Exhibit “A”
Scope of Services

1.0 PURPOSE

The purpose of this contract is for the Consultant to provide the Space Coast Transportation Planning Organization (TPO) with professional services for developing an Intelligent Transportation Systems Master Plan. This master plan will evaluate the current systems in the Brevard County Area (Referred to as County), determine future needs and formulate an implementation strategy for the future development and maintenance of the ITS. The Master Plan shall incorporate various methodologies in conformance with the national, statewide, and regional architectures.

The Consultant will provide a final comprehensive report that will contain all essential technology information and recommendations and a system-wide implementation methodology. The Plan will be in sufficient detail to format a sound basis for design, plans, specifications, and estimates to phase implementation of the projects. The report shall contain all necessary background research, technical analysis, and coordination with local and regional agencies.

A detailed list of services is provided under the Section 2.0 Consultant’s Tasks.

2.0 CONSULTANT’S TASKS

Task 1 – Determine ITS Vision, Goals and Objectives
The Consultant will determine an ITS Vision, Goals and Objectives for the project, a subset of the Space Coast 2035 Long Range Transportation Plan (LRTP) goals and objectives. The Space Coast’s Transportation Planning Organization’s (TPO) State of the System (SOS) Report will also serve as a supporting document for this development.

As part of this task the Consultant will work with the TPO staff to establish a Steering Committee for the project consisting of local stakeholders identified by the TPO, local municipalities and transportation agencies. The Consultant will meet with the stakeholders on a periodic basis, familiarize them with basic concepts of Intelligent Transportation Systems (ITS), and will solicit their guidance in the development of the ITS Vision, Goals and Objectives. The Goals and Objectives shall be based on the National ITS Architecture.

Task Product
The Consultant will summarize information from the LRTP and the SOS Report coupled with preliminary Task 2 information regarding Existing Conditions/Infrastructure to facilitate a discussion with the Steering Committee. The ITS Vision will be initially developed and then supported by measurable goals and objectives.

TPO Responsibility
The TPO shall make available to the Consultant, upon request, any data available in the TPO’s files pertaining to the work to be performed under this Task and aid in the identification of stakeholders of which will establish the Project Steering Committee. The TPO shall review such documentation and provide comments, where applicable.
Task 2 – Document Existing Conditions/Infrastructure
The Consultant will document the existing conditions of ITS related systems and networks currently deployed and planned in the county. The Consultant will document and/or evaluate transportation systems that are relevant to the plan. Work will include:

- Evaluation of the Advanced Traffic Management System (ATMS) and the equipment currently in use
- Identification of major traffic generators;
- Identification of park and ride facilities;
- Identification of inter-modal facilities;
- Identification of evacuation routes.

The Consultant will document communications systems and networks that are used by local municipalities and modal agencies. Systems may include traffic signal interconnections; wireless networks, radio systems and other potential communications networks.

The Consultant will also document the availability of fiber and conduit in the Florida Department of Transportation’s infrastructure running throughout the county. The Consultant will conduct a qualitative assessment of the adequacy of these different systems.

The Consultant will document the ways that transportation related information is disseminated by information service providers (ISPs) to travelers in the county. This documentation will identify the sources of information used by each of the ISPs.

The Consultant will document the information flows associated with the identification and response to traffic incidents in the county. This will include the nature of the information exchanged and the media that are used for the exchange of information among the following organizational units:

- Brevard 911/Communications Center
- Brevard County Sheriff’s Office
- Brevard County Fire Rescue
- Brevard County Emergency Medical Services
- Brevard County Public Works
- Brevard County Emergency Management Department
- Florida Highway Patrol
- Florida Department of Transportation
- Other municipalities and multi-modal agencies including Port Canaveral, Kennedy Space Center, Space Coast Area Transit and airports within Brevard County

The Consultant will document where ITS is considered and included in recent transportation studies, such as in the TPO’s 2035 Long Range Transportation Plan, and other programmed construction projects that include ITS.

Task Product
The Consultant will document all existing traffic control and ITS/ATMS devices currently in use or planned in the county. A full evaluation of the ATMS network will be conducted including the evaluation of major traffic generators, Park & Ride Lots, inter-Modal facilities and Evacuation Routes.
Documentation will include the condition, capability, and operability with ITS standards. The documentation and evaluation will also inventory the different systems with the use of Geographic Information Systems (GIS), utilizing existing GIS information and collected field data. However, this will not involve as-built documentation of the overall system. It is intended to be used for conceptual planning. In addition to documenting the relevant transportation systems, the Consultant will also document the communication systems and networks that are used by local municipalities and the different modal agencies.

