

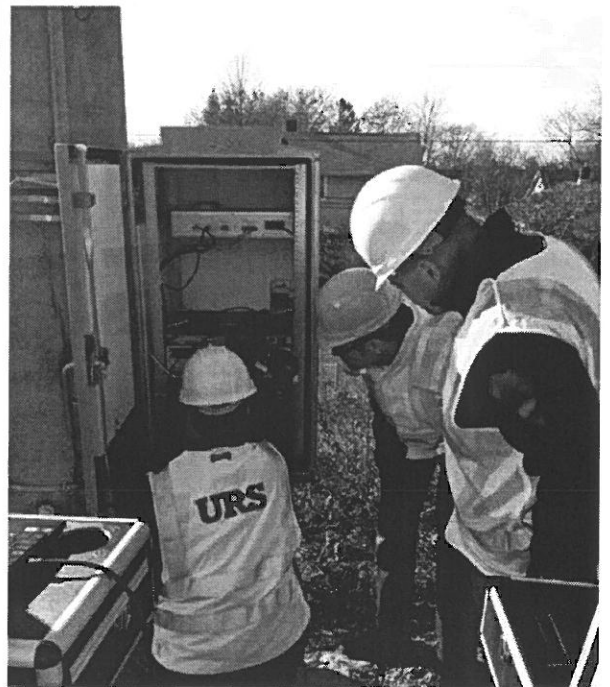
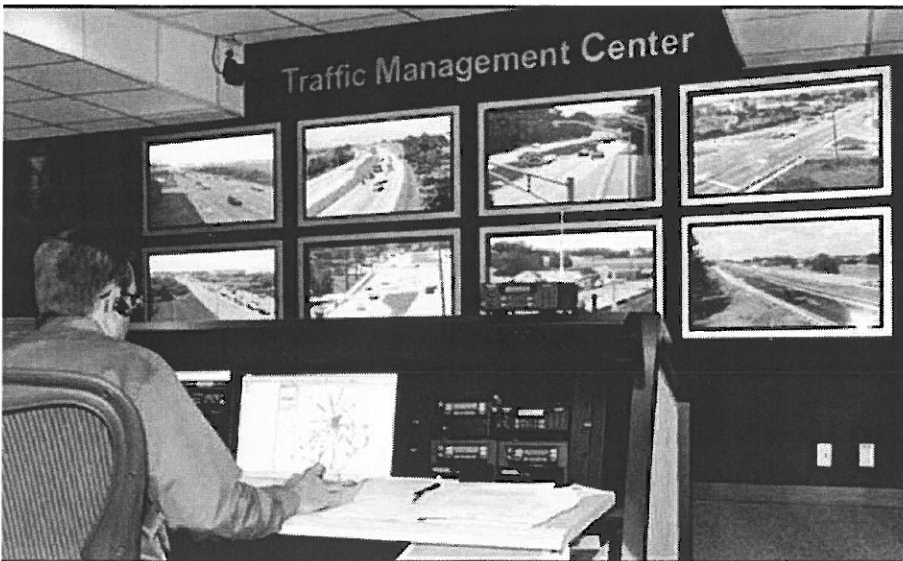
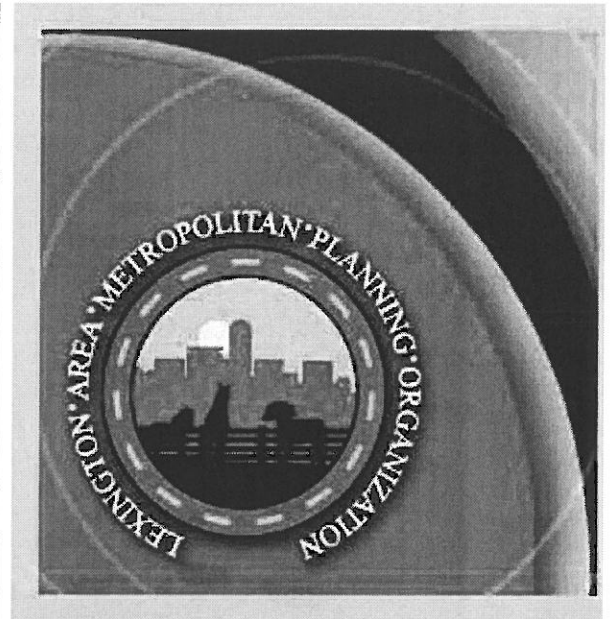
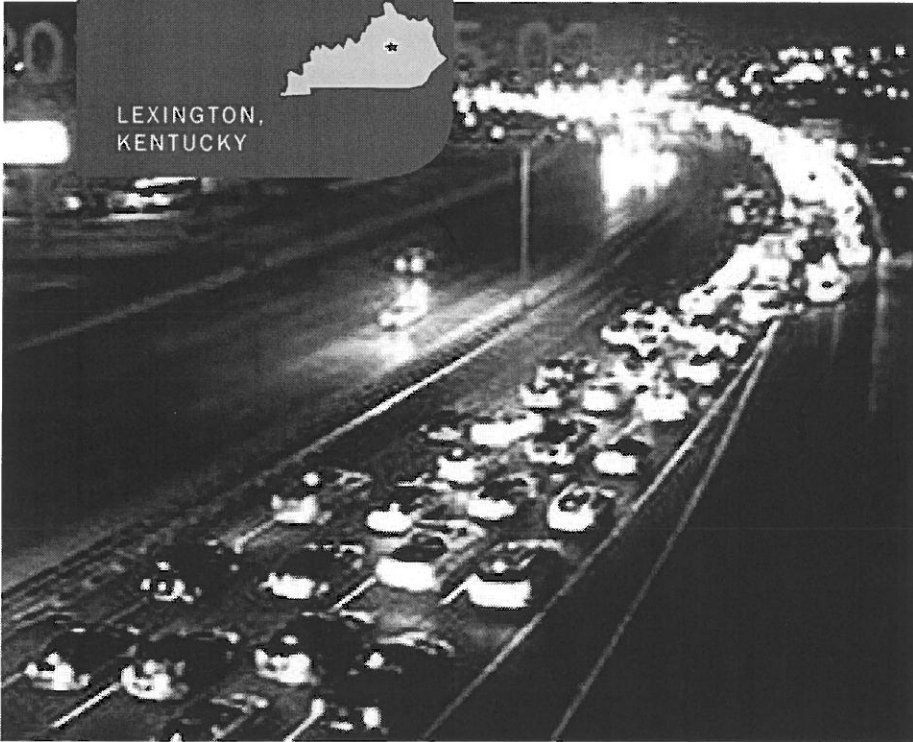
URS

TRANSPORTATION
AND TRAFFIC
ENGINEERING

RFP #37-2014

**Lexington Area Metropolitan
Planning Organization (LAMPO)
Regional Intelligent Transportation System (ITS)
Architecture Study**

