

Scope of Services
Traffic Engineering and Operations Office
Telecommunications Consultant Services

I. Purpose

The Florida Department of Transportation (Department) requires professional services of a Telecommunications Consultant (Consultant) to provide a wide range of assistance for the Department's telecommunications networks related with the Public Safety Land Mobile Radio communications system, its supportive infrastructures and the communications systems associated with the Intelligent Transportation Systems Program. The Consultant shall make available a variety of services that include but not limited to: telecommunications planning, engineering, architecture, standards, deployment, integration, operations, maintenance, mainstreaming, management and administrative tasks as well as Consulting Engineering and Inspection (CEI) activities to support Districts and the Central Office telecommunications needs. A principal task of the Consultant is the preparation of design criteria packages for design-build procurements, and specifications for low bid procurements for public safety land mobile radio communications systems, supportive communications infrastructures and the Intelligent Transportation Systems communications systems for implementation, deployment, and integration within the state. The Consultant will work closely with the Department's District level telecommunications personnel and other Department Consultants currently under retention.

Intelligent Transportation Systems (ITS) telecommunications developments as they apply to in this contract are the various components of ITS user services, including roadside transponders, variable message signs, and traffic signals, rely upon communication linkages in order to transmit and receive data. These components communicate with each other through various mediums, such as wireless networks, fiber optics, radio signals, and wire-line connections. These modes of communication in turn comprise the telecommunications infrastructure that allows ITS user services to function efficiently, not only as independent systems, but also as parts of the larger network of intelligent transportation systems. In this regard, telecommunications systems planning and implementation is a critical part of transportation system planning. The quality and manageability of the communications networks developed by this contract will thus play a pivotal role in determining the degree to which ITS will succeed.

In those instances where the Consultant prepares the design criteria packages for design-build procurements, the Consultant firm will not be allowed to compete as a proposing Design-Build firm, or participate as a sub-consultant to a proposing Design-Build firm.

The Consultant shall provide qualified technical and professional personnel to perform to Department standards and procedures the duties and responsibilities assigned under the terms of this agreement. The Consultant shall minimize to the maximum extent possible the Department's need to apply its own resources to assignments authorized by the Department. The Consultant shall support the Department project manager in the coordination with the Districts on any statewide related topics. The Department, at its option, may elect to expand, reduce, or delete the extent of each work element described in this Scope of Services document, provided such action does not alter the intent of this contract.

The Department shall request Consultant services on an as-needed basis. There is no guarantee that any or all of the services described in this scope will be assigned during the term of this agreement. Further, the Consultant is providing these services on a nonexclusive basis. The Department, at its option, may elect to have any of the services set forth herein performed by other consultants or Department staff.

The Consultant will be primarily tasked with providing support regarding the state's telecommunications and ITS Program. However, the Consultant may also be needed to interface state systems with local systems to bring together the efforts of both the state and locals into a coordinated interoperable program to better benefit the traveling public.

II. Office Location, Staffing and Equipment

The Consultant shall provide a branch office within the Department's Traffic Engineering and Operations Office such that they may interface with the staff of Department's Traffic Engineering and Operations Office (ITS Program). This branch office shall be staffed, at a minimum, with the Project Manager, one Senior Telecom Engineer, four Associate Engineers and one Administrative Assistant. Additional staff may be needed to meet work load requirements. The Project Manager and Senior Telecom Engineer (if applicable) shall be professional engineers that have telecommunication engineering education, training and experience, qualified and authorized in the disciplines identified in Section I pursuant to Chapter 471, Florida Statutes, to practice engineering within the State of Florida.

The Project Manager, in addition to his administrative duties, will devote 65% of his/her time to actual project work. Project work will be that work such as developing conceptual plans, design documents, specifications, etc. that are directly related to completing assign Task Work Orders.

The branch office shall be of sufficient size and equipped so that the Consultant can effectively carry out its responsibilities under this agreement. The Consultant's branch office shall clearly be identified as the Consultant's office.

Any replacement of Consultant branch office staff shall be reviewed and approved by the Department. This would apply to home office staff that have been assigned as Project Managers for critical work efforts.

