Research Program Manual

Florida Department of Transportation

Research Center

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Purpose

Update of 2021-8 *Research Manual*.

Update to Appendix C

Contact

For more information regarding this manual, please contact the Research Center at (850) 414-4615.

Preface

This version of the *Research Manual* is an update of the December 2019 version of the manual. This update is intended to reflect current practices, documentation requirements, and partnerships (e.g., university transportation centers).

The Research Center is continuing to improve its engagement with its customers and research partners, improve accountability, monitor program and project performance, and increase awareness of the benefits of research. Research outputs, whether new products, process improvements, or increased knowledge, have played an integral role in transportation improvements in Florida, contributing to increased efficiency, improved safety, and cost savings. The strategic, ethical conduct of transportation research and diligence in implementing the results provide a valuable path for developing and applying solutions to meet and overcome the transportation challenges of the 21st century.

Table of Contents

Chapter 1: Introduction

The Research Center exists to assist the Florida Department of Transportation (FDOT) in carrying out its mission, share results with other transportation agencies, and ultimately, contribute to the improvement of the transportation system delivered to the traveling public. The purpose of this manual is to present and describe the Research Center's functions and procedures, and to provide guidance to our internal and external partners. This manual is the primary source of information regarding the procurement, administration, and management of research administered through FDOT's research program, and, as such, fulfills 23 CFR 420.209 requirements for establishing and documenting the research program management process. It will provide information useful to project managers, principal investigators, divisions of sponsored research, and other contractors and partners.

The sections that follow provide guidance on how to use this manual and general information about the research program.

About This Manual

This section describes the purpose of the Research Manual and its intended audiences.

The Research Manual is designed to provide guidance to those involved in FDOT's research program, document program processes and requirements, and comply with Title 23 Code of Federal Regulations (CFR) Part 420.209 by serving as documentation of the research program management process.

The principal audiences for this manual are FDOT research coordinators, FDOT research project managers, principal investigators, and divisions of sponsored research at universities in Florida. The Research Center does not fund grants or in-house research but does contribute funding to a limited number of pooled funded studies through the Federal Highway Administration's Transportation Pooled Program. The overwhelming majority of research projects administered by the Research Center are contract-driven. The contract tools (i.e., contracts or master agreements/task work orders) define the terms for any given project. This manual supplements the contract tools and identifies the responsibilities of FDOT personnel and contractors. It is recommended that all participants in the research program familiarize themselves with the entire contents of the manual. Sections particularly relevant to the respective parties are identified below:

Research coordinators are FDOT staff located in major functional areas of the department. A list of research coordinators by functional area is maintained on the Research Center website: https://www.fdot.gov/research/Research-Coordinators.shtm.

Research coordinators are the primary liaisons between their functional areas and the Research Center. As such, they coordinate information distribution and the research activities of their functional areas, notably in the development of the prioritized research needs package submitted at the beginning of the annual research cycle (chapter 2). Research coordinators may also provide general oversight on the progress of all projects managed within their functional area, from contracting through quality assurance (chapters 3-6).

Project managers are FDOT technical experts located within the functional areas of the department who serve as the primary points of contact with the principal investigators. The project manager provides technical oversight, approves deliverables and invoices, provides deployment plan information and updates, and is otherwise generally the champion of the research. Chapter 3 provides guidance for preparing the proposal, chapter 4 for managing the project, and chapter 5 for ensuring the results are deployed effectively. Chapter 6 provides information about the quality assurance review process used to assess and monitor the performance of the research and the implementation of the research results.

Principal investigators are the technical experts who perform and oversee the research; they may be affiliated with either public or private research facilities. Chapters 3 and 4 will be of most use to principal investigators, as they cover the preparation of scopes of service, deliverables, and invoices. Principal investigators will also find chapter 6 of interest with respect to the review processes that will be applied to research projects.

Divisions of sponsored research (DSRs) are the primary administrative points of contact at the universities. Contracts are processed and administered, on the university side, through DSRs. Chapters 2 (section 1), 3, 4, and 6 will be of greatest interest to DSRs.

Much of the information that is included and/or referenced throughout this manual is located on the Research Center website: https://www.fdot.gov/research/default.shtm.

Contact the Research Center at 850.414.4615 or at research.center@dot.state.fl.us.

Program Overview

This section provides a general overview of the Research Center's mission, authority, funding, and function as liaison to other transportation research organizations.

The Research Center oversees the Florida Department of Transportation's research program. Its mission is to improve and protect Florida's transportation system through the ethical scientific conduct of research that increases global knowledge of products, processes, and practices; to transfer information; and to encourage, support, and monitor the implementation of research results.

The Research Center carries out this mission through the following:

- coordinating with internal customers to identify strategic research needs
- contracting with state universities and other research service providers to perform research in all areas of transportation
- facilitating participation in transportation pooled fund studies with state transportation agencies and other organizations
- contributing to national studies on subjects of benefit to Florida
- providing administrative and management processes to procure, conduct, monitor, and report on research projects including performance, outputs, and outcomes
- supporting and monitoring the implementation of research products

FDOT functional areas identify and prioritize research needs that align with and support their respective strategic directions. The Research Center reviews and develops the needs into a proposed research program, which upper management and the Federal Highway Administration (FHWA) reviews and approves (with comments and requests for modification, as appropriate). Most of the research undertaken is applied, i.e., designed to address existing needs in the near-term. However, policy studies to improve decision-making and exploratory studies that may identify opportunities to address emerging or anticipated needs may also be conducted.

The authority for the research program is found in Florida Statutes 334.044(20) and (21) and in Title 23 CFR, Part 420. Funding for the research program comes from both federal and state sources.

Federal funding accounts for over two-thirds of research program funding. The basis of this funding is set forth in 23 CFR, Part 420.107, according to which at least 25 percent of the State Planning and Research (SPR) funds apportioned to a state for a fiscal year is to be expended for research, development, and technology (RD&T) activities relating to highway, public transportation, and intermodal transportation systems. This funding is used to

contract research needed by FDOT to improve its delivery of a safe and effective transportation system to the traveling public in Florida.

It is the responsibility of the Research Center to ensure the provisions and requirements of 23 CFR, Part 420 are met. Key responsibilities include preparing for FHWA review and approval of an annual SPR SubPart B Work Program to include a listing of research projects that utilize federal funding, project activities, and project status. FHWA must approve the projects in this research work program before they may be contracted.

23 CFR 420.209(a)(7) also requires the Research Center to periodically (currently defined as at least every five years) conduct peer exchanges. Peer exchanges are structured sessions designed to allow the staff of a state's research program to engage peers from other states and transportation organizations in dialogue to discuss the research process and to explore the effectiveness of the research program or some particular aspect(s) of it. The product of the peer exchange is a report that documents compliance and identifies ideas and opportunities for improving operations. The peer exchange final report is presented to FDOT management.

Pursuant to 23 CFR 420.209, FHWA will conduct a periodic review of the state's management process for research, development and technology activities which use federal funds. Reviews are typically conducted on a 5-year cycle.

The Research Center serves as an FDOT liaison to and maintains relationships with a host of other entities, including but not limited to the American Association of State Highway and Transportation Officials (AASHTO), the Transportation Research Board (TRB), and university transportation centers (UTCs).

The primary goal of the American Association of State Highway and Transportation Officials is to foster the development, operation, and maintenance of an integrated national transportation system. AASHTO's Special Committee on Research and Innovation (SCRI) is charged with staying informed of all transportation research programs in the United States, which it does largely through its working arm, the Research Advisory Committee (RAC). RAC's membership consists primarily of state DOT research program managers. The Research Center manager serves as the FDOT representative on RAC.

AASHTO also sponsors the National Cooperative Highway Research Program (NCHRP) in cooperation with FHWA. The program is administered by the Cooperative Research Programs Division of TRB. Each year, AASHTO standing committees and member departments as well as FHWA, propose for selection candidate research problems from a host of highway transportation technical areas. Member departments vote by ballot on which projects to fund. The Research Center coordinates FDOT's response to the initial NCHRP ballot for ranking new and continuing NCHRP projects. New proposals are due to

TRB in November, followed by a series of votes by RAC, SCRI, and AASHTO member CEOs, the last of which confirms and finalizes the program.

The Research Center also provides assistance and coordination efforts for the other cooperative research programs and research awards, e.g., providing research support for FHWA Accelerating Innovation Deployment (AID) grants.

The Transportation Research Board's purpose is to bring scientific and technical knowledge to bear on transportation problems by encouraging and conducting research and by disseminating information. TRB oversees the Cooperative Research Programs, hosts the annual TRB meeting, and annually visits each state DOT to identify and report on trends in transportation. TRB produces national transportation research documents, such as NCHRP reports and the Transportation Research Record Journal. These publications, along with some 100 new transportation webinars produced each year, are available online at no cost to state DOTs as sponsor organizations. State DOTs annually provide support to TRB's correlation services and contribute 5.5% of their SPR allocations to support NCHRP. The Research Center manager serves as Florida's state representative to TRB.

The Research Center is the primary liaison with the university transportation centers (UTCs) in Florida, of which there are four under the FAST Act: Freight Mobility Research Institute (FMRI) at Florida Atlantic University; Accelerated Bridge Construction (ABC) University Transportation Center at Florida International University; Southeastern Transportation Research, Innovation, Development, and Education Center (STRIDE) at the University of Florida; and, most recently, National Institute for Congestion Reduction (NICR) at the University of South Florida.

The Research Center also assists in the coordination of FDOT responses to national research program problem statement solicitations and calls for panel nominations (e.g. Cooperative Research Programs, AASHTO's Innovation Initiative).

The Research Center also manages and oversees the Local Technical Assistance Program (LTAP). LTAP provides local agencies with information and training programs to improve the maintenance of local roadways and bridges. Currently, the Center for Urban Transportation Research (CUTR) at the University of South Florida provides these services to local agencies in Florida. More information about the LTAP Center at the University of South Florida is available at www.floridaLTAP.org.

Chapter 2: Program Development

The research program primarily consists of projects identified through an annual request for research needs distributed within FDOT. Section 2.1 details this portion of the program. The Research Center also partners with, or participates in, various other research, development, and technology programs, at both national and state levels. Sections 2.2-2.5 provide information about these programs.

