

## **ENGINEERING SERVICES AGREEMENT**

THIS AGREEMENT is made and entered into by and between the Fort Bend Grand Parkway Toll Road Authority, a transportation corporation organized and operating under the laws of the State of Texas, hereinafter called the “FBGPTRA” and Terracon Consultants, Inc., hereinafter called “Engineer.”

### **WITNESSETH**

WHEREAS, the FBGPTRA proposes to obtain geotechnical and soil information along the Fort Bend Grand Parkway Toll Road, Segment D, at the Judge Jodie Stavinoha Bridge over the Brazos River, in Fort Bend County, Texas, (the “Project”);

WHEREAS, the FBGPTRA desires to enter into an agreement with Engineer for the performance of services during the Project, that are within the scope of services in Attachment A (“Scope of Services”);

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth below, the parties agree as follows:

### **AGREEMENT**

#### **1. General**

The Engineer shall render professional services to FBGPTRA related to the Project as defined in the Scope of Services in Attachment A.

The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of Engineer’s profession practicing under similar conditions at the same time and in the same locality.

#### **2. Compensation and Payment**

- a. The Maximum Compensation under this Agreement is \$169,483.00. The amount paid under this Agreement may not exceed the Maximum Compensation without an approved supplemental agreement.

Compensation for the performance of services within the Scope of Services described in Attachment A will be paid as a lump sum amount not to exceed \$169,483.00, as shown in Attachment B.

The Engineer shall furnish satisfactory documentation of such work (e.g. timesheets, billing rates, classifications, invoices, etc.) as may be required by FBGPTRA.

- b. All performance of the Scope of Services and any services outside the Scope of Services (“Additional Services”), including changes in the contractual scope of

work and revision of work satisfactorily performed, will be performed only when approved in advance and authorized by the FBGPTRA, and Additional Services will be reimbursed based on the billing rates in effect at that time, to the extent that such labor costs and subcontracts are reasonable and necessary for the performance of such services. Out-of-pocket expense costs may be reimbursed only when approved in advance and authorized by the FBGPTRA. Payment will be made on the basis of project progress to be billed monthly and, for Additional Services, on the basis of time and expense records, and, in all cases, in accordance with those payment procedures set forth in subsection d. below. Billing rates will be inclusive of all direct labor, fringe benefits, general overhead, and profit.

- c. Where subcontractors are employed by the Engineer to perform pre-approved and pre-authorized Additional Services, the Engineer will be reimbursed for subcontractors' actual salaries and hourly rates, including overtime rates. Reimbursement to the subcontractor for non-salary costs incurred by subcontractor will be on the same basis as if the cost was incurred by the Engineer. For subcontractors employed for the convenience of the FBGPTRA, the Engineer will be paid a subcontract administrative fee equal to ten percent (10%) of all subcontractor invoiced amounts.
- d. It is understood and agreed that monthly payments will be made to the Engineer by the FBGPTRA based on the following procedures: On or about the fifteenth day of each month during the performance of services hereunder and on or about the fifteenth day of the month following completion of all services hereunder, the Engineer shall submit to the FBGPTRA two (2) copies of invoices showing the amounts due for services performed during the previous month, set forth separately for work under this Agreement and for any Additional Services (accompanied by supporting certified time and expense records of such charges in a form acceptable to the FBGPTRA). It is specifically understood that any requests for travel reimbursements shall comply with those procedures for travel reimbursement to Fort Bend County (the "County") employees established by the Fort Bend County Auditor (the "Auditor"). The FBGPTRA shall review such invoices and approve them within 30 calendar days with such modifications as are consistent with this Agreement, and forward same to the Auditor. The County shall pay each such invoice as approved by the FBGPTRA within thirty (30) calendar days after the FBGPTRA's approval of same.

### 3. Time of Performance

It is understood and agreed that the time for performance of the Engineer's services under this Agreement shall begin with receipt of the Notice to Proceed. The Engineer will maintain the delivery schedule to be provided by the FBGPTRA.

This Agreement will terminate upon the Engineer's completion of the Scope of Services to the satisfaction of the FBGPTRA.

