

## Exhibit C – Fee

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URS Fee Estimate form for LAMPO ITS Architecture Update

URS

Tasks	PAUL (Project Manager)	VANESSA (Traffic Engineer)	MING (Senior Traffic Eng)	D NELSON (Traffic Engineer)	D SHAMO (Senior Traffic Eng)	Total Hours	Raw Average Rate	Raw Billable Labor	Loaded Average Rate	Loaded Billable Labor	Est to Comp (hrs)	Est to Comp \$
1 Task 1. Research	2	1				3	\$ 57.00	\$ 171.00	\$ 143.64	\$ 431.00		\$ -
2 Description of Region			8	12		20	\$ 41.85	\$ 837.00	\$ 105.45	\$ 2,109.00		\$ -
3 Changes in relevant ITS Architectures	2	16				18	\$ 37.28	\$ 671.00	\$ 93.84	\$ 1,691.00		\$ -
4 Existing ITS Infrastructure Inventory (DBE Assisting)			2	4		6	\$ 47.50	\$ 285.00	\$ 119.70	\$ 655.00		\$ -
5 Changes in regional needs	2		2	4		6	\$ 47.50	\$ 285.00	\$ 119.70	\$ 655.00		\$ -
6 Changes in scope of service	2		2	4		6	\$ 47.50	\$ 285.00	\$ 119.70	\$ 655.00		\$ -
7 Changes in ITS elements	2		2	4		6	\$ 47.50	\$ 285.00	\$ 119.70	\$ 655.00		\$ -
8 Change in ITS elements	2		2	4		6	\$ 47.50	\$ 285.00	\$ 119.70	\$ 655.00		\$ -
9 QA/QC Review						0	\$ -	\$ -	\$ -	\$ -		\$ -
10 Task 2. Stakeholder Involvement						0	\$ -	\$ -	\$ -	\$ -		\$ -
11 ID participating agencies & stakeholders	4	8		4		16	\$ 42.18	\$ 675.00	\$ 106.31	\$ 1,701.00		\$ -
12 First round stakeholder meeting	12		20		8	40	\$ 56.83	\$ 2,273.20	\$ 448.24	\$ 5,930.00		\$ -
13 Second round stakeholder meeting	12		20		8	40	\$ 56.83	\$ 2,273.20	\$ 448.24	\$ 5,930.00		\$ -
14 Task 3. Regional Architecture Update						0	\$ -	\$ -	\$ -	\$ -		\$ -
15 Needs assessment	2	4		4		10	\$ 48.90	\$ 489.00	\$ 123.23	\$ 1,232.00		\$ -
16 Lines of communication	2	4		4		10	\$ 48.90	\$ 489.00	\$ 123.23	\$ 1,232.00		\$ -
17 Agreements	4					4	\$ 68.75	\$ 275.00	\$ 173.25	\$ 693.00		\$ -
18 System Functional Requirements	2	12		12		26	\$ 45.85	\$ 1,192.00	\$ 116.53	\$ 3,004.00		\$ -
19 Interface Requirements	4	8		8		12	\$ 40.42	\$ 485.00	\$ 101.85	\$ 1,222.00		\$ -
20 Identify Standards	2	4		4		6	\$ 48.90	\$ 489.00	\$ 123.23	\$ 1,232.00		\$ -
21 Sequence of Projects	4	18		20		48	\$ 39.83	\$ 1,912.00	\$ 100.38	\$ 4,818.00		\$ -
22 TURBO Setup	8	8		8		24	\$ 35.84	\$ 859.20	\$ 90.31	\$ 6,141.00		\$ -
23 QA/QC Review						16	\$ 54.56	\$ 873.00	\$ 137.50	\$ 2,200.00		\$ -
24						0	\$ -	\$ -	\$ -	\$ -		\$ -
25 Task 4. Maintenance Plan	4	16		32		64	\$ 44.84	\$ 2,870.00	\$ 113.01	\$ 7,232.00		\$ -
26						0	\$ -	\$ -	\$ -	\$ -		\$ -
27 Task 5. Management Presentations	18					32	\$ 61.66	\$ 1,973.00	\$ 155.37	\$ 4,972.00		\$ -
28						0	\$ -	\$ -	\$ -	\$ -		\$ -
29 Task 6. Project Management (10% of Project Hrs)	50					50	\$ 68.78	\$ 3,439.00	\$ 175.33	\$ 8,666.00		\$ -
30						0	\$ -	\$ -	\$ -	\$ -		\$ -
###						519	\$ 49.25	\$ 25,559.00	\$ 124.10	\$ 64,409.00		\$ -
<b>BILLING RATES (2013 KYTC rates Escalated)</b>	\$ 68.77	\$ 33.34	\$ 54.56	\$ 33.34	\$ 54.56							
<b>TOTAL HOURS</b>	124	41	114	172	86	0						
<b>Other Direct Costs</b>												
Airfare (\$600 x 2 Trips)	212	0.56	\$ 1,183									
Meetings (12 x 176 miles roundtrip) From CINN	1140	0.56	\$ 638									
Meetings (3 x 380 miles roundtrip) from INDY												
<b>LOADED TOTAL</b>								\$ 64,409.00				ODC Used
												ODC Remain
												\$ 4,441.00
												TOTAL Budget Remaining
												\$ 4,441.00

