GENERAL MEETING OF THE BOARD OF DIRECTORS
OF THE
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY

RESOLUTION NO. 17-003

APPROVAL OF WORK AUTHORIZATION NO. 6 WITH PARSONS BRINCKERHOFF, INC. FOR GENERAL ENGINEERING CONSULTANT SERVICES RELATED TO THE MOKAN PROJECT

WHEREAS, by Resolution 16-034 dated June 15, 2016, the Board of Directors authorized the Executive Director to negotiate and execute on behalf of the Mobility Authority an agreement with Parsons Brinckerhoff, Inc. for general engineering consultant services; and

WHEREAS, on July 1, 2016 the Mobility Authority entered into an agreement with Parsons Brinckerhoff, Inc. for general consulting civil engineering services; and

WHEREAS, the Executive Director and Parsons Brinckerhoff, Inc. have agreed to proposed Work Authorization No. 6 for general engineering consultant services for the Mokan Project; and

WHEREAS, the Executive Director estimates the reasonable fees associated with the services to be provided under Work Authorization No. 6 to be in an amount not to exceed $612,890.13, including contingency; and

WHEREAS, the services to be provided under in Work Authorization No. 6 shall be substantially complete by December 31, 2017. However, Work Authorization No. 6 will not expire until all tasks associated with the Scope of Services are completed; and

WHEREAS, the Executive Director recommends that the Board approve proposed Work Authorization No. 6, a copy of which is attached to this resolution as Exhibit A.

NOW THEREFORE, BE IT RESOLVED, that the Board approves an amount not to exceed $612,890.13 for the services described in Work Authorization No. 6; and

BE IT FURTHER RESOLVED, that the Board authorizes the Executive Director to finalize and execute proposed Work Authorization No. 6 with Parsons Brinckerhoff, Inc., in the form or substantially the same form as Exhibit A.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 22nd day of February 2017.

Submitted and reviewed by:

Geoffrey Petrov, General Counsel

Approved:

Ray A. Wilkerson
Chairman, Board of Directors

Exhibit A

APPENDIX D

WORK AUTHORIZATION

WORK AUTHORIZATION NO. 06

This Work Authorization is made as of this 22nd day of February, 2017, under the terms and conditions established in the AGREEMENT FOR GENERAL CONSULTING ENGINEERING SERVICES, dated as of July 1, 2016 (the "Agreement"), between the Central Texas Regional Mobility Authority ("Authority") and **Parsons Brinckerhoff, Inc.** ("GEC"). This Work Authorization is made for the following purpose, consistent with the services defined in the Agreement:

MoKan Project – Preliminary Engineering

Section A. - Scope of Services

A.1. GEC shall perform the following Services:

Please reference Attachment A – Scope of Work

A.2. The following Services are not included in this Work Authorization, but shall be provided as Additional Services if authorized or confirmed in writing by the Authority.

N/A

A.3. In conjunction with the performance of the foregoing Services, GEC shall provide the following submittals/deliverables (Documents) to the Authority:

Please reference Attachment A – Scope of Work

Section B. - Schedule

GEC shall perform the Services and deliver the related Documents (if any) according to the following schedule:

Services defined herein shall expire on December 31st, 2017 or when all tasks associated with the Scope of Services are complete as defined by the Authority.

Section C. - Compensation

C.1. In return for the performance of the foregoing obligations, the Authority shall pay to the GEC the amount not to exceed **$510,741.78** based on a Cost Plus fee listed in Attachment B – Fee Estimate. Compensation shall be in accordance with the Agreement.

The Authority and the GEC agree that the budget amounts contained in Attachment B-Fee Estimate for the GEC are estimates and that these individual figures may be redistributed and/or adjusted as necessary over the duration of this Work Authorization. The GEC may alter the compensation distribution between tasks or work assignments to be consistent with

the Services actually rendered within the total Work Authorization amount. The GEC shall not exceed the maximum amount payable without prior written permission by the Authority.

