STATE OF TEXAS §
§
COUNTY OF FORT BEND §

AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES

(Grand Parkway (SH99) SB at Bay Hill - Project No. 20126x)

This Agreement ("Agreement") is made and entered into by and between Fort Bend County, Texas (hereinafter "County"), a political subdivision of the state of Texas, and Quiddity Engineering, LLC, (hereinafter "Contractor"), a corporation duly authorized to conduct business in the state of Texas. County and Contractor may be referred to individually as a "Party" or collectively as the "Parties."

WHEREAS, Contractor is a professional engineering and land surveying firm which provides engineering and surveying services in the state of Texas; and

WHEREAS, County desires for Contractor to provide engineering services for the Grand Parkway (SH99) SB at Bay Hill Blvd. Auxillary Lane and Bridge Widening – Mobility Bond Project No. 20126x; and

WHEREAS, Contractor represents that it is qualified and desires to perform such services for County; and

WHEREAS, pursuant to the requirements of Chapter 2254 of the Texas Government Code, County has determined that Contractor is the most highly qualified provider of such professional services and the Parties have negotiated a fair and reasonable price for the same; and

WHEREAS, this Agreement is not subject to competitive bidding requirements under Section 262.023 of the Texas Local Government Code because this Agreement is for professional engineering services and may not be competitively bid pursuant to Chapter 2254 of the Texas Government Code.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the Parties do mutually agree as follows:

1. **Recitals.** The recitals set forth above are incorporated herein by reference and made a part of this Agreement.

2. **Scope of Services.** Contractor shall render services to County as defined in Contractor's Letter dated December 13, 2023 and in the Scope of Work (hereinafter, the "Services") attached hereto as "Exhibit A" and incorporated by reference for all intents and purposes.

3. **Time of Performance.** Time for performance of the Scope of Services under this Agreement shall begin with Contractor's receipt of Notice to Proceed and shall end no

later than December 31, 2028. Contractor shall complete such tasks described in the Scope of Services, within this time or within such additional time as may be extended by County.

4. **Compensation and Payment Terms.**

(a) Contractor's fees for the Services shall be calculated at the rate(s) set forth in Exhibit "A" attached hereto. The Maximum Compensation to Contractor for the Services performed under this Agreement is Seven Hundred Forty Thousand Eight Hundred Six and 00/100 Dollars ($740,806.00). In no event shall the amount paid by County to Contractor under this Agreement exceed said Maximum Compensation without an approved change order.

(b) Contractor understands and agrees that the Maximum Compensation stated is an all-inclusive amount and no additional fee, cost or reimbursed expense shall be added whatsoever to the fees stated in the attached Exhibit "A."

(c) County will pay Contractor based on the following procedures: Upon completion of the tasks identified in the Scope of Services, Contractor shall submit to County staff person designated by the County Engineer, one (1) electronic (pdf) copy of the invoice showing the amounts due for services performed in a form acceptable to County. County 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 for processing. County shall pay each such approved invoice within thirty (30} calendar days. County reserves the right to withhold payment pending verification of satisfactory work performed.

5. **Limit of Appropriation.** Contractor understands and agrees that the Maximum Compensation for the performance of the Services within the Scope of Services described in Section 2 above is Seven Hundred Forty Thousand Eight Hundred Six and 00/100 Dollars ($740,806.00). In no event shall the amount paid by County under this Agreement exceed the Maximum Compensation without a County approved change order. Contractor clearly understands and agrees, such understanding and agreement being of the absolute essence of this Agreement, that County shall have available the total maximum sum of Seven Hundred Forty Thousand Eight Hundred Six and 00/100 Dollars ($740,806.00) specifically allocated to fully discharge any and all liabilities County may incur under this Agreement. Contractor does further understand and agree, said understanding and agreement also being of the absolute essence of this Agreement, that the total Maximum Compensation that Contractor may become entitled to and the total maximum sum that County may become liable to pay to Contractor under this Agreement shall not under any conditions, circumstances, or interpretations thereof exceed Seven Hundred Forty Thousand Eight Hundred Six and 00/100 Dollars ($740,806.00).

6. **Non-appropriation.** Contractor understands and agrees that in the event no funds or insufficient funds are appropriated by the County under this Agreement, County shall immediately notify Contractor in writing of such occurrence and the Agreement shall thereafter terminate and be null and void on the last day of the fiscal period for which appropriations were received or made without penalty, liability or expense to the County. In no event shall said termination of this Agreement or County's failure to appropriate said funds be deemed a breach or default of this Agreement or create a debt by County in any amount(s) in excess of those previously funded.

7. **Taxes.** County is a body corporate and politic under the laws of the state of Texas and as such, is exempt from sales and use taxes. County shall furnish evidence of its tax-exempt status upon written request by Contractor.

8. **Insurance.** Prior to commencement of the Services, Contractor shall furnish County with properly executed certificates of insurance which shall evidence all insurance required and provide that such insurance shall not be canceled, except on 30 days' prior written notice to County. Contractor shall provide certified copies of insurance endorsements and/or policies if requested by County. Contractor shall maintain such insurance coverage from the time Services commence until Services are completed and provide replacement certificates, policies and/or endorsements for any such insurance expiring prior to completion of Services. Contractor shall obtain such insurance written on an Occurrence form from such companies having Best's rating of A/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 in accordance with the laws of the State of Texas. Substitutes to genuine Workers' Compensation Insurance will not be allowed.

   (b) Employers' Liability insurance with limits of not less than $1,000,000 per injury by accident, $1,000,000 per injury by disease, and $1,000,000 per bodily injury by disease.

   (c) Commercial general liability insurance with a limit of not less than $1,000,000 each occurrence and $2,000,000 in the annual aggregate. Policy shall cover liability for bodily injury, personal injury, and property damage and products/completed operations arising out of the business operations of the policyholder.

   (d) 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.

   (e) Professional Liability insurance with limits not less than $1,000,000.

   County shall be named as additional insured to all required coverage except for Workers' Compensation and Professional Liability (if required). All Liability policies written on behalf of Contractor shall contain a waiver of subrogation in favor of County.

If required coverage is written on a claims-made basis, Contractor warrants that any retroactive date applicable to coverage under the policy precedes the effective date of the Contract and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of 2 years beginning from the time the work under this Contract is completed.

Contractor shall not commence any portion of the work under this Contract until it has obtained the insurance required herein and certificates of such insurance have been filed with and approved by County.

No cancellation of or changes to the certificates, or the policies, may be made without thirty (30) days prior, written notification to County.

Approval of the insurance by County shall not relieve or decrease the liability of the Contractor.

9. **Indemnity. TO THE FULLEST EXTENT PROVIDED BY APPLICABLE LAW, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS COUNTY, ITS OFFICIALS, OFFICERS, AND EMPLOYEES FROM AND AGAINST ALL CLAIMS, LOSSES, DAMAGES, CAUSES OF ACTION, SUITS, LIABILITY, AND COSTS, INCLUDING THE REIMBURSEMENT OF REASONABLE ATTORNEY FEES, ARISING OUT OF OR RESULTING FROM AN ACT OF NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT, OR FAILURE TO PAY A SUBCONTRACTOR OR SUPPLIER COMMITTED BY CONTRACTOR OR CONTRACTOR'S AGENTS, EMPLOYEES, OR ANOTHER ENTITY OVER WHICH CONTRACTOR EXCERCISES CONTROL. CONTRACTOR SHALL FURTHER PROCURE AND MAINTAIN GENERAL LIABILITY INSURANCE WITH COVERAGE AS PROVIDED IN SECTION 8 OF THIS AGREEMENT AND SHALL FURNISH A CERTIFICATE OF INSURANCE FOR THE SAME SHOWING FORT BEND COUNTY, TEXAS AS AN ADDITIONAL INSURED.**

10. **Public Information Act.** Contractor expressly acknowledges and agrees that County is a public entity and as such, is subject to the provisions of the Texas Public Information Act under Chapter 552 of the Texas Government Code. In no event shall County be liable to Contractor for release of information pursuant to Chapter 552 of the Texas Government Code or any other provision of law. Except to the extent required by law or as directed by the Texas Attorney General, County agrees to maintain the confidentiality of information provided by Contractor expressly marked as proprietary or confidential. County shall not be liable to Contractor for any disclosure of any proprietary or confidential information if such information is disclosed under Texas law or at the direction of the Texas Attorney General. Contractor further acknowledges and agrees that the terms and conditions of this Agreement are not proprietary or confidential information.

