

## **SCOPE OF SERVICES**

This scope of services is intended to be an accurate description of the items and tasks required for completion of this project. However, this project is unique and may require more or less effort in an individual task to complete the design. The following information will explain and define in general terms the major items of importance relating to this project. All the elements of work that are necessary to satisfactorily complete this project may or may not be listed. The lack of a specific listing of an element or item in the scope of services does not in itself constitute the basis for additional services, supplemental agreements, and/or adjustment in compensation.

Services rendered by the CONSULTANT, which are considered as additional services, will be addressed per paragraph (3), Additional Services of the Project Design Consultant Agreement. The provisions of the Design Consultant Agreement outlining the responsibilities of the CONSULTANT regarding the quality and accuracy of the deliverables and products shall apply to any decisions regarding determinations of additional services.

## **BACKGROUND AND GENERAL REQUIREMENTS**

This project involves completing traffic research and feasibility plans for the possible implementation of ramp meters along the I-64 corridor from I-70 in St. Charles County to I-55 in St. Louis City. CONSULTANT service work includes these primary categories: performing traffic studies and analyses, and developing a proposed implementation plan. Due to the regional design of the intelligent transportation system, this project will research the entire length of the corridor, so work will be performed in St. Charles County, St. Louis County, and St. Louis City. Research will be completed for the entire corridor in order to ensure continuity of the traffic management system.

The CONSULTANT shall review "as built" plans, aerial photographs, manuscripts, and other information to be provided by the Commission and make the necessary field investigations to ensure that there have been no significant changes since the information was recorded or obtained.

## **PROJECT MANAGEMENT**

This task will include, but not be limited to, the following project management activities:

1. Coordination of all work task activities, including recommendations on proposed implementation scheduling to ensure project connectivity and compatibility with other projects.
2. Management of all sub-consultants, if applicable.
3. Quality assurance of work products and deliverables.

4. Preparation of progress reports and invoices.
5. Project communications between the CONSULTANT and the COMMISSION, and attendance at project management and status meetings as requested by the COMMISSION.
6. The CONSULTANT shall meet on a monthly basis with representatives of the COMMISSION at the St. Louis Transportation Management Center for the purpose of reviewing the status of the project. Additional meetings may be required for specific task deliverables. The CONSULTANT shall provide summary minutes within five working days after each meeting for review and approval by the COMMISSION. Phone conferences may also be acceptable in order to minimize travel costs.
7. Within 10 days after written Notice to Proceed, the CONSULTANT shall provide a schedule of project milestones. For the purpose of scheduling, the CONSULTANT shall allow the COMMISSION four weeks of review time for each submittal. All schedules shall be updated and resubmitted for COMMISSION approval at any time when prior schedules become obsolete.
8. Coordinate with MoDOT and partners on special issues.

## **TRAFFIC STUDIES AND ANALYSES**

Comprehensive research will be required along the project corridor in order to determine the impact of the future installation of ramp meters. This task will include the following activities:

1. The CONSULTANT will compile existing traffic volume, speed, and density data by lane for the segments between each interchange along the I-64 corridor from I-70 to I-55 to compute the "Before" characteristics. Where available, this information will be provided by the COMMISSION to the CONSULTANT. It is assumed that the data will be provided in 15-minute intervals for the peak hour periods to be analyzed. The data will be compiled for the A.M. commuter peak period and the P.M. commuter peak period for each weekday during a typical month. This sample size should be sufficient to allow the determination of statistically reliable averages and the system reliability as indicated by average speed variability.
2. The CONSULTANT will compile existing traffic volume data on the ramps to compute the "Before" conditions. Where available, this data may be provided by MoDOT from the ATMS detector system. It is assumed that the data will be provided in 15-minute intervals for the peak hour periods to be analyzed. The data will be compiled for the A.M. commuter peak period (i.e., from 6:00 to 9:00 am) and the P.M. commuter peak period (i.e., from 3:00 to 6:00 pm) for each weekday during a typical week.

3. The CONSULTANT will summarize and compile general traffic crash information along the project corridor within the limits. Rear end and side swipe crash patterns which are recognized as susceptible to correction by ramp metering will be recorded to identify the location, time of day, day of week, and year that each crash occurred. This data will be provided by MoDOT for the past three to five years to establish the “Before” condition.
4. The CONSULTANT will work with MoDOT and East-West Gateway transportation planning staff to determine the 10-year and 20-year design hour traffic volumes along I-64 and at all project ramp terminals. Information from the various available travel demand models which cover the corridor will be used to derive a set of design traffic volumes that can be agreed upon by the affected agencies.
5. The CONSULTANT will compute and record actual AM and PM peak hour vehicle queue lengths at the project ramps, including queues on the arterials for existing conditions. This information would be used as “Before” data, as well as to calibrate/validate the VISSIM models.
6. The CONSULTANT will complete a series of “floating car” travel time surveys to obtain existing, “Before” speeds and travel times for typical through and ramp to ramp traffic movements for use in calibration of the existing conditions VISSIM model. It is assumed that ten runs will be completed in each direction during both the AM and PM peak periods for ten vehicle movements along the project corridor. These speed and travel time data will be correlated with the data provided by MoDOT in Task 1 above, so that the VISSIM model can be validated to the “Before” MOE statistics.
7. The CONSULTANT will prepare AM and PM peak hour VISSIM computer simulation models of existing conditions and conditions which should be expected with the proposed ramp meter design for existing traffic volumes, 10-year traffic volumes, and 20-year traffic volumes, under up to two alternative designs. These simulations will provide computer based “Before” and “After” characteristics and video graphics for display to the design team and affected stakeholders. The VISSIM model will include simulation of the ramp operation if the ramp metering is suspended to empty a ramp if excess queues are encountered. The VISSIM models may be prepared and coordinated with the public relations presentations so that the video graphics could be used at meetings with the affected technical staffs, public officials, and local public groups.

### **CONSTRUCTION IMPLEMENTATION PLANNING**

The implementation planning task will include the following details in order to prepare for the construction phasing for the future installation of ramp meters:

1. The CONSULTANT will determine the appropriate comparison method in order to establish the ramp meter installation implementation plan, with approval from the COMMISSION. Criteria to determine the implementation plan may include (but not limited to):
  - Existing and proposed geometric conditions of ramps
  - Estimated costs to construct the ramp meters relative to the anticipated environmental benefits and/or traffic impact improvements
  - County boundaries, major intersections, or interstate interchanges
  - Public perception and understanding
  - Ease of construction due to existing conditions
  - Current and future known roadway projects along the corridor
  - Locations in which ramp meters may improve safety by reducing merging related crashes
2. Prior to the final implementation plan submittal, the CONSULTANT will provide to the COMMISSION a proposal for the criteria determination. Upon approval from the COMMISSION, the CONSULTANT may proceed with the evaluation of the corridor.
3. The CONSULTANT shall evaluate the corridor using the approved criteria and prepare the final phased ramp meter installation implementation plan. The plan documentation will be included in the final report to the COMMISSION.

### **PROJECT DELIVERABLES**

Upon completion of specified tasks, the CONSULTANT shall submit a final report in both hard copy and electronic formats. For the final report, a brief written report, a single complete CD of the entire report and 5 CDs consisting of utilizable Synchro, VISSIM and SimTraffic files (if used) are to be included. Additionally, the CONSULTANT shall prepare and present to the COMMISSION a summary of the topics contained within the final report. The presentation will be a maximum of 2 hours and will be presented to approximately 20 COMMISSION-designated staff and will be held at a MoDOT facility. The CONSULTANT should be prepared to answer questions as part of the presentation.

### **MAXIMUM PRICE**

For the services, as detailed in this MOU, the Consultant will be paid at the contract hourly rates up to \$200,000.

### **DELIVERY OF DOCUMENTS AND CONTACT INFORMATION**

The CONSULTANT will forward deliverables to the following representatives of the Commission:

Mr. Greg Owens, P.E.  
Traffic Operations Engineer  
MoDOT  
1590 Woodlake Drive  
Chesterfield, MO 63017  
phone: 314-275-1538  
[Gregory.Owens@modot.mo.gov](mailto:Gregory.Owens@modot.mo.gov)

Mrs. Cindy Simmons  
Traffic Studies Specialist  
MoDOT  
1590 Woodlake Drive  
Chesterfield, MO 63017  
phone: 314-565-6710  
[Cynthia.Simmons@modot.mo.gov](mailto:Cynthia.Simmons@modot.mo.gov)