C.2. Compensation for Additional Services (if any) shall be paid by the Authority to the GEC according to the terms of a future Work Authorization.

Section D. - Authority's Responsibilities

The Authority shall perform and/or provide the following in a timely manner so as not to delay the Services of the GEC. Unless otherwise provided in this Work Authorization, the Authority shall bear all costs incident to compliance with the following:

N/A

Section E. - Other Provisions

The parties agree to the following provisions with respect to this specific Work Authorization:

N/A

Except to the extent expressly modified herein, all terms and conditions of the Agreement shall continue in full force and effect.

Authority:	**GEC:**
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY	**Parsons Brinckerhoff, Inc.**
By: _____	By: _____
Name: Mike Heiligenstein	Name: Mario Medina, P.E.
Title: Executive Director	Title: Vice President
Date: _____	Date: _____

SERVICES TO BE PROVIDED BY THE ENGINEER

I. INTRODUCTION

The ENGINEER shall perform work generally consisting of alternatives development and evaluation, preliminary engineering, traffic modeling, and hydraulic studies for the Central Texas Regional Mobility Authority's (Mobility Authority) proposed MoKan Project (Project) located in Williamson County, Texas. The limits of the services are from Georgetown Inner Loop south to SH 45 North, approximately 9 miles.

The ENGINEER shall complete the following tasks:

- Project Management and Administration
- Project Development Support
- Environmental and Public Involvement
- Route and Design Studies
- Financial Planning Support
- Traffic Analysis

II. PROJECT MANAGEMENT AND ADMINISTRATION

The ENGINEER shall perform the following project administration and coordination duties:

A. PROJECT MANAGEMENT AND ADMINISTRATION

Task 1: Progress Reports and Invoices

For the Project, prepare monthly invoices and progress reports for the work tasks and provide evidence of work accomplished during the time period since the previous report. Monthly progress reports shall be submitted and shall include: activities completed, initiated, or ongoing during the reporting period; activities planned for the coming period; problems encountered and actions to remedy them; overall status, including a tabulation of percentage complete by task; and updated project schedules.

Deliverables

- Monthly invoices and progress reports

Task 2: Record Keeping and File Management

The ENGINEER shall maintain all records and files related to the project throughout the duration of the services. A document management system specified by the Mobility Authority will be used for all records and files.

Deliverables

- Project records and files in system specified by the Mobility Authority

Task 3: Correspondence

Prepare written materials, letters, survey forms etc. used to solicit information or collect data for the project and submit them to the Mobility Authority for review and approval prior to use or distribution. Copies of relevant outgoing correspondence and incoming correspondence will be provided to the Mobility Authority on a continuing basis.

Deliverables

- List of outgoing and incoming documents
- Copies of relevant correspondence

B. COORDINATION

Task 1: Project Coordination

Coordinate Project aspects with the team members and the Mobility Authority.

Task 2: Project Coordination Meetings

Schedule and attend meetings to coordinate. The ENGINEER shall attend monthly progress/coordination meetings with the Mobility Authority. In preparation for Project meetings, the ENGINEER shall prepare and distribute a Meeting Agenda which shall include a brief description of the meeting objectives, a list of the topics to be covered and who shall facilitate the discussion of each topic. When action items arise from the meeting discussion, an assignment of responsibility and due date for each action item shall be made immediately and distributed amongst the team. The ENGINEER shall prepare all meeting minutes.

Deliverables

- Meeting agendas and minutes

III. PROJECT DEVELOPMENT SUPPORT

The ENGINEER shall provide project development support to the Mobility Authority as required during the Project Development process, including:

Task 1: Engineering and Technical Support

Provide various engineering and technical tasks as requested by the Mobility Authority including, but not limited to: engineering assistance, environmental assistance, traffic analysis, reports, research, presentations, and meetings.

Task 2: Project Phasing

Support and provide technical advice to the Mobility Authority for scoping or phasing the Project into three to four longitudinal phases. Develop and update a preliminary Project estimate by phase.

