



January 9, 2015

Matthew Brown
Eastern Shore MPO
Fairhope Satellite Courthouse
1100 Fairhope Avenue
Fairhope, AL 36532

**SUBJECT: Eastern Shore MPO Traffic Signal Technology / Concept of Operations
Executive Summary & Recommended Next Steps
SA #14-0237**

Dear Matthew,

The following is an executive summary of the Concept of Operations (ConOps) dated January 9, 2015 as prepared by Sain Associates, Inc., and recommendations for next steps associated with pursuit of enhancements to traffic signal system technology within the Smoothed Urban Boundary area of the Eastern Shore MPO (ESMPO).

The ConOps was prepared based on correspondence with the ESMPO, as well as guidelines and requirements set forth in [FHWA-HOP-11-027, Model Systems Engineering Documents for Adaptive Signal Control Technology \(ASCT\) Systems](#).

Executive Summary

We evaluated a total of 61 signalized intersections contained within all major and several minor arterials containing traffic signals within the Smoothed Urban Boundary area. The arterials within the study area include CR-13, CR-64, SR-59, SR-104, SR-181, US-31, US-90, and US-98.

The Stakeholders for the project include the ESMPO, ALDOT, Baldwin County, the City of Daphne, the City of Fairhope, the City of Spanish Fort, and Southern Light – which owns the fiber optic network that is being considered for backbone infrastructure for system communication purposes.

Our evaluation included research of each corridor's traffic characteristics and a field inventory of each signalized intersection's current equipment. Our evaluation led us to initial recommendations for signal groupings, the type of signal system technology to ultimately deploy for each grouping, and assignment of priority.

We determined that isolated signal control was the best solution for the CR-13, CR-64, and SR-104 corridors. This was primarily due to the traffic characteristics exhibited by each corridor and spacing between traffic signals. Signalized intersections where these corridors intersect with US-98 or SR-181 are included in the recommendations for the US-98 and SR-181 corridors, respectively.

We determined that some form of coordinated signal control was the best solution for the SR-59 corridor. However, we recommended further study of this corridor since it is functionally part of the overall SR-59 corridor that runs from I-65 to Gulf Shores.

We determined that a phased approach to implementation of adaptive traffic signal control was the best solution for the remaining corridors in the study area. Adaptive control can better manage traffic fluctuations associated with events, holidays, abnormal commercial shopping peaks, incidents (either on the corridor or adjacent to the corridor), voluntary weather-related evacuations, or other uncharacteristic traffic fluctuations. The groups were prioritized based on the traffic characteristics of each corridor, potential for heavy traffic associated with incident management, and proximity to I-10.

The phases and corridor groupings, total number of intersections, and our opinion of probable cost (with base assumptions) is shown in the following table.

Corridor Phase/Group	Total Intersections	OPC
Phase One		
Group A (US-98 Daphne/Spanish Fort area)	19	\$1,675,000
Group B (SR-181 Daphne/Spanish Fort area)	12	\$1,100,000
Group C (US-98 Fairhope area)	10	\$950,000
	41	\$3,625,000
Phase Two		
Group D (SR-181 unincorporated/Fairhope area)	9	\$750,000¹
TOTAL	50	\$4,375,000

1. Fiber cost not calculated – no current Southern Light fiber optic coverage

- \$65,000 per intersection (which includes software plus its implementation cost)
- Additional \$100,000 per group for supplemental fiber optic cable coverage
- Additional 25% per group for PE and CE&I
- Calculated value rounded up to nearest \$25,000
- Southern Light costs not included

The above costs and their assumptions are based on one-time costs related to the design and construction of each project. Recurring software licensing costs also not included in our opinion of probable costs.

Southern Light provides a significant amount of coverage on or adjacent to each of these corridors. Supplemental fiber optic cable will have to be provided in each project at some level in order to provide full system communication.

Recommended Next Steps

Upon obtaining Stakeholder concurrence of the findings of the ConOps, the next step is to determine whether a viable and feasible project has been identified to move forward into additional planning and design. There is concurrence within the Stakeholder group that applicability of the system to meet the needs of the system, address the deficiencies of the current system, and system cost are the main factors in considering the selection of corridors, system type, and software.

At this point in our evaluation, the SCOOT adaptive system appears to be the most practical system to pursue in terms of compatibility with existing field equipment, less complexity of vehicular detection requirements, and no requirement for engineering traffic signal system timing plans for initial implementation and future maintenance of the system.

In order to “sole-source” procure a SCOOT (or any) adaptive system deployment when Federal funds are involved, close coordination with FHWA will be required, as they will have to be involved with developing and approving a project strategy that will include provisions for sole-source procurement.

There are three (3) available sole source procurement options that FHWA may consider:

1. Certification – when the proprietary product uniquely fulfills the requirements imposed on the product, or when the proprietary product is required to synchronize with existing systems
2. Public Interest Finding – when the proprietary product is not the only product that fulfills the requirements (i.e. when the proprietary product can fulfill the requirement and the cost of its implementation will result in a substantial savings in tax dollars when compared to the cost of implementation of another product that can fulfill the requirements)
3. Experimental Project – when an adaptive system being installed as a pilot project to determine suitability for broader implementation (there is generally a requirement from FHWA to conduct and document an evaluation of the experimental project)

SCOOT is not currently implemented anywhere in the state of Alabama. There are two (2) projects in the early design stages, one (1) in Prattville and one (1) in Tuscaloosa, which have gained FHWA approval via the Experimental Project sole source procurement option. Sain Associates is the consultant for the City of Prattville on their proposed SCOOT project, and thus we have experience with obtaining approval of a project via the Experimental Project sole source procurement option.

Our recommendation is to pursue a SCOOT deployment project for Group 1 (and Group 2 due to its proximity to Group 1, if funds are available) and request FHWA approval of sole source procurement via the Experimental Project option.

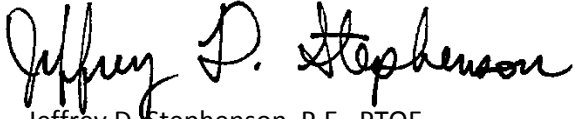
In order to determine a more accurate cost estimate for each project, we recommend close consultation with Southern Light in the early stages of planning and design in order to determine the exact details of the fiber coverage, to evaluate each municipality’s rights-of-use agreements that may be in place, and to plan for project design requirements associated with providing full fiber optic coverage.

In the event that a project for Group 1 (and possibly Group 2) is approved, and the Stakeholders are interested in pursuing additional projects after the initial project’s implementation, FHWA approval of the future project(s) may be possible via the Certification sole source procurement option.

We look forward to meeting with the Stakeholder group on Wednesday, January 7, 2015 to discuss our findings, recommendations, and next steps. If additional information is needed, please contact me at (205) 263-2172.

Sincerely,

SAIN ASSOCIATES, INC.

A handwritten signature in black ink that reads "Jeffrey D. Stephenson". The signature is written in a cursive, flowing style.

Jeffrey D. Stephenson, P.E., PTOE
Team Leader/Transportation