

**SUPPLEMENTAL AGREEMENT NO. 3
TO
AGREEMENT OF
FOR APRIL 20, 2011
ENGINEERING SERVICES for
Fort Bend Parkway Toll Road, Segment B-1**

This Supplemental Agreement is made and entered into this 16th day of April, 2014, and modifies the ENGINEERING SERVICES AGREEMENT between Fort Bend County Toll Road Authority and Parsons Brinkerhoff, dated April 20, 2011 for engineering services for the Fort Bend Toll Road, Segment B-1.

The agreement is hereby modified as follows:

1. The first sentence of Section 2.a is replaced with the following sentence:

“The Maximum Compensation under this contract is \$1,985,445.57.”

2. The second paragraph of Section 2.a is replaced with the following paragraph:

“Compensation for performance of services within the Scope of Services described in Attachment A will be as follows: The compensation shall be increased by \$516,646.92, for the additional work shown in Attachment A. The maximum amount payable under this agreement shall not exceed \$1,985,445.57, as shown in Attachment B. Progress payments for work detailed in Attachment A will be made when the Engineer has attained a level of completion equal to or greater than the agreed upon milestones of completion in the reasonable opinion of FBTRA.”

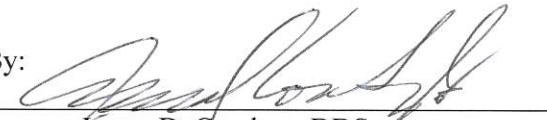
3. The Scope of Services shown in Attachment A shall be expanded to include Exhibit A-3, attached hereto.
4. The Compensation for Scope of Services shown in Attachment B shall be expanded to include Exhibit B-3, attached hereto.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, this Supplemental Agreement is hereby executed as of the
date first set forth above.

FORT BEND COUNTY TOLL ROAD
AUTHORITY

By:


James D. Condrey, DDS
Chairman, Board of Directors

ATTEST:

By



PARSONS BRINKERHOFF, INC.

By:



Name: GABRIEL Y. JOHNSON

Title: V.P.

**EXHIBIT A-3
ATTACHMENT A
SUPPLEMENTAL AGREEMENT NO. 3
ADDITIONAL SCOPE OF SERVICES**

FORT BEND COUNTY TOLL ROAD AUTHORITY, SEGMENT B-1

The Engineer shall modify existing 60% plans for the Fort Bend Parkway Extension at State Highway 6 from a depress section to an overpass over the existing SH 6 facility.

The following is highlight of the major refinements:

- Revised the Traffic Control Plans for phasing of proposed structure over SH 6 as well as Knight Road.
- Revised Roadway plans to accommodate:
 - a. Proposed Overpass
 - b. Extension Exit Ramp to Knight Road
 - c. Two additional right turn lanes at FB Parkway and SH 6. One located at the SW corner and the other NW corner.
- Design of new bridge with an approximate length of 2,200 feet.
- Design of new MS&E Retaining Walls to accommodate the new overpass
- Additional Geotechnical Investigation for soil borings for new structure. Additional Depth is required.
- Modify existing detention pond.

ROUTE AND DESIGN STUDIES (Function Code 110)

A. Preliminary Cost Estimate. The Engineer shall prepare revised construction cost estimate for the new overpass over State Highway 6.

B. Geotechnical Investigation.

a. Field Exploration

Soils stratigraphy and conditions for the proposed overpass structures and embankments/retaining walls will be evaluated by drilling soil borings at select locations within the proposed structures areas. Soil samples will be obtained continuously up to a depth of twenty five (25) feet from the ground surface and at five (5) feet interval below that depth. Standard Penetration Tests (SPT) will be performed in sands, if encountered, and clays will be sampled by Shelby tube. Shear strengths of the clays will be measured in the field with a hand penetrometer and correlations between this data and laboratory shear strength data will be made during analysis. In addition, Texas Highway Department (THD) cone penetration tests will be performed at 5 feet intervals.

Depth to ground water will be important for the project design and during construction excavations. For this reason, borings will be drilled dry to the bottom of the borehole (or to borehole cave-in depth) and the depth at which

groundwater is encountered will be recorded. In addition, we propose to convert four (4) of the boreholes into 50-ft deep piezometers for long term groundwater readings. Boreholes will be grouted after the completion of drilling and sampling. Any cored pavement will be patched using lean

b. Laboratory Testing

Laboratory tests will vary with the soils encountered but will be planned to classify soils and define design parameters for the proposed overpass structures and embankment/retaining walls including bearing capacity, earth pressures, global stability, etc. Laboratory soil testing including moisture content, Atterberg limits, percent passing a No. 200 sieve, unconfined compression, triaxial unconsolidated-undrained, triaxial consolidated undrained tests, will be conducted on select soil samples. All tests will be performed in accordance with the American Society of Testing Materials (ASTM) Procedures. Estimated test types and quantities are presented on attached sheet.

c. Engineering Analysis and Reporting

The Engineer will process the field and laboratory data, and conducted engineering analyses, and present the information, findings and recommendations in a geotechnical report. The report will present will present the following:

- Information regarding the soils and groundwater encountered in the borings including their engineering properties.
- Geotechnical recommendations for the proposed overpass bridge foundation (type and bearing capacity curves), MSE Walls design parameters (soil parameters, lateral earth pressures, etc.) and embankment global stability analyses, embankment foundation allowable bearing capacity, etc. TxDOT design criteria will be followed.
- Construction recommendations for the proposed overpass bridge foundations, embankments and the MSE walls.
- Recommendations for earth excavations including the need for groundwater control if applicable.

