# Appendix A: Deliverable Base Project Agreements

## Chapter 3
## Proposal Requirements

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# 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:

- Form ProbStat Research Problem Statement

- Form ProjStat, Research Project Statement

- Form IPR, Implementation Project Recommendation

- Deliverable Base Forms: Exhibit A, Deliverables Table, Schedule of Activities

**Electronic Format** – All proposals are required to be submitted in PDF format (1 PDF file per proposal). The file can be submitted:

- By email to RTI 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.

**Delivery Methods and Locations** – The acceptable methods and addresses for delivery of proposals are included in the RFP instructions distributed by RTI. Proposals must be received before the deadline.

## Other Critical Reminders:

- Submit only 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 is set by RTI and is stated in the RFP instructions.

- **Responsibility for Delivery of Proposals** – The University is responsible for ensuring the timely arrival of each proposal at 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 and it does not 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 right email address.

# Section 2
## Required Documents

### Overview

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

- Cover Page (on an RTI form)

- Itemized Budget, Exhibit A (on an RTI form)

- Project Description, Exhibit B, consisting of:
  - Project Abstract,
  - Implementation,
  - Work Plan,
  - Estimated Cost Savings
  - Assistance or Involvement by TxDOT,
  - Value of Research (include the RTI form),
  - Deliverables Table (on an RTI form), and
  - Schedule of Research Activities (on an RTI form)

- Background and Significance of Work

The Project Agreement's pages are numbered as one document, beginning with "1 of X". The correct page order is in Chapter 3, Section 2, Overview.

A second Work Plan is required and to be fully redacted in a PDF format.

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 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.

### Elements of the Cover (Signature) Page

The Cover Page serves as the signature page for a Project Agreement and should always be prepared using the current RTI form. Each Cover Page includes the elements discussed below.

- **Fiscal Year** –This is the fiscal year when the project is activated.

- **Heading** – Labels the document as a "Project Agreement" and identifies the performing agency(s), the lead agency first.

- **Research or Implementation Project** – Check the appropriate box to indicate the type of project.

- **Project Number** is the project number from the Project Statement included in the RFP.

- **Document Date** is 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** is the project title from the Project Statement included in the RFP.

- **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 for each Deliverable by proposed fiscal year for the agency completing the all or part of the Deliverable. This detailed budget (by agency, fiscal year) is attached as Exhibit A. The Budget incorporates all Exhibit As into the Project Agreement. If there is a

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discrepancy between the total budget on an 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 page order is in Chapter 3, Section 2, Overview.

**Information for these items is 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 parts III and IV may be left blank. Do not change the standard language on the RTI form.

# Section 4
# Exhibit A

## Overview

Each proposal will include a separate **Itemized Budget – Exhibit A** for each performing agency(s) on a project, for each year of the proposed 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 deliverable.

TxDOT realizes that the assumptions used to estimate individual cost items may change as the project progresses.
- During a project, a university may move funding between cost items, or add cost items, within the Itemized Budget for a fiscal year without TxDOT approval, as long as the total project cost for that year does not change. A revised Itemized Budget is not required in these instances.
- During a project, a university may move funding between deliverables within the Itemized Budget for a fiscal year with the TxDOT Project Manager's approval, as long as the total project cost for that year does not change. A revised Itemized Budget is required in these instances.
- During a project, a university may modify funding for a fiscal year's deliverables with the TxDOT Project Manager and RTI Finance Committee's approval. A revised Itemized Budget is required in these instances.

## 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
- Project #
- 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)
- Revision Date (enter the date presented to the above)
- Final Project Year (place an 'X' in the Exhibit A of the final year of the project)

## Direct Costs

Include only those costs specifically identifiable to each project deliverable.

- **Salaries and Wages** – Show estimated budget totals for salaries and wages for full and part-time personnel under these categories:
    - Project Supervisor
    - Professional
    - Sub-professional and technical
    - Other Personnel
    - Student

  For each salary group working on a deliverable, give:
    - # of Persons
    - Fringe Benefit % - % of the hourly rate to cover all allowable benefits for the individual (1.XX) (average the fringe for each category with multiple rates for the expected participating individuals).
    - A total for each Deliverable.

- **Subcontracts** – Any contract or procurement of engineering or other professional services arranged between the university and an entity not a part of that university is considered a subcontract. 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 or name it (the name will be removed during the first review by RTI), list the rate, and total estimated cost per deliverable. Do not list the name of the subcontractor.

- **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. Include associated Maintenance costs as a line item in the Operating and Other Expenses.

  Itemize significant equipment costs to assist in explaining the category for each task. The costs can be budgeted to the first deliverable with use, or allocated over several.

  Following are examples of items that may be included, as long as they are directly identifiable with the project:
    - Vehicles
    - Large\ Unique Testing Equipment

- **Supplies** – Itemize significant supply costs to assist in explaining the category for each task. The costs can be budgeted to the first deliverable with use, or allocated over several. Following are examples of items that may be included, as long as they are directly identifiable with the project:

- o   Office supplies, including reproduction supplies
- o   Minor parts and materials
- o   Minor equipment
- o   Electrical, plumbing, and building supplies
- o   Laboratory supplies

- **Travel** – Travel is categorized as In-State or Out-of-State (includes International). Enter the following information associated with each trip.
  - o   City/ State
  - o   Purpose
  - o   Total # of Trips
  - o   Total Mileage
  - o   Avg # of individual(s) traveling for each trip.
  - o   The expected cost of all trips for that destination will be placed under the associated deliverable(s).

- **Operating 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 Circular A-21, as noted on Exhibit A.

- **Total Direct Costs** – The total of all cost categories listed above. Using the RTI (Excel) form, calculates the total.

## 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.

## Modified Direct Costs

- **Included in Modified Total Direct Costs** – some common items include:
  - o   Travel – Includes private car mileage, meals/lodging costs, public transit fare, etc. Itemize and describe both in-state and out-of-state travel to the best extent at the time of the proposal. Whether or not out-of-state travel is shown on the project budget, specific case-by-case approval must be requested through RTI in advance of the travel, unless the Project Agreement specifies otherwise.
  - o   Other – Includes costs such as reference materials and books, registration fees, and maintenance and repair of equipment, freight, and postage.
- **Excluded from Modified Total Direct Costs** – "Other" costs, which per OMB Circular A 21 cannot cover can be included in Modified Total Direct Costs.

## Total Project Costs by Fiscal Year

The total is derived from total direct costs plus total indirect costs charged to each deliverable of the project. Using the RTI (Excel) form calculate the total, based on individual costs entered on the form. Review the total to make sure the data was entered in the correct cells on the form, and that the total is calculated correctly.

Include the Fiscal year budget totals from other fiscal years in the additional lines of the 'TOTAL PROJECT COST FY.' Total Project Cost will be calculated. Lastly, the 'Deliverable's Budget % of Total' will calculate. Under Deliverable Base Project Agreements, the Research Report and Project Summary Report will have a specified percentage of the total project cost; noted in Exhibit A's Notes.

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.

## Final Deliverable

The Final Deliverable is made of the Research Report and other documents due at the end of the project. The Final Deliverable shall have a minimum weight of 15% of the entire Project Budget within the final fiscal year of the project. That amount is budgeted into the final fiscal year of the budget and can be invoiced against after the Final Deliverable has been received and accepted.

# Section 5
# Exhibit B

## Overview

The **Project Description– Exhibit B** is comprised of several sections. All pages in Exhibit B should display a footer with the project number 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 directly, completely, and concisely to the Project Statement distributed in the RFP, clearly communicate how the project will be conducted,
- include substance.
- 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 free form (no RTI form needed). This section of the selected proposal will become part of the Project Agreement; the Abstract should be direct. Use contractual phrases which are definitive, such as – "this project shall", rather than "we propose to" or "the proposed project will".

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

For successful 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 (for research projects only)

At the university's option, include a free form 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. If included, this section should also include an assessment of which TxDOT operations will be affected.

When deciding whether or not to include an implementation section, consider the project being proposed, and what the project results will look like. If including thoughts about the implementation will better explain the project or knowledge of the area, include the section.

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 section that should fully describe the approach researchers intend to use and specify how the project will be structured and performed.

For joint projects or projects with subcontractors, the Work Plan should specify which entity(s) will be performing the work on each task.

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 and 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.
- 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 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 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 meets, 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 | 1.1, 1.2, 1.3 |
| Task 2 - Product 1, Product 2 | 2 |
| Task 3 - Tech Memo 3 | 3.1, 3.2 |

### 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. The cost of this assistance must be found to be affordable and feasible for the project to be approved.

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."

### Value of Research

The Value of Research for TxDOT and the State of Texas can be determined from 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 forces practitioners to investigate benefits that might not have seemed obvious at project inception.

In this section, describe the value of the project to TxDOT and/or the State of Texas. The Project Sponsor will assign the expected functional areas where value will fall for a problem statement. The researcher will then expand upon the Value of Research in the final section of the Work Plan.

**Value** must:
- Be balanced, with qualitative and economic data
- Contain financial and non-financial perspectives
- Reflect strategic and tactical issues Represent different time frames
- Be consistent in collection and analysis
- Satisfy all key stakeholders
- Be grounded in conservative standards
- Come from credible sources
- Reflect efficiency in its development
- Create a call for action

- <u>For TxDOT or the State of Texas.</u>

The Value of Research breaks down into a set of functional areas. These functional areas will have qualitative or economic benefits. Each functional area will have a value of research that would benefit TxDOT, Texas, or both. These functional areas are cross referenced with value type and the benefiting entity below:

| Functional 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 |

Value in each of the identified functional areas from the Project Sponsor will be developed in the Work Plan. Be specific to TxDOT and the State of Texas in identifying the value.

<u>Value Types</u>
**Qualitative**
- *Intangible Benefits* are subjective benefits that cannot be measured in monetary terms.
- *Influencing Decisions.* Although intangible benefits are hard to define, they can influence business and legislative decisions.

- *Intangible Assets* consist of information and knowledge that an organization can use as "intellectual capital" to produce funding and cost savings.
  - Patents, copyrights and licenses
  - Customer lists and relationships
  - Non-compete agreements

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- o Favorable financing
- o Software
- o Trained and assembled workforces
- o Contracts
- o Leasehold interests
- o Unpatented proprietary technology
- o Trademarks/Trade names

## Economic

- **Net present value** is a calculation that compares the amount invested today to the **present value** of the future savings from the implemented research.

$$NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_o$$

> where: $C_t$ = net cash inflow during the period
>
> $C_o$ = initial investment
> r = discount rate, and
> t = number of time periods

- **Cost-Benefit Analysis** is a systematic approach to estimating the strengths and weaknesses of alternatives that satisfy transactions, activities or functional requirements for a project. It is used to determine options that provide the best approach for the adoption and practice in terms of benefits in labor, time and cost savings.

  - o *Cost- Benefit Ratio* attempts to summarize the overall value for money of a project or proposal
    *BCR = Present Value of Total Savings (Benefits) / Present Value of Cost of Research*

  - o *Total Savings (Benefits)*
    *Total Savings = (Estimated Savings over a period of Years) – Cost of Implementation*

  - o *Payback Period* is calculated by counting the number of years it will take to recover the budget invested in a project.
    *Payback period (Years) = Project Cost / Cost Savings per Year*

## Method of Development
TxDOT has developed a method to determine Value of Research. The process leads a researcher through four phases within a project assisting in identifying inputs and calculating the value of a project's research. Value is broken out into two categories:

1. Qualitative, 2. Economic. Researchers shall expand upon what qualitative values are expected. Researchers shall calculate the various economic value benefits expected within the project. Researchers should define all formula inputs, essentially 'show their work' within the Value of Research Template. Current RTI forms are sent to university liaisons for distribution, and can also be downloaded off the RTI website.

Process steps are as follows:

### Project Proposal
1. <u>Develop Objectives of the Project</u>. Functional areas of value are evaluated for each project and assigned by the TxDOT Project Sponsor.

2. <u>Develop Evaluation Plans and Baseline Data</u>.  Baseline data identifies the recognized TxDOT Research Functional Areas values at the time of the Project Proposal. Included in the Proposal's Abstract will be the 'Value of Research' section. Expected benefits of each functional area should be evaluated and included as assumptions and estimates.

   These areas can include qualitative and economic data.
   A. <u>Identify the Functional Area value(s) for determining the Value of Research</u>. The methods are determined by what the objective(s) of the project are for TxDOT.

   B. <u>Identify the projects Qualitative and Economic Data Sources.</u> Qualitative sources will not be measurable. Economic Data sources will have equivalents associated to dollars, time, and lives.

   C. <u>Identify the entity that the measure is for and include an explanation.</u>

### Project Testing
1. <u>Collect Data During Project Tasks and Phases</u>.  Measures of the data sources



Determining the Value of Research
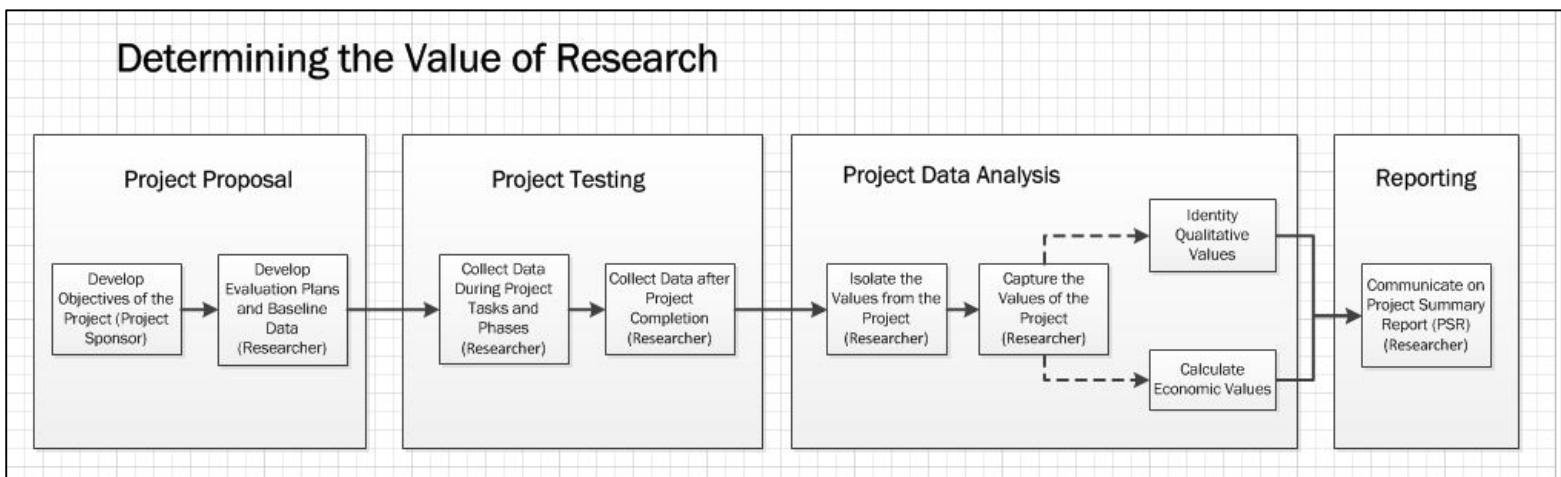
are recorded during testing.

2. <u>Collect Data after Project Completion</u>. As the project's testing ends, conclusions and decisions can be drawn from the measurements of data sources.

### Project Data Analysis
1. <u>Isolate the Values from the Project</u>. The measures of the data sources are converted, summarized and categorized into the areas of the Value of Research for TxDOT: Qualitative and Economic.

2. <u>Capture the Values of the Project</u>.
   A. <u>Identify Intangibles</u>. List qualitative value aspects of the research.
      - Intangible Benefits
      - Influencing Decisions
      - Intangible Assets

   B. <u>Calculate Benefits</u> – Find the economic values of research using formulas:
      - Benefit/ Cost Ratio
      - Total Savings
      - Payback Period

### Reporting
1. Communicate on Project Summary Report (PSR)
   A. Write up all findings on the values of the research for TxDOT of the project by method.
      I. Qualitative.
      II. Economic.
         o Discuss data sources and measures.
         o Explain estimates.

At the end of the project, the Value of Research will be revaluated in the Project Summary Report (PSR). Researchers will again discuss what qualitative values are expected. Newly identified qualitative values found throughout the project should be included. Researchers will also calculate the various economic benefit values found within the project. Variances between the initial estimated values in the Work plan should be contrasted against the values found at the end of the project in the PSR.

### Deliverables Table
The Project Supervisor ensures the project adheres to the Deliverables Table. All deliverables anticipated or required from the project should be shown on the Deliverables Table. Minimum deliverables required by TxDOT are listed on the Project Statement or IPR.

Each Deliverables Table should be prepared on RTI's form.

All required deliverables are to be listed on the Deliverables Table by the associated Task of the Work Plan of Exhibit B.

Complete the following on the Deliverables Table
- Project #
- Project Name
- Agency Name(s)
- Task (from Exhibit B, Work Plan)
- Deliverable (assigned in Exhibit B to Task, Estimated Budget is assigned in Exhibit A)
- Agency # (agency responsible for the deliverable)
- Subtask (the process of a task from beginning to end; are numbered 1, 2, 3, etc. for each task)
- Description (short summary of the subtask)
- Due Date (Date that a deliverable is due, Monthly Progress reports are due by the 3$^{rd}$ business day)
- % of Task Budget (assigned percentage of the task's estimated effort to complete the deliverable, adding to 100%)
- Subtask Amount dollar amount of the associated percentage from Exhibit A)
- Comments (include any associated comments with the delivery of a deliverable)

Each Deliverable's subtasks have a deliverable of the Monthly Progress Report (MPR). Invoicing for the project is dependent on this breakdown. Once the Monthly Progress Report has been received and accepted, Invoice Reports for the associated Tasks and amounts are to be submitted to RTIMain@txdot.gov and FIN_INVOICE@txdot.gov. MPRs are due on the third business day of the month and should reflect that in the Due Date on the Deliverables Table.

If deliverables are not broken down into subtasks, deliverable amounts will be paid based on full amount associated with the deliverable after the deliverable has been received and accepted. Deliverables with timelines crossing fiscal year can be invoiced within the fiscal year that the deliverable is due.

## Schedule of Research Activities

The Schedule of Research Activities provides an overview of the project, and serves as a project management tool for both TxDOT and researchers. The Schedule shall clearly assign each deliverable's work tasks to one or more universities on the research team. It shows all deliverable tasks proposed, along with an estimated schedule for completion of each task, and the estimated cost of each task. This schedule is the last required document in Exhibit B.

The schedule should be prepared on RTI's Schedule of Research Activities form, or in some other automated document that shows at least the information included on RTI's form. The RTI forms sent to University Liaisons include an example of a completed Schedule of

Research Activities. When a Schedule of Research Activities is prepared, keep the issues below in mind.

- **Making the Schedule a Better Tool** – If each date is not defined for each project meeting, deliverable, or Tech Memo as a task, it may still be noted on the Schedule of Activities that these item will occur. Make notations understandable. The Schedule of Research Activities can then serve as an overview of all project activities.

- **Schedule for Each Deliverable's 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.

- **Estimated Budget** – The associated amount for the task should be from the Deliverable's table.

Sections of Schedule of Activities

- Correspond to Deliverables Table
    - o Project #
    - o Project Name
    - o Agency Name(s)
    - o Task
    - o Deliverable
    - o Agency #
    - o Subtask
    - o Due Date )
    - o Estimated Budget
- Schedule (Enter an X for the Original and R for Revised Schedule next to each month for the expected duration of the  subtask)
- Revision History (include notes on revisions before submitting to Project Manager)

Should the project start be significantly delayed past the date anticipated in the proposal, a new schedule will be requested by TxDOT before the Project Agreement is executed, so that everyone involved in the project clearly understands what is expected, and by when.

Use RTI's (Excel) form. The RTI form uses patterns, instead of colours, to distinguish between the original schedule, work completed, and revised schedule for each task. The RTI form also provides a separate line where each time line (original, work completed, revised) may be maintained for each task throughout the life of the Project Agreement.

# Section 6
# Background and Significance of work

## Contents

This section should include several topics.

- The findings of a literature search or other description of existing technology on the subject. A search should be made of the Transportation Research Information Service's (TRIS) or other relevant databases to ensure that previous work is considered in the new project. If a list of references would enhance the proposal, it may be included here.

- 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.

## Length and Format

This section is limited to no more than 10 pages, and is prepared free form. 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 experience of the proposed research team, and the capacity and capability of the facilities.

Provide information that is relevant to the specific proposed project. Do not send only a resume, or a list of every report the researcher has written. The researcher is best able to relate past experience to the project. Unless an entire career has dealt with the subject of the specific project, don't miss this opportunity to explain how experiences are relevant. Evaluators must make their 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.