

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

**RESOLUTION NO. 13-032**

**APPROVING AN AGREEMENT WITH CDM SMITH FOR TRAFFIC AND  
REVENUE STUDIES RELATED TO THE MOPAC SOUTH PROJECT.**

WHEREAS, by Resolution No. 09-014, dated February 25, 2009, the Board of Directors authorized the Executive Director to negotiate and execute contracts with a list of recommended providers of traffic and revenue services, including Wilbur Smith Associates (“WSA”), the predecessor company to CDM Smith Inc. Associates (“CDM Smith”), and the Mobility Authority subsequently entered into a contract with WSA effective August 1, 2009; and

WHEREAS, the Mobility Authority is undertaking an environmental study relating to the proposed MoPac South and MoPac South Overpass projects, which will require traffic and revenue engineering services and related studies; and

WHEREAS, the Executive Director recommends engaging CDM Smith to provide professional traffic and revenue engineering services for the proposed MoPac South and MoPac South Overpass Projects generally on the terms and conditions set forth in the draft Letter of Engagement attached as Exhibit 1.

NOW THEREFORE, BE IT RESOLVED, that the Board of Directors authorizes the Executive Director to negotiate and execute on behalf of the Mobility Authority an agreement with CDM Smith to provide professional traffic and revenue engineering services for the proposed MoPac South and MoPac South Overpass Projects in the form or substantially in the form of Exhibit 1, for a maximum, not to exceed fee of \$1,600,000, and as the Executive Director further determines is in the best interest of the Mobility Authority.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 24<sup>th</sup> day of April, 2013.

Submitted and reviewed by:



Andrew Martin  
General Counsel for the Central  
Texas Regional Mobility Authority

Approved:



Ray A. Wilkerson  
Chairman, Board of Directors  
Resolution Number: 13-032  
Date Passed: 4/24/13

**EXHIBIT 1 TO RESOLUTION 13-032**

**DRAFT LETTER OF ENGAGEMENT WITH CDM SMITH FOR**  
**TRAFFIC AND REVENUE ENGINEERING SERVICES FOR**  
**MOPAC SOUTH AND MOPAC SOUTH OVERPASS PROJECTS**

**[on the following 10 Pages]**



April 17, 2013

William Chapman  
Chief Financial Officer  
Central Texas Regional Mobility Authority (CTRMA)  
301 Congress Avenue, Suite 650  
Austin, Texas 78701

**Re: Letter of Engagement – Central Texas Regional Mobility Authority  
MoPac South and MoPac South Overpass Projects – Traffic and Revenue Engineering  
Services**

Dear Mr. Chapman:

CDM Smith Inc. Associates (CDM Smith) is pleased to submit this letter of engagement for professional services related to the Loop 1 MoPac South Project. As part of this engagement, CDM Smith will assist Central Texas Regional Mobility Authority (the “Authority”) in assessing the proposed MoPac South Project and MoPac South Overpasses Project (Projects), located in Travis County, Texas. The level of effort shall include traffic and revenue and modeling support through the environmental phase of the projects, which includes an Environmental Assessment (EA) for the MoPac South Project and a Categorical Exclusion (CE) for the MoPac South Overpass Project. The level of assistance will include traffic engineering and operational analyses with detailed traffic operational assessments to support the environmental phases, and the implementation of a sketch level, Level 2 Intermediate, and a Comprehensive Traffic and Toll Revenue (T&R) study (if requested and authorized), to bring the MoPac South Project to the bond market, including presentations to rating agencies. The necessary traffic and revenue study documents for inclusion within the official statement will be prepared by CDM Smith.

In order to provide Traffic and Revenue support as noted above, the Authority will provide previously collected data, updated Travel Demand Model developed by Capital Area Metropolitan Planning Organization (CAMPO), schematic diagrams of alternatives, operational models and other relevant data to CDM Smith as needed to undertake the proposed work. CDM Smith will draw upon several collected travel pattern and behavioral databases and travel demand models already developed as part of the Mopac North Project and will supplement and enhance these with additional data collected specifically within the Mopac South corridors.

