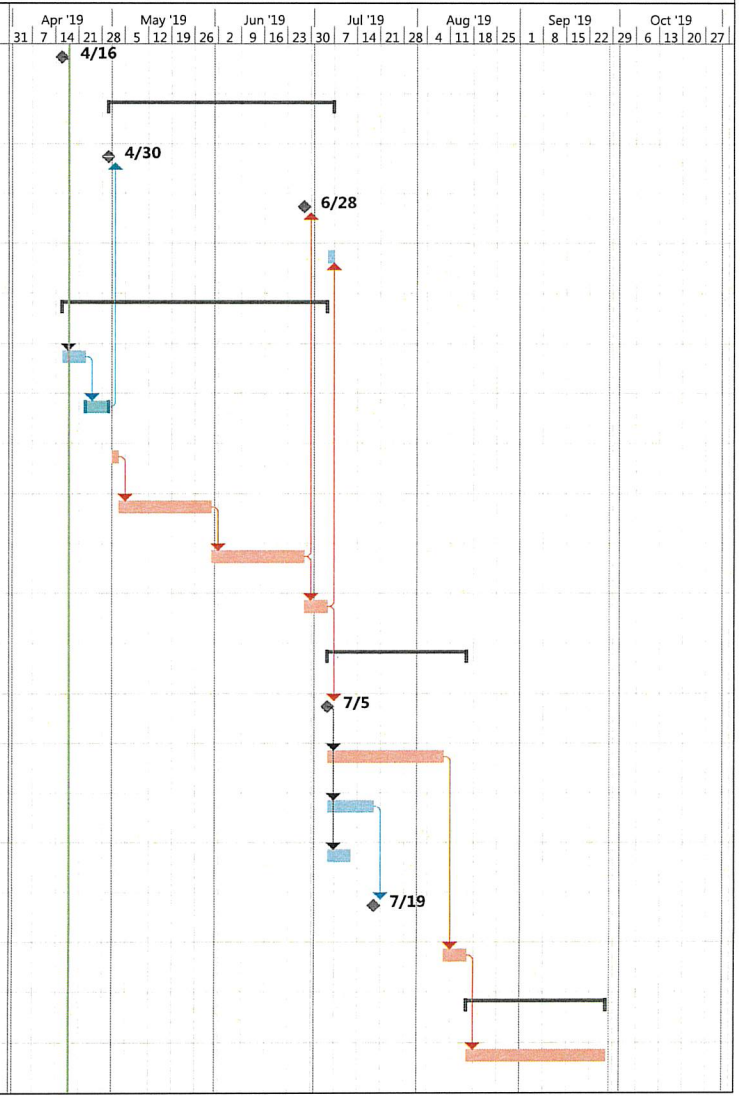
1. Drainage Report (electronic H&H models will be provided to the County)
2. Geotechnical Report or Pavement Design
3. Bridge layout or design
4. Retaining wall layout or design
5. FEMA Coordination, such as CLOMR/LOMR permitting
6. Floodplain permitting
7. Utility relocation design or coordination, except as noted above
8. Traffic Impact Analysis, or any traffic counts except as provided by others
9. Field surveying, including Right-of-Entry
10. Right-of-way or easement acquisition, except support services as noted above
11. Reset missing property corner pins or other permanent monumentation
12. Survey or excavation of underground utilities (survey for SUE shall be performed by separate County consultant)
13. TCEQ Coordination
14. Municipal review or permitting, except as noted above
15. Regulatory agency or municipality review fees
16. Historical assessment
17. Landowner Coordination
18. Bidding Phase Services (addenda, bidder Q&A, bid tabulations, etc.)
19. Construction Phase Services, except for assistance with RFI's as noted above

Steger Bizzell
F-181

Attachment C
Work Authorization #5
Professional Engineering Design Services for Roadway Reconstruction