Should space be available in FDOT facilities, leased or owned by the FDOT, the Consultant may be required to collocate with the FDOT. The Consultant would be allowed to utilize any of the existing furnishings that may be available. However, for planning purposes the Consultant should plan on providing furnishings for all Consultant personnel. Reduced overhead will be negotiated for staff working fulltime in FDOT facilities.





III. Initiation & Length of Services

Services to be provided by the Consultant will be initiated and completed as directed by the Department's Project Manager for each assignment authorized under this contract. Such specific assignments shall be clearly defined by a Task Work Order which shall document the specific work to be performed, the products and services to be provided, the agreed to staffing, the task schedule and the task cost and method of compensation.

The general services agreement with the Consultant will be for a multi-year term as authorized by those agencies providing funding for the consultant contract.

IV. Telecommunications Services

Telecommunications is the application of sensor, computer, electronics, land mobile radio, data and other communication technologies and/or management strategies, in an integrated manner, to improve the safety and efficiency of the surface transportation system. Telecommunications for the terms on this contract includes but is not limited to:

- A. Technical Management Support of the Statewide Microwave System Maintenance Contract.
- 1  Network Management System shall include,
 - a. Monitor daily the statewide Harris Network Management System (HNM) and log alarms by day, date, site and District.
 - b. Review monthly invoices from maintenance contractors and any District comments for accuracy and completeness and submit a review report to the contract manager.
 - 2  Site management of the HNM shall include,
 - a. Maintaining an electronic site-use and system use-plan that includes a channel bank availability list and current list of manufacturer's card type and order numbers for future additions of channels.
 - b. Provide recommendations for additional equipment and/or software or upgraded equipment and/or software over time to insure that the microwave system and site support facilities do not become obsolete.
 - c. Maintain site files for each microwave site that includes any as-built drawings, tower use agreements, tower load drawings, shelter floor plans and site plans. An existing digital photo library shall be continued and maintained that includes both archived photos for reference and current photos. Existing FDOT internet (HTML) sites shall be maintained that includes both current photos in sufficient thumb-nail quantity to provide both a quick view of each site and hyperlink to individual full size photos for more detailed requirements of both the thumb-nail photos and detailed text; short and concise for thumb-mail photos and detailed for the full sized photos.
 - 3  Technical assistance of a "Resource Sharing Agreement" in support of any FDOT fiber networks. The Consultant shall be required and/or authorized to perform the following services:
 - a. Assist as required in the development of a statewide fiber infrastructure.
 - b. Design the build-out and/or installation of a statewide fiber network.
 - c. Monitor the statewide network management system and report any anomalies to the Contract Manager.
 - d. Review monthly invoices from the maintenance contractor and any District comments for accuracy and completeness and submit a report to the Department Contract Manager.
 - 4  Technical Management Support for the Loadstar Wireless Agreement (American Tower)
The Consultant shall be required and/or authorized to perform the following services:
 - a. Provide technical reviews and recommendations for all requests for the use of existing FDOT radio towers.
 - b. Provide technical reviews and recommendations for requests from the Districts to comment on use of un-improved FDOT Right-of-way.
 - c. Provide technical support to the FDOT Contract Manager that shall include but not limited to FCC licensing, FAA studies, tower loading and interference analysis.
 - d. Research and determine the value of services provided by the agreement in exchange for access to FDOT right-of-way and existing facilities.
 - e. Assist the Department in developing design plans and specifications for the installation of services acceptable to FDOT and provided by the contract.
 - f. Direct the installation of services provided by the contract.
 - g. Proctor the quarterly lease revenue payments for deposits to the Cashier's Office for FDOT in accordance with the Comptrollers Office.

