J6I3022 I-270/I-255 Arterial Management Interface (AMI)
Scope of Services

The Scope of Services defined herein represents tasks to be performed to append the existing Alternate Route User Interface and to develop Incident Signal Timing Plans. The selected consultant will be responsible for the tasks as defined in this scope of work.

The order in which the tasks are completed may or may not correspond to the sequence of the task numbers in the scope of services. In fact, some tasks listed within this scope may be carried out concurrently to expeditiously complete the study.

The consultant shall use the existing I-70 AMI document. The consultant shall use standardized format as in the original I-70 AMI including font, links, symbols and layout. Appended sections shall be indistinguishable from the original AMI document.

STUDY AREA LIMITS

This project will focus primarily on the interchanges and arterial corridors along the entire I-270/I-255 corridor in St. Louis County and St. Louis City. At each interchange location, the corridor will enlarge to encompass the involved interchange and relevant outer roadway segments.

TASK 1: PROJECT MANAGEMENT

1.1 Project Administration and Quality Assurance/Quality Control

Project Manual: The Consultant will prepare and maintain a project manual containing all information vital to their part in the project, e.g. scope, schedule, and deliverables.

Quality Control: The Consultant will insure all studies, reports, and plans are reviewed for compliance with MoDOT policy and standards, clarity, and completeness. As part of our quality assurance/quality control practices, all final products will be reviewed by the Consultant's internal QA/QC team to ensure a high quality product is delivered and that the deliverables required in the scope of work have been completed.

Cost Accounting: The Consultant will establish and maintain a study cost control system to process and track their study costs in accordance with MoDOT standards.

Invoicing: The Consultant will prepare invoicing and payments requests on a monthly basis. The invoices will include monthly progress reports including brief narrative descriptions, financial reports, and expenditures. The reports shall provide MoDOT and the Consultant with sufficient, timely financial and study progress information so that managerial decisions concerning control of various aspects of the study can be made.

Schedule: The Consultant will work closely with Gateway Guide stall to ensure that the proposed schedule is being completed on time.

Project Close-Out: At the completion of the study, the Consultant will provide MoDOT a complete summary of all time and resources spent on the project.

Work Products: The Consultant will submit all products to MoDOT, who will coordinate the review of all products and materials.

1.2 Meetings

It is anticipated that the Consultant will conduct up to six monthly meetings with MoDOT staff during the duration of the project. Meetings with the public or other agencies are not anticipated for this project.

TASK 2 – DATA COLLECTION AND INVENTORY

2.1 Information to be provided by the Department

Existing Synchro Models: MoDOT will provide existing Synchro Models for the following interchanges, intersections and corridors:

- Lilac Ave.
- Bellefontaine Rd.
- Route 367
- Route AC
- Old Halls Ferry Rd.
- West Florissant Ave.
- Washington-Elizabeth Ave.
- Hanley-Graham Rd.

- Route 67
- McDonnell Blvd.
- MO Bottom Rd.
- Route 180
- Route B
- Dorsett Rd.
- Route 340
- Route AB
- Route 100
- Dougherty Ferry Rd.
- Route 30
- Route 21
- Route 267
- Route 231
- Route 141
- Route 61-67

Existing Communication layouts and ITS Inventories: MoDOT will provide communication layouts and ITS inventories for the entire study area. It is expected that the Consultant will not need to perform any inventories of field equipment. MoDOT will provide this data in GIS formats as well as hard copies as needed.

2.2 Compile and Summarize Data to be used in User Interface

Compile and Summarize Data: The Consultant will obtain existing GIS database/Base Maps from MoDOT, compile this information, and summarize it for use in the existing User Interface. The most recent files for roadways and signal locations in any spatial data format (shapefile or geo-database) will also be requested.

TASK 3 – INCIDENT SIGNAL TIMING PLAN DEVELOPMENT

3.1 Interchange Synchro Models

Verify Existing Synchro Models: The Consultant will verify geometrics and existing timing within all available Synchro models provided by MoDOT and the Consultant. AM and PM existing condition models will be saved for each interchange.

Create Existing Conditions Synchro Models: The Consultant will create Existing Conditions Synchro models for all interchanges and corridors not already provided. These models will include interchange intersections including ramp terminals and any outer road intersections. AM and PM existing condition models will be created for each interchange.

3.2 Development of Incident Signal Timing Plans

Existing Incident Signal Timing Plans: Use existing plans where already created.

Coordinated Intersections: The Synchro models created in Task 3.1 will be used to develop Incident Signal Timing Plans. The existing cycle lengths will be increased and the timing plans will be optimized to create separate directional incident plans. Time-space diagrams will be created to be used in the existing User Interface.