**TPO Responsibility**
The TPO shall make available to the Consultant, upon request, any data available in the TPO's files pertaining to the work to be performed under this Task. The TPO shall review such documentation and provide comments, where applicable.

**Task 3 – Identify Transportation ITS Needs**

The Consultant will use a combination of Task 1: ITS Vision, Goals and Objectives and Task 2: Existing Conditions/Infrastructure to identify deficiencies in the county's transportation and ITS systems. The Consultant will utilize comments received from the Steering Committee, and through the assessment of information provided by the County and cities describing the existing conditions. Findings will be summarized in an easy to interpret format that lends to identification of relative priorities for each of the identified problems and needs.

The Consultant will include discussion of a Traffic Management Center (TMC), focusing on location, type, size, and recommendations and requirements based on the County's present and future needs. Discussion will include information regarding central software and specific elements of a TMC, such as servers, video walls, encoders/decoders, workstations, racks, switches, etc. Further information such as capability of the TMC, detailed list of required equipment for a functional TMC, staffing needs, staff roles and responsibilities, maintenance costs, and cost estimates, will also be included.

**Task Product**
The Consultant will document the findings of this task in a Technical Memorandum. A thorough discussion and review of all transportation, ITS and TMC needs will be included with identification and justification for such needs, which are most applicable to the function, operation and geographic needs of the county.

**TPO Responsibility**
The TPO shall make available to the Consultant, upon request, any data available in the TPO's files pertaining to the work to be performed under this Task. The TPO shall review such documentation and provide comments, where applicable.

**Task 4 – Identification of Applicable ITS Strategies**

The Consultant will review the transportation problems and needs identified in Task 3: Identify Transportation ITS Needs. This review will determine the nature and cause(s) of each problem or need and determine if there are any candidate ITS improvements or strategies that can address or mitigate the problem or need. The Consultant will consider the potential for future technologies and how they may be utilized to meet needs. Potential transit related ITS strategies shall also be considered. After candidate ITS improvement strategies have been identified, the candidates will be screened by the
Consultant to establish an initial priority for each of the projects. Where possible the anticipated benefits and life cycle cost of each candidate will be quantified to aid in comparison.

The Consultant will propose strategies to document operations and maintenance needs, define performance requirements and identify existing and future ATMS deployments on Brevard County arterial roadways. This plan will determine the cause of each transportation problem and identify candidate ITS improvements or strategies to help improve traffic conditions.

Part of this approach will be to utilize, by linking and managing an ITS network with an ATMS system, Transportation System Management and Operations (TSM&O) principles. TSM&O is a performance driven approach for solving traffic related problems and minimizing congestion through the utilization of ITS, signal system control, and other management and operational strategies to locate and correct the causes of delays in real-time. The objective of the TSM&O program is to improve the efficiency of the existing transportation network through performance monitoring, active arterial management, and coordinating freeway and arterial management strategies, such as incident management. The TSM&O program also considers future technologies and the importance of improving the efficiency of a system.

**Task Product**
The Consultant will submit strategies as a Technical Memorandum documenting the process used to determine the needs and identifying the potential ITS solutions.

**TPO Responsibility**
The TPO shall make available to the Consultant, upon request, any data available in the TPO's files pertaining to the work to be performed under this Task. The TPO shall review such documentation and provide comments, where applicable.

**Task 5 – Regional ITS Architecture (RITSA)**

The Consultant will document the Regional Architecture to be followed in the implementation of improvements. The Regional Architecture helps define the elements of the ITS system and the standard information that is exchanged between these elements; the guidelines for developing a Regional Architecture are defined in the National ITS Architecture.

The Consultant will work with TPO staff and the Steering Committee to determine the capabilities that are relevant to the county’s problems and needs, and to customize these capabilities to suit the county. The Consultant will work with the local governments and agencies to develop an architecture that reflects their needs. The architecture shall be based on the National ITS Architecture, and will complement FDOT’s Regional ITS Architecture.

The Consultant will review both the existing National ITS Architecture for identification of any new applicable market packages as well as the existing Statewide Florida ITS Architecture as it applies to Brevard County. Given Florida has an existing process for updating the SITSA through the Change Management Board, the Consultant will discuss with both the steering committee and the FDOT ITS Representative(s) the process by which any updates to the SITSA are considered by the CMB.

