STATE OF TEXAS §
§
COUNTY OF FORT BEND §

AMENDMENT TO AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES

THIS AMENDMENT, is made and entered into by and between Fort Bend County (hereinafter "County"), a body corporate and politic under the laws of the State of Texas, and Halff Associates, Inc., (hereinafter "Contractor"), a company authorized to conduct business in the State of Texas.

WHEREAS, the parties executed and accepted that certain Agreement for Professional Engineering Services on May 22, 2018, (hereinafter "Agreement") pursuant to SOQ 14-025; and

WHEREAS, the parties desire to amend the Agreement for additional services to be provided and increase the total Maximum Compensation under the Agreement for the completion of such additional services.

NOW, THEREFORE, the parties do mutually agree as follows:

1. County shall pay Contractor an additional one hundred fifty-one thousand eight hundred fifty-five dollars and 00/100 ($151,855.00), for the services as described in Contractor's Proposal for Additional Engineering Services dated March 6, 2019, attached hereto as Exhibit "A" and incorporated herein for all purposes.
2. The Maximum Compensation payable to Contractor for Services rendered is hereby increased to an amount not to exceed four hundred thirty-six thousand eight hundred seventy dollars and 00/100 ($436,870.00), authorized as follows:

   $285,015.00 under the Agreement; and

   $151,855.00 under this Amendment.
3. In no case shall the amount paid by County for all Services under the Agreement and this Amendment exceed the Maximum Compensation without written agreement executed by both parties.

Except as provided herein, all terms and conditions of the Agreement shall remain unchanged.

FORT BEND COUNTY

KP George, County Judge

Date

HALFF ASSOCIATES, INC

FOR Michael Barbier, P.E.,
Public Works/Transportation Leader

5/29/19
Date

ATTEST:

Laura Richard, County Clerk

APPROVED:

J. Stacy Slawinski, P.E., County Engineer

APPROVED AS TO LEGAL FORM:

Marcus D. Spencer, First Assistant County Attorney

AUDITOR'S CERTIFICATE

I hereby certify that funds are available in the amount of **$**_____ to accomplish and pay the obligation of Fort Bend County under this contract.

Robert Ed Sturdivant, County Auditor

I:\Marcus\Agreements\Engineering\Road Construction\Bamore\17105\Amend 1 - Pro Eng Svcs Bamore HA v2.docx 5/22/2019

EXHIBIT A

March 6, 2019
034053

Fort Bend County Engineering
301 Jackson St., 4th Floor
Richmond, TX 77469

Attn: Mr. Kevin Mineo, P.E. (BBI)

Re: Proposal for Additional Engineering Services
Bamore Road Segment 2 – From Klauke Road to Cottonwood School Road

Dear Mr. Mineo:

Halff Associates, Inc. (Halff) is pleased to present our proposal for Additional Engineering services for the Bamore Road Segment 2 project in support of the 2017 Fort Bend County Mobility Bond Program. The base project length is approximately 3,400 linear feet along a new alignment from Klauke Road to Cottonwood School Road. The proposed roadway will no longer include a roundabout as part of the design.

We have developed the attached scope of services and a fee estimate based on the additional scope items that area required to complete the project. Below is a brief summary of the additional scope items.

1. Added preliminary design for roundabout option (not included in original scope)
2. Additional PER meeting and preparation
3. Additional survey required based on alignment change after PER
4. Additional H&H modeling due to change in outfall from original scope
5. Revising alignment and updating plan sheets based on alignment change after PER
6. Revising drainage options and pond location based on new alignment

A detailed scope of these items is included in Exhibit A. A breakdown of the proposed fees for this additional scope is included as Exhibit B.

We trust this proposal meets your requirements for this project. We appreciate the opportunity to be of service to you and trust that our continued association on this project will be mutually beneficial. Please feel free to contact me if you have any questions or comments concerning this matter.

Sincerely,
Halff Associates, Inc.

Michael Barbier, PE
Transportation/Public Works Team Leader
HALFF ASSOCIATES, INC.