Free Operating Intersections: For interchanges with intersections operating free, the max times will be increased in order to create incident signal timing plans. Dynamic maximum settings will be documented for use in programming the incident signal timing plans.

TASK 4 – PROGRAMMING AND IMPLEMENTATION OF INCIDENT TIMING PLANS

4.1 ACTRA Programming

Programming of Incident Signal Timing Plans: The Consultant will program the incident signal timing plans for each interchange to each local signal controller. Programming will be done via the ACTRA system from a TMC workstation or via Remote Access.

4.2 Implementation

Implementation of Incident Signal Timing Plans: The Consultant will implement and perform signal adjustments during three major incidents along the I-270/I-255 corridor. The three major incidents may occur in either St. Louis County or Jefferson County.

4.3 Documentation

Document Timing Adjustments and Final Timing Plans: Following the three major incidents the Synchro models will be updated with any timing changes that were needed. These timing changes will be documented along with the final timing plans will be submitted to MoDOT.

TASK 5 – DATA COLLECTION AND GIS DATA COMPILATION

5.1 Develop and Compile GIS Database

The Consultant will develop a geo-database of roadways, alternate routes, and signal locations at the interchanges along I-270/I-255 specified in the study area and other signalized intersections along State Routes that will be evaluated as potential alternate/diversion routes. This data will use existing MoDOT data and be supplemented by alternate route data collected in the field under Task 6. All signal and ITS information made available pertaining to the signals and roadways associated with this project will be linked to the spatial features to create a single relatable GIS database. The geo-database will be implemented into map documents that facilitate ease of use and maintenance by end users as well as export into other systems.

TASK 6 – APPEND EXISTING ELECTRONIC ALTERNATE ROUTE USER INTERFACE

Using the data and deliverables from Tasks 2 through 5, the Consultant will append the existing alternate route user interface.

6.1 Survey and Assess Alternate Route Corridors

The Consultant will assess the existing transportation network to determine a list of candidate routes that are available to move large volumes of traffic should an emergency take place and the need to implement a bypass route, evacuation route, or relieve interstate congestion occurs. A number of critical factors have been identified that the Consultant will assess:

- Roadway capacity
- Bridge weight restrictions
- Adjacent land use
- Adjacent utilities and services
- Attractiveness of the corridor as a means to move emergency servic34s
- Connectivity with key corridors and/or other population centers
- Presence or availability of ITS infrastructure
- Ability to coordinate traffic signals and other traffic operations instruments
- Truck accessible routes
- Bridge height/clearance issues
- Proximity to residential areas, schools and other key institutions
- Railroad crossings
- Where should lay enforcement personnel be deployed to keep traffic moving?

- What messages should be displayed on permanent DMS and portable CMS for each particular alternate route scenario?

Deliverables

The Consultant will provide a technical memorandum summarizing the list of criteria and the list of potential alternate routes, including maps.

6.2 Append Existing Electronic Alternate Route Guide

The Consultant will append the existing Alternate Route Guide that can be used by both transportation professionals as well as emergency services in an electronically accessed format. One updated hard copy of only the appended and revised pages will be produced and updated into the existing copy for emergency needs at the TMC. The primary version will be an electronic copy that will be appended to the existing document. The Guide will include individual alternate route maps for each segment of interstate showing the closure area, alternate route designations, signage locations, signal locations, key areas for law enforcement to deploy, messages for portable CMS and permanent CMS, key factors noted above in Task 6.1, list of key contacts and phone numbers for that alternate route, and resources needed. The appended electronic version will be a seamless duplicate of the existing highly interactive PDF file on CD that will mimic the use of the hard copy manual but allow for quicker access to various pages and route maps.

Deliverables

The Consultant will provide 2 CDs, one electronic copy of the entire Alternate Route Guide and one hard bound version of the appended portions of the Alternate Route Guide. The electronic document will be interactive via hot buttons for navigation of the manual.

The consultant will produce at the most five (5) two-minute video tutorials with audio that instruct users on the use and navigation of the Alternate Route Guide. These videos will be linked from the Alternate Route Guide and shall be approved by the Commission before acceptance.

6.3 Develop Geo-Database/Alternate Route Guide Access for End Users

The Consultant will utilize data collected under Task 5 and alternate routes creates under Task 6 to populate a geo-database that will be electronically accessible via MoDOT licensed software

for users will access and permission. This will display the information regarding signals, intersections, timing plans, and alternate route plans gathered and created throughout this project.

Deliverables

The Consultant will develop, integrate, test, and coordinate access to the geo-database with MoDOT staff and provide written procedures on how to access the geo-database and utilize data to the greatest potential.