### 4. The FBGPTRA's Option to Terminate

- a. The FBGPTRA has the right to terminate this Agreement at its sole option at any time, with or without cause, by providing 30 days written notice of such intentions to terminate and by stating in said notice the "Termination Date" which shall be less than 30 days later than the actual receipt of such written notice by the Engineer. Upon such termination, the FBGPTRA shall compensate the Engineer in accordance with Section 2, above, for those services which were provided under this Agreement prior to its termination and which have not been previously invoiced to the FBGPTRA. The Engineer's final invoice for said services will be presented to and paid by the FBGPTRA in the same manner set forth in Section 2(d), above.
- b. Termination of this Agreement and payment as described in subsection (a) of this section shall extinguish all rights, duties, obligations, and liabilities of the FBGPTRA and the Engineer under this Agreement, and this Agreement shall be of no further force and effect, provided, however, such termination shall not act to release the Engineer from liability for any previous default either under this Agreement or under any standard of conduct set by common law or statute. The obligations in Sections 5, 6, and 14 of this Agreement shall survive the termination of this Agreement.
- c. If the FBGPTRA terminates this Agreement as provided in this section, no fees of any type, other than fees due and payable at the Termination Date, shall thereafter be paid to the Engineer.
- d. The FBGPTRA's rights and options to terminate this Agreement, as provided in any provision of this Agreement shall be in addition to, and not in lieu of, any and all rights, actions, and privileges otherwise available under law or equity to the FBGPTRA by virtue of this Agreement or otherwise. Failure of the FBGPTRA to exercise any of its said rights, actions, options, or privileges to terminate this Agreement as provided in any provision of this Agreement shall not be deemed a waiver of any rights, actions, or privileges otherwise available under the law or equity with respect to any continuing or subsequent breaches of this Agreement or of any other standard of conduct set by common law or statute.
- e. Copies of all completed and partially completed documents prepared under this Agreement shall be delivered to the FBGPTRA within 30 days of the Termination Date or upon Engineer's receipt of fees due and payable at the Termination Date, whichever is sooner, when and if this Agreement is terminated.

5. Inspection of the Engineer's Books and Records

Upon written notice (including email), the Engineer will permit the FBGPTRA, or any duly authorized agent of the FBGPTRA, to inspect and examine the books and records of the Engineer for the purpose of verifying the amount of work performed on the Project at reasonable times during normal business hours. FBGPTRA's right to inspect survives the termination of this Agreement for a period of four years.

6. Ownership and Reuse of Documents

Upon payment in full for undisputed amounts of Engineer's services, all documents, including original drawings, estimates, specifications, field notes, and data created, produced, developed or prepared by Engineer or its approved outside advisory or support consultants (collectively, the "Documents") shall be the property of the FBGPTRA, subject to all of the following terms and conditions; provided, however, FBGPTRA shall not own and shall have no right to receive any documents not deemed "final" by the Engineer until completion or termination of this Agreement, as applicable. Engineer will deliver the Documents to FBGPTRA within 30 days of the completion or termination of this Agreement and may retain a set of reproducible record copies of the Documents, provided that the Engineer has received full compensation due pursuant to the terms of this Agreement. It is mutually agreed that FBGPTRA will use the Documents solely in connection with the Project and for no other purposes, except with the express written consent of the Engineer, which consent will not be unreasonably withheld. Any use of the Documents without the express written consent of the Engineer will be at FBGPTRA's sole risk and without liability or legal exposure to Engineer.

FBGPTRA shall also be the owner of all intellectual property rights of the services rendered hereunder, including all rights of copyright therein. It is the intention of Engineer and FBGPTRA that the services provided are a "work for hire" as the term is used in the federal Copyright Act. Moreover, Engineer hereby agrees to assign, and by these presents, does assign to FBGPTRA, all of Engineer's worldwide right, title, and interest in and to such work product and all rights of copyright therein.

Engineer agrees that all trademarks, trade names, service marks, logos, or copyrighted materials of FBGPTRA that Engineer is permitted to use in connection with the services will not be used without FBGPTRA's consent and shall remain the sole and exclusive properties of FBGPTRA, and this Agreement does not confer upon Engineer any right or interest therein or in the use thereof.

7. Personnel, Equipment, and Material

- a. The Engineer represents that it presently has, or is able to obtain, adequate qualified personnel in its employment for the timely performance of the Scope of Services required under this Agreement and that the Engineer shall furnish and maintain, at its own expense, adequate and sufficient personnel and equipment, in the opinion of the FBGPTRA, to perform the Scope of Services when and as required and without delays. It is understood that the FBGPTRA will approve assignment and release of all key Engineer personnel and that the Engineer shall submit written notification of all key Engineer personnel changes for the FBGPTRA's approval prior to the implementation of such changes. For the purpose of this Agreement, key Engineer personnel are defined as: Project Manager. Services described in this Agreement shall be performed under the direction of an engineer licensed to practice professional engineering in the State of Texas.

- b. All employees of the Engineer shall have such knowledge and experience as will enable them to perform the duties assigned to them. Any employee of the Engineer who, in the opinion of the FBGPTRA, is incompetent, or, by his conduct, becomes detrimental to the Project, shall, upon request of the FBGPTRA, immediately be removed from association with the Project.
- c. Except as otherwise specified, the Engineer shall furnish all equipment, transportation, supplies, and materials required for its operation under this Agreement.

8. Items to be furnished to Engineer by the FBGPTRA

As applicable, the following items will be supplied to the Engineer:

- a. Copies of preliminary studies by others.
- b. Assistance in coordination with all utility companies.
- c. Assistance in coordination with all public and governmental entities.

9. Subletting

The Engineer shall not sublet, assign, or transfer any part of its rights or obligations in this Agreement without the prior written approval of the FBGPTRA. Responsibility to the FBGPTRA for sublet work shall remain with the Engineer.