14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079-2943
TEL (713) 588-2450
FAX (713) 588-2488
WWW.HALFF.COM

BAMORE ROAD
EXHIBIT A
SCOPE OF SERVICES

Background Information

Halff is currently under contract to provide Professional Engineering Services for the Bamore Road Segment 2 project in support of the 2017 Fort Bend County Mobility Bond Program. The previous concept was for approximately 2,900 linear feet of roadway alignment including a roundabout.

Proposed Conditions

The current proposed design for Bamore Road does not include a roundabout. The current design will consist of a roadway alignment of approximately 3,400 linear feet with back to back reverse 2000 foot curves. The proposed section for the Bamore Road will be a two-lane 24' wide concrete curb and gutter road. This would consist of one 12-foot wide lane in each direction. The proposed roadway will now tie into the north side of Klauke Road at a predetermined location with the Segment 1 project. Additional ROW will be needed along the existing Cottonwood School Road to match the alignment of the existing asphalt pavement on the south of this project.

Preliminary Design

1. **Study Phase**
    a. Additional Iterations for Roundabout
        i. Multiple updates to typical section for different roadway alignments and roundabouts.
        ii. Run additional AutoTurn models to verify turning movements for roundabout
        iii. Design roundabout scenario with bypass lane.
        iv. Determine ROW acquisition needs based upon alignment changes and for different roundabout scenarios.
        v. Review and modify proposed conceptual drainage plan based on roadway/roundabout design.
        vi. Update plan and profile sheets for different roadway alignments and roundabout scenarios.
        vii. Additional project management and coordination for multiple alignments and roundabout scenarios.

2. **Design Phase**
    a. Modification to Alignment from Roundabout Design
        i. Modify roadway alignment for removal of roundabout from design to a new 3,400 linear foot roadway alignment with back to back reverse 2000 foot curves.
        ii. Revise typical section for "interim" ditch in future median location. Review and consider drainage easement to parallel Bamore Road.
        iii. Update drainage area map sheets based on new roadway alignment.
        iv. Review location for proposed detention pond site based on modification of alignment.
        v. Revise conceptual calculations for detention pond based on location
        vi. Update PGL and drainage for Segment 1 roadway tie-in.

vii. Update drainage areas
viii. Update plan and profile sheets for modification to alignment

3. Drainage Study

a. Drainage Analysis Assumptions
   i. This drainage analysis scope of work is based on the following assumptions:
      - Drainage analysis for existing conditions and proposed conditions will be based on the most current LiDAR dataset where survey is not available.
      - The drainage analysis will be updated to reflect the new alignment due to removing the roundabout at the intersection of Bamore Road and Cottonwood School Road. Any additional changes to the roadway alignment that have a major impact to the drainage study are not accounted for in this scope.
      - Mitigation and impact analysis will focus on the proposed Bamore Road improvements; no mitigation evaluation is included in this scope for the full Bamore Road build-out condition.
      - Floodplain information is based on FEMA FIRM Map 48157CO240L, effective date 04/02/2014 and includes Coon Creek, which crosses Cottonwood School Road west of the project.
      - The design storm for mitigation is the 100-year storm and the design storm for the proposed drainage system (ditches or pipes) will be confirmed with Fort Bend County. This drainage analysis assumes three (3) different storm events will be modeled – the 10-, 25-, and 100-year events.
      - No adverse impact will be demonstrated for all improvements

b. Drainage Study Tasks
   i. Data Coordination – Provide regular updates on the status of the drainage study and coordinate with Fort Bend County and the Halff transportation team. Drainage coordination tasks include the following:
      - Biweekly Status Update Conference Calls (6)
      - Coordination Conference Calls (4)
      - Proposed Recommendations Meeting (1)

c. Data Collection – Gather key information relevant to the study and project area, which may include record drawings (if available), hydrologic and hydraulic modeling or studies, and GIS and terrain data. In addition, a field reconnaissance will be performed. Specific tasks include the following:
   - Gather record drawings (if available) and reports for the project and surrounding areas.
   - Gather best available terrain information and relevant GIS data.
   - Perform one (1) field reconnaissance visit to answer any additional questions about existing drainage patterns and better understand the feasibility of the proposed drainage system.

