

# ATTACHMENT A

## Scope of Work for the FM 2818 Corridor Study

### *SH 6 in College Station, northwestward to SH 6 and US 190 in Bryan*

The scope of services to be provided by the Consultant involves development of a plan for the FM 2818 corridor that makes the most efficient use of available project funding to mitigate level-of-service issues. This segment of FM 2818 is approximately 20 miles in length.

The Consultant will address cost-benefit and cost-effectiveness of four concepts/solutions. The study shall conclude with the identification of a list of recommended improvements, timeframe for implementation, and possible funding sources/agency responsibilities.

The Consultant, in cooperation with the Bryan College Station MPO (BCSMPO), Texas Department of Transportation (TxDOT) and other governmental and private sector entities, will attend project and public meetings, and will be required to provide technical assistance for the meetings listed below:

- Technical Committee Meetings (2)

### **TASK 1 – PROJECT MANAGEMENT AND COORDINATION**

The Consultant's Project Manager, in coordination with BCSMPO Project Manager, will be responsible for directing and coordinating all activities associated with the FM 2818 Corridor Study including development of a Project Management Plan, progress reports and invoices, and scheduling.

#### 1.1 – Project Management Plan

A Project Management Plan (PMP) will be prepared to identify work organization, responsibilities, and coordination/communication procedures. The Consultant will incorporate: services to be provided by BCS MPO, services to be provided by the Consultant, and the project schedule with target dates for milestones into the PMP.

#### Deliverable

- PMP document (electronic copy)

#### 1.2 - Progress Reports and Invoices

The Consultant will review the project schedule and prepare monthly progress reports for review by BCS MPO Project Manager. Invoices for all work completed during the period will be submitted monthly with the progress report for work performed by the Consultant and subconsultants.

Monthly progress reports will include a summary of:

- Activities, ongoing or completed, during the reporting period;
- Activities planned for the following month;
- Problems encountered and actions to remedy them;
- Project status report, detailing milestones completed and a tabulation of percent complete by task, management schedule showing study progress, supporting documentation and,
- Minutes of meetings.

## Deliverables

- Monthly invoice and progress report including all aspects identified in Section 1.2 of Scope of Work. (One electronic copy of the invoice and progress report with documentation attached to be submitted to the appropriate financial office).

### 1.3 - Scheduling

At the beginning of the project, the Consultant will prepare a graphic schedule identifying tasks, milestones, meetings, deliverables, and Steering Committee review periods. The schedule will be included in the PMP and submitted monthly as part of the progress report. The schedule will demonstrate graphically the study's progression.

## Deliverables

- Schedule (to be included in the PMP)

### 1.4 – Subconsultant Management and Meetings

The Consultant will prepare subcontracts for Subconsultant(s), monitor Subconsultant staff activities and adherence to schedules, and review and recommend approval of Subconsultant invoices. Also, the Consultant will schedule and participate in meetings throughout the project.

## Deliverables

- One Sub consultant contract (1 copy) within 30 days of each contract execution.

### 1.5 - Quality Assurance/Quality Control

The Consultant will provide continuous quality assurance and quality control throughout the life of the study and will provide BCS MPO staff periodic opportunities to perform their contract monitoring duties of all consultant team agencies. The Consultant will have a qualified team member review written deliverables to ensure the grammatical accuracy and layouts are understood easily by the layperson. The QAQC process will be identified under the Project Management Plan

## **TASK 2 – Technical Advisory Committee Updates and Public Engagement**

### 2.1 - Technical Committee Meetings

The Consultant will meet up to two times with the Technical Committee as determined in the study schedule to receive and assess reports on project progress, provide comments on the schedule, coordinate with their respective agencies, and provide technical oversight of major activities associated with the study. The meetings will be face to face.

Additional topics for this group may include:

- Establishment of the study goals, objectives, and evaluation criteria;
- Existing and projected corridor conditions;
- Development of short-term improvement concepts; and,
- Feasibility and availability of funding for medium or long-range improvement concepts.

