

STATE OF TEXAS §
 §
COUNTY OF FORT BEND §

**SECOND AMENDMENT TO AGREEMENT FOR
PROFESSIONAL ENGINEERING SERVICES**

THIS SECOND 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 S&B Infrastructure, Ltd., (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 December 1, 2015, (hereinafter "Agreement"), pursuant to SOQ 14-025, as amended by document dated August 9, 2016, (hereinafter "Amendment"); and

WHEREAS, the parties desire to further amend the Agreement to include additional Services to be provided, increase the total Maximum Compensation available to perform the Services, and extend the Time of Performance under the Agreement.

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

1. County shall pay Contractor an additional two hundred seventy-five thousand eight hundred forty-four dollars and no/100 (\$275,844.00) to render additional Services, including the development of a Construction Bid Package as described in Contractor's Supplemental Request dated July 11, 2018 attached as Exhibit "A" hereto and incorporated herein for all purposes; and
2. The Maximum Compensation payable to Contractor for all Services rendered under the Agreement and this Amendment is hereby increased to an amount not to exceed six hundred fifty-seven thousand one hundred ninety-seven dollars and 60/100 (\$657,197.60), authorized as follows:
 - \$349,275.00 under the Agreement;
 - \$32,078.60 under the Amendment; and
 - \$275,844.00 under this Second Amendment.
3. In no case shall the amount paid by County for all Services under the Agreement and any subsequent executed amendment thereof exceed the Maximum Compensation without further written amendment executed by the parties.

4. The parties hereby agree that the terms and conditions of the Agreement have remained effective from the date of execution and the Time of Performance thereunder shall hereby be extended to end no later than December 31, 2019.
5. Certain State Law Requirements for Contracts
 - a. Agreement to Not Boycott Israel Chapter 2270 Texas Government Code: By signature below, Contractor verifies Contractor does not boycott Israel and will not boycott Israel during the term of this Agreement.
 - b. Texas Government Code Section 2251.152 Acknowledgment: By signature below, Contractor represents pursuant to Section 2252.152 of the Texas Government Code, that Contractor is not listed on the website of the Comptroller of the State of Texas concerning the listing of companies that are identified under Section 806.051, Section 807.051 or Section 2253.153.

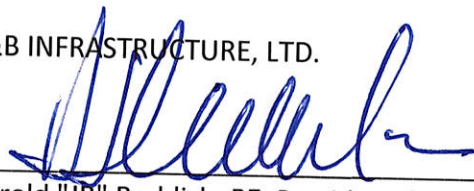
Except as provided herein, all terms and conditions of the Agreement and the Amendment shall remain unchanged.

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FORT BEND COUNTY

S&B INFRASTRUCTURE, LTD.

Robert E. Hebert, County Judge



Harold "JR" Reddish, PE, President & CEO

Date

19 SEP 18

Date

ATTEST:

Laura Richard, County Clerk

APPROVED:

Richard W. Stolleis, 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

EXHIBIT A



July 11, 2018

Robert W. Barnett, P.E.
Senior Project Manager
LJA Engineering, Inc.
2929 Briarpark Drive Suite 600
Houston, Texas 77042-3703
Direct: 713-953-5248
Cell: 281-615-9683

RE: Supplemental Request, Fort Bend County Mobility Bond Project, Reading Road Extension FM762 to Royal Crest Lane Project No. 13102, Precinct 1

Dear Mr. Barnett,

S&B Infrastructure, Ltd. (S&BI) is pleased to submit this supplemental for the development of a Construction Bid Package for the Extension of Reading Road from FM762 to Royal Crest Lane. After the Preliminary Technical Memorandum was developed and approved, numerous negotiations with the landowners along the alignment for Right-of-Way (ROW) Donations have been undertaken by Fort Bend County. The new alignment is shown in **Exhibit 1**. The new typical section is shown in **Exhibit 2**. A brief history of the project is shown on **Exhibit 3**. A summary of New Design Criteria to satisfy the requirements of the adjacent landowners for ROW Donations is shown in **Exhibit 4**. The overall requirements of the original contract for the 2013 Mobility Bond program would still apply.

The original contract was signed December 1, 2015. One supplement was previously awarded for survey of and additional alignment work. The current total contract amount is \$381,353.60. After billings through April 14, 2018, the amount spent is \$258,439.96 with the remaining funds are \$122,913.64. The new Level of Effort (LOE) to complete the contract under the revised scope of work is \$398,757.64. See **Exhibit 5**. By utilizing the remaining funds, the net supplemental would \$275,844.00. The revised sub-consultant proposals are attached. **Terracon** will provide geotechnical services and **MBCO** will provide surveying services.

This proposal assumes that S&BI will have a Notice-to-Proceed (NTP) on August 1, 2018. The initial survey and geotechnical work would be completed September 12, 2018. A draft Preliminary Technical Memorandum (PTM) will be presented on October 10, 2018. The comments will be received by October 24, 2018. A Final PTM will be delivered by November 21, 2018. It is anticipated that a NTP for Design will be delivered by January 2, 2019. The submittal dates with including week review times are: for 70% submittal, February 6, 2019; 95% Submittal March 20, 2019; and, 100% Submittal, April 17, 2019.

If you have any questions, please contact us.

A handwritten signature in blue ink that reads 'Nelson B. Nuckles'.

Nelson B. Nuckles, P.E.
S&BI Project Manager



3535 Sage Road
Houston, Texas 77056
PH - 713-845-5401
FAX - 713-993-9301
Firm Registration No.:
F-1582

S&B INFRASTRUCTURE, LTD.