10. Conference

At the request of the FBGPTRA, the Engineer shall provide appropriate personnel for conferences at its offices, or attend conferences at the various offices of the FBGPTRA, or at the site of the Project, and shall permit inspections of its offices by the FBGPTRA, or others when requested by the FBGPTRA.

11. Appearance as Witness

If requested by the FBGPTRA, or on its behalf, the Engineer shall prepare such engineering exhibits and plans as may be requested for all hearings and trials related to the Project and, further, it shall prepare for and appear at conferences at the office of the FBGPTRA and shall furnish competent expert engineering witnesses to provide such oral testimony and to introduce such demonstrative evidence as may be needed throughout all trials and hearings with reference to any litigation relating to the Project. Trial preparation and appearance by the Engineer in courts regarding litigation matters are Additional Services and compensation will be paid in accordance with Section 2(b).

12. Compliance with Laws

The Engineer shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or

tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required, the Engineer shall furnish the FBGPTRA with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees above specified.

13. Insurance

The Engineer shall obtain and maintain, throughout the term of the Agreement, insurance of the types and in the minimum amounts set forth in Attachment C.

14. Indemnification

With respect to claims brought by third parties against either Engineer or the FBGPTRA relating to the property or facilities with respect to which this Agreement pertains, Engineer and the FBGPTRA agree as follows:

- a. **ENGINEER WILL INDEMNIFY AND HOLD HARMLESS THE FBGPTRA, ITS DIRECTORS, OFFICERS, AND EMPLOYEES AGAINST ANY CLAIMS, DEMANDS OR CAUSES OF ACTION; AND COSTS, LOSSES, LIABILITIES, EXPENSES AND JUDGMENTS INCURRED IN CONNECTION THEREWITH, INCLUDING REASONABLE ATTORNEY'S FEES AND COURT COSTS, BROUGHT BY ANY OF ENGINEER'S EMPLOYEES OR REPRESENTATIVES, OR BY ANY OTHER THIRD PARTY, BASED UPON, IN CONNECTION WITH, RESULTING FROM OR ARISING OUT OF THE NEGLIGENT ACTS, ERRORS OR OMISSIONS OF ENGINEER; HOWEVER, ENGINEER'S CONTRACTUAL OBLIGATION OF INDEMNIFICATION SHALL NOT EXTEND TO THE NEGLIGENCE OR OTHER FAULT OF THE FBGPTRA OR STRICT LIABILITY IMPOSED UPON THE FBGPTRA AS A MATTER OF LAW (INCLUDING STRICT LIABILITY IMPOSED UPON THE FBGPTRA AS A RESULT OF THE CONDITION OF THE PROPERTY OR FACILITIES WITH RESPECT TO WHICH THIS AGREEMENT PERTAINS).**
- b. In the event that both the FBGPTRA and Engineer are adjudicated negligent or otherwise at fault or strictly liable without fault with respect to damage or injuries sustained by the claimant, each shall be responsible for its own costs of litigation and pro rata share of damages as determined by the proceedings.

It is a condition precedent to the indemnitor's contractual obligation of indemnification under this Agreement that the party seeking indemnity shall provide written notice of a third party claim, demand, or cause of action within 30 days after such third party claim, demand, or cause of action is received by the party seeking indemnity. It is a further condition precedent to the indemnitor's contractual obligation of indemnification under this Agreement that the indemnitor shall thereafter have the right to participate in the investigation, defense, and resolution of such third party claim.

15. Dispute Resolution

Except as expressly provided in Section 4. Option to Terminate, if a dispute arises out of, or relates to, the breach thereof, and if the dispute cannot be settled through negotiation, then the FBGPTRA and the Engineer agree to submit the dispute to mediation. In the event the FBGPTRA or the Engineer desires to mediate any dispute, that party shall notify the other party in writing of the dispute desired to be mediated. If the parties are unable to resolve their differences within 10 days of the receipt of such notice, such dispute shall be submitted for mediation in accordance with the procedures and rules of the American Arbitration Association (or any successor organization) then in effect. The deadline for submitting the dispute to mediation can be changed if the parties mutually agree in writing to extend the time between receipt of notice and submission to mediation. The expenses of the mediator shall be shared 50 percent by the FBGPTRA and 50 percent by the Engineer. This requirement to seek mediation shall be a condition required before filing an action at law or in equity.

16. Delivery of Notices, Etc.

- a. All written notices, demands, and other papers or documents to be delivered to the FBGPTRA under this Agreement, shall be delivered to the Fort Bend Grand Parkway Toll Road Authority, P.O. Box 1307, Sugar Land, Texas 77406, Attention: Mike Stone, or at such other place or places as it may from time to time designate by written notice delivered to the Engineer. For purposes of notice under this Agreement, a copy of any notice or communication hereunder shall also be forwarded to the following address: Fort Bend County Clerk, 301 Jackson Street, Richmond, Texas 77469, Attention: County Judge.
- b. All written notices, demands, and other papers or documents to be delivered to the Engineer under this Agreement shall be delivered to Terracon Consultants, Inc., 11555 Clay Road, Suite 100, Houston, Texas, 77043, Attention: Todd Swoboda, PE, or such other place or places as the Engineer may designate by written notice delivered to the FBGPTRA.