### 2-1 - Public Engagement

Due to the nature of this project, there will be no public engagement. Any public engagement or outreach process will require an amendment to this scope and fee.

## Deliverables

- Presentation Materials for the Technical Committee meetings in Electronic Format

### **TASK 3 - Data Collection and Analysis**

#### 3.1 Data Collection

Once data needs and sources are identified, the Consultant will contact the appropriate agencies and organizations to obtain the data. Some of the data to be collected may include

- A. Transportation System Data for FM 2818:
  1. Detailed existing data from the public entity stakeholders, such as:
    - a. Traffic volumes (daily and peak hour) within each corridor segment from TxDOT AADT volumes
    - b. Traffic signal timings and/or plans from City or TxDOT
    - c. Median opening locations from aerials
    - d. Access to adjacent land uses
    - e. Adjacent land use from MPO's GIS dataset (classifications, acreage by type)
    - f. Rights-of-way (if available)
    - g. Roadway plans (where applicable)
    - h. Traffic signal timings from the MPO or City
  2. Most current Transportation Plans from TxDOT, and local governments to include committed improvements and travel forecasts.
  3. Most current Transit Service and Facility Planning data from transit agencies, to include any revised Service Plans, if applicable.
  4. Pertinent data on existing and planned major utilities and railroad facilities.
  5. Most recent digital aerial map of the study area immediately available from BCS MPO or TxDOT or other source as appropriate.
  6. Recent and historic crash data.
  7. The Consultant will supplement available data obtained from area agencies with field data collection, such as traffic volume counts at major intersections and turning movement counts.
- B. Land Use Plans - Obtain mapping showing existing land use, existing building footprints, major utility ROW, and street names. Obtain existing development guidelines and restrictions, development densities, etc., for the study corridor.
- C. Travel time data from google maps or other available online source.

Traffic volume data for this analysis will be collected as follows:

**Traffic Counts**– From SH 6 in College Station, northwestward to SH 6 and US 190 in Bryan

*Weekday AM/PM, and Weekend Peak Intersection Turning Movement Counts – 44 locations*

- Harvey Mitchell Pkwy at Texas 6 Frontage Rd
- Harvey Mitchell Pkwy at Texas 6 Frontage Rd
- Harvey Mitchell Pkwy at Mumford Rd
- Harvey Mitchell Pkwy at Phil Gramm Blvd
- Harvey Mitchell Pkwy at Sandy Point Rd
- Harvey Mitchell Pkwy SBFR at SH 21 W
- Harvey Mitchell Pkwy NBFR at SH 21 W
- Harvey Mitchell Pkwy at Independence Ave
- Harvey Mitchell Pkwy SB at Shiloh Ave

- Harvey Mitchell Pkwy NB at Beck St
- Harvey Mitchell Pkwy at Providence Dr
- Harvey Mitchell Pkwy at Providence Dr
- Harvey Mitchell Pkwy at Clear Leaf Dr
- Harvey Mitchell Pkwy at Leonard Rd
- Harvey Mitchell Pkwy at Rock Hollow Loop
- Harvey Mitchell Pkwy at Turkey Creek Rd
- Harvey Mitchell Pkwy SBFR at W Villa Maria Rd
- Harvey Mitchell Pkwy NBFR at W Villa Maria Rd
- Harvey Mitchell Pkwy at La Brisa Dr
- Harvey Mitchell Pkwy at Cedarwood Dr
- Harvey Mitchell Pkwy at Rockwood Dr
- Harvey Mitchell Pkwy at Pinewood Dr
- Harvey Mitchell Pkwy at N Traditions Dr
- Harvey Mitchell Pkwy at F and B Rd
- Harvey Mitchell Pkwy SBFR at Raymond Stotzer Pkwy
- Harvey Mitchell Pkwy NBFR at Raymond Stotzer Pkwy
- Harvey Mitchell Pkwy at George Bush Dr W
- Harvey Mitchell Pkwy at Luther St W
- Harvey Mitchell Pkwy at Canyon Creek Cir
- Harvey Mitchell Pkwy at Legacy Ln
- Harvey Mitchell Pkwy at Holleman Dr
- Harvey Mitchell Pkwy NBFR at Jones Butler Rd
- Harvey Mitchell Pkwy SBFR at Wellborn Rd
- Harvey Mitchell Pkwy NBFR at Wellborn Rd
- Harvey Mitchell Pkwy at Welsh Ave
- Harvey Mitchell Pkwy at Nueces Dr
- Harvey Mitchell Pkwy at Rio Grande Blvd
- Harvey Mitchell Pkwy at Southwood Dr
- Harvey Mitchell Pkwy at Longmire Dr
- Harvey Mitchell Pkwy at S Texas Ave
- Harvey Mitchell Pkwy at Dartmouth St
- Harvey Mitchell Pkwy near Texas 6 SBFR
- Harvey Mitchell Pkwy at Texas 6 SBFR
- Harvey Mitchell Pkwy at Texas 6 NBFRFM