Section 2.1 – Annual Research Work Program

Section 2.2 – University Transportation Centers

Section 2.3 – Transportation Pooled Fund Studies

Section 2.4 – Local Technical Assistance Program

Section 2.5 – Cooperative Research and Other National Programs

2.1 Annual Research Work Program: Needs Solicitation

This section provides information about the Research Center's call for research needs and project selection process. The portion of the research program developed through annual solicitation constitutes the greater part of the annual research work program. The research work program also includes research services procured through other processes, which will be addressed specifically in sections 2.2-2.5.

Annually, the Research Center solicits high priority research needs from FDOT's functional areas and districts. The Research Center does not accept unsolicited proposals. Prospective researchers with promising research ideas may choose to contact the research coordinator for the appropriate functional area relative to the subject matter. A listing of research coordinators is available online: . https://www.fdot.gov/research/research-Coordinators.shtm.

The solicitation process begins in October, when the Research Center sends the research coordinators and district secretaries a call for research needs. The list of prioritized needs is due in January. Research coordinators are responsible for coordinating the development of research needs within their functional areas and submitting them to the Research Center per solicitation instructions by the advertised deadline. Districts' requests should be coordinated through a single point of contact to serve as the research coordinator for the district. Research coordinators are encouraged to develop a process for communicating the call for research needs to managers and employees, identifying and prioritizing needed projects for the functional area, and obtaining functional area management review and approval.

A request for research funding form (Appendix A) is distributed with the solicitation. This form must be completed for each research need submitted to the Research Center. Each need statement must be ranked; no two need statements may have the same priority ranking. **Technical experts preparing the need statements are expected to review the current state of the art/practice, available, and ongoing research in the subject area to ensure against any duplication of effort.** The Research Center can offer assistance in obtaining more information about identified existing or ongoing research. **Each request should also have a reasonable time and funding estimate.**

An annual implementation survey regarding the implementation status of research results developed through projects completed the prior fiscal year is distributed to research coordinators at the time of the research need solicitation. The purpose of this survey is to improve research results implementation tracking, documentation, and analysis. It consists of a single, two-part question that requests the status of the implementation of the research results, ranging from "not implementable" to "implemented," and an explanation of the identified implementation status. Functional area research coordinators will receive

surveys identifying the projects completed within their respective areas. **Implementation surveys must be submitted for new need requests to be processed.**

The Research Center reviews the requests with respect to their prioritization, potential impact/benefit, and potential for duplicating available or ongoing work, and the research workload and past performance of the proposed project managers and principal investigators (when identified).

In January, the Research Center prepares for internal stakeholders an online commenting page to provide feedback on projects related to their subject matter expertise, after which management can review the prioritized research needs. Research proposers will have the chance to present their needs to executive leadership for consideration of funding. Projects are approved based on need and available funding and are funded based on timely submission.

If functional areas and districts elect to fund projects not approved through the research solicitation by using their cost center funds, they are strongly encouraged first to re-evaluate these projects, especially if they were not approved based on concerns regarding need, duplication of effort, or reasons other than funding limitations.

FDOT-approved projects are presented to FHWA as the SPR SubPart B Work Program. FHWA reviews, comments on, and must approve the federally funded projects for the upcoming year. Contingency projects will be advanced to FHWA for approval through the status report cycle. The compiled list of approved projects and the status is posted to the Research Center website and updated monthly.

Approved projects from the program cycle prior to solicitation are not carried forward. For example, approved projects for the 2019-20 program will not be processed if scopes of service have not been submitted to the Research Center by the end of the 2020-21 solicitation period. If the need for such projects is still high, they should be resubmitted with the prioritized needs in January. The status of the current fiscal year program is posted on the Research Center website on the Project Management Resources web page: https://www.fdot.gov/research/project-mgt-resources.shtm.

In addition to the requirements of 23 CFR Part 420 already noted, state DOTs are to promote effective use of available resources. States are encouraged to cooperate with other state DOTs, FHWA, and other appropriate agencies to achieve objectives established at the national level and to develop a technology transfer program to promote and use transportation research results. The Research Center accomplishes this by partnering with university transportation centers and the Local Technical Assistance Program (LTAP) and participating in pooled fund studies. The sections that follow address these relationships and the utilization of the cooperative research programs.

2.2 University Transportation Centers

The University Transportation Center (UTC) program was established in 1987 for the purpose of establishing federally funded university-based transportation centers for research, education, and training/outreach programs. The U.S. Department of Transportation (USDOT) Office of Research and Technology oversees the program. UTCs receive grants from the USDOT to conduct research to advance the field of transportation and to educate the future transportation workforce. Each UTC is required to match the federal funds.

There are two tier one UTCs in Florida: Freight Mobility Research Institute (FMRI) at Florida Atlantic University and Accelerated Bridge Construction (ABC) University Transportation Center at Florida International University. In each of fiscal years (FY) 2019 and 2020, tier one UTCs receive up to $1.6M, requiring a 50% match.

FMRI focuses on promoting smart cities, improving multimodal connections, system integrations and security, data modeling, and analytical tools. The goal of the FMRI is to optimize freight movements to improve overall freight transportation efficiency. Additional information on this center is available at http://eng.fau.edu/research/fmri/.

The goal of ABC is to provide the transportation industry with the tools needed to effectively and economically utilize the principles of accelerated bridge construction to enhance mobility and safety, and to produce safe, environmentally friendly, long-lasting structures. Additional information on this center is available at http://www.abc-utc.fiu.edu/.

The University of Florida hosts the federal region four UTC, Southeastern Transportation Research, Innovation, Development and Education Center (STRIDE). In FY 2019 and 2020, regional UTCs are funded at up to $2.95M with a 100% match requirement. STRIDE is a consortium of ten schools located in seven states, whose collective mission is to develop novel strategies for reducing congestion. Additional information on this center and its members is available at https://stride.ce.ufl.edu/.

The most recent UTC designee in Florida is the University of South Florida, whose proposed National Institute for Congestion Reduction (NICR) was awarded one of two national UTCs solicited in 2018, funded for three years at up to $2.5M per year, requiring a 100% match. NICR's mission is to pursue ideas for reducing congestion through three research areas that include system optimization, transit, and options (e.g., alternative forms of transportation). Additional information on this center and its members is available at https://www.cutr.usf.edu/nicr/.

Additional information about the UTC program is available at http://utc.dot.gov/.

The Research Center regards these centers as key research partners and actively engages with them to identify opportunities to develop match project opportunities. The Research Center identifies projects requested through the annual solicitation that can serve as match projects, when the subject matter is appropriate to a center's theme and expertise.

The UTCs are encouraged to work with other state and other transportation agencies to generate opportunities for match funding and provide value to the larger transportation community. Approved projects are included in the SPR SubPart B Work Program. All projects directed to the UTCs are contract research projects, not grants.

2.3 Transportation Pooled Fund Program

Each year, the Research Center contributes to pooled fund studies to leverage the funding of peer agencies on subjects of common interest. The Transportation Pooled Fund (TPF) Program is administered by the Federal Highway Administration (FHWA). The program provides a means for state DOTs, FHWA, and other entities to combine resources to achieve common research goals. The underlying principle is that participants can avoid duplicating research and can optimize their funding by cooperatively sponsoring research of mutual interest. Such projects may be geographically regional in interest (e.g., coastal states subject to hurricanes may want to collaborate in studying emergency evacuation) or national in interest (e.g., the National Center for Asphalt Technology).

A pooled fund study must be sponsored and initiated by a federal, state, regional, or local transportation agency. Other entities, such as municipalities, metropolitan planning organizations, colleges, universities, and private companies may partner with any or all of the sponsoring agencies.

Throughout the year, the Research Center receives postings of new solicitations for contributions and forwards them to the appropriate functional area(s) for review. If a functional area determines a proposed study has potential high value to FDOT and wishes to champion FDOT's participation, then that functional area must provide justification and an impact statement for funding the study. When received prior to the solicitation cycle, the request should be included with the prioritized needs. If received after the solicitation cycle and deemed of value, it can be requested as a mid-cycle project or listed with the project requests for the following cycle, depending on the solicitation deadline. Projects will be funded based on need and considered against the overall program needs. A portion of the research program budget is set aside for TPF studies.

The functional area requesting the project must justify participation by identifying the value of the research to FDOT and must identify an employee to serve as the department's contact for the project. The responsibilities of the contact are similar to those of the project manager. The contact will receive, review, and share reports and other deliverables as appropriate, update deployment goals and strategies for utilizing the results, and otherwise promote implementation of the results.

In reviewing the annual research solicitation package, the Research Center will identify projects that could be pursued effectively as pooled fund studies, based on subject matter, project cost, and urgency. Utilizing the TPF program to advance projects can have the advantages of increasing their scope while reducing the cost of the research to the agency. Pooled fund program participation should be coordinated through the Research Center. Information about this program is available online at http://www.pooledfund.org/.

2.4 Local Technical Assistance Program

The Federal Highway Administration created the Local Technical Assistance Program (LTAP) in 1982 to provide local agencies with information and training programs to address the maintenance of local roadways and bridges. This program is composed of a network of centers, one in every state and Puerto Rico. These LTAP centers support local counties, cities, and towns in their efforts to improve their roads and bridges. LTAP supplies these local agencies and organizations with various training programs and information media, including an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters. More information about this program is online at https://floridaltap.org/.

Currently, the Center for Urban Transportation Research (CUTR) at the University of South Florida provides these services to local agencies in Florida and also actively informs them about FDOT research products. In this way, the LTAP Program helps to perform technology transfer of Florida's transportation research products in order to promote wider application of the results and contribute to the improvement of the entire transportation network within Florida. More information about the LTAP program is available at www.FloridaLTAP.org.

2.5 Cooperative Research and Other National Programs

This section provides information about the National Cooperative Highway Research Program (NCHRP) and the other cooperative research programs: Airport, Freight, Hazardous Materials, Rail, and Transit Cooperative Research Programs. It also briefly discusses the Research Center's role in coordinating FDOT participation in these and other national research programs.

The state DOTs provide contributions to NCHRP based on the level of their State Planning and Research (SPR) funding. Florida's contribution is currently approximately $1.9 million, with Planning (SPR Part 1) and Research (SPR Part 2) each contributing half.