Task 3: Agency Coordination

Provide appropriate staff as part of coordination efforts between the Mobility Authority and TxDOT, Capital Metro, FHWA, Williamson County, Travis County, City of Round Rock, City of Georgetown and City of Pflugerville. The ENGINEER will provide coordination efforts on the Mobility Authority's behalf at the direction of the Mobility Authority.

Prepare for, attend and document coordination and status meetings.

Compile and maintain TxDOT Local Government Project Procedures (LGPP) documentation for preliminary engineering activities.

Deliverables

- Meeting agendas and minutes

Task 4: Traffic and Revenue (T&R) Consultant Coordination

Provide coordination and support to the Mobility Authority's T&R Consultant, as directed by the Mobility Authority.

Task 5: Project Scheduling

Develop and maintain a master project schedule that will show critical project development milestones. Schedule update will occur monthly at a minimum.

Deliverables

- Initial and updated project master schedule

IV. SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

The ENGINEER shall provide preliminary environmental and public involvement services for the Project.

Task 1: Environmental Constraints Mapping

The ENGINEER shall provide environmental services necessary to produce a high-level fatal flaw analysis of the study area. The analysis will be performed at a desktop level, with no field work or windshield surveys. Constraints to be identified include but are not limited to:

a. Cemeteries
b. Parks, Preserves, Trails & Greenbelts
c. Soils
d. Edwards Aquifer Zones
e. Karst sensitive areas/zones
f. Farmlands
g. Oil/gas wells
h. Hazardous material sites
i. Historic Properties
j. Archeological sites
k. Williamson County Regional Habitat Conservation Plan areas (if needed)
l. Data from the Texas Parks and Wildlife Department's Natural Diversity Database
m. United States Fish and Wildlife Service's Critical Habitat Mapper
n. National Wetland Inventory Data
o. Floodplains
p. National Hydrography Dataset
q. Land uses identified through aerial photo interpretation
r. Existing and planned development

The above information shall be mapped in Geographic Information System (GIS) and utilized for the evaluation of alternatives.

The ENGINEER shall provide a technical memorandum summarizing the results of the environmental constraints mapping.

Deliverables

- Draft and Final GIS-based Environmental Constraints Map
- Meeting Minutes, if meetings related to this task are held
- Draft and Final Environmental Constraints Mapping Technical Memorandum

Task 2: Public Involvement

The ENGINEER shall perform the following public involvement activities:

1. The ENGINEER shall compile, maintain and update a mailing list of people, agencies and organizations interested in the proposed project. The Mobility Authority shall provide the ENGINEER with relevant data available to the Mobility Authority.
2. The ENGINEER shall provide content for public consumption. Content could include, but not be limited to:
    - Project description information
    - Project reports and documentation
    - Project fact sheets and graphics
3. Project Fact Sheets. The Engineer will:
    - Prepare up to 5 Fact Sheets as requested by the Mobility Authority.
    - Make the facts sheets available as needed.
4. Community Engagement. The Engineer will:
    - Develop and maintain a list of potential community members (neighborhood associations, special interest groups, business associations, etc.) to contact for future informal meetings/discussions.
    - Respond to requests from community members for meetings with project staff.
    - Maintain a correspondence file for major stakeholder meetings.
    - Prepare a meeting summaries for major stakeholder meetings.

Deliverables

- Updated project database/mailing list
- Up to 5 Fact Sheets
- List of potentially interested community groups
- Stakeholder meeting summaries

V. ROUTE AND DESIGN STUDIES

The ENGINEER shall prepare all work in accordance with the latest version of applicable State procedures, manuals and guidelines. The ENGINEER shall obtain written concurrence from the Mobility Authority prior to proceeding with a design if any questions arise during the design process regarding the applicability of the design criteria.

Task 1: Alternative Development and Analysis

The ENGINEER shall review and refine up to 3 alternative concepts and develop a conceptual layout in plan exhibits for each alternative. Alternative connection types at roadway intersections will be considered and evaluated. The alternative analyses for interchanges will be based on the Mobility Authority established project limits and up to 3 intermediate interchanges within the project limits.