FORT BEND COUNTY

READING ROAD
EXHIBIT 1

DATE:	DRAWN BY:	CR'D BY:	SCALE:	JOB:
REVISION DATE:				

EXHIBIT 3
Project History
Reading Road
FM762 TO Royal Lakes Estates
Fort Bend County 2013 Mobility Bond Program
Revised Alignment

Fort Bend County Engineering Department (FBCED) contracted with S&B Infrastructure, Ltd. (S&BI) on November 20, 2015, to provide Professional Engineering Services (PES) for the development of a new section of Reading Road, located in Fort Bend County Based on the approved 2015 Fort Bend County Major Thoroughfare Plan. A brief history of the project follows:

1. Reading Road's project limits are from FM 762 to approximately 430-feet west of Royal Lakes Manor Boulevard on Royal Crest Lane. The approximate length of this project is 1.6 miles
2. Reading Road was classified as a Major Thoroughfare. The proposed design for the new alignment would facilitate an ultimate 4-lane boulevard section constructed in multiple phases.
3. The project was originally conceived for to have an initial phase consisting of a 2-lane asphalt roadway section to accommodate two-way traffic until the ultimate boulevard section is achieved.
4. The initial roadway design included asphalt pavement, roadside ditches, cross culverts for drainage, and necessary appurtenances.
5. The original Preliminary Engineering Memorandum (PEM) was approved on June 13, 2016. The PEM included a preliminary alignment and limited drainage analysis.
6. The project was suspended and restarted several times due issues with adjacent property owners concerning the potential Right of Way (ROW) donation, drainage, access, design criteria, and future development opportunities of adjacent land
7. Numerous alignments (six in total) were developed after the PEM.
8. TxDOT design of FM762 caused some reconsideration of the intersection design with Reading Road
9. The south roadway section was planned to have only an inside curb along the median and drained to the outside.
10. The limits of the 100 year flood plan has changed several times. In addition, a new drainage study and a Letter of Map Revision (LOMR) provided by FBC Drainage District for Gapps Slough impacted the project, since the proposed roadway alignment was to be place outside the 100-year flood plain as much as possible.
11. Reading Road was reclassified as a collector on the FBC Thoroughfare Plan, after the start of the project.
12. The current proposed design includes an initial phase of a two-lane concrete curb and gutter section. Since the proposed roadway will have curb and gutter on both the inside and outside lanes, storm sewer will be necessary to drainage water off the roadway.
13. A new alignment has been developed to accommodate the desires of adjacent property owners to secure their ROW donation.

14. An existing detention pond on one of the adjacent properties will be filled and a new pond will be constructed as part of the design that will include the volume lost by filling in the existing pond.
15. The drainage systems will accommodate pass full develop drainage flows of adjacent properties.
16. FBC Drainage District wants to demonstrate that the improvements in the Reading Road project does not impact the 100-year and 500-year Flood Plain.
17. New design criteria are explained in Exhibit 4.



EXHIBIT 4
Design and ROW Criteria
Reading Road
FM762 TO Royal Lakes Estates
Fort Bend County 2013 Mobility Bond Program
Revised Alignment

July 11, 2018

1. Design the road as ½ of a concrete 4-Lane Boulevard in 100 foot wide right of way.
2. This project will be designing the south side of the proposed roadway as the initial phase of construction as a two-way roadway. ROW will be designed to accommodate the full boulevard section in the future.
3. Place a large interception ditch in a 20' wide "Drainage Easement" along the north side of the alignment. This easement can be eliminated in the future by the land owners if they wish to do so as part of their planning and design.
4. Use design criteria for a Collector Street. The landowners have requested confirmation from Fort Bend County that Reading Road will not be considered a Major Thoroughfare.
5. Locate the south gutter line a minimum of 1.5 feet above the 100-Year Flood elevation, making the roadway passable in both directions for a 100-year event, but not necessarily for a 500 year event.
6. Design sufficient capacity in culvert openings (location and size) to allow passage of the 100 and 500 year storm flow without increasing the flood elevations on the upstream side of the alignment. The large interceptor ditch can also be designed to meet this criteria.
7. The culvert openings should be designed assuming full development.
8. Use the CLOMR Model developed by Pape Dawson or the most current model provided by Fort Bend County Drainage District to verify that the limits of the 100 and 500 year flood plain does not change due to proposed improvements. No new model will be developed as part of this project. Also no CLOMR/LOMAR documentation will be developed and filed with the appropriate agencies as part of this project.
7. Determine the size and location of a new detention for the Reading Road project. The landowners have agreed to donate the ROW for the roadway and detention pond. The new detention pond will be designed to accommodate the volume of the existing pond and the volume necessary to potentially remove the existing office building and church on the Leaman property out of the 100-year flood plain (no fill other than the existing pond) and the mitigation



of proposed Reading Road for a full section). Any additional detention capacity required will require a supplemental.

8. The existing Leaman detention pond will be filled to existing ground level.

9. Existing drainage patterns on adjacent properties will be maintained.

10. The proposed detention pond will be designed to allow future expansion (not part of this project) to accommodate development of the Shouse Property. No additional detention pond construction will be included in the design.

11. Fort Bend County will provide Utility Record Drawings for the Leaman, Shouse, and Royal Lakes Estates Properties. S&BI will provide a Utility Conflict List for the project. Utility coordination, if required, will be handled by the Fort Bend County.

12. Fort Bend County will provide Environmental Site Assessment necessary for ROW Acquisition.

13. S&BI will prepare a Technical Memorandum outlining the alignment tentatively accepted by the land owners; the geotechnical recommendations and conclusions; the Environmental Site Assessment Conclusions; and the Drainage Study recommendations and conclusions.

14. Fort Bend County will provide FM762 TxDOT Design Plans (associated sheets to the proposed Reading Road intersection) in electronic format.