d. Existing Conditions Analysis - Evaluate existing drainage patterns and develop existing drainage area maps, peak discharges and volumes as specified in the Fort Bend County criteria. Specific tasks include the following:
    i. Finalize existing conditions drainage areas based on identified existing outfall location and prepare an existing drainage area map.
    ii. Develop an existing conditions hydrologic model in HEC-HMS to calculate existing peak discharges and generate runoff hydrographs for hydraulic modeling. Existing runoff draining along Cottonwood School Road towards Coon Creek will be evaluated and routing performed within the hydrologic model if needed to represent existing drainage patterns and flows discharging into Coon Creek at the existing Cottonwood School Road Bridge.
    iii. Develop an existing conditions hydraulic model of Coon Creek using HEC-RAS from approximately 1,500 feet north and south of the Cottonwood School Road crossing to calculate existing water surface elevations and peak flow rates for three storm events. The hydraulic model will include existing flows draining from Cottonwood School Road.

e. Proposed Conditions Analysis – Analyze the impacts of the proposed roadway improvements on the drainage patterns and incorporate the proposed roadway into the hydraulic model. Develop and evaluate proposed drainage improvements that include roadside ditches, detention ponds, and storm sewer. Specific tasks include the following:
    i. Revise previously delineated proposed drainage areas based on the current roadway alignment.
    ii. Develop a proposed conditions hydrologic model in HEC-HMS to calculate proposed peak discharges and generate runoff hydrographs for hydraulic modeling.
    iii. Determine storm sewer and ditch sizes for the design storm.
    iv. Revise the existing hydraulic model to incorporate the proposed drainage improvements to estimate proposed water surface elevations and peak flow rates for three storm events. The proposed hydraulic model will include proposed drainage infrastructure along Bamore Road, the new detention pond, and the outfall pipe from the pond to Coon Creek.
    v. Develop an additional hydraulic model that analyzes the ultimate conditions (box culvert within the Bamore Road right-of-way) for the 100-yr storm event.
    vi. Confirm the proposed conditions drainage system has sufficient capacity based on applicable Fort Bend County criteria.

f. Impact and Mitigation Evaluation - Determine the mitigation volume needed to ensure no adverse impact from the project, including from the increased impervious cover due to proposed roadway and from the change in location of where runoff enters Coon Creek.
    i. Estimate volume of detention needed to mitigate potential impacts from proposed roadway.

ii. Use the proposed conditions hydraulic model to verify the required detention volume needed to demonstrate no adverse impact to surrounding properties and receiving waterways.
iii. Evaluate potential mitigation sites by considering multiple factors, including but not limited to hydraulic effectiveness, accessibility of roadway drainage, physical site constraints, ROW acquisition, and environmental factors.
iv. Develop final recommendations for mitigation facilities locations and sizes.

g. Plan Production Support – Coordinate with Halff transportation team to provide any required H&H data or results needed to complete the plans. Review any plan sheets related to drainage as needed.

h. Drainage Report - Prepare documentation of the drainage analysis including narrative, exhibits, and tabular data. Include information regarding the data collection, existing and proposed conditions H&H analysis, and mitigation evaluation. The drainage report shall be prepared in accordance with Fort Bend County requirements.
    i. Prepare a narrative detailing the assumptions, methodologies, findings, alternatives considered, and recommendations.
    ii. Provide relevant exhibits showing the project location, drainage areas, current and proposed drainage patterns, mitigation locations, and overland flow characteristics.
    iii. Include tabular data including parameter development, runoff and volume calculations, and ditch capacity. Mitigation volume calculations will also be included.
    iv. The report will be signed and sealed by an engineer and will be reviewed and approved by Fort Bend County.

Bamore Road Phase II - Fee Estimate - Exhibit B
Halff Associates, Inc.
Project Manager: Michael Barbier