11. **Compliance with Laws.** Contractor shall comply with all federal, state, and local laws, statutes, ordinances, rules, regulations, and the 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. Contractor in providing all services hereunder, further agrees to abide by the provisions of any applicable Federal or State Data Privacy Act.

12. **Independent Contractor.** In the performance of work or services hereunder, Contractor shall be deemed an independent Contractor, and any of its agents, employees, officers, or volunteers performing work required hereunder shall be deemed solely as employees of Contractor. Contractor and its agents, employees, officers, or volunteers shall not, by performing work pursuant to this Agreement, be deemed to be employees, agents, or servants of County and shall not be entitled to any of the privileges or benefits of County employment.

13. **Use of Customer Name.** Contractor may use County's name without County's prior written consent only in Contractor's customer lists. Any other use of County's name by Contractor must have the prior written consent of County.

14. **County/County Data**. Nothing in this Agreement shall be construed to waive the requirements of Section 205.009 of the Texas Local Government Code.

15. **Personnel.** Contractor represents that it presently has, or is able to obtain adequate qualified personnel in its employment for the timely performance of the Services required under this Agreement and that Contractor shall furnish and maintain, at its own expense, adequate and sufficient personnel, in the opinion of County, to perform the Services when and as required and without delays.

    All employees of Contractor shall have such knowledge and experience as will enable them to perform the duties assigned to them. Any employee of Contractor or agent of Contractor who, in County's opinion, is incompetent or by his conduct become detrimental to providing Services pursuant to this Agreement, shall, upon request of County, immediately be removed from association with the Services required under this Agreement.

    When performing Services on–site at County's facilities, Contractor shall comply with, and will require that all Contractor's Personnel comply with, all applicable rules, regulations and known policies of County that are communicated to Contractor in writing, including security procedures concerning systems and data and remote access thereto, building security procedures, including the restriction of access by County to certain areas of its premises or systems for security reasons, and general health and safety practices and procedures.

16. **Confidential and Proprietary Information.** Contractor acknowledges that it and its employees or agents may, in the course of performing their responsibilities under this Agreement, be exposed to or acquire information that is confidential to County. Any and

all information of any form obtained by Contractor or its employees or agents from County in the performance of this Agreement shall be deemed to be confidential information of County ("Confidential Information"). Any reports or other documents or items (including software) that result from the use of the Confidential Information by Contractor shall be treated with respect to confidentiality in the same manner as the Confidential Information. Confidential Information shall be deemed not to include information that (a) is or becomes (other than by disclosure by Contractor) publicly known or is contained in a publicly available document; (b) is rightfully in Contractor's possession without the obligation of nondisclosure prior to the time of its disclosure under this Agreement; or (c) is independently developed by employees or agents of Contractor who can be shown to have had no access to the Confidential Information.

Contractor agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Contractor uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third parties or use Confidential Information for any purposes whatsoever other than the provision of Services to County hereunder, and to advise each of its employees and agents of their obligations to keep Confidential Information confidential. Contractor shall use its best efforts to assist County in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limitation of the foregoing, Contractor shall advise County immediately in the event Contractor learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Agreement and Contractor will at its expense cooperate with County in seeking injunctive or other equitable relief in the name of County or Contractor against any such person. Contractor agrees that, except as directed by County, Contractor will not at any time during or after the term of this Agreement disclose, directly or indirectly, any Confidential Information to any person, and that upon termination of this Agreement or at County's request, Contractor will promptly turn over to County all documents, papers, and other matter in Contractor’s possession which embody Confidential Information.

Contractor acknowledges that a breach of this Section, including disclosure of any Confidential Information, or disclosure of other information that, at law or in equity, ought to remain confidential, will give rise to irreparable injury to County that is inadequately compensable in damages. Accordingly, County may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies that may be available. Contractor acknowledges and agrees that the covenants contained herein are necessary for the protection of the legitimate business interest of County and are reasonable in scope and content.

Contractor in providing all services hereunder agrees to abide by the provisions of any applicable Federal or State Data Privacy Act.

17. **Ownership and Reuse of Documents.** All documents, data, reports, research, graphic presentation materials, etc., developed by Contractor as a part of its work under this Agreement, shall become the property of County upon completion or termination of this Agreement. Contractor shall promptly furnish all such data and material to County on request.

18. **Inspection of Books and Records.** Contractor shall permit County, or any duly authorized agent of County, to inspect and examine the books and records of Contractor for the purpose of verifying the amount of work performed under the Scope of Services. County's right to inspect such books and records shall survive the termination of this Agreement for a period of four years. Notwithstanding the foregoing, Contractor shall bear no liability or responsibility for deliverables that have been modified post-delivery or used for a purpose other than that for which they were prepared under this Agreement.

19. **Termination.** County may terminate this Agreement at any time, with or without cause, upon thirty (30) days written notice to Contractor. Upon termination of this Agreement by County, Contractor shall be paid in accordance with Section 4, above, for those services which were provided under this Agreement prior to its termination and which have not been previously invoiced to County. Contractor's final invoice for said services will be presented to and paid by County in the same manner set forth in Section 4 above. No fees of any type, other than fees due and payable at the Termination Date, shall thereafter be paid to Contractor by County.

20. **Force Majeure.** Notwithstanding anything to the contrary contained herein, neither Party shall liable to the other for any delay or inability to carry out its obligations under this Agreement if such delay or inability is the result of a Force Majeure Event. Within a reasonable time after the occurrence of such event, the Party whose obligations are affected (the "Affected Party") thereby shall notify the other in writing stating the nature of the event and the anticipated duration. The Affected Party's obligations under this Agreement shall be suspended during the continuance of any delay or inability caused by the event, but for no longer period. The Affected Party shall further endeavor to remove or overcome such delay or inability as soon as is reasonably possible.

    For purposes of this Agreement, a Force Majeure Event includes, but is not limited to: strikes or other labor disputes, severe weather disruptions, natural disasters, fire or other acts of God; riots, war, or other emergencies; failure of any governmental agency to act in a timely manner; the discovery of any hazardous substance or differing and unforeseeable site conditions; and any other inabilities of any Party, similar to those enumerated, which are not within the control of the Party claiming such inability, which such Party could not have avoided by the reasonable exercise of due diligence and care.

21. **Assignment.** Contractor may not assign this Agreement to another party without the prior written consent of County.

22. **Successors and Assigns Bound.** County and Contractor each bind themselves and their successors and assigns to the other Party and to the successors and assigns of such other Party, with respect to all covenants of this Agreement.

23. **Publicity.** Contact with citizens of Fort Bend County, media outlets, or other governmental agencies shall be the sole responsibility of County. Under no circumstances, whatsoever, shall Contractor release any material or information developed or received during the performance of Services hereunder unless Contractor obtains the express written approval of County or is required to do so by law.

24. **Notice.** Any and all notices required or permitted under this Agreement shall be in writing and shall be mailed by certified mail, return receipt requested, or personally delivered to the following addresses:

If to County:
Fort Bend County Engineering
Attn: County Engineer
301 Jackson Street,
Richmond, Texas 77469

And

Fort Bend County, Texas
Attention: County Judge
401 Jackson Street, 1st Floor
Richmond, Texas 77469

If to Contractor:
Quiddity Engineering, LLC
6330 West Loop South
Suite 150
Houston, Texas 77401

25. **Performance Representation**. Contractor represents to County that Contractor has the skill and knowledge ordinarily possessed by well-informed members of its trade or profession ("Professionals") practicing in the greater Houston metropolitan area. Contractor shall provide the Services to County with the same professional skill and care ordinarily provided by such Professionals under the same or similar circumstances and professional license and as expeditiously as is prudent considering the ordinary professional skill and care of a competent Professional.