5 Communications Program Development, Operations and Maintenance Support.
The Consultant shall be required and/or authorized to perform the following services:



a. Research

- 1). Conduct research of domestically and internationally deployed state-of-the-art Communications systems.
- 2). Conduct surveys in support of Communications initiatives.
- 3). Conduct electronic frequency searches of the Federal Communications Commission database in support of FDOT.
- 4). Attend technical workshops, conferences, symposia on Communications related topics.
- 5). Accompany FDOT personnel as deemed appropriate on “fact-finding” trips to observe Communications systems and/or interview other state DOT administrators.



b. Analysis

- 1). Prepare benefit/cost studies of existing or proposed Communications initiatives.
- 2). Prepare cost effectiveness analyses of existing or proposed Communications initiatives.
- 3). Prepare life-cycle cost analyses of existing or proposed Communications initiatives.
- 4). Prepare Communications impact studies as related to the districts.
- 5). Provide value engineering analyses for proposed Communications initiatives.
- 6). Prepare comparative engineering cost estimates.
- 7). Provide special engineering services including special studies and economic advisory/analytical services.
- 8). Provide Communications path analysis and radio propagation calculations based on software designed for Microsoft Windows (provided by the Department) which fully integrates coverage, interference and allocations studies for AM, FM, TV, Point-to-Point, Point-to-Multipoint and all forms of Land Mobile Radio communications services from various sites on an as-needed bases and in presentation form, throughout the term of this contract.

c. Project Concept Development

- 1). Prepare formal concept studies in support of proposed communications initiatives.
- 2). Prepare “white papers” on contemporary communications issues.
- 3). Synthesize the research and analysis of others to further develop proposed communications concepts.



d. Procurement Documentation Development

- 1). Develop Request for Proposal (RFP), Invitation to Bid (ITB) and Invitation to Negotiate (ITN) documents as required by the FDOT Contract Manager.
- 2). Provide the technical capability to produce system designs, technical specifications, conditions, provisions and Scope of Services under this contract.
- 3). Participate in negotiations sessions associated with ITN's.
- 4). Participate in pre-proposal meetings, site inspections, and debriefing meetings.

- 5). Prepare responses to official inquires and questions received pertaining to RFP's, ITB's, and ITN's.
 - 6). Prepare cost estimates associated with RFP's, ITB's, and ITN documents.
 - 7). Assist in the preparation of addendums associated with RFP's, ITB's, and ITN documents.
 - 8). Prepare evaluation criteria and assist with the bid evaluations and proposals.
 - 9). Participate in bid/proposal conflict resolution.
 - 10). Provide technical assistance in contract negotiations and establish contractual statements of work.
- e. System Implementation
- 1). Provide system implementation management services.
 - 2). Provide system implementation engineering and inspection services.
 - 3). Establish implementation test and acceptance criteria.
 - 4). Provide system implementation acceptance and performance test observation and verification.
- f. Systems Integration
- 1). Provide systems integration services for all communications initiatives to ensure intra-district and inter-district communications continuity and maximum performance.
 - 2). Develop and maintain Windows base software for applications programs to integrate various elements of statewide communications initiatives.
- g. Independent Validation and Verification (IV&V)
- 1). The Consultant shall assist FDOT to conduct the IV&V as formal acceptance test for each Telecommunication project;
 - 2). The Consultant shall prepare IV&V test environment, IV&V test plan, IV&V test case procedures and corrective action items in hot wash up meeting.
- h. Communications Operations
- 1). Establish operational procedures of FDOT communications systems.
 - 2). Integrate the operational procedures into a FDOT Telecommunications Plan.
 - 3). Maintain and/or expand the existing computerized database of FDOT communications systems.
- i. Training
- 1). Provide training to various FDOT personnel on department's operational procedures.
 - 2). Provide training to FDOT personnel on communications systems hardware, software, system standards and protocols.
- j. Communications Maintenance
- 1). Maintenance Procedures
 - a). Establish and/or maintain maintenance procedures for FDOT statewide communications systems.
 - b). Assist FDOT Project Manager as required with departments Telecommunications Maintenance Contract.
- k. Staffing
- 1). Provide communications qualified personnel as required to manage contractors in the performance of construction, installation and



maintenance services for FDOT's land mobile radio system, digital microwave radio system, fiber optics communications network and other telecommunications services.

- 2). Provide communications qualified personnel as required to manage the statewide communications system tower sites including but not limited to the Motorist Aid System (MAS) "Call Box" radio network, microwave towers and associated infrastructures and the districts land mobile radio systems.

