



CENTRAL TEXAS REGIONAL  
**MOBILITY AUTHORITY**

July 26, 2017  
**AGENDA ITEM #7**

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Approve Supplemental Work Authorization  
No. 1 for CP&Y's contract for design and  
construction support services for the Manor  
Expressway (290E) Phase III project

Strategic Plan Relevance: Regional Mobility  
Department: Engineering  
Contact: Justin Word, P.E., Director of Engineering  
Associated Costs: \$900,000 (not to exceed)  
Funding Source: Manor Expressway (290E) Phase III Project  
Action Requested: Consider and act on draft resolution

**Summary:**

At the July 27, 2016 Board meeting, the Board authorized the Executive Director to execute a contract and Work Authorization No. 1 with CP&Y for engineering design services for the Manor Expressway (290E) Phase III Project. Following execution of the original work authorization, a supplemental work authorization was to be executed when specific project details were determined through the design development process and to provide for future construction support services.

This supplemental work authorization No. 1 approves a not to exceed amount of \$900,000 to design the ITS/Tolling elements of the project, provide additional design efforts for a collector-distributor system at Parmer Lane and sidewalk design on the north side of the US 290 westbound frontage road, provide funding for future construction support services, and create a contingency to provide funding for any unanticipated design requirements for the Project.

Backup Provided: Draft Resolution  
Supplemental Work Authorization No. 1

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

**RESOLUTION NO. 17-0XX**

**APPROVE SUPPLEMENTAL WORK AUTHORIZATION NO. 1 FOR CP&Y'S  
CONTRACT FOR DESIGN AND CONSTRUCTION SUPPORT SERVICES FOR THE  
MANOR EXPRESSWAY (290E) PHASE III PROJECT**

WHEREAS, the Mobility Authority supports the goal of improving mobility in the Central Texas region through development of three (3) additional 290 East / SH130 direct connectors in order to improve safety and operations; and

WHEREAS, by Resolution No. 16-049 dated July 27, 2016, the Board authorized the Executive Director to execute a contract and Work Authorization No. 1 with CP&Y Inc. for engineering design services for the Manor Expressway (290E) Phase III Project; and

WHEREAS, the Mobility Authority planned to issue a supplemental work authorization once sufficient design development occurred to identify additional project design elements and to provide for construction phase services; and

WHEREAS, the Executive Director and CP&Y have negotiated Supplemental Work Authorization No. 1 in an amount not to exceed \$900,000 for additional design efforts needed to complete the project design and for construction phase services; and

WHEREAS, the Executive Director recommends that the Board approve the proposed Supplemental Work Authorization No. 1 in the form or substantially the same form attached to this resolution as Exhibit A.

NOW THEREFORE, BE IT RESOLVED that the Board authorizes the Executive Director to execute Supplemental Work Authorization No. 1 with CP&Y 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 26<sup>th</sup> day of July 2017.

Submitted and reviewed by:

Approved:

\_\_\_\_\_  
Geoffrey Petrov, General Counsel

\_\_\_\_\_  
Ray A. Wilkerson  
Chairman, Board of Directors

**Exhibit A**

**Exhibit A**

**MANOR EXPRESSWAY (290E) PHASE III**

**SUPPLEMENTAL WORK AUTHORIZATION NO. 1  
TO WORK AUTHORIZATION NO. 1  
CONTRACT FOR ENGINEERING SERVICES**

**THIS SUPPLEMENTAL WORK AUTHORIZATION** is made pursuant to the terms and conditions of Article 4 of the Contract for Engineering Services (the Contract) entered into by and between the Central Texas Regional Mobility Authority (the Mobility Authority) and CP&Y, Inc. (the Engineer) dated July 29, 2016.

The following terms and conditions of Work Authorization No. 1 are hereby amended as follows:

Supplemental Work Authorization No. 1 is not to exceed \$900,000 and will be authorized, as necessary, in individual Notice to Proceeds as indicated below.

**NTP1**

A Notice to Proceed 1 (NTP 1) on this Supplemental Work Authorization will be issued in writing to perform supplemental design services that were not included in Work Authorization No. 1. This work primarily includes design efforts and data collection/geotechnical explorations required for the addition of:

1. Collector-Distributor System at Parmer Lane
2. Sidewalk and associated crosswalks and signals on the north side of the US 290 westbound frontage road from Blue Goose Road to the east side of the northbound SH 130 frontage road
3. ITS/Toll Facility Design (not included in the original Work Authorization)

Additional scope shown in Attachment A will be added to the services to be provided by the engineer shown in the original work authorization.