Thu 4/18/19

ID	Task Name	Duration	Start	Finish	Predecessors
1	Work Authorization Executed	0 days	Tue 4/16/19	Tue 4/16/19	
2	**Task 1: Project Management**	**68 days**	**Tue 4/30/19**	**Sun 7/7/19**	
3	Kick-off Meeting	0 days	Tue 4/30/19	Tue 4/30/19	8
4	Milestone Review Meeting	0 days	Fri 6/28/19	Fri 6/28/19	11
5	Coordinate with County UC	2 days	Fri 7/5/19	Sun 7/7/19	12
6	**Task 2: Preliminary Engineering**	**80 days**	**Tue 4/16/19**	**Fri 7/5/19**	
7	Collect relevant data	1 wk	Tue 4/16/19	Tue 4/23/19	1
8	Field reconnaissance	1 wk	Tue 4/23/19	Tue 4/30/19	7
9	Import & review survey data	2 days	Wed 5/1/19	Fri 5/3/19	
10	Roadway Design	4 wks	Fri 5/3/19	Fri 5/31/19	9
11	Hydrologic and Hydraulic Design	4 wks	Fri 5/31/19	Fri 6/28/19	10
12	Present to County and Revise as Necessary	1 wk	Fri 6/28/19	Fri 7/5/19	11
13	**Task 3: PS&E Preparation**	**42 days**	**Fri 7/5/19**	**Fri 8/16/19**	
14	Final design kick-off	0 days	Fri 7/5/19	Fri 7/5/19	12
15	Prepare Construction Plans	5 wks	Fri 7/5/19	Fri 8/9/19	14
16	Prepare Quantity Take-offs	2 wks	Fri 7/5/19	Fri 7/19/19	14
17	Prepare Cost Estimate	1 wk	Fri 7/5/19	Fri 7/12/19	14
18	Submit 50% PS&E	0 days	Fri 7/19/19	Fri 7/19/19	16
19	Submit 100% PS&E	1 wk	Fri 8/9/19	Fri 8/16/19	15
20	**Task 4: PS&E Preparation**	**42 days**	**Fri 8/16/19**	**Fri 9/27/19**	
21	Review and Process RFI's	6 wks	Fri 8/16/19	Fri 9/27/19	19



Attachment D

Work Authorization #5

Professional Engineering Design Services for Roadway Reconstruction and Drainage Improvements

Estimated Fee Schedule

	Task and Description	Senior Engineer	Engineer (PE)	Engineer in Training	CADD Technician	Clerical	Total Estimate
	Hourly Rate:	$ 195	$ 161	$ 133	$ 100	$ 72	
TASK 1: PROJECT MANAGEMENT							
1	Project Kick-off Meeting		6	4			$1,498
2	Milestone Review Meetings (2 max)		12	8			$2,996
3	Update Project Schedule Monthly		8				$1,288
	Subtotal Hours:	**0**	**26**	**12**	**0**	**0**	**38**
	Subtotal Fees:	**$0**	**$4,186**	**$1,596**	**$0**	**$0**	**$5,782**
TASK 2: PRELIMINARY ENGINEERING							
1	Collect available data		2	4		2	$998
2	Field reconnaissance & documentation		4	8			$1,708
3	Process field surveying data		2	10	8		$2,452
4	Roadway Design						
	a. Horizontal alignment determination	2	4	16			$3,162
	b. Vertical alignment design	2	8	24			$4,870
	c. Driveway design		4	16			$2,772
	d. Typical section design		8	16			$3,416
	e. Traffic Control Design	4	12	24			$5,904
	f. Proposed Corridor Modelling		4	40			$5,964
5	Hydrologic and Hydraulic Design						
	a. Existing Hydrologic Study		8	12			$2,884
	b. Existing Cross Culvert Hydraulic Study		12	16			$4,060
	c. Roadway Channel Design		8	32			$5,544
	d. Driveway Culvert Design		12	48			$8,316
	e. Cross Culvert Design		8	24			$4,480
	f. Proposed Hydrologic Study	4	8	12			$3,664
6	Present to County and revise		8	32			$5,544
7	Coordinate with County's UC consultant		4	8			$1,708
	Subtotal Hours:	**12**	**116**	**342**	**8**	**2**	**480**
	Subtotal Fees:	**$2,340**	**$18,676**	**$45,486**	**$800**	**$144**	**$67,446**
TASK 3: PS&E Preparation							
1	General Sheets		16	8			$3,640
2	Traffic Control Sheets		8	16			$3,416
3	Roadway P&P Sheets	4	24	64			$13,156
4	Cross Section Sheets	2	4	60			$9,014
5	Existing Drainage Study Sheets		8	16			$3,416
6	Proposed Drainage Study Sheets		8	16			$3,416
7	Cross Culvert Sheets	4	8	24			$5,260
8	Driveway Summary		4	16			$2,772
9	Erosion Control Sheets	1	4	8			$1,903
10	Prepare Quantity Take-offs		8	16			$3,416
11	Prepare Probable Cost Estimate		6	8			$2,030
12	Prepare Project Construction Manuals	1	8	16		5	$3,971
13	Submit 50% & 100% PS&E	4	8	40			$7,388
	Subtotal Hours:	**16**	**114**	**308**	**0**	**5**	**443**
	Subtotal Fees:	**$3,120**	**$18,354**	**$40,964**	**$0**	**$360**	**$62,798**
TASK 4: CONSTRUCTION PHASE SERVICES							
1	Review and process RFIs (4x)		24	8			$4,928
	Subtotal Hours:	**0**	**24**	**8**	**0**	**0**	**32**
	Subtotal Fees:	**$0**	**$3,864**	**$1,064**	**$0**	**$0**	**$4,928**
	TOTAL HOURS:	**28**	**280**	**670**	**8**	**7**	**993**
	TOTAL FEES:	**$5,460**	**$45,080**	**$89,110**	**$800**	**$504**	**$140,954**