### 3.2 - Current Corridor Conditions and Analysis

Year 2016 daily traffic volumes estimated by BCS MPO travel demand model will be compared to annual average daily traffic volumes obtained and collected as part of this study to determine the accuracy of BCS MPO's regional model in reflecting existing travel demands and the areas needing adjustment and factoring for estimating future travel demands. The growth rate from the MPO travel demand model will be used to estimate future traffic along the corridor.

The Consultant will identify existing travel demands, crash hot spot locations, level-of-service, and quantify weekday capacity and operation issues.

#### **Deliverables**

- Data Collection Plan detailing the available data, additional data needs, and schedule constraints.

- Data in ESRI shape files or any other file format such as Excel or Access which can be imported into a standard GIS platform such as ArcGIS or TransCAD
- Draft and Final Existing Situation Report

## **TASK 4 - Alternatives Analysis**

### 4.1 – Develop Peak Hour Traffic Operations Model

The Consultant will develop a traffic operations model for the FM 2818 study corridor and select existing and proposed arterial roadways adjacent to or that intersect FM 2818 Sychro/SIMtraffic. Videos of the model analysis from SIMTraffic will be prepared for the technical committee meetings.

The simulation model will be developed for the weekday PM peak hour. The model will include the signalized intersections and un-signalized intersections listed under Task 3.1.

The traffic analysis will result in an evaluation of various performance measures, which could include capacity/level-of-service, vehicular delay, and travel time/speed. The existing conditions traffic simulation model will be used for the traffic operations evaluation of improvements developed in Task 5.1. The results of the model will be used to compare roadway and intersection traffic operations before and after the implementation of the recommended improvements.

### 4.2 – Identify and Define Proposed Improvements

The existing traffic operations model along with crash hotspots will be used to identify the top eight locations with the immediate level of service and safety concerns. These 8 locations can be an intersection or a corridor location. The Consultant will identify and define context-sensitive improvements within the study area for these eight locations using the following steps.

- A. Review prior corridor studies, mobility data, and evaluations related to the study corridor and to identify a toolbox of potential access management treatments, including the potential of unconventional intersection treatments.
- B. The Consultant will prepare context sensitive improvement concepts to address the corridor issues for the eight identified locations, potentially including:
  1. Intersection Geometric Improvements (turn lanes and grade separations);
  2. Median Opening Modifications (closures and consolidations);
  3. Access Control Modifications (driveway consolidations and closures);
  4. Traffic Signal Modifications (timings, coordination, and emergency preemption);
  5. Intelligent Transportation System Improvements (driver information systems, changeable message signs, and alternate route notification with real time traffic signal adjustments);
  6. Travel Demand Management Programs (carpool/vanpools, telecommuting, parking management, employer trip reduction programs, and transit incentives);
  7. Alternative Corridor Improvements (transportation system improvements along alternative parallel corridors which would assist in reducing demand); and,
- C. Additional concepts may be identified via technical committee and public input.

### **Deliverables**

- Synchro / SIMTraffic Traffic operations model results and videos
- Description of improvement concept for the eight identified locations with sufficient detail for the development of cost estimates.