UTILITY AND RIGHT-OF-WAY (Function Code 130)

A. Right-of-Way Mapping

- Follow TxDOT Standards for Design Survey (FC 150) and for Right-of-Way Surveying (FC 130)
- Project Length is 5350 (1,500-foot Transition North of Hughes Ranch Road), Plus 100-ft on Side Streets and along Max Road for the proposed cul-de-sac extend the survey south to the proposed feeder road = 6,750 Total L.F.
- Estimated 10 R.O.W. Map Sheets in the R.O.W. Map Set - Title, Index, Control, Monument Set, and 6- Map Sheets

- Abstracting Services for Additional Areas not Previously Part of the Research Area, Address In-depth Research Needs for Problem Areas (Max Road ROW Width) and Address TxDOT Comments on the Abstract Map.
- Perform Additional ROW Services and Mapping based on the Additional 11 Proposed Parcel Takes.
- Prepare Parcel Map with Description Documents for Quitclaim Deed from Gulf Coast Water Authority. The Mapping and Descriptions based on TxDOT Standards will be used for a base and modify as necessary for the GCWA.
- Coordination with Gulf Coast Water Authority.
- Additional Topographic Survey to survey all of Parcel 2 and Located Additional Features outside the Transition Curve
Between Reid Road and Max Road.

B. **Utility Coordination.** Coordinate with the City of Missouri including traffic signals and waterlines, and fiber optic cable. The Engineer shall then coordinate the utility company's relocation plans and provide continuous updated project design information.

FIELD SURVEYING (Function Code 150)

A. **Field Surveying.**

Construction Staking / Miscellaneous Survey Requests as required to supplement the proposed overpass.

ROADWAY DESIGN (Function Code 160)

A. The Engineer shall revise the existing 60% plans from depress section to the overpass facility. The modifications will include:

1. Update Index of sheets to accommodate.
2. Update Quantities and Estimate
3. Update typical sections for the mainlanes, Knight Road, and Ramp B realignment, and two new right turn lanes.
4. Horizontal Revise horizontal and vertical alignment as well the geometric data to accommodate the overpass over the existing SH 6 bridge.
5. Revise typical sections to from depress facility to overpass facility.
6. Develop Right turn lane at the SW corner of the FB Parkway and SH 6.
7. Develop typical sections for Knight Road.
8. Develop new layouts for the reconstruction Knight Road that was originally to be removed.
9. Update Removal layouts to accommodate the reduction of items to be removed.
10. Update Design cross sections to reflect the changes above.

DRAINAGE DESIGN (Function Code 161)

The Engineer shall modify the existing 60% design plans to accommodate the proposed overpass. The modifications to the drainage plans include the following:

- A. Modify the proposed detention pond facility under the new FB Parkway overpass. The task will include new minor analysis, layouts and details. The details will also include backfilling the existing north side detention pond to the flowline of the outfall culvert. In addition close coordination with recently construction FB Parkway to south to accommodate the storm runoff.
- B. Plan and Profile drawings including details of support facilities and appurtenances will be included in the design plans. The existing storm sewers that discharge into proposed detention ponds will be tied to the new storm sewers that will collect the runoff and discharge into proposed detention pond.
- C. Accommodate the flow coming from the City of Missouri design near FB Parkway and Trammel Fresno.
- D. Temporary drainage will be required between the proposed detention pond and existing detention ponds to handle the existing flow prior to construction of the proposed detention pond and abandonment of existing detention ponds.
- E. The design will also include additional of deck drains for the proposed bridge and storm sewer system along the MSE walls to the new detention pond.
- F. **Storm Water Pollution Prevention Plans (SW3P).** The Engineer shall updated SW3P plan to include the extension of the exit ramp to Knight Road.

SIGNING, MARKINGS AND TRAFFIC (Function Code 162)

- A. The Engineer shall revise existing 60% plans to accommodate the following:
 - 1. New typical section for the proposed overpass.
 - 2. Extension of the exit ramp to Knight Road.
 - 3. Knight Road Intersection with SB and NB Ramps/Frontage Road
 - 4. Knight Road.
 - 5. Northbound Frontage.
 - 6. Relocation of the large ground sign structure to proposed overpass.
 - 7. Remove the signing/markings from roadways they will remaining place.
 - 8. Update quantities to reflect above changes.