**ENGINEERING FEE PROPOSAL ESTIMATE
EXHIBIT 5
FORT BEND COUNTY
READING ROAD EXTENSION
FROM FM 762 TO ROYAL CREST LANE**

Item	Description / Task	No. of Sheets	Estimated Manhours										Subtotal Hours	Total Fee	
			Principle in Charge	Sr Manager	Project Engineer	EIT	Senior Designer	Designer/CAD	Admin / Clerical						
	Raw Salary		\$ 80.00	\$ 65.00	\$ 55.00	\$ 45.00	\$ 40.00	\$ 35.00	\$ 30.00	\$ -	\$ -	\$ -	\$ -		
	Raw Salary Multiplier (3.00)		\$ 240.00	\$ 195.00	\$ 165.00	\$ 135.00	\$ 120.00	\$ 105.00	\$ 90.00	\$ -	\$ -	\$ -	\$ -		
A	Project Management														
	Data Collection			1	2	2				2				7	\$ 1,005.00
	Site & Coordination Meetings (6 Meetings)		2	24	30		12		8					76	\$ 12,270.00
	Progress Submittals (70%, 90% & 100%)			6	6	12			6					30	\$ 4,320.00
	Specifications - Preparation & Review			6	12	3			6					27	\$ 4,095.00
	Prepare Project Manual			4	8				16					28	\$ 3,540.00
	Subconsultant Management														\$ 7,686.50
	Reproduction														\$ 500.64
	Miscellaneous Expenses														\$ 1,000.50
	Subtotal Project Management		2	41	58		12		2				36	168	\$ 34,417.64
B	Preliminary Design Review														
	Technical Memorandum		2	12	52	6			8					128	\$ 17,370.00
	Utility Conflict List			2	4	12								18	\$ 2,670.00
	Construction Cost Estimate			2	6	12			6					26	\$ 3,630.00
	Drainage Study			20	78	160		60	8					376	\$ 51,540.00
	Utility Conflict List			2	4	8			4					18	\$ 2,490.00
	Schematic Layout			4	8	16		8	16					52	\$ 6,900.00
	Subtotal Preliminary Design Review		2	42	152	214	68	80	60				618	\$ 84,600.00	
C	Design Submittals														
	Cover Sheet	1		2	6				12					20	\$ 2,640.00
	Index Sheet	1		3	12				12					27	\$ 3,825.00
	General Notes	1		3	6				12					21	\$ 2,835.00
	Typical Sections	2		3	8				36					59	\$ 7,125.00
	Project Layout Sheets	2		3	6				24					45	\$ 5,535.00
	Survey Control Plan (Provided by Subconsultant)	4		3	6				3					12	\$ 1,935.00
	Right-of-Way (ROW) Mapping (Provided by Subconsultant)	11		3	6				3					12	\$ 1,935.00
	Road Plan & Profile (1"=40' H / 1"=4' V)	22	3	6	24	48	96	192					369	\$ 44,010.00	
	Advanced Warning Sign and TCP Notes	1		1	3	12	3	6					25	\$ 3,300.00	
	Traffic Control Plan At FM 762	3		1	6	24	12	24					67	\$ 8,385.00	
	Traffic Control Plan At Royal Crest	1		1	1	8	2	2					5	\$ 615.00	
	Overall Drainage Plan Layout	1		1	2	8	4	8					23	\$ 2,925.00	
	Drainage Area Maps	4		1	6	24	8	47					86	\$ 10,320.00	
	Drainage Data Sheets	4		1	3		6	12					22	\$ 2,670.00	
	Channel Outfall Plan & Profile	5		3	6	24	24	8					65	\$ 8,535.00	
	Culvert Profile Sheets	6		3	6	24	24	8					65	\$ 8,535.00	



ENGINEERING FEE PROPOSAL ESTIMATE
EXHIBIT 5
FORT BEND COUNTY
READING ROAD EXTENSION
FROM FM 762 TO ROYAL CREST LANE

Item	Description / Task	No. of Sheets	Estimated Manhours										Total Fee
			Principle in Charge	Sr Project Manager	Project Engineer	EIT	Senior Designer	Designer/CAD	Admin / Clerical	Subtotal Hours			
	Raw Salary		\$ 80.00	\$ 65.00	\$ 55.00	\$ 45.00	\$ 40.00	\$ 35.00	\$ 30.00	\$ -	\$ -		
	Raw Salary Multiplier (3.00)		\$ 240.00	\$ 195.00	\$ 165.00	\$ 135.00	\$ 120.00	\$ 105.00	\$ 90.00	\$ -	\$ -		
	Overall Detention Pond Layout	1		1	2	12	6	3				24	\$ 3,180.00
	Detention Pond Calculation Sheet	1		1	2	4	8	12				27	\$ 3,285.00
	Detention Pond Grading Plan Sheets	4		2	6	12	24	12				56	\$ 7,140.00
	Roadway Signing and Pavement Marking (1"=40')	11		1	12	6		6				25	\$ 3,615.00
	Environmental Permits, Issues and Commitments Sheet	1		1	3	12		3				19	\$ 2,625.00
	Storm Water Pollution Prevention Plan Sheets (Roadway)	11		1	3	24	12	6				46	\$ 6,000.00
	Storm Water Pollution Prevention Plan (Channels)	5		1	3	12	6	3				25	\$ 3,345.00
	Roadway, Pavement and Curb Details	2		1	3			3				7	\$ 1,005.00
	Driveway Details	1			3			3				6	\$ 810.00
	Pavement Marking Details (TxDOT)	1			3			3				6	\$ 810.00
	Headwall Details	3			3			3				6	\$ 810.00
	Standard Storm Sewer Details	3			3			3				6	\$ 810.00
	Detention Pond Detail Sheets	2			3			3				6	\$ 810.00
	Sign Mounting Details (TxDOT)	1			3			3				6	\$ 810.00
	Guard Rail Details (TxDOT)	2			3			3				6	\$ 810.00
	Construction Project Sign	1			3			3				6	\$ 810.00
	TXDOT TCP Standard Sheets	1			3			3				6	\$ 810.00
	Barricade Details	12			3			3				6	\$ 810.00
	Storm Water Pollution Prevention Details	2			3			3				6	\$ 810.00
	Miscellaneous Drainage, Detention Ponds, & Channel Details	2		3	9	12	24	12				60	\$ 7,830.00
	QA/QC			24	12				4			40	\$ 7,020.00
	Review & Incorporate Submittal Review Comments			12	12	3			6			33	\$ 5,265.00
	70%, 95% and 100% Construction Cost Estimate			1	3	12		12				28	\$ 3,570.00
	Subtotal Design Submittals		3	86	210	273	289	508	10			163	\$ 177,915.00



ENGINEERING FEE PROPOSAL ESTIMATE
EXHIBIT 5
FORT BEND COUNTY
READING ROAD EXTENSION
FROM FM 762 TO ROYAL CREST LANE

Item	Description / Task	No. of Sheets	Estimated Manhours							Subtotal Hours	Total Fee
			Principle in Charge	Sr Project Manager	Project Engineer	EIT	Senior Designer	Designer/CAD	Admin / Clerical		
	Raw Salary		\$ 80.00	\$ 65.00	\$ 55.00	\$ 45.00	\$ 40.00	\$ 35.00	\$ 30.00	\$ -	
	Raw Salary Multiplier (3.00)		\$ 240.00	\$ 195.00	\$ 165.00	\$ 135.00	\$ 120.00	\$ 105.00	\$ 90.00	\$ -	
D Bidding Phase											
	Bid Phase Services			32	40	20	30	40	18	180	\$ 24,960.00
	Subtotal Bidding Phase		0	32	40	20	30	40	18	180	\$ 24,960.00
	TOTAL HOURS		7	201	460	507	399	630	124	1,129	
	TOTAL SBI COST										\$ 321,892.64
	Survey										
	Base Map/ ROW Acquisition Exhibits/Control										\$ 18,520.00
	Design Survey										\$ 9,417.50
	ROW/Staking										\$ 9,927.50
	Total Survey										\$ 37,865.00
	Geotechnical										
	Field Exploration										\$ 22,700.00
	Clearing of Pathways										\$ 4,600.00
	Laboratory Testing										\$ 7,000.00
	Geotechnical Consulting and Reporting										\$ 4,700.00
	Total Geotechnical										\$ 39,000.00
	TOTAL SUB COST										\$ 76,865.00
	TOTAL PROJECT FEE										\$ 398,757.64

May 30, 2018



S&B Infrastructure, LTD
3535 Sage Road
Houston, Texas 77056

Attn: Mr. William M. Gunkle, P.E.
P: (713) 845-5423
E: wmgunkle@sbinfra.com

Re: Cost Estimate for Geotechnical Engineering Services
Reading Road Extension
FM 762 to Royal Crest Lane
Fort Bend County, Texas
Terracon Document No. P92185196.Revision2

Dear Mr. Gunkle:

We understand we have been selected based on qualifications to provide Geotechnical Engineering Services for the above referenced project. The following are exhibits to the attached.

Exhibit A	Project Understanding
Exhibit B	Scope of Services
Exhibit C	Compensation and Project Schedule
Exhibit D	Site Location

Our base fee to perform the scope of services described in this proposal is \$39,000. See **Exhibit C** for more details of our fees and consideration of additional services.

Terracon Consultants, Inc. 11555 Clay Road, Suite 100 Houston, Texas 77007
P (713) 690 8989 F (713) 690 8787 terracon.com

EXHIBIT A - PROJECT UNDERSTANDING

Our scope of services is based on our understanding of the project as described by S&B Infrastructure, LTD and the expected subsurface conditions as described below. We have not visited the project site to confirm the information provided. Aspects of the project, undefined or assumed, are highlighted as shown below. We request the design team verify this information prior to our initiation of field exploration activities.

Site Location

Item	Description
Parcel information	The project site consists of the proposed extension of Reading Road from FM 762 to an existing residential street named Royal Crest Lane in Fort Bend County, Texas.
Existing improvements	Based on aerial images, the alignment of the proposed new roadway extension passes through wooded areas, open agricultural fields, and an existing detention pond.
Existing topography	Relatively level.
Site access	We anticipate the ability to access the boring locations along the proposed roadway alignment and detention pond with all-terrain vehicle (ATV) mounted drilling equipment.

Planned Construction

Item	Description
Project description	The project is planned to include the construction of half of a concrete four-lane boulevard, approximately 1½ miles long. We also understand a new detention basin is planned to be constructed for this project with an approximate area of 18 acres to the south of the proposed boulevard.

Item	Description
<p>Proposed improvements¹</p>	<p>Roadway</p> <ul style="list-style-type: none"> ■ The new roadway is planned to connect the existing Reading Road at FM 762 to an existing residential street named Royal Crest Lane. The new roadway is assumed to be a collector street and be raised 3 to 4 feet above existing grade. ■ We understand that the proposed pavement section is planned to consist of the County's standard pavement design of 8 inches of concrete over 8 inches of chemically treated subgrade. We understand that we are to follow Harris County Guidelines for borings associated with the proposed roadway, box culverts, and utilities. ■ Box culverts are planned to be placed along the alignment. The box culverts are anticipated to extend to a maximum depth of 5 feet below the final grade of the roadway extension. Box culverts are planned to branch off of the box culverts located beneath the roadway extension at an interval of 300 feet and extend south to outfall into Gapps Slough. Recommendations regarding the proposed outfall structures are not planned to be provided as part of this scope of services. ■ Utilities are planned adjacent to the proposed roadway extension with a maximum embedment depth of 10 feet. We assume utilities and box culverts will be installed using open-cut methods. <p>Existing/Proposed Detention Ponds</p> <ul style="list-style-type: none"> ■ An existing detention pond with a maximum depth of 15 feet is planned to be filled and have the proposed roadway cross the area. We understand that filled box culverts may be used beneath the proposed roadway in the existing detention pond area to help reduce the potential settlement of deep fill beneath the new roadway. ■ A new detention pond is planned south of the proposed roadway. The exact size of the detention pond has not been determined at this time. For this proposal, it is assumed to be 18 acres. We understand that the new detention pond will have a maximum depth of 8 feet with sideslopes no steeper than 3(horizontal):1(vertical). We understand that we are to follow Harris County Flood Control District (HCFCD) geotechnical guidelines when scoping our work for the new detention pond.

1. Based on the information provided by S & B Infrastructure, LTD.

Terracon will need to be provided with information for the new structures not defined at the time of this proposal to verify the assumptions made herein. Please let us know if our understanding of the project is inaccurate or incomplete, so we can revise the project details, assumptions, scope of services, and associate fees accordingly.

EXHIBIT B - SCOPE OF SERVICES

Our proposed scope of services consists of field exploration, laboratory testing, and engineering/project delivery. These services are described in the following sections.

Field Exploration

The field exploration program consists of the following:

Number of Borings	Planned Boring Depth (feet) ¹	Planned Location
2	40	Pavement, existing detention pond ² and box culverts
13	15	Pavement, utilities and box culverts
4	15	Proposed detention pond ³

1. Below existing grade.
2. The borings associated with the existing detention pond are planned to be drilled outside of the limits of existing detention pond.
3. Exact location has not been defined at this time.

Pavement, utilities and box culverts borings will follow Harris County Guidelines for Consultants performing Geotechnical Investigations - Appendix B, effective date January 1, 2011, which require a boring spacing of no greater than 500 feet. The Harris County Guidelines Appendix B, calls for boring depths to be “trench depth plus 5 feet for trenches up to 10 feet deep”. We understand that no utilities shall be deeper than 10 feet, therefore boring depths associated with the pavements, utilities, and box culverts are planned to be 15 feet deep.