17. Reports of Accidents, Etc.

Within 24 hours after the occurrence of any accident or other event which results in, or might result in, injury to the person or property of any third person (other than an employee of the Engineer), whether or not it results from or involves any action or failure to act by the Engineer or any employee or agent of the Engineer and which arises in any manner from the performance of this Agreement, the Engineer shall send a written report of such accident or other event to the FBGPTRA, setting forth a full and concise statement of the facts pertaining thereto. The Engineer shall also immediately send the FBGPTRA a copy of any summons, subpoena, notice, other documents served upon the Engineer, its agents, employees, or representatives, or received by it or them, in connection with any matter before any court arising in any manner from the Engineer's performance of work under this Agreement.

18. The FBGPTRA's Acts

Anything to be done under this Agreement by the FBGPTRA may be done by such persons, corporations, or firms as the FBGPTRA may designate.

19. Limitations

Notwithstanding anything herein to the contrary, all covenants and obligations of the FBGPTRA under this Agreement shall be deemed to be valid covenants and obligations only to extent authorized by the Act creating the FBGPTRA and permitted by the laws and the Constitution of the State of Texas. This Agreement shall be governed by the laws of the State of Texas, and no officer, director, or employee of the FBGPTRA shall have any personal obligation hereunder.

20. Captions Not a Part Hereof

The captions of subtitle of the several sections and divisions of this Agreement constitute no part of the content hereof, but are only labels to assist in locating and reading the provisions hereof.

21. Controlling Law, Venue

This Agreement shall be governed and construed in accordance with the laws of the State of Texas. The parties hereto acknowledge that venue is proper in Fort Bend County, Texas, for all disputes arising hereunder and waive the right to sue or be sued elsewhere.

Contractor certifies and agrees that it (i) does not, nor will not, so long as the Agreement remains in effect, boycott Israel, as such term is defined in Chapter 808, Texas Government Code, and (ii) is not identified on a list prepared and maintained under Sections 806.051, 807.051, or 2252.153, Texas Government Code.

22. Successors and Assigns

The FBGPTRA and the Engineer bind themselves and their successors, executors, administrators, and assigns to the other party of this Agreement and to the successors, executors, administrators, and assigns of the other party, in respect to all covenants of this Agreement.

23. Appendices

The Appendices attached to this Agreement, which consists of:

Attachment A	Scope of Services
Attachment B	Compensation for Scope of Services
Attachment C	Insurance Requirements



24. Statutory Terms Applicable To State Political Subdivisions

- a. As required by Chapter 2270, Government Code, Engineer hereby verifies that it does not boycott Israel and will not boycott Israel through the term of this Agreement. For purposes of this verification, “boycott Israel” means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.
- b. Prior to execution of this Agreement by FBGPTRA, the Engineer will be required to submit a Texas Ethics Commission Form 1295. Please see this website for details related to this disclosure:  
[https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm)
- c. Engineer certifies and agrees that it is not identified on a list prepared and maintained under Sections 806.051, 807.051 or 2252.153, Texas Government Code.


In accordance with Section 176.0065, Texas Local Government Code, a list of local government officers of FBGPTRA may be obtained by contacting the FBGPTRA’s records administrator at (281) 500-6050.

IN WITNESS WHEREOF, the parties hereto have signed or have caused their respective names to be signed to multiple counterparts to be effective on the 15<sup>th</sup> day of April, 2020.

FORT BEND GRAND PARKWAY TOLL ROAD  
AUTHORITY, a Texas local government  
corporation

By:   
William D. Kee, III (Apr 19, 2020)

TERRACON CONSULTANTS, INC.,  
Engineer

By:   
Name: Patrick Beecher, P.E.  
Title: Principal

**EFFECTIVE DATE**

THIS AGREEMENT IS EFFECTIVE ON THE DATE IT IS APPROVED BY THE FORT BEND COUNTY COMMISSIONERS COURT, AND IF NOT SO APPROVED SHALL BE NULL AND VOID.

DATE OF COMMISSIONERS COURT APPROVAL: \_\_\_\_\_

AGENDA ITEM NO.: \_\_\_\_\_

## ATTACHMENT A SCOPE OF SERVICES

April 1, 2020

Fort Bend Grand Parkway Toll Road Authority  
c/o BGE, Inc.  
10777 Westheimer Road, Suite 400  
Houston, Texas 77042

Attn: Mr. Will Bohlen, P.E.  
Structural Practice Lead

Re: Cost Estimate for Geotechnical Engineering Services  
SH99 at Brazos River Bridge Foundations  
Fort Bend County, Texas  
Terracon Document No. P92195596.rev2

Dear Mr. Bohlen:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to provide geotechnical engineering services for the above referenced project. This document outlines our understanding of the scope of services to be performed by Terracon for this project and provides an estimate of the cost of our services.