Additional fees for the added services, not to exceed \$350,481, are shown in Attachment B.

**NTP2**

NTP 2 is intended for addition of Construction Phase Services to Work Authorization No. 1 as the construction phase of the project is implemented. This fee will be negotiated and authorized at that time. As a placeholder for these efforts, an estimated fee of \$281,847 was developed.

**NTP3**

NTP3 includes contingency funding for any unforeseen project efforts that will require design services from CP&Y and their project team. The amount identified for this contingency is \$267,672 and will be authorized as necessary for design or construction phase services.

This Supplemental Work Authorization shall become effective on the date of final execution of the parties hereto. All other terms and conditions of Work Authorization No. 1 not hereby amended are to remain in full force and effect.

**IN WITNESS WHEREOF**, this Supplemental Work Authorization is executed in duplicate counterparts and hereby accepted and acknowledged below.

**THE ENGINEER**

**CENTRAL TEXAS REGIONAL  
MOBILITY AUTHORITY**

\_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Printed Name)  
\_\_\_\_\_  
(Title)  
\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature)  
Mike Heilgenstein  
\_\_\_\_\_  
Executive Director  
\_\_\_\_\_  
(Date)

**ATTACHMENT A**  
**Services to be Provided by the Engineer**  
**Manor Expressway (290E) Phase III**

The Design Consultant Engineer (“Engineer”), shall provide additional design services related to the proposed improvements at Parmer Lane and SH 130. These improvements require extending the northern SH 130 project limits to allow for the design and construction of a collector distributor over Parmer Lane and existing ramp modifications. Additional design services are required for the design of pedestrian facilities along the WB 290E frontage road from Blue Goose Road to the SH 130 interchange per the project environmental commitments and for the design of toll facilities on the project.

**1. DATA COLLECTION / PRELIMINARY DESIGN**

**1.4. Geotechnical Investigation**

**1.4.1. General Requirements**

**1.4.1.1.** Perform geotechnical investigations and testing according to TxDOT’s Geotechnical Manual (latest edition) and TxDOT’s Test Methods, or ASTM Standards if no corresponding TxDOT Methods exist. Supplement existing boring logs performed by others with five (5) new borings for the design of bridge substructures and retaining walls at the Parmer Lane area. All proposed boring locations shall be identified by the Engineer and shown on a boring layout, reviewed and approved by the Mobility Authority prior to performing geotechnical investigations.

**2. FINAL DESIGN**

**2.3. Geotechnical Investigation**

**2.3.1.** The Engineer shall perform an analysis of the existing retaining walls at Parmer Lane using available as-built plans, geotechnical studies, and additional soil investigations in order to assist in making recommendations for wall modifications associated with the proposed CD construction. The Engineer shall develop design options for both modifying the existing retaining walls and/or replacing the existing walls with a new wall system. A preliminary costs analysis shall be developed to assist in making a final wall recommendation. The geotechnical Engineer shall update the geotechnical report with their findings and prepare the additional PS&E documents associated with the CD construction including the wall and bridge structure.

**2.7. Final Roadway Design**

**2.7.2. Roadway Plans & Geometry**

The Engineer shall:

- Develop final Proposed Typical Sections Sheets for the Parmer Lane CD improvements.
- Complete Roadway Plan and Profile sheets. Prepare roadway geometry of proposed CD and ramps. Prepare modifications to SH 130 ramp scheme

**ATTACHMENT A**  
**Services to be Provided by the Engineer**  
**Manor Expressway (290E) Phase III**

associated with State comments. Prepare miscellaneous exhibits for coordination of design with stakeholders

- Develop Ramp Gore Layout for the Parmer Lane CD. Prepare miscellaneous roadway details for Parmer Lane median modifications.
- The Engineer will complete the Open Roads 3D DGN and DTM to model the proposed project elements at Parmer Lane.
- Prepare Design Cross Sections at 50-foot stations along the CD improvements for the determination of cut and fill quantities and limits of construction.
- Incorporate pedestrian sidewalk into the roadway plans along the WB 290E frontage road from Blue Goose to the SH 130 interchange. The Engineer shall prepare miscellaneous roadway details required for the construction of the sidewalk.