Harris County Guidelines for Consultants performing Geotechnical Investigations Appendix B, effective date January 1, 2011, calls for detention pond structures to follow current Harris County Flood Control District (HCFCD) geotechnical guidelines, dated December 2010. HCFCD criteria was used to develop boring spacing, depth, sampling, laboratory testing and engineering for the proposed detention pond.

Boring Layout and Elevations: We use handheld GPS equipment to locate borings with an estimated horizontal accuracy of +/-20 feet. Field measurements from existing site features may be utilized. The layout of the borings and test locations will be approximate. If available, approximate elevations are obtained by interpolation from a site specific, surveyed topographic map. The boring locations will be marked after the completion of drilling. As required by HCFCD criteria we request that survey information including Northing, Easting, and surface elevation be provided for the drilled boring locations upon completion of the field program.

Cost Estimate for Geotechnical Engineering Services

Reading Road Extension ■ Fort Bend County, Texas

May 30, 2018 ■ Terracon Document No. P92185196.Revision2



Subsurface Exploration Procedures: We advance soil borings with an all-terrain (ATV) mounted drill rig using continuous flight augers. For borings corresponding to Harris County criteria (pavement, utilities and box culverts), continuous sampling is performed to a minimum depth of 15 feet, and at 5-foot intervals below that depth. For borings corresponding to HCFCD criteria (proposed detention pond), the sequence of sampling is continuous for the upper 20 feet of each boring and at intervals of 5 feet thereafter. Soil sampling is typically performed using open tube and/or split-barrel sampling procedures. In the open tube sampling procedure, an open, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split barrel sampling procedure, a standard 2-inch outer diameter split barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. The samples are placed in appropriate containers, taken to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we observe and record groundwater levels during drilling and sampling and, for the borings associated with the new detention pond, one day after boring completion.

Our exploration team prepares field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Based on the information provided to us and available aerial photographs, we understand that portions of the site are heavily wooded. Therefore, the site is likely inaccessible to drilling equipment and clearing of pathways will likely be required. We understand that there are no conflicts with regard to clearing of pathways. Debris generated from the clearing process will be left on-site, generally along the alignment, and not transported within the site or hauled off site. If there are any restricted areas, trees, facilities, etc. on-site that are sensitive to clearing, Terracon should be notified in advance so that we avoid these areas during our clearing activities. We request written permission from either S&B Infrastructure or Fort Bend County to access and clear necessary boring sites. The additional cost associated with having Terracon coordinate and clear pathways on-site is provided in **Exhibit C**.

Property Disturbance: We backfill borings with auger cuttings after completion. Our services do not include repair of the site beyond backfilling our boreholes. Excess auger cuttings are dispersed in the general vicinity of the borehole. Because backfill material often settles below the surface after a period, we recommend boreholes are checked periodically and backfilled, if necessary. We can provide this service, or grout the boreholes for additional fees, at your request.

Cost Estimate for Geotechnical Engineering Services

Reading Road Extension ■ Fort Bend County, Texas

May 30, 2018 ■ Terracon Document No. P92185196.Revision2



Terracon will take reasonable efforts to reduce damage to the property, such as rutting of the ground surface. However, in the normal course of our work, some such disturbance could occur. We have not budgeted to restore the site beyond backfilling our boreholes.

Laboratory Testing

The project engineer reviews field data and assigns various laboratory tests to better understand the engineering properties of various soil strata. Exact types and number of tests cannot be defined until completion of field work. Procedural standards noted below are for reference to methodology in general. In some cases, local practices and professional judgement require method variations. Standards noted below include reference to other related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D1140 Standard Test Methods for Amount of Materials in Soils Finer than the No. 200 Sieve
- ASTM D2166/D2166M Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
- ASTM D6572 Standard Test Methods for Determining Dispersive Characteristics of Clayey Soils by the Crumb Test
- ASTM D4767 Standard Test Method for Consolidated Undrained Triaxial Test for Cohesive Soils
- ASTM D4221 Standard Test Method for Dispersive Characteristics of Clay Soil by Double Hydrometer
- ASTM D854 Standard Test Method for Specific Gravity of Soil Solids by Water Pycnometer
- ASTM D2435/D2435M Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading

Our laboratory testing program includes examination of soil samples by an engineer. Based on the results of our field and laboratory testing programs, we describe and classify soil samples in accordance with the Unified Soil Classification System (USCS).

Safety

Terracon is currently not aware of environmental concerns at this project site that would create health or safety hazards associated with our exploration program; thus, our scope considers standard OSHA Level D Personal Protection Equipment (PPE) appropriate. Our scope of services does not include environmental site assessment services, but identification of unusual or

Cost Estimate for Geotechnical Engineering Services

Reading Road Extension ■ Fort Bend County, Texas

May 30, 2018 ■ Terracon Document No. P92185196.Revision2



unnatural materials encountered while drilling will be noted on our logs and discussed in our report.

Exploration efforts require borings (and possibly excavations) into the subsurface, therefore Terracon complies with local regulations to request a utility location service, Texas811, to help locate public utilities within the vicinity of the site. We consult with the owner/client regarding potential utilities or other unmarked underground hazards. Based upon the results of this consultation, we consider the need for alternative subsurface exploration methods, as the safety of our field crew is a priority.

All private utilities should be marked by the owner/client prior to commencement of field exploration. Terracon will not be responsible for damage to private utilities that are not made aware to us. If the owner/client is not able to accurately locate private utilities, Terracon can assist the owner/client by coordinating or subcontracting with a private utility locating services. Fees associated with the additional services are not included in our current scope of services and will be forwarded to our client for approval prior to initiating. The detection of underground utilities is dependent upon the composition and construction of the utility line; some utilities are comprised of non-electrically conductive materials and may not be readily detected. The use of a private utility locate service would not relieve the owner of their responsibilities in identifying private underground utilities.

Site Access: Terracon must be granted access to the site by the property owner. We understand that Fort Bend County will be handling Right-of-Entry to site properties. Terracon request written permission from either S&B Infrastructure or Fort Bend County to access and clear necessary boring sites.