26. **Entire Agreement and Modification.** This Agreement constitutes the entire Agreement between the Parties and supersedes all previous agreements, written or oral, pertaining to the subject matter of this Agreement. Any amendment to this Agreement must be in writing and signed by each Party to come into full force and effect.

27. **Understanding Fair Construction.** By execution of this Agreement, the Parties acknowledge that they have read and understood each provision, term, and obligation contained herein. This Agreement, although drawn by one party, shall be construed fairly and reasonably and not more strictly against the drafting Party than the non-drafting Party.

28. **Severability.** In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision hereof and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

29. **No Waiver of Immunity.** Neither the execution of this Agreement nor any other conduct of either party relating to this Agreement shall be considered a waiver or surrender by County of its governmental powers or immunity under the Texas Constitution or the laws of the state of Texas.

30. **Applicable Law and Venue.** This Agreement shall be construed according to the laws of the state of Texas. Venue for any claim arising out of or relating to the subject matter of this Agreement shall lie in a court of competent jurisdiction of Fort Bend County, Texas.

31. **Certain State Law Requirements for Contracts** The contents of this Section are required by Texas law and are included by County regardless of content For purposes of Sections 2252.152, 2271.002, and 2274.002, Texas Government Code, as amended, Contractor hereby verifies that Contractor and any parent company, wholly owned subsidiary, majority-owned subsidiary, and affiliate:

    (a) Unless affirmatively declared by the United States government to be excluded from its federal sanctions regime relating to Sudan or Iran or any federal sanctions regime relating to a foreign terrorist organization, is not identified on a list prepared and maintained by the Texas Comptroller of Public Accounts under Section 806.051, 807.051, or 2252.153 of the Texas Government Code.

    (b) If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not boycott Israel and is authorized to agree in such contracts not to boycott Israel during the term of such contracts. “Boycott Israel” has the meaning provided in § 808.001 of the Texas Government Code.

    (c) If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not boycott energy companies and is authorized to agree in such contracts not to boycott energy companies during the term of such contracts. “Boycott energy company” has the meaning provided in § 809.001 of the Texas Government Code.

(d) If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and is authorized to agree in such contracts not to discriminate against a firearm entity or firearm trade association during the term of such contracts. "Discriminate against a firearm entity or firearm trade association" has the meaning provided in § 2274.001(3) of the Texas Government Code. "Firearm entity" and "firearm trade association" have the meanings provided in § 2274.001(6) and (7) of the Texas Government Code.

32. **Human Trafficking.** BY ACCEPTANCE OF THIS AGREEMENT, CONTRACTOR ACKNOWLEDGES THAT FORT BEND COUNTY IS OPPOSED TO HUMAN TRAFFICKING AND THAT NO COUNTY FUNDS WILL BE USED IN SUPPORT OF SERVICES OR ACTIVITIES THAT VIOLATE HUMAN TRAFFICKING LAWS.

33. **Captions.** The section captions used in this Agreement are for convenience of reference only and do not affect the interpretation or construction of the Agreement.

34. **Electronic and Digital Signatures.** The Parties to this Agreement agree that any electronic and/or digital signatures of the Parties included in this Agreement are intended to authenticate this writing and shall have the same force and effect as the use of manual signatures.

35. **Certification.** By his or her signature below, each signatory individual certifies that he or she is the properly authorized person or officer of the applicable Party hereto and has the requisite authority necessary to execute this Agreement on behalf of such Party, and each Party hereby certifies to the other that it has obtained the appropriate approvals or authorizations from its governing body as required by law.

{Execution Page Follows}

IN WITNESS WHEREOF, and intending to be legally bound, County and Contractor hereto have executed this Agreement to be effective on the date signed by the last Party hereto.

FORT BEND COUNTY, TEXAS

KP George

KP George, County Judge

2.27.2024

Date

ATTEST:

Laura Richard

Laura Richard, County Clerk

QUIDDITY ENGINEERING, LLC

Authorized Agent – Signature

Donald M. Durgin

Authorized Agent- Printed Name

Transportation Manager

Title

02/06/2024

Date

APPROVED:

J. Stacy Slawinski, County Engineer

AUDITOR'S CERTIFICATE

I hereby certify that funds in the amount of **$** 740,806.00 are available to pay the obligation of Fort Bend County, Texas within the foregoing Agreement.

Robert Ed Sturdivant, County Auditor

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EXHIBIT A

(Follows Behind)

QUIDDITY

6330 West Loop South, Suite 150
Bellaire, Texas 77401
Tel: 713.777.5337
www.quiddity.com

December 13, 2023

Mr. Matt Billiot, PE
1710 Seamist Drive
Houston, TX 77088

Re: Professional Engineering Services Proposal for
SB SH 99 at Bay Hill Blvd Auxiliary Lane and Bridge Widening

Dear Mr. Billiot,

Quiddity Engineering, LLC. is pleased to present our proposal for Professional Services in connection with Plans Specifications and Estimates (PS&E) and construction phase services for the SB SH 99 at Bay Hill Blvd Auxiliary Lane and Bridge Widening project.

Project Understanding

The project is located along existing southbound SH 99 beginning approximately 1500' north of Bay Hill Blvd./ Highland Knolls Drive to approximately 1500' south of Bay Hill Blvd./ Highland Knolls Drive. Fort Bend County proposes to widen the existing southbound structure 12' to the outside (westside) allowing the existing entrance ramp north of Bay Hill to enter and create an auxiliary lane which exits south of Bay Hill at a new proposed exit ramp.

Design will include widening the existing bridge by 12' in accordance with typical TxDOT bridge widening practices. Quiddity will make some modifications to the Green Ribbon Aesthetics (horizontal scheme) to keep the aesthetic similar to the existing bridge and will provide the modifications with the consultant designing the NB SH 99 over Bay Hill bridge widening for their use. The project will also include earthwork and roadway design for the revised ramp, drainage design, retaining walls, traffic control for construction, proposed pavement markings and signing including one cantilevered overhead sign, erosion control and SWPPP planning, relocation of illumination at the existing north retaining wall and additional safety lighting at the proposed ramp tie-in to the frontage road, and applicable standards as necessary to facilitate proper construction and meet reviewing agency requirements.

Special Considerations

This proposal is based on the following special considerations:

1. It is our understanding the following services are to be provided by a 3rd party, therefore they are not included in this proposal: survey, construction management and inspection, materials testing, environmental permitting, or NOI/SWPPP submittals.
2. Programs, Codes, Standards and Specifications in effect during design at the time of the interior widening project will be used for this scope of work.
3. This proposal shall be valid for 30 days from the date of this proposal.

4. Any review or permit fees associated with the project shall be paid by the Client, or shall be considered as a reimbursable expense not included in any lump sum fees proposed.

Attached to this proposal are exhibits detailing scope, schedule, and fee for the above-mentioned project.

- Exhibit “A” – Project Scope
- Exhibit “B” – Project Schedule
- Exhibit “C” – Professional Engineering Services Fee Proposal
- Exhibit “D” – Schedule of Hourly Rates and Reimbursable Expenses

We appreciate the opportunity to present this proposal. Should you have any questions, or require additional information, please call.

Sincerely,

Miguel Trevino, P.E.
Sr. Project Manager

Don Durgin, P.E.
Transportation Manager

EXHIBIT "A"

SERVICES TO BE PROVIDED BY THE ENGINEER

DESCRIPTION
Highway: SH 99
County: Fort Bend
Limits: From 1,000' before Bay Hill to 1,000' after Bay Hill

The Engineer shall provide engineering services required for the preparation of plans, specifications and estimates (PS&E). These services may include preparing roadway and bridge design, hydraulic design, and construction phase services necessary to support the design process.

TASK DESCRIPTIONS AND FUNCTION CODES

The Engineer shall categorize each task performed to correspond with the Function Codes (FC) and Task Descriptions.