6 Communications Engineering Services


The consultant shall be required and/or authorized to perform engineering services in the following areas:

a. Operations



- 1). Prepare communications engineering reports to be used as justification reports to qualify for work program funding.
- 2). Conduct detailed communications studies to identify and correct deficiencies in FDOT's communications systems engineering hardware and software.
- 3). Prepare before and after studies to evaluate the effectiveness of implemented improvement plans.
- 4). Prepare benefit/cost analyses for proposed improvement plans.
- 5). Assist FDOT in the technical evaluation of new applications for statewide communications and communications engineering positions.

b. Plans and Reviews

- 1). Assist with development of FDOT Communications Plan.
- 2).  Conduct communications systems review for all design projects, providing comments and concept, 30%, 60%, 90%, 100% and bid-ability phases.
- 3). Attend all meetings as required related to plans review.

c. Technical Support




- 1). Provide communications engineering services for FDOT in the form of path and coverage area analyses, system design, FCC license preparation, FAA permit preparation and provide other consultants and districts support as required.
- 2). Conduct communications engineering investigations for all public complaints received by the department in a timely manner in accordance with FDOT policy.
- 3). Provide Windows based software support for districts as required.
- 4). Perform various data collection services.

7 Program Management

a. Project Management

- 1). The contractor shall provide communications and ITS qualified personnel to perform project management services including planning, scheduling, directing and controlling project activities from concept development through the completion of installation of a communication project. Persons assigned to FDOT Contract manager, as project manager shall be registered professional engineers in the state of Florida. Persons assigned to oversee registered professional engineers are themselves to be registered professional engineers in the state of Florida in accordance with Section II, Paragraph 1.


- 2).  Provide contract administration services to support the microwave maintenance, American Tower and the Florida Fiber Network agreements and/or associated contracts.
 - 3). Monthly Reporting: The Consultant shall provide a monthly progress report that provides information on the services provided to the Department and task assignment work progress.
 - 4). Invoice Time Reporting: In addition to the Monthly written report, the Consultant shall provide the Department with information that outlines the hours worked by each staff member for the invoice period.
 - 5). The Consultant shall create and maintain a Telecommunication General Consultant website to disseminate the project information, project status and project contacts. This website shall be cross-referenced with information on FDOT Traffic Operations ITS Program.
- b. Budget Tracking
- 1). The Consultant will track the utilization of budget and notify the Department's project manager when the budget levels fall to the point where there are only funds left to cover approximately two months of normal invoicing.
- c. Work Program
- 1). Coordinate the various radio communications, microwave communications, fiber communications and ITS and/or Traffic Engineering communications infrastructure projects, statewide, for funding and operational continuity.
- d. Schedules
- 1). Prepare and update critical path method schedules for projects in the communications program.
 - 2). Prepare and update bar chart (Gantt or equivalent) schedules for projects in the communications program.
 - 3). Evaluate and validate communications sub-consultant submitted schedules and their overall compliance with project milestones objectives.
 - 4). Evaluate physical progress of design activities versus scheduled progress and report significant variances.
- e. Action Item Lists
- 1). Develop action item lists for ongoing ITS and/or communications projects
- f. Minutes of Meetings
- 1). Prepare minutes of meetings for all communications meetings.
- g. Communications Filing System
- 1). Maintain a communications document control and filing system which shall govern the distribution and file copies of all program related correspondence, reports, plans, technical data of the consultant.
 - 2). File system shall be subject to FDOT approval.
 - 3). Program and/or project files shall be transferred to the department upon completion of the work or as otherwise directed by FDOT.
- h. Claims Against the Department
- 1). Analyze claims against the department arising out of a communications project or work and provide support as required to effect the settlement of such claims.

- i. Testimony
 - 1). Furnish testimony in administrative hearings or other litigation and prepare trial exhibits as required.

8 Design Services

The consultant shall be required and/or authorized to perform engineering services in the following areas:

a. Design Support

- 1). Review, coordinate and/or manage the design work of other communications consultants.
- 2). Review and comment on the preparation of communications installation documents by communications consultants at normal phase submittals as required by FDOT procedures and for special submittals that may be established and of preliminary and final estimates of installation costs.
- 3). Review design development compliance with approved project design criteria.
- 4).  Review and provide written responses on the adequacy of all communications consultants design submittals.
- 5). Advise and consult on questions of engineering with respect to project design intent.
- 6). Revalidate and provide written responses as to the state of design completion (physical progress) as reported by communications consultants in their requests for progress payments.
- 7). Monitor ITS/communications consultants performance of services to determine adequacy of work performed relative to contract intent.
- 8). Advise and consult on questions of engineering with respect to installation of communication systems and equipment.
- 9). Provide quality assurance reviews of the communications consultants' implementation of their quality control plan.
- 10). As required by FDOT, review all documentation submitted by communications consultants and/or contractors to assure timely processing by a Department's CEI consultant.

