CENTRAL TEXAS
Regional Mobility Authority

AGENDA ITEM #4 SUMMARY

Approve an agreement with CDM Smith to provide traffic and revenue engineering services and operational analysis services.

Strategic Plan Relevance: Regional Mobility

Department: Finance

Associated Costs: Not to exceed $1,000,000

Funding Source: STP-MM and Various

Board Action Required: Yes

Description of Matter:

This agreement has three major parts – miscellaneous technical services; travel modeling and operational analysis for the 183/MoPac interchange; and support for the analysis of the 183 North project. Under the technical services component, CDM Smith will provide miscellaneous services, as requested by the Authority, which are not covered in existing work authorizations. With regard to the 183 North project, upon completion of the environmental phase, the need for a Level 2 analysis and investment grade analysis will be assessed.

Reference documentation:
Draft Agreement
Draft Resolution

Contact for further information:
Bill Chapman, Chief Financial Officer

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

RESOLUTION NO. 13-___

APPROVING AN AGREEMENT WITH CDM SMITH FOR TRAFFIC AND REVENUE SERVICES AND OPERATIONAL ANALYSIS SERVICES.

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 and operational analysis services related tot he US 183/MoPac Interchange, the US 183 North project, and for miscellaneous technical services requested from time-to-time by the Mobility Authority, 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 and operational analysis services in the form or substantially in the form of Exhibit 1, for a maximum not to exceed fee of $1,000,000, 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 31st day of July, 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-___
Date Passed: 7/31/13

EXHIBIT 1 TO RESOLUTION 13-___

DRAFT LETTER OF ENGAGEMENT WITH CDM SMITH

[on the following 8 Pages]

July 10, 2013

William Chapman
Chief Financial Officer
Central Texas Regional Mobility Authority (CTRMA)
3300 N IH-35, Suite 300
Austin, TX 78705

Re: Letter of Engagement – Central Texas Regional Mobility Authority
US 183 North Project – Traffic and Revenue Engineering Services, US 183/MoPac Interchange Analysis, and Miscellaneous Technical Services

Dear Mr. Chapman:

CDM Smith Inc. (CDM Smith) is pleased to submit this letter of engagement for professional services related to the US 183 North Project. This letter of engagement between CDM Smith and the Central Texas Regional Mobility Authority (the "Authority") has three major parts – miscellaneous technical services; environmental analysis support for the US 183/MoPac interchange; and support for the analysis of the US 183 North project. CDM Smith will provide miscellaneous technical services, as requested by the Authority, which are not covered in existing work authorizations. CDM Smith will also provide traffic and revenue related support for the environmental reevaluation of the US 183/MoPac interchange. Finally, as part of the US 183 North Project, CDM Smith will assist the Authority in assessing the proposed project, located in Williamson and Travis counties, Texas. This effort shall include travel demand modeling support and sketch-level traffic and toll revenue analysis through the Environmental Assessment (EA) phase for the US 183 North 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, and the initial data collection for a Level-2 Intermediate Traffic and Toll Revenue (T&R) study that may be requested by the Authority through a future letter of engagement. In order to provide the 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. CDM Smith will coordinate with efforts already undertaken as part of the US 183A Project studies and will supplement and enhance these with additional data collected specifically within the US 183 North Project corridor.

BACKGROUND AND PURPOSE

This letter of engagement has been designed to reflect CDM Smith's commitment to support the US 183 North Project traffic and revenue analyses, consistent with our understanding of the Authority's objectives and the Central Texas region. The services to be provided by CDM Smith under this engagement will include the evaluation of US 183 North Project that will extend along US 183 from the intersection of SH 45/RM 620 to the intersection of US 183 and MoPac (Loop 1). The envisioned tasks to be undertaken as part of this study are described in more detail below.

Miscellaneous Technical Services

Traffic and Revenue Related Miscellaneous Technical Services (Not to exceed $250,000)

This task is designed to cover miscellaneous technical services, as requested, that are not already covered in an existing work authorization and that may include: peer review services; sketch or planning level analyses for proposed improvements including capacity expansions of existing system, new location facilities or extensions of existing facilities; attending miscellaneous meetings, as requested; and, providing expert opinions regarding potential impacts of policy or travel demand changes. It is anticipated that the cost of these miscellaneous technical services will not exceed a total of $250,000 for duration of the current contract.

US 183/MoPac Interchange

Travel Modeling, Operational Analysis and Environmental Support (Not to exceed $300,000)

CDM Smith proposes the following scope of work to perform traffic operational modeling for the planned improvements to the US 183/MoPac Interchange. The budget is estimated to cover eight (8) models.

The study area for this project includes the five-mile corridor consisting of US 183 between MoPac Expressway and Braker Lane, and MoPac Expressway between 35th Street and US 183. The following tasks are envisioned:

1. Development of Traffic Volume Profiles

Using the traffic data collected (as part of Initial Data Collection task), CDM Smith will develop traffic volume profiles under existing (2013) and future (2035) conditions by balancing traffic volumes along the study corridor. Traffic volumes under future conditions will be developed based on traffic projections obtained from the MoPac North corridor model.

2. Base Model Development

Traffic operational analysis will be performed using the PTV VISSIM microsimulation software. Separate base models will be developed to evaluate commute traffic in the peak directions of travel, i.e., in the southbound direction during the AM peak period (referred to as the Southbound AM model) and in the northbound direction during the PM peak period (referred to as the Northbound PM model).

3. Model Calibration

To ensure that the base microsimulation models reflect existing traffic conditions within the study area, they will be calibrated as follows:

- Capacity Calibration – The capacities of the study corridor at bottleneck locations will be calibrated such that traffic volumes at the bottleneck locations obtained from the microsimulation models would be similar to those collected in the field. Upon calibrating the bottleneck capacities, the rest of the traffic counts will be used to check the route choice aspects of the base models.

- System Performance Calibration – The overall network performance measures predicted by the base models are compared to those collected during the field observations. Relevant performance measures include traffic volumes at key locations, travel times along the study corridor, location of congested areas as well as bottlenecks, and queue lengths at bottlenecks. The following calibration acceptance target would be used for this project:

  - Individual link flows should generally be within 15 percent of the field data.

  Additionally, CDM Smith will calibrate weaving sections, if any, based on traffic counts and field observations. The driver behavior characteristics for a typical weaving section will be applied to other weaving sections in the corridor.

The resultant calibrated base models will be used to evaluate the proposed interchange improvement alternatives.

4. Future Model Development

As mentioned earlier, traffic volumes for the study corridor under future conditions will be developed based on traffic projections obtained from the MoPac North travel demand model.

The following is a list of potential performance measures that will be used to evaluate the study corridor:

- Average travel speed
- Average travel time

- Average vehicle delay

A comparison of the no-build and build model output (performance measures) will be developed and provided to the project team for review.

The future build analysis will only be conducted for the year 2035 and will be based on one set of traffic volumes for the general purpose (GP) and express lanes as provided by the travel demand model and tested for the no-build option and the two design options. Any additional traffic volume development and/or evaluation of alternatives would necessitate supplementing the budget. Further discussions in this regard with CTRMA and HNTB Corporation will be undertaken before initiating the modeling effort.

5. Documentation

CDM Smith will prepare a draft technical memorandum summarizing the model development procedures, calibration methodologies and results, and traffic analysis results. This draft technical memorandum will be submitted to CTRMA, HNTB Corporation and CP&Y for their review. Upon receiving the comments, CDM Smith will prepare and submit the final technical memorandum.

Deliverables: Technical Memorandum and modeling results

US 183 North Project

Initial Traffic Engineering, and Environmental Modeling Support (Not to exceed $170,000)

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 being obtained either through the sketch-level or higher data collection efforts. CDM Smith will provide the following services to the Authority, as requested under this task:

- In consultation with the Authority, request and obtain all readily available data from relevant local agencies including the Capital Area Metropolitan Planning Organization (CAMPO), as part of the initial project development and technical support.
- 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 applicable assumptions and procedures implemented in determining the traffic demand potential from the intersection of SH 45/RM 620 at the northern termini to the intersection of US 183/ MoPac at the southern terminus.