Engineering and Project Delivery

Results of our field and laboratory programs are evaluated by a professional engineer. The engineer develops a geotechnical site characterization, performs the engineering calculations necessary to evaluate foundation alternatives, and develops appropriate geotechnical engineering design criteria for earth-related phases of the project.

Your project is delivered using our **GeoReport** system. Upon initiation, we provide you and your design team the necessary link and password to access the website (if not previously registered). Each project includes a calendar to track the schedule, an interactive site map, a listing of team members, access to the project documents as they are uploaded to the site, and a collaboration portal. A typical delivery process includes three basic stages:

- Stage 1: Project Planning
- Stage 2: Site Characterization

■ Stage 3: Geotechnical Engineering

When utilized, a collaboration portal documents communication, eliminating the need for long email threads. This collaborative effort allows prompt evaluation and discussion of options related to the design and associated benefits and risks of each option. With the ability to inform all parties as the work progresses, decisions and consensus can be reached faster. In some cases, only minimal uploads and collaboration will be required, because options for design and construction are limited or unnecessary. This is typically the case for uncomplicated projects with no anomalies found at the site.

When services are complete, we upload a printable version of our completed final geotechnical engineering report, including the professional engineer's seal and signature, which documents our services. Previous submittals, collaboration, and final report are maintained in our system indefinitely. This allows future reference and integration into subsequent aspects of our services, as the project goes through final design and construction.

The final geotechnical engineering report provides the following:

- Boring logs with field and laboratory data
- Stratification based on visual soil classification
- Groundwater levels observed during and after completion drilling
- Site and Boring location plans
- Subsurface exploration procedures
- Description of subsurface conditions
- Subgrade preparation/earthwork recommendations (regarding pavements, new and existing detention ponds)
- Terracon will evaluate the pavement design provided by Fort Bend County and estimate the equivalent single axle load (ESAL) value
- Detention pond construction considerations
- Slope stability analyses of the detention pond
- General discussion on erosion control for the detention pond
- Utility construction considerations, such as excavation, groundwater control, and backfill

Slope stability analysis for up to three cross sections will be performed on selected geometric sections of the detention basin under short-term, long-term, and rapid drawdown conditions. We request that the client provide all applicable cross sections and any other data relevant to the slope stability analysis.

EXHIBIT C - COMPENSATION AND PROJECT SCHEDULE

Compensation

Based upon our understanding of the site, the project as summarized in **Exhibit A** and our planned scope of services outlined in **Exhibit B**, our fee is shown in the following table:

Task	Cost
Field Exploration	\$22,700
Clearing of Pathways	\$4,600
Laboratory Testing	\$7,000
Geotechnical Consulting and Reporting	\$4,700
Total Estimate	\$39,000

Unless instructed otherwise, we will submit our invoice(s) to the address shown at the beginning of this proposal. If conditions are encountered that require scope of work revisions and/or result in higher fees, we will contact you for approval prior to initiating these services. A supplemental proposal stating the modified scope of services as well as its effect on our fee will be prepared. We will not proceed without your authorization, as evidenced by your signature on the Agreement for Services form.

Project Schedule

We developed a schedule to complete the scope of services based upon our existing availability and understanding of your project schedule. This schedule does not account for any delays in field exploration beyond our control, such as weather conditions, permit delays, or lack of permission to access the boring locations. If such delays are encountered during our field program, this could delay submittal of preliminary and final reports. In the event the schedule provided is inconsistent with your needs, please contact us so we may consider alternatives.



GeoReport Stage	Posting Date from Notice to Proceed ^{1, 2}
Project Planning	5 to 7 working days
Site Characterization	15 to 25 working days
Geotechnical Engineering and Reporting	25 to 40 working days
Responding to comments on Draft Geotechnical Engineering Report	2 weeks after Fort Bend County review

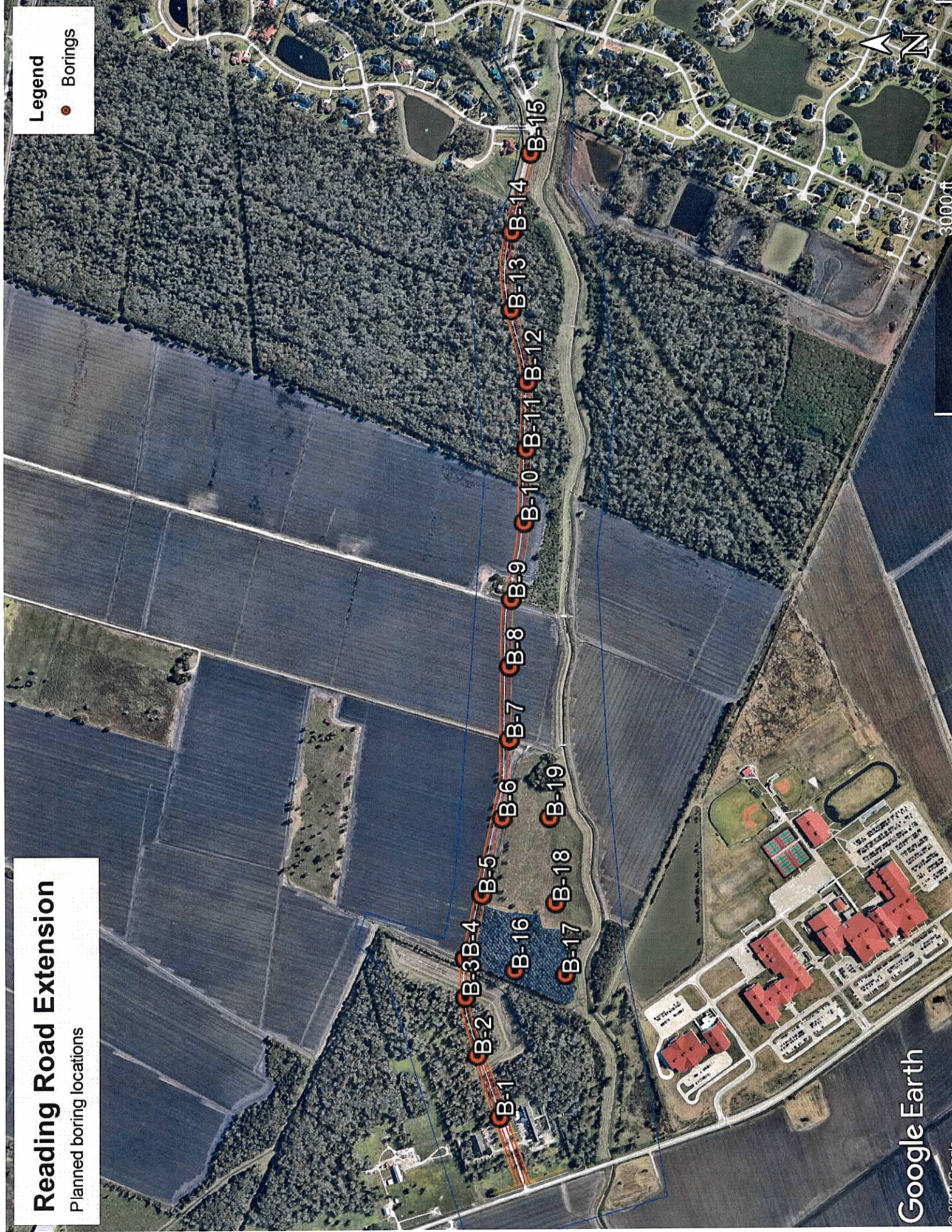
1. Upon receipt of your notice to proceed we will activate the schedule component of our **GeoReport** website with specific, anticipated calendar dates for the three delivery points noted above as well as other pertinent events such as field exploration crews on-site, etc.
2. We will maintain a current calendar of activities within our **GeoReport** website. In the event of a need to modify the schedule, the schedule will be updated to maintain a current awareness of our plans for delivery.