NCHRP is sponsored by the American Association of State Highway Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) and administered by the Transportation Research Board (TRB). This program, developed through a three-stage process, funds approximately $28 million in continuing and new research annually. AASHTO standing committees, member departments, and FHWA propose selection candidate research problems from a host of highway transportation technical areas. In the first stage, member departments vote by ballot on which projects to fund, ranking proposed new and continuing projects. These initial ballots are distributed to the AASHTO Research Advisory Committee (RAC) members. The Research Center coordinates FDOT's response to this ballot in a process that involves requesting the functional areas to provide input on projects that fall within their respective subject matter expertise. Functional areas should provide comments on projects of greatest value to allow the Research Center to better advocate for them. In the next stage, AASHTO's Standing Committee on Research (SCOR) develops the proposed program. Finally, AASHTO member CEOs cast the final votes to finalize the program.

FDOT benefits from this well-respected, peer-reviewed research program. As a state DOT, however, FDOT can do more than simply vote on the most needed research proposals. Each year, FDOT employees, often as members of AASHTO committees, are involved in preparing or co-sponsoring problem statements for this program, typically up to about a half dozen projects.

In reviewing the annual research solicitation package, the Research Center will identify projects that could be considered for submission to the NCHRP call for research statements, based on subject matter, potential scope of interest (i.e., regional, national), project cost, and urgency. Functional areas and districts are likewise requested to consider identifying projects that might be recommended for application to this program. Advancing projects of appropriate subject matter through NCHRP can have the advantages of allowing for larger project scope, enhancing project development, advancing the research at no additional cost

to the department, producing peer-reviewed research of national import and impact, and producing research through a program that often guides national direction.

The processes followed by the other Cooperative Research Programs vary, but none use the balloting process described above. However, in its relationship with TRB, RAC members are notified of activities for the other cooperative research programs, such as panel and problem statement solicitations, and facilitate FDOT responses accordingly. For more information on the other cooperative research programs, visit http://www.trb.org/AboutTRB/AboutCooperativeResearchPrograms.aspx.

The Research Center also assists with other national programs, as needed, such as FHWA's Accelerated Innovation Deployment (AID) Demonstration program and AASHTO's Technical Services Programs (https://research.transportation.org/programs/).

Chapter 3: Contracting Research

When a research request is approved for funding, various options exist to contract the project and establish the terms for compensation. Section 3.1 provides an overview of the types of contracts and methods of compensation. Sections 3.2-3.3 discuss in greater detail the two primary types of acquiring research services. **Whatever method of contracting is utilized, a deployment plan is required (see chapter 5).**

Section 3.1 – Contract Types and Methods of Compensation

Section 3.2 – Direct Contracting

Section 3.3 – Requests for Proposals

3.1 Contract Types and Methods of Compensation

Two primary options exist to award a project: direct contracting using a master university agreement and competitive selection using the request for proposal (RFP) process advertised to all vendors registered in MyFloridaMarketplace (MFMP). The majority of contracts are awarded to Florida universities, either through direct contracting or competitive selection. Justification should be provided for using either the direct selection or the RFP method. **When a project is to be procured through competitive selection, the project manager and other involved staff may not at any time from conception to execution discuss it with any potential proposers but must follow the guidelines provided by Procurement (i.e., guidelines and contact information is provided in advertisements for proposers to submit questions). Potential bidders may not contact FDOT personnel before an advertisement is posted or other than as instructed in the advertisement. Failure to follow this process may result in a vendor being deemed non-responsive.**

Most research contracts overseen by the Research Center are awarded to Florida universities. Master university agreements, which provide boilerplate contract language, typically are used to contract directly with universities. Such projects are authorized, and funds are encumbered through individual Task Work Orders (TWO) written off the master agreements. TWOs usually include appendices relevant to type of project or funding. Master university agreements and instructions for their use are available on the Procurement Infonet, http://infonet.dot.state.fl.us/procurement/ccs/universitycontracts.htm.

The method of compensation is typically either lump sum or a combination of lump sum and cost reimbursable. By any method of contracting and compensation, the purchase of equipment is subject to Florida Statutes and must be tagged with FDOT inventory property tags and returned to FDOT at the conclusion of the research for appropriate disposition, unless otherwise agreed in writing. Travel cost is written as a cost reimbursable expense and must be in accordance with Section 112.061, F.S.

3.2 Direct Contracting

FDOT may contract directly with universities, which are exempt from competitive selection per Section 287.057(3)(e)12, F.S. However, unless justification exists for direct contracting (e.g., intellectual property considerations, UTC match projects), competitive selection is recommended.

If an approved project is identified and approved for direct contracting with a university, it will be processed using the master university agreement.

The project manager must review and approve the scope of service prior to formal submission to the Research Center. If the functional area and/or project manager determines that the project should utilize a review panel to provide additional technical oversight and assistance, then the panel should also have opportunity to review the proposal and provide feedback to the project manager before it is submitted to the Research Center. Projects that will require the assistance of other functional areas to perform the research (e.g., require use of the Materials or Structures testing facilities) or to implement the results should be vetted with those functional areas during, if not prior to, the scope development stage. Similar coordination should occur for projects whose implemented products will affect other areas. Proper coordination of scope reviews should enhance their development and promote an effective and efficient path for implementation.

After reviewing and approving the scope of service and budget, the project manager shall submit both to the Research Center, to the attention of the Research Development Coordinator for administrative review and processing (contact information available at https://www.fdot.gov/research/researchcenterstaff.shtm). This review process is followed to ensure general compliance with Research Center processes, proper coordination of scope development, and that the budget is reasonable, necessary, and allowable by rule and in accordance with state and federal laws and regulations.

The Research Center will process each proposal by encumbering the appropriate funds, writing a task work order off the master university agreement, obtaining legal review and forwarding the work order to the university for signature. The principal investigator is authorized to begin work only after FDOT has signed the task work order: **work is not authorized until the work order has been executed and no work performed prior to execution of the task work order can be reimbursed**.

For more information on preparing a scope of service, refer to chapter 4, section 1.

3.3 Requests for Proposals (RFPs)

Administered through FDOT's Procurement Office, the request for proposal (RFP) procurement process is open to all vendors, including universities, registered to do business in Florida.

The first step in acquiring research services utilizing the RFP process is for the project manager to develop a problem statement that describes the need for the research, provides appropriate background information (i.e., what gave rise to the need), and identifies the objectives of the research. The project manager shall then select a technical review team. The technical review team shall be comprised of at least three persons with background and experience in the related subject matter.

The Research Center will work with the project manager and technical review team to develop point values for each of the following criteria: *understanding of the problem*, *proposed research approach*, *qualifications of staff and firm*, *adequacy of resources*, *time requirements*, and *budget*. The technical review team is encouraged to discuss the research objectives and evaluation criteria before submitting the finalized problem statement for advertisement.

The Research Center will coordinate the dates to be contained in the advertisement (e.g., open and close dates, technical questions and responses, pre-proposal teleconferences) with the project manager and technical review team.

The RFP will include a date/time deadline and guidelines for vendors to submit technical questions. The guidelines will include a Procurement Office contact who will serve as the point of contact for questions. The Procurement Office contact will coordinate with the Research Center, which will work with the project manager or appropriate contact to develop responses. Proposals received from vendors that violate the prescribed process may be deemed non-responsive.

Prior to the advertisement of the RFP, the project manager will determine if a pre-proposal teleconference is necessary. The purpose of the teleconference is to provide an open forum for the project manager to review the RFP and respond to vendors' questions regarding the scope of service, RFP requirements, contractual requirements, method of compensation, and other appropriate attachments or requirements of the RFP. At the discretion of the project manager, this teleconference can be made mandatory, in which case vendors that do not participate are ineligible to submit a proposal. The date of this teleconference is included in the RFP.

The project manager, a representative from the Research Center, and a representative from the Procurement Office shall participate in pre-proposal teleconferences. The technical review team members are strongly encouraged, but not required, to participate.

Once the problem statement and objectives are finalized, the technical review team is identified, the point values for the evaluation criteria are established, and the necessary deadlines are set, the RFP is ready to be advertised.

The advertisement includes:

- Date/time the proposal is due
- Date/time the technical questions are due
- Date/time the response to technical questions will be posted
- Date/time/location/details of pre-proposal teleconference, if applicable
    - If the teleconference is mandatory, registration information will be included
- Evaluation and grading criteria
- Date the intended award will be posted
- Background statement describing the current conditions and need for the research
- Objectives statement describing the work to be done

RFPs, notice of agency decisions, and other matters related to an advertisement are electronically posted at http://www.myflorida.com/apps/vbs/vbs_www.main_menu.

Please refer to the Commodities and Contractual Services Procurement Manual for more information on the RFP process, online at https://www.fdot.gov/procurement/CCSPM.shtm and http://infonet.dot.state.fl.us/procurement/ccs/procedures.htm.

Proposals arriving after the deadline will be rejected.

Once the advertisement has closed, the Procurement Office will distribute to each member of the technical review team a copy of each proposal received. The technical review team will independently evaluate the proposals on the established criteria.

Technical review team members return the completed proposal evaluation forms to the Procurement Office by the established deadline. The Procurement Office will present the technical scores in a public meeting along with opening of the price proposals. If possible, the pricing scores may be calculated right after opening the price proposals and the final scores/ranking may be given at the same meeting to announce either the recommended award or the intended award decision.

If a university is selected, the project can be written as a governmental agreement. Otherwise, FDOT's standard written agreement will be used to contract research services

with the selected vendor. In no case is work authorized to begin before a signed agreement is in place. Both agreement formats can be viewed by going to https://pdl.fdot.gov, choosing the "Forms" drop-down list, selecting "By Office," selecting "Procurement," and viewing the forms for 375-040-17 and 375-040-19.