FUNCTION CODE 102(110) – FEASIBILITY STUDIES

ROUTE AND DESIGN STUDIES

110.1. Data Collection and Field Reconnaissance. The Engineer shall collect, review and evaluate data described below. The Engineer shall notify the State in writing whenever the Engineer finds disagreement with the information or documents:

1. Data, if available, from the State, including "as-built plans", existing schematics, right-of-way maps, Subsurface Utility Engineering (SUE) mapping, existing cross sections, existing planimetric mapping, environmental documents, existing channel and drainage easement data, existing traffic counts, accident data, Bridge Inspection records, Project Management Information system (PMIS) data, identified endangered species, identified hazardous material sites, current unit bid price information, current special provisions, special specifications, and standard drawings.
2. Documents for existing and proposed development along proposed route from local municipalities and local ordinances related to project development.
3. Flood plain information and studies from the Federal Emergency Management Agency (FEMA), the United States Army Corps of Engineers (USACE), local municipalities, and other governmental agencies.
4. Conduct field reconnaissance and collect data including a photographic record of notable existing features.

110.2. Design Criteria. The Engineer shall review design criteria provided by the PMC.

110.3. Geotechnical Borings and Investigations: The Engineer shall determine the location of proposed soil borings for bridge design, embankment settlement analysis, retaining walls, slope stability in accordance with the latest edition of the State's Geotechnical Manual. The State will review and provide comments for a boring layout submitted by the Engineer showing the general location and depths of the proposed borings. Once the Engineer receives the State's review comments they shall perform soil borings (field work), soil testing and prepare the boring logs in accordance with the latest edition of the State's Geotechnical Manual and State District's procedures and design guidelines.

1. All geotechnical work should be performed in accordance with the latest version of the State's Geotechnical Manual. All testing shall be performed in accordance with the latest version of the State's Manual of Test Procedures. American Society for Testing Materials (ASTM) test procedures can be used only in the absence of the State's procedures. All soil classification should be done in accordance with the Unified Soil Classification System.
2. If applicable, the Engineer shall perform any retaining wall analyses to include the settlement analysis. This analysis must include the computation of the factor of safety for bearing capacity, global stability, overturning and sliding. In addition, the Engineer shall include allowable bearing pressure, passive earth pressure, friction factor, settlement analysis (consolidation report) and lateral earth pressure for the retaining walls.
3. If applicable, the Engineer shall perform soil borings, coring for pavement removal items, piezometric readings, testing and analysis to include slope stability analysis, settlement analysis, and foundation design recommendations along storm drain alignment, retaining walls, overhead sign structures, bridges, embankments and any temporary soil retaining systems.
4. The Engineer shall provide a signed, sealed and dated geotechnical report which contains, but is not limited to, soil boring locations, boring logs, laboratory test results, generalized subsurface conditions, ground water conditions, piezometer data, analyses and recommendations for settlement and slope stability of the earthen embankments, skin friction tables and design capacity curves including skin friction and point bearing. The skin friction tables and design capacity curves must be present for piling and drilled shaft foundation.
5. The Engineer shall sign, seal and date soil boring sheets to be used in the PS&E package. The preparation of soil boring sheets must be in accordance with a State's District standards.
6. Foundation Studies: The Engineer shall coordinate with the State to determine the location of soil borings to be drilled along the retaining wall alignments. The soil borings shall extend a minimum of 35 feet below the

footing elevation or deeper as soil conditions warrant. Spacing of soil borings shall not exceed 500 feet. The Engineer shall provide a boring layout for the State's review and comment.

7. The Engineer shall incorporate soil boring data sheets prepared, signed, sealed, and dated by the Geotechnical Engineer. The soil boring sheets shall be in accordance with the State's WINCORE software as can be found on the Texas Department of Transportation (TxDOT) website.

FUNCTION CODE 145(145, 164) – MANAGING CONTRACTED/DONATED PE

PROJECT MANAGEMENT AND ADMINISTRATION

The Engineer, in association with the State's Project Manager shall be responsible for directing and coordinating all activities associated with the project to comply with State policies and procedures, and to deliver that work on time.

Project Management and Coordination. The Engineer shall coordinate all subconsultant activity to include quality of and consistency of plans and administration of the invoices and monthly progress reports. The Engineer shall coordinate with necessary local entities.

The Engineer shall:

- Prepare monthly written progress reports for each project.
- Develop and maintain a detailed project schedule to track project conformance to Exhibit C, Work Schedule, for each work authorization. The schedule submittals shall be hard copy and electronic format.
- Meet on a scheduled basis with the State to review project progress.
- Prepare, distribute, and file both written and electronic correspondence.
- Prepare and distribute meeting minutes.
- Document phone calls and conference calls as required during the project to coordinate the work for various team members.

FUNCTION CODE 160(150) – ROADWAY DESIGN

Design Surveys and Construction Surveys
The Engineer will review the Survey Control sheets provided by the PMC and incorporate them into the plan sheets.

FUNCTION CODE 160(160) - ROADWAY DESIGN

ROADWAY DESIGN CONTROLS

160.1. Geometric Design. The Engineer shall:

A. Preliminary Geometric Project Layout. The Engineer shall develop a preliminary geometric project layout (Layout) and a preliminary 3D corridor model for the full length of the project to be reviewed and approved by the State prior to the Engineer proceeding with the 30% milestone submittal package.

The Layout must consist of a planimetric file of existing features and the proposed improvements within the existing and any proposed ROW. The Layout must also include the following features: existing and proposed ROW, existing and proposed horizontal and vertical alignment and profile grade line, cross culverts, lane widths, cross slopes, ditch slopes, pavement structure, clear zone, dedicated right turn lanes, corner clips, retaining walls (if applicable) guard rail (if applicable), and water surface elevations for various rainfall frequencies, etc. Existing major subsurface and surface utilities must be shown on the Layout.

The Engineer shall develop the proposed alignment to avoid the relocation of existing utilities as much as possible. The Engineer shall consider Americans with Disabilities Act (ADA) requirements when developing the Layout. The Layout must be prepared in accordance with the current Roadway Design Manual. The Engineer shall provide horizontal and vertical alignment of the project layout in English units for main lanes and cross streets. Minor alignment alternatives must be considered to provide for an optimal design. The project layout must be coordinated with the State and adjacent Engineers, if any. The Engineer shall also provide proposed and existing typical sections with the profile grade line (PGL), lane widths, cross slopes, ROW lines, ditch shapes, pavement structures and clear zones depicted, etc.

The 3D corridor model must be created using Bentley's OpenRoads GEOPAK tools. The 3D corridor model must include enough details to verify the feasibility of the proposed design.

Prior to proceeding with the final preliminary geometric layout the Engineer shall also present to the State for review and approval, alternatives for the design (e.g. flush or raised curb median) with recommendations and cost estimates for each alternative. The Engineer shall also attend all necessary meetings to discuss the outcome of the evaluations of the study.

160.2. Roadway Design.

The Engineer shall use Bentley's OpenRoads 3D Design technology in the design and preparation of the roadway plan sheets. The Engineer shall use the versions of MicroStation and GEOPAK that are implemented at TxDOT at the time the work authorization is executed. However, TxDOT may approve the use of other versions.

The Engineer shall provide roadway plan and profile drawings using CADD standards as required by the State. The drawings must consist of a planimetric file of existing features and files of the proposed improvements. The roadway base map must contain line work that depicts existing surface features obtained from the schematic drawing. Existing major subsurface and surface utilities must be shown if requested by the State. Existing and proposed right-of-way lines must be shown. Plan and Profile must be shown on separate or same sheets (this depends upon width of pavement) for main lanes, frontage roads, and direct connectors.

