

University Handbook • 2017

THE RESEARCH AND TECHNOLOGY
IMPLEMENTATION DIVISION

TEXAS DEPARTMENT OF TRANSPORTATION

Chapter 1 Introduction

Table of Contents

Section 1	1-2
TxDOT Research and Implementation Program	1-2
Research and Technology Implementation Division- Introduction	1-2
TxDOT Values, Vision, Mission, Goals, and Priorities.....	1-2
Section 2	1-5
Conduct	1-5
Non-Discrimination	1-5
Gratuities and Lobbying.....	1-5
Conflict of Interest.....	1-5
Disclosures	1-6
Section 3	1-7
Using This Handbook	1-7
Using this Handbook.....	1-7
Section 4	1-8
RTI – Program Overview	1-8
Program Overview	1-8

Section 1

TxDOT Research and Implementation Program

Research and Technology Implementation Division- Introduction

Texas Department of Transportation's (TxDOT) Research and Implementation Program (Research Program), is managed by the Research and Technology Implementation Division (RTI). The Research Program provides for TxDOT to contract with Texas state-supported institutions of higher education, through a competitive process, to improve Texas transportation.

Products from the Research Program include devices, analytical tools, new materials, new or improved specifications, improved testing methods, as well as less tangible concepts such as knowledge, or guidance. Research products impact virtually every area of TxDOT's core operations. Dividends may be in terms of lives saved, more efficient operations, improved services, or cost savings. A key to the success of the Research Program is that it draws upon the expertise of department personnel from across the state. The research conducted must closely align with the goals and priorities of TxDOT.

Research and Implementation projects are managed by RTI's Project Managers (PM). The PMs work with TxDOT subject matter experts to form a TxDOT Project Team. This team works closely with the University Project Supervisor.

TxDOT Values, Vision, Mission, Goals, and Priorities

Values

- People
People are the Department's most important customer, asset, and resource. The well-being, safety, and quality of life for Texans and the traveling public are of the utmost concern to the Department. We focus on relationship building, customer service, and partnerships.
- Accountability
We accept responsibility for our actions and promote open communication and transparency at all times.
- Trust
We strive to earn and maintain confidence through reliable and ethical decision-making.
- Honesty
We conduct ourselves with the highest degree of integrity, respect, and truthfulness.

Vision

- Forward thinking leader delivering mobility, enabling economic opportunity, and enhancing quality of life for Texas.

Mission Statement

Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.

Goals and Objectives

Deliver the Right Projects - Implement effective planning and forecasting processes that deliver the right projects on-time and on-budget.

- Use scenario-based forecasting, budgeting, and resource management practices to plan and program projects.
- Align plans and programs with strategic goals.
- Adhere to planned budgets and schedules.
- Provide post-delivery project and program analysis.

Focus on the Customer - People are at the center of everything we do.

- Be transparent, open, and forthright in agency communications.
- Strengthen our key partnerships and relationships with a customer service focus.
- Incorporate customer feedback and comments into agency practices, project development, and policies.
- Emphasize customer service in all TxDOT operations.

Foster Stewardship – Ensure efficient use of state resources.

- Use fiscal resources responsibly.
- Protect our natural resources.
- Operate efficiently and manage risk.

Optimize System Performance – Develop and operate an integrated transportation system that provides reliable and accessible mobility, and enables economic growth.

- Mitigate congestion.
- Enhance connectivity and mobility.
- Improve the reliability of our transportation system.
- Facilitate the movement of freight and international trade.
- Foster economic competitiveness through infrastructure investments.

Preserve our Assets – Deliver preventive maintenance for TxDOT’s system and capital assets to protect our investments.

- Maintain and preserve system infrastructure to achieve a state of good repair and avoid asset deterioration.
- Procure, secure, and maintain equipment, technology, and buildings to achieve a state of good repair and prolong life cycle and utilization.

Promote Safety – Champion a culture of safety.

- Reduce crashes and fatalities by continuously improving guidelines and innovations along with increased targeted awareness and education.
- Reduce employee incidents

Value our Employees - Respect and care for the well-being and development of our employees.

- Emphasize internal communications.
- Support and facilitate the development of a successful and skilled workforce through recruitment, training and mentoring programs, succession planning, trust, and empowerment.
- Encourage a healthy work environment through wellness programs and work-life balance.

TxDOT Priorities.

- Be the safest DOT in the United States.
- Further strengthen and enhance our relationship with Metropolitan Planning Organizations, local, governments, and other key stakeholders.
- Act as a resource for transportation funding.
- Research transportation technology solutions.
- Develop innovative maintenance approaches that reduce costs and improve and preserve transportation system conditions.
- Develop effective information systems.

Section 2 Conduct

Non-Discrimination

As stated in TxDOT's Research Manual, it is TxDOT's policy that no person shall on the grounds of race, color, religion, sex, national origin, genetic information, disability, military status, or age be excluded from participation in or be denied the benefits of, or otherwise be subjected to discrimination, under any TxDOT program, including the research program. This policy is reflected in the Cooperative Research and Implementation Agreement (CRIA).

Gratuities and Lobbying

By signing the CRIA, the university, or university system, agrees not to offer gifts to TxDOT employees or to influence (lobby) Federal employees. These provisions are contained in Articles of each CRIA.

Conflict of Interest

Members of research committees may have no direct or indirect financial interest in any project they are evaluating or managing. Nor may they have family, personal, or business relationships with university employees that would create a conflict of interest, or the appearance of a conflict of interest, between their duties as a member of a research committee and their personal or business interests.

University shall only assign an employee responsible for the design, conduct or reporting of research to a project funded under the terms of the CRIA who is in full compliance with the University's Financial Conflicts of Interest Policy.

Each Project Team member and all RTI employees are expected to disclose any potential conflicts of interest.

Each situation is then evaluated and structured to avoid true or apparent conflicts of interest.

Disclosures

Final data generated or produced in the course of executing the contracts may not be disclosed if the Sponsor Agency reasonably determines that the premature disclosure of such data would adversely affect public safety, the protection of intellectual property, rights of the institution of higher education, publication rights in professional scientific publications, or valuable confidential information of the institution of higher education or a third party.

Section 3 Using This Handbook

Using this Handbook

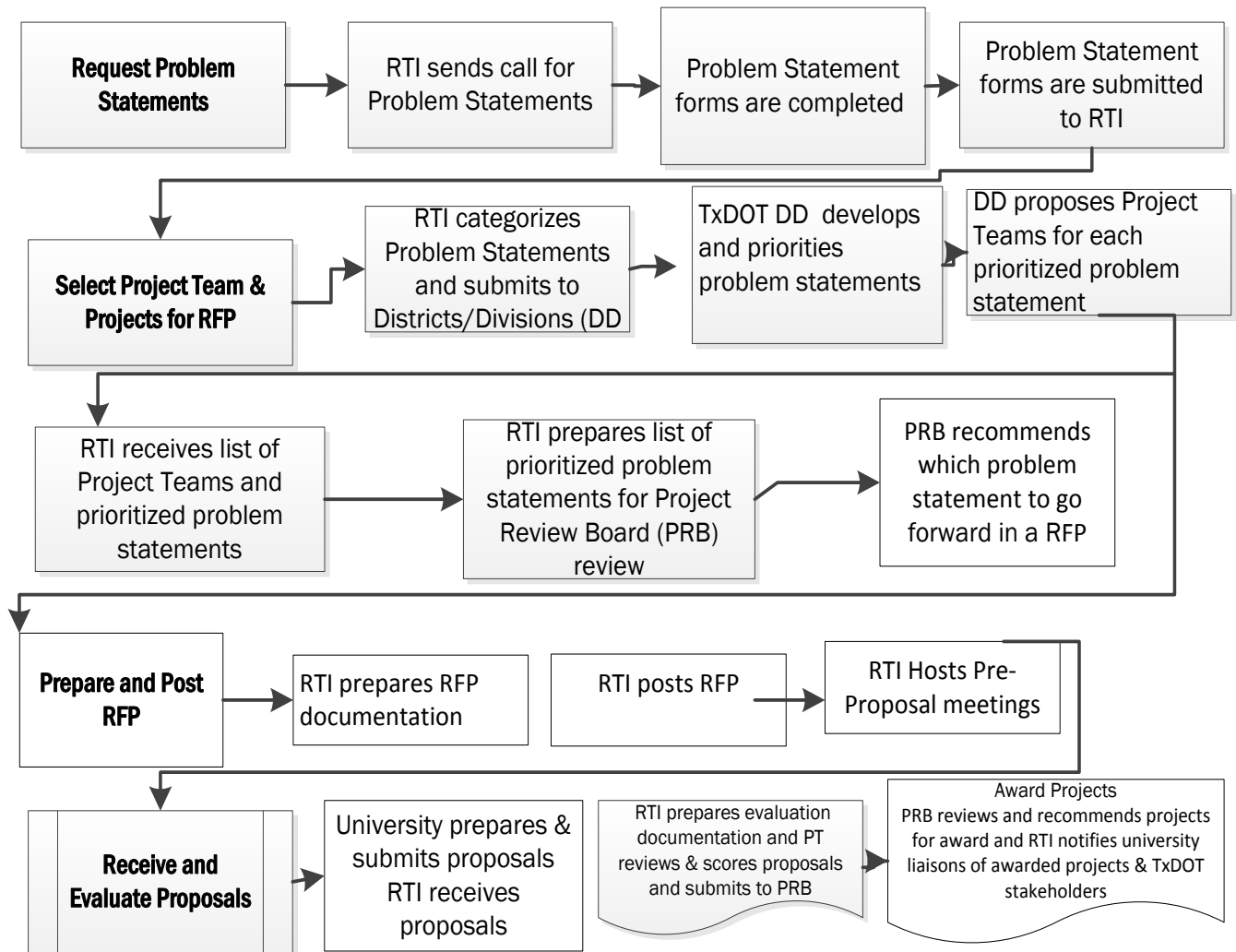
This handbook, TxDOT's *Research Manual*, and the CRIA outline the program policies and provide an overview of TxDOT's Research Program.

This handbook provides the framework and policies under which related procedures are developed. This handbook establishes the procedures that implement the policies expressed in the Research Manual. By signing a CRIA, each university, or university system, agrees to TxDOT procedures. This handbook presents those procedures to universities active in TxDOT's Research Program.

Section 4 RTI – Program Overview

Program Overview

The diagram below is an outlines of the Program Overview



Chapter 2 Request for Proposals (RFP)

Table of Contents

Section 1	2-2
Request for Proposals	2-2
Process	2-2
Requirements.....	2-3
Section 2	2-4
Eligible Proposers	2-4
Eligible Proposers	2-4
Joint Proposals with Texas State Supported Universities	2-4
Subcontracting.....	2-4
Section 3	2-5
Communications with TxDOT	2-5
Project Team Non-Disclosure Agreement.....	2-5
Throughout the RFP	2-5
Announcement of Selections	2-5
Proposal Review Comments.....	2-5

Section 1

Request for Proposals

Process

The following information details TxDOT's Research Program through the Request for Proposal (RFP) process.

Request and Receive Problem Statements

- RTI sends call for Problem Statements.
- Problem Statement forms are completed.
- Problem Statement forms are submitted to RTI.

Select Project Team and Projects for RFP

- RTI categorizes Problem Statements and submits to Districts/Divisions (DD).
- TxDOT DD develops and prioritizes Problem Statements.
- DD proposes Project Teams for each prioritized problem statement.
- RTI receives list of Project Teams and prioritized problem statements.
- RTI prepares list of prioritized problem statements for Project Review Board (PRB) review.
- PRB recommends which problem statements to go forward in an RFP.

Prepare and Post RFP

- RTI prepares RFP documentation.
- RTI posts RFP.
- RTI hosts Pre-Proposal meetings.

Receive and Evaluate Proposals

- University prepares and submits proposals.
- RTI receives proposals. Proposals not received by the proposal deadline will not be accepted.
- RTI confirms receipt of proposals.

- Award Projects RTI prepares evaluation documentation.
- Project Teams review and score proposals.
- RTI compiles proposal scores and submits to PRB
- Award Projects
- PRB reviews and recommends projects for award.
- RTI notifies University Liaisons and TxDOT stakeholders of awarded projects.

The University Liaison is the point of contact for RFP information and for submitting proposals to RTI.

Requirements

Proposals are only accepted from eligible proposers and following a RFP. Each proposal must be submitted prior to the deadline within the RFP.

Each proposal must meet the following requirements to be accepted for evaluation:

- Submittal via email to RTI prior to the deadline.
- Proposal requirements (See Chapter 3, Proposal Requirements).
- Project requirements - Project Statement (PS)/Implementation Project Recommendation (IPR).
- Use of current RTI Forms (see the University Liaison for current forms).

Section 2 Eligible Proposers

Eligible Proposers

Proposals are only accepted from Texas state-supported Universities. Proposals that include partnerships with other entities will be considered when the appropriate expertise is not available from a Texas state-supported University. Unless authorized by the RTI Director, proposals are not accepted which include Research Team members with overdue deliverables.

Joint Proposals with Texas State Supported Universities

Joint proposals include two or more state-supported universities and must have a researcher (or principal investigator) designated by the team as the Project Supervisor.

Subcontracting

If an entity other than a Texas state-supported university joins the Research Team, the university is responsible for those consequent subcontractors, including out-of-state universities or private entities.

Section 3

Communications with TxDOT

Project Team Non-Disclosure Agreement

Each member of the Project Team signs a Non-Disclosure Agreement (NDA), agreeing not to respond to researcher questions during the open period of the RFP; except at a pre-proposal meeting.

Throughout the RFP

During the open period of the RFP (from issuance to the due date), questions about RTI's policies or procedures associated with the RFP may ONLY be posed to the contact person named in the RFP or emailed to RTIMain@txdot.gov.

For questions regarding scope, submit to the point of contact named on the Project Statement or ask the question during the Pre-proposal meeting, or emailed to RTIMain@txdot.gov.

Announcement of Selections

RTI announces the project awards, after proposals are approved, to University Liaisons and TxDOT stakeholders.

Proposal Review Comments

RTI will forward the reviewer comments and scores for each proposal to each University's Liaison after all contracts are executed.

Chapter 3

Proposal Requirements

Table of Contents

Section 1	3-3
Submission Format and Deadline	3-3
Required Format for Submission	3-3
Section 2	3-5
Required Documents	3-5
Overview	3-5
Formatting and Important Information	3-5
Section 3	3-6
Project Agreement Cover Page	3-6
Elements of the Project Agreement Cover Page (Signature)	3-6
Section 4	3-9
Itemized Budget Exhibit A- Overview	3-9
Overview	3-9
Estimating Individual Cost Items	3-9
Heading Elements on an Itemized Budget	3-9
Completing Exhibit A	3-9
Direct Costs	3-9
Indirect Costs	3-11
Total Project Costs by Fiscal Year	3-11
Section 5	3-12
Project Description - Exhibit B	3-12
Overview	3-12
Project Abstract	3-12
Implementation (only completed for Research projects)	3-13
Work Plan	3-14
Standard Research Project Deliverables	3-15
Assistance or Involvement by TxDOT	3-17
Project Deliverables Table	3-17
Section 6	3-20
Background and Significance of Work	3-20

Contents	3-20
Length and Format	3-20
Background and Significance of Work -What it is -and What it is Not	3-20
Section 7	3-21
Research Staff and Facilities	3-21
Contents	3-21
Format	3-21
Relevance to Project Agreement.....	3-21

Section 1

Submission Format and Deadline

Required Format for Submission

Current Forms – Proposals should be submitted on current RTI forms. Current RTI forms are sent to University Liaisons for distribution, and can also be downloaded off the RTI website:

- Research Problem Statement
- Research Project Statement
- Project Agreement Cover Page
- IPR, Implementation Project Recommendation
- Itemized Budget, Exhibit A
- Project Deliverables Table

Delivery Method – All proposals are required to be submitted electronically in portable document format (PDF). The file can be submitted:

- By email to RTIMAIN if the email and attachment together are smaller than 15 megabytes.
- Larger files can be sent to RTI through TxDOT's drop box service, available at <https://ftp.dot.state.tx.us/dropbox>.

Critical Reminders:

- Submit only one (1) PDF file for each proposal.
- Researchers – Submit proposals through the University Liaison
- Resubmitting a proposal – The last submission by email before the deadline will be taken as the proposal.
- Do not send a proposal to an individual's email address in RTI

Meeting the Deadline Timeframe – The date and time proposals are due and is set by RTI and is stated in the RFP instructions.

Responsibility for Delivery of Proposals –The University is responsible for ensuring the timely submission of each proposal to RTI. Proposals received after the deadline will not be accepted.

Confirmation of Receipt – RTI confirms receipt of proposals received to the email address that sent the file. TxDOT's email system does not provide an automated return receipt nor does it reply to messages sent to non-existent email addresses to alert the error. If the confirmation is not received, check to make sure the proposal was sent to the correct email address.

Section 2 Required Documents

Overview

The documents listed below are required for the submitted proposal in the following order:

- Project Agreement Cover Page (RTI form)
- Itemized Budget, Exhibit A (RTI form)
- Project Description, Exhibit B, consisting of:
 - Project Abstract
 - Implementation
 - Work Plan
 - Assistance or Involvement by TxDOT,
 - Project Deliverables Table (on a RTI form).
- Background and Significance of Work
- Research Staff and Facilities

Formatting and Important Information

The Project Agreement's pages are numbered as one document, beginning with "1 of X".

Incomplete proposals will not be accepted. Documents beyond those listed above will not be accepted. Examples (not all inclusive) of additional documents that will not be accepted include:

- Reference Lists –If submitted, include it in Background and Significance of Work.
- Resumes – Include all relevant information on the Research Staff and Facilities form.
- Letters of intent from subcontractors or suppliers.

Required documents are discussed in detail in the remainder of this chapter.

Section 3 Project Agreement Cover Page

Elements of the Project Agreement Cover Page (Signature)

This Cover Page should always be prepared using the current RTI form. Each Cover Page includes the elements discussed below:

- **Fiscal Year (FY)** – This is the fiscal year when the project is activated.
- **Heading** – Labels the document as a “Project Agreement” and identifies the performing agency(s), with the lead agency listed first.
- **Research or Implementation Project** – Check the appropriate box to indicate the type of project.
- **Project Number** - The project number from the Project Statement included in the RFP.
- **Document Date** - The date the document is prepared. This uniquely identifies this version of the agreement, and will be referenced when the final Project Agreement is activated. The date initially entered here is the date the proposal is prepared. That date must be changed if the proposed Project Agreement is modified before execution.
- **Project Title** -The project title from the Project Statement included in the RFP.
- **DUNS #** - The Performing Agency’s unique ID Number.
- **Indirect Cost Rate** – The Performing Agency’s approved indirect cost rate from cognizant agency, Health and Human Services also known as HHS.
- **FAIN #** - The Federal Award ID Number. (RTI will provide this information)
- **Federal Award Date** – The date the federal award was approved by the Federal Agency. (RTI will provide this information)
- **Amount of Federal Funds Obligated to Sub-recipient** – Amount the Federal Agency obligated to the Performing Agency, also known as Sub-recipient. (RTI will provide this information)
- **Contact Information** – The contact information for TxDOT’s Research and Technology Implementation Division.
- **Federal Awarding Agency** – Indicates the Federal Agency awarding the project.
- **CFDA #** - The Catalog of Federal Domestic Assistance. (RTI will provide this information)

- **CFDA Name – The Catalog of Federal Domestic Assistance** title name. (RTI will provide this information)
- **Amount of Federal Funds Obligated** – The total amount of Federal Funds obligated to the award. (RTI will provide this information)
- **CRIA Statement (First Paragraph)** - Specifies the general terms and conditions under which the Project Agreement is made, identifies the contracting parties, and identifies the project as included in an Annual Program, or as an Independent Project. Check the appropriate box and enter the performing agency(s).
- **Part I. Project Description** – Paragraph incorporates Exhibit B, the description of the specific work needed, into the Project Agreement. Do not make changes to this language.
- **Part II. Project Duration and Performance Period** – States that project work is not approved, and that no work should be performed, for any fiscal year, until RTI issues either an initial or continuation Activation Letter to the university. Only insert a proposed Project Termination Date to be considered during proposal review. This date sets the proposed project duration.
- **Part III. Project Budget** – Includes an estimated total project budget by proposed fiscal year. This detailed budget (by agency, fiscal year) is attached as Itemized Budget, Exhibit A. The Budget incorporates all Exhibit As into the Project Agreement. If there is a discrepancy between the total budget on an Itemized Budget, Exhibit A for any agency and the amount shown on the Cover Page for that agency, the amount on the Cover Page will be used during the initial evaluation of the proposal.
- **Total Project Budget** – Is the total of the proposed annual project budgets for all deliverables, for all performing agencies. Once the project is activated, this can be changed only by modification of the Project Agreement. If there is a discrepancy between the annual budgets shown and the total project budget, this will be resolved before a Project Agreement is executed.
- **Part IV. Project Supervision** – Identifies the Project Supervisor, who also specifies the lead agency on a joint project. Other primary researchers on the project should also be identified, including at least one researcher from each performing agencies. The lead researcher at each agency may be identified as that agency's Principal Investigator (PI). Information about each researcher, including contact information, is also required here.
- **Part V. No Waiver** –Incorporates all the applicable provisions of the CRIA into the Project Agreement.
- **Approved (Performing Agency)** - Is a signature block for each university on the project, including each signatory's official title and agency.

- **Approved (TxDOT)** – Is a signature block is included for the Responsible TxDOT officials, to execute the agreement for TxDOT.
- **Page Numbering** – Should begin with “1”. The project agreement, which includes several different sections, is numbered as one document, beginning with “1 of X”. The correct document order for page numbering is in Chapter 3, Section 2, and Overview.

The following information can be found on the Project Statement, IPR, or in the RFP message:

- Fiscal Year
- Research or Implementation Project
- Project Number and Title
- Annual Program or Independent Project

No section should be removed from the form; unused lines in Part III (Project Budget) and IV (Project Supervision) may be left blank. Do not change the standard language on the RTI form.

Section 4

Itemized Budget Exhibit A- Overview

Overview

Each proposal will include an **Itemized Budget – Exhibit A** for each performing agency(s) on a project. “Total Project Cost” on each Itemized Budget sets the maximum contract amount between TxDOT and that performing agency – for that fiscal year.

Estimating Individual Cost Items

Each Itemized Budget should include the best estimates available for individual cost item for each fiscal year (see Chapter 4 for changing and modifying an itemized budget).

Heading Elements on an Itemized Budget

The elements discussed below are included at the top of each Itemized Budget – Exhibit A. Some of the information comes from the project document attached to the RFP. Some are developed at the university(s).

Completing Exhibit A

- Proposal # (change to Project # after award)
- Agency
- Primary Agency (Place an ‘X’ if the Agency holds primary responsibility)
- Revision # (enter the revision being presented to the PM or RTI Finance Committee), when applicable
- Revision Date (enter the date presented to the above)

Direct Costs

Include only those costs specifically identifiable for each fiscal year.

- Salaries and Wages – Show estimated budget totals for salaries and wages for full and part-time personnel under these categories:
 - Research Supervisor
 - Professional
 - Sub-professional and technical
 - Clerical or Administration
 - Student

- For each salary group, give:
 - Fringe Rate % - Percentage of the salaries and wages to cover all allowable benefits for the individual. The actual amounts are included in with the salary and wages amounts, it is not broken out.
- Subcontracts – A subcontract is defined as any contract or procurement of engineering or other professional services arranged between the university and an entity not a part of that university. This definition is intended to cover the types of work that university researchers might typically perform; not all service purchases. For instance, copier or automotive repair, printing or similar services that administratively support research and specialized testing would not typically fall under this definition. For each Subcontractor expected to be used; number the subcontractor and include a brief description of what they will do, and a total estimated cost per fiscal year.
 - The first \$25,000 of each subcontract is subject to indirect costs.
 - However, the amount over \$25,000 of each subcontract is excluded from Modified Total Direct Cost (MTDC).
- Equipment – Include each item of equipment or other tangible items to be purchased under the project for which the item or system cost is \$5,000 or more. A system is defined as two or more items purchased which will be combined to form a single, functional unit. Include specifications over the standard on included equipment and which tasks it is expected to be used within Exhibit B.
 - Equipment is excluded from MTDC.
 - Include associated maintenance and repair costs (including insurance) as a line item in the Operating, Supplies, and Other Expenses.

Itemize the significant equipment costs which should have an estimate purchase timeframe and be budgeted to the fiscal year the equipment is needed.

- Travel – Travel is categorized as In-State or Out-of-State (includes International). Enter the following information associated with each trip.
 - City/State
 - Purpose
 - Total number of Trips
 - Average number of individual(s) traveling for each trip.

- Operating, Supplies and Other Expenses –Several different types of costs may be included here. Show the expenses as either “included” or “excluded” from Modified Total Direct Costs. This determination is made based on OMB Rule, 2 CFR 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, as noted on Itemized Budget, Exhibit A.

Total Direct Costs – The total of all cost categories listed above. Using the RTI (Excel) form, the total will be calculated.

Indirect Costs

Indirect costs include facility and administrative costs of the university that are not specifically identifiable with a particular project. These costs are calculated as a percentage of modified total direct costs, as defined on the Itemized Budget – Exhibit A form.

Exhibit A should show indirect costs calculated with the university’s federally approved indirect cost rate, and with the amount charged to the TxDOT project. The maximum percentage that can be charged to TxDOT on a university project is set in the CRIA. The difference between these two numbers is shown as the university’s contribution to the project.

Total Project Costs by Fiscal Year

The total project cost is derived from total direct costs plus total indirect costs charged to each fiscal year of the project. The Exhibit A form provided by RTI calculates each Fiscal Year total, based on individual costs entered on the form. Review each Fiscal Year total to verify the data was entered correctly on the form, and that the total is calculated correctly.

The fiscal year amounts on Exhibit A for each agency should agree with the Project Deliverables table amounts by fiscal year.

Note: If there is a discrepancy between line item amounts and “total project cost” on an Exhibit A, the amount shown as “total project cost” will be used during evaluation of the proposal. Any discrepancies will be resolved before a Project Agreement is executed. The proposer could be required to reduce line items amounts so “total project cost” does not exceed the annual funding approved.

Section 5 Project Description - Exhibit B

Overview

The Project Description– Exhibit B is comprised of several sections. All pages in Exhibit B should display a footer with the proposal number (change to project number after award) and consecutive page numbers. The required sections, and one optional section, should be presented in the order discussed within Chapter 3, Section 2 Overview.

Taken together, sections in Exhibit B:

- present the essence of the project,
- describe the work to be performed,
- establish the deliverables due to TxDOT, and
- establish the schedule for completion of project work.

When preparing Exhibit B:

- respond clearly, directly, completely, and concisely to the Project Statement distributed in the RFP,
- do not include university name on header or footer,
- communicate how the project will be conducted,
- include substance, and
- refer to the submitting agency as the ‘Performing Agency’ and TxDOT as the ‘Receiving Agency.’

Project Abstract

Each proposal should contain a project abstract that summarizes the project objectives and tasks. The abstract should be no more than 200 words and is prepared in free form text. This section of the selected proposal will become part of the Project Agreement; the Abstract should be direct. Use contractual language which is definitive, such as – “this project shall”, rather than “we propose to” or “the proposed project shall”.

Note: Use “shall” when describing Performing Agency actions and use “will” when describing Receiving Agency actions.

The primary value of the abstract is to clearly and succinctly describe the project. The ability to succinctly summarize the work proposed will help demonstrate the understanding of the project.

For awarded proposals, the abstract is used to enter a project description into relevant databases, including.

- TxDOT's research database(s)
- Transportation Research Board's (TRB) Research in Progress system

Implementation (only completed for Research projects)

The university should include a free form text section by this title that presents the researcher's assessment of potential areas for application of the research findings, such as changes in specifications, standards, or department policies. This section should also include an assessment of which TxDOT operations will be affected.

In the Implementation section, consider the project being proposed, and what the project results will look like.

For projects expected to produce results which could be implemented either during the progress of the project or shortly after completion, material in this section might include an assessment of several issues.

The form in which the findings would be most effectively reported

- mathematical model or formula
- laboratory test procedure
- design techniques

The organization logically responsible for application of the results

- American Association of State Highway and Transportation Officials (AASHTO)
- Federal Highway Administration (FHWA)
- Texas Department of Transportation (TxDOT) Division or District

The specific medium of practice that would be changed or developed by the findings

- AASHTO Standard Specifications
- TxDOT Standard Specifications
- Special Specifications

The best method to convey the research findings to operating personnel for use

- circulation of a written report
- personal contact with operating personnel
- demonstrations
- movie, slide, or videotape presentation
- field manuals
- training classes

Work Plan

The work plan is a free form text section that should fully describe the approach researchers intend to use and specify how the project will be structured and performed.

Ideally, each task in the work plan is separate and distinct. A well written work plan will also describe dependencies and relationships between the tasks, including the project's critical path.

The work plan for a research or implementation project should contain at least the following information.

- How the project and each deliverable/ tasks will be managed.
- Principles or theories to be used (Not included in implementation projects).
- Possible solutions to the problem.
- The device, process, material, or system to be developed or enhanced, when applicable.
- Critical experiments to test the applicability of the theory or the item developed.
- Data analysis and statistical procedures.

Proprietary techniques owned by the university can, and should be discussed in a way that demonstrates the researchers' knowledge and skill without revealing any proprietary information owned by the university.

The work plan should not include additional information about the background and significance of the project, or researchers' qualifications. That information belongs in other sections of the proposal. The ability to describe a clear, complete and concise work plan helps demonstrate the researchers' management skills and knowledge of the project.

Each task in the work plan should highlight the expected deliverable or outcome from the work performed in the task and cross reference to the Project Deliverables Table. The

deliverables can be in the form of white papers, work products (excel spreadsheets, instructor manuals, models, enhanced or developed systems, devices), seminars, close out meeting, and technical reports to name a few.

Technical Memos are numbered sequentially by task number.

Tech Memo Numbering Example: Multiple Tech Memos Example:

Task 1 - Tech Memo 1 TM1A, TM1B

Task 2 - Product 1, Product 2 P1, P2

Task 3 - Tech Memo 3 TM3

Standard Research Project Deliverables

Use the following standardized language for the deliverables needed within all projects.

Value of Research:

“The Performing Agency shall determine the project’s Value of Research (VoR) based on the development of the qualitative and economic benefit areas designated by the Receiving Agency.

Benefit Area	Qual	Econ	Both	TxDOT	State	Both
Level of Knowledge	X			X		
Management and Policy	X			X		
Quality of Life	X			X		
Customer Satisfaction	X			X		
Environmental Sustainability	X				X	
System Reliability		X		X		
Increased Service Life		X		X		
Improved Productivity and Work Efficiency		X		X		
Expedited Project Delivery		X		X		
Reduced Administrative Costs		X		X		
Traffic and Congestion Reduction		X			X	
Reduced User Cost		X			X	
Reduced Construction, Operations, and Maintenance Cost		X			X	
Materials and Pavements		X			X	
Infrastructure Condition		X				X
Freight movement and Economic Vitality		X				X
Intelligent Transportation Systems		X				X
Engineering Design Improvement			X			X
Safety			X			X

(The Project Manager should remove all benefit areas not selected by the Project Sponsor.)

The Performing Agency shall complete the Value of Research Template, and include it with the write up on the economic based calculations, the description of economic variables used within the calculations, and the qualitative values of the Project Sponsor's selected benefit areas within the Technical Memorandum.

The Performing Agency shall direct all benefit area data requests to the Receiving Agency's Project Manager. The initial submission of the VoR Template and Technical Memo shall be evaluated, and if needed, revised by the Performing Agency.

The Performing Agency shall continue to identify qualitative and economic VoR data during the course of the research project. This information shall be included within the resubmittal of the VoR Template at the end of the project within the Project Summary Report (PSR) and expanded upon in the Research Report (R1).

Deliverable: The Performing Agency shall submit the Value of Research Template (VoR) to RTIMain@txdot.gov, copying the RTI Project Manager per the Project Deliverables Table."

Project Management:

"The research team will document all research findings from this project, submit monthly progress reports, and attend project progress meetings as scheduled by the Receiving Agency.

The documentation/deliverables/meetings will include:

- Technical Memoranda documenting project progress and findings for each task as defined in the Project Deliverables table (TM).
- A research report that completely documents the work performed, methods used, and results achieved (e.g. R1).
- A project summary report that highlights the key findings and recommendations from the research (PSR).
- A Close-Out Meeting (CO).

Following the Project Team review, the research team will revise all documents to incorporate the suggestions of the reviewers.

The deliverables associated with the project management task, R1, PSR, shall be delivered via email to RTIMAIN@txdot.gov , copying the RTI Project Manager per the Project Deliverables Table."

A Project Manager has the ability to modify the language of these tasks, during the negotiation period.

Please review Chapter 6 on Deliverables for more information on Value of Research and Project Management.

Assistance or Involvement by TxDOT

In this section, describe any TxDOT assistance the university(s) expects, other than project oversight normally provided by the Project Team of advisors. Include the relevant task number(s) in the description. If no assistance will be needed, other than that normally provided by the Project Team, state “none” in this section.

Be specific so TxDOT can realistically estimate the cost of assistance requested. To be approved, the cost of this assistance must be found to be affordable and feasible for the project.

TxDOT assistance may include items such as core drilling, traffic control, testing, materials and supplies, providing data files, or maps. The cost of this assistance is covered by TxDOT directly and is not included in the university’s budget.

TxDOT assistance does not include purchasing equipment or large quantities of materials. Such purchases should be included in the university’s project budget. Reasonable TxDOT assistance would not include building or operating a test facility or a commitment of significant TxDOT staff time for data analysis or direct participation in work tasks.

If the university(s) expects to need and operate TxDOT equipment on the project, the following language must be included in this section before a Project Agreement can be executed:

“If it becomes necessary under this agreement for any agent or employee of the Performing Agency to operate a vehicle owned by TxDOT, the Performing Agency shall assume all risks of operation, including the risks of damage to the vehicle, damage to any other vehicle, and injury to any person. To the extent permitted by law, the Performing Agency shall indemnify and hold harmless TxDOT for any liability that may accrue from the Performing Agency's operation of the vehicle. The Performing Agency shall maintain worker's compensation insurance and any other insurance necessary to meet its obligations under this provision.”

Project Deliverables Table

The Project Supervisor ensures the project adheres to the Project Deliverables Table. All deliverables anticipated or required from the project should be shown on the Project Deliverables Table.

Each Project Deliverables Table should be prepared on RTI’s form.

The Project Deliverables Table includes a forecast of a fiscal year's spending on a project. All required major deliverables are to be listed on the Project Deliverables Table by the associated Task of the Work Plan of Exhibit B. The budgeted amounts from Exhibit A should be spread out amongst the twelve months within the fiscal year (September – August). The Task within each fiscal year should add up to the total for each fiscal year in Exhibit A.

Complete the following on the Project Deliverables Table:

- Project #: initially the Proposal # before award
- Project Name
- Primary, secondary Agency Abbreviation(s)
- Version
- Task (from Exhibit B, Work Plan). Subtask: the scheduling of time to complete the task from beginning to end; are numbered 1.1, 1.2, 1.3, 2.1, 2.2 etc. for each line
- Agency #: agency responsible for the deliverable
- Deliverable: a minor deliverable is listed as Monthly Progress Report/Task Activities, a Major Deliverable is one assigned in Exhibit B; the Major Deliverable is listed as the last deliverable in a Task. Subtask series.
- Due Date (Budgeted Month End): Date that a deliverable is due, the end date of a month that actual expenses are billed to on the Invoice Report, after the corresponding deliverable has been received by TxDOT; All deliverables are due the last day of the month, but minor deliverables have a three (3) business day grace period.)
- Monthly Budget Forecast: the budgeted dollar amount of the associated month for subtask
- Comments: include any associated comments of a deliverable
- FY/ Months: mark the month corresponding to the due date of the Task/Subtask on the schedule portion of the Project Deliverables Table.

Once a specified month's deliverables has been received, an Invoice Report for that month may be submitted to RTI_Invoices@txdot.gov. When scheduling deliverables, keep the issues below in mind:

- **Schedule for Tasks** –An assumed start date is shown in the proposal. The work will start only after the project is activated by RTI.
- **Due Date** – The due date should be a clear indicator of when a task will be completed and its associated deliverable is sent to RTI.

Project Deliverable Table will be requested by TxDOT before the Project Agreement is executed.

Use RTI's (Excel) form. The RTI form's legend distinguishes between the original, revised and completed work on the Project Deliverables Table.

Major deliverables should be produced at a minimum of six month intervals. When a task's duration is less than twelve months, interim deliverables will be negotiated.

The fiscal year amounts on Exhibit A for each agency should match the Project Deliverables Table amounts by fiscal year

Section 6

Background and Significance of Work

Contents

This section should include at least the following topics.

- Discussion sufficient to demonstrate the researcher's understanding of the underlying principles involved in the problem that TxDOT needs solved, and in the work proposed.
- Background findings of a literature search or other description of existing technology on the subject should be included. A search should be made of the Technology Requirements Integration Division (TRID) or other relevant databases to ensure that previous work is considered in the new project. Include a list of references if it would enhance the proposal.

Length and Format

This section is limited to no more than 10 pages, and is prepared free form text. Page number this section separately, beginning with “1 of X”. Start and end this section on pages separate from all other sections of the proposal.

Background and Significance of Work –What it is -and What it is Not

- **It is** – The place to demonstrate that the subject of the proposed project is understood, and to briefly describe the overall approach to the project.
- **It is** – The place to summarize the results of any literature search performed to prepare the proposal, as each is relevant to the proposed project.
- **It is not** – The place to describe details of the proposed work. Put that information in the Work Plan.
- **It is not** – A place to detail the background and experience of the proposed research team. Put that information in the Research Staff and Facilities section of the proposal.
- **It is not** – The place to list every document reviewed during the preparation of the proposal. Use the (up to) 10 pages for information that is more meaningful during proposal review.

Section 7 Research Staff and Facilities

Contents

This section explains the experiences of each research team member and why he/she should be a part of the proposed research team and the capability of the facilities to be used in the Research. Include capacity and reasoning for each member proposed and provide the relevant information to the specific proposed project.

Do not send resumes, or a list of every report the researcher has written. The researcher is best suited to relate their past experience to the project. Unless an entire career has dealt with the subject of the specific project, do not miss this opportunity to explain how their particular experiences are relevant. Evaluators must make judgments based on information in the proposal.

Format

This section should be prepared on RTI's Research Staff and Facilities form, or in a document showing equivalent information.

Relevance to Project Agreement

This information is used only during the evaluation of proposals. It is not included in the Project Agreement.

Chapter 4

Project Agreements

Table of Contents

Section 1	4-2
Approval	4-2
Proposal Selection	4-2
Project Review Board Approval	4-2
Revisions to the Proposal	4-2
Section 2	4-3
Activation	4-3
Initial Activation.....	4-3
Continued Activation.....	4-3
Activation Lists	4-3
Section 3	4-4
Modifications	4-4
Determining if a Modification (Mod) is Required	4-4
Requirements for a Modification	4-4
Changing the Project Supervisor.....	4-4
Submitting a Modification Form.....	4-5
Preparing a Modification Form.....	4-5
Marking Changes in Attachments.....	4-6
Work Plan Rewritten	4-7
Project Agreement Rewritten	4-7
Modification Activation	4-7
Modification Activation Lists	4-7
Section 4	4-8
Subcontracts	4-8
What is a Subcontract?	4-8
Purpose of RTI Review	4-8
Evidence of RTI Concurrence	4-8

Section 1

Approval

Proposal Selection

Proposals received are initially evaluated through an administrative review. During this review, RTI staff determines whether:

- All researchers on the proposed teams are eligible to participate in the program.
- Each proposal is complete enough to be deemed responsive.
- Each proposal meets any specific constraint or limitation specified in the RFP.

Proposals are sent to the TxDOT Project Teams to have its technical criteria evaluated. Proposals are rated against the criteria and described needs of a Project Statement.

Project Review Board Approval

The Project Review Board meets and decides which proposals are awarded for funding.

Revisions to the Proposal

The awarded proposal may require modifications and enhancements to become a Project Agreement. Revisions requested can be administrative and/or technical. Each revised proposal will:

- Carry a new date on the Cover Page.
- Clearly mark all revised language.
- Be coordinated through the University Liaison and the RTI Contract Specialist.

After all revisions have been approved by TxDOT, RTI will request a signed copy of the Project Agreement from the lead University Liaison. Before execution by the university (ies), all highlighted revisions will be incorporated, or “accepted” into the Project Agreement.

Section 2 Activation

Initial Activation

Once a Project Agreement has been executed by TxDOT, the University Liaison for each university will receive an activation letter from RTI. The Activation date is the first day that work can be performed. Work completed, or purchases made, before the activation date or budgeted fiscal year begins will not be reimbursed by TxDOT.

Although the term of the agreement may cover several fiscal years, the initial activation covers only the fiscal year specified in the activation letter, or on attachments to the activation letter.

In the event that the initial project activation covers only portions of the project, the activation letter will state which work tasks are not yet approved, and researchers will not begin work on those tasks. RTI will issue a subsequent activation letter when that work is approved to start. Work on unapproved tasks will not be reimbursed by TxDOT.

Continued Activation

For projects that extend beyond an initial fiscal year, RTI will issue a separate activation letter for each year. If there are no issues pending resolution on a project, the project will be included on an annual activation letter issued for the fiscal year that starts the following month allowing projects for which work has been approved for the coming year to continue without interruption.

Approval for a specific fiscal year does not guarantee that future years of the project will be funded and approved. No work will continue on a project in a fiscal year for which RTI has not issued an activation letter.

Activation Lists

Activation lists accompany an activation letter and show the termination date and budget amount activated for each project. With each annual activation letter, the total amount shown on the activation list for each program (research or implementation) shows the amount that Article 9 of the CRIA refers to as “Total Program Funding” for that annual program. This amount may change throughout the year as new projects or modifications are activated.

Section 3 Modifications

Determining if a Modification (Mod) is Required

The terms of a Project Agreement can be changed only by executing a Modification. Anytime you make a change to the scope, schedule or budget a Modification is needed. While a researcher may certainly discuss a potential Modification with the Project Team members it is essential to include the RTI PM. PMs will facilitate the Modification of the terms of a Project Agreement, and the PM will communicate the possibility of increasing funds to the appropriate team members.

Requirements for a Modification

Submit a Change Request Form to the project's PM when a Modification of a Project Agreement is required.

Modification forms shall include information on changes to the agreement, a justification, and impact if not implemented. Enough information must be provided to enable TxDOT to make an effective and realistic initial evaluation of the request.

The explanation of why the agreement needs to be modified will answer the following:

- Why can project work not be completed within the terms of the current agreement?
- How do the proposed changes relate to any previous Modifications on the project?
- Is the information provided consistent with previous status information submitted for the project – in Monthly Progress Reports, Tech Memos, or project meetings?
- How will the recommended changes preserve, or enhance, the value of the project to TxDOT?
- What will happen if the Modification is not approved?

Changing the Project Supervisor

When a Project Supervisor leaves a project, finding a replacement is critical to project continuation. As soon as possible, the Project Supervisor or University Liaison will notify the RTI PM that the Project Supervisor is planning to leave the project, along with an estimated date of departure.

The lead university will develop a plan to continue the project. The lead university will submit a nomination for the Project Supervisor's replacement and a continuation project plan to RTI including:

- When and how the university intends to deliver project documentation.
- Name and professional background of the nominated Project Supervisor.
- The nominee's relationship to the project.

The RTI PM and the Project Team will review the status of project work and identify all outstanding concerns, review the status of deliverables due on the project, review the qualifications and past performance of the researcher nominated as the new Project Supervisor, agree to the nominated Project Supervisor or negotiate another solution, and decide whether the agreement will be modified to accept a new Project Supervisor or terminated.

Submitting a Modification Form

If initial discussions about modifying an agreement are positive, the University Liaison will submit a formal written RTI Modification Cover. This document provides the details about what terms in the agreement need to change, and how. Other updated forms should be included, as necessary.

The University will submit a Modification Cover in response to a request from RTI. The Contract Specialist on the project will send the request to the lead University Liaison after the Modification has been conceptually approved within TxDOT and funding has been identified. If the changes proposed to the Project Agreement are approved, and funding is secured, a RTI Contract Specialist will promptly request the university to sign the Modification and send the partially executed agreement to RTI, for final execution.

The last date in each fiscal year that RTI typically will request a signed Modification is August 1st, with the signed Modification due back to RTI by August 15th. These deadlines allow adequate time for final processing before the end of the fiscal year. Meeting deadlines is critical, especially on any Project Agreement set to terminate at the end of August. Terminated Project Agreements cannot be modified.

Preparing a Modification Form

The Modification Cover Page is the signature page. Language on the Modification Cover must either specify the new contract terms, or incorporate by reference. All documentation associated with the Modification is attached to the signature page. Most items on the form parallel items on the Project Agreement Cover Page, and are self-explanatory. The following discusses those items which are unique to Modifications.

- **Numbering Modifications** – Number the Modifications in sequence, starting with "1". The sequence continues through the life of the agreement.

- **Document Dates** – Each Modification, and each respective Modification version, will be uniquely dated. Each document will carry the date it was developed or last edited. The date distinguishes that document from other versions of that particular Modification, and from any other agreement document for that project. Attachments to the Modification signature page do not need to be separately dated.
- **The “revision date”** fields on the Itemized Budget and Project Deliverables Table are used when these documents are updated to provide more current information or clarification, not as part of a Modification.
- **Language on a Modification Form** – The forms that RTI distributes to University Liaisons include a file with example language for common scenarios that arise when agreements need to be modified. Basic language is included for the scenarios listed below, along with reminders of other parts of the agreement that may be affected.
- **Budget Modification**
 - Increase to annual and total budget
 - Move budget from one university to another, no change in Total Budget.
 - Reduce budget in one year, increase in another year, and no change in Total Budget.
- **Project Duration Modification**
- **Research Supervisor Modification**
- **Project Deliverables Table Modification**
- **Add, Delete, or Revise Tasks**
 - Minor revisions to a task(s) – new Work Plan not attached.
 - Major revisions to a task(s) – new Work Plan not attached.
 - Add a task – new Work Plan not attached.
 - Delete a task – new Work Plan not attached.
 - Revise tasks – new Work Plan is attached.
 - Add tasks – new Work Plan is attached.

Marking Changes in Attachments

When attaching documents to the Modification to show what specific terms of the Project Agreement are being changed, clearly mark all modified language.

Each Modification will highlight only the changes being made in the respective Modification. Changes approved in previous Modifications will be incorporated, or accepted, into the Project Agreement before developing the current Modification. Mark the current changes in simple ways. Common techniques are to underline for additions and strikethrough for deletions.

As with all Project Agreements, use information in the footer, such as the project, modification numbers, and page numbers, to clearly identify the Modification.

Work Plan Rewritten

Occasionally, changes needed to a Work Plan may be so extensive that a complete rewrite is needed. In those situations, the language on the Modification signature page will state something like “The Work Plan is deleted in its entirety and replaced with the attached.”

Changes in the Work Plan are not highlighted in this situation. Rather, the following notice will be included at the beginning of the Work Plan:

- **Significant Modification** – This is a significant modification of the Work Plan. Changes are not highlighted and some previous material may have been removed. This Work Plan must be reviewed in its entirety.

Project Agreement Rewritten

In rare cases, the entire Project Agreement may need to be rewritten. In those rare cases, a new Project Agreement form, rather than a Modification form is used. Review the requirements for Project Agreements in general, and pay particular attention to these items.

- **Cover Page** – The heading on the cover page will state: "Modification No. ____" before the line reading "Project Agreement." This modification will be numbered in sequence, with all other modifications to the agreement for this project.
- **Notice of Rewrite** – No highlighting of additions and deletions is necessary. Instead, a notice similar to that shown above for a rewritten Work Plan will be included at the beginning of the Cover Page.

Modification Activation

Once a Modification has been executed by TxDOT, the University Liaison for each university will receive an activation letter from RTI. The Activation date is the first day that work can be performed. Work completed, or purchases made, before the activation date or budgeted fiscal year begins will not be reimbursed by TxDOT.

Modification Activation Lists

Once a Modification has been executed by TxDOT, the University Liaison for each university will receive an activation list which accompanies an activation letter and reflects any changes for each project.

Section 4 Subcontracts

What is a Subcontract?

In general, subcontracts include engineering or professional services provided by someone who is not part of the university. Subcontracts in this context do not include routine service purchases, or services not typically provided by a Texas state-supported university.

The definition of a subcontract is dependent on the type of service to be provided, not on the university's method of procurement.

Purpose of RTI Review

RTI reviews the proposed use of a subcontractor to ensure there is a real need for someone other than a Texas state-supported university to do that work, not to determine the adequacy of the contract provisions. RTI relies on the university to see that subcontracts meet the requirements in the CRIA and the university's own contracting standards.

- There are occasions when the private sector or an out-of-state university may be needed to provide a service that is critical to a project, but is not readily available in the Texas university community. Specialized testing services are an example. Before a university plans to subcontract, make a realistic assessment of whether the work can be done by another Texas state-supported university, if not by another department in the researcher's university.

Evidence of RTI Concurrence

RTI's concurrence in a subcontract may be evidenced in either of two ways:

- Execution of a Project Agreement that adequately discloses the subcontract.
- By a written statement from RTI identifying the subcontract and explicitly concurring.

Adequate disclosure of a subcontract in a Project Agreement includes showing an estimated budget for the subcontract on each Itemized Budget affected and clearly describing in the Work Plan what work the subcontractor is expected to perform. Once a specific subcontractor has been selected, the name of the subcontractor should be disclosed to the Project Manager and the Contract Specialist.

If a Project Agreement mentions a subcontract, but does not clearly describe the work the subcontractor is to do, execution of the agreement by RTI does **not** serve as evidence of RTI concurrence. The university will need to request specific concurrence for that subcontract. A written statement of concurrence from RTI will include at least the project number, the name of the subcontractor, and a brief description of the work the subcontractor is expected to perform. RTI's concurrence covers only the work identified. This most typically happens when the need for a subcontract was not known, or not disclosed, in the Project Agreement. In such cases, submit subcontracts to RTI for review at least ten (10) working days before execution of the subcontract.

Chapter 5 Managing the Project

Table of Contents

Section 1	5-2
Project Agreement	5-2
Project Agreement	5-2
Updating the Itemized Budget	5-2
Section 2	5-3
Project Supervisor Responsibilities	5-3
Project Work	5-3
Deliverables.....	5-3
Status Reports and Tech Memos	5-3
Project Meetings	5-3
Communications with TxDOT	5-4
Request for TxDOT Assistance	5-4
Request for Out-of-State Travel.....	5-4
Roadside Safety	5-4
Submitting Questionnaires and Surveys for TxDOT Review	5-5
Submitting Papers (and Presentations) for TxDOT Review	5-5
Section 3	5-6
Technical Memorandums Standards	5-6
Overview	5-6
Contents	5-6
Minimum Requirements.....	5-7
How to Submit.....	5-7

Section 1

Project Agreement

Project Agreement

Project work will start once RTI has notified the University Liaison the agreement has been executed and the project is active for the fiscal year in which the work will be completed.

Verbal discussions that may have taken place in a pre-proposal meeting, or in negotiations after a proposal is selected, do not obligate the university (ies) or TxDOT, unless the results of those discussions were incorporated into the written Project Agreement prior to signature.

Updating the Itemized Budget

See Chapter 4.

Section 2

Project Supervisor Responsibilities

Project Work

The Project Supervisor has a primary responsibility to TxDOT for the conduct and completion of all project tasks and work. The Project Supervisor manages and oversees the entire research team, including all researchers on joint university projects, and with subcontractors, to ensure project work is consistent with the Work Plan in the Project Agreement.

Deliverables

The Project Supervisor is responsible for seeing that all required deliverables meet TxDOT's standards and are delivered in a timely manner. Deliverables shall be submitted electronically to RTIMain@txdot.gov, copying the RTI Project Manager. Assistance can be sought from other university personnel, including professional editors, to help meet TxDOT's standards for quality and timeliness of deliverables.

Status Reports and Tech Memos

The Project Supervisor is responsible for providing project status reports and findings, for project work, as requested or required by the PM, Project Team or RTI. There are different types of status reports to fill different needs. They all help TxDOT monitor project work, and help manage and demonstrate progress on the project.

- **Monthly Progress Reports** –Monthly Progress reports are due the last day of the month and have a three (3) business day grace period.
- **Technical Memorandums** –Tech Memos describe work completed during a task and document the results of the work.

Project Meetings

Several meetings are typically scheduled by TxDOT on each project. The Project Supervisor may request a project meeting, by letting the Project Team, PM and RTI know a meeting is needed to discuss the project.

Communications with TxDOT

RTI coordinates all program matters through University Liaisons. Expect to receive information from the liaison about program requirements, RFPs, proposal selections, revisions needed to agreements before they are executed, deliverables, and other matters.

The Project Supervisor will communicate directly with the Project Team, generally on technical issues related to a specific ongoing project, and with the RTI Project Manager assigned to the project. The Project Supervisor or University Liaison may also receive communication from the RTI Contract Specialist.

Communication with RTI will be project specific, and may involve a wide range of issues.

Request for TxDOT Assistance

When the Research Team requires TxDOT's assistance for work on a RTI project, the Research team will:

- coordinate with the district(s) to define and schedule the needed work,
- complete an RTI "Request for Research Fund Authorization (RFA)" form, and
- send the completed form to the University Liaison, at least two (2) weeks before work is to start.

The University Liaison will coordinate with the appropriate RTI Contract Specialist, and let the researcher know when the request is approved. If approved, RTI will provide a charge number to the district(s).

Request for Out-of-State Travel

- Prior to out-of-state or country travel, a request for University Out-of-State Travel on Form No. 2632 is required for TxDOT's approval, if the travel will be charged to an RTI project.

Roadside Safety

Each university must follow TxDOT's Handbook of Safe Practices, including wearing hard hats, safety vest and steel toe shoes, or other appropriate safety attire, when working on the TxDOT right of way.

Coordinate all traffic control needs and plans with the TxDOT district, when applicable. Ensure submittal of request for TxDOT assistance to RTI is sent at least two (2) weeks before work is to start.

Submitting Questionnaires and Surveys for TxDOT Review

A preliminary copy of all questionnaires and surveys expected to be used on a research project must be submitted to RTI before being used in the field. RTI will coordinate a review by the Project Team, and other appropriate TxDOT personnel. The Project Supervisor is responsible for submittal to the RTI Project Manager.

TxDOT reviews surveys to ensure an objective manner and that surveys do not offer incentives to participants. TxDOT will not support paying participants to complete surveys.

Submitting Papers (and Presentations) for TxDOT Review

Prior to publishing or submittal of a paper or presentation to a professional journal or conference documenting work on a TxDOT sponsored project, the Project Supervisor must receive approval from TxDOT-RTI Project Manager. In this context, publishing includes posting material on a non-secure Internet site.

If the paper or presentation contains subject matter or technical findings substantially similar to those in a deliverable that TxDOT has already approved, another TxDOT review is not needed. Send a courtesy copy to RTI Project Manager, to help keep everyone aware of what is going on with the project. If the paper or presentation contains significant technical findings that have not been approved by TxDOT, TxDOT's approval is needed prior to presentation.

When the preparation schedule does not allow adequate time for TxDOT review and approval, send an abstract of the material to RTI, along with a notice of when and where the material will be presented. RTI will coordinate TxDOT's review and approval of the abstract. The paper or presentation must then include a disclaimer that TxDOT has not reviewed the findings. Submit a copy of the complete material to RTI as soon as possible. If there is time before the material is scheduled to be presented, TxDOT will review the material, and the disclaimer may be able to be removed.

Section 3

Technical Memorandums Standards

Overview

Project Agreements include provisions requiring the Project Supervisor to submit a Technical Memorandum (Tech Memo) to RTI at the end of each task. Tech Memos document project work as it progresses and provide current research results to TxDOT. Tech Memos also benefit the project by facilitating the preparation of project reports. Tech Memos are due on the date listed in the Project Deliverables Table. Typically this date is the final day of the month at the end of the respective task.

Contents

Tech Memos will include detailed information about the work completed under each task reported and the results of corresponding work. For example, if the focus of a task in the Work Plan is to conduct certain types of tests on materials, the Tech Memo submitted for that task would typically discuss several issues:

- How the tests were structured.
- Criteria established for evaluation of test results.
- Types of materials tested.
- How many tests were conducted, and on how many samples of each material.
- Test results – presented in a way that is meaningful, effective and relevant to the objectives of that work task.

Data collected during work on a task should generally be delivered to TxDOT with, or in, the Tech Memo. The data will be delivered in the manner most effectively communicated. Raw data to be analyzed or used by TxDOT is best delivered electronically, as raw data. In other cases, or in addition to the raw data, a chart or graph presenting an analytical view of the data may be most appropriate.

Each Tech Memo will present any conclusions, or preliminary findings, that researchers have drawn from completed work. The preliminary findings or conclusions will facilitate TxDOT utilization and ensures relevance throughout the project, as well as highlight variations in project objectives and methodology from project inception.

The contents appropriate for each Tech Memo are dependent on the work completed. The Project Supervisor uses judgment to determine what should be included, or discusses any concerns with the Project Team before preparing a Tech Memo.

Minimum Requirements

- **Each Tech Memo must be understandable.** RTI does not require that Tech Memos be professionally edited before they are submitted, nor does RTI prohibit editing of Tech Memos by any university personnel.
- **Each Tech Memo will be in a format that effectively communicates the information.** RTI does not require Tech Memos to be in a specific format. If a task is defined in such a way that the work will most likely represent a distinct chapter in a technical report, the Tech Memo can be submitted in that format.
- **Each Tech Memo will be submitted to TxDOT on or before the due date per the Project Deliverables Table.** If a task is scheduled to be conducted over a period of many months, the Project Supervisor or the Project Team may decide that an interim Tech Memo would benefit the project.

How to Submit

Tech Memos should be sent electronically to RTIMain@txdot.gov, copying the RTI Project Manager.

Tech Memos are typically submitted to TxDOT by the Project Supervisor. Other university personnel may submit Tech Memos with the approval of the Project Supervisor.

Chapter 6 Deliverables

Table of Contents

Section 1	6-3
Submission, Review, and Publication	6-3
Deliverables Required on Each Project	6-3
Value of Research	6-3
Monthly Progress Reports (MPRs)	6-5
Products.....	6-6
Publication and Distribution.....	6-7
Section 2	6-9
Technical Report Standards	6-9
General	6-9
Cover Page.....	6-9
Technical Report Documentation Page.....	6-9
Title Page	6-9
Credits for Sponsor	6-10
Disclaimer(s)	6-10
Acknowledgments.....	6-11
Table of Contents.....	6-11
List of Figures	6-11
List of Tables	6-12
List of Abbreviations and Symbols.....	6-12
Body of the Report	6-12
Use of Copyrighted Material.....	6-14
Section 3	6-16
DOT F 1700.7 Instruction	6-16
Technical Reports	6-16
Draft Products	6-17
Section 4	6-18
Project Summary Report Standards	6-18
General	6-18
Contents	6-18
Copyrights.....	6-19
Ownership and Release of Data	6-19

Section 5	6-20
Product Standards	6-20
General	6-20
Equipment and Devices.....	6-20
Guidebooks and Manuals General	6-20
Construction Specifications	6-21
Training Materials	6-21
Video Presentations.....	6-21
Technical Report Documentation Page.....	6-22
Copyrights.....	6-22
Ownership and Release of Data	6-22

Section 1

Submission, Review, and Publication

Deliverables Required on Each Project

The Project Deliverables Table specifies the deliverables due to TxDOT. The requirement for a deliverable and its due date will only be changed by modifying the Project Agreement.

Value of Research

The initial version of the Value of Research (VoR) should be included in the Project Agreement as the first deliverable. The VoR template shall be completed and included with the write up on the economic based calculations, the description of economic variables used within the calculations, and the qualitative values of the Project Sponsor's selected benefit areas within a Tech Memo.

- The VoR for TxDOT and the State of Texas shall be determined for all projects. Value turns the subjective into the objective, which can often turn uncertainty into support. It also builds stakeholder support for projects and to further research if new phases or possibilities arise. It can also uncover additional benefits. Determining value services practitioners to investigate benefits that might not have seemed obvious at project inception.

VoR Benefits

The Project Sponsor will select and “define” the benefit areas below.

The VoR benefit areas are as follows.

Benefit Area	Qual	Econ	Both	TxDOT	State	Both
Level of Knowledge	X			X		
Management and Policy	X			X		
Quality of Life	X			X		
Customer Satisfaction	X			X		
Environmental Sustainability	X				X	
System Reliability		X		X		
Increased Service Life		X		X		
Improved Productivity and Work Efficiency		X		X		
Expedited Project Delivery		X		X		
Reduced Administrative Costs		X		X		
Traffic and Congestion Reduction		X			X	
Reduced User Cost		X			X	
Reduced Construction, Operations, and Maintenance Cost		X			X	
Materials and Pavements		X			X	
Infrastructure Condition		X				X
Freight movement and Economic Vitality		X				X
Intelligent Transportation Systems		X				X
Engineering Design Improvement			X			X
Safety			X			X

VoR Template

The Value of Research Template is an RTI form provided to the University Liaisons and should be used for all VoR reporting. It is a plug-n-play spreadsheet which will calculate multiple formulas based off a few inputs.

Complete the following on the VoR Template:

'Benefit Area Variable Amounts' Tab

- Benefit Area: list the designated benefit areas selected by the Project Lead; each area can be listed once and can have multiple values associated.
- Value: List each of the variables amounts, individually, for the selected economic benefit areas; which are expanded upon within the Technical Memo. Add additional columns as required by each benefit area.

'Value of Research' Tab

- Project #

- Project Name
- Agency Name(s)
- Project Budget (Total for all project years)
- Project Duration (Years): Do not round, equate the number of months into the appropriate decimal using .08333 for each month.
- Expected Value Duration (Yrs)
- Expected Value (per Yr): Expected Value is the amount of savings to TxDOT and/or the State of Texas; the amount comes from the total from the 'Benefit Area Variable Amounts' Tab.
- Discount Rate: Typically 5%
- Total Savings, NPV, Payback Period, and Cost Benefit Ratio are calculated.

VoR Tech Memo

Within the Tech Memo, each of the selected qualitative and economic benefit area's variables should be defined and discussed in association to the project and the VoR. Some benefit areas can contain multiple variables. A narrative for the expected value duration, Expected Value, and Discount Rate variables should be discussed to validate the estimates of the VoR; include references and source material as needed.

VoR in the Research Report

At the end of the project, the VoR will be reevaluated and discussed within the Research Report. Researchers will highlight and discuss findings of the research that effects the VoR economic and qualitative benefit areas. Researchers will also recalculate the VoR template with the updated economic benefit area variables. Variances between the initial and new VoR estimates should be contrasted and discussed.

Monthly Progress Reports (MPRs)

MPRs should be completed on a monthly basis and completed on the latest template from TxDOT. MPRs are due the last day of the month and are the only deliverable that have a three (3) day grace period.

Complete the following information:

- Project Number
- Project Name
- Agency
- Month/Year
- Answer the listed questions

- Work Completed/Ongoing This Month: Expand the actual work within the tasks and deliverables being worked on and completed.
- Work Planned Next Month: Expand upon the ongoing work within the tasks and any expected, completed deliverables.
- Comments/ Issues: Discuss any concerns that the Research Team is facing, or that Project Manager and Team should know of.

Submission of Deliverables

Deliverables are due on the date listed in the Project Deliverables Table, and are to be submitted to RTIMain@txdot.gov, copying the RTI Project Manager.

Technical Memorandums

Project Agreements include provisions requiring the Project Supervisor to submit a Technical Memorandum (Tech Memo) in association with a task to RTIMain@txdot.gov, copying the RTI Project Manager. Tech Memos document project work as it progresses and provide current research results to TxDOT. Tech Memos also benefit the project by facilitating the preparation of project reports. Tech Memos also benefit the project by facilitating the preparation of project reports.

Technical Reports

RTI will evaluate each submitted draft, log the report as received, and then coordinate the review and approval process within TxDOT. The contractual requirement for a technical report deliverable is met once an approved final complete submission is received by RTI.

Project Summary Report

A Project Summary Report (PSR) that highlights the key findings and recommendations from the research. This shall be submitted to RTIMain@txdot.gov, copying the RTI Project Manager per the Project Deliverables Table.

Products

Products submitted to RTI will be coordinated for a review and approval process within TxDOT.

Equipment: When equipment is specified for delivery to a location other than RTI, notify RTI of the delivery, and include the following information:

- Which product the equipment represents.
- When and where the equipment was delivered.
- Who (TxDOT) accepted delivery.
- A picture of the deliverable, including front and side views, when possible.

Intangibles: When products are not tangible items to be delivered physically, such as university's conducted workshop, notify RTI of the product delivery and include with the notice any related tangible materials available.

Deadline for Submission

Draft deliverables, in compliance with submission requirements, must be received by RTI by the due date on the Project Deliverables Table. For those products where the Project Deliverables Table specifies another location for delivery, the formal notice to RTI meets this submission requirement.

TxDOT Review Process

The PM is responsible for final acceptance or approval of each deliverable. During the review process, the PM considers comments from Project Team members and the Project Supervisor. After the TxDOT review is complete, RTI will provide further instructions.

Final Approval

RTI will provide publication and distribution instructions along with formal approval. The instructions may vary, dependent on the deliverable, the anticipated audience, and the cost of publication.

Publication and Distribution

- **Approved deliverables that TxDOT elects not to publish** — The University may not publish at its own expense.
- **Disapproved deliverables** —The University can revise and resubmit the report. The document may not be published until an approval is received from RTI for publication.
- **Deliverables containing classified or sensitive information** — The University shall comply with any written request from TxDOT to restrict access and distribution of any deliverable containing information that TxDOT determines to be classified or sensitive. Any disagreement on the part of the University will be submitted to RTI in writing.

Publication and Reproduction Costs

If the university does not have the resources to publish an approved deliverable in accordance with RTI's instructions, contact RTI to discuss potential options. TxDOT may opt to publish the deliverable, using TxDOT or other resources.

Copies Retained by the University

A university may publish up to five hard copies of any approved report or product, at TxDOT's expense. Hard copy needs beyond these limits will be discussed with RTI in advance of publication, and will be evaluated on a case by case basis.

Section 2

Technical Report Standards

General

Technical reports will be developed, published, and reproduced to reflect the best professional standards of the university or research agency. They will be written and edited per current professional standards of style and usage, such as The Chicago Manual of Style or the Federal Highway Administration (FHWA) publication guidelines.

Cover Page

A formal cover page is required on each published report, produced on heavy stock and designed by the university responsible for the report. Information shown on the cover page will include the information listed below:

- Name of the university, prominently displayed;
- Title of the report, prominently displayed;
- TxDOT report number, prominently displayed;
- TxDOT project number;
- URL where the report will be posted on the Internet;
- Additional information may be included at each university's option.

Technical Report Documentation Page

A DOT F 1700.7 form will be included in each technical report. The DOT F 1700.7 will be used as the cover page on a draft report submitted to TxDOT for review. The form is included as the first page of the front matter in reports published in hard copy, and may serve as the cover page for a report published on-line.

Title Page

The Title Page follows the Technical Report Documentation Page, and will include the following information:

- Title of the deliverable;
- Researchers and their research agency(ies);
- Deliverable number, including the entire project number and deliverable item number;

- Project number;
- Project title;
- Sponsoring agency(ies);
- Date; and
- Performing agency.

Credits for Sponsor

The following statement will be included either on the report cover or on the title page of each report:

“Performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration.”

If the FHWA credit will be omitted, or other sponsors included in the credits, RTI will notify the University of the required changes.

Disclaimer(s)

Disclaimers, as appropriate, are presented on a separate page, following the title page.

- **Author’s Disclaimer** – required in all technical reports, and states:

“The contents of this report reflect the views of the author(s), who is (are) responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA) or the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation.”

- **Engineering Disclaimer** – required on all technical reports that contain engineering recommendations and states:

“This report is not intended for construction, bidding, or permit purposes.”

This disclaimer will be accompanied by a statement identifying the engineer in charge of the project, including name, P.E. designation, and license number.

All technical reports produced for TxDOT under this program will comply with the requirements of the State of Texas and TxDOT related to signing, sealing, and dating of engineering documents, as applicable to work produced under the specific project.

Trade Names / Manufacturers' Notice

Reports will avoid the appearance of endorsing or favoring a specific commercial product, commodity, or service. Trade names or manufacturers' names are given only if their exclusion results in the loss of meaningful information. When trade names or manufacturers' names are used in a report, the following "notice" will be included on the disclaimer page:

"The United States Government and the State of Texas do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report."

TxDOT Disclaimer

If TxDOT disapproves or conditionally approves the report, the University must include any disclaimer deemed appropriate by RTI.

Acknowledgments

Members of the Project Team will be acknowledged in each report, along with their organizations. For TxDOT employees, the acknowledgment may include the "Texas Department of Transportation" rather than individual district or division affiliations. Acknowledgments are presented on a separate page following the disclaimers.

Table of Contents

Each report will contain a table of contents, following the acknowledgments page. This table will include all principal headings and subheadings as they appear in the report, along with page numbers. Lists of figures, tables, and abbreviations may follow, as required.

List of Figures

A list of figures (includes figures, illustrations, and photographs) is required for reports containing five or more figures, and may be included at the author's option in any report. This list will contain:

- The number of each figure;
- The title or caption for each figure; and
- The page number of each figure.

List of Tables

A list of tables is required for reports containing five or more tables, and may be included at the author's option in any report. This list will contain:

- The number of each table;
- The title for each table; and
- The page number of each table.

List of Abbreviations and Symbols

If a report contains numerous or unusual abbreviations or symbols, the author should include a list that clearly defines each abbreviation and symbol.

Body of the Report

The body of the report will include all the information needed to adequately support the conclusions and recommendations presented. Contents will be logically organized into chapters. Clearly identify Project Recommendations.

References will be included for specific sources cited in the report. References will contain author(s), title, publication number, publisher, and publication date. References shall be listed in a separate chapter or appendix. Material used to help conduct the project or develop the report, which is not specifically cited in the report, may be listed in a bibliography following the references.

- **Size Conventions**

Technical reports will be formatted for 8 ½ by 11 inch pages. Contents will be presented in portrait orientation, with a margin of at least 1 inch on all sides. Large charts or multiple charts presented together, which would not be easily readable otherwise, may be presented in a landscape orientation, or produced on oversize pages. All reports will be in a single-column format, to facilitate on-line reading. Individual reports may be divided into volumes if deemed necessary by the author.

- **Line Spacing**

For body text and other non-graphical elements, either single or one-and-one-half line spacing is acceptable. Reports with double line spacing will not be accepted.

- **Pagination**

Reports will be printed on both sides of the paper, except when standard bookmaking practice dictates that a left-hand page be left blank so that the start of a section (chapter, appendix, etc.) falls on a right-hand page.

- **Front Matter** — Number pages consecutively with lower case Roman numerals, such as ii, iii, etc. The Technical Report Documentation Page is always page 'i', but does not display the page number. The title page also is left unnumbered.
 - **Body of the Report** — Number pages consecutively, starting with Arabic numeral 1 and continuing uninterrupted through any back matter (appendices, list of references, etc.,) in the report. Page numbering each chapter or section separately using a dual system, such as “1-1”, is also acceptable.
- **Figures / Illustrations / Photographs**
 - **General** — Information in each report will be illustrated clearly and in a cost-effective manner. The most appropriate illustrations will depend on the type of work done and the amount of data gathered. PMs may request figures or illustrations be added to more effectively convey the content of the report.
 - **Numbering** — Figures will be numbered consecutively within chapters, using Arabic numerals in a dual system. For example, the second figure in Chapter 3 would be numbered “Figure 3-2”. Numbering figures consecutively through the entire report is also acceptable.
 - **Titles** — Each figure will include a title or caption, generally beneath the figure. The title will quickly and simply describe the essence of the figure. If a legend is required to make the figure readily understandable, it will be included beneath the figure. Titles and legends will be distinguished from the body of the report by placement (for example, centered just beneath the figure) and a difference in font.
 - **Labels** — Labels within figures will appear in a consistent font throughout a report, as that is practical. A font will be chosen for readability and contrast with surrounding text.
 - **Color** — Figures will not be printed in color unless authorized by RTI, either by a specific statement, or approval of a draft submitted in color. Approved reports may be delivered electronically, such as on university web sites, in full color without specific permission from RTI, even if the draft was submitted in black and white. When figures are developed, colors or patterns will be chosen for critical elements that can be delivered effectively in color electronically, and printed in black and white.
 - **Placement** — Each figure will be placed near, but not before, its first reference in the text. If a report contains few text pages and many figures, place all the figures sequentially after the text.

- **Tables**

- **Tables Numbering** – Tables will be numbered consecutively within chapters. For example, the first table in Chapter 4 would be numbered “Table 4-1” and the second table in Appendix A would be numbered “Table A-2.” Numbering tables consecutively through the entire report is also acceptable.
- **Titles** – Each table will include a title at the top of the table. The title will quickly and simply describe the essence of the data presented in the table. Any legends or notes needed to make the table readily understandable will be included within, or just below the table. Titles will be distinguished from the body of the report by placement (for example, centered just above the table) and a difference in font.
- **Placement** – A table will be placed near, but not before, its first reference in the text. If a report contains few text pages and many tables, place all the tables sequentially after the text.

- **Equations**

- **General** – For each independent equation or for the first in a series of related equations, authors will identify symbols after their first use, or in a separate list, to aid the reader.
- **Numbering** – Within each chapter, sequentially number equations that are part of a series, or which are referred to consecutively in the text, with Arabic numerals in a dual system. Enclose each number in parentheses at the right margin on the last line of the equation elements. For example, “(Eq. 1-2)” in chapter 1, or “(Eq. A-2)” in appendix A. Numbering equations consecutively through the entire report is also acceptable, if a list of equations is then added in the front matter of the report.
- **Placement** – Indent or center each equation in the line immediately following the first text reference made to it.

Use of Copyrighted Material

- **General** – No copyrighted material, except that which falls under the “fair use” clause, may be incorporated into a report without permission from the copyright owner, if the copyright owner requires such. Prior use of the material in a TxDOT or governmental publication does not necessarily constitute permission to use it in a later publication.

As applicable, copyrighted material used in a report shall be accompanied by a statement y as follows:

“Reprinted from (title of publication) by (name of author), by permission of (name of copyright owner). Year of first publication ____.”

- **Courtesy** – Acknowledgment or credit will be given by footnote, bibliographic reference, or a statement in the text for use of material contributed or assistance provided, even when a copyright notice is not applicable.
- **Caveat for Unpublished Work** –Some material may be protected under common law or equity even though no copyright notice is displayed on the material. Credit will be given and permission will be obtained as appropriate.
- **Proprietary Information** – To avoid restrictions on the availability of reports, proprietary information will not be included in reports, unless it is critical to the understanding of a report and prior approval is received from RTI. Reports containing such proprietary information will contain a statement on the Technical Report Documentation Page restricting availability of the report.

University’s Right to Copyright

Article 17, “Copyrights,” of the Cooperative Research and Implementation Agreement (CRIA) contains provisions relating to copyrights on materials developed under a research or implementation project.

Ownership and Release of Data

As stated in Article 16 of the CRIA, release of information contained in a report is restricted prior to approval of the report by TxDOT, to the extent allowed by the Texas Public Information Act.

Section 3

DOT F 1700.7 Instruction

Technical Reports

- Box 1, Report No. — Enter as FHWA/TX-09/0-1234-1, where:
 - FHWA = Federal Highway Administration,
 - TX = Texas,
 - 09 = year the report is approved,
 - 0-1234 = entire project number, including suffix if used on contract,
 - 1 = usually the Deliverables Table item number, without the preceding “R”.
- Box 2, Government Accession No. — Leave blank.
- Box 3, Recipient’s Catalog No. — Leave blank.
- Box 4, Title and Subtitle — Entire report title.
- Box 5, Report Date — Month and year report was written or last revised, whichever is later.
- Box 6, Performing Organization Code — Leave blank.
- Box 7, Author(s) — List all authors, primary author first, including first name, middle initial if available, and last name.
- Box 8, Performing Organization Report No. — Report number, consisting of entire project number and report number from Deliverables Table, 0-1234-1 for example.
- Box 9, Performing Organization Name and Address — Name and address of the research agency(s).
- Box 10, Work Unit No. — Leave blank.
- Box 11, Contract or Grant No. — Entire TxDOT project number, as on the contract.
- Box 12, Sponsoring Agency Name and Address— enter:

Texas Department of Transportation
Research and Technology Implementation Division
125 E. 11th Street
Austin, TX 78701
- Box 13, Type of Report and Period Covered — “Technical Report” and dates showing period of time covered by the report.
- Box 14, Sponsoring Agency Code — Leave blank.

- Box 15, Supplementary Notes — Enter “Project performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration.” If the title of the project is significantly different from the report title, enter the project title here.
- Box 16, Abstract — Include a brief (200 – 250 words) summary of the most significant information contained in the report. When applicable, the abstract should include advice on how the results of the research can be used.
- Box 17, Key Word — Terms or short phrases that identify the important topics in the report.
- Box 18, Distribution Statement — “No restrictions. This document is available to the public through the National Technical Information Service, Alexandria, Virginia 22312, www.ntis.gov.”
- Boxes 19 and 20, Security Classif. — Unless advised otherwise in writing by RTI, enter “unclassified”.
- Box 21, No. of Pages — Total number of pages in the report, excluding any bound covers.
- Box 22, Price — Leave blank.

Draft Products

Although not required with draft products, at the university’s option, this form can be included to help identify the deliverable. If including the form with a draft product, modify the contents of the form, compared to a technical report, as discussed below. This form is not generally published with stand-alone products; as such products will carry enough information to be readily identifiable without this form.

- Box 8 —Indicate “Product”, and include the entire product number from the Deliverables Table, 0-1234-P2 for example.
- Box 13 — Indicate “Product”, and do not include a “period covered”.
- Boxes 18, 19, 20 — leave blank.

Section 4

Project Summary Report Standards

General

PSRs are required for projects. PSRs are utilized to communicate information about research results to a broad audience, although technical information may be included. PSRs serve as a link between research and implementing the results of that research.

The material for the body of each PSR is prepared, edited and submitted by the lead university on the project. The PSR is then reviewed and approved by TxDOT.

The ideal PSR is a clear and concise description of:

- Why the research is important;
- What the research accomplished;
- How the research results may be utilized for implementation.

Contents

The body of each PSR is limited to 1000 words (if no graphics are included) and discusses the topics listed below. A Technical Report Documentation Page is not required with a PSR.

- Background – A brief description of the purpose and scope of the project and why the research was important.
- What the Researchers Did – A brief summary of project activities (e.g.: literature review, interviews, laboratory and field testing, surveys, monitoring of test sections, development of a draft specification), and problems encountered.
- What They Found – A summary of the research findings and conclusions drawn from those finds, and whether or not the findings were expected.
- What This Means – Suggestions from the research team for putting project findings to use.

A graphic is not required in a PSR, but may be used if it will most effectively convey the information. The 1000 word limit must then be reduced to make space for the graphic(s). Graphics will be clear, simple and referenced in the text of the PSR to effectively convey meaning to the reader.

The university shall include the names of all university researchers who should be credited.

Copyrights

Article 17, “Copyrights,” of the CRIA contains provisions relating to copyrights on materials developed under a research or implementation project. The same standards for use of copyrighted material, and ownership of copyrights, apply to PSRs that apply to technical reports.

Ownership and Release of Data

As stated in Article 16, “Ownership of Data,” of each CRIA, release of information contained in a report is restricted prior to approval of the report by TxDOT, to the extent allowed by the Texas Public Information Act.

Section 5 Product Standards

General

Products are intended for implementation within TxDOT operations. The Project Deliverables Table for each project specifies the form or media in which each product will be delivered, and any specific format required. All products will be developed and produced in final form in a manner that reflects the best professional standards of the university or research agency. Standards applicable to specific types of products commonly required by TxDOT are included below.

Equipment and Devices

- General-Equipment deliverables, as discussed here, are tangible devices developed or procured under a research or implementation project specifically for delivery to TxDOT.
- Physical Delivery to TxDOT —The Project Deliverables Table specifies where within TxDOT the university will deliver the equipment. Physical delivery will often be to a functional Division, or a District, rather than RTI.
- Schematics — Working plans or schematics may or may not be required, dependent upon patent filing contemplated by the university.
- Patents — Article 18, “Patents,” of each CRIA contains provisions relating to patentable discoveries or inventions resulting from research or implementation projects.

Guidebooks and Manuals General

Products such as guidebooks, manuals, and similar items are developed as specified by TxDOT. Often developed as printed documents and published in non-traditional formats, guidebooks and manuals may be printed on heavy stock or waterproof material, or in a size smaller than 8.5 by 11 inches, to facilitate use in the field. Guidebooks and manuals may be published electronically as a PDF document that includes active hyperlinks to resources on the Internet.

- Standards — When a product is developed as printed material, all of the technical report standards that can be reasonably applied to the document will be, except the requirement for a Technical Report Documentation Page (form DOT F 1700.7). If a form 1700 is needed with the final delivery of a product, RTI will notify the university.
- Final Publication within TxDOT — When a department manual is developed under a research or implementation project managed by RTI, the final outcome is a draft

department manual. Once the PM approves the product on the RTI project, RTI ensures the appropriate District or Division, is responsible for the functional area, and receives the material in a format that will facilitate final approval and publishing of the manual within TxDOT.

Construction Specifications

- Format – Specifications will be delivered in a format consistent with those found in the current version of TxDOT’s standard specifications.
- Final Approval within TxDOT – Once specifications are approved by the PM, they must be approved by TxDOT’s Specification Committee before distribution for use.
- Other Specifications Format – The required format for delivery of specifications, other than construction specifications, will typically be stated on the Projects Deliverables Table in the Project Agreement. If not stated in the Project Agreement, the required format will be discussed with the PM before the specification is submitted to RTI.

Training Materials

- Development – Development of training materials shall be coordinated with the agency that will ultimately be responsible for providing and supporting the training. Within TxDOT, this may be a specific technical division or the Human Resources Division. It may also be an outside entity, such as the National Highway Institute (NHI).
- Format – The format in which the training material will be delivered is specified on the Project Deliverables Table. For a specific training module, multiple formats may be required, such as student notebooks for a workshop, hard copy and electronic instructor material, and a video presentation. Some training modules may be required to be delivered via the internet.

Video Presentations

- Quality – Commercial quality equipment shall be used to document research work or develop into a formal presentation.
- Scripts – Scripts for formal presentations will be submitted to RTI for review at least 60 days prior to the start of production.
- Review of Draft – A draft of the presentation will be presented to RTI and members of the Project Team for review, prior to final editing.

Technical Report Documentation Page

A Technical Report Documentation Page is not generally required. Each product will carry adequate identifying information, on the product itself, to make this form unnecessary. If the university chooses to submit this form, see “Draft Products” in Section 3 of this chapter.

Copyrights

The same standards for use of copyrighted material, and ownership of copyrights, apply to products that apply to technical reports, when the product is one to which these standards can be logically applied.

Ownership and Release of Data

As stated generally in Article 16, “Ownership of Data,” of each CRIA, release of information contained in a product is restricted prior to the approval of the product by TxDOT, to the extent allowed by the Texas Public Information Act.

Chapter 7 University Costs

Table of Contents

Section 1	7-2
Allowable Costs	7-2
Eligibility Requirements.....	7-2
Cost Control.....	7-3
Equipment.....	7-3
Supplies.....	7-3
Facilities	7-3
Indirect (Overhead) Cost Charges.....	7-3
Salary and Travel	7-4
Foreign Travel.....	7-4
Proposal Preparation.....	7-4
Section 2	7-5
Equipment	7-5
General Requirements of Equipment.....	7-5
Approval for Procurement	7-6
Equipment Purchases Must be Necessary and Reasonable.....	7-6
Procurement Reporting	7-6
Working Title.....	7-6
Possession and Use.....	7-6
Property Management.....	7-7
Disposal.....	7-8
Section 3	7-9
Invoicing	7-9
Submitting Invoices	7-9
Electronic Format -	7-9
Basic Billing Requirements	7-10
Deliverables Base Projects	7-10
Traditional Projects.....	7-11
Supporting Documentation	7-11
Documentation of salary charges to clearly show:.....	7-12
Documentation for equipment purchases:	7-12
Review and Payment by TxDOT.....	7-13

Section 1

Allowable Costs

Eligibility Requirements

Eligible costs chargeable by universities, and other research agencies to TxDOT's Research and Implementation Projects are outlined in 2 CFR 200, which became effective on December 26, 2014. The following principles must be met for costs to be eligible for reimbursement by TxDOT:

- Project Agreement must be executed by RTI for any costs to be eligible for reimbursement by TxDOT.
- Costs must be necessary and reasonable on the specific project to which the costs are charged.
- Costs meet all applicable principles for allowable costs in federal regulations.
- Costs are payable under Texas state requirements and rules, including the determination of the correct state budget year.
- Costs must be within the scope of the executed Project Agreement and included on the Itemized Budget – Exhibit A.
- Costs must be incurred during the term of the Project Agreement.
- Costs must be within the approved budget limits (see CRIA Article 9, “Budget”) for the project.

While there is some judgment involved in determining what costs are necessary and reasonable, there are some costs that should not be charged to a project, such as:

- Business meals not related to travel.
- Costs not actually incurred. For example, charging an amount based on an allowance or estimate, rather than actual cost.
- Salary for someone who did not work on the project for the amount of time charged.
- Costs for preparing proposals.
- Purchases, such as equipment, that are not expected to be used on that project.

Cost Control

TxDOT and universities share the responsibility of ensuring that costs charged to RTI projects meet state and federal requirements. This responsibility is covered by CRIA Article 13, “Billing and Payment,” which discusses billing frequency, requirements, and limits.

Equipment

Refer to Section 2 of this chapter for requirements related to purchasing and safeguarding equipment purchased under RTI projects.

Supplies

“Supplies”, in this context, means tangible property other than that meeting the definition of “equipment” (see below). Prior approval is not needed from RTI to purchase supplies under a research or implementation project. The university generally retains title to supplies, unless RTI requests title in writing, or title is retained by TxDOT in the Project Agreement. Supplies should be used by the university on the project for which they were acquired. After the project terminates, the supplies should be used on other TxDOT projects.

If supplies valued in excess of \$5,000 are still on hand when a project terminates, RTI’s approval is needed to retain the supplies, without compensating TxDOT. Notify RTI in writing, describing the type of supplies still on hand, and how it is planned to be used. If the supplies will not be used on another TxDOT project, RTI will advise the university on how to compensate TxDOT.

Facilities

Universities and research agencies maintain and operate the facilities necessary to conduct research and implementation projects. Items such as standard office equipment, including general use computers, and furniture are part of these facilities and are not generally chargeable to TxDOT projects. Refer to CRIA Article 10, “Facilities, Equipment and Procurement”, for additional information. It discusses such things as equipment procurement, management, and maintenance and repair.

Indirect (Overhead) Cost Charges

Indirect cost charges by universities to TxDOT research and implementation projects are covered in CRIA Article 12, “Indirect Cost Charges”, which discusses indirect cost rate limits and what direct costs indirect rates may be applied to.

Salary and Travel

Salary and travel costs are covered in CRIA Article 11, “Salary and Travel Charges”. This article discusses general requirements for salary and travel charges, and the advance approval needed from TxDOT for out-of-state travel by university personnel.

Foreign Travel

In addition to the requirements in CRIA Article 11, university personnel are responsible for meeting all requirements of their agencies and the state for pre-approval of foreign travel.

Proposal Preparation

Costs incurred to prepare proposals in response to a Request for Proposal (RFP) issued by RTI must be covered by the university or research agency proposing. These costs may not be charged to a prospective or current TxDOT project. Refer to CRIA Article 1, “Nature of the Agreements” for additional information.

Section 2 Equipment

General Requirements of Equipment

University research facilities may not include all the equipment needed to complete a specific research or implementation project. Specialized items needed for a specific project are typically included in the project budget and procured under that project.

Pursuant to, Title 2-Grants and Agreements, Subtitle A, Chapter 11, Part 200- Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, Subpart A- Acronyms and Definitions, Section 200.33- Equipment, states:

“Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000. See also 200.12 Capital assets, 200.20 Computing devices, 200.48 General purpose equipment, 200.58 Information technology systems, 200.89 Special purpose equipment, and 200.94 Supplies.”

Both state and federal requirements govern equipment issues related to RTI projects. State requirements are implemented through the State Property Accounting (SPA) System maintained by the Texas Comptroller. Relevant federal requirements are contained in several documents, such as:

- Code of Federal Regulations, Title 23- Highways, Revised as of April 1, 2014, Subchapter E- Planning and Research, Part 420- Planning and Research Program Administration, Subpart A- Administration of FHWA Planning and Research Funds.
- Code of Federal Regulations, Title 2-Grants and Agreements, Subtitle A, Chapter 11, Part 200- Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

In general, federal requirements state that any equipment acquired under an RTI project should be used, managed, and disposed of according to state and federal requirements. Universities are required to follow 2 CFR 200 which is consistent with state property management requirements.

The remainder of this section summarizes the requirements covering acquisition and property management for university equipment acquired under RTI projects. Equipment provisions are covered in general in CRIA Article 10, “Facilities, Equipment and Procurement”.

Approval for Procurement

Procured equipment must be approved for purchase under current state procurement methods and requirements.

Approval for an equipment purchase under an RTI project is obtained and evidenced by being specifically identified on the approved Itemized Budget Exhibit A for the project. In addition, equipment must be purchased in the fiscal year in which it is budgeted.

Equipment Purchases Must be Necessary and Reasonable

- Equipment purchased under a project, must be for use on that project.
- Purchases made near the end of a project, when there is no reasonable expectation that the equipment will be used on that project, will not be reimbursed by TxDOT, regardless of budget or purchase approval.

The university may elect to rent the equipment from a third party if cost savings will accrue to the project. The equipment rental from a third party should be listed on the Itemized Budget - Exhibit A.

Procurement Reporting

Universities report equipment purchases to RTI through:

- their billings that include these costs. For details on the information required, see Section 3 below
- Monthly Progress Reports (MPR)

Working Title

TxDOT retains ownership of the title to all equipment purchased under RTI projects, unless RTI transfers title, in writing, to a university. If TxDOT and a university share the cost of a piece of equipment, they share title. If the university incorporates a component purchased by TxDOT into a piece of equipment, such that the component cannot be recovered from the equipment, TxDOT and the university share title to that equipment.

Possession and Use

The University shall use equipment on the project for which it was acquired until it is no longer needed on that project. TxDOT may then allow the university to retain possession of the equipment for use on other TxDOT projects funded through the Research and

Implementation Program. Such equipment should not be used on non-TxDOT projects, unless approved in advance by RTI. TxDOT may ask for the return of TxDOT equipment at any time after project termination, or cancellation.

Property Management

The university must maintain effective property records for all equipment purchased under RTI projects and still in the University's possession. Effective inventory records typically include:

- A clear description of the equipment.
- Serial number, model number, date of manufacture, or other available manufacturer's identification information.
- State or university property identification number.
- Source of the equipment, including the RTI project number.
- Who holds title.
- Date purchased (or date received if furnished by TxDOT or the Federal government).
- Cost of the equipment.
- Location of the equipment.
- Condition of the equipment and last inventory date.
- Disposal data, including date and price.

Universities are responsible for properly tagging, maintaining, and securing equipment. If TxDOT pays for all or part of a piece of equipment, it must be tagged with a TxDOT-RTI inventory tag. The university is also responsible for conducting annual equipment inventories, and reporting equipment in their possession per the State Property Accounting System (SPA). Loss, damage to, or theft of equipment should be investigated by the university, fully documented, and reported to RTI.

RTI is responsible for tracking equipment purchased under research and implementation projects as long as TxDOT holds title to the equipment, or until a university disposes of the equipment, whichever comes first. RTI maintains inventory records for such equipment, performs physical inventories, and monitors each university's inventory process. During physical inventory, RTI will tag equipment in the University's possession as belonging to TxDOT, if the equipment was not previously tagged.

Disposal

When the university no longer needs TxDOT equipment used within its research, inform RTI in writing that it is no longer needed. State the condition of the equipment and an estimated fair market value. RTI will evaluate the condition and potential uses for the equipment, and instruct the university about disposal actions. Equipment purchased under an RTI project should not be transferred to another agency, or disposed of, without contacting RTI and receiving approval.

Section 3 Invoicing

Submitting Invoices

RTI considers timely invoice submissions to be critical for effective project management. Invoices should be sent directly to RTI **monthly** and no later than 120 days after costs are incurred*. If a significant invoicing delay is expected, notify RTI in advance and include the reason and the estimated amount. CRIA Article 13, “Billing and Payment”, includes provisions covering billing frequency, references to cost principles and circulars, and penalties assessed on untimely billings. Late-invoicing penalties are waived on expenses under \$500 and are waived altogether if the penalty total on an invoice is below a \$50 minimum threshold.

Electronic Format –

All invoices are required to be submitted in PDF format (1 PDF file per invoice). The file can be submitted:

- By email to RTI_Invoices@txdot.gov, if the email and attachment together are smaller than 15 megabytes.
- Larger files can be sent to RTI through TxDOT’s drop box service, available at <https://ftp.dot.state.tx.us/dropbox>.

Before submitting an invoice, perform a quality control check to ensure the invoice is acceptable. RTI recommends checking at least the following points:

- In order to save data storage space, PDFs are scanned in black and white, not in color
- Excess supporting documentation beyond requirements (see “Supporting Documentation” below) is removed.
- Invoices should only be submitted after the corresponding deliverables have been received by RTI.
- For Deliverables Base projects, the Invoice Report form has been completed and the Invoice Total is correct.

All charges must be for costs incurred during the term of the agreement and within the fiscal year billed. The fiscal year in which a cost is incurred is determined by state purchasing and fiscal management standards. See §5.56 of Title 34, Part 1, Chapter 5 of the Texas Administrative Code for more information.

Send a final invoice, marked "FINAL", for each fiscal year a project is active. RTI requests final billings for projects to be submitted by October 31st for the previous year*.

If you cannot meet the October 31st deadline for final invoices*, send RTI a notice by this date, to include project(s) to be billed late, the estimated amount(s) remaining to be billed, and an explanation for late billing. If RTI does not receive a notice of remaining charges on a project by October 31st, RTI will consider the last invoice received by October 31st *, for that project year, as the final invoice; even if it is not marked.

For equipment which was not received by the end of the fiscal year to be billed, also send a copy of the purchase order awarded during that fiscal year.

***NOTE: Based on requirements in 2 CFR 200.343 through 200.345 regarding project closeout, all invoices for terminating projects, including those projects terminating in mid-year, must be sent to RTI no later than 90 calendar days after the project termination date. Consideration should be given to allow time within the 90 calendar days for any resubmissions requested by RTI.**

Basic Billing Requirements

An invoice is payable when the deliverables have been received and accepted.

Basic billing requirements are that each invoice be legible, and include at least the information listed below for Deliverables Base or Traditional projects. Each invoice may include other information for the university's benefit, such as university reference numbers, but should not include a TxDOT charge number.

Deliverables Base Projects

An Invoice Report form will be provided by RTI for each project, with some fields pre-filled. When submitting an invoice, include an Invoice Report with the following required fields and sections completed:

- Project #
- Project Title

- Month/Year being invoiced – The Month/Year must fall within the active dates of the project.
- University Invoice #
- Vendor (Agency)
- Supplier #
- PO # (as given by RTI)
- RTI PM
- Expenditure Information Section
- Fiscal Year Budget Section

Traditional Projects

On the invoice, include at least the following information:

- TxDOT Project number,
- Project title,
- Agency,
- Billing Period. The billing period must fall within a single fiscal year, and within the active dates of the project,
- University invoice number,
- Amount due,
- Cumulative fiscal year-to-date amount, including the current invoice.

Supporting Documentation

Break-out pages detailing all expenditures/charges on the invoice, including amount, date posted, voucher numbers, break-out of fringe benefits, etc.

Documentation of all out-of-town travel (travel away from the researcher's normal work location) sufficient to clearly show:

- who traveled,

- date(s) of the travel,
- destination(s),
- purpose of the travel,
- who the researcher met with,
- when billing for weekend days provide a clear explanation
- specific costs (meals/lodging, mileage, etc.), and
- RTI approval prior to the travel for out-of-state (including foreign) travel.

Documentation of salary charges to clearly show:

- who worked on the project that billing period,
- total cost charged for each person,
- pay period, and
- monthly or hourly rate of each person working on the project. (Show salary rates by directly stating each person's rate in supporting documentation, or by showing the percentage of monthly time or number of hours being billed.)

Documentation of tuition costs showing the name, semester and amount charged for each person.

Documentation of supplies/equipment costs, which should clearly identify all items purchased. A copy of the vendor's invoice or receipt is required for charges over \$250. For charges under \$250, if a vendor invoice or receipt is not available, another form of documentation would still be required.

Documentation for equipment purchases:

- Send evidence that the equipment has been added to the university's inventory system, such as a screen print from the university or state property accounting system, or other documentation showing:
 - Description of equipment, including make, model number, and serial number if available
 - university equipment number
 - date of purchase

- current location of equipment
- For equipment which was not received by the end of the fiscal year to be billed, a copy of the purchase order awarded during that fiscal year

Documentation to support charges for services received from outside the university. For outside service charges, a copy of the vendor's invoice or receipt is required for charges over \$250. For outside service charges under \$250, if a vendor invoice or receipt is not available, another form of documentation would still be required.

Documentation adequate to support charges for services received from another department within the university.

Documentation to explain and justify unusual costs; such as excessive printing, significant equipment repair costs, unusual supply costs, or similar items.

Universities are encouraged not to send supporting documentation beyond what is required. The inclusion of excess documentation increases the time required to process invoices and may generate more questions from RTI to the university.

Review and Payment by TxDOT

After submission, invoices are reviewed by RTI accounting staff and the Project Managers.

Project Managers review invoices for reasonableness and to identify charges that may not relate to approved project work. If there are questions, the Project Manager will contact the Project Supervisor or request the Accounting Specialist to ask for additional information.

RTI determines whether payment should be withheld because deliverables are overdue. Whenever possible, universities should not submit invoices for projects with overdue deliverables.

Invoices that pass RTI's review, without needing additional information, are typically paid by the Comptroller's Office 30 days after their receipt at RTI.

RTI will request the university's accounting staff to resubmit an invoice requiring adjustment and will advise them if an invoice is declined. For questions about the status of payment of an invoice after that time period, contact RTI to help resolve the issue.