**BACKGROUND AND PURPOSE**

This letter of engagement has been designed to reflect CDM Smith’s commitment to support the MoPac South and MoPac South Overpasses Projects Traffic and Revenue analyses, consistent with our understanding of the Authority and the Central Texas region. The services to be





provided by CDM Smith under this engagement will include the evaluation of two separate projects, namely:

- MoPac South Overpasses Project: Anticipated to extend from Davis Lane to the North and La Crosse to the South, and will include the consideration of overpasses at Slaughter Lane and La Crosse Avenue under the Categorical Exclusion initial assessment only; and
- MoPac South Project: Extending from Cesar Chavez Street at the northern termini to Slaughter Lane at the southern termini, and will include consideration of a park-and-ride location (proposed locations to be provided by Capital Metro) for the Environmental Assessment traffic engineering and operational modeling phases and the traffic and revenue Sketch Level, Intermediate, and Comprehensive stages.

## MoPac South Overpasses Project

### Initial Traffic Support for Categorical Exclusion (Not to exceed \$30,000)

CDM Smith will provide the following services to the Authority, as requested under this task:

- Evaluate initial spot counts and turning movement counts within the corridor undertaken as part of a level 2 data collection effort, if authorized.
- Review relevant technical reports and historical data collected by the Authority, and all applicable assumptions and procedures implemented to determine the historical and existing traffic demand potential across the two Slaughter Lane and La Crosse Avenue overpasses within the corridor.
- Obtain and review signal timings, frontage road speeds and turning movement characteristics within the corridor.
- Extract information from several initial CAMPO model runs (undertaken as part of the entire Mopac South Project model runs), and undertake a thorough review of the official CAMPO model, analyze data validity, travel demand modeling procedures and provide suggested changes to CAMPO official model (model run efficiencies will be implemented between the Overpass and Mopac South projects).
- Provide traffic pattern diagrams related to the overpass configurations to aid in traffic analysis to support the air quality analysis, +/- 5 percent MSAT analysis, and level of service and operations analyses.
- Conduct these analyses for two intermediate years – e.g. 2015 and 2035 – for AM Peak Hour, PM Peak Hour and Daily time periods.
- Conduct a high level operational analysis using tools such as HCS and SYNCHRO to assess traffic operations associated with up to three (3) design configurations and focused mostly on intersection signal operations and merge/diverge at existing/proposed ramps. This analysis will be limited to the current 2035 CAMPO mobility plan time horizon only for budget estimate purposes.



- Participate in discussions on best approaches to utilize in support of the Air Quality and Noise Mitigation analyses. This may include the running of the CAMPO models to obtain a +/- 5 percent impact on the segments within the entire CAMPO model.
- Attend relevant traffic modeling coordination meetings (up to three (3)), as requested by the Authority with the project team (additional support may be implemented through joint meetings with the Mopac South Project).
- Contract management activities and quality control.

The MoPac South Overpass Project baseline alternative is currently envisioned to operate as a non-toll section, thus the development of any independent estimates of traffic and toll revenue by CDM, if warranted, will be undertaken as part of subsequent tasks and is not included as part of this task.

**Deliverables: Technical Memorandum documenting existing travel demand patterns, data reviews, high level operational analysis for up to three (3) design configurations, attendance at meetings or conference calls as warranted by the Authority, and technical assistance to kick-off the travel demand model efforts and. Delivery of traffic patterns to support the categorical exclusion assessment of air quality, MSAT and Level of service for up to three (3) design configurations.**

## **MoPac South Project**

### **Initial Traffic Engineering, and Environmental Modeling Support (Not to exceed \$140,000)**

The following task will support the development of the project schematic and is dependent on some initial traffic count collection and speed and delay data having been obtained either through the sketch level or higher data collection efforts. CDM Smith may provide the following services to the Authority, as requested under this task:

- In consultation with the Authority, request any readily available data from relevant local agencies including the Capital Area Metropolitan Organization (CAMPO), as part of the initial project development and technical support.
- Assemble and analyze all available data and studies developed by the Authority and partner agencies.
- Analyze data validity, existing travel demand models, travel demand modeling procedures and parameters and economic parameters used as inputs to travel demand growth.
- Review relevant technical reports and data collected by the Authority, and all applicable assumptions and procedures implemented in determining the traffic demand potential from Cesar Chavez Street at the northern termini to Slaughter Lane at the southern



termini and will include consideration of a park-and-ride location (proposed locations to be provided by Capital Metro).