The plan view must contain the following design elements:

1. Calculated roadway centerlines for mainlanes, ramps, cross streets and frontage roads, as applicable. Horizontal control points must be shown. The alignments must be calculated using OpenRoads horizontal geometry tools.
2. Pavement edges for all improvements (mainlanes, direct connectors, ramps, cross streets, driveways and frontage roads, if applicable).
3. Lane and pavement width dimensions.
4. The geometrics of ramps, auxiliary and managed lanes.
5. Proposed structure locations, lengths, and widths.
6. Direction of traffic flow on all roadways. Lane lines and arrows indicating the number of lanes must also be shown.
7. Drawing scale shall be 1”=100’
8. Control of access line, ROW lines and easements.
9. Begin and end superelevation transitions and cross slope changes.
10. Limits of riprap, block sod, and seeding.
11. Existing utilities and structures.
12. Benchmark information.
13. Radii call outs, curb location, Concrete Traffic Barrier (CTB), guard fence, crash safety items and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items.

The profile view must contain the following design elements:

1. Calculated profile grade for proposed mainlanes (cite direction), direct connectors, ramps, cross streets and frontage roads, if applicable. Vertical curve data, including “K” values must be shown. The profiles must be calculated using OpenRoads vertical geometry tools.
2. Existing and proposed profiles along the proposed centerline of the mainlanes, the outside shoulder line of ramps, and the outside gutter line of the designated (north, south, east or west) bound frontage roads.
3. Water surface elevations at major stream crossing for 2, 5, 10, 25, 50, and 100 year storms.
4. Calculated vertical clearances at grade separations and overpasses, taking into account the appropriate superelevation rate, superstructure depth and required clearance.

5. The location of interchanges, mainlanes, grade separations and ramps (shall include cross sections of any proposed or existing roadway, structure, or utility crossing).
6. Drawing vertical scale to be 1”=10’.

160.3. Typical Sections:

The Engineer shall prepare typical sections for all proposed and existing roadways and structures. Typical sections must include width of travel lanes, shoulders, outer separations, border widths, curb offsets, managed lanes, and ROW. The typical section must also include Proposed Profile Gradeline (PGL), centerline, pavement design, longitudinal joints, side slopes, sodding or seeding limits, concrete traffic barriers and sidewalks, if required, station limits, common proposed and existing structures including retaining walls, existing pavement removal, riprap, limits of embankment and excavation, etc.

160.4. Mainlane and Frontage Road Design: The Engineer shall provide the design of mainlanes with full shoulders, frontage roads, entrance and exit ramps, managed lanes and auxiliary lanes. The design must be consistent with the approved schematic or refined schematic and the current *TxDOT Roadway Design Manual*.

160.5. Cross Streets. The Engineer shall provide an intersection layout detailing the pavement design and drainage design at the intersection of each cross street. The layout must include the horizontal and vertical alignments, curb returns, geometrics, transition length, stationing, pavement, drainage details, and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items. The Engineer shall design for full pavement width to the ROW and provide a transition to the existing roadway.

160.6. Plan Preparation. The Engineer shall prepare roadway plans, profiles and typical sections for the proposed improvements. Prior to the 30% submittal, the Engineer shall schedule a workshop to review profiles, OpenRoads 3D corridor models and cross-sections with the State. The profile and cross sections must depict the 2, 5, 10, 25, 50, 100 and 500 year (if available) water surface elevations. The drawings will provide an overall view of the roadway and existing ground elevations with respect to the various storm design frequencies for the length of the project. This will enable the State to determine the most feasible proposed roadway profile. The State will approve the proposed profiles, 3D corridor models, and cross sections before the Engineer continues with the subsequent submittals. This scope of services and the corresponding cost proposal are based on the Engineer preparing plans to construct freeway main lanes, direct connectors, ramps, frontage roads, and cross streets at intersections. The roadway plans must consist of the types and be organized in the sequence as described in the *PS&E Preparation manual*.

DRAINAGE

161.1. Data Collection. The Engineer shall provide the following data collection services:

1. Conduct field inspections to observe current conditions and the outfall channels, the cross drainage structures, drainage easements, the tributary channel, and land development projects that contribute flow to the tributary. Document field inspections with digital photos.
2. Collect available applicable data including GIS data and maps, site survey data, construction plans, previous reports and studies, and readily available rainfall history for the area. Particular sources of data collected must include, but are not limited to, the State, County, and Federal Emergency Management Agency (FEMA).
3. Collect available Flood Insurance Rate Maps (FIRMs), Flood Insurance Study (FIS) study data, and models.
4. Review survey data and coordinate any additional surveying needs with State.
5. Present existing drainage structures in a 3D corridor-MicroStation model.
6. Meet with local government officials to obtain historical flood records. Interview local residents or local government employees to obtain additional high-water information if available. Obtain frequency of road closure and any additional high-water information from the District Maintenance office.
7. Submit a letter report to the State Project Manager detailing completion of data collection.

161.2. Hydrologic Studies. The Engineer shall provide the following services:

1. Incorporate in the hydrologic study a thorough evaluation of the methodology available, comparison of the results of two or more methods, and calibration of results against measured data, if available.
2. Calculate discharges using appropriate hydrologic methods and as approved by the State.
3. Consider the pre-construction and post-construction conditions in the hydrologic study, as required in the individual Work Authorization.
4. Obtain the drainage area boundaries and hydrologic parameters such as impervious covered areas, and overland flow paths and slopes from appropriate sources including, but are not limited to, topographic maps, GIS modeling, construction plans, and existing hydrologic studies. The Engineer shall not use existing hydrologic studies without assessing of their validity. If necessary, obtain additional information such as local rainfall from official sites such as airports.
5. Include, at a minimum, the “design” frequency to be specified in the Work Authorization and the 1% Annual Exceedance Probability (AEP) storm frequency. The report must include the full range of frequencies (50%, 20% 10%, 4%, 2%, 1%, and 0.2% AEP).

6. Compare calculated discharges to the effective FEMA flows. If calculated discharges are to be used in the model instead of the effective FEMA flows, full justification must be documented.

161.3. Complex Hydraulic Design and Documentation. The Engineer shall provide the following services:

1. Gather information regarding existing drainage facilities and features from existing plans and other available studies or sources.
2. Perform hydraulic design and analysis using appropriate hydraulic methods, which may include computer models such as HEC-RAS, unsteady HEC-RAS or 2D models such as SWMM. 2D models shall not be developed without the express permission of the State. Data entry for appropriate hydraulic computer programs shall consist of a combination of both on-the-ground survey and other appropriate sources including but not limited to topographic maps, GIS modeling, and construction plans and existing hydrologic studies.
3. Use the current effective FEMA models, where appropriate, as a base model for the analysis. If a “best available data” model is provided by the local floodplain administrator, it must be utilized accordingly for this analysis. Review the provided base model for correctness and updated as needed. If the provided effective model is not in a HEC-RAS format, convert it to HEC-RAS for this analysis.
4. If the appropriate hydrologic model requires storage discharge relationships, develop HEC-RAS models or other State’s approved models that will compute these storage discharge relationships along the channel.
5. Consider pre-construction, present and post-construction conditions, as well as future widening, as determined in the Work Authorization.
6. Quantify impacts, beneficial or adverse, in terms of increases in peak flow rates and water surface elevations for the above listed hydraulic conditions and hydrologic events. Impacts will be determined both upstream and downstream of the bridge crossings.
7. If required in the individual Work Authorization, compute right of way corridor 1% AEP flood plain volumes for existing and proposed roadway elevations. The Engineer shall provide mitigation to offset a decrease in 1% AEP flood plain volumes.
8. Use hydrograph calculations and peak flows to determine the storage required.
9. If necessary, present mitigation measures along with the advantages and disadvantages of each. Each method must consider the effects on the entire area. Include approximate construction costs in the report.
10. Provide hand calculations which quantify the cut and fill within the 1% AEP flood plain, if any.