b. Permitting Support

- 1). Prepare, review and/or provide written comments on Federal, State, and local permit requirements, including FCC licensing, FAA approvals and Florida Department of Management Services.
- 2). Prepare permit packages to include drawings and data that are provided by ITS communications, consultants or subcontractors.
- 3). Provide an inventory of permits, permit requirements, permitting schedule, and permit preparation support.
- 4). Coordinate permit schedules with project schedules.
- 5). Review plans, special provisions, and construction activities for permit compliance.

V. Responsibilities of the Department

The Department will furnish, without cost to the Consultant, the following services and data to the Consultant in connection with services authorized under terms of this agreement:

- A. Provide all criteria and information as to the Department's requirements for consultants' and contractors' services including objectives, constraints, budgetary limitations, and time restraints.
- B. Furnish all Department procedures, standards, forms, and policies applicable to the Services.

- C. Furnish drawings, specifications, schedules, reports and other information prepared by and/or for the Department by others which are available to the Department and which the Department considers pertinent to Consultant's responsibilities, as described herein.
- D. Provide existing structural, roadway, and other plans as available.
- E. Furnish all necessary utility relocation form letters, agreements, relocation schedules and any other document form needed by the Consultant to clear the project utilities.
- F. Advise the Consultant in all utility negotiation matters.
- G. Provide project utility certification to the Department's Central Office.
- H. Advise the Consultant on all engineering requirements and Department updates.

VI.

VII.

Computer Services

The Department will allow the Consultant to utilize the Department's Data Processing Computer Services for programs requested by the Consultant and approved by the Department in accordance with the Consultant agreement and in accordance with the latest computer access procedure from the Department's Office of Information Services. Computations based on computer programs other than the Department's must conform to the Department's general format (See latest Plans Preparation Manual and amendments thereof).

VIII.

Specifications for Work

- A. Plans & Specifications
The Consultant shall ensure that all documents, studies, and construction plans, as applicable are prepared in accordance with the latest editions of the standards utilized by the Department which include, but are not limited to, publications such as:

- AASHTO, "A Policy on Geometric Design of Highways and Streets"
- FDOT Location Survey Manual
- FDOT Right-of-way Mapping Handbook
- Geometric Geodetic Accuracy Standards
- FDOT Soils and Foundations Manual
- FDOT Flexible Pavement Design Manual for New Construction and Pavement Rehabilitation
- FHWA Manual on Uniform Traffic Control Devices
- FDOT Standard Specification for Road and Bridge Construction
- FDOT Roadway Plans Preparation Manual
- South Florida Building Codes - Broward and Dade County Editions
- Standard Building Codes
- FDOT Basis of Estimates Manual
- Federal Highway Program Manual
- FDOT Drainage Manual
- FDOT Structures Design Guidelines Manual
- FDOT Structures Detailing Manual
- AASHTO Roadside Design Guide
- FDOT Roadway and Traffic Design Standards
- FDOT Utility Accommodation Manual
- FDOT CADD Manual

Construction Plans shall be accurate, legible, and complete in design to the extent necessary to support the type of procurement method selected by the Department. The construction plans shall be drawn to the appropriate scale, furnished in reproducible form on material acceptable to the Department. This also applies to other documents, studies and reports.

B. Survey Services

The Consultant shall ensure that all survey work, as applicable, is performed in accordance with the Department's Highway Field Survey Specifications, Department (Policy No. 550-030-001), Automated Survey Data Gathering (Policy No. 550-030-030), and Department Location Survey Manual (Policy No. 550-030-100). Work must comply with the minimum technical standards for Land Surveyors Rule 61G17-6, Florida Statutes 472.027, Department of Environmental Protection Rule, Florida Administrative Code Chapter 18-1, Florida Statutes 177 - Parts Two and Three, Department of Environmental protection state jurisdiction boundary surveys (where applicable) and any special instructions from the Department.