Reading Road Extension

Planned boring locations

Legend

- Borings





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PROPOSAL FOR LAND SURVEYING SERVICES

July 2, 2018

S&B Infrastructure, Ltd.
3535 Sage Road Houston, Texas
77056

Attn: Nelson B. Nuckles (Project Manager)
Ref: Project Name: Reading Road Surveying

Dear Mr. Nuckles:

MBCO Engineering, LLC. (MBCO) is pleased to submit this proposal for professional surveying services on the referenced project in accordance Ft. Bend County Design Standards. MBCO will provide a supplemental survey to the previous survey of Reading Road from 2016 for client specified locations and establish the Proposed ROW as defined by the alignment provided by S&B with acquisition documents for the length of +/- 7500 linear feet from FM 762 to the Royal Lakes Manor Boulevard and locations of present and future detention ponds, as well as Natural Ground 50 feet south of south top bank of Gapps Slough along project limits.

SCOPE OF BASIC SERVICES

I. BASE MAP/ROW ACQUISITION EXHIBITS/CONTROL

- MBCO will perform boundary research for all the adjacent properties and subdivisions along the project length and update the existing base map of previous 2016 survey. MBCO will find and tie in any additional boundary corners for any new land transactions since the time of the original survey prepared in 2016; and re-establish the existing ROW of FM762 & Royal Lakes Manor Boulevard as previously surveyed; establish the existing ROW of the new design area along Royal Crest Lane, and Royal Lakes Boulevard.
- MBCO will prepare proposed parcel acquisition exhibits along the Proposed ROW to include parcel maps, metes and bounds descriptions of the acquisition tracts. We understand there are eleven (11) proposed parcel acquisitions. We will re-verify the boundary of the parcels in which acquisition is being acquired as per the minimum standards of the Texas Board of Professional Land Surveying.
- MBCO will recover primary control from previous survey from 2016. Primary control points will be tied to TXDOT and correction formula for FM 762 alignment. We will prepare signed and sealed Survey Control maps.



II. DESIGN SURVEY

- MBCO will analyze the present-day condition on the ground of the project area and **visually verify** if the previous 2016 survey is applicable for this design survey. This does not mean that the surveyor will certify to the accuracy of the previous 2016 survey.
- MBCO will extend the topography to 150 feet north of the new proposed centerline.
- MBCO will complete the topography of the entire Leaman Property adjacent to the project area.
- MBCO will provide cross sections for 200 feet along all side streets and ditches perpendicular to the proposed alignment, 50 feet south of Gapps Slough southerly top bank, densify the data within wooded areas, locate the existing septic tank at the present house on Nelson Lane within the project limits.
- MBCO will extend the topography of the drainage channel to 100 feet past the first bend (elbow) to the north of the project limits.
- MBCO will make a call to the Texas one-call system and request utility locates will be notified and pipeline companies will be contacted to mark their pipeline (if any) and field tie visible surface features in evidence of possible underground utilities that have been marked by the Texas one-call (811). Our field crew will also complete inverts on all sanitary and storm sewer manholes, and storm sewer outfalls that are within the project area.
- MBCO will locate pipeline markers or other evidence of pipeline along the limits of the project.
- MBCO will locate building structures within 200' of centerline of proposed alignment.
- MBCO will also locate geotechnical bore holes in one mobilization.

III. ROW STAKING

- MBCO will stake the centerline of the Proposed ROW, both sides of the Proposed ROW line and the 20-foot drainage easement along the north side of the Proposed ROW at 500-foot interval stations or at PC's and PT's, based on the final alignment to be provided by S&B. MBCO will stake this alignment once in its' entirety and will not break it into sections. This will be only for land owner approval and **NOT FOR CONSTRUCTION PURPOSES.**
- Any additional request to re-stake the Proposed ROW will be covered under a separate contract.
- MBCO will monument the acquisition parcels at the time the metes and bounds descriptions are signed and sealed. This monumenting will be done one time.

DELIVERABLES:

MBCO will submit a sealed survey control map; AutoCAD Civil 3D 2016 format with x, y, and z coordinates in a CSV file; Microstation file with complete topo meeting TXDOT standards; a ROW Map; Metes & Bounds descriptions with corresponding Category 1A surveys for the maximum of 11 Proposed Acquisition parcels; a .CSV file of the geotechnical bore holes.



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TO BE PROVIDED BY THE DESIGN ENGINEER AND/OR COUNTY:

- A Microstation file with the Proposed ROW limits.
- A map and estimated lat/long w/ descriptions of the bore hole location which will be marked by the Geotechnical Engineer by a wood hub flush with the ground and a wood lathe labeling the location within 48 hours of drill completion.
- Fort Bend County will provide Record Drawings for the Shouse Family, Leaman Property, and Royal Lakes Estates.