161.4. Storm Drains

The Engineer shall provide the following services:

1. Design and analyze storm drains using software as approved by the State.
2. Size inlets, laterals, trunk line and outfall. Develop designs that minimize the interference with the passage of traffic or incur damage to the highway and local property in accordance with the State's Hydraulic Design Manual, District criteria and any specific guidance provided by the State. Storm drain design software shall be selected as directed by the Work Authorization.
3. Determine hydraulic grade line starting at the outfall channel for each storm drain design. Use the design water surface elevation of the outfall as the starting basis (tailwater) for the design of the proposed storm sewer system.
4. Calculate manhole headlosses. Compute manhole head losses as per FHWA's HEC-22.
5. Limit discharge into existing storm drains and existing outfalls to the capacity of the existing system, which will be determined by the Engineer. Evaluate alternate flow routes or detention, if necessary, to relieve system overload. Determine the amount of the total detention storage to control storm drain runoff for the design frequency based on hydrograph routing for the full range of frequencies (50%, 20% 10%, 4%, 2%, 1%, and 0.2% AEP), as well as a rough estimate of the available on-site volume. When oversized storm drains are used for detention, the Engineer shall evaluate the hydraulic gradeline throughout the whole system, within project limits, for the design frequency or frequencies. The Engineer shall coordinate with the State any proposed changes to the detention systems. The State will assess the effects of such changes on the comprehensive drainage studies.
6. Identify areas requiring trench protection, excavation, shoring, and de-watering.

161.5. Cross-Drainage Structures.

The Engineer shall provide the following services:

1. Determine drainage areas and flows for cross culvert drainage systems.
2. Determine the sizing of the drainage crossings. The scope may include extending, adjusting or replacing non bridge-class culvert crossing or crossings as specified in the Work Authorization. Develop designs that minimize the interference with the passage of traffic or cause damage to the highway and local property in accordance with the State's Hydraulic Design Manual, District criteria and any specific guidance provided by the State. Cross drainage design shall be performed using HY-8 or HEC RAS.

161.6. Plans, Specifications and Estimates (PS&E) Development for Hydraulics:

The Engineer shall provide the following services:

1. Prepare the PS&E package in accordance with the applicable requirements of the State's specifications, standards, and manuals, including the PS&E

Preparation Manual. Include the following sheets and documents, as appropriate:

i. Hydrologic Data Sheets
ii. Hydraulic Data Sheets
iii. Scour Data Sheets (if applicable)
iv. Culvert Layout Sheets
v. Storm Drain Plan/Profile Sheets
vi. Detention Pond Layouts
vii. Detention Pond Details
viii. Roadway Plan & Profile Sheets including profile grade line of parallel ditches, if applicable.
ix. All other relevant sheets

2. Prepare culvert cross sections and identify each cross section's station location.
3. Identify areas requiring trench protection, excavation, shoring and de-watering.
4. Prepare drainage area maps.
5. If applicable, prepare plan and profile sheets for storm drain systems and outfall ditches.
6. Select any necessary standard details from State or District's list of standards for items such as inlets, manholes, junction boxes and end treatments.
7. Prepare details for non-standard inlets, manholes and junction boxes.
8. Prepare drainage details for outlet protection, outlet structures and utility accommodation structures.
9. Identify pipe strength requirements.
10. Prepare drainage facility quantity summaries.
11. Identify potential utility conflicts and, if feasible, design to mitigate or avoid those identified conflicts.
12. Consider pedestrian facilities, utility impacts, driveway grades, retaining wall and concrete traffic barrier drainage impacts.
13. Identify existing ground elevation profiles at the ROW lines on storm sewer plan and profile sheets.
14. Locate soil borings every 500 feet along the storm sewer alignment and take piezometric readings at 2000 feet intervals.
15. Prepare Hydraulic Data Sheets for any bridge or cross drainage structures at the outfall channel and indicate site location (e.g., station and name of creek or bayou), if applicable.
16. Develop a 3D model of the proposed drainage structures using the SUDA capabilities of the GeoPak/OpenRoads Product.
17. Develop layouts for the following:
    i. Subsurface drainage at retaining walls.
    ii. Outfall channels within existing ROW.
    iii. Bridge deck drainage systems, including internal drainage piping within the bents where required on structures.

iv. Detention ponds, associated outlet structures, and details, if applicable. If information is not available at the time of initial scoping, this work shall be considered as additional work

FUNCTION CODE 160(162) - ROADWAY DESIGN

SIGNING, PAVEMENT MARKINGS AND SIGNALIZATION (PERMANENT)

162.1. Signing. The Engineer shall prepare drawings, specifications, and details for all signs. The Engineer shall coordinate with the State (and other Engineers as required) for overall temporary, interim and final signing strategies and placement of signs outside contract limits. The Engineer shall:

- Prepare sign detail sheets for large guide signs showing dimensions, lettering, shields, borders, corner radii, etc., and shall provide a summary of large and small signs to be removed, relocated, or replaced.
- Designate the shields to be attached to guide signs.
- Illustrate and number the proposed signs on plan sheets.
- Select each sign foundation from State Standards.

162.2. Pavement Marking. The Engineer shall detail both permanent and temporary pavement markings and channelization devices on plan sheets. The Engineer shall coordinate with the State (and other Engineers as required) for overall temporary, interim, and final pavement marking strategies. The Engineer shall select Pavement markings from the latest State standards.

The Engineer shall provide a 3D corridor model with the proposed pavement marking stenciled onto the model.

The Engineer shall provide the following information on sign and pavement marking layouts:

- Roadway layout.
- Center line with station numbering.
- Designation of arrow used on exit direction signs
- Culverts and other structures that present a hazard to traffic.
- Location of utilities.
- Existing signs to remain, to be removed, to be relocated or replaced.
- Proposed signs (illustrated, numbered and size).
- Proposed overhead sign bridges to remain, to be revised, removed, relocated, or replaced.
- Proposed overhead sign bridges, indicating location by plan.

- Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation.
- Quantities of existing pavement markings to be removed.
- Proposed delineators, object markers, and mailboxes.
- The location of interchanges, mainlanes, grade separations, frontage roads and ramps.
- The number of lanes in each section of proposed highway and the location of changes in numbers of lanes.
- Right-of-way limits.
- Direction of traffic flow on all roadways.

FUNCTION CODE 160(163) - ROADWAY DESIGN

MISCELLANEOUS (ROADWAY)

The Engineer shall provide the following services:

163.1. Retaining Walls and Miscellaneous Structures. The Engineer shall develop each retaining wall design and determine the location of each soil boring needed for the foundation design of each retaining wall in accordance with the *Geotechnical Manual*.

For projects that have retaining walls, the Engineer shall develop the retaining walls in the 3D corridor model.

The approximate limits of each retaining wall shall be based on Station or length. The Engineer shall notify the State the type of retaining walls that will be used for and Cut and Fill location. Retaining wall types must include:

- Mechanically Stabilized Earth (MSE) Walls. The Engineer shall prepare the retaining wall layouts showing plan and profile or retaining walls for design by a State approved vendor. The Engineer is responsible for design of geometry and wall stability. The Engineer shall incorporate a slope of 4:1 or flatter from the existing and finished ground line elevation to the face of the retaining wall.

The Engineer shall provide layouts (scale 1”=100’), elevations, quantity estimate, summary of quantities, typical cross sections and structural details of all retaining walls within the project. Approximate lengths of the retaining walls as shown on the schematic are listed as below. The Engineer shall determine if any additional walls are required and verify the need for and length of the retaining walls as shown on the schematic.

If applicable, the State will provide architectural standard drawings. The Engineer shall incorporate architectural standard drawings into design details. The specific requirements for each item are as follows:

1. Layout Plan
   a. Designation of reference line
   b. Beginning and ending retaining wall stations
   c. Offset from reference line
   d. Horizontal curve data
   e. Total length of wall
   f. Indicate face of wall
   g. All wall dimensions and alignment relations (alignment data as necessary)
   h. Soil boring locations
   i. Drainage, signing, lightning, etc. that is mounted on or passing through the wall.
   j. Subsurface drainage structures or utilities which could be impacted by wall construction.