LEXINGTON,
KENTUCKY



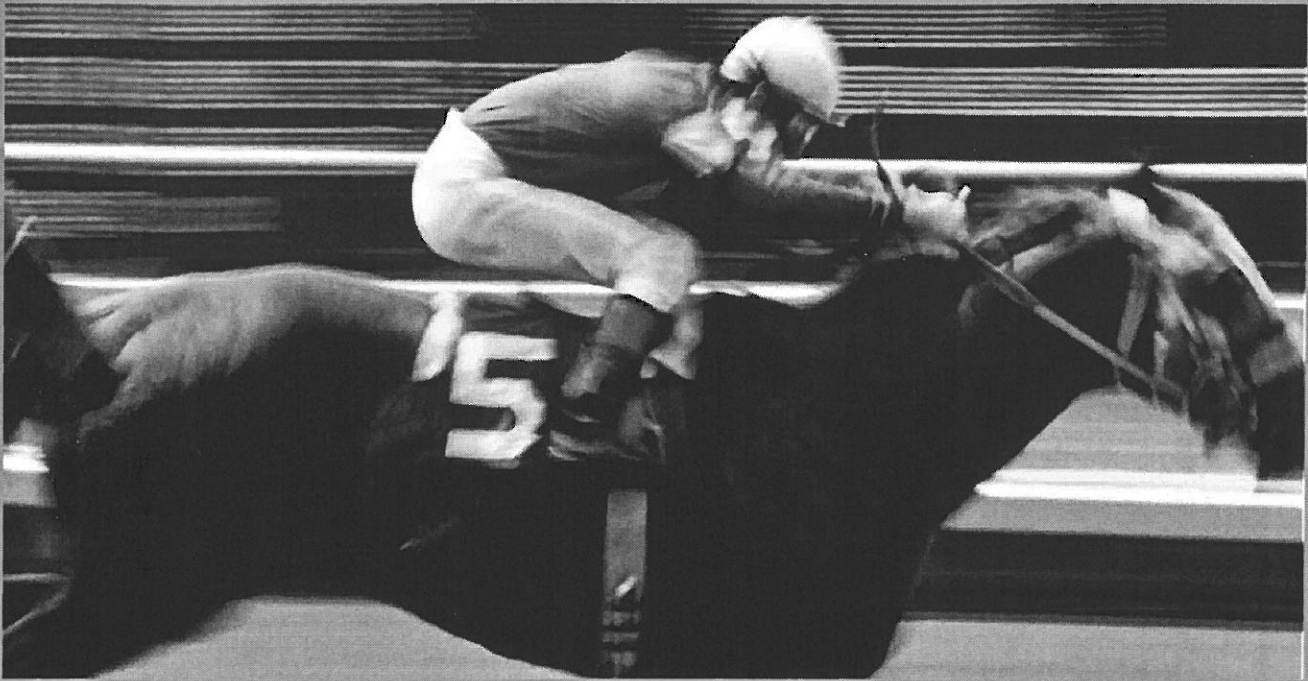


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March 25, 2013

Theresa Maynard
Lexington-Fayette Urban County Government
Room 338, Government Center
200 East Main Street
Lexington, KY 40507

Re: RFP #37-2014 LAMPO Regional ITS Architecture Study

URS Corporation is pleased to submit this proposal to support the Lexington Area Metropolitan Planning Organization (LAMPO) with updating the 2004 Bluegrass Intelligent Transportation System (BITS) Technical Memorandum. The URS Team provides both local and national expertise, resources, and experience necessary to develop an effective ITS Architecture for the LAMPO. We have assembled a strong and dynamic team, specifically tailored to meet all project requirements. The URS Team includes committed key individuals who have performed significant ITS strategic planning and architecture projects as well as, local transportation planning and traffic operations projects. This Project Team brings invaluable local knowledge of the existing operations as well as experience from past ITS projects across the country.

URS is a recognized leader in all aspects of ITS, including planning, design, implementation, operations, maintenance, and program management. We have extensive experience in ITS Architecture, having been involved in the development or updating of over 30 regional or state ITS Architectures across the country. URS is also well acquainted with the transportation stakeholders and needs in the Lexington area from its involvement in the US 27 Access Management Plan and the Lexington Signal Retiming Project. URS has a prominent footprint with transportation in the Bluegrass Region. We recently completed the LFUCG Traffic Signal Retiming project encompassing four of Lexington's major routes; we have held the KYTC District 7 Traffic Engineering Services contract since its inception in 2007; and a few of our engineers regularly attend and participate in the bimonthly Congestion Management Committee meetings. Our partner Integrated Engineering (DBE) is a local multidisciplinary planning and engineering firm that will assist with GIS and stakeholder involvement activities.

Our strength is in our team of subject matter experts. Paul Slone, the Project Manager, is one of the top traffic operations engineers in Kentucky. Earlier in his career, Paul both lived in and worked for Lexington as the Traffic Signal Systems Manager, supervising the day-to-day operation of several traffic signal systems. This experience gives him unique knowledge and familiarity with the operations within the LFUCG, one of the largest ITS stakeholders in the LAMPO area. Paul will be supported by URS' national expert on ITS Architecture Dr. Ming- Shiun Lee, PhD, PE. Ming has led the development of over 30 regional and statewide ITS Architecture plans.

With the selection of URS, LAMPO will receive the benefits of working with a project manager that you and many of the area stakeholders know well. Supported by the best ITS Architecture professionals URS has to offer, we will deliver a solid product that will satisfy FHWA requirements and chart the course for future ITS projects in the LAMPO area. Thank you for your consideration.

Sincerely,

Paul A. Slone, PE, PTOE
Project Manager



FIRM INFORMATION

Name of firm	URS Corporation
Type of ownership	Publicly Traded (NYSE: URS)
Complete mailing address	525 Vine Street, Suite 1800 Cincinnati, Ohio 45202
Contract Contact	Glenn I. Armstrong, PE
Telephone number	513.651.3440
Email address	glenn.armstrong@urs.com
Technical Contact	Paul A. Slone, PE, PTOE
Telephone number	513.651.3440 (o) 513.419.3456 (d) 513.325.2748 (m)
Email address	paul.slone@urs.com
Fax number	877.660.7727
Firm website address	www.urs.com

QUALIFICATIONS

Team Qualifications

The following KYTC prequalifications are applicable to this project and the team has the ability to cover all necessary requirements.

KYTC Prequalification	URS	Integrated Engineering
ITS/Concept Development Feasibility Studies	X	
Advanced Traffic Engineering Design and Modeling	X	
Transportation Corridor & Systems Planning	X	
Travel Demand and Simulation Modeling	X	
Traffic Engineering Services	X	X
Traffic Data Collection	X	
Traffic Forecasting	X	
Electrical Engineering Traffic Signal Services	X	
Certified DBE		X





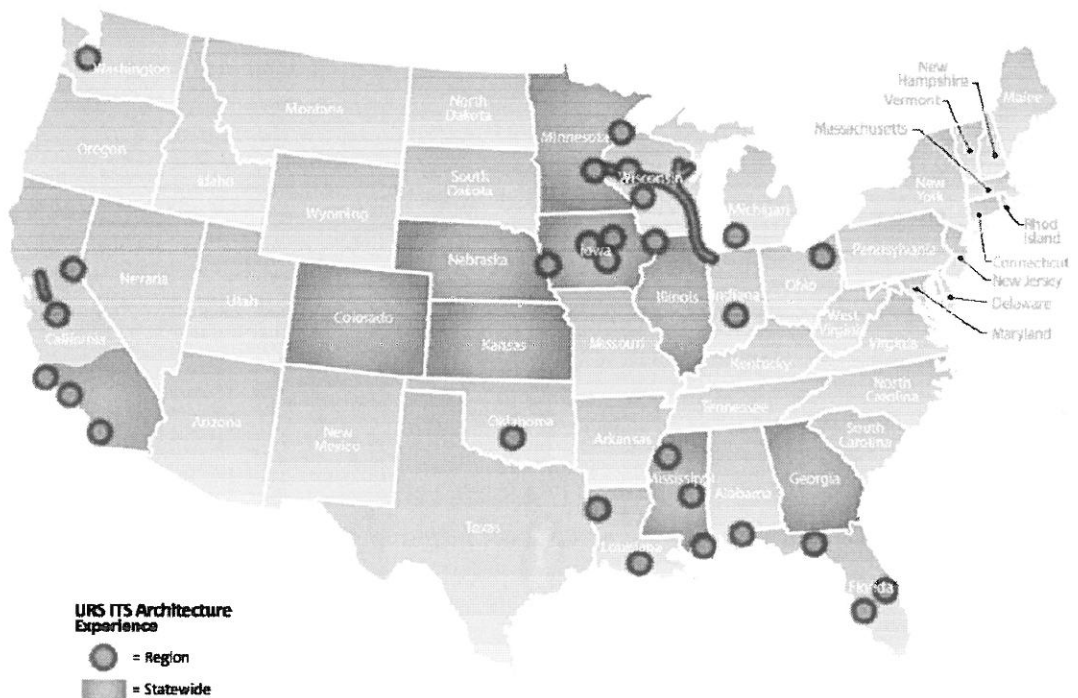
SPECIALIZED EXPERIENCE AND TECHNICAL COMPETENCE

URS ITS PLANNING AND ARCHITECTURE DEVELOPMENT EXPERIENCE

URS has lead more than sixty ITS planning efforts and over thirty ITS architecture projects around the nation including the development of strategic plans/architectures and program management for large and small urban and rural areas. Our approach to ITS planning and architecture development emphasizes the important role of stakeholder involvement, agency coordination, cooperation and consensus building. This key emphasis on outreach, communication and coalition building has been the cornerstone in URS' proven success in developing ITS architectures throughout the nation.