In developing and refining the alternatives, the ENGINEER shall consider impacts to the FEMA floodplains and the Edwards Aquifer. Mitigation for such impacts will be considered and stated in the preliminary engineering summary report for the preferred alternative.

The ENGINEER will consider available utility information in the development of alternative concepts. This information will be based on available data and information received from requests made by the ENGINEER to utility companies.

The ENGINEER shall prepare plan view exhibits (conceptual layouts) for each alternative showing differences in grade separation locations and/or ramp configurations and a typical section.

In assessing various alternatives, the ENGINEER shall evaluate the following design and engineering considerations, as appropriate:

a. Constructability
b. Special design considerations
c. Construction costs
d. Engineering costs
e. Utility impacts (if known)
f. Operation and Maintenance
g. Level of Service
h. Environmental and drainage constraints
i. Bike/Pedestrian considerations
j. Geometric design and restrictions
k. Right-of-way costs

The ENGINEER shall evaluate the alternatives based on the design and engineering considerations. The ENGINEER shall develop a decision matrix based on the above design and engineering considerations in order to identify the preferred alternative.

Deliverables

- Plan Exhibits (conceptual layouts) for up 3 alternative concepts (DGN and PDF formats)
- Engineering summary technical memorandum

Task 2: 30% Design Schematic

For the Preferred Alternative, the ENGINEER shall:

a. Schematic development will be based on available horizontal and vertical information obtained from online sources or information readily available from agencies. A plannimetric or topographic survey will not be performed.

b. The ENGINEER will develop the geometric design that will include the refinement of the proposed typical sections and a geometric design that includes horizontal and vertical alignments.

c. The ENGINEER will develop preliminary design cross sections at 200' increments and at other critical intermediate locations as necessary. The cross sections will be used to identify the preliminary ROW requirements and assist in locating proposed retaining walls, bridge locations, etc. Earthwork quantities derived from the cross sections will be used in the development of the preliminary construction cost estimate.

d. The ENGINEER shall prepare a 30% schematic (conceptual schematic). The conceptual schematic will be prepared on color plan and profile roll plots. The ENGINEER shall deliver 3 copies of the schematic design to the Mobility Authority for approval.

e. The ENGINEER will perform basic preliminary engineering to determine the general structure length, span length, and bridge depth for new bridges including direct connections.

f. The ENGINEER will perform basic preliminary engineering to determine the location and general height of retaining wall structures necessary along the roadway sections.

g. The ENGINEER shall prepare a preliminary engineering summary report to summarize the main project design aspects.

Deliverables

- 30% schematic for preferred alternative (DGN and PDF formats).
- Preliminary engineering summary report

VI. FINANCIAL PLANNING SUPPORT

The ENGINEER shall provide financial planning support to the Mobility Authority as required during the Project Development process, including:

Task 1: Project Cost Estimate Updates

As directed by the Mobility Authority, the ENGINEER shall provide total project cost estimate updates for up to 3 alternative concepts and for the preferred alternative. The construction cost development will be based on measured quantities from the conceptual layout/schematic such as paving and bridges and estimated cost for grading, drainage, retaining walls, other structures, signing and marking, lighting, signalization, and toll collection systems. The estimate of the probable construction costs will be used to estimate other project costs such as preliminary engineering, final engineering, environmental compliance/mitigation, utility relocation and construction engineering and inspection (CEI). The corridor design concept exhibits will be used to estimate the right of way cost.

Deliverables

- Preliminary project estimates for up to 3 alternative concepts
- Preliminary project estimate for the preferred alternative

Task 2: Operations, Maintenance, and Renewal & Replacement Estimate Updates

Develop and/or update ENGINEER'S opinion of probable operations cost estimates using either a Sketch Level approach (i.e. an assumed per transaction cost based on average operations costs of similar toll systems) or a Level 1 approach (i.e. estimate quantities for various elements of the toll operations and applying anticipated unit prices to same to develop an opening year cost which can be escalated over time).