**TOTAL FEE ESTIMATE \$ 77,250.00**

Subs \$ 8,400.00  
 ODC \$ 4,441.00  
**TOTAL Budget Remaining \$ 4,441.00**

Budgeted Multiplier based upon FAR & KYTC audited 121.12% overhead rate and 15% profit margin.

**TOTAL MILEAGE \$ 1,821**

Days People

Travel Expenses (\$100/day MEALS & LODGING)  
 Airfare (\$600 x 2 Trips) \$ 1,200  
 Hotels (4 nights x 2 persons) \$ 1,040  
 Meals (\$30 / day x 2 persons x 4 days) 2 \$ 240  
 Lunches (\$8 x 2 persons x 10 days) 10 2 \$ 140  
 Travel Expenses \$ -

Sub Costs Integrated Engineering (DBE) \$ 8,400 (DBE Percentage 10.5%)

## Exhibit D – Scope of Services

# Scope of Services

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## LAMPO ITS Regional Architecture

This scope of services was developed from the URS Corporation / Integrated Engineering (consultant team) response to RFP #27-2014 submitted on July 28, 2014. The scope is to develop a new Regional ITS Architecture (Architecture) for the Lexington Area Metropolitan Planning Organization's (LFUCG/LAMPO) two-county area (Fayette and Jessamine Counties). This project is to update and replace that previous Bluegrass ITS Regional Architecture plans completed in 2004.

### Task 1. Getting Started

- ❖ Project Kickoff;

The Consultant Team will hold a kick-off meeting to discuss the following agenda.

- ❖ Project goals, objectives, and expectations
- ❖ Setting initial meetings for project research;
- ❖ Identification of the participating agencies and stakeholders;

The current list of stakeholders will be updated. During the project kickoff meeting with the LFUCG/LAMPO, the project team will review the previously identified ITS Architecture stakeholders and attempt to include other transportation related groups, agencies, and individuals who might provide useful information for the development of a new Architecture.

- ❖ Identification of Project Champions

Project champions, those to assist in moving the Architecture and ITS projects forward, will emerge from the stakeholder list. The key will be to identify these leaders and garner their acceptance as a vital piece as a project champion.

### Task 2. Gather Data: Identification of Existing ITS infrastructure and Updated Stakeholder Information

- ❖ Description of the region;

The consultant team will develop a description of the region to be mutually agreed upon with the LFUCG/LAMPO for inclusion in the Architecture. The study area will be limited to the two-county MPO area and will include the KYTC interstate ITS facilities on I-64 and I-75 just outside of the Fayette County line in Franklin, Scott, Clark and Madison Counties. There are dynamic message boards, cameras, and/or ARWIS outside the periphery of Fayette County on the interstate system that would have value when integrated into this plan.

- ❖ Changes in relevant ITS architectures (e.g., National and Statewide)

The consultant team will review the current editions of the statewide and national ITS architectures to provide compatibility between the new Architecture and these higher level ITS architecture documents.

❖ Existing ITS Infrastructure Inventory

The consultant team will work with the LFUCG/LAMPO and regional stakeholders to review the current ITS inventory. This task will include the creation of a GIS shape file with locations and identifiers for existing and planned ITS elements and projects in the region. The GIS layers will include:

- Traffic Management Systems (Centracs & TransPhat)
- Traffic Signal locations the with following information
  - Traditional and advanced
  - Isolated, closed loop or adaptive systems
- Communications Mediums with the following information
  - Fiber optic routes
    - ◆ Number of fibers
    - ◆ Users (agencies)
    - ◆ Termination points
  - wireless devices
    - ◆ Local wireless devices (local point of communication)
    - ◆ Wireless bridges (trunk line)
  - copper lines
- Surveillance Cameras (Freeway and arterial)
- Other Data Capture Devices (Bluetooth, Sidefire RADAR, RWIS, etc)

Existing standalone databases will be requested to begin the compilation of this data into GIS.