Chapter 4: Project Management

Every research project must have a project manager (i.e., FDOT employee) who possesses the technical expertise necessary to oversee the research from beginning to end, and perhaps through implementation. The project manager may develop, and must review, the scope of service. If the work is to be procured through competitive selection, the project manager will generally be the person who develops the problem statement and serves as chair of the technical review team. **Every project manager must sign an FDOT intellectual property rights form prior to assignment on an FDOT research project (Appendix B).**

Project management also involves development of research deployment plans; participation in project meetings; review of deliverables, invoices, and amendment requests; and review of equipment needs. **The project manager is the chief point of contact with the principal investigator on technical and project management issues—if a co-project manager or a review team is established, a single person shall serve as the principal lead. The project manager should be the one through whom communication with the principal investigator occurs.**

The sections that follow provide information regarding project management responsibilities, both of the project manager and the Research Center.

4.1 Scope of Service

The scope of service provides the direction, tasks, milestones, and budget for any research project. Instructions for preparing a complete scope of service are available online at https://www.fdot.gov/research/project-mgt-resources.shtm. This website should be consulted before a scope of service is prepared to ensure that current guidance is being followed. The instructions define the Research Center's required deliverables and provide language requirements that must be met for a scope of service to be accepted by the Research Center for processing.

A complete scope of service includes the following:

- Quantifiable, measurable, and verifiable units of deliverables that must be received and accepted in writing by the project and contract managers before payment. Each deliverable must be directly related to the scope of work and specify a performance measure. As used in this paragraph, the term "performance measure" means the required minimum acceptable level of service to be performed and criteria for evaluating the successful completion of each deliverable.
- A completed deliverables schedule (the Research Center requires at a minimum a deliverable every six months).
- A detailed budget by task.
- Division of Sponsored Research approval.

The Research Center will not process a scope of service that has not been prepared according to format and information requirements. The scope of work includes both a background statement that describes the need for research and a project objective that describes the purpose and objectives of the project. The scope of work also clearly establishes the needed tasks required of the principal investigator and the associated deliverables.

A complete detailed budget by task must also be provided with each scope of service. The project manager must review and assess the objectives, tasks, deliverables, and the requested equipment, travel, and sub-consultant services identified in the scope and budget.

The project manager is responsible for ensuring that any requested equipment is necessary to conduct the research. The most economically feasible option for utilizing needed equipment for the duration of the study should be pursued, whether lease or purchase. Only equipment necessary to meet specialized needs of the research should be requested. All purchased equipment must be returned to FDOT at the conclusion of the research, unless otherwise agreed to in writing.

Requested travel will be approved only when required to accomplish the work or aid in its implementation (e.g., FDOT meetings at which decision makers or end users will be present). No more than the minimum of travelers required should be requested to travel. Conferences, workshops, conventions, and other non-FDOT meetings will not be reimbursed. Travel must comply with Florida Statute 112.061. Out-of-state travel requested must be identified and include a justification that explains why resources outside Florida are required.

When sub-consultant services are needed to perform the research, the scope of service must include a justification for the use of sub-consultant(s) and clearly identify and define the tasks the sub-consultant will perform. A separate budget must be submitted for sub-consultants.

The scope of service defines the work that can be reimbursed. **Work outside the scope of service should not be performed and will not be reimbursed.** Needed changes to the scope of service must be requested in the proper format, approved by the project manager and the Research Center, and processed before taking effect (see section 4.6).

Instructions for Completing a Scope of Service, is provided as Appendix C.

4.2 Deployment Plan Development

Before any project is contracted, a deployment plan shall be developed by the project manager and submitted to the Research Center.

The deployment plan is an important tool that helps ensure that research undertaken will be implementable, that barriers that would prevent implementation do not exist or can be addressed, and that the necessary steps are taken to facilitate implementation in a timely manner.

The deployment plan also requires the project manager to consider other aspects of the research and potential outcomes in advance of project initiation including the following:

- What performance indicators could be applied to project activities and outcomes?
- What technology transfer (T2) effort is needed beyond standard T2 activities?
- Will training be necessary to implement the research results?
- Are additional outreach and coordination activities appropriate to the project?

Each of the deployment plan components must be addressed so that proposal evaluation, planning, and preparation may occur. The deployment plan may be updated, as needed, and should be if the project is modified in a way that will directly affect implementation (e.g., the project is amended to add a task that will result in an additional deliverable to be implemented).

The plan should identify sections and staff who will need to be involved in developing, monitoring, and/or performing the necessary activities. If additional funds will be needed to accomplish any of the identified activities required to carry out the plan, estimates should be provided.

A link to the deployment plan survey will be distributed with the notification of the approved projects to the research coordinators.

The FDOT project manager or co-project manager is expected to complete the survey, not the contractor. More information on the deployment plan is provided in chapter 4.5.

4.3 Required Meetings

Every research project must have both a kick-off meeting and a closeout meeting. Projects typically will also have mid-cycle meetings and, depending on the nature of the research, additional progress and other meetings may also be scheduled.

Kick-off meetings are to occur within the first 30 days of the project and shall be scheduled by the principal investigator. Participants shall include, as a minimum, the project manager, the principal investigator, and the Research Center performance coordinator. The purpose of the kick-off meeting is to ensure that the project manager and principal investigator are clear on the details of the scope of service, allow them to discuss expectations, and address any potential unforeseen issues at the outset. Task, schedule, and budget modifications may not be made at the kick-off meeting. If any modifications are deemed necessary, they must be reviewed and approved by the Research Center manager and processed through an amendment. Kick-off meetings should be held as teleconferences or video conferences to reduce travel time and expense.

Closeout meetings shall be conducted 30 days prior to the end date of a contract to review project performance, the deployment plan, and next steps. The closeout meeting shall be scheduled by the principal investigator. Attendees shall include, at a minimum, the project manager, the principal investigator, and the Research Center performance coordinator. Goals of project performance review include identifying lessons learned and opportunities for process improvement. A clear path for implementation is a key component in ensuring that research results are used—this meeting shall address the deployment plan and any necessary next steps to implement the results. This meeting will aid the Research Center in identifying trends and conditions that either promote or deter implementation of research results, and in optimizing research program processes and resource allocation.

The Research Performance Coordinator will schedule mid-cycle meetings, as needed. If other meetings are needed, they should be identified in the scope of service with justification. As with kick-off meetings, scheduled progress meetings should occur using distance conferencing methods. Meetings requiring travel **must be identified in the scope and budget and approved during scope review**. Such meetings might include conduct and review of field or laboratory experiments, presentation, and feedback sessions with FDOT decision makers, and product delivery/training sessions (e.g., as when a new device has been developed). FDOT **will not pay** for travel to the annual TRB meeting, other conferences, workshops, conventions, etc., except as directly relevant to the purpose of the project and with pre-approval of the project manager and the Research Center manager.

4.4 Deliverables

The standard reporting requirements for most projects include task deliverables, a draft final report, and a final report. Per section 287.058 F.S., deliverables must be quantifiable, measurable, and verifiable. Each deliverable must be directly related to a task specified in the scope of work and must identify the minimum level of service to be performed. Deliverables must be provided by the principal investigator and accepted by the project manager prior to payment.

Deliverables, draft final reports, and final reports must be submitted via email to research.center@dot.state.fl.us. Project managers have ten working days to review a deliverable to ensure it is consistent with the scope of work, and to approve or reject it, accordingly.

Draft final reports typically are due 90 days before the project expires. Draft final reports are not rough drafts and should be complete, well-written, and high-quality documents ready for review. Principal investigators are encouraged to consult project managers for guidance during the development of the draft final report prior to submission to the Research Center.

Once the draft final report has been submitted to the Research Center, the project manager has 30 days to review the draft final report and advise the Research Center if the report is approved or rejected. Within two weeks of receiving the draft final, the Research Center will also provide to the project manager nontechnical review comments focusing on format, grammar, style, and other requirements identified in the "Guidelines for University Presentation and Publication of Research" and the "FDOT Research Final Report Style Guide" documents provided on the Research Center's website. Once the draft final report is approved to be submitted as the final report, the principal investigator may prepare and submit the required final report deliverables as directed in the work order.

The project manager's approval of the deliverables, draft final report, and final report signifies that they have reviewed the deliverable and agree that it meets the minimum requirements stated in the task work order. Approval of the deliverable constitutes approval of the corresponding invoice, upon receipt, excluding any cost reimbursable items.

4.5 Invoicing

A deliverable must be received and approved before an invoice will be processed. The project manager's approval of the deliverable constitutes approval of the corresponding invoice. An invoice may not request reimbursement for work not completed, or for undocumented or unallowable expenditures. Project managers should carefully review deliverables to ensure that the work claimed as performed accurately represents the actual work performed.

Invoices must be prepared in accordance with the method of compensation included in the task work order and submitted to the Research Center via email to research.center@dot.state.fl.us. Invoices should be identified sequentially in the order submitted. File identifiers should provide contract, work order, invoice number, and deliverable identifiers (e.g., BDV25 977-08 I12345 Del. 1.pdf). If an invoice must be revised and resubmitted, an alpha-numeric identifier may be used to distinguish it from prior submissions of the same invoice (e.g., BDV25 977-08 I12345-a Del. 1.pdf).

Invoices for cost reimbursable work orders must be supported by an itemized listing of expenditures by classification, such as travel, expenses, and tuition. The documentation must reflect each amount being claimed. Only expenditures agreed upon and approved within the budget and method of compensation shall be reimbursed. It is the project manager's responsibility to ensure that all costs are reasonable and allowable as defined by the scope of service and project budget. Approval of the invoice signifies that the invoice to be paid is correct and complies with the provisions of the procurement document. The project manager must approve or reject cost reimbursable invoices within **5 working days of receipt**.

The Research Center encourages all project managers to review the Invoice Processing section of the Disbursement Handbook, which is available online at https://www.fdot.gov/comptroller/doo.shtm.

Costs are eligible for FHWA participation provided the following:

- they are for work performed for activities eligible under the Section of title 23 applicable to the class of funds
- they are verifiable from the State DOT's or the subrecipient's records, are necessary and reasonable for the proper and efficient accomplishment of project objectives, and meet the other criteria for allowable costs in the applicable cost principles
- they are included in the approved budget or amendments thereto
- they were not incurred prior to FHWA authorization
- indirect costs are supported by a cost allocation plan and indirect cost proposal prepared, submitted, and approved as required

4.6 Amendments

Any modification to an executed task work order or contract must be processed as an amendment to the contract. Amendment requests are submitted as requests for one or more of the following: additional time, increase or decrease in funding, change in the scope of service, change of project title, and/or change of principal investigator. The principal investigator typically will initiate the process by submitting an amendment request form (available as Appendix E) to the Research Center.

Once an amendment is submitted, the project manager will review the amendment and approve or reject it. If the project manager approves the request, the Research Center Manager will review the request. If the request is approved by the Research Center Manager, it will be processed and executed. The requested modification(s) are not authorized until they receive all necessary approvals, and the amendment has been signed by both FDOT and the contractor.

Task work orders cannot be modified if the master contract has expired, the task work order has expired, all funds have been expended, or all contracted services have been delivered.

The different types of amendments are as follows:

Time Extension: This action modifies the end date of the agreement. Justification must be provided that describes in detail the events that caused the delay in completing the project. The justification should include a description of the plan for completing the project within the requested new timeframe.

Increase in funding: An increase in funding occurs as a result of additional work being performed. A modified scope of service detailing the additional work, a budget sheet reflecting the amount of funding requested, and a revised progress schedule must be submitted with the amendment request form.

Decrease in funding: A decrease in funding occurs as a result of work being removed from the original scope of service or a change in direction of the research. A modified scope of service, a budget sheet reflecting the revised amount of funding, and a revised progress schedule must be submitted.

Re-budget of funds: A re-budget of funds may occur when funds need to be moved from one category to another within the budget to accomplish work of the project, typically through a change in approach or as a result of an over- or underestimate of tasks required to do the work.

Change to Scope of Service: A scope of service change occurs as a result of additional work, a reduction in work, or a change in the direction of the work. A revised scope of service with an explanation of what caused the change to occur must be provided.

4.7 Equipment

Any equipment requested for use on a contract must be acquired in the most cost-effective manner possible. The preferred arrangement is for the contractor either to lease the needed equipment or to purchase it outright and have the Department pay a reasonable rental fee for its use during the life of the contract (and proportional to the anticipated life of the equipment). When equipment is required but rental or leasing is not feasible (e.g., not possible, practical, or cost-effective), contractors may purchase the equipment. Equipment requests must be particular to the specialized needs of the research (i.e., the contractor is expected to have the standard resources necessary to operate a research institution in the context of its subject matter area).

Contractors must identify all equipment to be purchased on the project budget sheet and provide the Research Center with receipts upon purchase of the equipment. Receipts will be used to issue FDOT inventory control tags that must be affixed to the equipment and that will be used for annual inventory. Equipment that falls into the exceptional class codes must be tagged regardless of purchase cost (see Appendix E). It is the responsibility of the contractor to attach the tag to the equipment. For inventory purposes, each year the Research Center shall secure a certified list of property from each contractor. Purchases made for FDOT contracts are subject to Florida Administration Code 60A-1.017 and Florida Statutes 273.02. The Research Center will handle equipment in accordance with FDOT procedure 350-090-310. Pursuant to 2 CFR 200.313 the purchase of equipment purchased on a federally funded project must be approved by the Federal Highway Administration.

Equipment should be maintained in proper working order and reasonably secured for the project duration. Equipment procured for use on research projects shall be returned to the Research Center at the conclusion of each contract unless the Research Center agrees, in writing, to allow the equipment to be used for another project. The Research Center shall make proper disposition in accordance with the requirements and procedures in effect at the time.

4.8 Supplies

Any materials and/or supplies requested for use on a contract must be acquired in the most cost-effective manner possible. Contractors must identify all materials and/or supplies to be purchased on the project budget sheet.

Pursuant to 2 CFR 200.314 if there is a residual inventory of unused supplies exceeding $5,000 in total aggregate value upon termination or completion of the project or program and the supplies are not needed for any other Federal award, the supplies will be retained or sold and FHWA must be reimbursed.

Chapter 5: Deployment

The Research Center asks those who request research funding three basic questions:

1. What do you want to do?
2. Why do you want to do it?
3. How will you use the results?

The purpose of the deployment plan (see also chapter 4, section 2) is to document how the results of research will be used by identifying the activities and actions necessary to optimize the use of research results - before the research begins. The project manager develops the plan with assistance from the Research Center, as needed. The Research Center will review the plan and seek clarification, as needed, from the pre-proposal stage through the end of the project, so that it can be maintained and updated appropriately to ensure successful use of the research results.

The following sections discuss in further detail the components of a deployment plan, how the plan will be monitored, opportunities for conducting demonstration projects as part of the deployment of the research results, and how plan activity will be reported.

Section 5.1 – Deployment Plan Components

Section 5.2 – Plan Monitoring

Section 5.3 – Demonstration and Pilot Projects

Section 5.4 – Reporting

5.1 Deployment Plan Components

There are five components that comprise a deployment plan: implementation, performance indicators, technology transfer, training, and outreach. Each is described in this section. Most plans will not require all of them for deployment. For example, few projects will warrant outreach activities. **However, all plans must address implementation and performance indicators.** An effective deployment plan will involve thoughtful consideration of needs and opportunities to deploy the research results and careful planning, from project conception through implementation and analysis of the outcome. The form used to manage the information collected from the deployment plan and monitor implementation progress is provided as Appendix G.

Implementation: Implementation is the use of research results in a production mode and may occur in a variety of ways and to varying degrees. For example, implementation may be limited by the nature of the application, partial by the scope and nature of the rollout, or systematic as through specifications modifications. The implementation section of the deployment plan should identify the anticipated product(s) of the research, the anticipated implementation path(s), and potential barriers to implementation.

Possible implementation paths, or barriers, could include required change in legislation; change of an FDOT rule, policy, procedure, or specification; need for a demonstration project; addition to FDOT's approved products list. The plan must also identify additional resources, such as personnel or funding, that will be required. Another important issue is whether the research will yield a patentable device or copyrighted product.

Plans should specifically identify what needs to be done or changed and who/what offices should be involved with those changes

While research projects are exempt from Buy America per 23 CFR 635.410, Buy America should be considered for any implementation projects.

Performance Indicators: Performance indicators will be used by the Research Center to determine and report the benefits of research projects. An understanding of the potential effect(s) of the research as it relates to present conditions is needed to develop this part of the deployment plan. For example, could the research results save lives, increase system efficiencies, provide resource savings, create environmental benefits, and/or provide for community enrichment? Whenever possible and feasible, quantitative fiscal indicators, such as benefit/cost, return on investment, and life-cycle analysis should be applied.

Proper planning from the outset of the research is an important factor in being able to effectively identify, qualify, and quantify performance indicators. If pre- and post-sampling will be needed to determine the outcome of implementing the research outputs, planning is critical. Gathering needed data after the fact can be more difficult and potentially

impossible (e.g., if an improvement to a particular facility is the subject of study and baseline data for the site have not been established and do not exist readily or at all). Performance assessment will continue well beyond the completion of the research in the sense that assumptions made before the project begins need to be verified and analyzed post-implementation in order to validate benefit estimates and improve forecasting techniques.

Technology Transfer: The term "technology transfer," or T2, is herein defined as a technical discussion between professionals. The options for transferring knowledge are varied and contain many steps and options. Training and outreach are forms of technology transfer. However, in order to be as specific as possible in the identification of deployment needs, training and outreach are treated separately. Normally, professional discussions will take the form of executive summaries and technical summaries, newsletters, conference and workshop presentations and proceedings, articles in trade publications, and so forth—i.e. venues and media developed for and directed towards professionals engaged either directly in the subject matter area or more generally in the profession.

The Research Center performs T2 activities for most projects: distribution of technical reports to various local, state, and national professional audiences; development of project summaries and other media including magazines and videos. This section of the deployment plan details any additional T2 activities needed, such as the development of social media, brochures, technical memoranda, websites, and so forth. These T2 tools can be built into the scope of service as deliverables. The primary purpose of additional T2 activities and tools would be to advance the use of the results to the benefit of FDOT and its customers.

Training: Most research will not require training as a component of the project. However, when needed, the right type of training will transfer knowledge, advance research results, and dramatically assist in the implementation of research results. Training can take the form of workshops, seminars, computer and/or classroom-based training, technical manuals, and training the trainer (with or without the development of teaching aids). Training materials can be developed, and the training can be conducted by any number of persons, from project managers and principal investigators to independent contractors. Any plan to provide some form of training or training delivery tool(s) must be consistent with FDOT guidelines on training. Training in the context of the research program cannot consist of an ongoing training program. The purpose of training in research is to deliver developed products so that they may be implemented or, when appropriate, develop tools that can be used by the appropriate persons within the appropriate programs to deliver recurring training.

Outreach: "Outreach" is herein defined as a non-technical communication, notably with the non-professional**.** Outreach activities typically is useful for projects that will have an

observable impact on the traveling public or to efforts that will convey the value of research to policy makers. For example, research that results in longer lasting pavement or corrosion reduction in structures may have significant impact to the transportation system without being appropriate for outreach. A new method of installing piles that reduces the time to construct and significantly reduces noise and vibration, particularly in commercial or urban settings, could provide an outreach opportunity, as could a new method of constructing roads using recycled materials that will reduce landfill use.

Various media may be used to deliver outreach messages, from print and digital media to television pieces. Outreach tools should be brief, understandable to a general audience, and image rich. The development of outreach tools should be coordinated with the FDOT Public Information Office (PIO). The Research Center's Technology Transfer Coordinator will not only facilitate appropriate coordination with PIO but, working with the performance coordinator, will identify opportunities to gather digital, video, and other assets during the performance of the research.

Projects warranting outreach should be identified as early as possible so that the opportunity to gather media assets during the life of the project can be discussed during the kick-off meeting.

5.2 Plan Monitoring

The deployment plan is designed to improve the transportation system in Florida by ensuring that the products, procedures, processes, and practices developed and/or enhanced through research shall contribute to the overall quality of the system and be implemented in a timely and cost-effective manner. A key element of the plan is stakeholder engagement throughout the research process, where stakeholders may represent partners in implementation or end-user audiences. At the outset of the research, stakeholders should be identified, and appropriate communication and coordination with them should occur to optimize implementation and assure effective use of the research product(s).