**Task Product**
The Consultant will provide a Technical Memorandum documenting the review and evaluation of the county’s Regional ITS Architecture (RITSA).
TPO Responsibility
The TPO shall make available to the Consultant, upon request, any data available in the TPO's files pertaining to the work to be performed under this Task. The TPO shall review such documentation and provide comments, where applicable.

Task 6 – Concept of Operations

The Consultant will provide an update to the existing Concept of Operations that defines the roles and responsibilities for maintenance and operation of ITS and also includes the level of information sharing, status and control between agencies.

The Concept of Operations (CONOPS) provides an overview of the project/system to be deployed; specific details as to the current system; the transportation situation being addressed; identification of any desired changes, assumptions and constraints or operational issues; specifics on using/operating the project/system; methods to train and involve stakeholders; and requirements for project/system support and maintenance. In order for the CONOPS to be most effective, the document will be updated as elements change or are added/deleted. Stakeholders, or parties who will have an interest in or participate in the project or system, will be consulted to determine their needs and preferences.

The CONOPS will summarize the needs and preferences of each stakeholder and how they will interact and utilize the project/system. In some instances where conflicts between the needs and preferences of various stakeholders arises, the CONOPS document will address these conflicts and document the resultant outcome of which items will be implemented by the project or system and which items have been considered but will not be included. Ultimately, the CONOPS will serve as a record of the project/system needs, requirements, interactions, agreements and constraints in regard to all parties involved from the conception through maintenance of the desired product.

The current version of the CONOPS document, dated October 9, 2012, will be updated by the Consultant, as required, throughout the term of the contract. The CONOPS currently covers several project corridors in Brevard County and includes several ITS and signal technologies to be deployed. Updates to the document will be needed if any of the corridors, stakeholders, technologies, needs or objectives change (as detailed in Section 2.1 - Task 1). Changes to the document are anticipated due to the number of stakeholders, roadways, technologies and funding sources involved in the expansion of the ATMS System in Brevard County. The Consultant will proactively review the CONOPS and suggest an update of the document be made anytime changes are made to the program and/or projects described within the CONOPS.

The Consultant will meet with each of the stakeholders upon project award to discuss their project roles and needs to determine if the existing CONOPS accurately reflects the current state of the anticipated construction, operation, and long term maintenance of the proposed Brevard ATMS Expansion. The document will also be reviewed by the Consultant to determine if any suggestions can be made regarding possible changes to technologies or operational concepts described throughout the CONOPS, which could provide equal or better results with less initial and future maintenance costs. Suggestions will be forwarded to the Project Manager for consideration and any approved changes would be added to the CONOPS via a document revision.
Task Product
The Consultant will update the Concept of Operations and Requirements document.

TPO Responsibility
The TPO shall make available to the Consultant, upon request, any data available in the TPO’s files pertaining to the work to be performed under this Task. The TPO will provide approval for any suggestions made by the Consultant for the update to the CONOPS.

Task 7 – Prioritized ITS Master Plan

The Metric Team will develop a prioritized ITS Master Plan that is based on the information obtained from Tasks 1-6 and from Steering Committee input. The plan will describe the existing ITS systems as well as programmed ITS systems and associated implementation timeframes. This will define the baseline conditions of the ITS Master Plan. Using information collected from previous tasks, a list of potential ITS projects will be developed to address deficiencies in the existing and planned infrastructure consistent with the ITS Vision, Goals, and Objectives from Task 1. The potential projects will take into consideration current systems found to operate with legacy equipment and are found to be difficult to maintain or are in need of replacement or modernization as well as new systems to address identified Transportation ITS needs.

To prioritize the list of potential ITS projects, the Consultant will develop screening criteria and apply this criteria to each of the projects. The screening criteria will be defined with the Steering Committee’s input and will include factors such as:

- Meets ITS Vision, Goals and Objectives
- Meets identified need
- Mitigates an identified transportation problem
- Proximity to Major Traffic Generators and Park and Ride facilities
- Improves dissemination of transportation related information
- Improves identification and response to traffic incidents
- Reduces congestion along evacuation routes
- Geographic area with high priority
- Consistent with Regional/National ITS Architecture
- Location relative to Strategic Intermodal Systems (Port Canaveral, Melbourne International Airport, etc.),
- Connections to other alternate facilities for diverting traffic during incidents
- Scale of probable project costs (i.e., $, $$, $$$, etc.)
- Life cycle cost, short and longer range staffing requirements
- Appropriate transit performance criteria

Each of the defined screening criteria will be organized into a screening matrix where numerical scales (e.g., 1-10) will be assigned for each potential project. The resulting matrix will become a tool for prioritizing the list of potential projects. The Consultant will meet with the Steering Committee to discuss the results of the screening process and to present the prioritized list of projects for approval for incorporation into the ITS Master Plan.