URS has assisted state, regional, and local agencies with developing vision, goals, objectives, and performance measures for their ITS programs. The performance methods are S.M.A.R.T. (Specific, Measurable, Agreed, Realistic, and Time-Bound) metrics as recommended in the FHWA publication *Advancing Metropolitan Planning for Operations: The Building Blocks of a Model Transportation Plan Incorporating Operations*.

The Figure below illustrates URS' experience in developing ITS Architectures across the country. Many of those ITS Architecture efforts included the development of ITS strategic deployment plans.





The URS Team is excited to support the Lexington Area Metropolitan Planning Organization (LAMPO) in updating the Regional Intelligent Transportation Systems (ITS) Architecture. We understand the importance of establishing a shared vision by multiple agencies that describes how various information technology systems work together to share information and resources; thus providing a safer, more efficient and effective transportation system for all travelers, and enhancing the vitality of the region. The URS Team also recognizes the significance of incorporating policies and directions from multiple strategic planning documents, such as the LAMPO Transportation Improvement Plan, into a broad strategic vision to serve as a roadmap for future ITS investments.

The URS Team will take a systems-level approach to updating the 2004 Bluegrass Intelligent Transportation System (BITS) Technical Memorandum. The outcome of this effort will be a living, actionable document that will present how transportation resources integrate with varying programs, including congestion management, transit, homeland security, and emergency management. The architecture will establish the processes by which ITS assets are leveraged for multimodal and intermodal mobility within the region and across the region's borders.

THE URS TEAM

The URS Team possesses the subject matter expertise, relevant experience, and strong, proven approach necessary to successfully support the LAMPO, LFUCG Department of Public Works, Kentucky Transportation Cabinet (KYTC), and other stakeholders in updating the Regional ITS Architecture. The URS Team includes URS Corporation and Integrated Engineering, Inc. (IE). IE is a certified Disadvantaged Business Enterprise (DBE) with KYTC. URS Team's DBE participation for this project is expected to be 10 to 15%.

Our team brings a unique blend of local knowledge and national ITS Architecture expertise to this project. We will lead the stakeholders through a process to update the architecture, and tie it into statewide, regional and local transportation goals, objectives, and needs. Our organizational approach, proven on other local projects such as the US 27 Access Management Study, provides the LAMPO and stakeholders with the necessary information to make effective decisions for this policy document. Our familiarity with many of the stakeholders will greatly benefit the project process. Our project manager, Paul Slone, will lead the stakeholder meetings. He has developed an educational presentation style in which he delivers technical information in a relaxed, comprehensible format, providing stakeholders the knowledge base to understand the technologies, deployments and benefits of ITS.

A charter member of ITS America, URS has led hundreds of ITS planning, design and/or deployment efforts around the nation. Our Midwest offices offer a combined staff of over 5,000 personnel, including planners, engineers, environmental scientists, and economists with proven expertise in the areas of ITS planning, system design, communications, and deployment and operations.

URS understands the interactions between transportation planning and transportation operations. We have direct, hands-on experience applying Federal Highway Administration (FHWA) guidance on developing an objectives-driven, performance based approach to incorporating the ITS architecture update and planning for operations.

Locally and nationally, URS caters to a diverse clientele that includes governmental agencies at local, county, state, and federal levels as well as private and corporate entities. We take great pride in our reputation as an industry leader in ITS, known for providing innovative and



consistently high-quality professional and technical services.

URS is pleased to present the specialized experience and technical competence of the team on the following pages. Our local project manager, Paul Slone, PE, has worked closely with many local stakeholders. Supporting Paul on this project, Dr. Ming-Shiun Lee, our proposed technical lead, is the URS ITS architecture expert and has led more than 30 ITS architecture and deployment planning projects.

This project will be led from our Cincinnati office with assistance from our Indianapolis and Minneapolis offices. The Minneapolis Office is one of our hubs for our ITS Architecture work with staff readily available to perform the necessary services described in this proposal. The traffic / ITS engineers have the experience and skills to perform all types of traffic engineering projects within the Commonwealth of Kentucky. One page resumes are included for the staff later in the submittal.

Project Manager – Paul A. Slone, PE, PTOE (URS)

Mr. Slone has over 22 years of experience in Traffic Engineering and Planning. He currently is Transportation Group Manager of the URS Cincinnati office. In this position he managed the Lexington Traffic signal study for LFUCG; is currently managing the CMAQ project US 42 / Weaver Road Improvement project for KYTC District 6; and is the Principal in Charge for the KYTC District 7 Traffic Engineering Support Services Contract and the KYTC statewide traffic engineering contract. The US 27 Access Management Plan was developed under the District 7 Traffic Contract. He is well versed in the requirements of public involvement and stakeholder meetings, and will lead this project, allocating the resources required and delivering the finished update on schedule.

ITS Architecture Design and Reporting Lead – Ming-Shiun Lee, PhD, PE

As the lead project engineer of URS Minneapolis office, Dr. Lee is primarily involved with engineering projects in the Intelligent Transportation Systems (ITS) and Traffic Engineering areas. He has over 19 years of experience in the areas of program management, ITS planning and architecture, design and implementation, systems engineering, advanced traffic management systems (ATMS), active traffic management (ATM), transportation systems evaluation, traffic modeling and simulation, and signal design and analysis. He is URS' technical leader in the field, and has completed designs across the Midwest including Minnesota, Iowa, Michigan, Indiana and Illinois .

Investigation Lead – Vanessa Fritsch, PE, PTOE (URS)

Ms. Fritsch has been recently promoted as the Traffic Department Manager. She gained significant experience over the last 8 years on other traffic signal retiming projects in Louisville, Lexington, Knoxville, and some small communities in Ohio. Her experience also includes transportation analysis, traffic signal design and Blue Tooth data collection technology. Vanessa is a certified URS Project Manager, and leads a team of three traffic engineers.

Technical Reviewer – Daniel E. Shamo, PE (URS)

Mr. Shamo has an extensive background in transportation engineering and project management. His areas of expertise include Intelligent Transportation Systems (ITS) and Traffic Operations. His experience includes establishing the current Intelligent Transportation System (ITS) initiatives for the Indiana Department of Transportation. His work with the Gary-



Chicago-Milwaukee Priority Corridor (GCM) program significantly influenced the ITS planning efforts across Wisconsin, Illinois and Indiana. While at INDOT, Dan was one of the founders of the GCM Corridor program. Along with promoting a significant number of ITS initiatives, part of this work established the development of several regional and statewide ITS Architectures for the three states involved. After leaving INDOT and joining URS Corporation, he continued his involvement with the GCM Corridor as the Executive Director.

SUBCONSULTANT

URS will be supported locally by Integrated Engineering, PLLC (IE). They are a KYTC Certified DBE and are located in Lexington at 166 Prosperous Place, Suite 220.

IE was founded by Harsha Wijesiri in August of 2006. They are an emerging professional civil engineering, landscape architecture, and surveying company with experience in diverse disciplines. Having worked on various public works projects IE has successfully completed numerous municipal projects in the region. They have worked with governmental agencies in various cities across Kentucky. Some of their valuable clients include the Kentucky Transportation Cabinet, Lexington-Fayette Urban County Government, the Northern Kentucky Sanitation District 1, City of Richmond, and the City of Frankfort. The staff has earned a reputation for completing projects in a responsive manner while meeting and exceeding the client's needs and expectations. This is accomplished by providing functional, economically feasible, and aesthetically pleasing designs in a timely manner.

Public Involvement Assistance — Eddie Mesta, PE (IE)

Eddie Mesta, PE will be providing assistance with the public involvement component of this project. As Vice President of Integrated Engineering he has gained a significant amount of utility coordination and community involvement experience over the last 15 years in working with public infrastructure projects.