### 1.0 PROJECT INFORMATION

Item	Description
Location	The site lies along the Brazos River at its intersection with State Highway 99 in Fort Bend County, Texas.
Existing conditions	Flooding in recent years has accelerated erosion of the northern bank of the Brazos River and scour near the foundations supporting the State Highway 99 bridge crossing the Brazos River.

We understand that this project is not required to be in accordance with TxDOT guidelines. If our understanding of the project is not accurate, please let us know so that we may adjust our scope of services, if necessary.

### 2.0 SCOPE OF SERVICES



Terracon Consultants, Inc. 11555 Clay Road, Suite 100 Houston, TX 77043  
P [713] 690 8989 F [713] 690 8787 [terracon.com](http://terracon.com)



A brief summary of the services to be provided by Terracon is provided in the following paragraphs.

Ground Penetrating Radar (GPR)

Terracon will use a GPR system consisting of a cart mounted 1600 MHz antenna made by Geophysical Survey Systems, Inc. (GSSI) to perform an upper profile geophysical survey of the concrete bridge at Boring B-1 in an attempt to measure the thickness of the bridge deck and locate existing reinforcing steel in the concrete bridge deck so that cores made through the bridge deck can be located to avoid the reinforcing steel. In general, field data collection follows as referenced in ASTM D 6432, and more information on both the general method and collection procedures can be found in the standard. A free-scanning technique will be used to scan the area. This technique involves analyzing the data in the field so that results can be supplied in real-time, without using software to post-process.

The geophysical survey is subject to the following limitations:

- Expected GPR penetration depth for the 1600 MHz antenna is 12 to 16 inches but is unknown until fieldwork commences.
- If present, reinforcing steel in the deck is no closer than about four inches on-center. Close spacing of reinforcement can limit penetration of the GPR signal.
- The scanned surfaces are expected to be clean and free of debris. **Any obstructed areas will not be scanned.**

The geophysical survey data will be collected as follows:

- GPR will be used to identify the steel reinforcement within the concrete bridge deck.
- Data will be collected only where accessible and instructed by the client.

**General Limitations** - It should be noted that GPR methods rely on instrument signals to indicate physical conditions in the field. Signal information can be affected by on-site conditions beyond the control of the operator, such as, but not limited to, cultural features (e.g., fences, light poles, power lines, buried utilities, buried metallic objects, building foundations), soil types, soil moisture, and/or groundwater table depth. Interpretation of those signals is based on a combination of known factors combined with the experience of the operator and the geophysical scientist evaluating the results. These tests cannot be performed during or within one day of a major rain event.

The geophysical results provide a level of confidence but should not be considered absolute. Thus, Terracon cannot be responsible for the interpretation of unverified geophysical results.

Field Program. As requested, the planned field exploration program consists of the following. An anticipated exploration plan is presented as an attachment to this document.

Location	Boring #	Planned Boring Depth <sup>1</sup> (feet)	Drilling Equipment <sup>2</sup>
Bent 8, Northbound	B-1	175	Truck-Mounted Drilling Rig <sup>3</sup>

Location	Boring #	Planned Boring Depth <sup>1</sup> (feet)	Drilling Equipment <sup>2</sup>
Bent 7, Northbound	B-2	30	Track-Mounted Drilling Rig
Bent 7, Southbound	B-3	85	Track-Mounted Drilling Rig
Bent 6, Northbound	B-4	80	Track-Mounted Drilling Rig
Bent 6, Southbound	B-5	30	Track-Mounted Drilling Rig
Anchor Wall, Northbound	B-6	65	Track-Mounted Drilling Rig
Anchor Wall, Northbound	B-7	70	Track-Mounted Drilling Rig
Anchor Wall, Southbound	B-8	65	Track-Mounted Drilling Rig
<b>Total</b>	<b>8</b>	<b>600</b>	

1. Below mudline or existing grade at the time of our field program.
2. Drilling equipment to be used is assumed and based on discussions with BGE.
3. Boring B-1 is planned to be drilled by coring through the existing bridge deck, placing casing down to the mudline, and drilling the boring from the bridge deck using truck mounted drilling equipment.

The borings will be located in the field by use of a hand-held Global Positioning System (GPS) unit with an accuracy of approximately ± 25 feet. The layout of the boring locations will be approximate. Boring depths will be measured from below the mudline or existing grade. Terracon will provide the latitude and longitude of the borings on the Boring Logs based on information obtained from the hand-held GPS unit.