3/6/2019

TASK DESCRIPTION	PRINCIPAL	PROJECT MANAGER	SENIOR ENGINEER	DRAINAGE ENGINEER	SENIOR ENGINEER IN TRAINING	ENGINEER IN TRAINING	GIS TECHNICIAN	CADD OPERATOR	CLERICAL	TOTAL HOURS	SUBCONSULTANT	Task Total
1. Preliminary Design (LS) {Addt'l Iterations for Roundabout}												**$ 20,580.00**
Establish a Typical Cross Section		4	4			8		4		**20**		**$ 2,900.00**
Determine ROW Acquisition Needs		1	2							**3**		**$ 595.00**
Determine Potential Conflicts with existing facilities & utilities		2	2			2				**6**		**$ 1,040.00**
Identify Problem Areas and Potential Resolutions		2	4							**6**		**$ 1,190.00**
Prepare 30% Plans		8	8			40		24		**80**		**$ 10,040.00**
Prepare Preliminary Design Report (PER)		1	2			8			1	**12**		**$ 1,615.00**
Project Management & Meetings		8	8							**16**		**$ 3,200.00**
Preliminary Phase Expenses												
2. Final Design (LS) {Modification to Alignment from Roundabout Design}												**$ 21,900.00**
Cover Sheet & Index										**0**		**$ -**
General Notes										**0**		**$ -**
Typical Sections		1	2			4		2		**9**		**$ 1,245.00**
Project Layout		1	1			1		2		**5**		**$ 690.00**
Drainage Area Maps		1	2	4		4		2		**13**		**$ 1,985.00**
Drainage Calculations		1	2	16		16		2		**37**		**$ 5,645.00**
Detention Pond (Relocate from west to east side of CSR due to modification of alignment)		1	2	8		8		4		**23**		**$ 3,375.00**
Plan and Profile Sheets (Roadway, Drainage, Public Utilities)		4	8			24		16		**52**		**$ 6,620.00**
Responses to Comments		4	4	4						**12**		**$ 2,340.00**
Project Management & Meetings										**0**		**$ -**
Final Design Phase Expenses												
3. Drainage Study *												**$ 59,085.00**
Drainage Coordination				20						**20**		**$ 3,700.00**
Data Collection and Site Visit				6	14		6	4		**30**		**$ 3,860.00**
Existing Conditions Analysis				22	44		64			**130**		**$ 16,610.00**
Proposed Conditions Analysis (Develop and run Bamore and Coon Creek interim hydraulic model)				17	40		60			**117**		**$ 14,745.00**
Proposed Conditions Analysis (Develop and run Bamore and Coon Creek ultimate hydraulic model)				8	16		28			**52**		**$ 6,560.00**
Impact and Mitigation Evaluation				8	12					**20**		**$ 2,980.00**
Plan Production Support				4	4					**8**		**$ 1,240.00**
Drainage Report including exhibits				14	24		16	24		**78**		**$ 9,390.00**
										0		
* Additional fee based on performing the drainage analysis for the new curved alignment versus the original roundabout concept. The drainage analysis is now based on developing a model for drainage to go to Coon Creek instead of to the northeast (Seabourne Creek) as outlined in the original Agreement.												
4. Additional Surveying												**$ 50,290.00**
Roadway Survey												
Perform topographic survey along new ROW/alignment (Approx. 3,300 LF)												**$ 7,480.00**
Perform topographic survey along Cottonwood School Road from current survey limit to Coon Creek (Approx. 750 LF)												**$ 3,740.00**
Perform topographic survey along northwestern track of Cottonwood School Road (Approx. 1900 LF). Limited line of site clearing.												**$ 8,120.00**
Perform cross-sections immediately adjacent to Coon Creek bridge and Shady Oaks Lane bridge. Bridge shots will include low chord information, location and size of columns.												**$ 3,380.00**
Perform topographic survey for no more than 300 linear feet of Bamore Segement 1 just north of Klauke Road.												**$ 1,840.00**
Control survey including establishing and/or setting horizontal & vertical controls												**$ 2,210.00**
Survey control map with control point detail sheets												**$ 1,680.00**
Digital Terrain Model (DTM) or TIN file												**$ 1,605.00**
Project Management and QA/QC												**$ 900.00**
Site Walk												**$ 570.00**
ROW/Parcel Acquisition Survey												
Additional Research of Conflicted Area												**$ 1,600.00**
Abstracting (3 Parcels @ $500.00 EA)												**$ 1,500.00**
ROW Parcel Acquisition Survey (2 parcels @ $3,000 EA)												**$ 6,000.00**
Re-do ROW Parcel Acquisition Survey (4 parcels @ $1,800 EA)												**$ 7,200.00**
Surveying Expenses												**$ 2,465.00**
MANHOUR SUBTOTAL	0	39	51	131	154	115	174	84	1	**749**		
	0%	5%	7%	17%	21%	15%	23%	11%	0%			
LABOR RATE PER HOUR	$250.00	$205.00	$195.00	$185.00	$125.00	$120.00	$110.00	$85.00	$60.00			
SUBTOTAL LABOR	$0.00	$7,995.00	$9,945.00	$24,235.00	$19,250.00	$13,800.00	$19,140.00	$7,140.00	$60.00			
TOTAL												**$ 151,855.00**