❖ Changes in regional needs

In order to continually optimize the regional transportation network, the local ITS needs have grown. The Consultant Team through our interviews and assessments with stakeholders and ITS operators will identify and document recent regional needs as well as project short-term future needs.

❖ Changes in the range and scope of ITS services considered

Both the KYTC and LAMPO/LFUCG have future plans for enhancing their respective ITS networks. These changes range from typical upgrades to the integration of new technologies and the expanded uses of the Traffic Management and Traffic Operations Centers.

❖ Changes in ITS element names;

The consultant team will also update/add new ITS elements that have evolved since 2004. Some examples of these elements include the updated Centracons signal system, TransPhat, the KYTC's internally developed traffic signal management software, Bluetoad and InSync.

### Task 3. Stakeholder Involvement

#### ❖ Stakeholder Meetings

The consultant team will work closely with LFUCG/LAMPO to organize the stakeholder meetings and perform the following:

- Recommending a schedule of meetings
- Coordinating with LFUCG/LAMPO District Public Affairs Managers for stakeholder outreach to encourage participation in the meetings
- Planning and coordinating stakeholder meetings
- Preparing agendas, handouts, presentations, and other materials necessary to support the meetings
- Attending and facilitating all meetings
- Preparing minutes of each ITS meeting and distributing them to all meeting participants

Two rounds of stakeholder meetings. The focus of the first meeting will be to provide a policy-level overview of the project, summarize the purpose and objectives of the local level stakeholder meetings, and promote support for ITS projects. The stakeholder meeting will focus on education of stakeholders and identification of champions, as well as gathering additional information necessary for the development/refinement of the regional architecture. This meeting will occur early in the project.

The second stakeholder meeting will present the final draft of the Architecture, answer questions, and obtain feedback for the final version.

#### ❖ Task 4. Regional Architecture Plan

The Consultant Team will develop a regional architecture based on the latest version of the Kentucky Statewide and National ITS Architectures using the latest version of the Turbo Architecture (Version 7.0). The Architecture will include the following components to satisfy the minimum FHWA criteria. These criteria are:

- Identifying existing and planned ITS systems discovered in Task 2.
- Identifying user needs and services.
- Defining an operational concept that describes the roles and responsibilities of participating agencies and stakeholders who are responsible with the operation and implementation of the ITS systems.
- Identifying market packages needed to provide the required services for existing and planned ITS systems.

- Identifying subsystems, equipment packages, and functional requirements that describe the required functionality for the systems.
- Identifying interface requirements and information exchanged.
- Identifying ITS standards that are applicable to systems and architecture flows included in the statewide architecture.
- Defining a sequence for project implementation based on the specific needs of the area and the readiness of each project, as well as taking into account funding, project interdependency, planning level costs and benefits, and specific technology maturity.
- Identifying existing and new agreements required for implementation and operations of the ITS systems.
- Creating a systems engineering checklist.

An initial draft architecture plan and turbo database shall be submitted to LFUCG/LAMPO for internal review prior to the second stakeholder meetings. The Consultant Team shall make revisions based on the feedback and provide a final draft plan prior to the second stakeholder meetings. Upon receipt of additional feedback from the stakeholder meetings, The Consultant Team will make appropriate revisions and submit the final plan and turbo database to LFUCG/LAMPO for approval.

- ❖ Needs Assessment: Identify transportation issues, needs and challenges in the region; prioritize needs with the stakeholders. This information along with the information gathered in Task 1 will be used to identify and develop future ITS strategies and projects for the region.
- ❖ Production of an operational concept that identifies the roles and responsibilities of stakeholders;

Based on information gathered from stakeholders, the consultant team will define and document stakeholders' roles and responsibilities in planning, design, implementation, management, operations, and maintenance of ITS elements and systems in the region.

The Operational Roles and Responsibilities document will identify the part each stakeholder plays in the region. The identification of operational roles and responsibilities is especially important where ITS crosses institutional and jurisdictional boundaries. This document will be produced as bullet point lists kept at a relatively high level that identify "who does what" with regard to the operation of ITS in the region. The roles and responsibilities may include, but not be limited to the following subject areas:

- Procurement of the System(s)
- Design and Implementation of the System(s)
- Day-to-Day Operation of the System(s)
- Day-to-Day Maintenance of the System(s)
- Long-Term Maintenance of the System(s)
- Funding Strategies for the System(s)
- Periodic Upgrades to the System(s)
- Replacement and Disposal of the System(s)

These operational roles and responsibilities will be reviewed with the regional stakeholders for accuracy and "buy-in." Operational roles and responsibilities will not be identified and assigned to any particular regional stakeholder without their understanding and consent.