2. Elevation:
   a. Top of wall elevations
   b. Existing and finished ground line elevations
   c. Vertical limits of measurement for payment
   d. Type, limits and anchorage details of railing (only if Traffic Railing foundation standard is not being used on this project)
   e. Top and bottom of wall profiles plotted at correct station & elevation.
   f. Underdrains
   g. Any soil improvement, if applicable.
   h. Drainage, signing, lighting etc. as noted above
   i. Drainage structures and utilities as noted above

3. Sectional View:
   a. Reinforced volume
   b. Underdrain location
   c. Soil improvements, if applicable.

4. General Guidelines for Retaining Walls
   a. The Engineer shall perform design calculations to check the external stability of the walls including slope stability, bearing, sliding and overturning and detail drawings in accordance with the standard requirements of the State.
   b. For retaining wall submittals, the Engineer shall check State's Bridge Division website for current requirements.

163.2. Traffic Control Plan, Detours, Sequence of Construction. The Engineer shall prepare Traffic Control Plans (TCP) including TCP typical sections, for the project.

A detailed TCP must be developed in accordance with the latest edition of the TMUTCD. The Engineer shall implement the current Barricade and Construction (BC) standards and TCP standards as applicable. The Engineer shall interface and coordinate phases of work, including the TCP, with adjacent Engineers. The Engineer shall:

1. Develop each TCP to provide continuous, safe access to each adjacent property during all phases of construction and to preserve existing access. The Engineer shall notify the State in the event existing access must be eliminated, and must receive approval from the State prior to any elimination of existing access.
2. Design temporary drainage to replace existing drainage disturbed by construction activities or to drain detour pavement. The Engineer shall show horizontal and vertical location of culverts and required cross sectional area of culverts.
3. Prepare each TCP in coordination with the State. The TCP must include interim signing for every phase of construction. Interim signing must include regulatory, warning, construction, route, and guide signs. The Engineer shall interface and coordinate phases of work, including the TCP, with adjacent Engineers, which are responsible for the preparation of the PS&E for adjacent projects.
4. Describe the type of work to be performed for each phase of sequence of construction and any special instructions (e.g. storm drain, culverts, bridges, railing, illumination, signals, retaining walls, signing, paving surface sequencing or concrete placement, ROW restrictions, utilities, etc.) that the contractor should be made aware to include limits of construction, obliteration, and shifting or detouring of traffic prior to the proceeding phase.
5. Include the work limits, the location of channelizing devices, positive barrier, location and direction of traffic, work area, stations, pavement markings, and other information deemed necessary for each phase of construction.

163.3. Illumination. The Engineer shall refer to TxDOT's *Highway Illumination Manual* and other deemed necessary State approved manuals for underpass lighting. The Engineer shall provide a preliminary layout for initial review and approval by the State. The Engineer shall prepare circuit wiring diagrams showing the number of luminaries on each circuit, electrical conductors, length of runs, service pole assemblies. Underpass lighting must be used on all structures within each project. The Engineer shall integrate existing illumination within the project limits into the proposed design. The Engineer shall coordinate with the State to determine the location of proposed high-mast, conventional, and underpass lighting.

163.4. StormWater Pollution Prevention Plans (SWP3). The Engineer shall develop SWP3, on separate sheets from (but in conformance with) the TCP, to minimize potential impact to receiving waterways. The SWP3 must include text describing

the plan, quantities, type, phase and locations of erosion control devices and any required permanent erosion control.

163.5. Compute and Tabulate Quantities. The Engineer shall provide the summaries and quantities within all formal submittals.

163.6. Estimate. The Engineer shall independently develop and report quantities necessary to construct the contract in standard State bid format at the specified milestones and Final PS&E submittals. The Engineer shall prepare each construction cost estimates using Estimator or any approved method. The estimate shall be provided at each milestone submittal.

163.7. Contract time determination. The Engineer shall prepare a detailed contract time estimate to determine the approximate time required for construction of the project in calendar and working days (based on the State standard definitions of calendar and working days) at the Final PS&E milestone. The schedule must include tasks, subtasks, critical dates, milestones, deliverables, and review requirements in a format which depicts the interdependence of the various items and adjacent construction packages. The Engineer shall provide assistance to the State in interpreting the schedule.

163.8. Specifications and General Notes. The Engineer shall identify necessary standard specifications, special specifications, special provisions and the appropriate reference items. The Engineer shall prepare General Notes from the District's *Master List of General Notes*, Special Specifications and Special Provisions for inclusion in the plans and bidding documents. The Engineer shall provide General Notes, Special Specifications and Special Provisions in the required format.

163.9. Constructability Review. The Engineer shall provide Independent Quality Review of the constructability PS&E sets.

The Engineer shall perform a constructability review to identify potential constructability issues and options that would provide substantial time savings during construction.

FUNCTION CODE 160(170) – ROADWAY DESIGN

BRIDGE DESIGN

170.1. Bridge Layout. The Engineer shall prepare a bridge layout plan sheet for each bridge and bridge class culvert. The Engineer shall determine the location of each soil boring needed for foundation design in accordance with the *Geotechnical Manual*.

Prior to preparation of each bridge layout, the Engineer shall prepare a comparative cost analysis of bridge structures to determine: (1) the optimum bridge beams for vertical clearance over railroads, roadway, or waterways, (2) the optimum bridge structure versus roadway embankment, pavement, soil stabilization, and retaining walls, and (3) to determine optimum in bridge beams for the direct connectors.

The Engineer shall submit a bridge layout for each structure early in the plan preparation process to obtain approval from the State. The Engineer shall also render each bridge, to the appropriate level of detail, in the 3D corridor model. The Engineer shall comply with all relevant sections of the latest edition of the *State's LRFD Bridge Design Manual, Bridge Project Development Manual, Bridge Detailing Guide, and AASHTO LRFD Bridge Design Specifications and respective checklists*. Each bridge layout sheet must include bridge typical sections, structural dimensions, abutment and bent locations, superstructure and substructure types. The Engineer shall locate and plot all soil borings and utilities, show proposed retaining walls, and, for staged construction, indicate limits of existing bridge for removal and reconstruction.

170.2. Bridge Detail Summary. The Engineer shall prepare total bridge quantities, estimates, and summary sheets for each bridge or bridge class culvert.

170.3. Bridge Structural Details. The Engineer shall prepare each structural design and develop detailed structural drawings of all required details in compliance with above-listed manuals and guidelines. The Engineer shall assemble and complete all applicable State Standard Details sheets.
Additionally, the Engineer shall:

- Perform calculations for design of bridge abutments.
- Perform calculations for bridge slab design.
- Perform calculations to determine elevations of bridge substructure and super structure elements.
- Perform calculations for bridge box beam design.
- Prepare necessary foundation details and plan sheets.
- Prepare plan sheets for abutment design.
- Prepare plan sheets for additional abutment details.
- Prepare framing plan and slab plan sheets.
- Compute and prepare tables for slab and bearing seat elevations, dead load deflections, etc.
- Design beams and prepare beam design tables.
- Prepare special provisions and special specifications in accordance to the above-listed manuals and guidelines.