—ooOoo—

URS agrees to perform the services in accordance with the industry standard of care based on the circumstances. Any obligation to "ensure" "insure" or "assure" will not require URS perform above the industry standard of care. With regard to the insurance coverage: (i) URS will provide 30 day advance notice of a canceled policy, unless the cancellation is caused by non-payment of the premium; (ii) The General Liability policy can provide professional liability coverage, but not an endorsement; (iii) subsections (b), (c), (d) and (e) under the Deductibles and Self-Insured Programs do not apply; and (iv) the verification of coverage may be executed by the URS insurance broker.

PROJECT EXPERIENCE

The section that follows details the areas of experience that URS brings to LAMPO to aid in your evaluation of our qualifications. These projects are examples of our traffic signal experience, our experience in the LAMPO, our public meeting experience and our ITS Architecture experience regionally and nationally.



Lexington Signal Retiming Project

This project involved the retiming of 35 intersections on four of Lexington's major arterial routes: Newtown Pike, Versailles Road, Georgetown Road and North Broadway. The project scope included extensive traffic data collection, before and after travel time studies, developing a minimum of 12 timing plans for each intersection and the consultant providing on-site staff to program as well as field adjust the timing. In all, 810 hours of traffic count data was collected during weekdays, Saturdays and Sundays.

Location

Lexington, KY

Services

Traffic Operations

Client

Steve Cummings,
Project Manager,
Lexington Fayette
County Urban
Government

(859) 258-3491

Project Duration

2013 – 2014

Synchro 8 was used to optimize the signal timing. Six plans were developed for weekday operation, three for Saturday and three for Sunday. All of these plans are activated by a time of day scheduler. Additional timing plans were developed on some routes. As an example, Newtown Pike had additional timing plans developed to accommodate the intense traffic demand during the AM and PM peak periods. Multiple timing plans operate with different offset patterns that adjust to the slowing speeds caused by congestion at predictable times within the peak periods.

All of these intersections utilize by 2070 traffic signal controllers connected to a centralized signal system (Centracs). URS personnel were onsite to program the Centracs database, perform the downloading to each intersection and provide field support to adjust the timing.

At the conclusion of the project, a benefit/cost analysis was performed. Based upon estimate fuel and delay savings over the lifespan of the timing plans (2 years), benefit/cost ratios of 30:1 to 65:1

URS Project Staff

Paul Slone, PE, PTOE, Project Manager

William Madden, PE, PTOE, Traffic Engineer

Vanessa Fritsch, PE, PTOE, Traffic Engineer

Amanda Beiting, EIT, Graduate Traffic Engineer



KYTC District 7 Traffic Engineering Services

US 27 Access Management Plan

The elected leadership for the City of Nicholasville and Jessamine County realized that an Access Management Plan was needed for US 27 between Nicholasville and Lexington. While economic development has slowed, there is still considerable development potential remaining in the corridor. The leadership recognized that the time to act and implement a plan was upon them.

URS was commissioned by the KYTC District 7 office to study the area from Man o' War Boulevard southward to the northern access control line of the proposed East Nicholasville Bypass. This plan will be enacted through a Memorandum of Understanding (MOU).

The memorandum is a multi-agency agreement that outlines the roles and responsibilities of the Kentucky Transportation Cabinet and local planning agencies, establishing a commitment to the vision and purpose of this plan.

Local access spacing and design requirements are often different from KYTC's requirements, and this has created confusion with respect to which set of requirements should take precedence in a particular situation. The primary goal of this plan is to establish a unique set of access permitting guidelines to be accepted and enforced by multiple agencies that have funding or land use decision making power in the corridor. This establishes both a common vision for the future and the desire to follow through with that vision for these agencies. This was achieved through multiple meetings with local stakeholders.

This plan established both spacing requirements and defined short and long term projects for implementation with additional strategies for sustaining the current four-lane US 27.

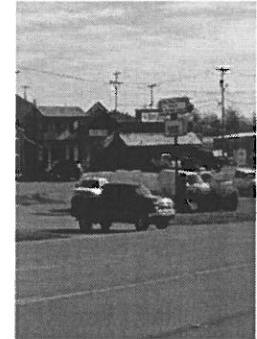
URS Project Staff

Paul Slone, PE, PTOE, Project Manager

William Madden, PE, PTOE, Traffic Engineer

Vanessa Fritsch, PE, PTOE, Traffic Engineer

Amanda Beiting, CAD Technician



Location

Nicholasville and
Lexington, KY

Services

Preliminary Design
Access Management

Client

Logan Baker, PE,
Project Manager

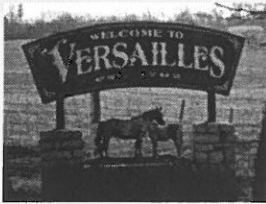
Kelly Baker, PE,
Engineering
Support Branch
Manager

(859) 246-2355

Project Duration

Oct. 2011 through
July 2012





Location

Lexington, Kentucky

Services

Data Collection

Client

Lexington MPO

Project Duration

June 2012

Versailles Road Bluetooth Data Collection

URS is a regular participant in the Lexington MPO's Congestion Management Committee (CMC). In June of 2012, URS offered to provide a pro-bono pilot project for transportation uses of Bluetooth data capture. At the time, the Urban County Government was in the process of procuring some Bluetooth data capture devices and the Transportation Center at University of Kentucky was also conducting an evaluation of Bluetooth technologies and probe based speed data provided by third parties.

Our offer was to collect Bluetooth data on one corridor in the Lexington area that would be of value to the committee. The CMC selected Versailles from Man o' War Boulevard to Pine Street. This was beneficial to the CMC on a number of fronts. First there was the evaluation of type and quantity of data that can be collected by Bluetooth data capture. Second was the application of that data for congestion management metrics. Finally, it interfaced with other projects at the UK Transportation Center, acting as an independent measure of travel speeds on Versailles Road.

This project exemplifies our commitment to our friends at the LFUCG, the Lexington MPO, and the UK Transportation Center.

URS Project Staff

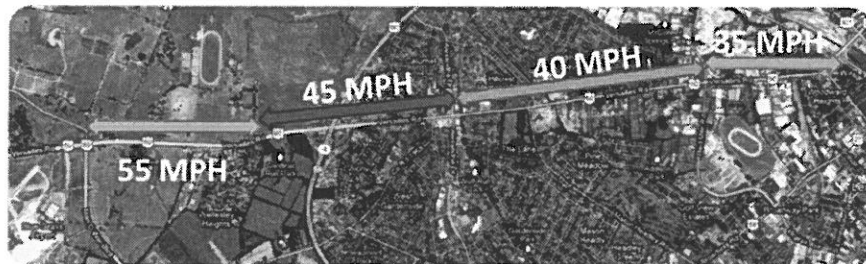
Paul Slone, PE, PTOE

Vanessa Fritsch, PE, PTOE

Bill Madden, PE, PTOE

Amanda Beiting, EIT

Versailles Road (US 60) Bluetooth Base Speed and Travel Time Demonstration Project



Segment	AM	NOON	PM	Sat/Sun	Overnite
MOW-Parkers Mill	50/52	51/51	50/48	52/51	51/53
Parkers Mill – Alexandria	23/27	27/32	18/28	25/31	27/36
Alexandria – Mason Headley	37/36	31/28	29/18	33/30	36/37
Mason Headley – Red Mile	32/35	32/35	30/31	36/36	35/40
Red Mile – Newtown Ext.	36/33	33/29	31/27	35/30	40/36

Speeds presented in MPH (rounded) and listed Eastbound/Westbound



Location

Lexington, KY

Services

Traffic Signal
Retiming

Client

Steven Cummins, PE

Traffic Signal
Systems Manager

(859) 258-3491

Project Duration

July through
November 2006

Traffic Signal Retiming: Downtown Lexington, Kentucky

URS developed three new traffic signal timing plans for **89 intersections** in the Downtown area of Lexington, Kentucky. This area included the downtown grid and portions of these arterials:

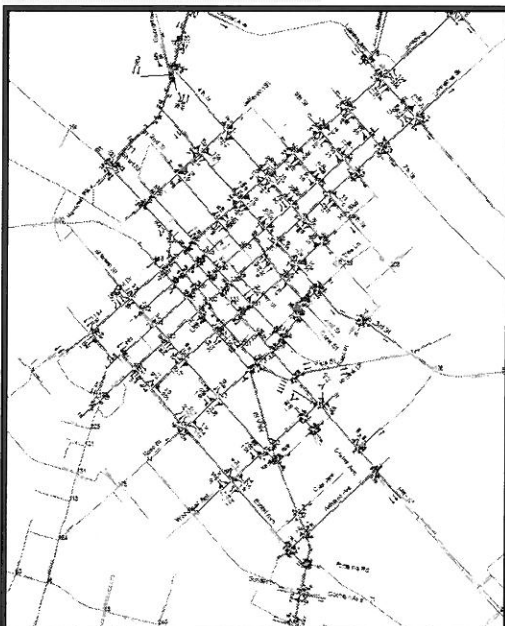
- East Main Street
- High Street
- Newtown Pike
- North Broadway
- Loudon Avenue
- Euclid Avenue

Signal timing plans are being developed using Synchro for the AM, midday and PM peak periods. Timing plans will be optimized and adjusted within the models and converted to Wapiti W4-IKS (traffic signal programming). Several advanced programming techniques utilizing Command Box were recommended and utilized.

Following delivery of the timing plans, URS assisted the LFUCG Division of Traffic Engineering entering the timing parameters into their centralize signal system, downloading to the field, and performing on-site adjustments.

An extensive calibration effort accompanied simulation model development.

- URS performed many field checks including:
- Verifying roadway and intersection geometry,
- Verifying existing signal timing and phasing,
- Measuring saturation flow rates
- Collecting speed and travel time information on specified routes using a GPS unit.



URS Project Staff

Paul Slone, PE, PTOE, Project Manager

Vanessa Fritsch, PE, PTOE, Traffic Engineer



Location

Multiple Sites, KY

Services

Lighting and signal design

Collaboration with other stakeholders (TRIMARC and CSX)

Client

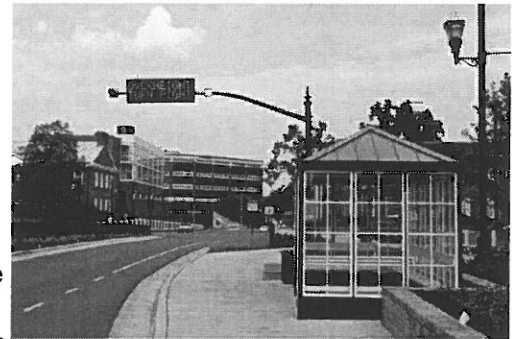
KYTC District 5

Specialty ITS

URS Corporation has provided services to the KYTC District 5 office involving specialty, low level ITS applications on two projects in Louisville. These project features were developed to address non-reoccurring congestion.

Specifically, the first locations involved the design and implementation of an over height vehicle detection system to warn trucks of a low height railroad bridge on Eastern Parkway at South Third Street.

The Eastern Parkway OVH system was an adaptation of the same technology used at Kentucky weight stations to check truck height. The application alerts and diverts trucks from the South Third Street railroad viaducts. Listed at 11- feet and 8 inches, the Norfolk Southern bridge was regularly struck three to four weeks on average. Some collisions involved closing the street for hours. The detection and alert system has reduced the average to one or two times per year.



The second location involved alerting traffic on I-265 approaching LaGrange Road of a crossing train. The train crossing notification sign at I-265 and LaGrange Road was performed at the request of the Ford Assembly Plant on Chamberlain Lane. The CSX crossing at Chamberlain Lane and LaGrange Road (the track runs parallel to LaGrange Road) has over 20 trains per day including service to the plant. Ford officials offered the idea to notify their employees when the crossing was blocked so that they may access the plant via the next interchange, Westport Road.

Also designed for local motorists, the sign was placed in an attempt to reduce the amount of traffic exiting to LaGrange Road when a train is crossing. The typical train crossing lasts several minutes and causes certain movements to queue and block through traffic on LaGrange Road.

The sign was designed as a warning sign with solar powered flashers that are activated by a wireless contact closure from the Chamberlain Lane traffic signal. This is signal is preempted by the railroad. The same preemption signal activates the signs.

This was also a collaborative project with TRIMARC, who provided a 50-foot pole that was installed by the project and later utilized by the TRIMARC system. The pole was used as a relay point for the wireless contact closure.

URS Project Staff

Paul Slone, PE, PTOE, Project Manager

Vanessa Fritsch, PE, PTOE, Traffic Engineer





Minnesota ITS Planning & Statewide Architecture Update

Location

Minnesota

Services

ITS planning

ITS Architecture

Client

Minnesota
 Department of
 Transportation

Rashmi Brewer,
 MnDOT ITS
 Project Engineer
 (651) 234-7063

Project Duration

2007-Present

URS has assisted the Minnesota Department of Transportation (MnDOT) with updating the Statewide ITS Architecture for the state of Minnesota through two work orders since 2007. The first work order updated the 2001 Minnesota Statewide ITS Architecture to reflect the ITS visions and investments as well as ITS needs as of 2008. The updated architecture meets requirements of the U.S. DOT's National ITS Architecture and allows MnDOT to enhance transportation operations which increases safety and efficiency. By identifying and adhering to National ITS standards, MnDOT can maintain an open environment for ITS development. The updated Statewide ITS Architecture helps MnDOT leverage system effectiveness and provides enhanced service to users by integrating systems using these common standards.

In this first work order effort, URS assisted MnDOT with the following tasks:

- Performed an overview of the existing Minnesota Regional ITS Architecture to identify gaps and new data that needed to be gathered
 - Identified applicable National ITS standards
 - Developed goals, objectives and performance measures and documented Needs and Service for each of the service package areas (i.e. maintenance and construction management, advanced public transportation systems, advanced traveler information systems, advanced traffic management systems, commercial vehicle operations, emergency management, archived data management, and advanced vehicle safety systems)
 - Documented the updated Regional ITS Architecture and Turbo Architecture
 - Developed an implementation strategy that identified dependencies among projects as well as an overall sequencing plan to show how the implemented projects can be deployed over time.
- Developed a detailed description for each project to help guide future implementation. Each project description included a description of the project concept, participating stakeholders and their roles and responsibility, technology assessment, project level architecture, goals and objectives addressed, estimated costs, and benefits.

The first work order for the Minnesota Statewide ITS Architecture Update was completed in 2009. The Architecture is one of the best practices highlighted in the FHWA Primer: [Applying Regional ITS Architectures to Support Planning for Operations](#).

Under a subsequent work order, MnDOT retained URS in 2011 to provide professional services to update the Statewide ITS Architecture through 2014. Under this current work order contract, URS assists MnDOT with refining the ITS vision, goals, objectives and performance measures, developing a refined, robust process for stakeholders to apply for ITS projects, updating the architecture to be consistent with National ITS Architecture Version 7.0, and updating the ITS projects implementation plan.

As part of this update process, URS applies FHWA guidance on the use of an objectives-driven, performance-based approach to incorporating the ITS Architecture update in planning for operations. URS works closely with MnDOT on incorporating S.M.A.R.T. objectives and performance measures into the ITS Architecture as recommended by a series of FHWA publications on planning for operations. URS is also updating the ITS Architecture Maintenance Plan and a checklist for ITS projects for use by MnDOT staff in the future to keep the Statewide Regional ITS Architecture and Implementation Projects update to date. This current work order is over 80% complete.