3/6/2019 8:18 AM

Amani Engineering, Inc.
• Engineers • Surveyors • Construction Managers

February 28, 2019

Halff Associates, Inc.
14800 St. Mary's Lane, Suite 160
Houston, TX 77079-2943

VIA Email: mBarbier@Halff.com

Attn: Mr. Michael Barbier, P.E.

Re: Fort Bend County 2017 Mobility Projects -Bamore Segment 2 from Klauke Road to Cottonwood Road, Fort Bend County, Texas
Fee Proposal for additional Surveying Services-Revision 2

Dear Mr. Barbier,

Amani Engineering, Inc. is pleased to submit this revised fee proposal for additional surveying services for the above referenced project. We propose the following scope of work, deliverables, schedule, exceptions and fee for our services.

I. SCOPE OF WORK:

- The length of additional topographic survey along the new proposed alignment is approximately 3,300 L.F. (see Exhibit A for project limits). An additional topographic survey will be performed along Cottonwood School Road between the current survey limits and Coon Creek for approximately 750 LF. Also, extend survey along Cottonwood School Road approximately 100' to the north of the current survey. Also to include approximately 300 LF of the future Bamore Road north of Klauke. The total length of the additional survey is approximately 4,450 LF.

- Set horizontal and vertical controls. Temporary benchmarks and baseline control will be set, both with 1,000-foot maximum spacing between points.

- The topographic survey shall be along the proposed alignment as depicted in the enclosed Exhibit A and extend 20 feet beyond the shown drainage easement. All trees, vegetation and existing structures will be surveyed within the survey limits. Structures in clear view and within 100 feet of the existing right-of-way will be surveyed, including edge of pavements, driveways, signs, mailboxes, traffic signals, sidewalks, pavement markings, etc. Pavement material types will be indicated as determined on the surface.

- Additional topographic survey (approximately 1,900 LF) 60-feet northwest of the current right-of-way of Cottonwood School Road at 100 foot cross sections with limited line of site clearing from the intersection of the private drive and Cottonwood School Road to just north of the intersection of Shady Oaks Lane and Cottonwood School Road.

- Cross-sections across Coon Creek. One (1) cross section on the north side of bridge and one (1) cross section on the south side of bridge. The cross sections on both the north and south side of the bridge should be taken immediately adjacent to the bridge. Bridge shots will include low chord information, location and size of columns.

- Existing underground utility toning, flagging, and paint markings will be collected as marked by others as well as visible surface features. Gravity sanitary and storm sewers will be located as to top of manholes and inlets, flow line elevations, type, size, and

direction of pipes if found within the topographic survey area as depicted in EXHIBIT A. Water lines will be located by tops of valves, fire hydrants (flush valves) and visible surface features if found within the topographic survey area as depicted in EXHIBIT A.

- Underground utilities will be located on the base map from resolution of field data and record information provided to the surveyor by others.

- Locate and depict overhead utilities with the survey limits provided in attached EXHIBIT A.

- Cross section of the existing roadway will be obtained at 100-foot intervals.

- All private utility and pipeline providers will be contacted via the current utility coordination process and all on-site utility markings and other information provided to Amani by these utility and pipeline providers will be collected by standard survey methods and incorporated into the topographic survey base map.

- Survey data will be added to existing condition 2-D planimetric topographic survey base map provided in Microstation (DGN) with text, line types, and feature blocks scaled to be plotted at 1" = 20' when plotted on a full size 22" x 34" sheet.

- Abstracting will be performed on three (3) parcels FBCAD R148767,FBCAD R48896 and FBCAD R43155. Research of FBCAD R46845 Chad Wleczyk and FBCAD R46848 GI-IBF Holding Co. LLC historical document research of parent properties to investigate recorded deed boundary discrepancies.