❖ Identification of lines of communication and information sharing;

The communications between agencies is essential to the successful operation of a regional ITS program because the public needs to experience seamless borders, particularly in the area of traveler information. Weather and incidents can dramatically influence motorists' immediate travel needs as they move from one jurisdiction to a neighboring sub-region. Emergency response agencies also need to have an integrated system that operates as a single entity. This cannot happen without fully integrated, robust, high through-put communication systems..

❖ Recorded agreements required for operations;

The consultant team will identify existing and explore additional interagency agreements that may be required, i.e. Memorandums of Understanding that will be required or enhance the use of the Architecture. The Consultant Team will investigate and report on potential avenues for agreements between the various stakeholder agencies in the development of the plan.

❖ System functional requirements (high level);

The team will develop the functional requirements for the LFUCG/LAMPO region. Functional Requirements are a key piece of the systems engineering process and are essential for developing systems and subsystems. Functional Requirements explain what a system is supposed to do, but not how it is done.

The consultant team will develop high level functional requirements for major categories of ITS projects. These functional requirements are form the basis for developing more detailed requirements for specific projects. The project sponsors can choose to use these requirements to advance regional goals or to supplement project-level requirements. The high-level project requirements will be grouped into major categories consistent with the Statewide and National ITS Architectures. The functional requirements will be written in easy to read, declarative statements consistent with the guidance from FHWA. They should have the following qualities:

- **Necessary** – The requirements must be important
- **Concise** – Functional requirements must be short and to the point
- **Attainable** – Functional requirements are not lofty goals that require unlimited resources to meet. They must be implementable within a reasonable amount of time and with reasonable resources
- **Complete** – The requirements should not reference other documents or parts of the plan. They should be standalone statements
- **Consistent** – The requirements cannot contradict each other or other portions of the plan
- **Unambiguous** – The requirements must be specific
- **Verifiable** – The requirements must be able to be checked or tested to determine if they are completed

❖ Interface requirements and information exchanges with planned and existing systems and subsystems;

The Consultant Team will prepare the Regional ITS Architecture consistent with Version 7 of the



National ITS Architecture, FHWA Rule 940.9, and Part V of the FTA National ITS Architecture Policy for Transit Projects. The Architecture will be inclusive of freeway, arterial and transit ITS elements.

The Consultant Team will utilize the Turbo Architecture database to develop the ITS Architecture. This database provides a structure to show service packages, user services, and data connections between systems and subsystems.

❖ Identification of ITS standards supporting regional and national interoperability

It is FHWA policy that ITS Architectures be developed to guide the development of ITS projects and programs and be consistent with ITS strategies and projects contained in applicable transportation plans. It is required that the National ITS Architecture be used as a resource in the development of a regional ITS architecture.

Currently, there is a document entitled the “ITS Standards Program Strategic Plan, 2011–2014” that describes the USDOT’s four year strategy and goals for interoperability, cooperative systems, and a connected transportation environment. This is a document approaching its sunset year and it is not known at this time if the current direction of the USDOT will significantly change. This will be monitored during the course of the project through contact with local FHWA officials.

❖ Sequence of projects required for implementation;

Through the project process, the Consultant Team will structure a prioritized list of ITS projects that is consistent with the goals and objectives of the Transportation Improvement Plan and fits within the projected funding for such projects. Interdependencies among projects such as coordination of implementation schedules with other transportation improvements will be considered to develop a strategically sound plan. An example would be to incorporate the installation of conduit banks and/or fiber optic lines as part of a roadway project

An initial draft architecture plan and turbo database shall be submitted to LFUCG/LAMPO for internal review prior to the second stakeholder meetings. The Consultant Team shall make revisions based on the feedback and provide a final draft plan prior to the second stakeholder meetings. Upon receipt of additional feedback from the stakeholder meetings, The Consultant Team will make appropriate revisions and submit the final plan and turbo database to LFUCG/LAMPO for approval.

## Task 5: Maintenance Plan

This task will assure the long-term viability and usability of the Architecture. The Consultant Team shall identify the tasks, responsibilities, and approaches necessary to use and maintain the architecture.

The Consultant Team shall develop an architecture maintenance plan to guide updates to the Architecture so that it continues to accurately reflect the existing and future ITS capabilities of the region. The maintenance plan will specify the procedures and responsible parties for maintaining and updating the Architecture and provide a timeframe for periodic review. A change management process shall be established as part of the maintenance plan to track and record future changes made on the Architecture and to facilitate maintenance of the project website. The maintenance plan shall also

detail a process and identify key stakeholders who should support the maintainer in evaluating and approving changes.