Location

Augusta, Georgia

Services

ITS planning

ITS Architecture

Client

City of Augusta,
Metropolitan
Planning
Organization

Project Duration

2007– Present

Augusta Regional Transportation Study ATMS Master Plan Update

URS was selected by the Augusta Region Transportation Study (ARTS), the regional Metropolitan Planning Organization (MPO) which is a division of the City of Augusta, to develop an Advanced Transportation Management System (ATMS) Master Plan for the ARTS region. The purpose of the Master Plan project is to update the original ATMS Master Plan completed in 2002. The ARTS region includes a number of unique transportation needs, include mobility related to the Savannah River Site (an industrial complex) and Ft. Gordon (a large military base). The Master's PGA golf tournament held in Augusta each April uses a number of temporary intelligent transportation system (ITS) components to successfully monitor and manage traffic and pedestrians. The recent completion of the I-520 freeway bypass, the deployment of adaptive traffic signal technology on several major arterials, and interest in a traffic control center for Richmond County were several other reasons why the ATMS Master Plan Update was commissioned. In addition, the counties within Georgia had recently approved a transportation-specific funding source that included earmarked money for ITS deployments within the next three years.

URS facilitated meetings with stakeholders to solicit input about their transportation needs. Three large stakeholder events were used to provide the opportunity for stakeholders to provide input, learn, and review during the project process. Topics included:

- ITS challenges/issues, needs, and goals
- ITS infrastructure
- TCC staffing and responsibilities
- ITS maintenance staffing and responsibilities
- ITS funding

The input provided was used to develop the ITS architecture, prepare an operational concept for the region, and to develop an ITS project list that addresses the needs of the region. The project list was prioritized by the stakeholders and divided into short-term, mid-term and long-term deployment periods.



Location

Kansas

Services

ITS planning

ITS Architecture

Client

Shari Hilliard
Kansas DOT
700 S.W.
Harrison Street
Topeka, KS 66603-
3754
(785) 296-6356

Project Duration

2007– Present

Kansas Statewide ITS Architecture

URS worked closely with the Kansas DOT to develop a statewide intelligent transportation systems (ITS) architecture. The Statewide ITS Architecture reflects the current state of the ITS elements deployed and planned as well as provides a strategic approach to all future Kansas DOT's ITS investment throughout the state. URS brought together State DOT planners, engineers and maintenance personnel; city and county planning, engineering, maintenance and public safety personnel; State Patrol; Turnpike Authority; various other state agencies; and representatives of the urban areas throughout the state to develop the Statewide ITS Architecture. Education, outreach, and interagency coordination efforts included a series of stakeholder workshops throughout the state.

As part of the Statewide ITS Architecture, URS developed an architecture integration and implementation plan to guide KDOT and participating stakeholders to effectively use the architecture in the planning, design, implementation, and operation stages of ITS systems and projects. An approach for mainstreaming ITS into the transportation planning and project development process was also identified. URS also investigated and identified opportunities to further integrate various ITS systems at local, regional and statewide levels.



Location

Iowa

Services

ITS planning

ITS Architecture

Client

Willy Sorenson, P.E.
Iowa DOT
800 Lincoln Way
Ames, IA 50010
(515) 239-1212

Project Duration

2007 – Present

Iowa Statewide ITS Architecture Update

URS is working closely with the Iowa DOT to perform a comprehensive update of the statewide ITS architecture. The URS team completed a Statewide Multimodal, Integrated ITS Deployment Plan and Statewide ITS Architecture for the Iowa DOT in 2000. URS performed an update to the Statewide ITS Architecture in 2004. URS continues to provide support and services to the Iowa DOT to maintain the updated Statewide ITS Architecture. The updated Architecture reflects the current state of the ITS elements deployed and planned as well as provides a strategic approach to all future Iowa DOT's ITS investment throughout the state. As part of the Statewide ITS Architecture Update, URS has developed a statewide DMS architecture based on the Iowa DOT Statewide DMS Plan. URS assisted the Iowa DOT with procuring the DMS, defining concept of operations, developing the DMS control policy and procedures, and integrating the DMS project architectures into the Statewide ITS Architecture.

Ames Area MPO Regional ITS Architecture

URS supported the Iowa DOT and Ames Area MPO with developing a regional ITS architecture for the Ames Area. This regional ITS architecture supports existing and future ITS projects within the region and enhances the compatibility with emerging national ITS architectures. URS performed comprehensive outreach and extensive coalition building as they were elements absolutely critical to the ultimate success of the development of the ITS architecture. The completed architecture ultimately provides a comprehensive framework for communication among agencies, as well as technologies.

Reference: John Joiner, P.E.
City of Ames Public Works Department
515 Clark Ave
Ames, IA 50010
Phone: 515-239-5165

Dubuque MPO Regional ITS Architecture

Through a contract with Iowa DOT, URS assisted the Dubuque MPO with developing a regional ITS architecture for a six-county area. This regional ITS architecture supports existing and future ITS projects within the region and enhances the compatibility with emerging national ITS architectures. URS performed comprehensive outreach and extensive coalition building as they were elements absolutely critical to the ultimate success of the development of the ITS architecture. The completed architecture provides a comprehensive framework for communication among agencies, as well as technologies.

References: Kelley Deutmeyer
East Central Intergovernmental Association
3999 Pennsylvania Ave., Suite 200
Dubuque, IA 52002
Phone: 563-556-4166



Regional experience

Columbus County (Indiana) Regional ITS Architecture

URS worked closely with representatives from Columbus, IN and Bartholomew County agencies to develop their Regional ITS architecture. The work product reflects the current state of the ITS elements both deployed and planned. It also provides a strategic approach to all future ITS investment throughout the County. URS brought together planners, engineers and maintenance personnel; City and County planning, engineering, maintenance and public safety personnel; State Police; various other state agencies; and key representatives of the urban area to develop the Regional ITS Architecture. Education, outreach, and interagency coordination efforts included a series of workshops with key personnel.

Southwest Michigan Regional ITS Architecture and Deployment Plan

URS assisted the Michigan DOT with developing a regional ITS architecture and ITS deployment plan for the Southwest Region and a portion of the University Region (Shiawassee and Jackson counties). This project involved developing a training class on the National ITS Architecture, a regional ITS architecture, and a deployment plan that included a project listing, developed through the stakeholder meeting process, planning level project costs, project prioritization and detailed benefits of the project in terms of improved safety, mobility and air quality. URS completed a Regional ITS Architecture and an ITS Deployment Plan for the Southwest Region in Michigan in 2008.

Wisconsin DOT District 8 ITS Architecture

The WisDOT District 8 ITS Strategic Deployment Plan was developed with the Wisconsin Department of Transportation to guide deployment of ITS applications throughout the eighth district, a rural region in northwestern Wisconsin. This region faces a growing number of challenges as traffic demand continues to increase. URS successfully brought together State DOT District planners and engineers, county maintenance personnel, state patrol, and representatives of the urban areas throughout the region to develop a strategic plan to address this rural area's needs. Education and outreach efforts included a project newsletter sent to stakeholders throughout the corridor. The URS Team conducted a stakeholder survey, a system inventory, and a technology assessment and developed a regional architecture.

Illinois Statewide ITS Strategic Plan

As a subconsultant, URS assisted in the development of a statewide strategic plan to deploy and integrate ITS technologies in Illinois to improve traffic system performance and operations. This strategic plan will guide Illinois DOT in deploying resources in a comprehensive manner to address transportation issues around the state. The plan outlined the high priority transportation needs in the state and recommended how to deploy projects to address these needs in a manner that best uses available resources. URS assisted in the technical review outreach workshops and development of the ITS Strategic Plan.



Lexington Congestion Management System

Personal Experience of Paul Slone

While working with his previous employer, Mr. Slone was the Project Manager for developing the Lexington MPO's Congestion Management System (CMS). A report published by the Lexington MPO in 2002 revealed that many routes through the Lexington area experienced high levels of congestion. This report was the beginning of the CMS for the Lexington area.

A CMS is a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods to levels that meet state and local needs. It is a tool to improve the planning and programming process and integrate with other programs that are part of an existing Transportation Management System.

Key tools used for this CMS include:

- Access Management
- Reversible Traffic Lanes
- Traffic Signal Improvements
- Intersection Improvements
- Increased Multimodalism

Phase I of the CMS process involved recommending policy framework and analytical methodologies through a decision matrix. In phase II of the process, an initial round of analysis on seven of the region's most congested routes was performed.