- A right-of-way acquisition survey will be provided for (2) parcels that the proposed roadway alignment crosses and revising four (4) previously submitted parcel acquisition packages.

- A category 1A, Texas RPLS signed and sealed survey will be provided for six (6) parcel maps with associated metes and bounds descriptions.

II. DELIVERABLES:

- Copies of abstract certificates and preliminary ROW/property boundaries.
- Update previously submitted topographic survey information with the additional survey in Microstation format.
- Copies of survey field notes and ASCII files.
- Utilities checklist and associated maps provided by others.
- Right-of-way acquisition drawings for six (6) parcels and associated metes and descriptions signed and sealed by Texas RPLS.
- DTM in Microstation format.

III. SCHEDULE:

- Topographic Survey- Six (6) weeks from receiving the proposed right-of-way centerline drawing file. Future Bamore portion completed four (4) weeks after construction completed weather permitting.

- ROW Acquisition Survey Schedule Twelve (12) weeks from receiving the proposed right-of-way centerline drawing file as detailed below:
  - 2 revised ROW acquisition surveys – four (4) weeks for NTP and receiving the proposed right-of-way drawing file.
  - 2 revised ROW acquisition surveys – six (6) weeks for NTP and receiving the proposed right-of-way drawing file.
  - 2 ROW acquisition surveys – eight (8) weeks for NTP and receiving the proposed right-of-way drawing file (***from previously defined scope*).
  - 2 ROW acquisition surveys – ten (10) weeks for NTP and receiving the proposed right-of-way drawing file (***from previously defined scope*).
  - 2 new ROW acquisition surveys –twelve (12) weeks for NTP and receiving the proposed right-of-way drawing file.

IV. EXCEPTIONS:

- Base Profile Drawing
- Subsurface Utility Engineering and locating
- Construction staking
- Utility coordination for permitting and approvals
- Coordination for site access and right-of-entry. Right of entry (ROE) is needed to gain access to the site. ROE will be obtained by the client.
- Approved alignment of right-of-way and centerline will be provided by client before topographic survey and ROW acquisition survey will be started.
- Extra work that is not included in our scope of work

V. FEE:

The estimated lump sum fee for the above mentioned scope of work, including abstracting, roadway topographic survey, drainage survey, right-of-way and parcel acquisition survey is **$50,290.00**. See enclosed Exhibit – B, Level of Effort Estimate for details.

We appreciate the opportunity to propose on this project. Please call Christina Weaver at 713-270-5700 x 116 if you have questions or need additional information concerning this proposal.

Yours Sincerely,
For Amani Engineering, Inc.