Developing a solution that cannot be implemented in a timely manner, or at all, because key facets of the implementation path have not been sufficiently considered is an unacceptable misuse of resources. Project managers are expected to sufficiently plan a project to ensure that the appropriate offices, partners, and end users are identified and involved, that barriers that would prevent implementation do not exist (whether statutory, fiscal, or otherwise), and that the goal and desired outcome of the project aligns with FDOT's strategic vision.

The deployment plan must be submitted prior to executing a research project work order. The plan should be discussed at the kick-off meeting and revisited, as appropriate, during the course of the project. The Research Center performance coordinator will conduct follow-up on projects and report on deployment plan progress. The goal is to monitor all projects through implementation and to document outcomes, both as a measure of accountability and to identify lessons learned that can be used to improve the research process.

Some research outcomes will require extensive lead times to implement, particularly where innovation stands to change a standard and accepted way of doing business (i.e., not just within FDOT but the transportation industry as a whole). Research may also require multi-phase study. The return on time- and funding-intensive research must be considered in advance to determine if it is appropriate to the time and funding investments. As appropriate, such research veins should be followed—there have been notable successes (e.g., bridge design, scour estimation) that have returned dividends many times over annual research program funding.

When new research needs are solicited in October, a request for the implementation status of projects closed during the previous fiscal year will also be solicited. The implementation survey must be submitted with the prioritized research needs package for new needs to be considered.

All research projects are investments of limited resources. The more effectively these resources can be applied to solve transportation problems in Florida, the better the

research investment and the greater the impact to the transportation system and the traveling public in Florida.

5.3 Demonstration and Pilot Projects

The deployment plan should identify the appropriate path to implementation. The office requesting the research should be committed to providing the resources required to implement the research product(s) that are developed through the research project. Resources may take the form of staff hours to perform preliminary or other work (e.g., developing specifications, identifying construction project/s on which to implement the results) or funding (e.g., manufacturing production units of a new device). Each project should have an anticipated implementation path.

The Research Center may, in some cases, fund demonstration or pilot projects to validate or complete research or otherwise advance product implementation. Limited funding will be directed to supporting such projects. Typically, best-fit candidates are those for which quantitative financial analyses can and will, as a part of the demonstration, be performed. Research needs statements should identify any proposed research projects that qualify for and may be submitted as candidates for demonstration or pilot projects. **However, all research requests must have deployment plans that are independent of this form of assistance—plans should not presume the availability of this funding.**

Demonstration and pilot project request forms (Appendix H) should be filled out completely and submitted to the Research Center. To request this funding, a specific plan will need to be provided that identifies the research project (which should be completed or substantially completed), how and where the research product(s) will be demonstrated/piloted (e.g., method of inclusion on an identified construction project), and the proposed participants (e.g., project manager, district personnel, researchers, other contractors).

Requests may be submitted throughout the year.

5.4 Deployment Reporting

The deployment plan promotes project planning, effective implementation practices, deployment support activities such as technology transfer and training, improvement of research program processes, and general accountability.

The deployment plan is prepared and submitted after a project is approved but before it is funded (i.e., executed as a contract or task work order). Deployment plans are used to monitor project implementation status. The plans remain active until project output(s) are deemed to have been implemented and performance indicators have been applied or project outputs are determined to be non-implementable.

Annual reports will be prepared to summarize the implementation status of projects, to include as a minimum the following information:

- number of projects completed in the subject fiscal year
- number of projects that were implemented
- number of projects that are in the process of being implemented
- number of projects for which no implementation activity has occurred
- number of projects that have been deemed non-implementable

The information will be used as a part of overall program assessment and reporting, and to identify opportunities to improve program processes. The nature of research is that not all inquiries will yield high impact, high return, implementable results; however, the goal of this program is to strive for a 100% rate of implementation through careful preparation and planning of high value projects. The ability to monitor and assess the success of implementation efforts, thereby identifying strengths and weaknesses in the processes used to select, conduct, and deploy research, will provide a valuable tool for moving towards the implementation goal. Monitoring of some projects may cover extensive periods, given the effort and stages that implementation may require (e.g., outputs that need to be tested and evaluated on actual projects prior to full-scale implementation may take years to get into the work program on a project, demonstrate value, and be incorporated into business processes).

Chapter 6: Quality Assurance Plan

Research involves experimentation, testing, development of new technologies, and other exploratory processes. It addresses and works through unknowns to develop solutions to existing or developing problems. While projects administered through the Research Center typically are low-risk and directed towards specific applications, they still involve some degree of uncertainty., Unexpected developments can result in project modification and unanticipated outcomes. In this regard, and with respect to the organizational environments of the community of research partners (i.e., universities), research differs substantially from non-research work performed by contractors and general consultants. The Research Center's program is entirely contract driven (i.e., no in-house research) and primarily partners with state universities. The program is also involved with the National Cooperative Highway Research Program (NCHRP), the University Transportation Center (UTC) program, and the Transportation Pooled Fund (TPF) program. A research quality assurance plan needs to consider these various relationships and identify critical factors and processes that can be monitored, controlled, and improved, within a context which acknowledges and adapts to the inherent uncertainty involved in research.

The research program is decentralized insofar as virtually all research projects are managed by technical experts located in other sections or in the districts. The Research Center is responsible for planning, developing, and coordinating the processes necessary for developing and managing the research program. Project managers are responsible for working directly with the researchers to ensure that project objectives are met, and quality deliverables are produced. Project managers review and approve scopes, reports, invoices, and deliverables. The quality assurance plan measures performance and compliance with requirements at both the program and project levels.

The following sections discuss the purpose, scope, and components of the quality assurance plan.

Section 6.1 – Purpose and Scope

Section 6.2 – Quality Assurance

Section 6.3 – Quality Assurance Reviews

6.1 Purpose and Scope

The purpose of the research quality assurance plan is to ensure that research projects are being properly scoped, contracted, managed, and deployed and the program managed in conformance with state and federal requirements and guidelines. The plan requires performing appropriate periodic reviews of both project- and program-level processes, establishing appropriate quality assurance monitoring processes, conducting quality assurance reviews to measure the effectiveness of the developed processes, reporting the results of the reviews, and developing and implementing quality improvement plans.

The scope of this quality assurance plan is to provide the details necessary for performing, documenting, and tracking quality assurance reviews and developing, implementing, and monitoring quality improvement plans.

6.2 Quality Assurance

"Quality assurance" (QA) herein refers to the activities the Research Center will perform to measure program- and project-level processes against predetermined critical requirements. The objective of quality assurance is the continual improvement of the total delivery process to enhance quality, productivity, and deployment. Thus, the QA process is designed to ensure that the appropriate processes are in place and administered according to established guidelines and requirements.

The quality assurance plan identifies the process, critical areas, and criteria used to measure compliance, report format, method of monitoring and tracking, and procedure for follow-up of unresolved issues. The results of QA monitoring activities will be published in quality assurance review (QAR) reports. They will identify areas requiring improvement, provide feedback on the effectiveness and appropriateness of established processes and guidelines, and recognize areas of outstanding quality. The reports shall also be used to maintain consistency in process and practice, and to share improvement ideas with peer state highway agency research programs, such as through the Peer Exchange process [23 CFR 420.207(b)].

The Research Center shall establish processes for program-level monitoring to review and improve the quality of program administration, including contracting and deployment processes. Program reviews will constitute part one of the review.

The Research Center shall furnish project managers with guidance to perform all the planned and systematic actions necessary for project-level management according to established processes and requirements. Each year, the Research Center shall identify a select number of contracts for project-level review. Material covered by these reviews may include report delivery, report quality, report and invoice approval, scheduling, performance, deliverables, and other appropriate project management areas. Project reviews will constitute part two of the review.

The Research Center shall use the program- and project-level reviews to ensure that the control measures in-place are adequate to ensure compliance with applicable guidelines and requirements. The program- and project-level reviews will be analyzed and used as the basis for preparing part three of the annual review, which shall include summary comments, identification of areas of excellence, noncompliance and need, and a quality improvement plan.

The fourth and final part of the QAR will report on the status of the implementation of recommendations for improvement developed in the QAR for the previous year. Explanation will be provided for recommendations that are not implemented.

The QAR will be used to identify opportunities to improve research program processes, notably identifying and applying best practices to improve the selection of projects and the implementation of results.

6.3 Quality Assurance Reviews

Periodically, key program process(es) and select research projects will be identified in a preliminary Quality Assurance Review (QAR) plan. This plan will briefly but specifically identify the processes and projects to be reviewed, based on the program and project critical areas identified in this section.

Program processes to be reviewed will be measured against current standards and requirements as identified in statute and established process guidelines. Projects to be reviewed will be measured against established processes, requirements, and terms of contract.

The Research Center shall document the contracting, contract administration, and deployment plan activities necessary for reviews. Project managers are recommended to maintain a contract file to document report reviews (e.g., draft final comments), invoice reviews, and critical correspondence with the researcher(s).

A quality improvement plan will be developed based on the findings of the program and project reviews. It shall identify corrective action. The QAR report will include the quality improvement plan and a final section that provides the status of the implementation of the prior quality improvement plan.

The following sections identify critical areas for program and project review.

Program Critical Areas

1. Data Management: Staff will perform quarterly reviews of data contained in the Research Center's program management database to ensure accuracy and quality of data.
2. Federal Liaison: The Research Center will regularly meet with the FHWA Florida division office representatives, either as one-on-one sessions with FHWA'a research/fiscal person or as mini status/update meetings with the office. Meetings should occur quarterly.
3. Budget Management: Quarterly financial summaries will be prepared to report the status of the program (planned/executed) and the funds (encumbered/remaining). Each summary will be dated and filed for future reference.
4. Outreach and Technology Transfer: An annual plan will be developed and reviewed to identify outreach and T2 activities. A master schedule will be developed annually to identify planned events/locations and staffing/functions for exhibit presentation, as appropriate.

5. Training: The Research Center will provide individual, ad hoc, and workshop training to project managers to present basic, updated, and occasional information, as appropriate. An annual webinar will be held prior to each research cycle to present the Research Manual and appropriate updates.
6. University Relations: The Research Center will develop an annual university communication plan. Teleconferences, webinars, and university visits will be documented.
7. Deployment Planning and Reporting: Performance measures will be identified, captured, and reported. Office staff will discuss performance of research at staff meetings.
8. Website Management: The office will review and discuss at staff meetings website content and presentation, making suggestions to improve and keep the site fresh.

Project Critical Areas

1. Budget: Project budgets are to be well constructed. The Project Manager should review the budget for reasonableness. The Research Center will provide additional review for appropriate content.
2. Deliverables: All deliverables are to be submitted and approved by the Project Manager for acceptance by FDOT in fulfillment of the terms of contract.
3. Editorial Review: The Research Center will provide the Project Manager with non-technical editorial review comments (e.g., format, grammar, readability) for use in preparing draft final review feedback for the Principal Investigator.
4. Kick-off Meetings: The Principal Investigator will schedule a kick-off meeting. The project manager, principal investigator and the Research Center shall attend.
5. Quality of Report and Invoice Reviews: The Project Manager (PM) reviews deliverables as the basis for approving deliverables-based invoices. Invoices for approved deliverables require no additional PM review. Cost-reimbursable (CR) invoices or invoices with CR components require additional PM review. Deliverable and invoice approvals are documented and will be reviewed for sufficiency of content and timeliness of response, per Research Center guidelines (5 days for invoice approvals, 10 days for progress report approvals, 30 days for draft final report approvals, and 10 days for final report reviews).
6. Overall Project Schedule: The developed schedule will be measured cradle to grave, i.e., what was originally proposed compared to what occurred. Results will be documented and used to develop improvement plans, as necessary. This item covers three areas:

6.1. Pre-contract: The Research Center funds needed, high priority research. It is expected that when requested a project is approved for funding, the project proposal will be prepared and submitted in a timely manner. The time from request/approval to proposal submission and acceptance will be measured (as will projects dropped/resubmitted). If the start of a project must be delayed due to particular contingencies (e.g., if it cannot begin until a specified event occurs, such as the start of a construction project related to the research effort), then the submitting office should inform the Research Center as soon as possible.

6.2. Contract Schedule Management: Actual work progress will be measured against the baseline schedule of tasks provided with the scope.

6.3. Implementation: The implementation of the results will be tracked and documented and measured against the planned implementation as documented in the deployment plan.

7. Amendments: When necessary, time extensions should be requested and submitted with appropriate justification at least one month in advance of the contract expiration. Other amendments should be requested and submitted with appropriate justification as soon as the need for the amendment is identified. Amendments may take up to five weeks to process, so if the amendment includes a need to extend the project, the request must be submitted with sufficient time for processing. Contracts under review for which these types of amendments have been processed will be reviewed for quality of justification and timeliness of submission.

8. Equipment: Equipment files will be periodically sampled for completeness (i.e., tracking and disposition of equipment purchased for research contracts).

Appendix A: Request for Research Funding

Request for Research Funding			
SPR Subpart B Project: (Research Center Use Only)			
Requesting Office	Or District	**Priority**	# of # (projects may not have the same ranking – no ties)
Proposed Title	All projects must have a title		
Justification	Describe the current situation, why the research is needed, and how the research affects your office's mission critical focus areas		
Impact	How shall the results impact practice? Consequences of not doing the research?		
Affected Offices	Identify any office and names of office personnel that will need to be involved in the scoping or conduct of the research, will be affected by implementation of the results, or will need to participate in the implementation process—including OTIT, if enterprise data/network software application will be a deliverable, and district staff, as appropriate, e.g., through statewide meetings. **If the requesting office will not be the implementing office, please identify which office and names of specific personnel which will have to serve in that capacity—have they been involved?**		
Existing Work	Learning About and Using the Research in Progress (RiP) Database http://www.trb.org/main/blurbs/176215.aspx As a minimum, the Transportation Research International Documentation (TRID) and the Research in Progress (RIP) online databases should be reviewed by an expert in the research subject matter to assure research effort and resources shall not duplicate prior or ongoing work. TRID: https://trid.trb.org/Results RIP: https://rip.trb.org/		
Keywords Used In Existing Work Search **(Cannot leave blank)**			
Related Contracts (Give contract numbers)			
Funding Request	Estimated cost	**Anticipated Duration**	Estimated length of time to complete work

Project Manager	Proposed technical manager to oversee research	**Contracting Method**	Anticipated procurement method (e.g., supplement to existing project, RFP to all registered vendors, direct contract with university)
Equipment	Estimated equipment cost (or N/A)	Comments* (understanding leases are preferred, include the proposed use of the equipment, whether lease options are feasible, whether work to be done with equipment could instead be procured through service expenditure, etc.)	
Urgency	Score 1-5 1= highest, most immediate need	Comments* (elaborate as appropriate on justification/impact comments to explain the urgency of the need . . . is a solution needed immediately, needed within a certain period of time or by a known or anticipated deadline, desired for enhancement, etc.)	
Implementability	Score 1-5 1=greatest likelihood of and proximity to implementing results	Comments* (consider both the likelihood of implementation and the length of time and resources required to implement the results of the research.) Identify any prerequisites to, requirements for, or barriers to implementing the anticipated results of this research (e.g., new or change to existing specifications, development of production units of prototype device, legislative change); please indicate if multiple phases of work shall be required	

Project Benefits (Succinct, complete explanation)

Project Benefits **(Select all that apply and explain)**	**Quantifiable Benefits (units, dollars, etc…if applicable)**	**Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits**
○ Materials Enhancement		
○ Materials Savings		
○ Time Savings		
○ Lives Saved/Injuries Prevented		
○ Other (Explain)		

Appendix B: Intellectual Property Agreement

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
INTELLECTUAL PROPERTY AGREEMENT

THIS AGREEMENT, made by and between the State of Florida Department of Transportation, hereinafter referred to as the Department, and _____, hereinafter the Employee.

W I T N E S S E T H

WHEREAS, the Employee may be called upon from time to time to supervise and participate in research projects conducted by entities outside the Department;

WHEREAS, in the course of such activities, the Employee may create intellectual property which may ultimately be marked by an outside entity and used to generate revenue;

WHEREAS, such outside entities may have in place revenue-splitting agreements which may require the payment of a percentage of any such revenues to the Employee;

NOW, THEREFORE, the Department and the Employee, as a condition of the Employee's continued employment, agree as follows:

1. The Employee hereby assigns any and all intellectual property rights he/she acquires while working on any project for the Department to the Department, or the Department's designee;
2. The Employee hereby agrees to cooperate with the Department in executing any forms and in taking any other action required to secure title to any intellectual property rights he/she acquires while working on any project for the Department; and
3. In the event that the Employee receives any compensation from any outside entity as a result of working on any project for the Department, the Employee agrees to promptly assign any such revenue to the Department and to direct that any future payments be made directly to the Department.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date set forth below:

_____	_____
STATE OF FLORIDA DEPT. OF TRANSPORTATION RESEARCH CENTER	EMPLOYEE DATE:_____
DATE:_____	

Appendix C: Instructions for Completing a Scope of Service

also available at: http://www.dot.state.fl.us/research-center/Project_Mgt_Resources.shtm

Instructions for Completing a Scope of Service

Task work orders must be in compliance with the requirements of Section 287.058, Florida Statutes. Task work orders must include the following information:

- A scope of work (Exhibit A) that clearly establishes all tasks the principal investigator is required to perform;
- Quantifiable, measurable, and verifiable units of deliverables that must be received and accepted in writing by the contract manager before payment. Each deliverable must be directly related to the scope of work and specify a performance measure. As used in this paragraph, the term "performance measure" means the required minimum acceptable level of service to be performed and criteria for evaluating the successful completion of each deliverable;
- A completed deliverables schedule (the Research Center requires, at a minimum, a deliverable every six months);
- A detailed budget by task; and
- Division of Sponsored Research approval.

Required documents should be sent to Jennifer.clark@dot.state.fl.us in Word format.

NOTE: All projects are contingent upon an acceptable scope of work, budget, and deliverables schedule. Approval to move forward with scope development does not authorize the university to incur any expenses in preparation of scope or hiring of project personnel.

Additional resources may be found at http://www.fdot.gov/research/ under the Project Resources tab.

Exhibit A – Scope of Service

Project Title:

Principal Investigator: Name

University

Address

Email address:

Phone number:

DSR Administrative Contact: Name

University

Address

Email address:

Phone number:

Project Manager: Name

Office

Address

Email address:

Phone number:

Background Statement

This paragraph should describe the need for the research.

Project Objective(s)

Describe the purpose and objective(s) of the project.

Project Kick-off Teleconference

A kick-off teleconference is required for all projects. The following language must be included:

The principal investigator will schedule a kick-off meeting to be held within the first 30 days of task work order execution. The kick-off meeting will consist of a webinar at least 30 minutes in length. The purpose of the meeting is to review the tasks, deliverables, deployment plan, timeline, and expected/anticipated project outcomes and their potential for implementation and benefits. The principal investigator shall prepare a presentation following the template provided at https://www.fdot.gov/research/project-mgt-resources.shtm.

The project manager, principal investigator, and research performance coordinator shall attend. Other parties may be invited, if appropriate.

Supporting Tasks and Deliverables:

Describe the task(s) necessary to achieve the objective(s) and deliverable(s). Each deliverable must be directly related to a specified task. All deliverable(s) must be submitted to the Research Center at research.center@dot.state.fl.us and must contain the contract number, task work order number, and deliverable number as identified in the scope. Also, describe what the deliverable will contain.

Task (insert #): Draft Final and Closeout Teleconference

This task will contain 2 deliverables: the draft final report and the closeout teleconference. The draft final report and closeout teleconference should be identified in the budget as one task with a specific dollar amount.

Deliverable (insert #): Ninety (90) days prior to the end date of the task work order, the university will submit a draft final report in PDF and Word formats to research.center@dot.state.fl.us.

The draft final report will contain *(insert description of information the report will contain)*.

The draft final and final reports must follow the Guidelines for University Presentation and Publication of Research and the FDOT Research Final Report Style Guide available at https://www.fdot.gov/research/project-mgt-resources.shtm.

The report must be well-written and edited for technical accuracy, grammar, clarity, organization, and format. The report must also comply with section 508 of the United States Workforce Rehabilitation Act of 1973.

Deliverable (insert #): Thirty (30) days prior to the end date of the task work order, the principal investigator will schedule a closeout teleconference. The principal investigator shall prepare a PowerPoint presentation following the template provided at https://www.fdot.gov/research/project-mgt-resources.shtm.

At a minimum, the principal investigator, project manager, and research performance coordinator shall attend. The purpose of the meeting is to review project performance, the deployment plan, and next steps.

Task (insert #) Final Report

The final report should be identified in the budget as one task with a specific dollar amount.

Deliverable (insert #): Upon Department approval of the draft final report, the university will submit the Final Report in PDF and Word formats electronically to the Research Center at research.center@dot.state.fl.us.The Final Report is due by the end date of the task work order.

Use of Subcontractor(s)

If a subcontractor is to work on the project, describe the work the subcontractor will perform. A scope of work and budget must be provided for the subcontractor.

Use of Graduate Student(s) and other Research Assistants

This section explains the need for graduate students and other research assistants, the experience/expertise of the research assistant(s), and the work they will be expected to perform. Tuition costs covered by a FDOT contract are considered payment in kind and a part of the salary package. Tuition costs covered by FDOT are limited in hours to the standard course load defined by the university and in cost to the in-state tuition rate. Tuition will only be covered for semesters in which the student will substantially work on the project covered by the contract.

Equipment

Rule 69I-72.002, Florida Administrative Code states, "All tangible personal property with a value or cost of $1,000 or more and having a projected useful life of one year or more shall be recorded in the state's financial system as property for inventory purposes."

The Department has determined that some property with a value of less than $1,000 should also be recorded in the state's financial system as property for inventory purposes. Universities must adhere to the Department's $1,000 threshold for equipment or items of lesser value appearing on the Exception Property listing. A review of the items on the Exception Property listing will be performed to determine if items fall within this category.

A description of the equipment to be purchased must be included with a copy of quotes obtained. Justification as to why the equipment should be purchased instead of leasing (leasing of equipment is preferred) and specific requirements for the projects is required for all equipment.

Once the equipment has been purchased, the university must immediately provide a copy of the equipment receipt(s), property description, and serial number with the applicable task invoice.

Expenses

Describe any expense items to be purchased, if applicable.

Travel

***Standard Research Center policy is that travel to conferences is not an allowable expenditure*.**

Describe travel that will take place, including justification of the need for travel. Include the traveler's name, position, location(s), purpose and duration.

If travel is budgeted, the following text must appear, as worded:

All travel shall be in accordance with Section 112.061, Florida Statutes. Travel expenses specifically authorized in the agreement shall be submitted using the Department's Travel Form No. 300-000-06, unless the university provides proof of the Department of Financial Services approval to use an alternate travel form. The Department shall not compensate the University for lodging/hotel in excess of $175.00 per day (excluding taxes and fees).

The maximum amount of travel is limited to $(insert amount). The maximum amount of indirect cost on travel is limited to $(insert amount).

Financial Consequences

Payment shall be made only after receipt and approval of goods and services. Deliverable(s) must be received and accepted in writing as specified in the task work order prior to payment.

If the Research Center and/or project manager determine that the performance of the university is unsatisfactory, the Research Center shall notify the university of the deficiency to be corrected, and correction shall be made within a timeframe to be specified by the Research Center. Within five days of notice from the Research Center, the university shall provide the Research Center with a corrective action plan describing how the university will address all issues of contract non-performance, unacceptable performance, failure to meet the minimum performance levels, deliverable deficiencies, or contract non-compliance. If the corrective action plan is unacceptable to the Research Center, the university shall be assessed a non-performance retainage equivalent to 10% of the total invoice amount. The retainage shall be applied to the invoice for the current billing period. The retainage shall be withheld until the university resolves the deficiency. If the deficiency is subsequently resolved, the university may bill the Department for the retained amount during the next billing period. If the university is unable to resolve the deficiency, the funds retained may be forfeited at the end of the task work order period.

Minimum Performance Measures

Performance metrics are defined in this scope of work, which describes the tasks, milestones, and/or deliverables the principal investigator shall accomplish and provide under this task work order. The Research Center will conduct periodic reviews to determine compliance with the tasks, milestones, and/or deliverables.

Publication Provision

If at any time during the TWO, the university desires to publish, in any form, any material developed under the TWO, the university must submit to the Project Manager and the Research Center at

research.center@dot.state.fl.us a written abstract and notification of intent to publish the materials and receive the Project Manager's concurrence to publish. Such approval to publish shall not be unreasonably withheld. If the Project Manager does not provide a written response within 30 days after receipt, the university may publish. The publication must include the following language:

> "The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Florida Department of Transportation or the U.S. Department of Transportation."

Deliverables Schedule

Note: this document will be used by the Research Center to monitor principal investigator (PI) performance and activity on the project. The PI should give careful consideration to the time needed to complete a task(s) and deliverable(s) against current workload. Failure to submit deliverables in a timely manner may result in cancelation of the task work order.

Remember to include kick-off teleconference, submittal of draft final report, closeout teleconference and final report. The Research Center must at a minimum receive a deliverable every 6 months on a project. Failure to submit deliverables in a timely manner may result in cancelation of the task work order.

Deliverable # / Description of Deliverable as provided in the scope (included associated task #)	Anticipated Date of Deliverable Submittal (month/year)	TO BE COMPLETED BY RESEARCH CENTER (performance monitoring)

Appendix D: Task Work Order Amendment Request

Master University Agreement Task Work Order Amendment Request

Contract-TWO #	Amendment #
Title:	
Start Date:	End Date:
Project Manager:	Principal Investigator:

Additional Time Request for additional time for completion of services to mm/dd/yyyy. Justification?

Change to funding: _____ *increase project amount by $_____* _____ *decrease project amount by $_____* _____ *rebudget (Note: cost reimbursable funds cannot be moved to the lump sum category)* *Justification:*

Attach a budget sheet for the requested change.

Change in scope

Describe the change being requested:

Justification:

Attach a revised scope of service and a revised project schedule.

Other modifications:

_____ Change of principal investigator to _____

_____ Change of title to _____

Requestor (provide contact information):

Note: Requests will not be processed without written FDOT project manager approval. Requested modifications must officially be processed as an amendment signed by the Research Center manager and the authorized party for the contractor in order to be reimbursable.

Appendix E: Exception Class Property

Exception Class Property

E-Readers and Tablets
Laptop Computers
Desktop Computers
Hand Cameras and Accessories
Digital Cameras
Generators
Blackberries
Cell Phones and Pagers

Appendix: F: Deployment Plan Survey

Project Information

Please identify any offices that may be affected by the outcome of this research.

Implementation

This section of the survey asks project managers to identify any prerequisites to or requirements for implementation. It should identify potential barriers to implmementation and any actions that should or will need to take place before the research can be put into practice.

- Will implementation of the research results require a change to legislation?
- Will implementation of the research results require a change to an FDOT Rule?
- Will implementation of the research results require a policy change?
- Will implementation of the research results require a change to a procedure or the development of a new procedure or test method?
- Will implementation of the research results require a change to specifications or a new specification?
- Will a demonstration or experimental project be required?
- If this project will result in the development of a product(s), please identify the type(s) of product(s) to be developed.
    - If a product will be developed, please identify any of the following that may be required. If more than one product was identified in the previous question, be sure to identify the need(s) for each product in the comments box provided.
- Will implementation of the research result in the use of any materials included in Buy America requirements contained in 23 CFR 635.410?

Performance Measures

This section of the survey requests project managers to identify performance measures that could be applied to the output and/or outcome of the research. Quantitative measures refer to quantifiable benefits that can be measured. Qualitative measures refer to non-quantifiable benefits, i.e., which are not subject to discrete analysis.

- Can economic benefits be determined if the results of this research are successfully implemented?
- Are there non-economic quantifiable benfits that could be assessed if the research results are successfully implemented?
- Will successful implementation of the research result in a safety enhancement?

- Will successful implementation of the research result in system efficiencies?
- Will successful implementation of the research result in resource savings?
- Will successful implementation of the research result in environmental gains?
- Will successful implementation of the research result in community enrichment?
- Are there any other qualitative benefits that could be measured?

Technology Transfer

The Research Center currently performs a variety of technology transfer activities. These activities are intended to inform practitioners of the research results. They include posting reports online; distributing final reports to national repositories and online transportation resources; using listservs to notify FDOT and non-FDOT recipients of report availability; and production of project cards. This section asks project managers to identify any addititional technology transfer needs. If no additional technology transfer is needed please check that box.

- Are any of the following additional technology transfer efforts needed or expected to be performed? If so, please identify who is anticipated or desired to perform the activity in the comment box below--for example, if your office has a newsletter or hosts a conference/meeting that you anticipate being used to perform technology transfer for this project. If any of the following options is selected as a need, but no provider has yet been identified, please so indicate.
- Please explain the anticipated need for any of the options selected, and identify anticipated venue or provider, if known.

Marketing

Unlike technology transfer, marketing is directed towards a larger, general audience. Current activities include general project summaries, a research showcase magazine, and development of videos. These activities are done in coordination with project managers. In this section, project managers should identify additional marketing efforts that may be warranted.

- A small percentage of projects may warrant additional marketing efforts. With respect to news media options, candidate projects would likely either be highly visible to the public, in which case marketing may be conducted as part of the project, or have a substantial safety or cost-savings benefit.
- Please explain the anticipated need for any of the options selected, and identify anticipated venue or provider, if known

Training

Training may sometimes be needed to implement the results of research, and it may be delivered by a variety of means, including processes already established within the implementing office. This section asks project managers to identify any training that might be needed for the research to be implemented.

- Please identify any of the following that may apply, and provide a brief explanation

Appendix G: Demonstration Project Request Form

Research Project	Enter Title of Research Project or Projects
Contract Number	Number
Research Project Mgr.	Last, First
Demo Project Mgr.	Last, First
Estimated Demo Cost	$0

Description of Requested Demonstration Project

Describe the goal of the demonstration project and how/where it would be implemented: identify involved parties, including FDOT sections and staff, and, if known, the work program project and contractor/s); describe necessary steps and anticipated time to begin the project; anticipated time to complete the project; and describe any post-implementation monitoring/analysis that might be required prior to general implementation.

Impact Statement

Describe anticipated economic and other benefits, scope for full implementation (statewide impact), expected time for full implementation.

Other Comments

Enter other important details.