A study work group has been formed to provide direction and guidance during the CMS development process. Phase II of the CMS process identified conceptual projects to improve congested conditions and prioritized these projects based upon benefit/cost ratio, future funding availability, anticipated lifespan of project benefits, as well as geographical balance of projects.

Project recommendations included a list of numerous, small operational improvement projects as well as project concepts for consideration in the Transportation Improvement Program. Also as part of this project, one CMAQ grant was submitted and approved by the Kentucky Transportation Cabinet and one Six Year Plan project was revised saving millions of dollars. Analysis included interchanges along New Circle Road and Interstate 75.

Location

Louisville, KY

Services

Traffic Data
Collection

Trip Generation
Study

Access Improvement

Client

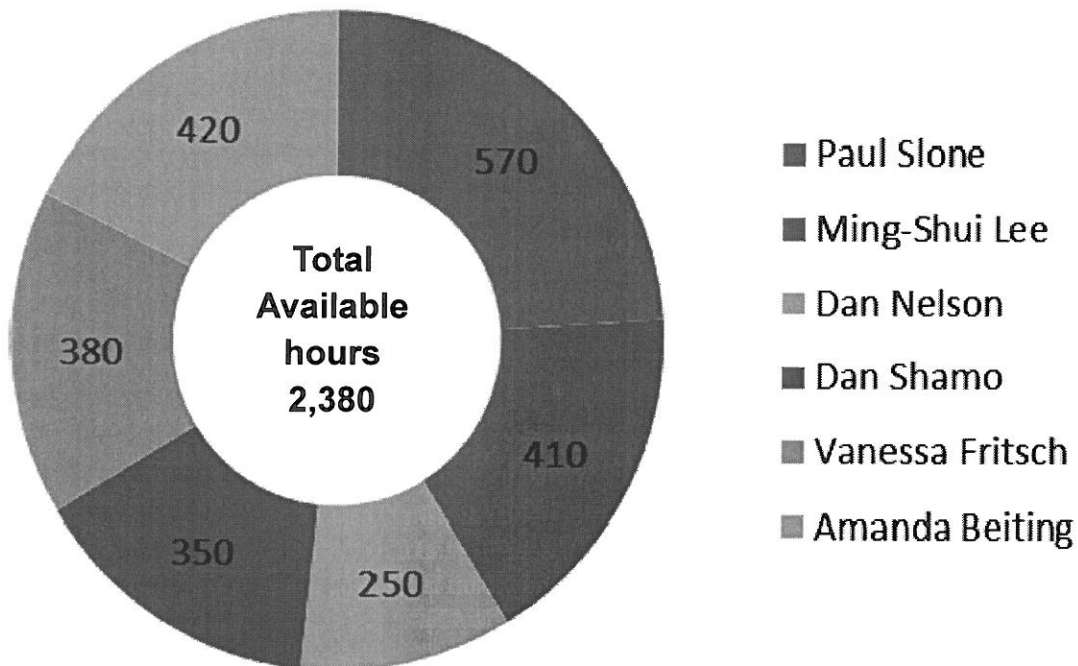
Max Conyers,
Director Division of
Planning

(859) 258-3167



WORKLOAD CAPACITY AND AVAILABILITY

Hours Available by Staff Member



URS has evaluated our availability to work on this project from **September 2014** until **February 2015**, allowing for holidays and projected personal time off. We have preliminarily estimated the effort required for this project to be between **600 and 800** personnel hours. The availability above demonstrates that we will be more than able to meet this expectation with projected project workloads.



PROJECT UNDERSTANDING

URS understands that one of the first challenges of this project is the limited timeframe with which LAMPO is confined. We have learned from attendance at the Congestion Management Committee Meetings, that the FHWA is requiring the LAMPO to update the 2004 BITS memorandum and adopt an updated ITS Architecture structure. Failure to do so in a timely fashion could result in the interruption of funding for certain projects.

We are strongly positioned to address the schedule challenge. We are beginning this project with a thorough understanding of the existing ITS elements and their operation within the region. We are also aware of new ITS elements such as the InSync adaptive signal system and BlueToad travel time reporting equipment currently being deployed around Lexington. Also we have an excellent working relationship with many of the stakeholders. This was exemplified on the US 27 Access Management Study performed for the KYTC District 7 office. Many of the stakeholders for that project will also be stakeholders for the updated architecture. Our local team of engineers brought various groups together including the KYTC, LFUCG, LAMPO, Bluegrass ADD, City of Nicholasville, Jessamine County and other local citizen based transportation groups to gain consensus for the project.

URS has also utilized an approach to developing ITS Architecture while minimizing stakeholder effort as much as possible. We can develop draft system information flows using material already collected and our in-depth knowledge of projects in the area. We will provide diagrams for users to comment on and respond to; instead of having stakeholders provide the information from scratch. We will provide the information to stakeholders electronically and follow up with phone calls when needed to explain project material or ask questions.

As the project product is an updated ITS Architecture, we will immediately begin the project by working on the draft framework to present during our initial stakeholder contact. This will eliminate the need for one round of meetings by combining the project introduction/kickoff and the initial draft presentation into one meeting with the stakeholders.

This initial draft of the Architecture update will be based upon our in-depth knowledge of the existing equipment and upcoming plans of the two operating stakeholders: The KYTC and LFUCG.

The current ITS system is comprised of freeway devices operated and maintained by the KYTC in Fayette County. They include:

- Surveillance cameras
- RWIS or Road Weather Information System
- Dynamic message signs outside of, but approaching to, Fayette County
- Homeland Security surveillance system of the Clays Ferry Bridge
- TransLink, an internally developed BlueTooth travel time collection system
- TransPhat, an internally developed traffic signal management software
- The primary communications in use are cellular hubs with wireless communications to individual devices.

The KYTC also maintains closed loop traffic signal systems in Jessamine County remotely accessible through IP (Ethernet) radios.



The LFUCG Division of Traffic Engineering currently utilizes the following ITS elements:

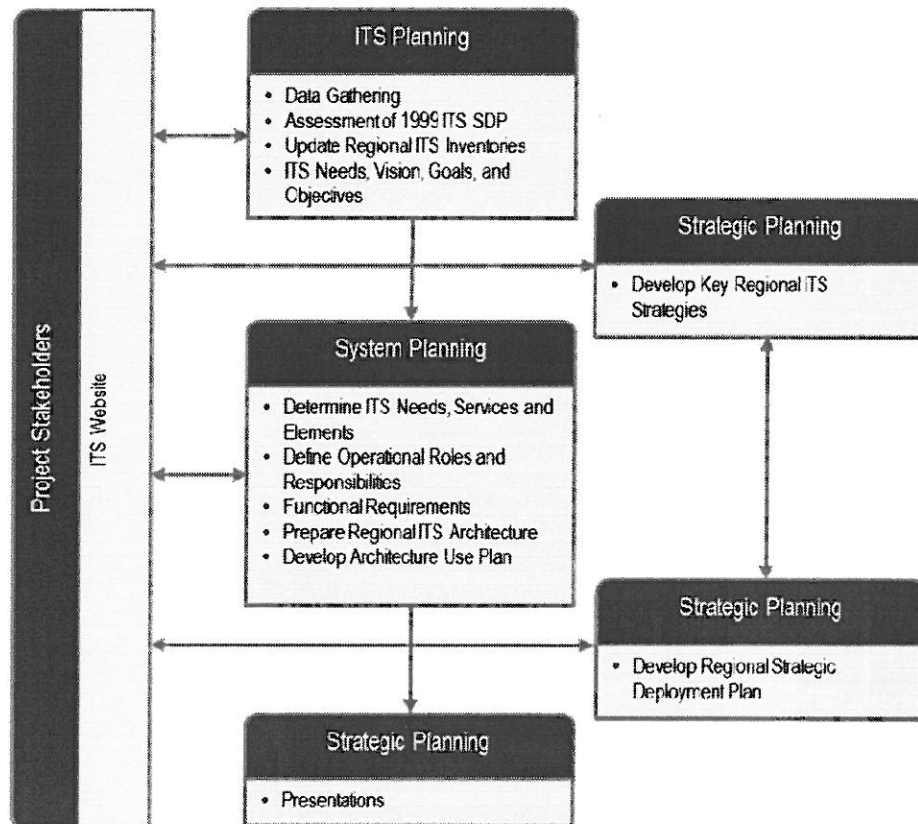
- Centracs centralized traffic signal system
 - The majority of the system uses advanced 2070 traffic signal controllers
 - The signal system is supplemented by the InSync adaptive signal system hardware in the Winchester Road corridor and through the Hamburg area
 - Bluetoad travel time collection units report travel time and speed through a third party website as well as through the Centracs system.
- Surveillance cameras primarily on arterial routes with a few on freeway facilities
- Hybrid communications network of fiber optic cable, wireless bridges and leased phone lines