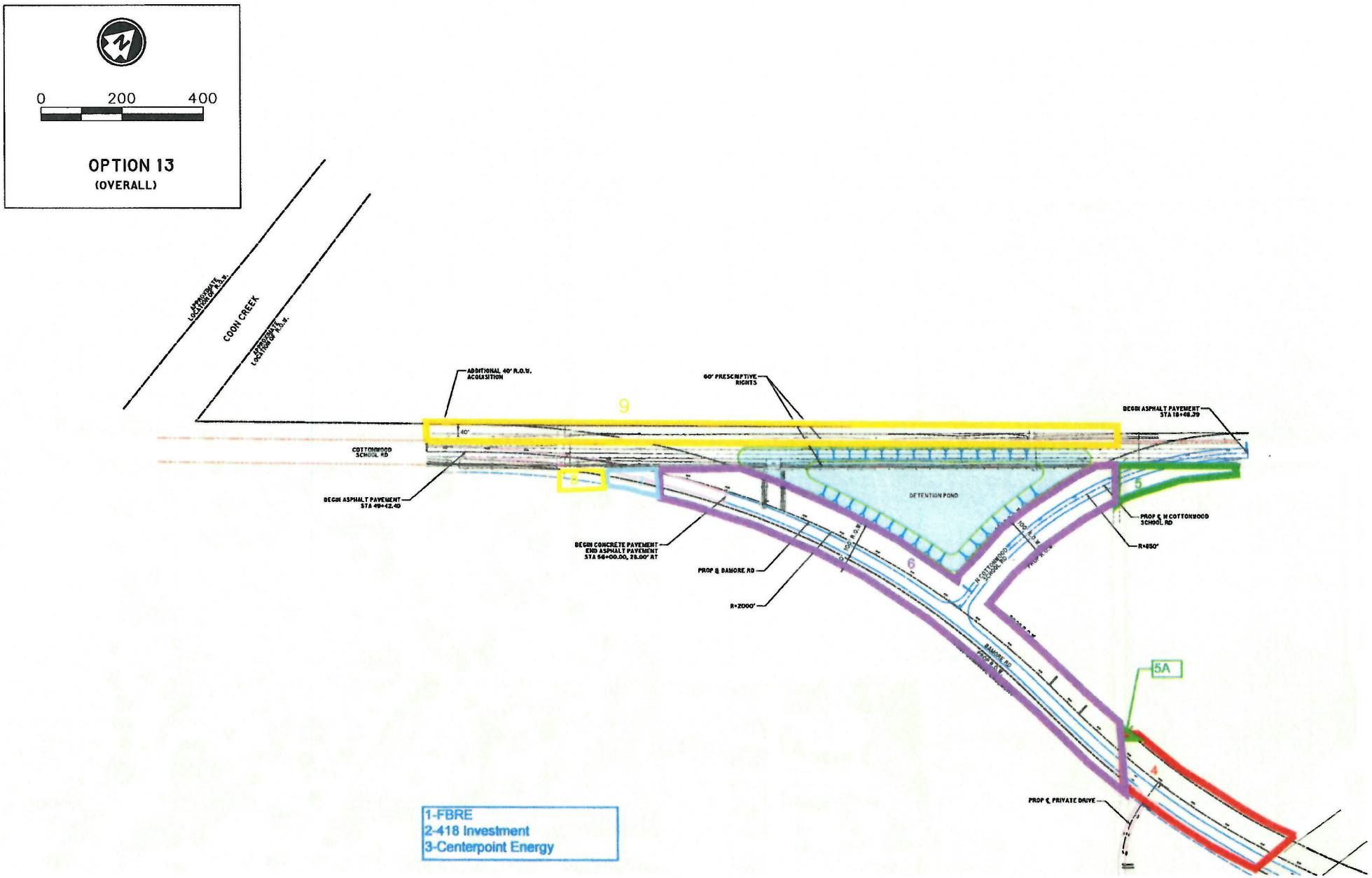
for

H. Prasad Kolluru, P.E.
President

TBPE Firm Reg. No. F-4528
TBPLS Firm Reg. No. 10028200

HPK: md: cw

Enclosures: 1) Exhibit – A, Parcel Acquisition Exhibit
2) Exhibit – B, Level of Effort Estimate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OPTION 13
(OVERALL)
COON CREEK
ADDITIONAL 40' R.O.W. ACQUISITION
60' PRESCRIPTIVE RIGHTS
BEGIN ASPHALT PAVEMENT STA 18+46.39
COTTONWOOD SCHOOL RD
BEGIN ASPHALT PAVEMENT STA 49+42.40
DETENTION POND
PROP ℄ N COTTONWOOD SCHOOL RD
R=850'
BEGIN CONCRETE PAVEMENT END ASPHALT PAVEMENT STA 56+00.00, 28.00' AT
PROP ℄ BAMORE RD
R=2000'
N COTTONWOOD SCHOOL RD
BAMORE RD
PROP ℄ PRIVATE DRIVE
9
8
6
5
5A
4
1-FBRE
2-418 Investment
3-Centerpoint Energy

EXHIBIT B - LEVEL OF EFFORT FEE ESTIMATE
Additional Survey Services-Rev 2

PROJECT NAME: Barmore Road-Seg. 2
LIMITS: From Klauke Rd. to Cottonwood School Rd.
FORT BEND COUNTY 2017 MOBILITY PROJECTS
CLIENT: HALFF ASSOCIATES