Miscellaneous Roadway (Function Code 163)

- A. **Illumination.**
 - a. The Engineer shall revise the illumination layouts from the 60% plans to accommodate proposed overpass and new under deck lighting on the proposed overpass over the existing SH 6 bridge.
 - b. Modify the existing light pole for the right turn lane to SH 6 eastbound lanes.

- B. **Traffic Signals.** The Engineer shall relocate the existing signal controller equipment to accommodate the new right turn lanes and potential conflict with proposed bent on the Eastbound SH6 frontage and turnaround.
- C. **Traffic Control Plan.** The Engineer will modify the existing 60% plans. The modifications will include the following:
- a. Phased construction of the NB frontage from just north of the Knight Road to SH 6 eastbound frontage.
 - b. Phased construction of Knight to prevent significant detours and limited impacts to the traveling public.
 - c. Phased construction by means of detours for the installation of columns at SH 6 and FB Parkway.
- D. **Retaining Walls.** All permanent retaining walls shall be mechanically stabilized earth retaining walls. The Engineer shall provide layouts, elevations, summary of quantities, typical cross sections and to for proposed SH 6 overpass.

PROJECT MANAGEMENT (Function Code 164)

- A. **Project Management.** The purpose of this task is to provide the overall management of the contract including scheduling, invoicing, and progress reports. The progress report will list outstanding issues that need resolution as well as progress of the tasks and estimated completion dates for the work.

The Engineer will attend coordination and interim progress review meetings to be scheduled on an as needed basis. Meeting minutes will be prepared and distributed within five working days after the meeting.

- B. **Coordination/Meeting.** The Engineer will provide overall coordination with subconsultants and attend coordination with adjacent engineers as needed (2 per month over 8 months).

BRIDGE DESIGN (Function Code 170)

All bridge structures shall be designed for HL 93 loading.

The project includes the following three structures:

1. Fort Bend Parkway over State Highway 6 approximately 2400' in length and 92 ft wide.

- A. **Bridge Layout.** The Engineer shall:

Prepare Bridge Layout plans and elevations for all bridge types listed below in accordance with the latest edition of the TxDOT's Bridge Design Manual, Bridge Project Development Manual, Bridge Detailing Manual, and AASHTO LRFD

Bridge Design Specifications. Submit to the County for approval before proceeding to structural detail design. The Bridge layouts in Plan View shall contain the following information, where applicable:

1. Horizontal curve information or bearing of centerline/baseline, including horizontal, vertical and template information of all roadways or railroads crossed
2. Including horizontal, vertical and template information of all roadways or railroads crossed
3. Bearing of centerline or reference line
4. Skew angle(s)
5. Slope for header banks and approach fills
6. Control stations at beginning and ending of bridge (with deck elevation)
7. Approach pavement and crown width
8. Bridge roadway width and curbs, face of rail, shoulders or sidewalks
9. Approach slab and curb returns
10. Limits and type of riprap
11. Proposed features under structure
12. Location of profile grade line
13. North Arrow
14. Typical bridge roadway section including preliminary proposed beam types and spacings.
15. Cross slope and superelevation data
16. Minimum horizontal clearance
17. Location of soil core holes (station and offset)
18. Bent stations and bearings
19. Retaining wall locations
20. Traffic flow directional arrows
21. Railing types shown
22. Joint types and seal size, if used
23. Beam line numbers consistent with span details
24. Critical horizontal clearances (location of railroad tracks, nearby structures and utilities)

Bridge Layouts in Elevation View should contain the following:

1. Type of foundation
2. Finished grade elevations at beginning and end of bridge
3. Overall length of structure
4. Length, type of spans and units
5. Type of railing
6. Minimum calculated vertical clearance(s)
7. Existing and proposed ground lines clearly marked
8. Grid elevations and stations
9. Bent numbers encircled
10. Standard Title

11. Profile grade data
12. Type of riprap
13. Soil Core Hole information with penetrometer test data
14. Fixed/expansion condition of all bents
15. Number, size and length of foundations

B. Bridge Design and Details. The Engineer shall perform designs and prepare detail drawings in accordance with standard requirements of the County. All bridge design shall be in conformance with the latest edition of TxDOT's Bridge Design Manual, Bridge Project Development Manual, Bridge Detailing Manual, and AASHTO LRFD Bridge Design Specifications.

C. Final Design Calculations and Details. The Engineer shall make final design calculations and final detail drawings, per structure, in accordance with standard requirements of the County. All bridge design shall be in conformance with the latest edition of the TxDOT's Bridge Design Manual, Bridge Project Development Manual, Bridge Detailing Manual, and AASHTO LRFD Bridge Design Specifications. The Engineer's designer and checker shall both check all calculations and initial each page. The Engineer shall submit for review all structural design calculations and quantity calculations at the 90% submittal.

**EXHIBIT B-3
ATTACHMENT B
SUPPLEMENTAL AGREEMENT NO. 3
ADDITIONAL SCOPE OF SERVICES**

FORT BEND COUNTY TOLL ROAD AUTHORITY, SEGMENT B-1

Compensation for the services described in A-3 will be for a not to exceed amount of \$516,646.92.