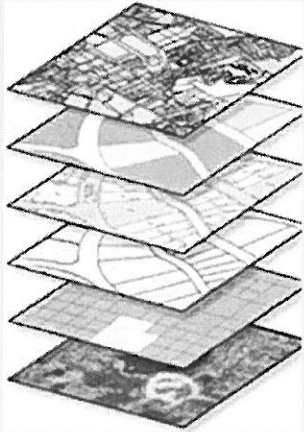


PROJECT APPROACH

The URS Team's approach to ITS deployment planning and architecture update emphasizes the important role of stakeholder involvement, agency coordination, cooperation and consensus building. This key emphasis on outreach, communication and coalition building is the cornerstone in URS' proven success in developing ITS strategic deployment plans and architectures. The figure below illustrates this process.

Our team is very familiar with the ITS architecture development and update process from our involvement with a variety of ITS architecture projects across the United States. We will build upon our ITS architecture experience and local working knowledge to assist the LAMPO and stakeholders in efficiently updating the LAMPO ITS Architecture.





The URS Team will collect significant input from various stakeholders in Fayette and Jessamine Counties. The identification of appropriate stakeholders and transportation partners and the ability to engage them in open dialog to create consensus about the benefits of an ITS is required. This ITS Architecture Update shall include stakeholder workshops to accomplish, to identify, and to remain in compliance with the FHWA Final Rule and FTA Final Policy that utilize Highway Trust Funds for ITS Projects; and therefore, shall include, but not be limited to, the following ITS elements:

- Identification of existing ITS infrastructure

The listing in the project understanding section demonstrates our knowledge of the existing ITS elements within the LAMPO area. The URS Team will work with the LAMPO and regional stakeholders to further review the current ITS inventory. This includes identifying new technologies and systems that have been deployed or planned since 2004 BITS Technical Memorandum.

This task will include the creation of a GIS map showing the location of existing and planned ITS projects in the region. This information can be integrated into a GIS database, such as the KYTC's Highway Information System (HIS) and LFUCG GIS systems. Our team partner Integrated Engineering will provide the GIS Services.

- Changes in regional needs since the BITS Technical Memorandum was developed in 2004

In order to continually optimize the Fayette County transportation network, the local ITS needs of the LFUCG have grown. Some examples of this are:

- The fiber optic communications backbone continues to expand,
- Surveillance cameras are now digital and have high resolution images
- Adaptive signal systems change according to day to day fluctuations in traffic compared to rigid time of day scheduling of timing plans.
- The need for route reliability and measuring their performance

- New stakeholders

At the project kickoff meeting with the LAMPO, the project team will review the previously identified ITS Architecture stakeholders and discuss the inclusion of other transportation related groups, agencies, and individuals in the development of an updated Architecture.

- Changes in the range and scope of ITS services considered

Some of the current ITS services include the use of the LFUCG surveillance cameras in the dissemination of traffic reports to the media through the Traffic Information Network. The LFUCG Division of Traffic Engineering also has plans to make live traffic data, such as the Bluetoad travel time information, and camera views available via the internet. Our team will explore these and other options with the KYTC and LFUCG

- Changes in stakeholder and ITS element names;

At the onset of the project, we will coordinate with the LAMPO to develop a thorough list of stakeholders. We will also update/add new ITS elements that have evolved since 2004. Some of these elements include the updated Centrac's signal system, TransPhat, which is the KYTC traffic signal management software, Bluetoad and InSync to name a few.



- Changes in relevant ITS architectures (e.g., Kentucky Statewide)

The current BITS memo was based upon the Kentucky Statewide ITS Architecture at the time it was developed. The updated architecture will be based upon the most recent statewide and national architectures.

- Description of the region;

Fayette and Jessamine Counties are geographically and demographically very diverse. From horse farms to agriculture, from dense urban centers to small urban areas and rural back roads to major urban arterials, the dual county area is very diverse on many fronts.

- Identification of the participating agencies and stakeholders;

The current list of stakeholders will be updated. Over the last 10 years, several of the listed individuals in the 2004 BITS Technical Memorandum have accepted different positions, retired, etc. At the project kickoff we will coordinate with the LAMPO staff to scrub this list of old information as well as explore opportunities for new stakeholders to be added.

- An operational concept that identifies roles and responsibilities of stakeholders;

Based on information gathered from stakeholders, the URS 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 will identify the operational roles and responsibilities of each project stakeholder in the region. This identification of operational roles and responsibilities is especially important where ITS crosses institutional and jurisdictional boundaries. The operational roles and responsibilities will generally be bullet point lists, kept at a relatively high level that will identify "who does what" with regard to operation of ITS. 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

- Any agreements required for operations

There is an on-going maintenance agreement between LFUCG and KYTC for the operation and maintenance of state owned traffic signals within Fayette County. There is no such agreement in Jessamine County and none is expected in the near future. The LFUCG Division of Traffic Engineering has explored the possibility of operating some



signals in northern Jessamine County on US 27 and those located within the Brannon Crossing development. However it was ruled by the LFUCG's Division of Law that LFUCG employees cannot perform such duties outside of Fayette County. URS will continue to investigate potential avenues for collaborative 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 LAMPO region. Functional Requirements are 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 URS Team will develop high level functional requirements for major categories of ITS projects. These functional requirements are a tool for developing more specific requirements for 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 were completed
- Interface requirements and information exchanges with planned and existing systems and subsystems

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

- Identifications 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" the describes the USDOT's four year strategy and goals for the interoperability,



cooperative systems, and a connected transportation environment. Of course, 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 researched further during the course of the project.

- Sequence of projects required for implementation

Through the project process, we will structure a prioritized list of ITS projects that is consistent with the goals and objectives of Transportation Improvement Plan and fits within the projected funding for such projects.

ITS Architecture Update - Deliverables

The Updated LAMPO ITS Architecture Plan will be crafted to meet the minimum FHWA requirements. These include:

1. A description of the region;
2. Identification of participating agencies and other stakeholders;
3. An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture;
4. Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the regional ITS architecture;
5. System functional requirements;
6. Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture);
7. Identification of ITS standards supporting regional and national interoperability; and
8. The sequence of projects required for implementation.

The URS 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 is another way the URS Team can compress the project schedule. This checklist can be found at

Why select URS?

URS technical leaders have committed to the success of this project. URS has the local experience with the LFUCG, KYTC, and other stakeholders. We have brought our Midwest expert on ITS Architecture to the project, receiving the commitment that the project will be as successful as his other Midwestern projects.

URS can educate and build consensus with the Stakeholders. Through our familiarity and previous local experience, our engineers and our subconsultant will work to deliver technical information in a relaxed, comprehensible format, allowing stakeholders the knowledge base to understand the technologies, deployments and benefits of ITS.

Schedule – Our familiarity with the current ITS elements and local operations will jump start this project, making a five to six month schedule feasible.

Quality – We promote a performance standard based on high quality professional services, where costs and scope are continuously managed.



Local Employment

The URS team will be led locally from our Cincinnati Office. While not located in LAMPO area, our Cincinnati traffic/ITS staff all reside in Northern Kentucky and are located less than an hour and a half away from Lexington. Our teaming partner, Integrated Engineering is located in Lexington.

With the degree of stakeholder involvement, plus achieving 10-20 percent participation by Integrated Engineering, we estimate that 50 percent of the work would be performed locally.