Following the screening process, the Consultant will develop an ITS Deployment Plan identifying the recommended implementation timeline (Short term (0-5 years), (6-10 years) and long term (11+ years))
for each prioritized ITS project. The Deployment Plan will also provide an assessment for each project summarizing information, such as: project benefits, assumptions, cost estimates, and potential funding sources or cost sharing recommendations.

- Project Description
- If needed, level of SEMP required
- Benefits
- Assumptions
- Relationship of Projects to the System Architecture
- Cost Estimates – Initial and ongoing, including personnel
- Potential implementing entity
- Potential funding sources or cost sharing recommendations

The plan will also define the agency roles related to the projects such as funding, implementing, operating, and maintaining. Development of performance measures will be necessary for efficient project prioritization both at the TPO level as well as at the state level.

The Consultant will also provide an Implementation Plan in keeping with the requirements of the Code of Federal Regulations Title 23 (23 CFR). This Implementation Plan will incorporate the results of the work performed on this project, and other information provided by the TPO.

Task Product
The Consultant will document the prioritized ITS Master Plan, ITS Deployment Plan and Implementation Plan identified within this task as a Technical Memorandum. A thorough discussion and review of all elements described will be included with identification and justification for such actions.

TPO Responsibility
The TPO shall make available to the Consultant, upon request, any data available in the TPO’s files pertaining to the work to be performed under this Task.

Other

Efficient Use of Manpower and Materials
The Consultant will provide qualified personnel that provide the highest level of competence in the tasks involved in this project. The Consultant will maintain efficiency through diligent communication and documentation. Individual project responsibilities, lines of communication, project progress, issues, and resources will be constantly monitored and allocated budget and schedule progression will be monitored on a weekly basis, and deviations are identified and subsequently corrected immediately in order to minimize the impact to the project cost and/or schedule. All of these items will be monitored and developed for all phases of the project in order to provide the most efficient and effective use of manpower and materials.

Methods to Minimize Costs
An essential part of the Consultant’s job will be to ensure that the project is completed within the approved budget. Project budget management requires monitoring all costs associated with the project and taking corrective actions when variances occur. The Consultant will use the agreed-upon baseline budget created for the project to track expenditures and measure the performance of the project. The Consultant will
ensure that the project budget is applied, monitored and updated, and the product is delivered within expected budget.

When tracking project finances, the Consultant will identify budget variances as they occur and will document the Budget Variance Report component of the Project Status Report. The following are implemented by the Consultant’s Project Manager:

1. Identify budget variances as they occur and focus on the following financial component of the project.
2. Understand the reasons for either positive or negative variances in the budget.
3. Make adjustments to the budget to reflect any changes or revise cost estimates.
4. Communicate any budget changes or issues in the early stages of project development.
5. Obtain approval for any budget adjustments.

Deliverables

The CONSULTANT will prepare a technical memorandum for Tasks 1 – 7 to be submitted electronically for review and comment. The results of each task will be compiled into a concise draft report to be submitted electronically for review and comment. After all comments have been received, the Consultant will prepare a final report and submit three (3) copies, bound full-color copies. Digital copies of the final report (in Adobe PDF format) and all supporting documentation will be supplied to the department.

3.0 SCHEDULE

All tasks included in this scope of services, Exhibit ‘A’, shall be completed within eighteen months from receipt of the Notice to Proceed. The TPO may grant a time extension if request is made within thirty (30) days of expiration of agreement.

4.0 BUDGET

This section defines the methods and limits of compensation to be made to the Consultant for the services described herein. The compensation for the Professional Services provided by the Consultant for the aforementioned Scope of Work shall be a (LS) Lump Sum amount of $270,000.00. It is agreed that this amount will be the limit of all compensation due to the Consultant for completion of services detailed in Exhibit A.

Invoicing
The lump sum will be paid on a percentage complete quarterly basis, at a minimum. Monthly invoices, billed from the first to the last of the month, are acceptable at the TPOs or Consultant’s discretion.