C. Professional Services Contract Documents

The Consultant shall ensure that all contract documents and support forms have been prepared on IBM or IBM-compatible hardware using Microsoft Word most current release software or a compatible convertible format and stored on CDs or disks.

IX. Conflict of Interest

The Consultant and its sub-consultants shall not enter into any other contract with the Department during the term of this agreement which would create or involve a conflict of interest with the services provided herein. Questions regarding potential conflicts of interest shall be addressed to the Secretary of the Department of Transportation for resolution.

X. Consultant Not Employee or Agent

The Consultant and its employees, agents, representatives, or subconsultants/ subcontractors are not employees of the Department and are not entitled to the benefits of State of Florida employees. Except to the extent expressly authorized herein, Consultant and its employees, agents, representatives, or subconsultants/subcontractors are not agents of the Department or the State for any purpose or authority such as to bind or represent the interests thereof, and shall not represent that is an agent or that it is acting on the behalf of the Department or the State. The Department shall not be bound by any unauthorized acts or conduct of Consultant.

XI. Ownership of Works and Inventions

The Department shall have full ownership of any works of authorship, inventions, improvements, ideas, data, processes, computer software programs, and discoveries (hereafter called intellectual property) conceived, created, or furnished under this Agreement, with no rights of ownership in Consultant or any subconsultants/subcontractors. Consultant and subconsultants/subcontractors shall fully and promptly disclose to the Department all intellectual property conceived, created, or furnished under this Agreement. Consultant or subconsultants/subcontractor hereby assigns to the Department the sole and exclusive right, title, and interest in and to all intellectual property conceived, created, or furnished under this Agreement, without further consideration. This Agreement shall operate as an irrevocable assignment by Consultant and subconsultants/subcontractors to the Department of the copyright in any intellectual property created, published, or furnished to the Department under this Agreement, including all rights thereunder in perpetuity. Consultant and subconsultants/subcontractors shall not patent any intellectual property conceived, created, or furnished under this Agreement. Consultant and subconsultants/subcontractors agree to execute and deliver all necessary documents requested by the Department to effect the assignment of intellectual property to the Department or the registration or confirmation of the Department's rights in or to intellectual property under the terms of this Agreement. Consultant agrees to include this provision in all its subcontracts under this Agreement.

Letter of Response Evaluation Sheet
FDOT Telecommunications General Consultant

Date:

Evaluator:

Consultant:

Executive Summary (5)

Written in non-technical language (1)

Familiarity and/or experience with FDOT Standards, design criteria and understanding with writing specifications (1)

Summarized capabilities and approach for accomplishing project (1) [Is it clear that they know how to complete the work?]

Facility capabilities, staff locations relative to work needs (2) [Is it clear that they have the resources to do the work?]

Comments:

Project Team (20)

[Were key personnel and subcontractors included in organizational structure? Is management plan effective? Will control of subcontractors be effective? How will conflicts be resolved?]

Staffing and Resource Management (0-20)

Capability to complete task in an accurate and timely manner; adequate personnel to accomplish multiple tasks within the same time period; ability to have dedicated staff in Tallahassee; capacity to deploy specific staff to accomplish tasks, keenness to train staff as necessary to the accomplishment a task.

Comments:

Identification of Key Personnel (35)

Comprehensive experience of the team's abilities (15)

Provide names and resumes of Key Personnel (5)

Requirements for Project Manager and experience (10)

Overall familiarity of the team to meet the "scope of services" (3)

Resource allocation sufficient (2)

Comments:

Letter of Response Evaluation Sheet
FDOT Telecommunications General Consultant

Date:

Evaluator:

Consultant:

Project Management (30)

[Is project management and organization structure clear and logical? Is management plan effective? Is there a formalized process for document control?]

This includes managing files documentation of work, distribution of work and communications with Project Manager. Other key areas should include: Organizational structure, Management style, Cost control methodology and Quality control methodology.

Comments:

Other Considerations (10)

Assurance and/or commitment to satisfy the Department's needs. (past performance of similar projects or contracts)

Comments:

If needed, attach additional sheets for comments.