## **2.8. Drainage Design**

### **2.8.1. Hydraulic Report:**

Refine the hydrologic and hydraulic studies performed in the preliminary phase to include the additional construction of the Parmer Lane CD.

### **2.8.2. Bridge and Culvert Plan Sheets**

- The Engineer shall prepare the necessary Hydraulic Data Sheets, External Drainage Area Maps, and Culvert layouts to account for the construction of the Parmer Lane CD and effect on the existing culvert at this location. This effort will also include drainage design for new sidewalk on the WBFR bridge over SH 130.

### **2.8.3. Storm Drain Plan Sheets**

The Engineer will address the required project storm drain systems associated with the Parmer Lane CD/ramp improvements and the new sidewalk along the WBFR, including the following:

- Storm Drain Computations
- Interior Drainage Area Maps
- Drainage Plan and Profile Sheets
- Channel Layouts

### **2.8.4. Storm Water Pollution Prevention Plan (SW3P)**

- Erosion and Sediment Control Plans shall be developed to account for the construction of the Parmer Lane CD and the new sidewalk on the WBFR.

## **2.9. Structural Design**

The Engineer shall prepare the additional design of the Parmer Lane CD structure and for the modification of the WB 290E frontage road structure over SH 130 to incorporate

**ATTACHMENT A**  
**Services to be Provided by the Engineer**  
**Manor Expressway (290E) Phase III**

sidewalk/pedestrian elements in conformance with the latest edition of the State's *LRFD Bridge Design Manual, Bridge Project Development Manual, Bridge Detailer's Manual,* and *AASHTO LRFD Bridge Design Specifications (HL 93 Loading)*. The Engineer will also modify the bridge plans and railroad agreement exhibits to add crash walls on both sides of both structures crossing over the Capital Metro rail facilities.

- 2.9.1.** The Engineer shall incorporate, into the final design of the bridge elements, aesthetic design features and details as determined in the preliminary engineering phase.
- 2.9.2.** Bridge Layouts: The Engineer shall finalize Bridge Layout plans, elevations and typical sections.
- 2.9.3.** The Engineer shall generate final design calculations and final detail drawings for the Project structures. Structural design calculations and final detail drawings will be in accordance with standard requirements of TxDOT. The Engineer's designer and checker shall both check calculations and sign the front page of each individual calculation package. The Engineer shall submit structural design calculations and quantity calculations for review at the Final submittal. The Engineer shall coordinate interim over the shoulder reviews at the request of the Mobility Authority and GEC.
- 2.9.4.** The Engineer shall develop a Boring Log Key map layout indicating locations of geotechnical boring.
- 2.9.5.** Boring Log Elevations: The Engineer will include boring logs for each geotechnical borings on separate sheets.
- 2.9.6.** Estimated Quantities and Bearing Seat Elevations: The Engineer shall provide bridge quantity summaries at 60%, Pre-Final and Final Plan submittals. The bridge elevations shall be limited to bearing seat elevations only.
- 2.9.7.** Abutment details and calculations shall be provided for custom abutments.
- 2.9.8.** Interior Bent details and calculations shall be provided for custom interior bent details (caps and columns).
- 2.9.9.** Footings: Details and calculations shall be provided for footing elements.
- 2.9.10.** Framing Plan: For steel girder design, this effort includes design of steel girders and field splices.
- 2.9.11.** Slab Plan: The slab plan includes the development of prestressed beam designs.
- 2.9.12.** Foundation Design: Details for foundation layouts and calculations shall be provided for foundation elements
- 2.9.13.** Drainage Details: The Engineer shall provide details for concealed drainage for bridge deck scuppers. Drainage slots in bridge rails shall not be used for the mainlane structures. These sheets will be developed with combined details for use on various structures.
- 2.9.14.** Aesthetic Design: The Engineer shall finalize detailed drawings for aesthetic features compatible with the project aesthetic theme.
- 2.9.15.** Miscellaneous Details: The details shall include Structural Details for aesthetics. These sheets will be developed with combined details for use on various structures.



**ATTACHMENT A**  
**Services to be Provided by the Engineer**  
**Manor Expressway (290E) Phase III**

**2.9.16. Standard Details:** The Engineer will use the latest TxDOT standard details for beams, diaphragms, railings, expansion joints, riprap, etc. wherever possible. Prepare any project-specific modified standards necessary for inclusion in the PS&E package. Sign, seal and date all project-specific modified standards.

**2.9.17. Specifications:** The Engineer will develop specifications as needed for bridge structures.

**2.11. Signing, Markings and Signalization**

The Engineer shall prepare additional signing/stripping design for the construction of the Parmer Lane CD and other requested sign modifications. The Engineer shall modify the existing WB 290E frontage road signals at SH 130 to account for the pedestrian movements associated with the construction of sidewalk along the frontage road. The Engineer shall provide the following:

- Large Sign Details: Engineer shall provide detail sheets for large guide signs. These sheets shall show dimensions, layout of text, directional arrows and shields, borders and colors.
- Overhead Sign Structures Elevations: Engineer shall provide five (5) overhead sign structure elevations.
- Pedestrian Signals: Engineer shall modify the existing signals to account for the construction of sidewalk along the WB 290E frontage Road at the SH 130 interchange. Engineer will coordinate with the City of Austin to receive approval of the traffic signal modifications.

**2.14. Illumination**

**2.14.1.** The Engineer shall design safety lighting at the Parmer Lane CD ramp merge locations, auxiliary lanes, and other locations as required. The Engineer shall provide lighting calculation exhibit(s) for the illumination design.

**2.14.2.** The illumination design documents will be prepared by the Engineer for the Project as a single set of illumination plans and incorporate them into the PS&E package. The Engineer shall coordinate and provide plans drawings, at a scale of 1" = 100', showing the locations of all components of the illumination system. The Engineer shall include all applicable standards, specifications, details and estimates for the system in the plan set.

**3. TOLL FACILITIES INFRASTRUCTURE DESIGN**

The Toll Facilities Infrastructure design documents will be prepared by the Engineer based on the details and directives provided by the Mobility Authority and incorporated into the PS&E package. It is assumed this task shall include one (1) toll gantry for the S-W direct connector. The Engineer shall coordinate and provide plan drawings for all tolling infrastructure and power. The Engineer shall provide the following:

**3.1.1.** Plan drawings showing the roadway geometry and layout in the vicinity of the toll

**ATTACHMENT A**  
**Services to be Provided by the Engineer**  
**Manor Expressway (290E) Phase III**

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- 3.1.2.** Detailed drawings for tolling locations including all conduits for communication and power, junction boxes, gantry foundation, structure and lightning protection, control cabinet foundations, foundations for generators, fencing and lighting. Plan sheets will include toll gantry foundation requirements, column details and identification of overhead sign bridge (OSB) truss standards.
- 3.1.3.** Detailed drawings for the foundations and electrical utilities, required for control cabinets, emergency generator, and fuel tank. The details will integrate the required dimensions and capacities to accommodate the appropriate structure sizes provided by the Mobility Authority's System Integrator. Electrical design will include coordination with primary utility company and secondary power supply to the cabinet including meter and all wiring/cables to the nearest junction box. Coordination with the Toll Systems Integrator will be required (Systems Integrator will provide all electrical load requirements and rough in locations/details). The toll collection system design will be prepared by others.
- 3.1.4.** Although a toll gantry installation will not be included as part of the E-S DC, design will be done to not preclude future addition of a toll gantry. This would include providing a future mounting location and conduit installations on the bridge structure.

**Attachment B  
FEE SCHEDULE  
Manor Expressway (290E) Phase III Project**

	CP&Y, Inc.	HDR Engineering, Inc.	K. Friese & Associates, Inc.	P.E. Structural Consultants, Inc.	Corsair Consulting, LLC	Maldonado-Burkett ITS, LLP	Inland Geodetics, LLC	Surveying and Mapping, LLC	TOTAL
<b>1.0 PRELIMINARY DESIGN</b>									
1.1 - ENVIRONMENTAL DOCUMENT REVIEW/COORDINATION	\$ -								\$ -
1.2 - PUBLIC INVOLVEMENT COORDINATION	\$ -								\$ -
1.3 - DATA COLLECTION	\$ -								\$ -
1.4 - GEOTECHNICAL INVESTIGATION	\$ -								\$ -
1.4A - GEOTECHNICAL DRILLING / TESTS					\$ 9,298				\$ 9,298
1.5 - SURVEYING	\$ -								\$ -
1.6 - SUBSURFACE UTILITY ENGINEERING AND UTILITY COORDINATION	\$ -								\$ -
1.6A - SUE LOCATION SERVICES	\$ -								\$ -
1.7 - PRELIMINARY DESIGN	\$ -								\$ -
1.8 - ROADWAY DESIGN	\$ -								\$ -
1.9 - DRAINAGE DESIGN	\$ -								\$ -
1.10 - STRUCTURAL DESIGN	\$ -								\$ -
1.11 - RETAINING WALL DESIGN	\$ -								\$ -
1.12 - SIGNING, MARKINGS AND SIGNALIZATION	\$ -								\$ -
1.13 - TRAFFIC CONTROL PLAN	\$ -								\$ -
1.14 - INTELLIGENT TRANSPORTATION SYSTEMS (ITS)	\$ -								\$ -
1.15 - ILLUMINATION	\$ -								\$ -
1.16 - TOLL FACILITIES INFRASTRUCTURE DESIGN	\$ -								\$ -
1.17 - TRAFFIC OPERATIONS MODELING	\$ -								\$ -
1.18 - MISCELLANEOUS	\$ -								\$ -
1.19 - COORDINATION, MEETINGS & INVOICING	\$ -								\$ -
<b>1.0 PRELIMINARY DESIGN - SUB TOTAL</b>	\$ -	\$ -	\$ -	\$ -	\$ 9,298	\$ -	\$ -	\$ -	\$ 9,298
<b>2.0 FINAL DESIGN</b>									
2.1 - PUBLIC INVOLVEMENT & STAKEHOLDER COORDINATION	\$ -								\$ -
2.2 - DATA COLLECTION	\$ -								\$ -
2.3 - GEOTECHNICAL INVESTIGATION	\$ -				\$ 43,865				\$ 43,865
2.4 - SURVEYING	\$ -								\$ -
2.5 - UTILITY COORDINATION AND DESIGN	\$ -								\$ -
2.6 - SPECIAL DESIGN PER MOBILITY AUTHORITY REQUEST	\$ -								\$ -
2.7 - FINAL ROADWAY DESIGN	\$ 71,695								\$ 71,695
2.8 - DRAINAGE DESIGN	\$ -		\$ 22,393						\$ 22,393
2.9 - STRUCTURAL DESIGN	\$ 12,096			\$ 52,151					\$ 64,247
2.10 - RETAINING WALL DESIGN	\$ -								\$ -
2.11 - SIGNING, MARKINGS AND SIGNALIZATION	\$ 23,523	\$ 10,623							\$ 34,146
2.12 - TRAFFIC CONTROL PLAN	\$ -								\$ -
2.13 - INTELLIGENT TRANSPORTATION SYSTEMS	\$ -								\$ -
2.14 - ILLUMINATION	\$ -					\$ 10,503			\$ 10,503
2.15 - TOLL FACILITY DESIGN	\$ -								\$ -
2.16 - MISCELLANEOUS	\$ -								\$ -
2.17 - COORDINATION, MEETINGS & INVOICING	\$ -								\$ -
<b>2.0 FINAL DESIGN - SUB TOTAL</b>	\$ 107,314	\$ 10,623	\$ 22,393	\$ 52,151	\$ 43,865	\$ 10,503	\$ -	\$ -	\$ 246,849
<b>3.0 TOLL FACILITIES INFRASTRUCTURE DESIGN - SUB TOTAL</b>	\$ 13,855			\$ 38,222		\$ 26,235			\$ 78,312
<b>OTHER DIRECT EXPENSES</b>	\$ -			\$ 934	\$ 15,088				\$ 16,022
<b>SUB TOTAL - ENGINEERING DESIGN SERVICES</b>	\$ 121,169	\$ 10,623	\$ 22,393	\$ 91,308	\$ 68,251	\$ 36,738	\$ -	\$ -	\$ 350,481
<b>PERCENTAGE DBE %</b>	34.6%	3.0%	6.4%	26.1%	19.5%	10.5%	0.0%	0.0%	100.0%
			6.4%	26.1%	19.5%	10.5%	0.0%	0.0%	62.4%