## **TASK 5 - Prioritization and Implementation**

### 5.1 - Mobility

Each of the viable improvement concepts identified in Task 4.2 for the eight locations will be evaluated from a mobility standpoint. The improvement concepts will be modeled using the traffic simulation models of the FM 2818 corridor segment developed in Task 4.1. The following items are used only to serve as possible examples of criteria that may be used to evaluate the improvement concepts from a mobility standpoint:

1. Vehicle congestion delay.
2. Percent of increased travel time due to congestion.
3. Average peak hour travel speed.
4. Peak hour level-of-service (LOS).
5. Accessibility enhancements to activity centers (qualitative).
6. Impacts of alternatives on existing facilities and system effectiveness (qualitative).
7. Consistency with community and regional transportation plans (qualitative).

### 5.2 - Cost Effectiveness

The Consultant will develop a preliminary cost estimate for these eight improvement concepts based on the TxDOT bid information and will evaluate cost-effectiveness to determine if the improvements cause sufficient user benefits to justify the investment. The Consultant will evaluate cost-effectiveness by determining the benefits (dollar-value) associated with the reduction in vehicle delay due to a short-term improvement and comparing the benefit to the cost of implementing the improvement. Benefits will be determined using the results of the peak hour model and converting the hourly delay values to estimated daily and annual delays, which will then be multiplied by an average cost per hour of delay to achieve annual benefits (dollar-value).

### 5.3 Prioritization of Improvement Concepts

The Consultant will rank the top four improvement concepts based on the results from Task 5.1, Task 5.2, and taking into account comments from the technical committee and public input. Each improvement concept will be ranked by its viability and compatibility with other improvement concepts for achieving acceptable traffic operations within the FM 2818 corridor segment. The Consultant will prepare line sketches for these top four concepts, showing (if appropriate) typical sections (existing and proposed), lane configurations, modal components, and profiles for changes in grade from existing conditions.

### 5.4 – Implementation Plan

Based upon the list of improvements and cost analysis provided in the previous tasks, the CONSULTANT will work with technical committee to develop an implementation plan for these preferred solutions.

### Deliverables

Charts or tables describing the short and medium-term recommendations including descriptions, detailed cost estimates, and jurisdiction. Cost estimates will not include utilities or drainage. (One reproducible set)

- Operational Analysis Report showing intersection analysis and microsimulation results and forecast speeds for the top eight locations
- Cost Analysis Report of Top eight of the viable alternatives

- Line sketches for these top four concepts, showing (if appropriate) typical sections (existing and proposed), lane configurations, modal components, and profiles for changes in grade from existing conditions
- Implementation Plan Document with a prioritized list of preferred alternative solutions.

## **TASK 7 – FINAL REPORT**

The Consultant will prepare a draft report of approximately 75 pages with up to 75 pages of appendices and executive summary of 4 pages reflecting the recommended improvement concepts and enhancements. The report will provide a description of the study effort associated with identification, definition, development, and refinement of improvement concepts. The report will include typical improvement layouts and will include an existing typical section and a proposed typical section in stick diagram form. The report will also include a discussion of any concepts eliminated for not addressing the study goals and objectives. The methodology and evaluation criteria will be explained. A section, documenting the traffic analysis including the development of the traffic simulation models for the short-term solutions analysis, will be included.

The report will include a summary of recommended projects along with project descriptions, preliminary cost estimates, and benefits. The draft report will be submitted to the MPO and Technical Committee for review. Based on the feedback from the MPO and technical committee, the Consultant shall revise the Draft Transportation Plan and executive summary once for final submittal.

### **Deliverables:**

- Study Report including maps or other drawings and exhibits of each concept recommended. (electronic copy in PDF format)
- Executive summary (electronic copy in PDF format). The executive summary should be an 11"x17" folded document, which includes a brief introduction, goals, recommendations, anticipated benefits, project location map, study partners, and the estimated costs breakdown by type, and implementation timeframe.