### **Task 6: Management and Key Stakeholder Presentations**

The Consultant Team shall prepare and make a round of presentations of the final LFUCG/LAMPO ITS Architecture, Implementation Strategy, and Maintenance Plan to: (1) LFUCG/LAMPO and KYTC officials and (2) key stakeholders identified by LFUCG/LAMPO.

### **Task 7: Project Management**

This task will include the Project Management activities consisting of project oversight, schedule and budget tracking, invoicing and project meetings. The Consultant Team shall support and facilitate monthly meetings or teleconferences with LFUCG/LAMPO throughout the duration of the project. The Consultant Team shall also meet and interact with other key LFUCG/LAMPO personnel and project stakeholders as directed by LFUCG/LAMPO and will be responsible for all meeting documentation.

This project will require coordination between the client, stakeholders and consultant team resources. Additionally, this task will include administrative functions related to project accounting project documentation, i.e. meeting minutes, monthly invoicing and progress reports, and general oversight monitoring the schedule and expenditures over the course of the project.

### **Deliverable Products**

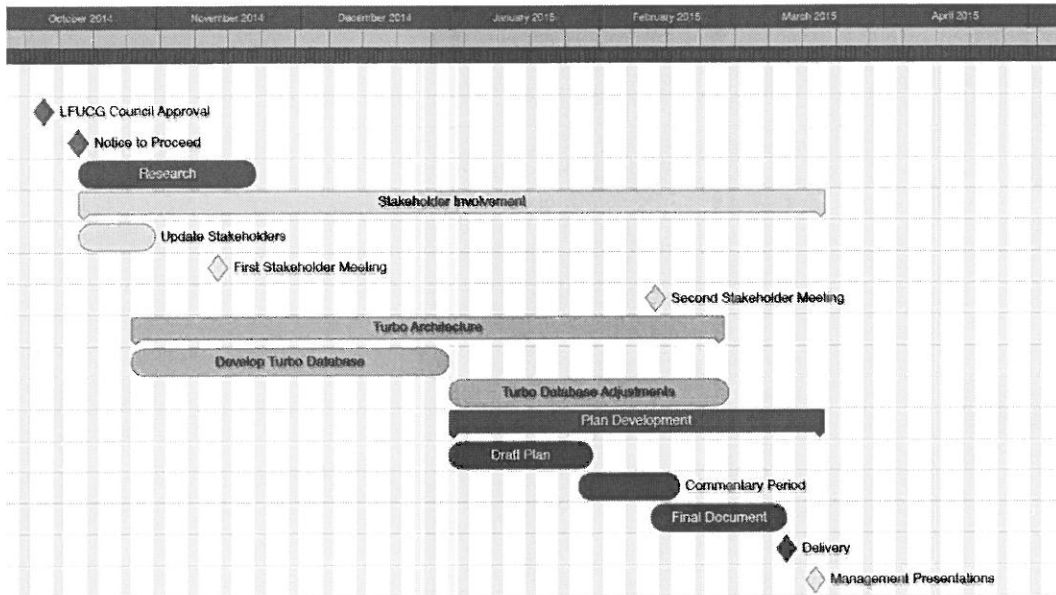
The new LFUCG/LAMPO ITS Architecture Plan will be crafted to meet the minimum FHWA requirements as previously described. The report will be produced using the latest version of the Turbo software.

The Consultant Team will check the Architecture against the FHWA's Regional ITS Architecture Assessment Checklist - Version 3.0 (5/07) to provide confidence that the FHWA will approve the Architecture or will have minimal commentary. This checklist can be found at [http://ops.fhwa.dot.gov/its\\_arch\\_imp/checklist.htm](http://ops.fhwa.dot.gov/its_arch_imp/checklist.htm)

The project deliverables will include fifteen (15) hardcopy versions of the Architecture along with a reproducible PDF copy. Additional electronic files will include inventory GIS shapefiles, presentation files and presentation graphics, meeting minutes, photos, etc.

### **Schedule**

The project schedule has been developed assuming contract approval at the October 9, 2014 LFUCG Council meeting and a notice to proceed being received within seven (7) calendar days of contract approval.



## Fee

The fee for the services described within shall be for the lump sum/fixed fee amount of \$77,250. Invoices will be prepared monthly on a percentage completion basis and sent to the LAMPO/LFUCC project manager.