ITEMS TO BE SPECIFICALLY EXCLUDED:

- We will not provide SUE services
- We will not include any As-Built plans of utilities linework in our files
- We will not locate any trees (unless we deem it to be a Heritage tree (30" or larger)
- **MBCO will not certify to the present-day accuracy of the data collected in the previous survey from 2016. The RPLS for this project will only visually verify that the previous survey from 2016 is applicable for present day design.**

SCHEDULE:

MBCO will complete the Design Survey and Base Map services listed above within sixty (60) calendar days when we receive the signed contract. Proposed Right-of-Way will be staked at the time of request by the Design Engineer and/or County.

COMPENSATION:

The estimated cost for the above described professional services shall be a **Lump Sum** fee and will be billed by the 5th day of each month based on a percent complete of the total project and will not be based solely on deliverables.

Task I \$18,520.00

Task II \$9,417.50

Task III \$9,927.50

Total Fee of all Tasks \$37,865.00

This cost proposal is valid for 30 days and may be re-evaluated after such time to account for any changes with the project scope, environmental factors and/or the general rate schedule.

EXHIBIT D Fee Schedule

MBCO ENGINEERING, LLC
4-17-2018 Reading Road for S&B

TASK DESCRIPTION	SURVEY PROJECT MANAGER	RPLS	SURVEY TECHNICIAN	SURVEY TECHNICIAN - GPS, SIT	2-MAN SURVEY CREW	3-MAN SURVEY CREW	ABSTRACTOR	ADMIN/CLERICAL	TOTAL HRS	TOTAL LABOR HRS. & COSTS
Base Map										
Base Map Update	1	2	8	4		12			27	\$ 3,865.00
Proposed Right-Of-Way Parcel Exhibits (11 Tracts)	12	24	24	16		16		2	94	\$ 12,360.00
Re-Establish Horizontal & Vertical Control	0.5	1	1	1		6			9.5	\$ 1,477.50
Prepare Survey Control Maps	0.5	2	5	2					9.5	\$ 1,017.50
									0	\$ -
									0	\$ -
HOURS SUB-TOTALS	14	29	38	23	0	34	0	2	140	\$ 140
CONTRACT RATE PER HOUR	\$ 185.00	\$ 150.00	\$ 85.00	\$ 100.00	\$ 135.00	\$ 175.00	\$ 60.00	\$ 50.00		
TOTAL LABOR COSTS	\$2,590.00	\$4,350.00	\$3,230.00	\$2,300.00	\$0.00	\$5,950.00	\$0.00	\$100.00		\$ 18,520.00
% DISTRIBUTION OF STAFF HOURS	10.0%	20.7%	27.1%	16.4%	0.0%	24.3%	0.0%	1.4%		
SUBTOTAL Task	\$2,590.00	\$4,350.00	\$3,230.00	\$2,300.00	\$0.00	\$5,950.00	\$0.00	\$100.00		\$ 18,520.00
DESIGN SURVEYING										
Visual Verification of 2016 Survey		10							10	\$ 1,500.00
Supplemental Topo (Learnan Property, South of Gappes Slough.)	2	3	15	2		24			46	\$ 6,465.00
Geotechnical Bore Hole Locations (North of Proposed Alignment, Tree areas)	0.5	1		1	8				10.5	\$ 1,422.50
									0	\$ -
									0	\$ -
									0	\$ -
									0	\$ -
									0	\$ -
									0	\$ -
HOURS SUB-TOTALS	2.5	14	15	3	8	24	0	0	66.5	\$ 66.5
CONTRACT RATE PER HOUR	\$ 185.00	\$ 150.00	\$ 85.00	\$ 100.00	\$ 135.00	\$ 175.00	\$ 60.00	\$ 50.00		
TOTAL LABOR COSTS	\$462.50	\$2,100.00	\$1,275.00	\$300.00	\$1,080.00	\$4,200.00	\$0.00	\$0.00		\$ 9,417.50
% DISTRIBUTION OF STAFF HOURS	3.8%	21.1%	22.6%	4.5%	12.0%	36.1%	0.0%	0.0%		
SUBTOTAL Task	\$462.50	\$2,100.00	\$1,275.00	\$300.00	\$1,080.00	\$4,200.00	\$0.00	\$0.00		\$ 9,417.50
ROW Staking										
Proposed ROW Staking	0.5	1		4		24			29.5	\$ 4,842.50
Acquisition Tract Monumentation	1	2		4		24			31	\$ 5,085.00
									0	\$ -
									0	\$ -
									0	\$ -
									0	\$ -
HOURS SUB-TOTALS	1.5	3	0	8	0	48	0	0	60.5	\$ 60.5
CONTRACT RATE PER HOUR	\$ 185.00	\$ 150.00	\$ 85.00	\$ 100.00	\$ 135.00	\$ 175.00	\$ 60.00	\$ 50.00		
TOTAL LABOR COSTS	\$277.50	\$450.00	\$0.00	\$800.00	\$0.00	\$8,400.00	\$0.00	\$0.00		\$ 9,927.50
% DISTRIBUTION OF STAFF HOURS	1.1%	2.1%	0.0%	5.7%	0.0%	34.3%	0.0%	0.0%		
SUBTOTAL Task	\$277.50	\$450.00	\$0.00	\$800.00	\$0.00	\$8,400.00	\$0.00	\$0.00		\$ 9,927.50
Direct Cost										

EXHIBIT D Fee Schedule

MBCO ENGINEERING, LLC
4-17-2018 Reading Road for S&B

TASK DESCRIPTION	SURVEY PROJECT MANAGER	RPLS	SURVEY TECHNICIAN	SURVEY TECHNICIAN - GPS, SIT	2-MAN SURVEY CREW	3-Man SURVEY CREW	ABSTRACTOR	ADMIN/ CLERICAL	TOTAL HRS	TOTAL LABOR HRS & COSTS
Task Description	Number of Days	Rate	Number of People/Or Rooms	Per Item Rate	Number of Items	Number of Items	Number of Items			Total Cost
Property Record Fees				\$25.00						\$ -
Mileage				\$0.56						\$ -
Certified Letters (includes 2 attempts)				\$7.50						\$ -
Direct Cost Totals										\$ -
Project Totals										\$ 37,865.00