FUNCTION CODE 300(351) – DESIGN VERIF/CHANGES/ALTER

CONSTRUCTION PHASE SERVICES

The Engineer shall provide Construction Phase Services at the written request of the State's Project Manager. The written request must include a description of the work requested, a mutually agreed upon time limit, and any special instructions for coordination and submittal. These services shall include, but are not limited to the following:

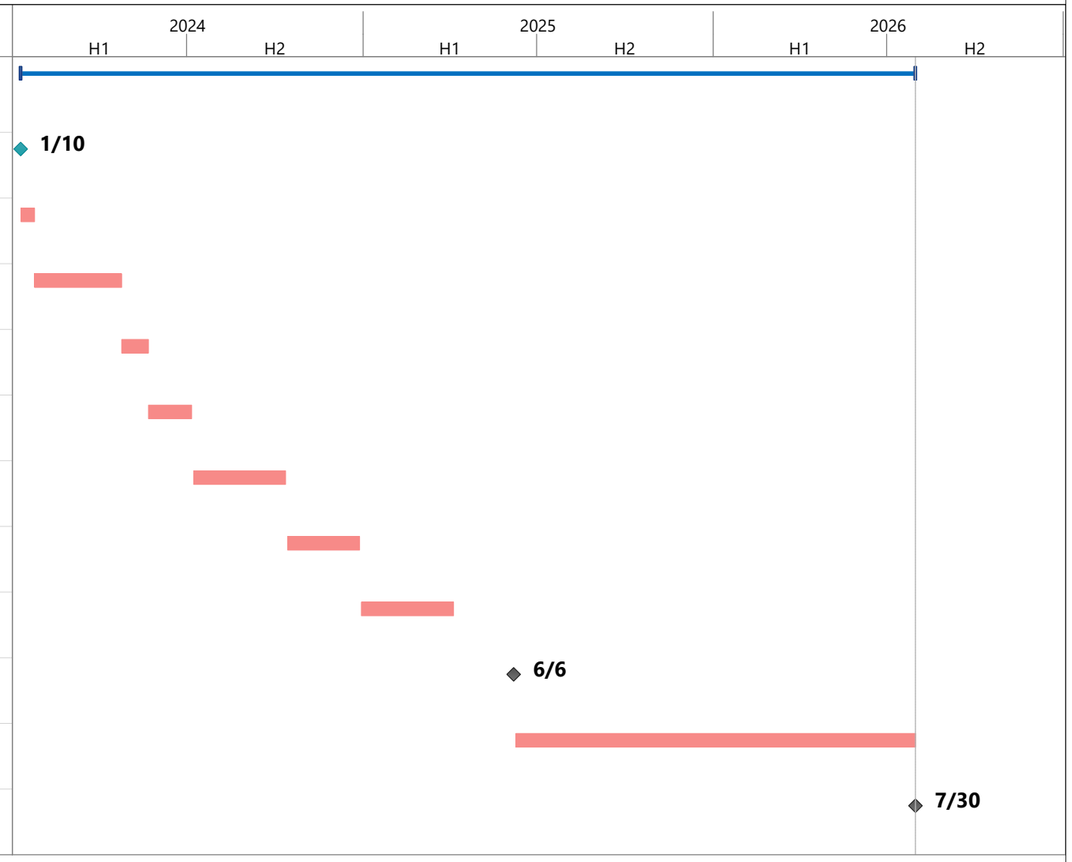
1. Attend preconstruction meeting
2. Attend partnering meeting
3. Attend field meetings and make visits to site
4. Calculate quantities and assist the area engineer in preparing change orders
5. Review and approval of shop drawings
6. Review and approval of forming details
7. Responding to requests for information (RFIs)
8. Providing minor redesign (major redesign should be handled with a contract supplement), which will include changes to the affected plan sheets and an updated copy of the 3D corridor model.
9. Answering general questions
10. Providing clarification
11. Other project related tasks in support of the State during construction

Prime Provider: Quiddity Engineering, LLC.
Highway: SH 99 at Bay Hill

EXHIBIT "B"
PROJECT SCHEDULE

Date: Wed 12/13/23

ID	Task Name	Duration	Start	Finish	Predecessors
1	**SH 99 at Bay Hill**	**668 days**	**Wed 1/10/24**	**Thu 7/30/26**	
2	NTP	0 days	Wed 1/10/24	Wed 1/10/24	
3	Refine Schematic	10 days	Wed 1/10/24	Tue 1/23/24	2
4	30% Submittal	65 days	Wed 1/24/24	Tue 4/23/24	3
5	Bridge Layout Submittal	20 days	Wed 4/24/24	Tue 5/21/24	4
6	60% Submittal	33 days	Wed 5/22/24	Fri 7/5/24	5
7	90% Submittal	70 days	Mon 7/8/24	Fri 10/11/24	6
8	95% Submittal	55 days	Mon 10/14/24	Fri 12/27/24	7
9	Final Submittal	70 days	Mon 12/30/24	Fri 4/4/25	8
10	Letting Date	45 days	Mon 4/7/25	Fri 6/6/25	9
11	Construction Phase Services	300 days	Mon 6/9/25	Thu 7/30/26	10
12	End Project	0 days	Thu 7/30/26	Thu 7/30/26	11



Task		Inactive Task		Manual Summary Rollup		External Milestone		Manual Progress	
Split		Inactive Milestone		Manual Summary		Deadline			
Milestone		Inactive Summary		Start-only		Critical			
Summary		Manual Task		Finish-only		Critical Split			
Project Summary		Duration-only		External Tasks		Progress			

Prime Provider: Quiddity Engineering, LLC **Highway: SH 99 @ Bay Hill Blvd**		**QUIDDITY**	**The Murillo Company**
FC 102 (110)	Total Labor Cost (Lump Sum)	$ 10,888.00	$ -
	Total Labor Cost (Unit Cost)	$ -	$ -
	Other Direct Expenses	$ -	$ -
FC 145 (164)	Total Labor Cost (Lump Sum)	$ 69,018.00	$ -
	Other Direct Expenses	$ 381.00	$ -
FC 160 (150)	Total Labor Cost (Lump Sum)	$ 2,381.00	$ -
	Total Labor Cost (Unit Cost)	$ -	$ -
	Other Direct Expenses	$ -	$ -
FC 160 (160)	Total Labor Cost (Lump Sum)	$ 78,306.00	$ -
	Other Direct Expenses	$ -	$ -
FC 160 (161)	Total Labor Cost (Lump Sum)	$ 64,097.00	$ -
	Other Direct Expenses	$ -	$ -
FC 160 (162)	Total Labor Cost (Lump Sum)	$ 27,739.00	$ -
	Other Direct Expenses	$ -	$ -
FC 160 (163)	Total Labor Cost (Lump Sum)	$ 161,553.00	$26,040.00
	Other Direct Expense	$ -	$ -
FC 160 (170)	Total Labor Cost (Lump Sum)	$ 181,040.00	$ -
	Other Direct Expense	$ -	$ -
FC 300 (351) Construction Phase Services	Total Labor Cost (Specified Rate)	$ 50,363.00	$ -
	Reimbursable Expense	$ 780.00	$ -
TOTAL LABOR COSTS		**$ 595,022.00**	**$ 26,040.00**
TOTAL ODE		**$ 381.00**	**$ -**
TOTAL SPECIFIED RATE		**$ 50,363.00**	**$68,220.00**
TOTAL REIMBURSABLE EXPENSE		**$ 780.00**	**$ -**
Grand Totals		**$ 646,546.00**	**$ 94,260.00**

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QUIDDITY

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Tel: 713.777.5337
www.quiddity.com

EXHIBIT "D"

Schedule of Hourly Rates and Reimbursable Expenses

Project Role	Hourly Rate
Project Manager	$300.00
Deputy Project Manager	$281.00
Senior Engineer	$260.00
Project Engineer	$250.00
Design Engineer	$195.00
Engineer In Training	$160.00
Senior CADD Operator	$190.00
Admin/Clerical	$90.00

Reimbursable Expense	Rate
Mileage (per mile)	Standard IRS Mileage ($0.655 currently)
Photocopies B/W (11x17) (each)	$0.25

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY
CERTIFICATION OF FILING

Certificate Number:
2024-1120876

Date Filed:
02/07/2024

Date Acknowledged:
02/27/2024

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Quiddity Engineering, LLC
Bellaire, TX United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

Fort Bend County

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

N/A
SB SH 99 at Bay Hill Blvd Auxiliary Lane and Bridge Widening

4 Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
		Controlling	Intermediary
Synatschk, Tobin	Bellaire, TX United States	X	
Black, Clayton	Bellaire, TX United States	X	
Kennedy, Bryan	Bellaire, TX United States	X	
Krahn, Kevin	Bellaire, TX United States	X	

5 Check only if there is NO Interested Party. ☐

6 UNSWORN DECLARATION

My name is _____, and my date of birth is _____.

My address is _____, _____, _____, _____, _____.
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in _____County, State of _____, on the _____day of _____, 20_____.
(month) (year)

_____
Signature of authorized agent of contracting business entity
(Declarant)