Boring B-1 is planned to be drilled by coring through the existing bridge deck, placing casing down to the mudline, and drilling the boring from the bridge deck using truck mounted drilling equipment. Based on discussions with BGE, we understand that the existing bridge deck is approximately 7¾ inches thick at the planned core location. As mentioned above, GPR will be used at this location to evaluate concrete thickness and location of reinforcing steel. Our core is planned to be 8 inches in diameter through the first five to six inches of the bridge deck, then 6 inches through the remainder of the deck to create a lip that will facilitate patching of the core hole. Upon completion of our boring, we plan to place an approximately 8-inch diameter steel plate into the core hole and on the top of the lip, then patch with high-early strength grout until level with the top of the existing deck. During drilling of Boring B-1, we plan to use a boat in the water to help secure the casing from the top of the bridge to the bottom of the river. Additionally, we plan to close the outside lane and shoulder of the SH 99 bridge using approved traffic control measures in accordance with TxDOT's Standard TCP 1-5a, which is presented as an attachment to this document.

Borings will be advanced using solid stem continuous flight augers and mud rotary drilling techniques. Samples will be obtained continuously in the upper 10 feet of each boring and at intervals of 5 feet to boring termination. Soil sampling is typically performed using open-tube and/or split-barrel sampling procedures. The split-barrel samplers are driven in accordance with the standard penetration test (SPT). The samples will be placed in appropriate containers, taken

to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we will observe and record groundwater levels during drilling for land-based borings.

Our exploration team will prepare 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 observed 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.

This document assumes that B-1 can be accessed by coring through the existing bridge deck as previously described. Drilling of Boring B-1 will depend on river flow and depth of river. Ideal conditions are when river flow is relatively slow and the water depth is relatively shallow. The remaining borings are assumed to be accessible by ATV-mounted drilling rig based on information provided by BGE. Access to land-based borings along the south bank will depend on the elevation of the Brazos River and may not be possible during periods of higher flow. This document assumes that any right-of-entry permits required will be provided by the client. Additionally, our scope assumes that access to the southern bank will be provided by the client. This document does not include services associated with obtaining right-of-entry permits, clearing, surveying of boring locations, or location of on-site underground utilities. If such services are requested, Terracon should be notified so that we may adjust our scope of services, if necessary.

Terracon will notify Texas811, a free utility location service, prior to our drilling program to help locate public utilities within dedicated public easements. If underground utilities are known to exist on the site, Terracon should be notified so that we may review utility plans to help avoid the existing lines. Terracon cannot be responsible for utilities for which we are unaware or that are improperly located in the field. For anchor wall borings B-6, B-7, and B-8, Terracon request that BGE locate the extents of the anchor wall prior to drilling at these boring locations.

Laboratory Testing. The sample classifications will be reviewed by a geotechnical engineer in the laboratory and a laboratory testing program will be assigned which will be specific to the project requirements and the subsurface conditions observed. The testing program could include, but may not be limited to, moisture contents, unit dry weights, Atterberg Limits, sieve analyses, hydrometer tests, and compressive strength tests.

Geotechnical Engineering Report The results of our field and laboratory programs will be evaluated by a professional geotechnical engineer licensed in the State of Texas. Based on the results of our evaluation, an engineering report will be prepared which details the results of the testing performed and a Boring Location Plan. The report will also provide geotechnical engineering recommendations which will address the following:

- Foundation capacities for driven piles at Bents 6 and 7 based on the current ground elevations;

- Foundation capacities for drilled shafts at Bent 8 based on current ground elevations;
- Foundation capacities for future foundations at Bent 8 to provide additional vertical capacity taking into account future scour up to four deep foundation types (driven pile or drilled shafts);
- Determination of critical scour depth at Bent 8 where additional loss of soil due to scour results in factor of safety of 1.0 for vertical loads;
- Load/deflection curves for vertical loads on existing drilled shafts at Bent 8 based on current ground elevations; and
- LPILE parameters for each boring.

Our scope of services does not include scour or erosion analyses.

Schedule. We estimate that the boring B-1 will take 7 days to complete (including GPR, coring and patching the bridge deck). We estimate that field exploration for the remaining borings will take a total of 8 days to complete. We anticipate completion of our services and submittal of our final report within four weeks after completion of our field services. In situations where information is needed prior to submittal of our report, we can provide verbal information or recommendations for specific project requirements after we have completed our field and laboratory programs.

### **3.0 COMPENSATION**

For the scope of work discussed above, consisting of field exploration, laboratory testing, and a report as outlined in this document, we estimate the following total costs for each task except for drilling Boring B-1.

As previously discussed, boring B-1 is planned to be drilled from the existing SH 99 bridge. If unexpected conditions such as poor weather, debris flow, elevated water flow/velocities, etc. are encountered, our drilling efforts may be delayed beyond the planned 6 days. If B-1 takes longer than 6 days, we estimate an all-inclusive day rate of \$8,900 for each additional day of drilling, which includes the cost for the drill rig and crew, traffic control measures, borehole logging, and coordination. If it becomes evident that these additional efforts will be required, we will confirm with BGE prior to incurring any additional costs beyond those authorized.

Terracon reserves the right to update and/or modify our fee if the assumptions stated in this document are inaccurate or if new information becomes available.

