

State of Florida
Department of Transportation
Research Center
605 Suwannee Street, MS 30
Tallahassee, FL 32399-0450

REQUEST FOR RESEARCH PROPOSAL

RFRP Number: RFRP-16/17-001

Title: Evaluation of Corrosion Inhibiting Materials applied by Impregnation (pressure injection) Methods to Prevent Corrosion of Post-Tensioned Tendons

Proposal Due Date & Time (On or Before): November 3, 2016 at 3:00 PM

This RFRP is open to Florida universities with an executed Master University Agreement on file with the Department.

THIS REQUEST FOR RESEARCH PROPOSAL DOCUMENT IS SUBJECT TO CHANGE. Notice of changes (Addenda), will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal.

CONTACT FOR QUESTIONS:

Patti Brannon
patti.brannon@dot.state.fl.us
850-414-4616

FDOT Research Center
605 Suwannee Street, MS 30
Tallahassee, FL 32399-0450

PRICE PROPOSAL FORM

RFRP Number: RFRP-16/17-001

RFRP Title: Evaluation of Corrosion Inhibiting Materials applied by Impregnation (pressure injection) Methods to Prevent Corrosion of Post-Tensioned Tendons

Services to be provided as specified in attached Exhibit "A", Scope of Services.

The proposer shall attach a detailed budget to support the lump sum price identified per task. The lump sum price per task shall include cost of salaries, overhead, fringe benefits, operating margins, expense and if applicable equipment. Cost for applicable travel shall be identified as a separate item. Payment for travel expenses authorized shall be in accordance with Section 112.061, Florida Statutes and shall be reimbursed as a maximum amount item. Indirect cost is limited to 10%.

	Lump Sum Price
Task 1: Literature Review	\$
Task 2: Exposure and Electrochemical Testing	\$
Task 3: Effects of the Impregnation Material	\$
Task 4: Laboratory Experimentation	\$
Task 5: Draft Final and Closeout Presentation	\$
Task 6: Final Report	\$
	Maximum Amount
Travel	\$
Indirect Cost on Travel	\$

The Research Center has a total maximum budgetary amount of \$250,000.00 for this project. Proposals received that exceed the total maximum budgetary amount will be considered non-responsive.

University Name: _____

Address: _____

City, State, Zip: _____

Telephone: (____) _____ Fax Number: (____) _____

Contact Person: _____

E-Mail Address: _____

INTRODUCTION SECTION

1. INVITATION

The Research Center, requests written proposals from qualified Universities to provide an evaluation of corrosion inhibiting materials applied by impregnation (pressure injection) methods to prevent corrosion of post-tensioned tendons. It is anticipated that the term of the contract will begin upon execution of the task work order and be effective through the timeframe proposed by the university.

The Research Center intends to award this contract to the responsive and responsible University whose proposal is determined to be the most advantageous to the Department. For the purpose of this document, the term "University" means the prime University acting on its own behalf and those individuals, partnerships, firms, or corporations comprising the Universities team. The term "proposal" means the complete response of the University to the Request for Research Proposals (RFRP).

2. TIMELINE

Provided below is a list of critical dates and actions. These dates are subject to change. Notices of changes (Addenda) will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal.

<u>ACTION / LOCATION</u>	<u>DATE</u>	<u>LOCAL TIME</u>
DEADLINE FOR TECHNICAL QUESTIONS - (There is no deadline for administrative questions)	09-29-2016	3:00 PM
PROPOSALS DUE, ON OR BEFORE - (Technical and Price Proposal) 605 Suwannee Street, SE 063 Tallahassee, FL 32399-0450	11-03-2016	3:00 PM
PUBLIC OPENING / MEETING (Price Proposal) - 605 Suwannee Street, Room 348 Tallahassee, FL 32399-0450 Teleconference Line: 850-414-4972 PIN 490513	11-17-2016	1:00 PM
POSTING OF INTENDED AWARD -	11-18-2016	9:00 AM

3. AGENDA FOR PUBLIC MEETINGS

Agenda – Price Proposal Opening & Intended Award Meeting

Agenda for Price Proposal Opening and Intended Award meeting for RFRP-16/17-001:

Starting Time: see "Timeline" in RFRP solicitation

- Opening remarks of approx. 2 minutes by Research Center personnel.
- Public input period – To allow a maximum of 15 minutes total for public input related to the RFRP solicitation.
- At conclusion of public input or 15 minutes, whichever occurs first, the technical evaluation scores will be summarized.
- Announce the universities that did not achieve the minimum technical score.
- Announce the universities that achieved the minimum technical score and their price(s) as price proposals are opened.
- Calculate price scores and add to technical scores to arrive at total scores.

- Announce Proposer with highest Total Score as Intended Award.
- Announce time and date the decision will be posted on the Research Center website.
- Adjourn.

4. SPECIAL ACCOMMODATIONS

Any person with a qualified disability requiring special accommodations at a pre-proposal conference, public meeting, oral presentation and/or opening shall contact the contact person at the phone number, e-mail address or fax number provided on the title page at least five (5) working days prior to the event. If you are hearing or speech impaired, please contact this office by using the Florida Relay Services which can be reached at 1 (800) 955-8771 (TDD).

SPECIAL CONDITIONS

1. QUESTIONS & ANSWERS

In accordance with section 287.057(23), Florida Statutes, respondents to this solicitation or persons acting on their behalf may not contact, between the release of the solicitation and the end of the 72-hour period following the agency posting the notice of intended award, excluding Saturdays, Sundays, and state holidays, any employee or officer of the executive or legislative branch concerning any aspect of this solicitation, except in writing to the contact person provided in the solicitation documents. Violation of this provision may be grounds for rejecting a response.

Any technical questions arising from this Request for Research Proposal must be forwarded, in writing to, Patti Brannon at patti.brannon@dot.state.fl.us. Questions must be received no later than the time and date reflected on the Timeline. The Research Center's written response to written inquiries will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting their proposal.

Questions regarding administrative aspects of the proposal process should be directed to Patti Brannon in writing at patti.brannon@dot.state.fl.us or by phone at 850-414-4616.

2. ORAL INSTRUCTIONS / CHANGES TO THE REQUEST FOR PROPOSAL (ADDENDA)

No negotiations, decisions, or actions will be initiated or executed by a proposer as a result of any oral discussions with a State employee. Only those communications which are in writing from the Department will be considered as a duly authorized expression on behalf of the Department.

Notices of changes (Addenda) will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal.

3. SCOPE OF SERVICES

Details of the services, information and items to be furnished by the University are described in Exhibit "A", Scope of Services, attached hereto and made a part hereof.

4. INTENDED AWARD

The Research Center intends to award a contract to the responsive and responsible university with the highest cumulative total points for the evaluation criteria specified herein. The Intended Award decision will be announced after final evaluation and totaling of scores at the Price Proposal opening specified in the Timeline (See Introduction Section 2 Timeline). If the Research Center is confronted with identical pricing or scoring from multiple universities, the Research Center shall determine the order of award in accordance with

section 295.187(4), Florida Statutes, and Rule 60A-1.011 Florida Administrative Code.

5. QUALIFICATIONS

5.1 General

The Department will determine whether the Proposer is qualified to perform the services being contracted based upon their proposal demonstrating satisfactory experience and capability in the work area. The Proposer shall identify necessary experienced personnel and facilities to support the activities associated with this proposal.

5.2 Qualifications of Key Personnel

Those individuals who will be directly involved in the project should have demonstrated experience in the areas delineated in the scope of work. Individuals whose qualifications are presented will be committed to the project for its duration unless otherwise accepted by the Research Center.

6. METHOD OF COMPENSATION

For the satisfactory performance of the services describe in attached Exhibit A, Scope of Service, the University shall be paid as described in the attached Exhibit B, Method of Compensation.

7. CONTRACT DOCUMENT

The Master University Agreement will serve as the contracting document. The Research Center will issue a task work order to the University receiving the award.

8. REVIEW OF PROPOSER'S FACILITIES & QUALIFICATIONS

After the proposal due date and prior to contract execution, the Research Center reserves the right to perform or have performed an on-site review of the University's facilities and qualifications. This review will serve to verify data and representations submitted by the University and may be used to determine whether the University has an adequate, qualified, and experienced staff, and can provide overall management facilities.

Should the Research Center determine that the proposal has material misrepresentations or that the size or nature of the University's facilities or the number of experienced personnel (including technical staff) are not adequate to ensure satisfactory contract performance, the Research Center has the right to reject the proposal.

9. PROTEST OF REQUEST FOR PROPOSAL SPECIFICATIONS

Any person who is adversely affected by the contents of this Request for Research Proposal must file the following with the Department of Transportation, Clerk of Agency Proceedings, Office of the General Counsel, 605 Suwannee Street, Mail Station 58, Tallahassee, Florida 32399-0450:

1. A written notice of protest within seventy-two (72) hours after the posting of the solicitation, (the notice of protest may be Faxed to 850-414-5264), and
2. A formal written protest in compliance with Section 120.57(3), Florida Statutes, within ten (10) days of the date on which the written notice of protest is filed.

Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

10. RESERVATIONS

The Research Center reserves the right to accept or reject any or all proposals received and reserves the right to make an award without further discussion of the proposals submitted. Therefore, the proposals should be submitted initially in the most favorable manner. It is understood that the proposal will become a part of the Research Center's official file, without obligation to the University.

11. ADDITIONAL TERMS & CONDITIONS

No conditions may be applied to any aspect of the RFRP by the proposer. Any conditions placed on any aspect of the proposal documents by the proposer may result in the proposal being rejected as a conditional proposal. The only recognized changes to the RFRP prior to proposal opening will be a written Addenda issued by the Department.

12. RESPONSIVENESS OF PROPOSALS

12.1 Responsiveness of Proposals

Proposals will not be considered if not received by the Research Center **on or before** the date and time specified as the due date for submission. All proposals must be typed or printed in ink. A responsive proposal is an offer to perform the scope of services called for in this Request for Research Proposal in accordance with all requirements of this Request for Research Proposal and receiving seventy (70) points or more on the Technical Proposal. Proposals found to be non-responsive shall not be considered. Proposals may be rejected if found to be irregular or not in conformance with the requirements and instructions herein contained. A proposal may be found to be irregular or non-responsive by reasons that include, but are not limited to, failure to utilize or complete prescribed forms, conditional proposals, incomplete proposals, indefinite or ambiguous proposals, and improper and/or undated signatures.

12.2 Multiple Proposals

Proposals may be rejected if more than one proposal is received from a University. Such duplicate interest may cause the rejection of all proposals in which such University has participated. Subcontractors may appear in more than one proposal.

12.3 Other Conditions

Other conditions which may cause rejection of proposals include, but are not limited to, evidence of collusion among Universities, obvious lack of experience or expertise to perform the required work, failure to perform or meet financial obligations on previous contracts. University's whose proposals, past performance, or current status do not reflect the capability, integrity, or reliability to fully and in good faith perform the requirements of the Contract may be rejected as non-responsible. The Research Center reserves the right to determine which proposals meet the requirements of this solicitation, and which Proposers are responsive and responsible.

13. PROPOSAL FORMAT INSTRUCTIONS

13.1 General Information

This section contains instructions that describe the required format for the proposal. All proposals submitted shall contain two parts and be marked as follows:

PART I TECHNICAL PROPOSAL NUMBER RFRP- 16/17-001
(One Separately Sealed Package for Technical)

PART II PRICE PROPOSAL NUMBER RFFP-16/17-001
(One Separately Sealed Package for Prices)

THE SEPARATELY SEALED PACKAGES MAY BE MAILED TOGETHER IN ONE ENVELOPE OR BOX.

13.2 Technical Proposal (Part I) (four (4) copies total)
(Do not include price information in Part I)

The Proposer must submit one (1) original and three (3) copies of the technical proposal which are to be divided into the sections described below. Since the Department will expect all technical proposals to be in this format, failure of the Proposer to follow this outline may result in the rejection of the proposal. The technical proposal must be submitted in a separate sealed package marked "TECHNICAL PROPOSAL NUMBER RFRP-16/17-001".

1. APPROACH TO PROJECT

The Proposer shall provide an Executive Summary to be written in nontechnical language to summarize the Proposer's understanding, approach for accomplishing the services, and knowledge of corrosion principles.

2. PROPOSER'S MANAGEMENT PLAN

The Proposer shall provide a management plan which describes administration, management and key personnel.

a. Schedule, Commitment, Responsiveness

The Proposer should indicate any modifications to scope tasks or propose new tasks along with justification and purpose. Indicate the project time for execution of each task and its delivery.

b. Means of Coordination & Communication

The Proposer should include the means and frequency of communications with project manager to ensure timely completion of tasks, deliverables, and consequent final report.

c. Identification of Key Personnel

The Proposer should identify key personnel executing each project task, their qualifications, and their duties for this project as well as their other academic and research commitments. Include proposed subcontractors, tasks to be executed, and time of availability.

3. PROPOSER'S TECHNICAL PLAN

The Proposer shall provide a technical plan which explains their technical approach, facility capabilities, and prior relevant experience.

a. Purpose

The Proposer should provide a detailed technical discussion that demonstrates an understanding of the project scope of work and purpose of the research.

b. General Requirements

The Proposer should provide a technical summary of each task and the proposed tests, experimentation or other means to reach each task goal.

c. Innovative Strategies

The Proposer should describe any innovative approach that would enhance the requested research and its benefits.

d. Testing Facilities

The Proposer should describe the intended research facilities and equipment available to execute the proposed research.

e. Quality Control

The Proposer should describe the intended means of verifying the quality of the work being

performed and frequency of such means.

4. WORK PLAN

The Proposer shall provide a Work Plan which sets forth on an average the estimated staff-hours for each skill classification that will be utilized to perform the work required and a Deliverables Schedule (attached) that identifies the submittal date of each deliverable.

13.3 Price Proposal (Part II) (two (2) copies)

The price proposal information is to be submitted in a separate sealed package marked "PRICE PROPOSAL NUMBER RFRP-16/17-001". The Price Proposal information shall be submitted on the forms provided in the Request for Research Proposal.

13.4 Presenting the Proposal

The proposal shall be limited to a page size of eight and one-half by eleven inches (8½" x 11"). Foldout pages may be used, where appropriate, but should not exceed five (5) percent of the total number of pages comprising the proposal. Type size shall not be less than 10 point font. Bindings and covers will be at the Proposer's discretion.

Unnecessarily elaborate special brochures, art work, expensive paper and expensive visual and other presentation aids are neither necessary nor desired.

It is recognized that existing financial reports, documents, or brochures, such as those that delineate the Proposer's general capabilities and experience, may not comply with the prescribed format. It is not the intent to have these documents reformatted and they will be acceptable in their existing form.

14. COSTS INCURRED IN RESPONDING

This Request for Research Proposal does not commit the Research Center or any other public agency to pay any costs incurred by a university in the submission of a proposal or to make necessary studies or designs for the preparation thereof, nor to procure or contract for any articles or services.

15. MAIL OR DELIVER PROPOSAL TO: (DO NOT FAX OR SEND BY E-MAIL)

**Florida Department of Transportation
Attention: Patti Brannon
Research Center
605 Suwannee Street, MS 30
Tallahassee, FL 32399-0450
Phone # (850) 414-4616**

It is the proposer's responsibility to assure that the proposal (Technical and Price proposal) is delivered to the proper place **on or before** the Proposal Due date and time (See Introduction Section 2 Timeline). Proposals which for any reason are not so delivered will not be considered.

By submitting a proposal, the University represents that it understands and accepts the terms and conditions to be met and the character, quality and scope of services to be provided.

All proposals and associated forms shall be signed and dated in ink by a duly authorized representative of the Proposer.

Each University shall fully acquaint itself with the conditions relating to the performance of the services under the conditions of this Request for Research Proposal. This may require an on-site observation.

16. MODIFICATIONS, RESUBMITTAL AND WITHDRAWAL

Proposers may modify submitted proposals at any time prior to the proposal due date. Requests for modification of a submitted proposal shall be in writing and must be signed by an authorized signatory of the proposer. Upon receipt and acceptance of such a request, the entire proposal will be returned to the proposer and not considered unless resubmitted by the due date and time. Proposers may also send a change in a sealed envelope to be opened at the same time as the proposal. The RFRP number, due date and time should appear on the envelope of the modified proposal.

17. PROPOSAL OPENING

All proposal openings are open to the public. Technical Proposals will be opened by the Research Center at the date, time and location in the Timeline (See Introduction Section 2 Timeline). Price Proposals, which have a corresponding responsive Technical Proposal, will be opened by the Research Center at the date, time and location in the Timeline (See Introduction Section 2 Timeline).

18. PROPOSAL EVALUATION

18.1 Evaluation Process:

A Technical Review Committee (TRC) will be established to review and evaluate each proposal submitted in response to this Request for Research Proposal (RFRP). The TRC will be composed of at least three (3) persons who collectively have experience and knowledge in the program areas and service requirements for which the commodities and/or contractual services are sought.

The Research Center will distribute to each member of the TRC a copy of each technical proposal. The TRC members will independently evaluate the proposals on the criteria and point system established in the section below entitled "Criteria for Evaluation" in order to assure that proposals are uniformly rated. Due to the complexity of certain procurements, the TRC members are authorized to consult with subject matter experts for the purpose of gathering information, if needed. The independent evaluations will be sent to the Research Center and averaged for each university. Proposing firms must obtain an average score of seventy (70) points or higher on the Technical Proposal to be considered responsive. Should a Proposer receive fewer than seventy (70) points for their average Technical Proposal score, the Price Proposal will not be opened.

During the process of evaluation, the Research Center will conduct examinations of proposals for responsiveness to requirements of the RFRP. Those determined to be non-responsive will be automatically rejected.

18.2 Price Proposal

The Proposer shall complete the Price Proposal form and submit as part of the Price Proposal Package. Any proposal in which this form is not used or in which the form is improperly executed may be considered non-responsive and the proposal will be subject to rejection. The university's completed form shall become a part of the contract upon award of the contract.

The Research Center will open Price Proposals in accordance with Section 17, Proposal Openings. The Research Center will review and evaluate the price proposals and prepare a summary of its price evaluation. The Research Center will assign points based on price evaluation criteria identified herein.

18.3 Criteria for Evaluation

Proposals will be evaluated and graded in accordance with the criteria detailed below.

a. Technical Proposal (100 Points)

Technical evaluation is the process of reviewing the Proposer's response to evaluate the experience, qualifications, and capabilities of the proposers to provide the desired services and assure a quality product.

The following point system is established for scoring the technical proposals:

	<u>Point Value</u>
1. Approach to Project	30
2. Management Plan	30
3. Technical Plan	30
4. Work Plan	10

c. Price Proposal (5 Points)

Price evaluation is the process of examining a prospective price without evaluation of the separate cost elements and proposed profit of the potential provider. Price analysis is conducted through the comparison of price quotations submitted.

The criteria for price evaluation shall be based upon the following formula:

$$\underline{(\text{Low Price} / \text{Proposer's Price}) \times \text{Price Points} = \text{Proposer's Awarded Points}}$$

19. POSTING OF INTENDED DECISION/AWARD

19.1 The Research Center's decision will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> on date and time in the Timeline, and will remain posted for a period of seventy-two (72) hours. Any proposer who is adversely affected by the Research Center's recommended award or intended decision must file the following with the Department of Transportation, Clerk of Agency Proceedings, Office of the General Counsel, 605 Suwannee Street, Mail Station 58, Tallahassee, Florida 32399-0450:

1. A written notice of protest within seventy-two (72) hours after posting of the Intended Award, (the notice of protest may be Faxed to 850-414-5264), and
2. A formal written protest and protest bond in compliance with Section 120.57(3), Florida Statutes, within ten (10) days of the date on which the written notice of protest is filed. At the time of filing the formal written protest, a bond (a cashier's check or money order may be accepted) payable to the Department must also be submitted in an amount equal to one percent (1%) of the estimated contract amount based on the contract price submitted by the protestor.

Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

19.2 - Inability to Post:

If the Research Center is unable to post as defined above, the Research Center will notify all proposers by electronic notification by mail and/or telephone. The Research Center will provide notification of any future posting in a timely manner.

19.3 - Request to Withdraw Proposal:

Requests for withdrawal will be considered if received by the Research Center, in writing, within seventy-two (72) hours after the price proposal opening time and date. Requests received in accordance with this provision will be granted by the Research Center upon proof of the impossibility to perform based upon obvious error on the part of the proposer.

20. AWARD OF THE CONTRACT

The Research Center will issue a task work order from the master university agreement receiving the

award. Services will be authorized to begin upon Department execution of the task work order.

Exhibit A – Scope of Service

Evaluation of Corrosion Inhibiting Materials applied by Impregnation (pressure injection) Methods to Prevent Corrosion of Post-Tensioned Tendons

Background:

Post-tensioning tendons on bridges are provided with several levels of protection to prevent corrosion. Typically these tendons are placed inside ducts (metallic or non-metallic) and are encased in grout to protect the tendons from the environment such that no corrosion develops. However, sometimes incorrect grouting procedures or deficiencies of the post-tensioning grouts used for protection have proven to promote accelerated corrosion of the tendons.

The only available technology at this time to prevent the development of corrosion in voided or deficient grout tendons is "tendon impregnation". This technology uses the interstitial spaces between the tendon wires to saturate the wire surfaces and the surrounding grout with a fluid material that prevents the flow of current produced by corrosion macro cells within the tendon system therefore inhibiting the onset of corrosion.

It has been demonstrated that tendon impregnation can be accomplished for distances up to 250 feet from a single injection port with pressure not exceeding 10 psi.

Preliminary testing results of the technology and the impregnation material has been very positive, and the impregnation system has been used on several bridges in an effort to prevent the development of corrosion activity.

Objectives:

The goal of this project is to evaluate the long term effectiveness and the service life of the material(s) actually used for impregnation of tendons and identify other materials that could produce better end results.

In addition, the project will evaluate the effects of the impregnation methods on the physical characteristics of the tendon system to determine applicability to bonded tendons.

It is anticipated that this project will include subcontracted work to provide and inject the tendon test specimens.

Tasks:

The proposal shall include as a minimum the following tasks:

Project Kickoff Teleconference

The university will schedule a kickoff meeting that shall be held within the first 30 days of contract execution. This kickoff 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 of benefits. The vendor shall prepare a presentation following the template provided at

http://www.dot.state.fl.us/research-center/Program_Information/Research.Performance/kickoff.meeting.pdf

The project manager, principal investigator, and research performance coordinator shall

attend. Other parties may be invited if appropriate.

Task 1: Perform a literature review on tendon impregnation systems to identify availability, advantage and disadvantages of each system. Determine if other (non-commercialized) similar materials are available that could be used for impregnation to mitigate corrosion.

Identify other suitable materials which could be impregnated into tendons that will enhance the corrosion mitigation properties of the existing tendon impregnation systems.

Task 1 Deliverable: Upon completion of Task 1, the university will provide to the Research Center at research.center@dot.state.fl.us a written report of the results from the Task 1 literature search and identified material(s) or product(s) to be further evaluated. The report must include the materials to be evaluated and the tests methods determined necessary for evaluation as to meet the project objectives.

Task 2: Conduct exposure and electrochemical testing to characterize the ability of the commercialized and other identified tendon impregnation material(s) to prevent or delay the onset of corrosion on new and in-service tendons using proper size laboratory specimens of impregnated tendons.

Evaluate the ability of the tendon impregnation material(s) to arrest already existing corrosion of in-service tendons.

Task 2 Deliverable: Upon completion of Task 2, the university will provide to the Research Center at research.center@dot.state.fl.us a written report discussing the results of the experimentation and testing from Task 2.

Task 3: This task shall identify the effects of the impregnation material on the physical properties of the tendon system, and its suitability for use on internal and external tendon systems.

Evaluate the physical characteristics of the impregnation material(s) as needed to make the material injectable including the effect of the material regarding the bond of the strand to surrounding protective grout.

Task 3 Deliverable: Upon completion of Task 3, the university will provide to the Research Center at research.center@dot.state.fl.us a written report discussing the results of the experimentation and testing from Task 3.

Task 4: Conduct laboratory experimentation to determine the effective service period of commercialized and identified non-commercialized tendon impregnation material(s) and the degradation mechanisms.

Based on the above results, identify the effects and procedures for future re-impregnation on tendons should this be necessary to ensure the service life of the tendons.

Task 4 Deliverable: Upon completion of Task 4, the university will provide to the Research Center at research.center@dot.state.fl.us a written report discussing the results of the experimentation and testing from Task 4.

Task 5: Draft Final and Closeout Teleconference

Task 5a Deliverable: Ninety (90) days prior to the end date of the contract, the university will submit a draft final report to research.center@dot.state.fl.us. The draft final report will contain at a minimum a description of all the work conducted, a discussion of the test results, final conclusions and recommendation, and related documents.

The draft final report and final reports must follow the Guidelines for Vendor Presentation and Publication of Research available at <http://www.dot.state.fl.us/research-center/docs/T2/University.Guidelines.2016.pdf>

The report must be well-written and edited for technical accuracy, grammar, clarity, organization, and format.

Deliverable 5b: Thirty (30) days prior to the end date of the task work order, the university will schedule a closeout teleconference. The university shall prepare a Powerpoint presentation following the template provide at http://www.dot.state.fl.us/research-center/Program_Information/Research.Performance/closeout.meeting.reqs.pdf

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 6: Final Report

Deliverable 6: Upon Department approval of the draft final report, the university will submit the Final Report on two (2) CDs. Both CDs shall contain the report in PDF and Word format. CDs must be labeled in a professional manner and include contract number, project title, and date.

The final report is due by the end date of the task work order and should be mailed to the Florida Department of Transportation, Research Center, 605 Suwannee Street, MS 30, Tallahassee, FL 32399-0450.

**Exhibit B
Method of Compensation**

1.0 Purpose

This Exhibit defines the limits of compensation to be made to the University for the services set forth in Exhibit "A" and the method by which payment shall be made.

2.0 Compensation

For the satisfactory performance of services detailed in Exhibit "A", the University shall be paid up to a Maximum Amount to be determined by the Department. The Maximum Amount shall consist of the following amounts:

Task 1 Deliverable	\$Lump Sum Amount to be determined by the Department
Task 2 Deliverable	\$Lump Sum Amount to be determined by the Department
Task 3 Deliverable	\$Lump Sum Amount to be determined by the Department
Task 4 Deliverable	\$Lump Sum Amount to be determined by the Department
Task 5 Deliverable	\$Lump Sum Amount to be determined by the Department
Task 6 Deliverable	\$Lump Sum Amount to be determined by the Department
Travel	\$Maximum Amount to be determined by the Department
Indirect Cost on Travel	\$Maximum Amount to be determined by the Department

3.0 Progress Payments

The University shall submit an invoice upon approval of each task deliverable in a format acceptable to the Research Center. Lump Sum payment shall be made to the Vendor for the satisfactory completion of each task and approval by the Department of each task deliverable.

Invoices shall be submitted to the Florida Department of Transportation, Research Center, 605 Suwannee Street, MS 30, Tallahassee, FL 32399-0450 or electronically to the Research Center at research.center@dot.state.fl.us

4.0 Tangible Personal Property

This task work order does not include the purchase of Tangible Personal Property, as defined in Section 273.02 Florida Statute.