Develop and/or update ENGINEER'S opinion of annual/routine maintenance cost estimates using either a Sketch Level approach (i.e. an estimated per centerline mile cost based on the facility type which considers the number of lanes, pavement material, and location) or a Level 1 approach (i.e. estimate quantities for various elements of the maintenance efforts and applying anticipated unit prices to same to develop an opening year cost which can be escalated over time).

Develop and/or update ENGINEER'S renewal & replacement budget estimates (also known as periodic/non-routine maintenance estimates) using either a Sketch Level approach (i.e. an estimated per mile cost based on renewal & replacement budgets utilized on similar facilities) or a Level 1 approach (i.e. includes the identification of a long-term, periodic maintenance schedule, estimation of

quantities for the associated elements, and inflated prices of same to assess the overall cost requirements of the system in the target years).

Task 3: Toll Feasibility Analysis Updates

The ENGINEER will assist the Mobility Authority in updating toll feasibility analyses which includes the incorporation of traffic and revenue forecast updates (by others); operations, maintenance, and renewal & replacement estimates; and total project cost estimates to determine the financial feasibility of the corridor.

Task 4: Financial Advisor Support

The ENGINEER will provide financial advisor support necessary for the Mobility Authority to conduct financial programming for their system. This will include the development of cash flow analyses which contemplate implementation costs and schedules.

VII. TRAFFIC ANALYSIS

The ENGINEER shall perform work for the Mobility Authority to analyze up to three scenarios using the year 2040 T&R forecasts developed by the T&R consultant. This task will generally include volume development for the AM and PM peak hours, developing corridor models, and compiling and comparing the results.

Task 1: Volume Development

Utilizing area traffic counts and the 24-hour volumes from the T&R study prepared by the T&R Consultant, the ENGINEER will develop a line diagram depicting AM and PM peak hour volumes.

Deliverables

- Line diagram depicting AM and PM peak hour volumes.

Task 2: Traffic Modeling

The ENGINEER will develop traffic models for up to three scenarios as directed by the Mobility Authority. The modeling will include level of service (LOS) and operational analysis. The model will not be calibrated to existing conditions. However, modifications will be made, as needed, to driver behavior based on engineering judgement and the ENGINEER'S experience in the local area. These models will include ramps and cross streets as directed by the Mobility Authority.

Deliverables

- AM and PM traffic model files for each scenario.

Task 3: Compile and Compare Results

The ENGINEER will compile and compare the results. Tables/figures presenting a comparison of the scenarios analyzed will be produced.

Deliverables

- Tables/figures presenting comparison of scenarios.

Task 4: Documentation

The ENGINEER will summarize the assumptions and results for each of the modeled scenarios in a technical memorandum.

Deliverables

- Technical memorandum summarizing the assumptions and results for each scenario.