DATE: 2/28/2019

ITEM NO	TASK DESCRIPTION	PROJECT MANAGER	RPLS TASK LEADER	SENIOR SURVEY TECHNICIAN	SURVEY TECHNICIAN	2-PERSON SURVEY CREW	3-PERSON SURVEY CREW	ADMIN/ CLERICAL	TOTAL HRS.	COST PER TASK
	CONTRACT RATE PER HOUR	**$165.00**	**$150.00**	**$95.00**	**$90.00**	**$140.00**	**$170.00**	**$60.00**		
ROADWAY SURVEY										
	Perform topographic survey along new ROW as detailed in the scope of work. See Exhibit A for the project limits (Approx. 3,400 LF).		4		16		32		52	$7,480.00
	Perform topographic survey along Cottonwood School Road from existing limits to Coon Creekas detailed in the scope of work. See Exhibit A for the project limits (Approx. 750 LF).		2		8		16		26	$3,740.00
	Perform topographic survey along Northwestern track of Cottonwood School Road. (Approx. 1900 LF). Limited line of site clearing in heavily wood and wet area.		4		8		40		52	$8,120.00
	One cross section on both the upstream and downstream side of the bridge should be taken immediately adjacent to the bridge. Bridge shots will include low chord information, location and size of columns. Take sections at two bridges (Coon Creek bridge at Cottonwood School Road and Coon Creek bridge at Shady Oaks Lane		2		4		16		22	$3,380.00
	Topo survey for no more than 300 linear feet of furture Barmore Segment 1 just north of Klauke Road. Updated topo survey to include the proposed 5'x2' concrete box culvert (locate and flowlines) shown in Sheet 1 of Fort Bend County Bus Maintenance Facility Barmore Road Extension Plan and Profile		1	6		8			15	$1,840.00
	Control survey including establishing and/or setting horizontal & vertical controls		1	4		12			17	$2,210.00
	Survey control map with control point detail sheets		4		12				16	$1,680.00
	Digital Terrain Model (DTM)/Triangular Irregular Network (TIN)	1			16				17	$1,605.00
	SiteWalk			6						$570.00
	Project Management, QA/QC	4						4	8	$900.00
	HOURS SUB-TOTALS	5	18	16	64	20	104	4	225	
	PERCENT OF TOTAL HOURS	2.22%	8.00%	7.11%	28.44%	8.89%	46.22%	1.78%	100.00%	
	SUBTOTAL	$825.00	$2,700.00	$1,520.00	$5,760.00	$2,800.00	$17,680.00	$240.00	**$31,525.00**	**$31,525.00**
ROW/PARCEL ACQUISITION SURVEY										
	Additional Research of Conflicted Area- Historical Documentation Acquisition of Parent tracts (Lump Sum)									$1,600.00
	Abstracting (3 Parcels @ $500.00 EA)									$1,500.00
	ROW Parcel Acquisition Survey (2 parcels @ $3,000 EA)									$6,000.00
	Redo ROW Parcel Acquisition Survey (4 parcels @ $1,800 EA)									$7,200.00
									SUBTOTAL ROW ACQUISITION SURVEY	**$16,300.00**
DIRECT EXPENSES		**QUANTITY**	**UNIT**	**RATE**						**TOTAL**
	Mileage	1000	mile	0.56						560.00
	Tolls (Estimated)									0.00
	Overnight mail - oversized box		each	30.00						0.00
	Photocopies B/W (8.5" X 11")	100	each	0.10						10.00
	Photocopies B/W (11" X 17")	100	each	0.20						20.00
	GPS RTK	75	hour	25.00						1,875.00
									SUBTOTAL DIRECT EXPENSES	**$2,465.00**
									TOTAL FEE	**$50,290.00**

2/28/19

2/24/19

0 200 400

OPTION 13
(OVERALL)

APPROXIMATE LOCATION OF R.O.W.

COON CREEK

APPROXIMATE LOCATION OF R.O.W.

ADDITIONAL 40' R.O.W. ACQUISITION

60' PRESCRIPTIVE RIGHTS

BEGIN ASPHALT PAVEMENT

40'

COTTONWOOD SCHOOL RD

BEGIN ASPHALT PAVEMENT STA 49+42.40

DETENTION POND

PROP ℄ N COTTONWOOD SCHOOL RD

R=850'

BEGIN CONCRETE PAVEMENT
END ASPHALT PAVEMENT
STA 56+00.00, 28.00' RT

PROP ℄ BAMORE RD

R=2000'

100' R.O.W.

PROP R.O.W.

N COTTONWOOD SCHOOL RD

BAMORE RD

PROP DRAINAGE EASEMENT

PROP ℄ PRIVATE DRIVE