### **4.0 AUTHORIZATION**

Environmental Considerations. In an effort to reduce the potential for cross-contamination of subsurface media and exposure of site workers to contaminants that might be present at the site, Terracon requests that prior to mobilization to the site, the Client inform Terracon of known or suspected environmental conditions at or adjacent to the site. If adverse environmental conditions



are present, additional expenses may be necessary to properly protect site workers and abandon boreholes that penetrate affected groundwater-bearing units. If an environmental assessment has not been conducted at the site, Terracon can submit a scope document for the performance of a Phase I Environmental Site Assessment (ESA).

If Terracon is not informed of potentially adverse environmental conditions prior to the geotechnical services, Terracon will not be responsible for cross-contamination of groundwater aquifers, soil contamination, or any modification to the environmental conditions to the site that may occur during our geotechnical services. The geotechnical scope of services described above is based on our assumption that the site does not pose environmental risks to the personnel conducting the geotechnical exploration services.

Agreement for Services. This project will be performed under a mutually agreed upon client's Agreement for Services which will be signed once the budget estimate is accepted and upon completion of review by our legal department. We will provide you with our comments once our review is completed.

We appreciate the opportunity to provide this scope document and look forward to the opportunity of working with you.

ATTACHMENT B  
COMPENSATION FOR SCOPE OF SERVICES

Highway: SH99 at Brazos River Bridge Foundations  
CSI:  
County: Fort Bend County

Task Descriptions	\$										Admin/Cal	Total Hours	Total Cost
	Project Manager	Quality Manager	Senior Engineer	Project Engineer	Engineer-In-Training	Senior Engineer	Engineer Tech	90.00	75.00	65.00			
<b>5. Geotechnical Borings and Investigations</b>													
Safety Planning and Pre-Task Meetings	1	1	2	2	4	2	2				0	12	\$ 1,792.00
Utility Clearance, GPR for B-1					2	2	10					14	\$ 1,440.00
Coordination for Drilling and Traffic Control					4	2	4					18	\$ 2,280.00
Staking Borings							4					8	\$ 840.00
Logging and Quality Assurance of Field Exploration	1	1	4	4	4	4	4		164			182	\$ 14,872.00
Review Samples, Field Logs, and Assign Laboratory Testing				1	4	8						13	\$ 1,740.00
Review of Laboratory Test Data	1	2	2	2	8							15	\$ 2,008.00
Preparation and Review of Boring Logs, Maps, and Drawings	1	2	4	8	40					2		59	\$ 7,598.00
Axial Foundation Capacities for Driven Piles and/or Drilled Shafts	1		12	16	20					4		49	\$ 7,166.00
Determination of Critical Scour Depth at Bent 8	1		6	4	2							13	\$ 2,126.00
Load/Deflection Curves for Axial Loads on Existing Drilled Shafts at Bent 8	1		4	4	2							9	\$ 1,466.00
Develop LPILE Parameters	1		1	2	4							8	\$ 1,166.00
Draft Geotechnical Report	2	2	6	12	24					4		50	\$ 6,844.00
Final Geotechnical Report	1	1	2	2	4					2		18	\$ 2,462.00
Subtotal Hours:	11	9	44	68	136		24		164	12		468	\$ 53,800.00
Subtotal Labor Cost:	\$ 2,266.00	\$ 1,854.00	\$ 7,920.00	\$ 10,200.00	\$ 16,320.00	\$ 2,160.00	\$ 12,300.00	\$ 780.00				468	\$ 53,800.00
Other Direct Expenses:													\$ 468.00
Unit costs													\$ 97,415.00
2 Additional Days of Boring if needed (not paid if not needed)													\$ 17,800.00
Total Cost FC102:													\$ 169,483.00

Other Direct Expenses

Other Direct Expenses	Unit	Unit Cost	Quantity	Cost
Mileage	mile	\$ 0.65	720	\$ 468.00
			Total	\$ 468.00

## Unit Costs

Highway: SH99 at Brazos River Bridge Foundations

CSI:

County: Fort Bend County

Geotechnical Engineering Services					
Services To Be Provided	Test Code	Unit	Negotiated Rates	Quantity	Cost
<b>Boring B-1 (175 ft), Drilling from bridge structure. Drilling 9 am to 3 pm.</b>					
Mobilization/Demobilization of Drill Rig	N/A	each	\$ 600.00	1	\$ 600.00
Truck Drill Rig Day Rate	N/A	day	\$ 3,000.00	6	\$ 18,000.00
Boat Rental (stabilize and set casing during drilling)	N/A	day	\$ 500.00	6	\$ 3,000.00
Mobilization/Demobilization of Coring Crew	N/A	trip	\$ 195.00	2	\$ 390.00
8" diameter core through bridge deck (up to 8 inches thick)	N/A	each	\$ 845.00	1	\$ 845.00
Patching core in bridge deck	N/A	each	\$ 910.00	1	\$ 910.00
Traffic Control Services, Lane/Shoulder Closure with Arrow Boards and TMA (Large)	N/A	day	\$ 4,200.00	7	\$ 29,400.00
Stand By of Crew	N/A	hrs	\$ 225.00	8	\$ 1,800.00
GPR Equipment Day Rate	ASTM D 6432	day	\$ 1,280.00	1	\$ 1,280.00
<b>Borings B-2 through B-5 (225 ft total), Drilling on south bank using ATV. Unrestricted drilling hours.</b>					
Mobilization/Demobilization of Drill Rig	N/A	each	\$ 600.00	1	\$ 600.00
Soil Boring without TCP, 0 to 50 feet	N/A	LF	\$ 37.00	180	\$ 6,660.00
Soil Boring without TCP, 50 to 100 feet	N/A	LF	\$ 42.00	45	\$ 1,890.00
ATV Drilling Rig Surcharge	N/A	feet	\$ 6.00	225	\$ 1,350.00
Borehole Grouting	N/A	feet	\$ 8.50	225	\$ 1,912.50
Per Diem (3 Man crew including Logger)	N/A	day	\$ 200.00	15	\$ 3,000.00
<b>Borings B-6 through B-8 (200 ft total), Drilling on north bank using ATV. Unrestricted drilling hours.</b>					
Mobilization/Demobilization of Drill Rig	N/A	each	\$ 600.00	1	\$ 600.00
Soil Boring without TCP, 0 to 50 feet	ASTM D1587	LF	\$ 37.00	180	\$ 6,660.00
Soil Boring without TCP, 50 to 100 feet	ASTM D1587	LF	\$ 42.00	20	\$ 840.00
ATV Drilling Rig Surcharge	N/A	feet	\$ 6.00	200	\$ 1,200.00
Borehole Grouting	N/A	feet	\$ 8.50	200	\$ 1,700.00
Per Diem (3 Man crew including Logger)	N/A	day	\$ 200.00	9	\$ 1,800.00
Traffic Control Services, Shoulder Closure near B-7 (Medium)	N/A	day	\$ 3,200.00	1	\$ 3,200.00
<b>Laboratory Testing</b>					
Unconfined Compressive Strength (Soil)	ASTM D2166	each	\$ 65.00	16	\$ 1,040.00
Unconsolidated Undrained (UU) Triaxial	ASTM D2850	each	\$ 100.00	12	\$ 1,200.00
Liquid Limits, Plastic Limits, and Plasticity Index	ASTM D4318	each	\$ 95.00	28	\$ 2,660.00
Determining Moisture Content in Soil Materials	ASTM D2216	each	\$ 12.50	43	\$ 537.50
Determination of Particle Size Analysis of Soils Text (Part I) - Retained +40	ASTM D6913	each	\$ 180.00	10	\$ 1,800.00
Determination of Particle Size Analysis of Soils Text (Part II) - Hydrometer Analysis	ASTM D7928	each	\$ 100.00	10	\$ 1,000.00
Amount of Minus No. 200 Sieve Material of Soils	ASTM D1140	each	\$ 55.00	28	\$ 1,540.00
				<b>Total</b>	<b>\$ 97,415.00</b>

## Attachment C

The Engineer shall furnish certificates of insurance to the FBGPTRA evidencing compliance with the insurance requirements hereof. Certificates shall indicate name of the Engineer, name of insurance company, policy number, term of coverage and limits of coverage. The Engineer shall cause its insurance companies to provide the FBGPTRA with at least 30 days prior written notice of any cancellation or non-renewal of the insurance coverage required under this Agreement. The Engineer shall obtain such insurance from such companies having a Bests rating of B+/VII or better, licensed or approved to transact business in the State of Texas, and shall obtain such insurance of the following types and minimum limits:

- a. Workers' Compensation insurance in accordance with the laws of the State of Texas, or state of hire/location of Services, and Employers' Liability coverage with a limit of not less than \$1,000,000 each employee for Occupational Disease, \$1,000,000 policy limit for Occupational Disease; and Employer's Liability of \$1,000,000 each accident.
- b. Commercial General Liability insurance including coverage for Products/Completed Operations, Blanket Contractual, Broad Form Property Damage, Personal Injury/Advertising Liability, and Bodily Injury and Property Damage with limits of not less than:

\$2,000,000	general aggregate limit
\$1,000,000	each occurrence, combined single limit
\$2,000,000	aggregate Products, combined single limit
\$1,000,000	aggregate Personal Injury/Advertising Liability
\$50,000	Fire Legal Liability
\$5,000	Premises Medical
- c. Business Automobile Liability coverage applying to owned, non-owned and hired automobiles with limits not less than \$1,000,000 each occurrence combined single limit for Bodily Injury and Property Damage combined.
- d. Umbrella Excess Liability insurance written as excess of Employer's Liability, with limits not less than \$2,000,000 each occurrence combined single limit.
- e. Professional Liability insurance with limits not less than \$2,000,000 each claim/annual aggregate.

The FBGPTRA and the FBGPTRA's Directors shall be named as additional insureds to all coverages required above, except for those requirements in paragraphs "a" and "e." All policies written on behalf of the Engineer shall contain a waiver of subrogation in favor of the FBGPTRA and the FBGPTRA's Directors, with the exception of insurance required under paragraph "e."