ATTACHMENT B - Fee Estimate

MoKan - Preliminary Engineering	Sr. Engineering Mgr.	Project Manager	Sr Engineering Mgr.	Sr. Engineering Mgr.	CADD Mgr. II	Sr. Supervising Engineer	Lead Planner	Sr. Engineering Mgr.	Supervising Engineer	Public Involvement	Sr. Engineer	Estimator	Engineer II	Engineer I	Planner I	Admin/Clerical II	TOTAL	TOTAL
TASK / WORK DESCRIPTION																		
II. PROJECT MANAGEMENT AND ADMINISTRATION																		
	20	200														20	240	$48,221.17
III. PROJECT DEVELOPMENT SUPPORT																		
Task 1: Engineering and Technical Support		8	200	50	200		16						260	100	60	20	914	$131,112.07
Task 2: Project Phasing		10	100		60											22	192	$37,911.63
Task 3: Agency Coordination		20				24											44	$9,365.68
Task 4: Traffic and Revenue (T&R) Consultant Coordination		5							20						20		45	$5,246.88
Task 5: Project Scheduling	5	5										80					90	$16,477.22
IV. SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT																		
Task 1: Environmental Constraints Mapping							120								80		200	$21,299.64
Task 2: Public Involvement										360							360	$38,667.24
V. ROUTE AND DESIGN STUDIES																		
Task 1: Alternative Development and Analysis	8	20	36	8	80								80	40			272	$38,559.90
Task 2: 30% Design Schematic	8	20	24	8	50								80	40			230	$31,448.63
VI. FINANCIAL PLANNING SUPPORT																		
Task 1: Project Cost Estimate Updates	5	16	36	16			8										81	$17,926.15
Task 2: Operations, Maintenance, and Renewal & Replacement Estimate Updates				8									30				38	$4,459.76
Task 3: Toll Feasibility Analysis Updates																	0	$0.00
Task 4: Financial Advisor Support	16	24	24	20									40			20	144	$24,205.31
VII. TRAFFIC ANALYSIS																		
Task 1: Volume Development	1							4	48		100						153	$18,706.45
Task 2: Traffic Modeling	2							8	60		200						270	$32,337.01
Task 3: Compile and Compare Results	3							3	20		40						66	$8,520.46
Task 4: Documentation	2							2	32		8						44	$6,307.28
TOTAL DIRECT LABOR	70	328	420	110	390	24	144	17	180	360	348	80	490	180	160	82	3383	
% Total by Classification	*2.07%*	*9.70%*	*12.42%*	*3.25%*	*11.53%*	*0.71%*	*4.26%*	*0.50%*	*5.32%*	*10.64%*	*10.29%*	*2.36%*	*14.48%*	*5.32%*	*4.73%*	*2.42%*		
Labor Costs	$ 5,637.10	$ 23,258.48	$ 39,228.00	$ 7,364.50	$ 18,540.60	$ 1,845.84	$ 6,792.48	$ 1,480.87	$ 9,090.00	$ 13,849.20	$ 13,387.56	$ 5,200.00	$ 16,302.30	$ 4,761.00	$ 3,700.80	$ 2,214.00		
Overhead Rate	1.5382	1.7	1.5382	1.5382	1.5382	1.5382	1.5382	1.5382	1.5382	1.5382	1.5382	1.5	1.7	1.7	1.7	1.7		
Overhead Costs	$ 8,670.99	$ 39,539.42	$ 60,340.51	$ 11,328.07	$ 28,519.15	$ 2,839.27	$ 10,448.19	$ 2,277.87	$ 13,982.24	$ 21,302.84	$ 20,592.74	$ 7,800.00	$ 27,713.91	$ 8,093.70	$ 6,291.36	$ 3,763.80		
Profit	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%		
Profit Costs	$ 1,430.81	$ 6,279.79	$ 9,956.85	$ 1,869.26	$ 4,705.98	$ 468.51	$ 1,724.07	$ 375.87	$ 2,307.22	$ 3,515.20	$ 3,398.03	$ 1,300.00	$ 4,401.62	$ 1,285.47	$ 999.22	$ 597.78		
Total Loaded Labor	$ 15,738.90	$ 69,077.69	$ 109,525.36	$ 20,561.83	$ 51,765.73	$ 5,153.62	$ 18,964.74	$ 4,134.62	$ 25,379.46	$ 38,667.24	$ 37,378.34	$ 14,300.00	$ 48,417.83	$ 14,140.17	$ 10,991.38	$ 6,575.58		**$ 490,772.48**
% Total by Class	3.21%	14.08%	22.32%	4.19%	10.55%	1.05%	3.86%	0.84%	5.17%	7.88%	7.62%	2.91%	9.87%	2.88%	2.24%	1.34%		

Total Direct Expenses	**$ 7,500.00**
Total	**$ 498,272.48**

Additional Subconsultants:

Cox McLain (Environmental)	**$ 3,483.80**
Whiddon Group (Utility)	**$ 8,899.50**
Total Work Authorization No. 6	**$ 510,741.78**