- Compare TxDOT's TP&P forecasts against any newly developed or collected data to confirm and identify areas requiring refinement.
- Undertake general model calibration efforts to incorporate corridor specific information collected within the corridor.
- Conduct travel demand model runs, and undertake a review of the official CAMPO model, analyze data validity, travel demand modeling procedures and incorporate changes to the CAMPO official model within the study corridor limits.
- 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.
- Conduct these analyses for two years – e.g. 2015 and 2035 – for AM Peak Hour, PM Peak Hour and Daily time periods.
- 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 travel demand models to obtain a +/- 5 percent impact on the segments within the travel demand model.
- Review the VMT mix documentation from CAMPO/TTI and provide a comparison between CAMPO VMT mix (if available) and the currently observed hourly breakdown based on any traffic data collected within the corridor.
- Review up to five (5) alternatives to support the Reasonable Alternative Evaluation Matrix. Assist in interpreting the results of the alternatives analysis and document the final travel demand modeling results leading to the identified preferred alternative.
- Attend up to five (5) relevant traffic modeling coordination meetings, as requested by the Authority with the project team.
- Attend up to five (5) Public Outreach and Environmental Coordination meetings, with the Authority and the project team.
- 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.

Sketch-Level Study (Not to exceed $80,000)

CDM Smith will conduct a sketch-level traffic and toll revenue study to evaluate the toll feasibility of the US 183 North Project in Austin and the following tasks are envisioned:

- Evaluate the background data for the study corridor from the intersection of SH 45/RM 620 at the northern terminus to the intersection of US 183/ MoPac at the southern terminus to enable the analysis of additional alternatives currently under development.
- Incorporate several key parameters and investigate the risk profiles around a combined effect of a set of variables to provide up to five (5) traffic and revenue scenario estimates of the projects under a defined set of business term assumptions and configurations as determined by the Authority. The risk profiling will be conducted at a sketch-level.
- 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, travel time saving of the toll facility, truck percentages, potential users' values-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.

Initial Data Collection (Not to exceed $200,000)

CDM Smith will undertake an initial Data Collection effort in support of the environmental tasks for the proposed US 183 North Project. The data collected as part of the MoPac North Project and US 183A 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 US 183 North Project corridor using non-invasive methods to support the traffic and revenue assessment of the corridor.
- Review any previously collected license plate matching data by the Authority to enhance the understanding of traffic patterns within the corridor. It is envisioned that no new license plate data will be collected.
- Collect traffic counts along the US 183 North Project corridor to determine the magnitude of existing ramps, frontage and mainline traffic demand, as well as traffic demand along the existing competing routes within the study corridor.

- Collect traffic counts along MoPac corridor from US 183 to 35th street to determine the magnitude of existing ramps, frontage and mainline traffic demand to support the MoPac/US 183 Interchange operational analyses.
- Utilize new data collection techniques and sources to evaluate origin/destination (O-D) patterns within the corridor to supplement previous O-D survey efforts. A comprehensive O-D survey effort is not envisioned as part of this task and will be undertaken as part of a subsequent effort, if authorized by the Authority.
- Field reconnaissance will be performed during the peak commute hours (usually from 6 AM to 9 AM and from 3 PM to 7 PM) of a typical weekday (Tuesday, Wednesday or Thursday). This data collection effort will include the purchase of INRIX (or an equivalent data source from another vendor) speed and delay data.
- Compare readily available socio-economic data to previous economic information collected by the Authority to evaluate the latest socio-economic trends within the corridor.
- 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 of traffic data.
- Review data collected for consistency and accuracy, and compile for distribution to other agencies.
- Contract management activities and quality control.

Deliverables: Letter report summarizing the data collection effort. Electronic files of the data collected.

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 **$1,000,000** from the date of Notice to 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 the environmental operations to a sketch-level 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.

Date:

Mike Heiligenstein
Executive Director
Central Texas Regional Mobility Authority

Date: