

CONSENT AGENDA  
ITEM NO. **25**

**CITY OF SAN ANTONIO  
PUBLIC WORKS DEPARTMENT  
CITY COUNCIL AGENDA MEMORANDUM**

**TO:** Mayor and City Council

**FROM:** Thomas G. Wendorf, P.E., Director of Public Works

**SUBJECT:** Downtown Traffic Simulation Model

**DATE:** December 1, 2005

**SUMMARY AND RECOMMENDATIONS**

This ordinance accepts a proposal, appropriates, and authorizes payment in the amount not to exceed \$399,760.72 for traffic engineering services to be provided by Post, Buckley, Schuh and Jernigan, Inc. (PBS&J) under a previously authorized Indefinite Delivery Professional Services Agreement for City-wide traffic engineering services, for the development of a Downtown Traffic Simulation Model of current and anticipated traffic movement in the Central Business District and adjacent areas, to be funded from Advanced Transportation District funds.

Staff recommends the approval of this ordinance.

**BACKGROUND INFORMATION**

The Downtown Traffic Simulation Model will provide the City with its first full-scale simulation model of on-street traffic in and adjacent to the Central Business District, which is necessary due to the dynamic environment caused by current and projected downtown development. This simulation model will provide Public Works a traffic model that will be adaptable to future needs. Numerous interdependent considerations, which are summarized below, have led to the need for a highly flexible traffic model.

- Downtown development/activities:
  - Convention Center Hotel
  - Hemisfair Park
  - Main Plaza
  - Market Square
  - Fiesta events
  - Parades
  - Condominium construction
  - New Orleans Saints and WNBA games
  - Houston St. Fair
  - SAWS building
  - Parking capacity
  - Grand Prix racing
  - Downtown restrooms
- Transportation options and transit development:
  - Westside multimodal facility
  - Thompson Transit Center
  - Bus Rapid Transit
  - Commuter rail
  - New proposals, e.g., one-way vs. two-way traffic
  - Valet service
  - Bus contraflow
  - Commercial loading zones
  - Taxi stands
  - Bicycle and pedestrian movements

A Downtown Traffic Simulation Model will provide an accurate report of current conditions and the ability to determine where to make improvements based on improved analytical capability. This is a valid ATD project in accordance with the ATD objectives to improve traffic flow at busy intersections, enhance connectivity between neighborhoods and major roadways, utilize technology to provide faster bus trips and offer more transit options, passenger facilities and rider conveniences. To achieve early results the model will be completed in phases, which are proposed as follows:

**Downtown Traffic Simulation Model**

| Phase | FY               | Est. Cost    | Area   |
|-------|------------------|--------------|--|
| 1     | 2006             | \$399,760.72 | Central Business District<br>(Map at Attachment 2) |
| 2     | 2007             | \$200,000    | South of Durango St.                               |
| 3     | 2007             |              | West of IH 10                                      |
| 4     | To Be Determined |              | North of Martin St. to IH 35/IH 37                 |

Funds for project phases to be completed in FY 2007 will be requested at a later date through a separate Council action.

Once completed, the Downtown Traffic Simulation Model will give the City of San Antonio the ability to simulate numerous vehicle, bicycle and pedestrian variables in order to more accurately assess transportation needs generated by increased downtown development and proposed operational changes. It is an appropriate follow-on to the traffic signal synchronization study for the Central Business District, which was approved by City Council on July 14, 2005, through Ordinance No. 101123 and completed in October 2005.

This ordinance accepts the proposal for PBS&J and authorizes payment in the amount not to exceed \$399,760.72 for the Downtown Traffic Simulation Model. A previously executed Public Works Department Indefinite Delivery Professional Services Agreement for professional traffic engineering services with PBS&J in an amount not to exceed \$500,000 was approved by City Council on January 6, 2005, through Ordinance No. 100234. To date work orders in the amount of \$42,777.25 have been assigned to PBS&J under this Professional Services Agreement. This council action will bring the total amount approved for work under this agreement to \$442,537.97.

**POLICY ANALYSIS**

Approval of this ordinance will be a continuation of City Council policy to use ATD funds for projects that will reduce traffic congestion and improve transportation mobility in major transit corridors.

**FISCAL IMPACT**

This is a one-time expenditure. Funds in the amount of \$399,760.72 are available from Advanced Transportation District (ATD) revenues and are authorized to be appropriated and payable to PBS&J.

**COORDINATION**


This request for ordinance has been coordinated with the Finance Department, the Office of Management and Budget, and the City Attorney's Office.

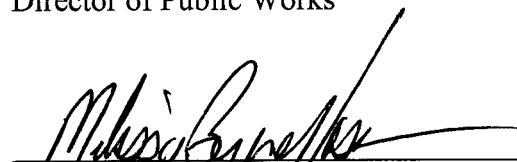
## SUPPLEMENTARY COMMENTS


The Discretionary Contracts Disclosure Form required by the Ethics ordinance is included herein.

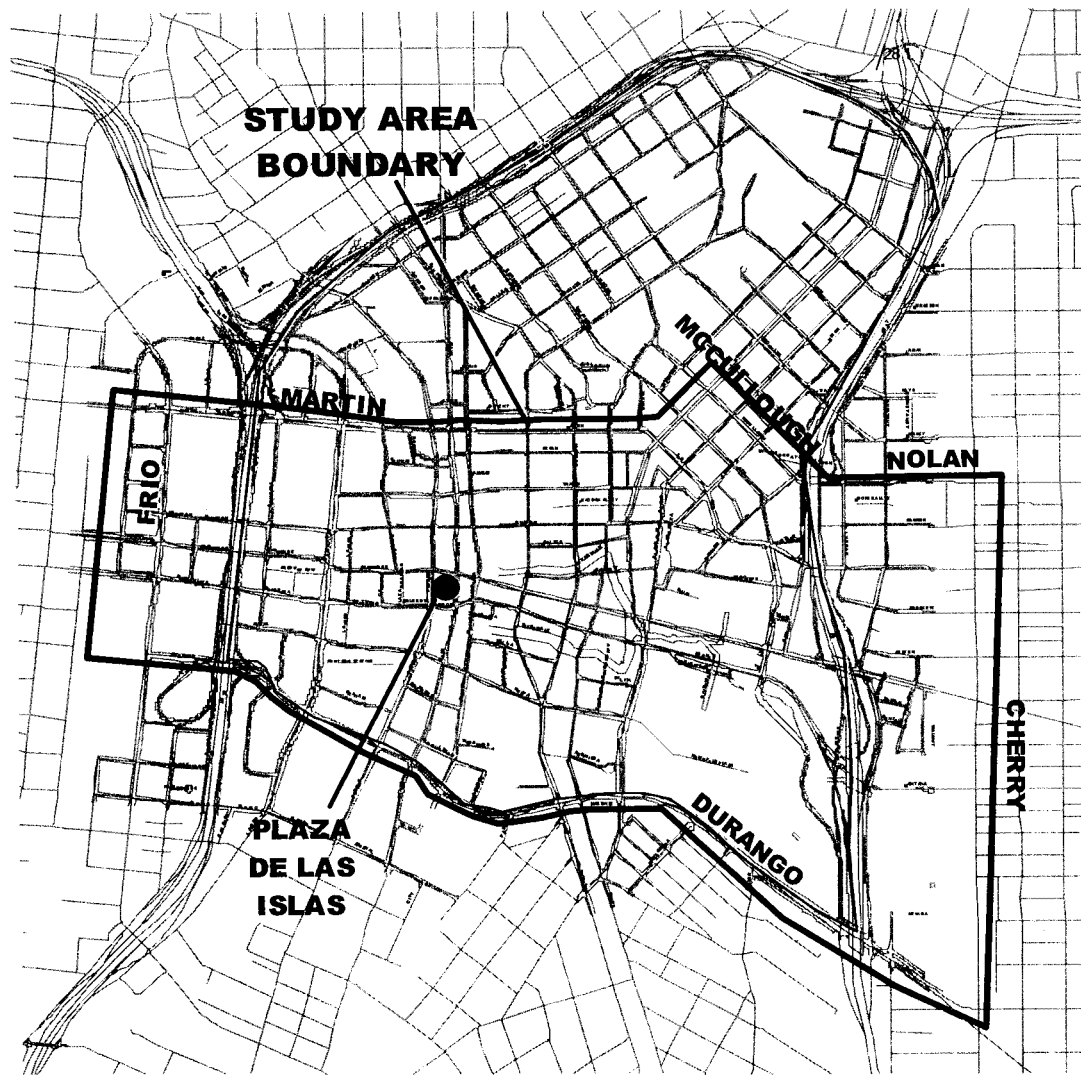
## ATTACHMENTS

1. Consultant's Proposal
2. Downtown Traffic Simulation Model Map
3. Discretionary Contracts Disclosure Form

  
Thomas G. Wendorf, P.E.  
Director of Public Works

  
Melissa Byrne Vossmer  
Assistant City Manager

  
Sheryl Sculley  
City Manager



**CBD MODELING STUDY  
DECEMBER 2005**

## City of San Antonio Discretionary Contracts Disclosure

For use of this form, see Section 2-59 through 2-61 of the City Code (Ethics Code)  
Attach additional sheets if space provided is not sufficient.

(1) Identify any individual or business entity<sup>1</sup> that is a party to the discretionary contract:

Post, Buckley, Schuh, and Jernigan, Inc.

(2) Identify any individual or business entity which is a *partner*, *parent* or *subsidiary* business entity, of any individual or business entity identified above in Box (1):

☒ No partner, parent or subsidiary; or

List partner, parent or subsidiary of each party to the contract and identify the corresponding party:

(3) Identify any individual or business entity that would be a *subcontractor* on the discretionary contract.

☐ No subcontractor(s); or

List subcontractors: WHM Engineering; GKW, Inc. ; HVJ, Inc.; Gram Traffic Counting

(4) Identify any *lobbyist* or *public relations firm* employed by any party to the discretionary contract for purposes related to seeking the discretionary contract.

☒ No lobbyist or public relations firm employed; or

List lobbyists or public relations firms:

<sup>1</sup> A business entity means a sole proprietorship, partnership, firm, corporation, holding company, joint-stock company, receivership, trust, unincorporated association, or any other entity recognized by law. A sole proprietor should list the name of the individual and the d/b/a, if any.

## City of San Antonio Discretionary Contracts Disclosure

*For use of this form, see Section 2-59 through 2-61 of the City Code (Ethics Code)  
Attach additional sheets if space provided is not sufficient.*

### (5) Political Contributions

List all political contributions totaling one hundred dollars (\$100) or more within the past twenty-four (24) months made to any *current or former member* of City Council, any *candidate* for City Council, or to any *political action committee* that contributes to City Council elections, by any individual or business entity whose identity must be disclosed under Box (1), (2), (3) or (4) above, or by the officers, owners of any business entity listed in Box (1), (2) or (3).

☒ No contributions made; If contributions made, list below:

| By Whom Made:  | To Whom Made:                   | Amount: | Date of Contribution: |
|----------------|---------------------------------|---------|-----------------------|
| John L. German | Councilmember Roger Flores, Jr. | \$75    | 08/04                 |
| John L. German | Councilmember Roger Flores, Jr. | \$75    | 10/04                 |
| John L. German | Councilmember Art Hall          | \$200   | 05/05                 |
| John L. German | Councilmember Kevin Wolff       | \$200   | 04/05                 |
| John L. German | Councilmember Roland Gutierrez  | \$100   | 10/05                 |

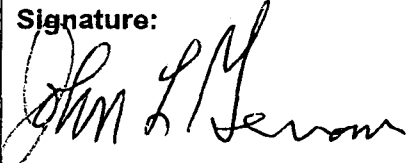
### (6) Disclosures in Proposals

Any individual or business entity seeking a discretionary contract with the city must disclose any known facts which, reasonably understood, raise a question<sup>2</sup> as to whether any city official or employee would violate Section 2-43 of the City Code (Ethics Code), ("conflicts of interest") by participating in official action relating to the discretionary contract.

☒ Party not aware of facts which would raise a "conflicts-of-interest" issue under Section 2-43 of the City Code; or

Party aware of the following facts:

This form is required to be supplemented in the event there is any change in the information before the discretionary contract is the subject of council action, and no later than five (5) business days after any change about which information is required to be filed, whichever occurs first.

|  |  |                                |
|--|--|--------------------------------|
| <b>Signature:</b><br><br>John L. German, P.E. | <b>Title:</b> Vice President/<br>District Director<br><br><b>Company or D/B/A:</b><br>Post, Buckley, Schuh, and<br>Jernigan, Inc., DBA PBS&J | <b>Date:</b> November 16, 2005 |
|--|--|--------------------------------|

<sup>2</sup> For purposes of this rule, facts are "reasonably understood" to "raise a question" about the appropriateness of official action if a disinterested person would conclude that the facts, if true, require recusal or require careful consideration of whether or not recusal is required.

# **San Antonio CBD Traffic Modeling and Alternatives Analysis**

## **Scope of Services**

November 22, 2005

This document summarizes the scope of services to be performed for the San Antonio CBD Traffic Model and Alternative Analysis Project by WHM Engineering, a subconsultant to PBS&J. WHM will be assisted by GKW, Inc. in this modeling effort.

The purpose of this study is to utilize a high-level, microscopic traffic model to simulate base and alternative street networks within a defined area of the Central Business District (CBD) as a result-oriented planning tool for various infrastructure and land development activities. The study will model intersection operations to determine existing and future levels-of-service and improvement needs related to potential changes on major streets such as Commerce Street, Dolorosa Street, Main Street and Soledad around the Plaza de las Islas, also known as Main Plaza.

Due to the lack of a public policy/plan for the CBD, all development currently occurs as individual projects, which results in an uncoordinated change to transportation access and circulation within the CBD that ultimately will limit access and circulation in the downtown area. The proposed traffic modeling study will provide the opportunity to develop a long-range access and circulation plan for the CBD. The plan will consider all modes of circulation, including vehicular, transit, pedestrian, and bicycle. The traffic model will be developed for the evaluation of traffic impacts on the CBD roadway network based on different road closures, street changes, and proposed future development.

PBS&J will serve as the prime consultant and will be responsible for overall project management. WHM will be responsible for performing traffic operational analysis, and evaluation of alternatives and recommendations.

### **Project Study Area**

The study area boundary will be as follows:

1. East – Cherry Street
2. South – Durango Boulevard
3. West – Frio Street
4. North – Martin Street/Broadway Street/6<sup>th</sup> Street/ Burnet Street

The study area includes approximately 200 intersections, of which approximately 140 are signalized. In addition 20, major driveways and parking garage entry/exit driveways will be included in the traffic model.

### **Task 1 - Project Management**

As a subconsultant, WHM will be responsible for coordination with PBS&J and the City of San Antonio, managing the traffic modeling effort, and development of alternatives and recommendations.

**1.1 Project Kick-Off Meeting** – Following contract approval and receipt of authorization to proceed, WHM will meet with PBS&J and the City's Project Manager and other key staff to conduct a project kick-off meeting, including review of the work program, project schedule and milestones. Data needs to be provided by the City will be reviewed. Coordination will be established with appropriate City departments, other agencies, and organizations.

**1.2 Monthly Progress Meetings** – WHM in conjunction with PBS&J will participate in meetings with the City's Project Manager on a monthly basis to review progress and status of the project. All progress meetings will be handled via teleconference.

### **Task 2 – Public/Stakeholders Involvement**

The Public/Stakeholders Involvement will be a cooperative and coordinated effort between the City of San Antonio and PBS&J. The purpose of the process is to encourage and receive meaningful participation for CBD business and citizen groups to obtain their perspective on access and mobility issues affecting the study area. This initial budget assumes that stakeholder/public involvement will be conducted by City staff or others after the completion of WHM's work. Should WHM participation be desired, a budget will be developed at that time.

**2.1 Meetings with City Staff Committee** – WHM will present the study findings and recommendations to members of City staff that have direct interest and responsibility pertaining to CBD traffic management and operations. WHM will attend one (1) meeting to present study results.



### **Task 3 - Data Collection**

There are approximately 200 intersections within the study area. In addition, 20 major driveways and parking garage entry/exit driveways will be included in the traffic model. **City of San Antonio will provide all traffic volume data within the study area.** Traffic data collection will be comprised of two components: identifying the type of data needed and field data collection.

Type of Data – A variety of data is required to develop the traffic model network, provide model-input data, and conduct the access and mobility analysis. These data include:

- All studies previously completed within the study area
- Peak period turning movement counts
- Traffic signal timing
- Travel time runs
- Roadway geometrics of the study area street network
- Pedestrian volume at each intersection
- Bicycle volumes
- On-street and off-street parking (public and private)
- Transit operations, including:
  - Routes
  - Bus travel headways
  - Bus dwell times
  - Bus stop locations

WHM will make maximum use of available data and information for this project. Existing information will be provided by the City of San Antonio, VIA Metropolitan Transit, the San Antonio Area Metropolitan Planning Organization (SAMPO), and CBD area traffic studies conducted by WHM and other organizations. The City of San Antonio will furnish WHM with any recent traffic counts, signal timing plans and transportation data that are pertinent to this study. WHM will evaluate this information to determine if all or any of this information can be used for the purpose of this study. Vehicle travel time runs will be collected as necessary for the AM and PM peak periods along key streets to provide a base measure for calibrating traffic signal timing optimization. All data collection will be performed during school session when no major events are planned for the CBD area.

### **Task 4 – Analysis of Existing Conditions**

The Consultant will use data collected in Task 3 to determine existing access and mobility demands on roadway, vehicle, pedestrian, bicycle and transit elements of the CBD transportation system. The analysis will include:

- Traffic access and circulation analysis, including identification of roadway deficiencies
- Evaluation of pedestrian/bicycle movements to identify pedestrian demand at critical locations, and the influence of vehicular operations on this demand
- Transit services and stop locations to determine the impact and relationship of bus operations on traffic operations

WHM will use the VISSIM microscopic traffic simulation model to conduct an analysis of existing AM and PM peak period street operations within the study area. WHM will use VISSIM to simulate the movement of individual vehicles on the street network. A unique feature of VISSIM is the animation capabilities it provides, which allow both technical and non-technical parties to more easily and better understand traffic operations on the proposed roadway network. The analysis will include operational modeling of all signalized and unsignalized intersections, analysis of major generators, analysis of pedestrian and bicycle traffic on arterial street operations, and analysis of bus routes and bus stops. Data input parameters will include signal phasing and timing, turning movement counts, bus operations, pedestrian movement, on-street parking, and intersection and roadway geometry. WHM will submit the existing conditions traffic model to the City for review prior to conducting alternative analysis. WHM will use VISSIM to perform one (1) model assignment in analyzing existing conditions.

Output of the computer simulation will characterize the operational performance of the existing street system. WHM, with assistance from the City and PBS&J, will develop Measures of Effectiveness (MOE). MOEs may include average vehicle speed, vehicle stops, vehicle delay, vehicle hours of travel, intersection level of service (LOS), maximum queue length per lane, vehicle miles of travel, emissions and fuel consumption. This information will be used to establish a baseline for the existing street traffic operations for the study area.

### **Task 5 – Development of Traffic Forecasts**

An important part of any study is the use of accurate traffic data to understand future traffic demands on the proposed roadway network. For this project, WHM will use existing traffic data, proposed development information from the City of San Antonio, and the SAMPO travel demand model as a basis for understanding the demands on the CBD roadway network. WHM will perform travel demand modeling efforts for each of the different alternative roadway alignments, which may include modifying the SAMPO travel demand model zone structure to obtain a better understanding of local travel demands, including directionality of that demand, on the CBD street network. In addition, WHM will develop micro-level demand forecasts based on the proposed development information for the study area to validate the future travel demand forecasts.

Similar project work completed by WHM includes the Downtown Access and Mobility Study completed for the City of Austin and the Traffic Modeling Study for the South Texas Medical Center completed for the City of San Antonio. For the Downtown Access and Mobility Study, WHM performed travel demand modeling for each of the different roadway alternatives based on development information obtained from the City of Austin. The travel demand forecasts entering the CBD roadway network was adjusted based on different alternative improvements, conversion to two-way operations and road closure scenarios. Forecasted trips were distributed in a rational manner and applied to different scenarios. The Capital Area Metropolitan Planning Organization (CAMPO) travel demand model was used in validating the travel demand forecasts.

For the Traffic Modeling Study for the South Texas Medical Center, WHM worked with the City of San Antonio to model intersection traffic operations in the Medical Center area to determine existing and year 2010 levels-of-service and improvement needs. WHM coordinated with the City of San Antonio, SAMPO, and Medical Center stakeholders to develop year 2010 travel demand forecasts, including modifying the existing zone structure and travel demand inputs within SAMPO's existing travel demand model, and re-running the model to develop 2010 traffic volume forecasts consistent with proposed development in the Medical Center. The travel demand forecasts obtained from the SAMPO model were adjusted and validated based on local development information.

### **Task 6 – Evaluation of Future Conditions Base Model**

WHM will use the existing conditions identified in Task 4 as the basis for evaluating the effect of future development on San Antonio's CBD street network. With the assistance of the City's Project Manager, WHM will identify proposed development in the study area. The SAMPO Transportation Plan will be reviewed as available to assist in travel demand/directional distribution assumptions for input to the VISSIM model. WHM will use VISSIM to develop an existing conditions model and three (3) other model assignments projecting future conditions. These models will include all proposed development and improvements committed for the established planning horizon, or "design year". . The following elements will comprise the evaluation process:

- Identification of proposed development/land use changes, including "Emerging Projects" as identified by the City
- Trip generation for the proposed development/land use changes
- Trip distribution assignment of future projections to the existing street network and traffic volumes
- Future traffic operations coded into the VISSIM network
- Run future conditions model to identify projected roadway/intersection deficiencies and locations for potential improvements

WHM, with concurrence from the City of San Antonio, will identify the MOE criteria to use in the evaluation. The operational performance for the design year model will serve as the basis for evaluation of the alternatives analysis. The operational performance of the future year base model will be expressed in terms of MOEs. MOEs may include average vehicle speed, vehicle stops, delays, vehicle hours of travel, intersection LOS, maximum queue length per lane, vehicle miles of travel, emissions and fuel consumption.

### **Task 7 – Development and Evaluation of Alternatives**

WHM will use the existing conditions identified in Task 4 as the basis for evaluating the effect of future development on San Antonio's CBD street network. With the assistance of the City's Project Manager, WHM will identify proposed development in the study area. The SAMPO Transportation Plan will be reviewed as available to assist in travel demand/directional distribution assumptions for input to the VISSIM model. **WHM will use VISSIM to develop three (3) model assignments for future conditions which will include all proposed development and improvements committed for the established planning horizon, or "design year".** The following elements will comprise the evaluation process:

- Identification of proposed development/land use changes, including "Emerging Projects" as identified by the City
- Trip generation for the proposed development/land use changes
- Trip distribution assignment of future projections to the existing street network and traffic volumes
- Future traffic operations coded into the VISSIM network
- Run future conditions model to identify projected roadway/intersection deficiencies and locations for potential improvements
- Provide an "improved" condition model run that will model the effect of improvements to be made on the street network.

WHM, with concurrence from the City of San Antonio, will identify the MOE criteria to use in the evaluation. The operational performance for the design year model will serve as the basis for evaluation of the alternatives analysis. The operational performance of the future year base model will be expressed in terms of MOEs. MOEs may include average vehicle speed, vehicle stops, delays, vehicle hours of travel, intersection LOS, maximum queue length per lane, vehicle miles of travel, emissions and fuel consumption.

### **Task 8 – Study Presentation and Documentation**

The findings and recommendations of Tasks 1 through 7 will be summarized and described in a draft of the final report. Findings, assumptions, and methodology used in the study will be explained and documented. A final draft report will be submitted to the City for review. In addition to the final report, 3-D animation of critical areas of the CBD area will be developed for all modeling scenarios for presentation to the City and public.

**FEE FOR SERVICES**

The tasks listed above can be performed for a fixed fee of \$220,000.

**List of Deliverables**

**VISIM Model**

- Current Conditions
- Design Year Conditions – three (3) alternatives

**Traffic Study Report**

- Existing Conditions Analysis
- Design Year with three (3) alternatives and an analysis of each
- “Improved” Design Year Condition Analysis with:
  - Schematic of Proposed Improvements
  - Benefit summary and cost of each Alternative
  - Cost Estimate to Implement Recommended Plan for Improvements

**See Attached Map of the Area to Be Studied**

# Post Buckley Schuh and Jernigan, Inc.

## Summary of Cost Proposal for City of San Antonio

Project: Downtown Traffic Planning and Modeling Project

Updated: 11/11/05

### Phases

| Position  | Name         | Billing Rate | Hours       | Total               |  |
|---|--------------|--------------|-------------|---------------------|--|
| <b>Preliminary Planning, Initial Modeling, and Concept Plan Development</b> |              |              |             |                     |  |
| PBS&J Sub Total   |              |              | 384         | \$ 49,740.40        | Perform Project management and Traffic Planning and Schematic Design |
| Traffic Modeling Consultants  | WHM/GKW      |              |             | \$105,000.00        | Convert 2002 CORSIM Model to VISSIM/Phase 1A and 1B/50 Interstns     |
| Sub total   |              |              | 384         | \$154,740.40        |  |
| <b>Expanded Area Traffic Routing and Modeling</b>                           |              |              |             |                     |  |
| PBS&J Sub total   |              |              | 168         | \$25,064.16         | Perform Project Management and Traffic Planning                      |
| Traffic Modeling Consultants  | WHM/GKW      |              |             | \$115,000.00        | Phase 2; Conduct of Expanded Traffic Modeling - 75 Interstns.        |
| Sub total   |              |              | 168         | \$140,064.16        |  |
| <b>Preliminary Engineering, Public Review, Schematic Plans</b>              |              |              |             |                     |  |
| PBS&J Sub Total   |              |              | 560         | \$76,706.16         | Perform Traffic engineering and Preliminary Design; cost estimating  |
| Traffic Modeling Consultants  | WHM/GKW      |              |             | \$5,000.00          | Upgrade and complete downtown traffic model                          |
| Sub total   |              |              | 560         | \$81,706.16         |  |
| <b>Final Plans, Specifications and Estimates for Civil and Traffic Work</b> |              |              |             |                     |  |
| Final Design and Bidding  |              |              | 0           | \$0.00              | TBD at the end of preliminary engineering for selected projects      |
| <b>Total</b>  |              |              | <b>1112</b> | <b>\$0.00</b>       |  |
| <b>Other Professional Costs (as needed)</b>                                 |              |              |             |                     |  |
| Surveys/Data Collection   |              |              |             | \$10,000.00         |  |
| Soil Borings/Materials Testing  |              |              |             | \$0.00              |  |
| Geotechnical/Pavement Design  |              |              |             | \$0.00              |  |
| Public Involvement  |              |              |             | \$0.00              |  |
| ROW Acquisition/Maps/Field Notes  |              |              |             | \$0.00              |  |
| Environmental/Permitting  |              |              |             | \$13,250.00         |  |
|   | Subtotal     |              |             | \$23,250.00         | Evaluating need for and preparing for US Army Corps permits,         |
|   | <b>Total</b> |              | <b>1112</b> | <b>\$399,760.72</b> |  |