- Conduct an assessment of the TxDOT TP&P forecasts comparison against any newly developed or collected data to confirm and identify areas requiring refinement to the TxDOT TP&P analyses.
- Advise the Authority on the likely range of the high, medium and low revenue potential of the conceptual level existing traffic demand results.
- Review signal timings, frontage road speeds and turning movement characteristics within the corridor.
- Complete several CAMPO model runs, and undertake a thorough review of the official CAMPO model, analyze data validity, travel demand modeling procedures and provide suggested changes to CAMPO official model.
- Provide traffic pattern diagrams related to the identified baseline configuration, and express lane access to aid in traffic analysis to support the air quality analysis, +/- 5 percent MSAT analysis, and level of service and operations analysis
- Conduct these analyses for two intermediate years – e.g. 2015 and 2035 (current CAMPO mobility plan time horizon) – for AM Peak Hour, PM Peak Hour and Daily time periods.
- Undertake several iterative discussions on best approaches to utilize in support of the Air Quality and Noise Mitigation analyses. This may include the running of the CAMPO models to obtain a +/- 5 percent impact on the segments within the entire CAMPO model.
- Reviewed the VMT mix documentation from CAMPO/TTI and provide a comparison between CAMPO VMT mix and the hourly breakdown based on any traffic data collected within the corridor.
- Review and assist in interpreting the results of the alternatives analysis and write up the final results for the identified preferred alternatives.
- Attend relevant traffic modeling coordination meetings (up to five (5)), as requested by the Authority with the project team.
- Attending Public Outreach and Environmental Coordination meetings (up to five (5)), with the Authority and the project team.
- Any traffic operational analysis will be conducted as part of the subsequent task. The development of independent estimates of traffic and toll revenue by CDM Smith will be undertaken as part of subsequent tasks.
- Contract management activities and quality control.

**Deliverables: Technical Memorandum documenting reviews, attendance at meetings or conference calls as warranted by the Authority, and technical assistance to kick-off the travel demand model efforts and environmental assessment support. Provide traffic demand support for up to four (4) model alternatives for the development of the project schematic with the study team.**



### **Operational Analyses and Environmental Support (Not to exceed \$240,000)**

CDM Smith will provide support for traffic engineering studies for the EA Alternatives Analysis and initial Operations Analysis for the schematic design. The following tasks may be undertaken and it is envisioned and assumed that some initial traffic count collection and speed and delay data will have been obtained either through the sketch level or higher data collection efforts:

- Review any currently developed operational models by other Consultant teams.
- Respond to traffic and mobility questions and provide reviews as needed on the operational elements for the Environmental Documentation, to be developed by the project team.
- CDM Smith will review and assess several proposed access/egress configurations as part of the environmental process.
- Develop up to five (5) sub-area models (bi-directional assuming typical standard weaving sections) to evaluate traffic operations associated with changes in project configuration, such as ingress and egress locations, lane configurations, merging and weaving areas. The sub-area model analysis will be conducted using VISSIM for an A.M. or P.M. period (critical peak period), and for the year 2035 (current CAMPO mobility plan time horizon). A corridor VISSIM model is not envisioned as part of this task and instead will be developed in the subsequent level 2 task, subject to further discussion with the study team.
- Calibrate the operational model using a software platform such as CAMPO travel demand model with official inputs that conform to the regional plan for use as the baseline for purposes of the environmental process.
- Conduct select link analyses to confirm the proposed logical access and egress locations.
- Contract management activities and quality control.

**Deliverables: Technical memoranda summarizing the developed analyses. The modeling documentation shall include traffic volumes used in modeling; computer models used; operational analysis results for five (5) sub-area models based upon a critical peak hour period and year 2035, and final model/traffic results.**

### **Sketch Level Study (Not to exceed \$80,000)**

CDM Smith will conduct a traffic and revenue study to evaluate the toll feasibility of the MoPac South Project in Austin and the following tasks are envisioned:

- Extend the study corridor to include Cesar Chavez Street from the northern termini to Slaughter Lane as the southern termini to enable the analysis of additional alternatives currently under development.



- Undertake some initial spot count traffic collection effort and speed and delay data analysis.
- Incorporate several key parameters and investigate the risk profiles around each of the variables to provide the traffic estimates of the projects under a defined set of business term assumptions and configurations as determined by the Authority.
- Conduct an “Initial traffic and revenue feasibility assessment” for the potential toll project to support the Authority and provide a sense of the project’s traffic and revenue potential.
- Analyze the traffic and revenue potential of a proposed toll option and review of parameters that include: opening year ramp-up, historical traffic growth, toll rate setting, attractiveness of the toll facility, truck percentages, value-of-time, and expected economic development within the corridor.
- Provide traffic projections and estimated toll revenue for a 50-year period.
- Contract management activities and quality control.

**Deliverables: Electronic file of the report and supporting spreadsheet files with the tables of the 50-year traffic and revenue projections for up to five (5) scenarios.**

#### **Data Collection and Level 2 Intermediate Study (if needed) (Not to exceed \$610,000)**

CDM Smith will undertake a Comprehensive Data Collection and a Level 2 Analysis of the proposed MoPac South Project. The data collected as part of the Mopac North Project will be referenced and used to the extent possible and will be supplemented with new information collected within the proposed corridor. The following tasks are envisioned for implementation under the data collection effort:

- Coordinate and implement the data collection for the MoPac South Project corridor using non-invasive methodologies to support the traffic and revenue assessment of the corridor.
- Update previously collected license plate matching data by the Authority to enhance the understanding of traffic patterns within the corridor.
- Collect traffic counts along the MoPac South Project corridor to determine the magnitude of existing ramp-to-ramp and mainline traffic demand, as well as traffic demand along the existing competitive routes within the corridor.
- Undertake an update to the Mopac North stated preference survey effort (if warranted) to observe the existing traffic profiles and behavioral characteristics of the major travel markets along the MoPac South Project corridor. Utilize new data collection techniques and sources to evaluate origin/destination (O-D) patterns within the corridor to supplement previous origin/destination survey efforts.
- Compare newly collected data to previous economic information collected by the Authority to evaluate the latest socio-economic trends within the corridor.
- Collect sufficient information to satisfy the traffic data requirements for the implementation of a Comprehensive Traffic and Toll revenue study using industry standard practices. (Note:





The independent economic assessment that is required for a Comprehensive Level 3 study is not conducted under this task and is accounted for as part of the comprehensive study task).

- Analyze and prepare the data collected to be distributed to the Authority and other partner agencies as directed by the Authority as a baseline source to traffic data.
- Review data collected for consistency and accuracy, and compile for distribution to other agencies in an industry standard format.

CDM Smith will perform a Level 2 Intermediate traffic and revenue estimate for an identified option/alternative as may be warranted by the Authority. The following tasks are envisioned:

- In consultation with the Authority, the latest CAMPO model will be obtained and a review and modification of the initial validated model inputs and databases from the Mopac North will be undertaken.
- Investigate the model network and trip table databases and validate the corridor specific socioeconomic attributes.
- Extend the study corridor to include MoPac South Project from Cesar Chavez Street to Slaughter Lane.
- Use the collected traffic data on the existing segments of the project and competing routes to calibrate the models to reflect current conditions as reflected by the collected new data. The calibration will use the empirical evidence of critical parameters such as the hourly and weekly distributions of traffic, the electronic toll collection and video billing shares, truck percentage and axle distributions, and value-of-time characteristics obtained from the stated preference survey efforts.
- Develop an existing condition VISSIM model for the corridor (approximately 8.2 miles in length), which includes main line segments and on/off ramps only. It is not envisioned that frontage roads will be modeled as part of this effort. The VISSIM Model will be developed for an A.M. and P.M. peak hour period and calibrated based on existing traffic counts, travel time, speed, and delay data. This existing condition VISSIM model will then be used to develop a future year build model (2035 CAMPO model time horizon only) for the proposed build option configuration. This model will be developed for both A.M. and P.M. peak hour periods.
- Develop volume delay function (vdf) curves using the simulation models to better represent congestion characteristics for input into the corridor travel demand model networks.
- Perform a detailed evaluation of the network coding and trip distributions currently forecasted by the CAMPO model. The level of detail contained in the procedure will provide a sense of the existing and forecasted demand along the defined project in relation to existing trends. Corrections to the overall databases will be performed to ensure a clean and valid version of the model is used for valuation of the defined corridor segments toll feasibility.



- Investigate the growth potentials along the study corridor using readily available databases to assess the current trends and potential changes in distributions that have occurred within the Capital Area Metropolitan Planning Organization model.
- Develop up to five (5) sub-area models to evaluate traffic operations associated with changes in project configuration as a result of the Level 2 study and newly collected data. These changes could include ingress and egress locations, lane configurations, merging and weaving areas. The sub-area model analysis will be conducted using VISSIM for an A.M. or P.M. period (critical peak period) and for the year 2035 CAMPO time horizon.
- Contract management activities and quality control.

**Deliverables: Final report summarizing the major tasks undertaken, operational analyses and data collected as part of the Level 2 Intermediate study. Electronic file of the report and supporting spreadsheet files with the tables of the 50-year traffic and revenue projections.**

### **Comprehensive (Level 3) Traffic and Toll Revenue study (Not to exceed \$500,000)**

The services to be provided under this task will be a natural transition from the Data Collection and Level 2 Intermediate study efforts to conduct a Comprehensive Level 3 Analysis of the proposed MoPac South Project corridor. The objective of the study will be to incorporate all relevant data from the data collection from the Level 2 study to generate investment grade traffic and revenue forecasts that can be used to support the project financing. The following tasks are envisioned under this effort:

- Perform and coordinate the collection of updated spot traffic counts along the MoPac South corridor, as may be warranted to determine significant changes to traffic patterns or trends, and may include existing ramp-to-ramp and mainline traffic demand, as well as traffic demand along the existing competitive routes within the corridor.
- Evaluate the origin/destination (O-D) survey and a stated preference survey previously collected to reconfirm the existing traffic profiles and behavioral characteristics of the major travel markets along the MoPac South Project corridor.
- Perform a detailed evaluation of the network coding and trip distributions currently forecasted by the CAMPO model.
- Incorporate the extensive data collection efforts implemented as a necessary part of the comprehensive effort.
- Apply corrections to the overall databases to ensure a clean and valid version of the model is used for toll feasibility valuation of the defined corridor segments.
- In coordination with the independent economist, investigate the growth potentials along the corridor to assess the current trends and potential changes in distributions that have occurred since the last CAMPO land-use updates and the Level 2 Intermediate study.



- Adjust socioeconomic databases and trip tables, if warranted, to evaluate the effects to the overall demand in the defined corridors.
- Evaluate the project under up to five (5) different project configurations (such as access/egress points, lane configurations, phased construction) and incorporate up to five (5) operational scenarios (such as tolling regimes, eligibility markets, growth scenarios) for evaluation, as may be requested by the Authority.
- Advise and assist the Authority and its financial investment bankers, bond council, and general consulting engineer (collectively, the “marketing committee”) in modifying and excerpting portions of the final report for inclusion in the official statement.
- Participate in meetings with the marketing committee by written communication, telecommunication, and personal attendance to plan the sale of bonds, assist in the writing of the official statement and the trust agreement, and to meet with rating agencies, major investors, and bond insurers.
- Contract management activities and quality control.

**Deliverables: A final report that will be designed to be suitable for possible inclusion in an Official Statement or other financing documents. Presentations to financial community, including rating agencies. Electronic spreadsheet file and tables of the 50-year traffic and revenue projections.**



CDM Smith is prepared to undertake the tasks outlined and will submit a more detailed scope of all relevant items as the need arises within each phase of the project under a total not-to-exceed fee of **\$1,600,000** from the date of Notice Proceed from the Authority. CDM Smith will invoice the Authority for the actual cost of services on a monthly schedule through invoices submitted to the Authority for work completed. The developed fee is based on the phased approach, as outlined within the scope and incorporates an evolution of the project from a Level 2 to an eventual Level 3 study. Under this phased approach, the Level 2 study will capture the majority of the data collection and model development efforts that will be necessary for inclusion in the Comprehensive Level 3 study. CDM Smith will provide an ongoing update on the project status and will notify the Authority prior to performing any additional and unforeseen work efforts that may extend beyond the estimated maximum fee. This fee arrangement, if not acceptable to the Authority, can certainly be modified to more closely reflect its desires from the outlined scope.

\* \* \*

We sincerely appreciate the opportunity to submit this letter of engagement for Traffic and Revenue services and thank you for considering CDM Smith for this important assignment. If this proposal adequately meets your needs, it may serve as the basis of the study agreement/contract by your executing the section at the end of the document and returning an originally signed copy. We look forward to working with the Authority on this significant project. Should you have any additional questions or require further clarification concerning the contents of this letter of engagement, please do not hesitate to contact us and we will incorporate the changes you require immediately.

Yours sincerely,

Letter of engagement approved as submitted

David Anderson  
Client Service Manager  
CDM Smith, Inc

Mike Heiligenstein  
Executive Director  
Central Texas Regional Mobility Authority

Date:

Date: