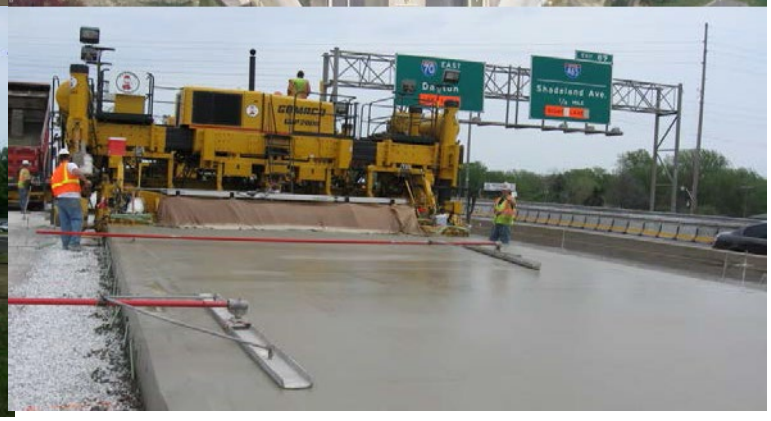

User's Manual for Research and Innovation

Joint Transportation Research Program
of the
Indiana Department of Transportation
and
Purdue University

Discovery with Delivery Since 1937

February 2026

The Joint Transportation Research Program

USER'S MANUAL FOR RESEARCH AND INNOVATION

Revised February 2026

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Foreword

From the Indiana Department of Transportation's perspective, research is a means to proactively address challenges and opportunities through investigation and data-driven decision making and to introduce innovation into INDOT business processes. The Research Program and the individual research projects provide direct support to INDOT's Goals Strategic Plan and its successful implementation. One of the Strategic Objectives in the INDOT Strategic Plan is Innovation and Technology, which is a primary focus of the INDOT Research Program.

Research findings frequently provide benefits such as cost savings, better performance, safer infrastructure, and faster delivery of goods and services. INDOT research generally is applied research addressing specific problems or needs. While research sponsored through the Joint Transportation Research Program (JTRP) of the Indiana Department of Transportation and Purdue University primarily benefits INDOT customers and stakeholders, it also benefits the transportation industry and the community at large, including Indiana counties, cities, and towns. Technology transfer and the implementation of viable research findings into operations are priorities of the program and primary measures of success. Research, coupled with implementation, is one of the key drivers of innovation at INDOT.

*The **mission** of the INDOT Research Program and JTRP is to conduct, oversee, and partner in cost-effective transportation research that benefits our customers and supports INDOT's Goals and Strategic Plan; perform specialized testing on behalf of the department; assist in technology development, identification, and transfer; provide expertise and technical assistance in solving INDOT's transportation problems; proactively address challenges and opportunities; and introduce innovation into INDOT business processes. The research program is a mandated part of the Federal-Aid program and is a match program (80 percent federal - 20 percent state match) utilizing dedicated State Planning and Research (SPR) federal funding.*

As a condition for receiving federal research dollars for transportation research, peer exchanges are required of State Departments of Transportation. The most recent peer exchange for the INDOT Research program was conducted in four sessions, October 26, November 9, November 16 and November 30, 2022.

Some of the outcomes of this peer exchange were as follows:

- The INDOT Research and Development (R&D) Division conducts a quality research program that addresses the timely, priority needs, providing cost-effective solutions to problems, and works with researchers and stakeholders to implement viable research findings.
- The program utilizes an effective top-down method for identifying relevant topics and needs for research.
- Research products have a direct, measurable impact on agency operations.
- Although the INDOT R&D program is very good, opportunities exist for improvement that can foster a great program, such as greater value creation through effective, consistent, and more rapid statewide implementation.

Recommendations were provided in the following themes:

- Theme #1: Safety
- Theme #2: Innovation and Transformational Technologies
- Theme #3: Workforce Development & Preparedness
- Theme #4: Asset Sustainability & Resiliency

The positive findings of this peer exchange are a direct result of the involvement of INDOT executive staff and staff subject matter experts, as well as the involvement of countless external transportation professionals in the research program.

INDOT customers and stakeholders have found that the research program provides not only a venue to solve problems and make data-driven decisions but also, as one of the program's performance measures, identifies and investigates opportunities to reduce costs, improve mobility, enhance economic development, and stretch transportation dollars.

The latest INDOT Research Program Benefit Cost Analysis (BCA, Return on Investment) report for Projects completed in FY16 to FY23 found that for each dollar invested in the research program, an average of up to ten dollars (with respect to agency cost) and up to seven dollars (as a result of travel time saving and crash reduction for road users), resulting in a 17:1 Benefits to Costs Ratio.

The Research Program also offers an opportunity for networking between transportation professionals and professional staff development. INDOT staff who serve as Business Owners or on Study Advisory Committees (SAC) for research projects have highlighted the professional growth and engagement opportunities the program offers.

INDOT's 2026 Agency Goals include a Focus on Safety, Plan for the Future, Excellence in Core Services and Organizational Excellence. Strategic Priorities include Safety, Mobility, Asset Sustainability, Customer Service, Organization & Workforce, Economic Competitiveness, and Innovation & Technology.

Research projects provide direct support to INDOT's Strategic Priorities and Agency Goals. In prior years Indiana, and nationally, has seen an unprecedented increase in the advancement of new and transformational technologies, including non-destructive testing (NDT) advancements, along with major shifts in demographic and economic profiles. A recently completed consultant review of INDOT's Specialized NDT Program indicated an annual economic impact of $66.9M resulting from enhanced data driven decision-making.

The coming years will undoubtedly hold even more exciting innovations and opportunities!

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1. Program Administration

This chapter provides general information pertaining to the conduct of research and implementation sponsored by the Joint Transportation Research Program (JTRP) of the Indiana Department of Transportation (INDOT) and Purdue University. The information consists of general definitions, research process, and the responsibilities of individuals related to administration of the program.

All procedures outlined in this guide follow the contracts and lease agreements between INDOT and JTRP at Purdue University (see **Appendix A**).

1.1 Research Funding

Research projects may be supported or financed through a variety of state and federal research funding programs.

The majority of JTRP research and implementation projects are funded through the State Planning and Research (SPR) Part II research program. JTRP administrative costs may also be funded with SPR funds. In addition, SPR funds are also used to support various national and regional research programs every year such as the National Cooperative Highway Research Program (NCHRP), the Transportation Research Board (TRB), and Pooled Fund Studies. Typically, SPR Part II funds require a minimum 20 percent State of Indiana cost share match. If a study is determined by the FHWA to address an issue of national interest, it may be funded completely with 100 percent federal funds.

INDOT must submit a *Work Program and Cost Estimate* to the FHWA before the start of each fiscal year (Code of Federal Regulations, 23 CFR § 420). This document includes proposed and ongoing SPR Part II research projects, a summary of the use of funding for the fiscal year, and the amount of funding required. As required by the federal transportation bills INDOT is to spend a minimum of 25 percent of its annual SPR funds on research, development, and technology transfer activities. States, however, can opt to spend a higher percentage of SPR funding on research.

23 CFR § 420 further notes that these funds must be spent on research within three years following the end of each highway bill or they are lost to the state. Although obligation authority may be flexed during any bill, if the allocated SPR Part II funds are not spent in this time frame, then the state's obligation authority may be reduced by the unspent amount.

1.2 JTRP Executive Committee and INDOT R&D Office Responsibilities

JTRP is administratively housed in the Lyles School of Civil Engineering at Purdue University in West Lafayette, Indiana. The management and coordination of the research program is handled through the INDOT Division of Research and Development (R&D) in coordination with the JTRP Office. JTRP operates under the guidance of an Executive Committee. The INDOT Commissioner appoints the INDOT Chairperson of the JTRP Executive Committee. The Head of the Lyles School of Civil Engineering at Purdue University appoints a Purdue faculty member to serve as the JTRP Director.

Members of the JTRP Executive Committee are appointed as follows:

- The JTRP Chairperson appoints INDOT personnel to serve as voting members.
- The JTRP Director serves as a nonvoting member and may recommend additional Purdue personnel to also serve as nonvoting members.
- The FHWA Indiana Division appoints FHWA personnel to serve as nonvoting members.

Responsibilities of the Executive Committee members:

- Oversee and assist in fulfilling the mission and responsibilities of the JTRP.
- Assist INDOT business units and executive staff in identifying research needs.
- Final approval of funding for research program and JTRP expenditures.
- Final approval of research proposals.
- Oversee implementation of cost-effective research results.
- Final approval of the annual *Work Program and Cost Estimate* to be submitted to the FHWA.
- Communicate to the INDOT Executive Staff, direct reports, and other INDOT staff the resources available through the research program to address transportation issues.
- Communicate to the INDOT Executive Staff and other stakeholders the findings and benefits from the research program.

Responsibilities of the Executive Committee Chairperson:

- Chair JTRP Executive Committee meetings.
- Act on behalf of the INDOT Commissioner on research matters.
- Assist INDOT business units in identifying major research needs of INDOT.
- Actively promote implementation of cost-effective research findings.
- Recommend INDOT staff members for appointments to the JTRP Executive Committee.
- Coordinate and promote research program roles and capabilities with INDOT Executive Staff, and its partners.

Responsibilities of Purdue-JTRP Director:

- Serve as the director of JTRP.
- Serve as the principal liaison between JTRP and other academic institutions and private and public organizations on matters related to transportation research.
- Oversee the planning and execution of the annual Purdue Road School.
- Recommend Purdue personnel as members of the JTRP Executive Committee.
- Prepare the agenda for Executive Committee meetings, report on JTRP activities at Executive Committee meetings, and supervise the preparation of minutes.
- Submit draft annual *Work Program and Cost Estimate*, semi-annual progress reports, budget estimates, and financial statements.
- Request research ideas and need statements from JTRP researchers and provide guidance with proposal development.
- Supervise personnel employed by JTRP, monitor project expenditures, and maintain equipment inventories.
- Review proposals and final reports of all JTRP research.
- Review time extensions and budget extensions requests.
- Encourage dissemination and implementation of research results.
- Ensure compliance with JTRP policies and procedures.
- Provide engineering and technical training support to INDOT business units and executive staff.
- Enter new research into the Research in Progress (RiP) database.

Responsibilities of the INDOT R&D Office:

- Update User's Manual and secure JTRP Board and FHWA approval
- Oversee and supervise the INDOT research program.
- Identify transportation research needs, conduct research, and assist in research implementation and technology transfer activities.
- Support and use the Transportation Research Information Service (TRIS) database for developing programs, reporting active RD&T activities, and inputting final report information.
- Develop, oversee, and execute the INDOT research program budgets.
- Prepare and submit the annual *Work Program and Cost Estimate* to the FHWA in accordance with federal requirements.
- Serve as principal liaison for INDOT on research activities with JTRP, FHWA, and national associations.
- Promulgate and approve research policies, including policies for consideration by the JTRP Executive Committee.
- Maintain internal records and performance measures for the research program.
- Process payments for research projects.
- Enter new in-house research into the Research in Progress (RiP) database.
- Request audits of research projects and the research program.
- Ensure that the INDOT research program meets all requirements for use of federal transportation funds outlined in 23 CFR § 420.
- Assist the Executive Committee Chairperson with related responsibilities.
- Approve assignment, addition, and/or changes in appointments of Principal Investigators (PIs), Business Owners (BOs), Project Advisors (PAs), and Study Advisory Committee (SAC) members.
- Final approval of project proposals or changes to approved proposals.

1.3 RD&T Management Process Certification

I **Ahmed Samy Noureldin** *A.S.Noureldin* INDOT JTRP Program Managing Director, of the State of Indiana, do hereby certify that the State is in compliance with all requirements of 23 U.S. Code 505 and its implementing regulations with respect to the research, development, and technology transfer program, and contemplate no changes in statutes, regulations, or administrative procedures which would affect such compliance.

1.4 Public-Private Partnerships

In many cases research projects are of mutual benefit to INDOT and industry. Industry may partner with INDOT and academia toward funding solutions for common problems. JTRP actively works to promote public-private partnerships and leverage resources and expertise. Partnering may include providing technical expertise, serving as a SAC member, and funding materials, equipment, and laboratories. Monetary contributors must agree that the tasks, objectives, and deliverables outlined in the JTRP research proposal represent their entire interest in the project, without any requirements for special reports, invoices, or additional work not outlined in the original JTRP project proposal. Furthermore, industry partners shall not construe their participation as endorsement by JTRP, INDOT, or Purdue University of their products, methods, or services.

1.5 Suspension and Debarment

The JTRP Master Agreement (contract) includes language related to suspension and debarment and will contain a clause that neither the consultant nor any subconsultants are debarred or suspended from entering into a contract with a federal agency.

There can be project-specific sub-agreements under the umbrella of the current master agreement that would contain the suspension and debarment language. This, however, should be tracked in the related sub-agreements so it can be checked for the suspension and debarment clause.

2. Identifying Research Needs

2.1 The Peer Group - Focus Group Process

INDOT focus groups initiative was an outgrowth of the INDOT research program peer exchanges for State Departments of Transportation. Peer exchange participants recommended utilizing focus groups, aligned with INDOT business units and priorities, to identify priority research needs. The focus group process included meeting with INDOT executive staff, participating in brainstorming sessions with diverse transportation professionals, selecting priority needs by INDOT staff, and approving a recommended program and funding by the JTRP Executive Committee. The results of this focus group effort are reflected in the development of the annual *Work Program and Cost Estimate* for FHWA approval.

During FY 2016 a JTRP study was completed emphasizing "INDOT-JTRP Project/Program Implementation Improvement". In addition, an "Innovation Office" was established by INDOT Executive Staff for the purpose of initiating and sustaining a culture of innovation, problem solving and continuous improvement. In addition, a link has been added to the IN.gov website under Innovative Programs that includes (1) a list of INDOT Innovation and research needs & Ideas and (2) Instructions for Submission of Research Ideas to INDOT. This link (http://www.in.gov/indot/2404.htm) allows faculty from any accredited University to submit transportation related research ideas to the Indiana Department of Transportation (INDOT) for consideration. This link also supports INDOT's compliance of the Title VI program. Researchers who have not conducted research for INDOT in the past are encouraged to submit a resume/curriculum vita with their research submission.

As a result of these initiatives,

a) Focus Groups were integrated with existing INDOT Peer Groups of various INDOT Business Units, when Peer Groups existed and were active.
b) Agency needs (including research needs & deployment of innovations) are compiled on a continuous basis (as compared to the previous annual batch by batch basis).
c) Needs are aligned with the INDOT Goals, Strategic Plan & Objectives, Priority Areas and Organizational Key Performance Indicators (KPIs).
d) JTRP research needs are further reviewed and compared against FHWA R&T priorities to determine which needs are being addressed, partially addressed, or not addressed. Prioritized needs may be incorporated into JTRP, NCHRP or pooled fund studies.

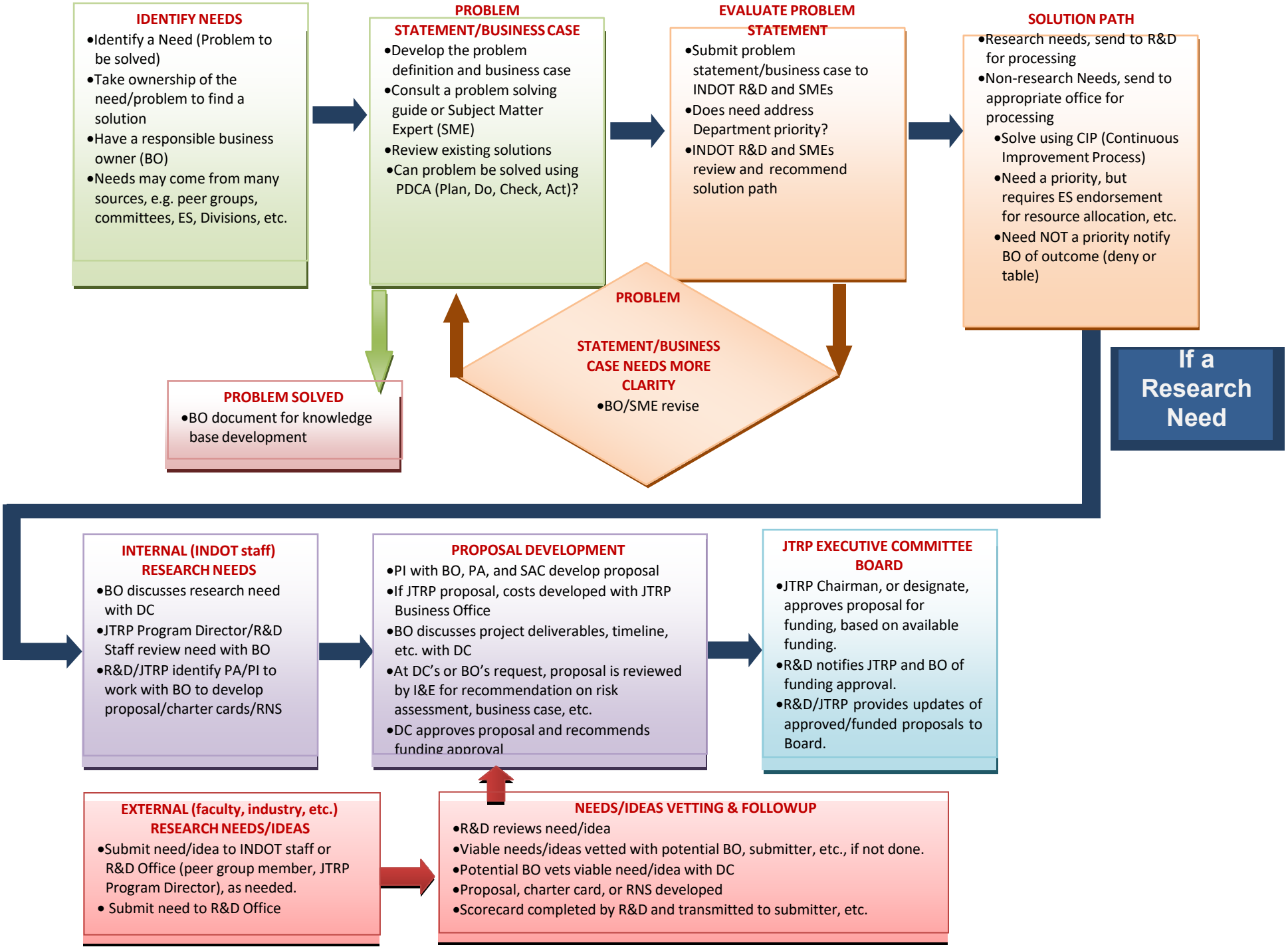
As part of the final prioritization of a need, the peer group leaders examine in consultation with subject matter experts whether this need is a research need or not. In addition, INDOT R&D and JTRP staff use the TRB's Transportation Research Information Service (TRIS) database for developing programs, reporting active RD&T activities, and inputting final report information. In addition, INDOT R&D representatives review existing knowledge from previous research, especially from the Transportation Research International Database (TRID), Research Needs Statement (RNS) and Research in Progress (RiP) databases, to avoid duplication of efforts related to a research need.

Current INDOT Focus groups, Peer Groups and proposed INDOT innovation process are shown in the following table (Table 1) and graph (Figure 1). It is recognized, in identifying research needs, that one process (or approach) may not fit all circumstances. Peer group/focus groups, participation in staff meetings, one-on-one interaction and networking in various forms is required to identify viable, priority research needs.

Table 1: INDOT Peer Groups & Focus Group

Peer Group	Focus Group
District Deputy Commissioners & Workforce	**District Operations, DDC-WF**
District and Central Office Highway Maintenance Directors	**Highway Maintenance Operations, MOP**
District Technical Directors	**Planning, Multimodal, Finance, Asset Management and Economic Impact, PMFAME**
Asset Program Management Group	
Pavements	**Pavements, Materials, Geotechnical and Construction, PMGC**
HMA Technical Committee	
PCC Technical Committee	
New Product Evaluation Committee	
Pipe Committee	
District Testing Engineers	
Construction Directors	
Safety Directors	**Statewide Safety, S**
ASCE-INDOT Structures Committee	**Structures (Bridges), Hydraulics and Environmental, SHE**
INDOT Bridge Inspection	
Bridges Maintenance Group	
Bridges Asset Team	
District Traffic Engineers and Central Office Traffic Engineering Staff	**Traffic Engineering, Safety, Mobility and Operation, TESMO**
Traffic Safety Asset Team	
Traffic Safety Interagency	
District Traffic Operation Managers	

Figure 1: INDOT Innovation Process – Need Submission



2.2Research Need Statements

A Research Need Statement (RNS) will be required for each priority research need under consideration by the Focus/Peer group. This research need statement can be in the form of a research Idea form, or a formal RNS. Template for the formal RNS is provided in **Appendix B**. A well-written, complete RNS is needed for peer group ranking of research needs.

2.3 Ranking of Research Needs

INDOT Focus/Peer group members rank research needs. Faculty engagement in Focus/Peer groups is encouraged and their expressions of support, or concerns, for a specific research need or an innovation are considered in the ranking process. The Focus/Peer group is accountable for ranking its needs and should be able to explain their ranking to INDOT Executive Staff.

Focus/Peer group/focus group leaders will summarize the overall ranking of the RNSs based on the Departmental priorities in their area.

2.4 Focus/Peer Group Reporting

Focus/Peer group leaders will be responsible for completion and submission of identified, ranked research needs to the R&D Office and for presenting their prioritized needs to their Deputy Commissioners and the Executive Committee. The R&D and JTRP Offices will combine the individual peer group reports into an accessible Smartsheet for Executive Committee review and approval.

2.5 Assignment of Project Personnel

When research needs have been submitted, the INDOT R&D Division and JTRP Office will identify and recommend project personnel. R&D Division and JTRP staff will facilitate meetings between potential principal investigators (faculty or consultants), INDOT staff, to discuss the research need and propose a course of action to address the need. Business Owners (BOs) and initial SAC members will be recommended by R&D Division to the JTRP Executive Committee.

Principal Investigators (PIs) may be recommended by the JTRP Office and approved by the R&D Office. Project Administrators/Advisors (PAs) will be selected by the INDOT R&D Division. Once project personnel have been selected, the recommendations will be visible in Smartsheet to the JTRP Executive Committee for review. Available capacity of staff should be considered when selecting project personnel. PIs will be notified by the R&D Division and JTRP to begin proposal development in consultation with BOs and SAC members. PIs must commit to submitting the proposal by the established deadline.

Once projects have been finalized, project personnel involved in submitting needs or ideas will receive feedback from INDOT R&D about Need/Idea disposition via an email and/or http://www.in.gov/indot/2404.htm which is updated monthly (by the 5th of the month).

If the research project is conducted as a **consultant contract** not affiliated by a university, INDOT R&D will work with INDOT Consulting Services to finalize the consultant agreement and approve funding for the project. If the research project is conducted as a **JTRP/Purdue subcontract** by another university, the starting date needs to account for the time for preparing the subcontract by the other university and checking with the JTRP Office for guidance.

2.6 Final Approval of the Research Program

INDOT must submit a *Work Program and Cost Estimate* to FHWA before the start of each fiscal year. This document must include each proposed and ongoing SPR Part II research project and indicate proposed funding for the next fiscal year. The FHWA Division Office will review and approve the SPR Part II *Work Program* for each fiscal year. After approval of the *Work Program*, it is not necessary for INDOT to submit individual and detailed proposals for review and approval to the FHWA; however, changes to the total funding level or major additions to the *Work Program* must be submitted to FHWA via an amendment request.

2.7 National Environmental Policy Act (NEPA) Clearance and Documentation for SPR Part B - Research as part of Work Program & Cost Estimate for Transportation Research

Per NEPA regulations, NEPA clearance and documentation need to be prepared and submitted for each new research project or budget expansion of an existing research project to make sure that the research project complies with NEPA regulations. New, planned research projects identified in the Fiscal Year Work Program and Cost Estimate for Transportation Research, can be submitted collectively for NEPA approval. A list of research projects and information about each research project needs to be included in the clearance request.

2.8 Human Research Protection Program (HRPP), Institutional Review Board (IRB) Letter of Cooperation and Human Related Data Use Agreement (DUA)

For research studies that need the collection of human subjects related data, per Purdue University's IRB requirement, an approved letter of cooperation is required. The letter of cooperation is approved by the INDOT JTRP Chairman. Obtaining IRB approval is the responsibility of the Principal Investigator (PI) of the research study.

For research studies that use human related data from INDOT employees, a signed data use agreement (DUA) is needed from INDOT. The DUA is intended to protect both the data recipient and data provider, as well as the data usage.

A general process and template for finalizing a letter of cooperation have been developed **(Appendix C)**, but details are project specific. As noted, the JTRP Chairman has been delegated the authority to sign letters of cooperation on behalf of INDOT.

3. Research Team Members and Responsibilities

Each JTRP research project is owned by a Business Owner (BO) with an assigned Principal Investigator (PI), a Project Advisor (PA), and a Study Advisory Committee (SAC). At the completion of the research project, the BO, in consultation with the PA, PI, and SAC, completes an Implementation Plan (IP); and submits it to the R&D Office within 30 days after the completion of the research project completion date for inclusion in a Smartsheet indicating implementation tasks and timeline (see **Appendices D& E**). Research team members' responsibilities are outlined below.

3.1 Business Owner (BO)

The INDOT BO is the primary owner of the research product and is designated by his or her supervisor and Deputy Commissioner (DC). The BO ensures that deliverables meet INDOT needs and that research results are incorporated into INDOT operations as early as possible. The BO also develops and submits the signed Implementation Plan (IP). The responsibilities of the BO are as follows.

- Has ownership of the research and ensures (before initiation, during the conduct and at delivery) that the research addresses INDOT needs.
- Participate actively with the PI and PA during the research proposal development process.
- **Communicates to his or her supervisor and the DC the need for the research, their support of the research, and how the results will be implemented into INDOT operations.**
- Team with the PI and PA in presenting the proposal to the JTRP Executive Committee for approval, if requested by the Board. Conveys support of the research and intended use of the research deliverables to the Executive Committee.
- Attends and participates in SAC meetings. SAC meetings are not held without the participation of the BO.
- Reviews and approves reallocation of proposal budgets, approval to purchase equipment/computers (not specified in the original proposal).
- **Reviews and approves, minutes of SAC meetings, progress reports interim reports (if any), final reports, technical summary, and project deliverables.**
- **Reviews, gives initial approval and communicates to his supervisor and the DC the need for proposed project scope changes, project expansions and/or time extensions, ,**
- Works with the PI and PA to keep projects on time and on budget, identify intermediate deliverables and concurrent implementation opportunities, and resolve any project issues/conflicts.

- Raises concerns to PA and R&D Director or JTRP Chairperson, as needed, if the research does not address the department's needs.
- Develops and executes (including obtaining signatures and transmitting) the Implementation Plan (IP).
- **Preparing a draft Implementation Plan at the closeout SAC meeting and finalizing it within 15 days of Project close out.**
- **Communicates with the PA and DC throughout the research and implementation process regarding the project status, project deliverables, status of implementation, and any implementation roadblocks (e.g., funding issues, process needs, legislative issues, etc.).**
- **Maintains and updates the Implementation Status for periodical updating. Presents to their respective DCs, in a timely manner, any issues regarding successful implementation of project findings.**
- Responds to the project close-out customer satisfaction survey to keep the research program on the path of continuous improvement.
- Along with the PI, PA, and the JTRP Office, it promotes the dissemination of viable research findings, innovation, cost savings, and potential press releases to INDOT users and decision-makers throughout the research and implementation process. Assists R&D Division and JTRP in capturing and presenting successful implementation.

3.2 Principal Investigator (PI)

The following are the responsibilities of the PI.

- Complies with all JTRP policies and procedures outlined in this manual and elsewhere.
- Prepares and submits the research proposal in conjunction with the BO, PA, and SAC. Dates of BO and PA approvals must accompany the submitted proposals.
- Conducts and supervises the research and ensure that the project is on time and on-budget in accordance with approved proposal.
- Calls, facilitates and documents (using approved minutes) SAC meetings at least every six months. **Agenda and associated materials of these meetings should be sent to SAC prior to the meeting**. **SAC meeting minutes should be sent to the SAC members within 5 business days after the meeting for their approval. SAC members should review the minutes within 5 additional business days. The PI should not wait more than an additional 5 business days to send minutes to JTRP office for posting. In short, SAC minutes should be submitted to the JTRP within 15 business days after the SAC meeting was held.**
- Prepares semi-annual progress, interim and final reports. with and the approval of the BO, PA, and the SAC.
- Prepares and submits requests for changes to the approved research project in conjunction with and the approval of the BO, PA, and the SAC.
- **Conducts a project closeout meeting with the BO, PA, and SAC. Includes discussion of proposed implementation of study findings in the closeout SAC meeting. BO is expected to indicate which study findings he/she plans to implement.**
- Provides project updates/summaries to the Executive Committee, as requested.

- **If there will be unexpected delays in submitting draft final reports or final reports by due dates, it is the responsibility of the PI to consult with the BO and PA to develop an action plan. Once finalized, the PI must submit the completed action plan to the JTRP Office and the INDOT R&D Division (attn: JTRP Managing Director.). Additionally, the Action Plan should be referenced in all relevant Project SAC meeting minutes.**
- **Co-PIs of studies (if any) are responsible for assuming the roles of the PI in any event the PI is not capable to continue his/her roles and responsibilities.**

3.3 Project Advisor (PA)

The PA is the representative of the INDOT R&D Division who has expertise or (working knowledge) in the subject area to act as the Project Advisor and working knowledge of project management to act as a Project Advisor. The PA has the following roles and responsibilities.

- Works with project personnel, particularly the BO and PI to ensure that project deliverables are achieved within the project budget, scope, and time frame.
- Provides technical guidance to the research.
- Ensures the research proposal follows sound research principles and practices.
- Seeks the timely and proactive resolution of any project concerns.
- Works closely with the BO to ensure user needs are met.
- Reviews and preapproves proposals, SAC meeting minutes, semiannual progress reports, time extensions, budget expansions and Action Plans prior to submittals.
- Reviews and approves reallocation of proposal budgets, approval to purchase equipment/computers (not specified in the original proposal).
- Assists in the transition of the research findings into the implementation phase by assisting the BO in developing and submitting the signed IP to the R&D Office **within 15 days after the completion of the research**.
- Assists with the marketing and communication of the research effort and research findings.
- Encourages the timely dissemination of implementable research findings to INDOT users and decision-makers throughout the research process.

3.4 Study Advisory Committee (SAC)

A SAC typically consists of the following individuals:

- The PI (faculty, consultant, or in-house researcher)
- The BO (required)
- The PA (required)
- INDOT technical experts and stakeholders
- Additional external experts and stakeholders such as an FHWA Indiana Division representative, industry representatives as appropriate, and possibly other state agencies.

The research study BO, PA and PI will recommend initial SAC members and additional SAC members during the duration of the study. Addition of recommended SAC members requires, the concurrence of that member, and approval by the JTRP Managing Director (or INDOT R&D Director). A notification to the JTRP Office is sent for the addition.
A SAC meeting must have at least the participation of the PI, PA, and BO as participants.

The roles and responsibilities of SAC members include the following.

- Ensure that the research meets the needs of INDOT and other designated users and fulfills the objectives and deliverables of the proposal within the proposal budget and time frame.
- Assist the PI in preparation of the research proposal and provide initial approval.
- Provide technical guidance to the PI during conduct of research.
- Attend SAC meetings.
- Review and provide initial approval of changes to the proposal scope, work plan, and/or budget as proposed by the PI.
- Review and provide comments for draft final reports.
- Provide initial approval of interim and final reports and project deliverables.
- Assist the BO in developing the IP.
- Attend the project close-out meeting.

4. Research Proposal Development and Modifications to the Work Plan

4.1 Research Proposal Contents

A research proposal should contain, as a minimum, the following elements.

- **JTRP proposal route sheet completed with the following information**: Study title, PI(s) (name and title), research agency (name and address), project number, project period, funding request, SAC members, SPR number, and current JTRP projects.

- **Introduction**: including ***background*** information leading to the research project, ***problem statement*** (concise statement indicating the need for the research), ***preliminary literature review*** and ***Objectives*** (what the research is to accomplish).

- **Work plan**: for how will each objective be achieved? the work plan should tell what, how, and where the study will be conducted. It should include such information as sampling plans, methods of construction, tests to be used, number of test sections, statistical analysis approaches, data collection methods, use or development of models, frequency of inspections, and criteria used to judge the results.

- **Expected benefits, deliverables, anticipated implementation, and cost savings**: This section should clearly describe expected benefits resulting from the research project deliverables, anticipated cost savings, and how the research results can be implemented by INDOT. Benefits resulting from the research could be expressed as improved procedures or operations, cost savings, improved quality, or increased efficiency. This section should describe in detail the project deliverables (e.g., software, design guide, specifications).

- **Reporting plan**: Completion dates of interim, draft final, and final reports should be specified. Interim reports may not be required but are recommended when significant findings are found, allowing for early implementation by INDOT. A draft final report must be submitted four months prior to the project end date indicated in the proposal. The draft final report is subject to SAC review and must include as a minimum a BO and PA review, unless otherwise specified by the R&D Office. The final report is then prepared, addressing review comments, by the project completion date. **If the deliverables of the study do not include a final report (only software, or application with a user manual) that should be indicated in the study proposal or documented SAC minutes of meeting approved by SAC members (at least BO and PA) with an associated written statement. In this case a reviewed user manual of the software and the written statement can replace the final report.**

- **Work time schedules**: A time bar chart is to be included showing the scheduling of the individual tasks of the study. This bar chart further becomes part of the semi-annual progress report indicating completed work by task versus planned work by task. Time periods should be expressed as months. The completion date should allow no more than four months for review of the final draft report.

- **Cost estimate**: The JTRP budget form should be completed. The estimated cost should be broken down by fiscal year and by item, such as salaries, equipment, subcontracts, in-state travel, out-of-state travel, and supplies. Equipment purchases should be individually identified as much as possible. The amount of effort to be funded for the academic year and the summer months must be identified in this section for each PI and all graduate students employed on the project.

- **BO, PA, SAC members, and DC**: The BO, PA, SAC members, and the DC are to be identified in the proposal. Member affiliations should also be noted.

- **Research team qualifications**: All research team members (i.e., PI(s), graduate research assistants, and technical staff) should be specifically identified in the proposal. The credentials and experience of the PI(s) should be presented, which may be in the form of a résumé or vita attachment at the end of the proposal.

Some projects, such as short duration or high-profile projects, may be required at the PA discretion.

- Proposals have a deadline and/or a critical timeline, so everyone understands how fast the project needs to be completed.
- A clear and documented agreement should be reached by the BO, PI, and PA regarding the criteria for success for the project including deliverables, timeframes, and communication plan.
- Ongoing implementation plans are encouraged to be part of the project from the beginning and updated as the project progresses. It is recommended that all SACs add an agenda item to their meetings regarding the status of the implementation.
- A communication plan is needed to ensure timely, clear, concise, and targeted information specifically for Business Owners.

4.2 Involvement of SAC in Proposal Development

SAC members (including the PA and BO) are assigned to JTRP projects to provide technical guidance to the PI in developing the proposal. The PI shall communicate with the SAC members throughout the proposal writing process, and their approval is required prior to the PI's submission of the proposal to the JTRP Office.

This proposal will not advance the JTRP Executive Committee without the approval of, at minimum, both the BO and the PA. A discussion should be held with the SAC members during the proposal development.

When required, the BO is required to participate in the JTRP Executive Committee meeting, when a proposal presentation is requested, to voice their need and support for the proposal. BOs are required to discuss the proposal with their DC prior to the proposal's submission to the JTRP Executive Committee for approval.

4.3 JTRP Office Review Process and Procedures

The JTRP Executive Committee believes that requiring methodical development and approval of research proposals is a worthwhile effort as it enhances the quality of proposals and the subsequent quality and impact of research results. Similarly, all JTRP projects by faculty PIs, subcontractors or consultants will be subject to the review process and procedures of the JTRP Office, as outlined in "Review Process for JTRP Projects" (see **Appendix D**).

4.4 Proposal Approval Process

- Research needs can be identified through a variety of sources such as peer groups, focus groups, staff meetings, direct reports/individuals, etc. Needs can be submitted throughout the fiscal year.

- Research Needs should be discussed with the appropriate Deputy Commissioner (DC). The JTRP Program Director/R&D Staff will review the need with the BO. R&D/JTRP will identify a PA/PI to work with the BO to develop a proposal.

- The PI in conjunction with BO, PA, and SAC will develop the proposal. As a minimum, the BO and PA must approve the final proposal.

- When subcontracts, such as with other universities, are involved these will be coordinated through the JTRP Office. The JTRP Office will attempt to have other universities comply with the terms of the approved INDOT/JTRP contract. The JTRP Office will keep the BO, PIs and PA informed of the subcontract status. In some cases the project may not be able to proceed until the subcontract is fully executed.

- If a JTRP Proposal, proposal costs are to be developed in conjunction with the JTRP Office/Business Office.

- BO must discuss the final proposal with the appropriate DC. Proposal timelines, deliverables, costs, etc. should be discussed with the DC. If the DC approves the proposal, the proposal is approved and recommended for funding.

- The JTRP Chairman, or his designate, approves the proposal for funding, subject to available funding/priorities.

- R&D notifies JTRP and BO of funding approval. For JTRP proposals, including subcontracts, once a proposal has been approved for funding, R&D will issue a letter of approval for the research project to proceed. The JTRP Office will forward the award letter to Sponsored Program Services for setup of the award.

- Upon award setup, the business office sends award notification to the PI, which includes the expectations for the project's completion in accordance with the approved proposal.

- If a research project is conducted as a consultant contract, INDOT R&D will work with INDOT Consulting Services to finalize the consultant agreement and approve funding for the project. Award letter of the project will be held until the consultant agreement is finalized. INDOT R&D will provide INDOT Consulting Services with a Non-Competitive Selection Request Form (if needed) for processing. The Non-Competitive Form includes the sole source justification and can be found in **Appendix F**.

  A meeting may be needed between INDOT R&D, INDOT Contract Services and the Consultant representatives for making revisions of the timeline, fee schedule and scope of services per the estimated Notice to Proceed.

  A Selection Review Committee (SRC) will thereafter review the proposal and all other related materials. If approved as a Non-competitive contract, INDOT Contract Services will prepare the contract and INDOT R&D needs to secure the funding if not secured already. Award letter of the project will be held until the consultant agreement is finalized. **Invoices for payment from the consultant will be validated and approved by the project PA prior to payment.**

- R&D provides periodic updates of approved/funded proposals to JTRP Board.

- An Action Plan including Action Items and Timeline will be required from PIs if a Draft Final Report is not submitted 4 months before Project Completion Date. **If there will be unexpected delays in submitting draft final reports or final reports by due dates, it is the responsibility of the PI to consult with the BO and PA to develop an action plan. Once finalized, the PI must submit the completed action plan to the JTRP Office and the INDOT R&D Division (attn: JTRP Managing Director.). Additionally, the Action Plan should be referenced in all relevant Project SAC meeting minutes.**

- Researchers who have past due projects may not be eligible to serve as a PI for new research proposals. A project is considered past due when the approved final (not draft) report has not been submitted for distribution by the scheduled completion date for the research project.

  Proposal routing sheets are to indicate whether the proposal PI or Co-PIs have past due to final reports. If the PI has a past due final report, investigation into the reason for the past due final report will be conducted by R&D. If the reason for the past due final report is due to an INDOT business owner, follow-up with the business owner will be conducted by the Project Advisor and documented.

If needed, this can escalate to the JTRP Executive Committee Board. If the reason for the past due final report is due to the PI, follow-up with the PI and BO will be conducted by the Project Advisor and documented with an Action Plan. If the Action Alan is approved by INDOT, a copy of the Action Plan will be provided to JTRP. INDOT, at its discretion, may approve the new proposal, based on the approved Action Plan, if INDOT deems the new research is critical. If the Action Plan is not approved by INDOT, any new proposals may not be approved by INDOT for a delinquent PI.

- For projects with past due final reports, INDOT, at its discretion, will contact the JTRP Office to coordinate a meeting with the PI to finalize submittal of the final report. In general, if a final report has not been submitted within 4 months of the project completion date, INDOT will request the JTRP Office to coordinate a meeting with the PI and to escalate the process through the respective university administration to finalize the final report. In extreme circumstances, INDOT, at its discretion, may request repayment in part, or in whole, to INDOT of expended research funds for the past due projects.

4.5 Changes to the Approved Proposal

The JTRP Executive Committee expects all projects to finish on time and within the project budget. However, as the work of a project progresses, it is possible that changes to the original study may occur that could alter the study's objectives, work plan, budget, reporting plan, and so forth. These changes may necessitate a time extension or budget expansion for the work to be completed; or in extreme circumstances, when it becomes apparent that the research cannot be satisfactorily performed, it may be necessary to terminate a project without finishing the work plan and associated reporting.

- Requests for changes in study objectives, time extensions, or budget expansions for studies need to be justified.

- The PI must obtain the written approval of the project's SAC in writing prior to formally requesting the extension and/or expansion from the JTRP Office, evidence of which must be provided with the formal change request to the JTRP Office. It is recommended that the PI hold a SAC meeting to discuss this request if a SAC meeting has not been held recently. At a minimum, approval by the PA and BO must be obtained for the extension and/or expansion request to be considered. Approval by e-mail or by virtue of SAC meeting minutes will suffice as written evidence. This step is meant to provide the SAC members with an opportunity to provide comments related to how the proposed extension and/or expansion will impact INDOT needs regarding the project. SAC approval does not constitute final approval of the proposed extension and/or expansion. **Time extensions should be submitted no later than two months prior to the project completion date.**

- The proposed changes will be forwarded by the JTRP Office to the R&D Office for consideration and processing of final approval.

- The R&D Office may terminate a project at any time as outlined in the current contract between JTRP (Purdue) and INDOT.

- **Time extensions and budget expansions require approval by the INDOT Deputy Commissioners overseeing the specific research area.**

4.6 Guidelines for Survey Data Requests

Cybersecurity policies are evolving with many organizations, including Purdue and INDOT. INDOT personnel are advised not to click on links in emails that come from outside their organization or are not from a verified contact person. INDOT staff members have raised concerns or have not responded to surveys that come from unfamiliar people, such as Purdue Graduate students.

If a JTRP Research Project (including consultant contracts for research) involves survey data requests to INDOT personnel, the following guidelines should be followed.

1. All surveys should at a minimum be discussed with the INDOT Business Owner (BO) and Project Adviser (PA) to receive their approval for content and distribution to INDOT. The BO and PA may, at their discretion, ask for the survey to be reviewed by the SAC and/or additional INDOT colleagues. BO/SAC can assist in identifying the correct responders to the survey.

2. The JTRP SPR #, INDOT PA and INDOT BO should be identified in email along with background and purpose of the survey. Avoid using links to background information. Include important information as text.

3. The survey should be distributed in one of the following ways:
    a. By a faculty member who is a PI on the project and is a familiar researcher to INDOT personnel. This will also ensure continuity of the survey should change in research personnel or grad students occur during the project. Ask BO to notify INDOT recipients to expect and respond to the survey.
    b. By the Business Owner or Project Advisor for the project. This will help ensure the INDOT participants that the survey is a valid request.

If more clarifications are needed about these guidelines and distribution of surveys to INDOT personnel, please contact the Project Advisor and Business Owner of the project involved.

5. Study Advisory Committee Meetings

- SAC meetings are considered the communications plan of a project. They are mandatory and should be held during the proposal development phase and approximately every six months (or less) during the conduct of the research.

- A list of each project's SAC members and their contact information is provided to the Principal Investigator(s) with the JTRP award letter, and this listing is also available in the project's "SAC" folder at the JTRP Office & INDOT R&D tracking application.

- The JTRP Office can assist the PI in scheduling SAC meetings, including deciding on the meeting format, arranging a location and time, and ensuring the availability of equipment.

- Materials to be discussed during the SAC meeting should be distributed to the SAC members at least two days before the SAC meeting is held.

- Minutes of the SAC meeting must be submitted (after SAC concurrence within 5 business days) to the JTRP Office within 5 business days for posting in the project's "SAC" folder at the JTRP office. SAC meetings must at least include the BO and PA to be considered an official SAC meeting.

- **An exit closeout final SAC meeting is mandatory and must be scheduled to review the final report and assist the BO in drafting an Implementation Plan (IP).**

- SAC meetings frequency is monitored by the JTRP administration and considered a measure for evaluating the success in communication amongst research team members. More frequent SAC meetings are encouraged when necessary (e.g., short-term or high-profile projects).

6. Research Payments, Travel Approval, Equipment Use, and Safety Training

6.1 Research Payments

The cost principles and eligibility of direct and indirect cost items relative to federally funded research activities are set forth in the Code of Federal Regulations, Title 48, Contract Cost Principles and Procedures, Subpart 31.3 (OMB Circular A-21). Direct costs only will be claimed for reimbursement in the form of expenses for personnel, travel, and equipment, rental of special space, and materials and services, as defined in the JTRP contract.

Charges made by JTRP to INDOT are to be actual expenditures for personnel time, travel and subsistence, expendable and nonexpendable equipment, supplies, and miscellaneous services, including computational expenses and other incidental items. Invoices are submitted monthly by Purdue Sponsored Program Services to INDOT on supplementary vouchers.

INDOT maintains the right to withhold an agreed upon percentage of study funds until final deliverables, as outlined in the proposal, are satisfactorily received by INDOT. Furthermore, with written notification to JTRP prior to proposal approval, INDOT reserves the right to assign and make payments for study activities to deliverables identified in the proposal; JTRP retains the right to decline participation in such proposals.

Currently, INDOT retains 20% of the total approved project funding until the PI has submitted the draft final report. Once the draft final report has been submitted, 10% of the retained holdback will be released with the remaining 10% held until the final report has been approved and accepted by INDOT. If no final report is required, then the retainage fee (holdback) will be contingent on the final project deliverables outlined in the proposal. The R&D Division Director may approve partial payments to satisfy FHWA requirements.

The name(s) of faculty/students/staff to be involved in a project must be identified in the proposal, when known, including the percentages of effort for which they will be paid. Personnel time will be charged (1) for hourly employees, only that time actively spent on the approved project and (2) for salaried faculty and professional staff, only that percentage of effort actively expended on a project, including for both hourly and salaried personnel vacations and sick leave allowances according to the process of the research agency at the basic rate of pay of their persons employed, plus the research agency's payments for fringe benefits.

For hourly employees, records of time spent on each project by each employee will be maintained and available for review. For salaried faculty and professional staff, a certification is made on Personnel Activity Reports (PAR) of the percentage of effort

expended by each employee during the previous PAR period on each project. These too will be maintained and available for review for the time period outlined in the JTRP contract.

Totals of salaries and wages will be listed on all invoices and will be supported by payroll records showing basic rates of pay; all loadings will be added as separate item or on a percentage basis applied to the total salaries. There will be no charge for Facilities and Administration (F&A) costs by Purdue University, as Purdue University will contribute office space, heat, utilities, and other services usually associated with F&A costs to the transportation research program of the State of Indiana.

6.2 Out-of-State Travel

- Research-related out-of-state travel may be needed during a study. Whereas it is recognized that travel to conferences, seminars, and meetings is often beneficial to the successful conclusion of research, such travel is encouraged within the following guidelines. Furthermore, the travel budget restrictions many agencies face are recognized and, therefore, only those people providing direct and lasting benefits to the research should be approved for reimbursement for travel with research funds. Faculty and INDOT representatives should receive preference for approved travel reimbursement.
- It is the responsibility of those involved with administering the JTRP research program to ensure that only appropriate travel is approved. Furthermore, it is the responsibility of each researcher to ensure that the proposed travel directly benefits the research and that the following travel guidelines are followed. Failure to do so may result in delays or disapproval for reimbursement.
- The use of funds for out-of-state travel must be specified in the research proposal. For a research project, the funds for out-of-state travel generally should be less than 3 percent of the total budget. If the proposed travel budget exceeds the suggested maximum percentage, the researcher must justify this in the proposal.
- Research funds must be spent on travel that is of direct benefit to ongoing or planned research, and only the portion of the trip that is related to the research is eligible for reimbursement with project funds. In general, for multifaceted conferences, seminars, and meetings, such as the TRB Annual Meeting, research funds may be used as reimbursement for up to two days and nights of travel costs for each research project.
- For each research project, the accumulated total out-of-state travel costs cannot be greater than the approved out-of-state travel budget in the proposal. If the accumulated total travel costs exceed the approved out-of-state travel budget, prior approval of the SAC (as a minimum, BO and PA approval) must be obtained before spending study funds for out- of-state travel.

- Only researchers who do not have any past due projects are eligible for out-of-state travel with research funds. A project is considered past due when the approved final (not draft) report has not been submitted for distribution by the scheduled completion date for the research project. If a researcher has one or more past due projects at the time of the out-of-state travel, no JTRP research funds from any of the researcher's projects may be used for out-of-state travel.
- Researchers should share results of their meeting with their SAC and, although not required, are encouraged to bring to the JTRP Executive Committee information that significantly impacts their study. Each researcher must include all trips taken during the last period and trips planned for the next period in the following progress report.
- Research-related trips to be taken by INDOT representatives utilizing project funds must be approved in advance by the PI and the JTRP Executive Committee Chairperson, or their designee. Travel funds must be available in the project travel budget.
- Approved project travel funds cannot be used for travel outside of the United States.

6.3 Equipment Purchase and Disposition

- All purchases of nonexpendable equipment, including computers and computer-related devices, purchased through JTRP and initially costing more than $5,000 must be included on the JTRP equipment inventory list. This inventory list will be maintained by the JTRP Office for studies performed through JTRP, and a copy of the list will be forwarded to the INDOT R&D Division by April 15 of each calendar year.
- Equipment purchases shall be itemized as much as possible in the study proposal. Approval of the proposal constitutes approval of purchase of the equipment. If the cost of an approved piece of equipment exceeds the itemized cost by $5,000 or more, SAC approval is recommended. If only the total estimated equipment cost is included in the approved proposal, but the equipment items are not listed, further approval is required from the project's SAC when individual pieces of equipment are purchased costing $5,000 or more.
- No equipment purchases are allowed after submission of the draft final report for review without the approval of SAC.
- If a piece of equipment is no longer being used on a JTRP project, or at INDOT's discretion, INDOT can take ownership of the equipment and has first opportunity for ownership. If INDOT decides not to take ownership of the equipment and JTRP decides not to retain the equipment, it may be sold to a third party outside INDOT and JTRP at salvage value and removed from the JTRP inventory list. Funds from the salvage will be returned to the JTRP Residual Account. When INDOT takes possession of a piece of equipment, the equipment will be removed from the JTRP inventory list and added to the INDOT inventory list.

6.4 Research Team Facilities Use, Orientation, and Safety Training

- **Use of INDOT Facilities**
  All JTRP research team members are required to obtain proper orientation and safety training on all equipment residing at the INDOT R&D Division when applicable. The PA assigned to the project can assist with the scheduling of this training. Proper certification of this training must be submitted upon completion. JTRP research team members are also required to sign a liability waiver.

- **Roadside Safety Training**
  Very often the conduct of JTRP research requires that researchers collect data along Indiana highways. All faculty, staff, and graduate and undergraduate students participating in JTRP research projects must take part in roadside safety training produced and coordinated by the JTRP Office at Purdue University.
  Verification of participation in this training must be submitted via the online training certification before or immediately following the project award. The training is available here: https://engineering.purdue.edu/Intranet/Groups/Schools/CE/Safety/roadside-safety/RST-confirmation. The appropriate roadside safety equipment shown in the training video is available from the Purdue Civil Engineering Transportation area for checkout, and all researchers are expected to make use of this equipment while doing their fieldwork. JTRP and INDOT puts a great emphasis on roadside safety. Failure by any researcher to comply with this requirement may result in loss of funding. All questions regarding the roadside safety training and equipment should be directed to the JTRP Office.

7. Reporting Research Progress

INDOT and the FHWA require that the progress of research projects be monitored throughout the duration of the project. Additionally, as with all SPR Part II projects (unless otherwise permitted), a report must be prepared that outlines the research that was conducted as well as the research results, conclusions, and implementation recommendations. This chapter covers the requirements for research progress reporting and report development.

7.1 Progress Reports

Progress reports must be prepared for all SPR Part II funded studies. Other types of studies (e.g., totally federally funded projects) may also require progress reports. Progress reports should contain the following items:

- **Project identification**: title and SPR number
- **Principal Investigator(s):**
- **Date Started:**
- **Completion Date:**
- **Research agency:** JTRP, INDOT, other
- **Progress:** description of major progress in the proposed research tasks since last progress report (date of last SAC meeting held and/or a copy of the last SAC meeting minutes and/or pictures of research and/or implementation activity during the past six months (pictures should be high resolution and submitted as separate files) may be requested by BO & PA)
- **Problems:** problems encountered including delay of obtaining data, equipment failure, construction delays... etc.
- **Work Next Six Months**: including any possible need for time extensions and or budget of expansion.
- **Reports:** completed reports, papers, and presentations.
- **Research Implementation:** Implementation of results to date
- **Travel:** in-state and out-of-state travel during the last reporting period or planned for the upcoming reporting period.
- **Project Progress schedule**: time bar chart expressed in months showing expected progress and actual progress to date for the individual tasks of the study identified in the approved proposal.
- **Financial Report:** total project budget, total expenditures to date, and expenditures for present reporting period (the JTRP Office will insert this information)

Progress reports are due in electronic version to the JTRP Office by January 15 and July 15 of each calendar year during the duration of the research project. The JTRP Office will send out progress report due date reminders. Completed reports are to be forwarded by the PI (after review and approval by the BO & PA) to the JTRP Office. Reports not containing the necessary information will be returned to the PI for completion. A sample progress report is shown in **Appendix G.**

7.2 Interim Reports

While not required for all research projects, an interim report may be requested by the SAC for a particular research project, typically during proposal development. While there are no established format requirements for interim reports, it is anticipated that final report formatting requirements will be followed. PIs are to submit interim reports to the SAC and the INDOT R&D Division. A formal review may be required.

8. Reporting Research Results

8.1 Final Report Features

INDOT typically requires a final report for each SPR-funded research study. For implementation studies funded with SPR funds, the SAC may require only a short summary of work completed and deliverables. Draft final reports should be kept on file until study is closed out after the submission and approval of the reviewed and revised final report. The approved final report supersedes the draft final report.

JTRP author guidelines for technical reports are located here:
http://docs.lib.purdue.edu/jtrp/style_guidelines.pdf

8.2 Draft Final Report Review

Four months prior to the completion of the research project, the PI is required to submit a draft copy of the final report to the Purdue e-Pubs system. This four-month period is included to provide sufficient time for review and revision of the draft final report. An expedited review may be requested with the BO and PA approval. The JTRP report publishing process with guidelines for submission, review, and publication of the final report can be found here: https://docs.lib.purdue.edu/jtrp/JTRP-report-publishing-process.pdf

A close-out SAC meeting will be required just prior to the completion of the project. The JTRP Office can assist with the scheduling of this meeting. The closeout meeting is not meant to supersede the review procedure discussed previously. Topics for the closeout meeting should include the following:

- How the PI addressed the SAC members' review comments
- Comments or concerns regarding the final report
- Adequacy of the technical summary
- Proposed implementation and finalizing the Implementation Plan (IP)

8.3 Funding Hold Back Option

Currently, the JTRP Office, in conjunction with INDOT, retains 20% of the total approved project funding until the PI has submitted the draft final report. Once the draft final report has been submitted, 10% of the retained holdback will be released with the remaining 10% held until the final report has been approved and accepted by INDOT. If no final report is required, then the retainage fee (holdback) will be contingent on the final project deliverables outlined in the proposal. The R&D Division Director may approve partial payments to satisfy FHWA requirements.

8.4 INDOT Research Project Implementation Plan Form

Emphasis is always placed on accelerating and concurrent implementation of research findings into INDOT operations. PIs and SACs should look for early and concurrent implementation opportunities during proposal development, during conduct of the research, and in developing IPs. It should be recognized that delaying implementation of research results is a delayed or lost-opportunity cost. Additionally, if possible, to maximize the return on the research investment (ROI), broad statewide implementation should be the goal. During the conduct of the IP, if a delay or issue is encountered by an implementer—typically the BO—the implementer should bring this to the attention of his or her supervisor or DC. **The BO should draft the implementation plan during the close out SAC meeting. The BO is to submit a signed, approved IP to the R&D Division within 15 days after the completion of the research (project completion date).**

Approval to close out a project is not dependent on the BO's submission of the IP. While all SAC members may sign the IP, only the implementers, PA, and BO/Implementor signatures are required.

8.5Final Report Dissemination

The JTRP Office will provide electronic copies of the final reports to the appropriate agencies and repositories as defined in the document titled *JTRP Report Publishing Process* (see section 8.2). JTRP Final Reports will be made available for viewing, downloading, and/or purchase of a print-on-demand copy at the JTRP e-Pubs repository: http://docs.lib.purdue.edu/jtrp/. INDOT, at its discretion, may decide not to publish a final report, or its components.

8.6 Publication Provisions and Proprietary Rights

Publication provisions and proprietary rights shall be in accordance with the current contract language and federal and state law.

At least 50 percent of all royalties will be forwarded to the JTRP Office for utilization in the JTRP research program.

9. Implementing Research

The benefit of applied research is realized when research results are utilized in operational practice. Innovation is not what Innovators do, it is what Customers and Clients adopt. Research results typically will not be fully or cost-effectively incorporated into operations without deliberate forethought and planning. Successful implementation begins during the identification of research needs and is integrated into development of the proposal. Opportunities for accelerated and concurrent implementation should be identified and reflected in the proposal's timeline and deliverables. There is a missed opportunity-cost when research results are not quickly and fully implemented. The underlying goal is to implement viable research results into practice as soon as possible, and as fully as possible. Each proposal and final report is to include a section discussing proposed implementation, including potential ownership and use of research results, obstacles, resource requirements, process issues, etc.

A completed and signed Implementation Plan (IP; see example in **Appendix E)** is required as part of each project. The IP is to be developed by the project BO in consultation with SAC, PA, and PI. ***Good practice is to complete the IP at the closeout SAC meeting***. NOTE: An IP can include multiple individuals and steps to address in order to fully implement the research findings. As indicated in the IP, a timel i n e of implementation activities is to be included. A research project is not completed until a detailed and signed IP is submitted by the BO. IPs are documented in a Smartsheet for the BOs, Director Owners and INDOT Executive Staff review, update and monitoring.

Primary responsibility and accountability for implementation rests with the designated implementers identified in the IP. The IP should be considered not only as a plan to implement, but a working document that needs to be reviewed frequently and updated as needed, by the implementer(s). If resources such as PI time (e.g., for training, workshops) and purchase of prototype equipment are required for successful implementation, the INDOT R&D and JTRP Offices are willing to provide assistance where possible and should be contacted.

A new resource for researchers is the Purdue University Research Repository (PURR), which is a university Research Core (http://www.purdue.edu/research/cores) for Purdue faculty, graduate students, and staff. PURR provides a free service and platform for the creation of funder-compliant data management plans, a collaborative project space for data management, and a wizard for the publication of datasets with digital object identifiers (DOIs). In addition, PURR ensures the long-term preservation of research data.

To learn more about the Purdue University Research Repository, watch the PURR introductory video (http://www.youtube.com/watch?v=Yw0IJj7FqA8) or visit the PURR website (https://purr.purdue.edu).

9.1 Funding Implementation Activities

Implementation of research results is an approved SPR Part B expenditure within research program (with some limitations). Implementation Proposals can be submitted as other research proposals for funding. They are generally submitted near the completion of a research project. Implementation Proposals are developed, approved, and conducted in the same manner as research proposals, except that the deliverables of the project are the actual implementation of research results. As such, a final report may not be required for an Implementation Project; however, semi-annual progress reports are required for these projects.

To encourage implementation of viable research results, an implementation line item is also included in the annual *Work Program and Cost Estimate* prepared by the INDOT R&D Division. These funds are set aside specifically for implementation activities and projects. Accessing these funds should be done in coordination with the project PA and/or the INDOT R&D Division.

9.2 Implementation Plans

Implementation Plans (IP) are developed at the end of each completed research project by the Principal Implementer (generally the same person as the project BO). Ips should be drafted at the closeout SAC meeting. **IPs are due no later than 15 days after project closeout. BOs are responsible for completion of the IP and forwarding a completed/signed copy to R&D within the 15-day period.** R&D/JTRP will transfer IP details to the Smartsheet tab for implementation. DCs/Direct Reports have access to the Smartsheet tab and can track the implementation status. The Principal Implementer is responsible for updating and maintaining the project status in Smartsheet.

Implementation assistance may be available through the research program, if requested by the Principal Implementer. The status of IPs may be discussed at JTRP Board meetings.

9.3 INDOT Research Program IMPACT and Return on Investment (ROI)

INDOT R&D Division, generally annually, compiles and reports on the status of implementation projects, including developing an annual IMPACT summary (qualitative ROI) and possibly quantitative ROI.

Evaluating the ROI is good business practice when practical and where data exists (e.g., cost factors). INDOT R&D conducts an ROI based on benefit-cost analysis of quantifiable benefits projects to demonstrate the cost savings, impact of research and the overall effectiveness of INDOT Research program.

The annual IMPACT (qualitative findings) summary and the ROI (of completed projects) are published at http://www.in.gov/indot/2404.htm.

Appendix A

Contract between INDOT and JTRP (Purdue)

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AGREEMENT
BETWEEN
PURDUE UNIVERSITY
WEST LAFAYETTE, INDIANA
AND
THE INDIANA DEPARTMENT OF TRANSPORTATION
FOR THE
JOINT TRANSPORTATION RESEARCH PROGRAM

This Contract, made and entered into by and between the Indiana Department of Transportation, hereinafter referred to as "INDOT," and PURDUE University, hereinafter referred to as "PURDUE," on behalf of its Joint Transportation Research Program, hereinafter referred to as "JTRP."

WITNESSETH

WHEREAS, INDOT is faced with certain basic technical problems in its operations and in connection with its planning of future operations; such problems warranting considerable study and research; and

WHEREAS, the JTRP is a cooperative effort created by the Indiana Legislature by its Acts of 1990 and codified at IC §8-23-9-56, as a means of providing research and development for the best methods of improving and maintaining the state transportation system; and

WHEREAS, the JTRP is housed at PURDUE; and

WHEREAS, PURDUE has the technical staff and facilities capable of doing such research work; and

WHEREAS, INDOT expects that the United States Department of Transportation ("USDOT") – Federal Highway Administration ("FHWA") and other agencies within the USDOT will participate financially with INDOT in paying the attendant costs of federally funded research studies and activities, such studies and activities hereinafter referred to as "SPR," and other Federally Funded Studies and Activities; and

WHEREAS, INDOT expects to pay the total attendant costs of totally state funded studies and activities, such studies and activities hereinafter referred to as "JTRP Studies and Activities;" and

WHEREAS, it is required by the FHWA and other agencies within the USDOT, and in the best interest of INDOT, that the basic provisions pertinent to the conduct of work performed by the JTRP be enumerated in a contract, hereinafter referred to as "Contract;" and

WHEREAS, PURDUE will submit on behalf of the JTRP to INDOT various "Proposals for Research Studies" (hereinafter "Proposals"), each of which will include a statement of objectives, work plan, deliverables, business case, anticipated benefits and implementation of the study, total cost, timeline for completion, and a statement explicitly incorporating all relevant provisions of this Contract by reference; and

WHEREAS, the Proposals will be approved by the INDOT Commissioner (or his designee) and the JTRP Executive Board.

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NOW THEREFORE, IT IS AGREED that PURDUE shall conduct all JTRP research work in accordance with the following.

ARTICLE I.
SPECIFIC PROVISIONS

1.1. Definitions.

A. Research. The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions. INDOT research is typically 'applied research' which is addressing identified INDOT needs. Research may take various forms including, but not limited to synthesis studies of best practices, proof of concept studies, full scale investigation, and implementation of research findings. Research is conducted by researchers (Principal Investigators) either inhouse or contracted.

B. Research Project or Study are synonymous terms indicating the specific research investigation. An approved research proposal is the document that defines the research project or study need, work plan, study cost, timeline, deliverables, research team, etc.

C. SPR Fund/Program. The SPR Fund/Program is a federally funded State Planning & Research program established per the federal requirements for research funding outlined in 23 CFR 420, particularly §§ 420.105, 420.121, 420.207 and 420.209. INDOT uses the management process outlined in the "INDOT's User's Manual for Research & Innovation" (hereinafter the "JTRP User's Manual", available online at https://engineering.purdue.edu/JTRP/files) and the Joint Transportation Research Program (JTRP) Contract for deploying these funds.

1.2. Purpose of Agreement. The Purpose of this Agreement is to set forth the terms by which the Parties will cooperate to fund and complete transportation Research Projects or Studies. SPR Studies are typically funded using federal and state funds. Other studies and activities may have different funding splits. INDOT, through its annual budgeting process, authorizes an annual appropriation for research assistance and administration at PURDUE. This budgeted amount is made available to PURDUE in advance of disbursement by PURDUE. The exact amount is recommended to the JTRP Executive Board for approval by the JTRP Executive Board and requisitioned by voucher from PURDUE to INDOT as per an annual purchase for the JTRP services made by INDOT. Legislation authorizes this annual research funding by INDOT to PURDUE for research and extension. Payment of the research funding is obtained by filing a voucher for the amount authorized by INDOT and is not based on the JTRP expenditures by PURDUE. However, to ensure INDOT constantly has knowledge of how the funds are being used and/or accumulated, PURDUE will submit a quarterly estimate of expenses for each succeeding quarter and report the actual expenses of the most recent quarter for which such expenses are available to the JTRP Executive Board.

1.3. Term. The term of this Contract shall be for five years beginning August 1, 2023 and continuing through July 31, 2028, subject to either Party's right to terminate the Contract at any time upon thirty (30) days written notice in accordance with Section 2.34. If approved research or extension activities are cancelled under this provision, INDOT shall reimburse PURDUE for all work completed to the date notice is given, and for all irrevocable commitments entered into prior to the date of termination notice. Upon termination, all data, results, reports and other materials developed by the JTRP will become property of PURDUE, subject to INDOT's right to use and inspect such documents as provided herein.

1.4. JTRP Director Responsibilities.

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A. The JTRP Director is responsible for the overall operation of the JTRP. In this capacity, the Director is responsible for the timely submission of project reports, meeting program requirements and deadlines, and assuring compliance with JTRP Executive Board and PURDUE policies, procedures, and guidelines including the JTRP Executive Board-approved "JTRP User's Manual.

B. The Director will monitor all JTRP projects to assure such compliance. The Director will report any faculty and staff failure to comply to the appropriate PURDUE academic or fiscal administrator. PURDUE will take appropriate action to either remedy the immediate problem and/or prevent future occurrences by such faculty or staff member.

C. The Director will review all PURDUE proposals prepared for submission to the JTRP Board. If acceptable, the Director will submit the proposal, through normal PURDUE procedures, to the JTRP Executive Board for consideration.

D. PURDUE will ensure that procedures are in place to ensure that proposal budgets (including budget changes and expansions) are reasonable and accurately reflect the level of effort required to successfully accomplish project objectives outlined in the proposal and that expenditures against such budgets are properly made and invoiced.

1.5. Research Project Terms, Duties, and Responsibilities. The term "research project" as used herein shall include planning technical investigations and other data gathering and analysis activities as these may be defined in approved Proposals.

A. PURDUE agrees to undertake and perform completely each approved research project, including such investigations, services, activities, consultations, data-gathering, and other related work and studies as it may feel necessary to arrive at satisfactory conclusions pertinent to the specific problems posed, including a final report (and other deliverables identified in the proposal) with recommendations germane to such conclusions.

B. Period of Performance. Each Research Project or Study will be made during the period stated in the approved proposal, unless modified by written approval of INDOT Research and Development and the JTRP Executive Board (of its designee).

C. Inspection of Work. INDOT, FHWA and other appropriate federal agencies, shall be accorded proper facilities for review and inspection of the work hereunder and shall at all reasonable times have access to the premises, to all books, records, correspondence, instructions, receipts, vouchers and memoranda of every description pertaining to the work hereunder. Arrangements for all reviews and inspections by FHWA or other Federal agencies, will be made by INDOT.

D. Reports. PURDUE will furnish written progress reports as specified in the JTRP User's Manual on each JTRP project. Interim Research Reports (as appropriate) and the Final Research Report on each project will be prepared and submitted to the SAC and INDOT for review and comment prior to their publication or distribution. Acceptance of the final report by INDOT as satisfactory is a requirement for fulfillment of this Contract as it pertains to each Research Project or Study. Upon approval by INDOT, the JTRP will publish and distribute such interim and/or final reports on each project as specified in the JTRP User's Manual. All Interim and Final Reports published shall contain the following statement on the credit sheet:

"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

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official views or policies of the Indiana Department of Transportation or the Federal Highway Administration or the appropriate Federal agency. This report does not constitute a standard, specification or regulation."

E. Changes in Study. Any alteration, extension, expansion, supplement, or modification of the scope of work and method of study as detailed in an approved proposal must be approved in advance by the SAC, the JTRP Executive Board, and INDOT's Commissioner or his designee, as specified in the JTRP User's Manual.

F. Study Advisory Committee. The Parties to this Contract, with the consent and approval of the individuals and agencies concerned, will appoint a SAC for each research project as specified in the JTRP User's Manual. All agencies cooperating directly with INDOT shall be represented on the SAC. The SAC shall provide the principal investigator of the project with technical advice and with suggestions for work programming to promote the efficient and prompt attainment of the research objectives and the implementation thereof as set forth in the approved Proposal for each project. The SAC will provide approvals as outlined in the JTRP User's Manual.

1.6. Funding. FOR SPR AND OTHER FEDERALLY FUNDED OR STATE FUNDED STUDIES AND ACTIVITIES THE FOLLOWING PROVISIONS ARE A PART OF THIS CONTRACT:

A. SPR Studies are typically funded using federal and state funds. Other studies and activities may have different funding splits. INDOT, through its annual budgeting process, authorizes an annual appropriation for research assistance and administration at PURDUE. This budgeted amount is made available to PURDUE in advance of disbursement by PURDUE. The exact amount is recommended to the JTRP Executive Board for approval by the JTRP Executive Board and requisitioned by voucher from PURDUE to INDOT as per an annual purchase for the JTRP services made by INDOT. Legislation authorizes this annual research funding by INDOT to PURDUE for research and extension. Payment of the research funding is obtained by filing a voucher for the amount authorized by INDOT and is not based on the JTRP expenditures by PURDUE. However, to ensure INDOT constantly has knowledge of how the funds are being used and/or accumulated, PURDUE will submit a quarterly estimate of expenses for each succeeding quarter and report the actual expenses of the most recent quarter for which such expenses are available to the JTRP Executive Board.

B. Maximum Fee: The total sum paid PURDUE under approved study proposals shall not exceed the estimated total cost included in the approved Proposal without written approval as specified in the JTRP User's Manual. The basis of payment from INDOT to PURDUE will be actual costs incurred by PURDUE in conducting the research.

C. Purchase Orders. If the Commissioner of INDOT (or his designee) and the JTRP Executive Board approves the Proposal, INDOT will issue a Purchase Order per study to PURDUE for the JTRP's expenses.

D. Travel. All out-of-state travel performed for, or expenses in connection therewith incurred against, a project shall be as specified in the JTRP User's Manual and reported to the JTRP Executive Board on a quarterly basis.

1.7. Cost Principles. The cost principles and eligibility of direct and indirect cost items relative to federally funded research activities are set forth in the Code of Federal Regulations, Title 2, Chapter II, Part 220. Direct Costs only will be claimed for reimbursement when in the form of expenses for personnel,

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travel, equipment, rental of special space, materials and services, as further defined within the provisions for this Contract.

A. Charges made by PURDUE to INDOT and payable by INDOT for JTRP, SPR and other federally funded studies and activities are to be actual expenditures for personnel time, travel and subsistence, expendable and non-expendable equipment, supplies, and miscellaneous services, including computational expenses and other incidental items, to be billed monthly or quarterly by PURDUE to INDOT on supplementary vouchers. Such vouchers will be supported by copies of the original documents covering the charges. Such supporting documentation will be maintained at PURDUE.

B. INDOT maintains the right to withhold an agreed upon percentage of study funds until final deliverables, as outlined in the proposal, are satisfactorily received by INDOT. Furthermore, with written notification to PURDUE prior to Proposal approval, INDOT reserves the right to assign and make payments for study activities to deliverables identified in the Proposal(s); PURDUE retains the right to decline participation in such Proposals.

C. Personnel time will be charged 1) on hourly employees for only that time actively spent on the project and 2) on salaried professional staff for only that percentage of effort actively expended on a project, including for both hourly and salaried personnel vacations and sick leave allowances according to the policy of PURDUE at the basic rate of pay of their persons employed, plus PURDUE payments for fringe benefits.

D. For hourly employees, records of time actually spent on each project by each employee will be maintained by PURDUE and available for review by INDOT.

E. For salaried professional staff, a certification shall be made on payroll forms at the end of each month of the percentage of effort actually expended by each employee during the previous semester on each project. These too will be maintained by PURDUE and available for review by INDOT.

F. Totals of salaries and wages shall be shown on all billings and will be supported by copies of payrolls showing basic rates of pay, and all loadings will be added as separate items or on a percentage basis applied to the total salaries. There will be no charge for Facilities & Administration ("F&A") costs. PURDUE will contribute office space, heat, utilities, and other services usually associated with F&A costs to the transportation research program of the State of Indiana, although the JTRP Executive Board, at their discretion, may allocate funds for F&A costs in special circumstances.

1.8. <u>Equipment Purchase and Disposition</u>.

A. All purchases of nonexpendable equipment purchased through PURDUE initially costing more than the amount specified in the JTRP Executive Board approved, "User's Manual for Research and Innovation" must be accounted for with the equipment maintained on an inventory. This inventory will be maintained by the JTRP Director for studies performed through the JTRP, and a copy of the inventory in the JTRP Executive Board approved format will be forwarded to INDOT's Research & Development Office by April 15th of each year. The equipment will likewise be inventoried in PURDUE's Property Accounting System.

B. Equipment purchases shall be itemized as much as possible in the study proposal. Approval of the proposal constitutes approval of purchase of the equipment. If the approved proposal includes

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itemized equipment costs, no further approval of purchasing these equipment items is necessary. If only the total estimated equipment cost is included in the approved proposal, but the equipment items are not listed, further approval is required by the Study Advisory Committee ("SAC") and the JTRP Executive Board when individual pieces of equipment are purchased costing more than the amount specified in the JTRP User's Manual. If the cost of an approved piece of equipment exceeds the itemized cost by the amount specified in the JTRP User's Manual, SAC approval is recommended.

C. At the end of each research project, the JTRP Executive Board is to be notified what equipment was purchased as a result of the project and whether PURDUE desires to retain possession of the equipment for future INDOT research projects. INDOT can take ownership of the equipment and has the first right-of-refusal to acquire said ownership. If INDOT decides not to take ownership of equipment and PURDUE decides not to retain the equipment, it may be sold to a third party outside INDOT and PURDUE at salvage value and removed from the PURDUE inventory. Funds from the salvage will be returned to the JTRP for use in the JTRP research and administration and identified in the PURDUE quarterly estimate of expenditure report. When INDOT takes possession of a piece of equipment, the equipment will be removed from the PURDUE inventory and added to the INDOT inventory.

1.9. **Rental of Space, Special Equipment or Facilities**. The actual cost to PURDUE of renting additional space, special equipment or facilities, not owned by PURDUE but required for a JTRP project, will be approved by INDOT through a listing in the proposal. The cost thereof shall be included in the total cost of the study.

1.10. **Subcontracting**. PURDUE shall not enter into contracts with any third party to execute any part of a study, project, or any other work being performed under this Contract without prior written approval of INDOT. However this provision shall not be interpreted to prevent PURDUE from obtaining professional assistance at reasonable cost or at no cost from any of its departments or units, or from INDOT.

1.11. **Proprietary Rights**.

A. It is agreed that if patentable discoveries or inventions should result from Research described herein, such findings shall be promptly reported to INDOT and FHWA. PURDUE will have the right to retain all rights, title and interest in patentable inventions and copyrightable materials including software subject to:

i. A nonexclusive, nontransferable, irrevocable, paid-up license to the United States in accord with the provisions of Title 37*, Patents, Trademarks, and Copyright, Part 401 – Rights To Inventions Made By Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements*; and

ii. A nonexclusive, nontransferable, irrevocable, paid-up license to the State of Indiana for governmental purposes; and

iii. JTRP Executive Board approved, "User's Manual for Research and Innovation."

B. Subject to the requirements of 23 CFR Part 420, PURDUE may license such patentable inventions, copyrightable materials, and software to third parties. When such licenses are royalty bearing, INDOT and PURDUE agree to equally share all net royalty income (Net Royalty Income = Gross Royalty Income less direct legal expenses) except for Type One software as outlined below. INDOT designates its share of Net Royalty Income from the sale of Type One software to the JTRP research and administrative expenses at PURDUE.

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Furthermore, except as otherwise required pursuant to 23 CFR § 420.121(i), the Parties agree that PURDUE will retain all rights provided for the subgrantee or contractor, and the State of Indiana, acting through its Department of Transportation, will not, as a part of the consideration for awarding this or any future awards, obtain rights in the subgrantee's or contractor's subject inventions.

C. It is recognized that two types of software may be developed under this Contract:

i. Type One: JTRP developed, supported and distributed software. Revenue generated from the sale of Type One Software will be used to offset JTRP expenses related to maintaining, supporting and updating the software.

ii. Type Two: JTRP developed but distributed and supported by a third party under license from PURDUE. The license provides for full third-party funding to produce, maintain, and improve the software. The license also provides for royalty payments to PURDUE based on the third-party sales of the software.

Furthermore, any revenue generated from the sale of reports, publications, data, information, or electronic media described above by the JTRP will be used to offset JTRP expenses.

D. Ownership of other Data. Subject to 23 CFR 420.121, the ownership of all data, drawings, charts, etc., which are prepared or produced under this Contract shall be vested in PURDUE with the understanding INDOT has access to such data, drawings, charts, etc., as desired, during each project period and for a period of at least three (3) years following the completion of each study.

1.12. Publication Provisions.

A. Papers, interim or final reports, forms or other material which are a part of the work under an approved study will be copyrighted by PURDUE, with the provision that INDOT and FHWA or the appropriate Federal agency and the JTRP authors reserve a royalty-free, nonexclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use, the work for government or academic purposes on condition that appropriate credit is given to the JTRP as the place of first publication. (Refer to Article VIII for a more detailed discussion regarding Proprietary rights.)

B. Prior to acceptance of a final report, either party to the Contract or FHWA, or the appropriate Federal agency, may initiate a request for publication of a final or interim report, or any portions thereof. No other reports may be published, except as provided in this Section 1.12.

C. Neither party shall publish nor otherwise disclose, nor permit to be disclosed or published, the results of any investigations herein contemplated, or any particulars thereof, during the period of each project or after the completion of each project without notifying the other and securing its review in writing, except as provided in Section H below. A copy of any proposed publication or presentation by PURDUE personnel, based on a final report, that reveals any aspect of a research project conducted under this Contract (hereinafter called "Manuscript") will be submitted to INDOT by the PURDUE principal investigator at least thirty (30) days in advance of submission for publication or presentation. INDOT will have thirty (30) days to review the Manuscript from the date the Manuscript is received. If INDOT notifies the principal investigator in writing that the Manuscript contains any unauthorized disclosure of INDOT intellectual property, or INDOT confidential information, the PURDUE principal investigator shall remove the reference to INDOT intellectual property or INDOT confidential information from the Manuscript.

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D. The Parties to this Contract shall have equal responsibility to review material for publication, except that INDOT reserves the right to initially publish the final report.

E. In the event of failure of agreement between INDOT and PURDUE relative to the publication of a final report, or any interim reports during the period of a project, INDOT reserves the right to publish independently, in which event the non-concurrence of PURDUE shall be set forth, if requested by PURDUE.

F. If INDOT does not elect to publish a final report, publication by PURDUE shall then be a matter within the province of PURDUE policy; but, if PURDUE then elects to publish independently, the non-concurrence of INDOT and FHWA (or the appropriate Federal agency) shall be set forth, if requested.

G. When the scheduled time for presentation of a paper containing previously undisclosed findings does not permit formal review and approval of a complete report, abstracts may be used for notification of intent to present a paper based on the study. Such presentation must protect the interests of the other party by the inclusion of a statement in the paper and in the presentation to the effect that the paper has not been reviewed by the other party or FHWA, or the appropriate Federal agency. Lectures to other groups which describe research plans, but disclose neither data nor results, are permissible.

H. Publication by either party shall give credit to the other party and to FHWA, or the appropriate Federal agency unless, upon failure of agreement on any report of the study, FHWA, the appropriate Federal agency or either of the contracting parties requests that its credit acknowledgment be omitted.

I. After acceptance of a final report, PURDUE, INDOT and FHWA, or the appropriate Federal agency is free to use the data and results without restriction. If patentable items are involved, this paragraph is subject to the provisions of Section 1.11.

1.13. **Fiber Optic Communication Access**. To facilitate the fiber optic communication line that allows direct access to the PURDUE University Computing Center, by the INDOT Office of Research & Development, INDOT will provide funding to the JTRP administrative core funds equal to the actual cost for the monthly service fees. The fiber optic line is installed in support of the Joint Transportation Research Program of INDOT and PURDUE. It is anticipated that INDOT will provide funding for the access and maintenance fees for as long as the JTRP exists at PURDUE.

1.14. **Termination of Previous Agreements**. This Contract will become applicable to all future JTRP research projects, thereby terminating and superseding the provisions of the document entitled "A Compilation of Established Policies for Cooperative Special Study Projects" as compiled November 2, 1961 and revised February 1, 1970 and April 4, 1979. Furthermore, this contract terminates and supersedes the Memorandum of Understanding, dated September 22, 1999, as well as three agreements dated June 18, 1980, August 27, 1987, July 1, 2000 and the contracts dated April 30, 2008, June 21, 2013, and June 5, 2018.

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ARTICLE II. GENERAL PROVISIONS.

PURDUE and any subsequent parties to this Agreement shall follow the General Provisions, including the Non-collusion and Acceptance provision, to the extent these provisions are applicable under Indiana law to PURDUE. PURDUE shall also cause any contractor or agent working on the project to follow the General Provisions and will include the General Provisions in any contract entered into regarding the work for the project.

2.1. "Separateness" of Contracts between the Parties. The State acknowledges and agrees that because of the unique nature of State Educational Institutions, the duties and responsibilities of "PURDUE" in these Standard Conditions for Contracts between the State of Indiana and State Institutions and in any contract for professional services are specific to the department or unit of PURDUE. The existence or status of any one contract between the State and PURDUE shall have no impact on the execution or performance of any other contract and shall not form the basis for termination of any other contract by either party.

2.2. Access to Records. PURDUE and its subcontractors, if any, shall maintain all books, documents, papers, accounting records, and other evidence pertaining to all costs incurred for all projects under this Agreement. They shall make such materials available at their respective offices at all reasonable times during this Agreement term, and for three (3) years from the date of final payment under this Agreement, for inspection by the State or its authorized designees. Copies shall be furnished at no cost to the State if requested.

2.3. Assignment; Successors. It is agreed that the covenants, stipulations, and conditions herein contained shall inure to the benefit of and shall be binding upon the successors and assigns of the State and PURDUE. PURDUE shall not assign or subcontract the whole or any part of this Agreement without INDOT's prior written consent. It is agreed, however, that this provision shall not be interpreted to prevent PURDUE from obtaining professional assistance at reasonable cost or at no cost from any of its departments or units, or from INDOT.

2.4. Audits. PURDUE acknowledges that it may be required to submit to an audit of funds paid through this Agreement. Any such audit shall be conducted in accordance with IC § 5-11-1*, et seq.* and audit guidelines specified by the State and all applicable provisions of 2 C.F.R. 200.

The State considers PURDUE to be a "Contractor" under 2 C.F.R. 200.331 for purposes of this Agreement. However, if it is determined that PURDUE is a "subrecipient" and if required by applicable provisions of 2 C.F.R. 200 (Uniform Administrative Requirements, Cost Principles, and Audit Requirements), PURDUE shall arrange for a financial and compliance audit which complies with 2 C.F.R. 200.500 *et seq*.

2.5. Authority to Bind PURDUE. The signatory for PURDUE represents that he/she has been duly authorized to execute this Agreement on behalf of PURDUE and has obtained all necessary or applicable approvals to make this Agreement fully binding upon PURDUE when his/her signature is affixed, and certifies that this Agreement is not subject to further acceptance by PURDUE when accepted by the State.

2.6. Compliance with Laws.

A. PURDUE shall comply with all applicable federal, state and local laws, rules, regulations and ordinances, and all provisions required thereby to be included herein are hereby incorporated by reference. The enactment of any state or federal statute or the promulgation of rules or regulations thereunder after execution of this Agreement shall be reviewed by the State and PURDUE to determine whether the provisions of this Agreement require formal modification.

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B. PURDUE and its agents shall abide by all ethical requirements that apply to persons who have a business relationship with the State as set forth in IC § 4-2-6, *et seq*., IC § 4-2-7, *et seq*. and the regulations promulgated thereunder. **If PURDUE has knowledge, or would have acquired knowledge with reasonable inquiry, that a state officer, employee, or special state appointee, as those terms are defined in IC § 4-2-6-1, has a financial interest in the Agreement, PURDUE shall ensure compliance with the disclosure requirements in IC § 4-2-6-10.5 prior to the execution of this contract.** If PURDUE is not familiar with these ethical requirements, PURDUE should refer any questions to the Indiana State Ethics Commission or visit the Inspector General's website at http://www.in.gov/ig/. If PURDUE or its agents violate any applicable ethical standards, the State may, in its sole discretion, terminate this Agreement immediately upon notice to PURDUE. In addition, PURDUE may be subject to penalties under IC §§ 4-2-6, 4-2-7, 35-44.1-1-4, and under any other applicable laws.

C. PURDUE certifies by entering into this Agreement, that it is not presently in arrears in payment of its taxes, permit fees or other statutory, regulatory or judicially required payments to the State. PURDUE agrees that further work may be withheld, delayed, or denied and/or this Agreement suspended until PURDUE is current in its payments and has submitted proof of such payment to the State.

D. PURDUE warrants that it has no current, pending or outstanding criminal, civil, or enforcement actions initiated by the State.

E. If a valid dispute exists as to PURDUE's liability or guilt in any action initiated by the State or its agencies, and the State decides to delay, withhold, or deny work to PURDUE, PURDUE may request that it be allowed to continue, or receive work, without delay. PURDUE must submit, in writing, a request for review to the Indiana Department of Administration ("IDOA") following the procedures for disputes outlined herein. A determination by IDOA shall be binding on the Parties.

F. PURDUE represents that PURDUE and its subcontractors, if any, shall obtain and maintain all required permits, licenses, and approvals, as well as comply with all health, safety, and environmental statutes, rules, or regulations in the performance of work activities for the State. Failure to do so may be deemed a material breach of this Agreement and grounds for immediate termination and denial of further work with the State.

G. PURDUE agrees that the State may confirm, at any time, that no liabilities exist to the State, and, if such liabilities are discovered, that the State may bar PURDUE from contracting with the State in the future and cancel existing contracts.

H. As required by IC §5-22-3-7:

(1) PURDUE and its principals certify that:

(A) PURDUE, except for de minimis and nonsystematic violations, has not violated the terms of:

(i) IC §24-4.7 [Telephone Solicitation of Consumers];

(ii) IC §24-5-12 [Telephone Solicitations]; or

(iii) IC §24-5-14 [Regulation of Automatic Dialing Machines];

in the previous three hundred sixty-five (365) days, even if IC § 24-4.7 is preempted by federal law; and

(B) PURDUE will not violate the terms of IC § 24-4.7 for the duration of the Agreement, even if IC § 24-4.7 is preempted by federal law.

(2) PURDUE and any principals of PURDUE certify that an affiliate or principal of PURDUE and any agent acting on behalf of PURDUE or on behalf of an affiliate or principal of PURDUE, except for de minimis and nonsystematic violations,

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(A) has not violated the terms of IC § 24-4.7 in the previous three hundred sixty-five (365) days, even if IC § 24-4.7 is preempted by federal law; and

(B) will not violate the terms of IC § 24-4.7 for the duration of the Agreement, even if IC § 24-4.7 is preempted by federal law.

2.8. Confidentiality of Data, Property Rights in Products, Copyright Prohibition and Ownership of Documents and Materials. [OMITTED – Not applicable.]

2.9. Confidentiality of Information. [OMITTED – Not applicable.]

2.10. Debarment and Suspension.
A. PURDUE certifies by entering into this Agreement that it is not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from entering into this Agreement by any federal agency or by any department, agency or political subdivision of the State. The term "principal" for purposes of this Agreement means an officer, director, owner, partner, key employee or other person with primary management or supervisory responsibilities, or a person who has a critical influence on or substantive control over the operations of PURDUE.

B. PURDUE certifies that it has verified the suspension and debarment status for all subcontractors receiving funds under this Agreement and shall be solely responsible for any recoupments or penalties that might arise from non-compliance. PURDUE shall immediately notify the State if any subcontractor becomes debarred or suspended, and shall, at the State's request, take all steps required by the State to terminate its contractual relationship with the subcontractor for work to be performed under this Agreement.

2.11. Default by PURDUE. PURDUE shall be in default for failure to perform any of its obligations under this lease thirty (30) days after the State has notified PURDUE in writing of specific obligations not being performed. Default by PURDUE shall entitle the State to any remedy afforded it by Indiana law.

2.12. Disputes. [OMITTED – Not applicable.]

2.13. Drug-Free Workplace Certification. As required by Executive Order No. 90-5 dated April 12, 1990, issued by the Governor of Indiana, PURDUE hereby covenants and agrees to make a good faith effort to provide and maintain a drug-free workplace. PURDUE will give written notice to the State within ten (10) days after receiving actual notice that PURDUE, or an employee of PURDUE in the State of Indiana, has been convicted of a criminal drug violation occurring in the workplace. False certification or violation of this certification may result in sanctions including, but not limited to, suspension of contract payments, termination of this Agreement and/or debarment of contracting opportunities with the State for up to three (3) years.

In addition to the provisions of the above paragraph, if the total amount set forth in this Agreement is in excess of $25,000.00, PURDUE certifies and agrees that it will provide a drug-free workplace by:

A. Publishing and providing to all of its employees a statement notifying them that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in PURDUE's workplace, and specifying the actions that will be taken against employees for violations of such prohibition;

B. Establishing a drug-free awareness program to inform its employees of: (1) the dangers of drug abuse in the workplace; (2) PURDUE's policy of maintaining a drug-free workplace; (3) any available drug

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counseling, rehabilitation and employee assistance programs; and (4) the penalties that may be imposed upon an employee for drug abuse violations occurring in the workplace;

C. Notifying all employees in the statement required by subparagraph (A) above that as a condition of continued employment, the employee will: (1) abide by the terms of the statement; and (2) notify PURDUE of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction;

D. Notifying the State in writing within ten (10) days after receiving notice from an employee under subdivision (C)(2) above, or otherwise receiving actual notice of such conviction;

E. Within thirty (30) days after receiving notice under subdivision (C)(2) above of a conviction, imposing the following sanctions or remedial measures on any employee who is convicted of drug abuse violations occurring in the workplace: (1) taking appropriate personnel action against the employee, up to and including termination; or (2) requiring such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state or local health, law enforcement, or other appropriate agency; and

F. Making a good faith effort to maintain a drug-free workplace through the implementation of subparagraphs (A) through (E) above.

2.14. FERPA Compliance. If PURDUE is an "educational agency or institution" as that term is defined by the Family Educational Rights and Privacy Act (FERPA), 20 USC 1232g, 34 CFR 99.1, and this Agreement involves "personally identifiable information," as defined at 34 CFR 99.3, PURDUE covenants that it will appropriately safeguard from unauthorized disclosure to third parties any "personally identifiable information" with respect to a student.

2.15. Force Majeure. In the event that either party is unable to perform any of its obligations under this Agreement or to enjoy any of its benefits because of natural disaster or decrees of governmental bodies not the fault of the affected party (hereinafter referred to as a "Force Majeure Event"), the party who has been so affected shall immediately or as soon as is reasonably possible under the circumstances give notice to the other party and shall do everything possible to resume performance. Upon receipt of such notice, all obligations under this Agreement shall be immediately suspended. If the period of nonperformance exceeds thirty (30) days from the receipt of notice of the Force Majeure Event, the party whose ability to perform has not been so affected may, by giving written notice, terminate this Agreement.

2.16. Funding Cancellation. As required by Financial Management Circular 3.3 and IC § 5-22-17-5, when the Director of the State Budget Agency makes a written determination that funds are not appropriated or otherwise available to support continuation of performance of this Agreement, this Agreement shall be canceled. A determination by the Director of State Budget Agency that funds are not appropriated or otherwise available to support continuation of performance shall be final and conclusive.

2.17. Governing Law. This Agreement shall be governed, construed, and enforced in accordance with the laws of the State of Indiana, without regard to its conflict of laws rules. Suit, if any, must be brought in the State of Indiana.

2.18. HIPAA Compliance. [OMITTED – Not Applicable.]

2.19. Indemnification. PURDUE agrees to indemnify, defend and hold harmless the State, INDOT, their agents, officials and employees from any liability due to loss, damage, injuries, or other causalities of whatever kind, to the person or property of anyone arising out of, or resulting from the performance of this

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Agreement or the work connected therewith, or from the installation, existence, use, maintenance, condition, repairs, alteration or removal of any equipment or material, to the extent such liability is caused by the negligence of PURDUE, including any claims arising out the Worker's Compensation Act or any other law, ordinance, order or decree. INDOT shall **not** provide indemnification to PURDUE. PURDUE agrees to pay all reasonable expenses and attorney's fees incurred by or imposed on the State and INDOT in connection herewith in the event that PURDUE shall default under the provisions of this Section.

The Parties further agree that PURDUE's obligation to indemnify hereunder shall be limited in substance by state and federal statutes and constitutional provisions designed to protect the exposure and liability of PURDUE as an instrumentality of the State of Indiana or otherwise (e.g., actions and conditions as to which PURDUE is immunized by the Indiana Tort Claims Act, dollar limits stated in such Act, exemption from punitive damages, Article 11, Section 12 of the Indiana Constitution, the 11th Amendment of the Constitution of the United States, and the continued ability to defeat a claim by reason of contributory negligence or fault of a claimant), so that PURDUE's liability to indemnify, defend and hold harmless hereunder shall not in any case exceed what might have been its liability to a claimant had PURDUE been sued directly by the claimant in Indiana and all appropriate defenses had been raised by PURDUE.

2.20. Independent Contractor; Workers' Compensation Insurance. PURDUE is performing as an independent entity under this Agreement. No part of this Agreement shall be construed to represent the creation of an employment, agency, partnership or joint venture agreement between the Parties. Neither party will assume liability for any injury (including death) to any persons, or damage to any property, arising out of the acts or omissions of the agents, employees or subcontractors of the other party. PURDUE shall provide all necessary unemployment and workers' compensation insurance for PURDUE's employees and PURDUE shall provide the State with a Certificate of Insurance evidencing such coverage upon request.

2.21. Indiana Veteran Owned Small Business Enterprise Compliance. [OMITTED – Not Applicable.]

2.22. Information Technology Enterprise Architecture Requirements. [OMITTED – Not Applicable.]

2.23. Licensing Standards. PURDUE, its employees and subcontractors shall comply with all applicable licensing standards, certification standards, accrediting standards and any other laws, rules, or regulations governing services to be provided by PURDUE pursuant to this Agreement. The State will not pay PURDUE for any services performed when PURDUE, its employees or subcontractors are not in compliance with such applicable standards, laws, rules, or regulations. If any license, certification or accreditation expires or is revoked, or any disciplinary action is taken against an applicable license, certification, or accreditation, PURDUE shall notify INDOT immediately and INDOT, at its option, may immediately terminate this Agreement.

2.24. Merger and Modification. This Agreement constitutes the entire Agreement between the Parties. No understandings, agreements, or representations, oral or written, not specified within this Agreement will be valid provisions of this Agreement. This Agreement may not be modified, supplemented, or amended, except by written Agreement signed by all necessary Parties.

2.25. Minority and Women's Business Enterprises Compliance. [OMITTED – Not Applicable.]

2.26. Nondiscrimination.

A. This Agreement is enacted pursuant to the Indiana Civil Rights Law, specifically including IC §22-9-1-10, and in keeping with the purposes of the Civil Rights Act of 1964 as amended, the Age

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Discrimination in Employment Act, and the Americans with Disabilities Act. Breach of this covenant may be regarded as a material breach of this Agreement, but nothing in this covenant shall be construed to imply or establish an employment relationship between the State and any applicant or employee of PURDUE or any subcontractor.

Under IC §22-9-1-10 PURDUE covenants that it shall not discriminate against any employee or applicant for employment relating to this Agreement with respect to the hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment, because of the employee's or applicant's race, color, national origin, religion, sex, age, disability, ancestry, or status as a veteran.

B. PURDUE understands that INDOT is a recipient of federal funds. Pursuant to that understanding, PURDUE agrees that if PURDUE employs fifty (50) or more employees and does at least $50,000.00 worth of business with the State and is not exempt, PURDUE will comply with the affirmative action reporting requirements of 41 CFR 60-1.7. PURDUE shall comply with Section 202 of executive order 11246, as amended, 41 CFR 60-300, and 41 CFR 60-741, as amended, which are incorporated herein by specific reference. Breach of this covenant may be regarded as a material breach of this Agreement.

It is the policy of INDOT to assure full compliance with Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act and related statutes and regulations in all programs and activities. Title VI and related statutes require that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. (INDOT's nondiscrimination enforcement is broader than the language of Title VI and encompasses other State and Federal protections. INDOT's nondiscrimination enforcement shall include the following additional grounds: sex, sexual orientation, gender identity, ancestry, age, income status, religion, disability, limited English proficiency, or status as a veteran.)

C. During the performance of this Agreement, PURDUE, for itself, its assignees and successors in interest (hereinafter referred to as "PURDUE") agrees to the following assurances under Title VI of the Civil Rights Act of 1964:

1. Compliance with Regulations: PURDUE shall comply with the regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation, Title 49 CFR Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Agreement.

2. Nondiscrimination: PURDUE, with regard to the work performed by it during the Agreement, shall not discriminate on the grounds of race, color, sex, sexual orientation, gender identity, national origin, religion, disability, ancestry, or status as a veteran in the selection and retention of subcontractors, including procurements of materials and leases of equipment. PURDUE shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the Agreement covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by PURDUE for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by PURDUE of PURDUE's obligations under this Agreement, and the Regulations relative to nondiscrimination on the grounds of race, color, sex, sexual orientation, gender identity, national origin, religion, disability, ancestry, income status, limited English proficiency, or status as a veteran.

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4. Information and Reports: PURDUE shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by INDOT and the Federal Highway Administration ("FHWA") to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of PURDUE is in the exclusive possession of another who fails or refuses to furnish this information, PURDUE shall so certify to INDOT or FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of PURDUE's noncompliance with the nondiscrimination provisions of this Agreement, INDOT shall impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to: (a) withholding payments to PURDUE under the Agreement until PURDUE complies, and/or (b) cancellation, termination or suspension of the Agreement, in whole or in part.

6. Incorporation of Provisions: PURDUE shall include the provisions of paragraphs 1. through 5. in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

PURDUE shall take such action with respect to any subcontract or procurement as INDOT or FHWA may direct as a means of enforcing such provisions including sanctions for non-compliance, provided, however, that in the event PURDUE becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, PURDUE may request INDOT to enter into such litigation to protect the interests of INDOT, and, in addition, PURDUE may request the United States of America to enter into such litigation to protect the interests of the United States of America.

2.27. Notice to Parties. Whenever any notice, statement or other communication is required under this Agreement, it will be sent by E-mail or first-class U.S. mail service to the following addresses, unless otherwise specifically advised.

A. For INDOT:

Barry Partridge
Director of Research and Development
1205 Montgomery Street
West Lafayette, IN 47906
Phone: (765) 463-1521
Email: bpartridge@indot.in.gov

And with copy to:

Chief Legal Counsel and Deputy Commissioner
100 North Senate Avenue, Room N758
Indianapolis, IN 46204
Phone: (317) 232-5012
kshelby@indot.in.gov

B. Notices to PURDUE shall be sent to:

Director, Joint Transportation Research Program

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Purdue University
1284 Civil Engineering Building
West Lafayette, IN 47907

And

Sponsored Program Services
Purdue University
2550 Northwestern Ave.
Suite 1900
West Lafayette, IN 47906-1332

And with a copy to:

Office of Legal Counsel
610 Purdue Mall
West Lafayette, IN 47907
Email: legalcounsel@purdue.edu

2.28. Payments. All payments shall be made thirty-five (35) days in arrears in conformance with State fiscal policies and procedures and, as required by IC § 4-13-2-14.8, the direct deposit by electronic funds transfer to the financial institution designated by PURDUE in writing unless a specific waiver has been obtained from the Indiana Auditor of State. No payments will be made in advance of receipt of the goods or services that are the subject of this Agreement except as permitted by IC § 4-13-2-20.

2.29. Public Record. PURDUE acknowledges that the State will not treat this Agreement as containing confidential information and will post this Agreement on the transparency portal as required by IC §5-14-3.5-2. Use by the public of the information contained in this Agreement shall not be considered an act of the State.

2.30. Renewal Option. [OMITTED – Not Applicable.]

2.31. Severability. The invalidity of any section, subsection, clause or provision of this Agreement shall not affect the validity of the remaining sections, subsections, clauses or provisions of this Agreement.

2.32. Status of Claims. PURDUE shall be responsible for keeping INDOT currently advised as to the status of any claims made for damages against PURDUE resulting from services performed under this Agreement.

2.33. Taxes. The State is exempt from state, federal and local taxes. The State will not be responsible for any taxes levied on PURDUE as a result of this Agreement.

2.34. Termination for Convenience. Either party may terminate this Contract by giving the other party thirty (30) days written notice of its election to do so. If research projects are cancelled under this provision, INDOT shall reimburse PURDUE for all work completed to that date and for all commitments entered into prior to the date of termination notice. Upon termination, all data, results, reports, and other materials developed by PURDUE during JTRP projects will be governed by the provisions contained in Article I of this Agreement and any applicable laws or regulations.

2.35. Termination for Default. [OMITTED – Not Applicable.]

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2.36. Travel. [OMITTED – Not Applicable.]

2.37. Waiver of Rights. No right conferred on either party under this Agreement shall be deemed waived, and no breach of this Agreement excused, unless such waiver is in writing and signed by the party claimed to have waived such right.

2.38. Work Standards. [OMITTED – Not Applicable.]

2.39. State Boilerplate Affirmation Clause. [OMITTED – Not Applicable.]

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Non-Collusion and Acceptance

The undersigned attests, subject to the penalties of perjury, that the undersigned is the leasing party or that the undersigned is the representative, agent, member or officer of the leasing party. Further, to the undersigned's knowledge, neither the undersigned nor any other member, employee, representative, agent or officer of the leasing party, directly or indirectly, has entered into or been offered any sum of money or other consideration for the execution of this Agreement other than that which appears upon the face hererof. **Furthermore, if the undersigned has knowledge that a state officer, employee, or special state appointee, as those terms are defined in IC §4-2-6-1, has a financial interest in the Agreement, the undersigned attests to compliance with the disclosure requirements in IC §4-2-6-10.5.**

Agreement to Use Electronic Signatures

I agree, and it is my intent, to sign this Contract by accessing State of Indiana Supplier Portal using the secure password assigned to me and by electronically submitting this Contract to the State of Indiana. I understand that my signing and submitting this Contract in this fashion is the legal equivalent of having placed my handwritten signature on the submitted Contract and this affirmation. I understand and agree that by electronically signing and submitting this Contract in this fashion I am affirming to the truth of the information contained therein. I understand that this Contract will not become binding on the State until it has been approved by the Office of the Attorney General, which approvals will be posted on the Active Agreements Database:
https://fs.gmis.in.gov/psp/guest/SUPPLIER/ERP/c/SOI_CUSTOM_APPS.SOI_PUBLIC_CNTRCTS.GBL

In Witness Whereof, the Parties have, through their duly authorized representatives, entered into this Agreement. The Parties, having read and understood the foregoing terms of this Agreement, do by their respective signatures dated below agree to the terms thereof.

PURDUE UNIVERSITY

Executed by: _____

Dr. Darcy Bullock
Director of JTRP

Date: August 2, 2023

Rao Govindaraju
_____

Dr. Rao Govindaraju
Head of School of Civil Engineering

Date: August 02, 2023

Kyle Wargo
_____

Kyle Wargo
Director, Contracting

Date: 8/3/23

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INDIANA DEPARTMENT OF TRANSPORTATION

Barry Partridge
Barry K. Partridge, Director of the Office of
Research and Development

Date: 8/8/2023

_____ (for)
Roland Fegan, Deputy Commissioner

Date: 8/8/2023

STATE APPROVALS
[Signatures Electronic; See Attached Approval Sheet]

Indiana Department of Administration

_____ (for)
Rebecca Holwerda, Commissioner

Date: _____

State Budget Agency

_____ (for)
Zachary Q. Jackson, Director

Date: _____

Approved as to Legality and Form:

Office of the Indiana Attorney General

_____ (for)
Theodore E. Rokita, Attorney General

Date: _____

Document Approval Status

SetID	STIND	**Contract ID**	0000000000000000000075458
Supplier	PURDUE UNIV		

Review/Edit Approvers

Agency Fiscal Approval

STIND/0000000000000000000075458:**Approved**

Agency Fiscal Approval

Approved
Michael Hopper-00800
Agency Fiscal Approval for SCM
08/28/23 - 3:25 PM

IDOA Approval

STIND/0000000000000000000075458:**Approved**

IDOA Legal Approval

Approved
Redding,Sandra-061-Procq
IDOA Legal Approval for SCM
08/29/23 - 3:32 PM

SBA Approval

STIND/0000000000000000000075458:**Approved**

SBA Approval

Approved
Katie Hughes - 00057
SBA Analyst Approval for SCM
09/15/23 - 1:07 PM

Attorney General Approval

STIND/0000000000000000000075458:**Approved**

Attorney General Approval

Approved
Leisher,Jean-046
Deputy Atty General Appr SCM
09/15/23 - 1:47 PM

→

Approved
Zanna Claire Dyer-00046
Inserted Approver
09/20/23 - 9:22 AM

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Appendix B

Research Need Statement Template

INDOT/JTRP FY-202X Strategic Research Plan

Research Needs Statement (RNS)

RNS Title:

RNS Summary: *(100 or fewer word summary of INDOT needs being addressed and/or project deliverables):*

Peer/ Focus Group:

INDOT Primary Contacts:

Background & Problem Statement:

Proposed Scope of Work: (include items such as: research approach, deliverables, timeframes, project cost, etc.) Complete Estimated Cost Table below.

Implementation Potential: (describe items such as: project deliverables, how the deliverables will be implemented, person(s) responsible for implementation, timeframes for implementation, resources/funding available, resources/funding needed, any process or specification changes needed to implement, etc. Please consider especially opportunities for concurrent or accelerated implementation)

INDOT Strategic Priorities Impacted (select the primary priority area implementation of this project will impact):

- ○ **Safety**
- ○ **Mobility**
- ○ **Asset Sustainability**
- ○ **Customer Service**
- ○ **Organization & Workforce**
- ○ **Economic Competitiveness**
- ○ **Innovation & Technology**

INDOT KPI Impacted *(Select the primary KPI – select only one)*

	KPI #1: *State Controlled Road in Fair or Better Condition*
	KPI #2: *State Owned and Maintained Bridges Available for Use as Intended*
	KPI #3: *Construction Contracts Closed on Budget*
	KPI #4: *Construction Contracts Completed on Time*
	KPI #5: *Severe Crashes on State Controlled Roads*

Implementation Benefits

Describe the expected benefits of the research results in the following table and rank* order the benefits in order of importance (with 1 being the most important).

Rank	BENEFITS	DESCRIPTION OF BENEFIT
	Cost Savings (avoidance and revenue enhancement)	
	(such as: construction costs, material costs, early project completion, in-house labor and equipment costs, improve design to avoid over design, permit fees, direct revenues, etc.)	
	Safety	
	(such as: crash mitigation, reducing truck and vehicles conflicts, reducing INDOT's tort exposure, etc.)	
	Mobility/Reduced Congestion	
	(such as: travel time reliability, customer satisfaction in travel times, congestion relieve, ride quality, maintaining speed limit in construction zones, etc.)	
	Quality	
	(such as: improved processes/procedures, asset preservation, improved design, updated specifications, extends the life of infrastructure, etc.)	
	Time Savings	
	(such as: improve construction scheduling, early project completion, quicker maintenance or rehabilitation, etc.)	
	Other (other tangible and intangible benefits)	
	(such as: employee development/training, economic development, proof of concept, etc.)	

**** If there is no benefit in a particular category rank that category as 0.***

Appendix C
Example template IRB Collaboration Letter

INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: 12/18/2024

Re: Letter of Cooperation for Indiana Department of Transportation

Dear Dr. Samuel Labi and Dr. Konstantina "Nadia" Gkritza,

This letter confirms that I, as an authorized representative of the Indiana Department of Transportation (INDOT), will forward to Dr. Samuel Labi, Dr. Konstantina "Nadia" Gkritza, and graduate student David Holguin-Mejia, project recruitment information of INDOT employees, ensuring a comprehensive representation across key divisions, including but not limited to Bridges, Engineering, Environmental Services, Highway Design, Technical Support, and various INDOT districts and specialized units, and allow their participation in the project as discussed with the Principal Investigator and briefly outlined below, and which may commence when the Principal Investigator provides documentation of IRB approval for the proposed project.

- **Study Title:** SPR4812: The Business Case for Sustainable Road Infrastructure Development

- **Study Activities Occurring at this site:** Online surveys will be distributed via email to INDOT personnel to gather insights on sustainable development opportunities, relevant sustainability indicators, evaluation criteria, and potential barriers and incentives.

- **Site(s) Support:** Participants will be identified by INDOT, ensuring representation from key divisions, including but not limited to Bridges, Engineering, Environmental Services, Highway Design, Technical Support, and various INDOT districts and specialized divisions involved with the road infrastructure development process. Contact information will be provided by Alison Shaner, INDOT's representative.

- **Other:** INDOT will permit its employees to participate in the project during business hours, as the survey topic closely aligns with the scope of work and responsibilities of the participants.

- **Anticipated End Date:** July 31, 2025.

I understand that any activities involving compliance with Health Insurance Portability and Accountability Act (HIPAA), Family Educational Rights and Privacy Act (FERPA), or other applicable regulations at this site must be addressed prior to granting permission to the Purdue University researcher to collect or receive data from the site. I am authorized to make this determination on my organization's behalf.

INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Michael Smith, Commissioner

I understand that INDOT 's participation will only take place during the study's active IRB approval period. All study related activities must cease if IRB approval expires or is suspended. If we have any concerns related to this project, we will contact the Principal Investigator who can provide the information about the IRB approval. For concerns regarding IRB policy or human subject welfare, we may also contact the Purdue University IRB at irb@purdue.edu (www.irb.purdue.edu).

Please contact me at jpoturalski@indot.in.gov with questions.

Sincerely,

Signature	***Date Signed***
Jim Poturalski, Authorized Representative	Managing Director of Engineering & Research

Appendix D

Review Process for JTRP Projects

Review Process for JTRP Projects

Development, approval, initiation, progression, completion, and implementation of a JTRP research project through the JTRP Office is a collaborative effort involving the steps listed below. The primary responsible person/entity for completing these steps with the JTRP Office is indicated in the following table, although it is understood that each project is a collaborative effort that may involve multiple parties at each step.

PI = Principal Investigator; BO = INDOT Business Owner; SAC = Study Advisory Committee; JTRP = JTRP Office; R&D = INDOT Research and Development Division; EC = JTRP Executive Committee; IP = Implementation Plan; HVR = High Value Research

	Time Line	Primary Responsibility				
		PI	BO	JTRP	R&D	EC
Executive committee approval/start date of project						
Prepare Progress Report and submit to JTRP Office	Jan. 15; July 15	●				
Call SAC meeting	At least every 6 months	●				
Requests of Time Extensions	At least 2 months prior to expiration	●				
Draft Final Report submitted to e-Pubs	4 months prior to expiration	●				
Technical review by BO, PA, and SAC	2–4 months prior to expiration		●		●	
Reviews distributed to PI	2 months prior to expiration			●		
Call closeout SAC meeting	1 month prior to expiration	●				
PI submits final report to e-Pubs	1 month prior to expiration	●		●		
JTRP Office submits final report to R&D office for approval to close out	1 week prior to expiration			●		
R&D Office approves/disapproves project closeout	1 week prior to expiration				●	
Project expiration						
Prepare IP and submit signed document to R&D office	1 month after project closeout		●			
R&D Office approves/disapproves IP and transmits approved IP to stakeholders	1 month after project closeout				●	
Execute IP	Ongoing		●			

JTRP and R&D Offices track and report status of IP for HVR	Ongoing			
Production editor prepares report for typesetting and sends for processing	1 month after approval to publish	●		
Proof sent to PI for review	2 months after approval to publish	●		
PI approves report				
Report is published on e-Pubs and available print-on-demand				

Appendix E

Example (blank) Implementation Plan

INDOT RESEARCH PROJECT IMPLEMENTATION PLAN

The Project Advisor (PA) is responsible for completing the first section of this form (Section 1). The INDOT Business Owner (BO) is responsible for coordinating proper completion of the remainder of the form (Section 2), obtaining the necessary signatures, and returning the completed form to the PA within 30 days. Please note, while ownership of the Implementation Plan (IP) rests with the INDOT Business Owner, the PI, PA, and SAC are tasked with assisting in completion of the IP.

Section 1:

Research Project Number:

High Profile Project (Y/N):

Research Project Title:

Principal Investigator (PI):

Project Advisor (PA):

INDOT Business Owner (BO):

INDOT Director Owner (DO):

Responsible Deputy Commissioner:

Date IP Sent to BO:

Section 2:

INDOT STRATEGIC PRIORITIES IMPACTED (Select the Primary Area - Select Only One):

☐ **Safety & Mobility**

☐ **Customer Service**

☐ **Asset Sustainability**

☐ **Economic Competitiveness**

☐ **Innovation & Technology**

☐ **Organization & Workforce**

INDOT KPI Impacted (*select the primary KPI - select only one*):

☐ *KPI #1: State Controlled Road in Fair or Better Condition (2014)*

☐ *KPI #2: State Owned and Maintained Bridges Available for Use as Intended (2014)*

☐ *KPI #3: Construction Contracts Closed on Budget (2014)*

☐ *KPI #4: Construction Contracts Completed on Time (2014)*

☐ *KPI #5: Severe Crashes on State Controlled Roads (2014)*

☐ *N/A*

Multiple Implementers: If more than one implementer (Project Manager/Business Owner), please complete the information separately for each implementer's tasks.

Name of Primary Implementer (Project Manager/Business Owner):

Document all implementation tasks, including any concurrent and interim implementation activities that occurred during the project period. Include the target start date and end date for each task. Additional rows may be added as needed.

Implementation Tasks (list each separately)	Start Month/ Year	End Month/ Year	Help or resources needed for completion
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Signature of Primary Implementer (Project Manager/Business Owner):

Date:

Name of Additional Implementer (Project Manager/Business Owner), if applicable:

Document all implementation tasks, including any concurrent and interim implementation activities that occurred during the project period. Include the target start date and end date for each task. Additional rows may be added as needed.

Implementation Tasks (list each separately)	Start Month/ Year	End Month/ Year	Help or resources needed for completion
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Signature of Additional Implementer (Project Manager/Business Owner):

Date:

Name of Additional Implementer (Project Manager/Business Owner), if applicable:

Document all implementation tasks, including any concurrent and interim implementation activities that occurred during the project period. Include the target start date and end date for each task. Additional rows may be added as needed.

Implementation Tasks (list each separately)	Start Month/ Year	End Month/ Year	Help or resources needed for completion
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Signature of Additional Implementer (Project Manager/Business Owner):

Date:

Section 3:

Final Signatures, after the BO has returned the completed/signed form to the Project Advisor (PA)

Signature of Project Advisor:_____ *Date:* _____

JTRP Program Director: _____ *Date:* _____

Appendix F

Noncompetitive Selection Request

Noncompetitive Selection Request

To: Joel D. Myers, PE – Consultant Services Manager

Thru (Owner Office Director):

From (Owner Office Contact):

cc:

Date:

Re:

---

1. **Recommended consultant**:
2. **Des. No. (If applicable):**
3. **Estimated value of proposed contract action**: $
4. **Will there be federal funding participation in this contract?**
5. **Estimated contract duration:**
6. **What services will this consultant provide?**
7. **Are these services state or federally mandated? If so, please explain.**
8. **Why is noncompetitive selection required as opposed to RFP?**

   ☐ Emergency? ☐ Service only available from one source? ☐ Other?

   Explanation, be as specific as possible?

9. **Estimated cost savings by using sole source selection.**
10. **Estimated time savings by using noncompetitive selection. Not counting selection time savings.**
11. **How was this consultant chosen?**
12. **Were other potential consultants contacted? If so, list names.**

Appendix G

Sample Progress Report

Semi-Annual Report: January - June 2024

PURDUE UNIVERSITY
LYLES SCHOOL OF CIVIL ENGINEERING
JOINT TRANSPORTATION RESEARCH PROGRAM

1. **Project Identification:** Indiana **SPR- 49xx**
Purdue Grant 207xxx

Project Title: Friction Surface Treatment Selection

Principal Investigator(s): Shuo Li and Yi Jiang

2. **Date Started:** 01/01/2024

3. **Completion Date: 12**/31/2026

4. **Research Agency:** Joint Transportation Research Program, Purdue University

5. **Progress**:
   - All lab tests and data analysis were completed.
   - Crash data analysis completed.

6. **Problems**:
No.

7. **Work Next Six Months**:
   - Field testing on the test patches in September 2026
   - Family curves for friction performance of pavement preservation treatment
   - Harmonization of pavement friction and crash data
   - Development of CMFs for HFST
   - LCCA worksheet
   - Draft final report

8. **Reports**: No.

9. **Research Implementation**: No.

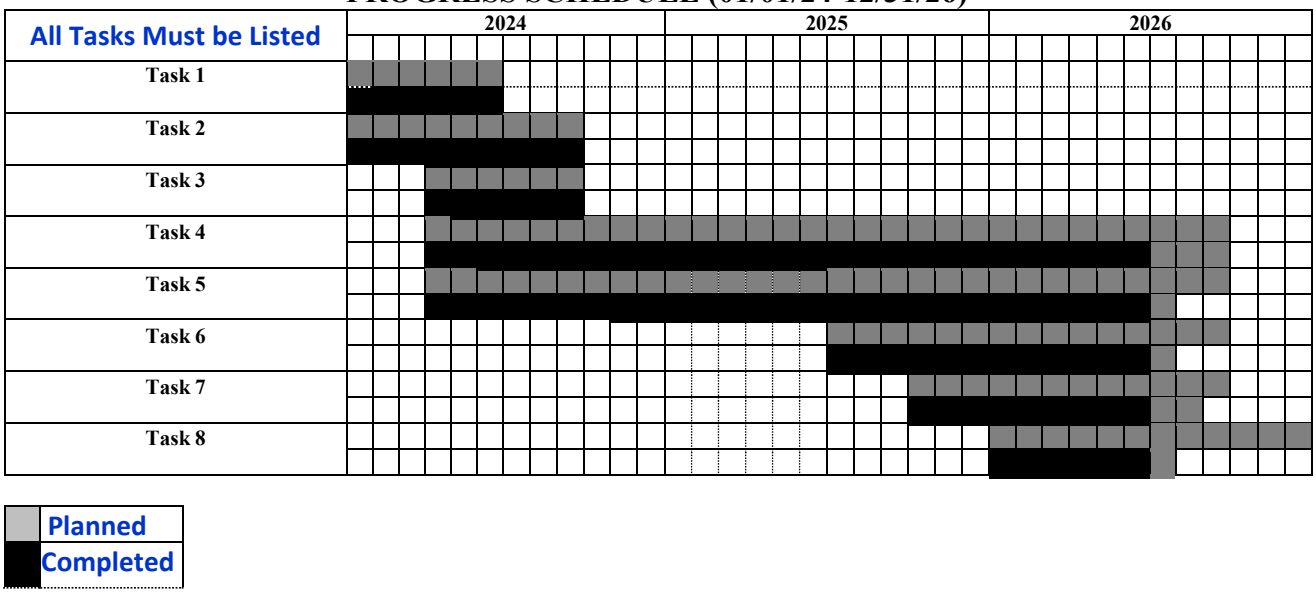
10. **Personnel:** A post-doctoral research assistant hired for the study.

Semi-Annual Report: January - June 2024

11. Travel: No.

12. Project Progress Schedule:

PROGRESS SCHEDULE (01/01/24-12/31/26)



13. Financial Report:

ITEMS	PROJECT BUDGET	SEMI-ANNUAL EXPENSES	TOTAL EXPENSES
Salaries	93,040.00	11,655.38	81,395.21
Supplies & Services	960.00		570.01
Travel	1,000.00		133.78
TOTAL	$ 95,000.00	$ 11,655.38	$ 82,099.00

Appendix H
JTRP - Key items for INDOT Information Technology, IT, Involvement

JTRP - Key Items for IT (formerly MIS) Involvement

The following is a list of key items to look for when reviewing JTRP prospectus for IT involvement:

Hardware:

- If INDOT needs to purchase, configure, or deploy any IT related hardware to staff. This includes desktop PC, laptops, tablets, phones, MiFi, or GPS/camera enabled data collection devices.
- Need to use server technologies that would be housed with IOT. We can assist with either virtual or physical server hosting arrangements.
- Any cloud-based third party hosted technologies at least need to be reviewed with IT and IOT to meet current state security standards for off site server hosting of state services.

Commercial Software:

- Any software used in the research process but will not be used or maintained by INDOT after research does not need our attention.
- Any software requirements for implementation of research projects at INDOT does need review with IT. We can assist with validating compatibility with INDOT hardware and compatibility with other software. We can assist in identifying comparable software that may already be in use at the state. We can assist with procurement and researching existing state contracts, purchase agreements, GSA agreements, etc.
- We can work with IOT to create software deployment packages of software if a large distribution is needed.

Purdue Written Software:

- Any software used by Purdue for Purdue only use on research projects does not need to be reviewed by IT.
- Any plans for writing any type of software code that will be ultimately turned over to INDOT for use, support and maintenance need to be reviewed by IT staff.
- Software code may include applications, scripts, procedures, web services, and customizations to off the shelf software products that need to be reviewed by IT staff.
- The research projects that include this type of custom code need IT representation on the SAC.

Data:

- Any project that the result of the project creates a method for collecting and storing data for implementation needs IT review.
- If the collection of data is just for the project and during the project, then IT does not need to be reviewed.
- If the project needs source data from INDOT systems, IT should review to assist with data sources, quality issues, and to assist in gaining access to the source data for the research team.
- Any third-party data sources should also be reviewed with IT. The state has access to hundreds of data sources from local, state, federal governments as well as several commercial products that may be available for use on the research project.

Accessing INDOT applications:

The intent of this appendix is to define how to better prepare INDOT for the adoption and integration of the applications and data products resulting from research projects.

- Business Owner (BO), Project Advisor (PA), Principal Investigator (PI) and SAC identify

early in the project if IT involvement is needed on the project. This would typically be before or during development of the project proposal. If IT involvement is needed, an IT representative should be added to the SAC. Additionally, IT involvement includes reviewing of the final proposal, attending SAC meetings and assisting and coordinating IT involvement with the primary implementor during implementation. This will help identify IT needs and requirements upfront and continue during the project duration**.**

- IT SAC representative coordinates with the SAC and software steering committee (SSC) early on to align the research project timeline with the implementation timeline. Consider creating a placeholder or pre-approval process for IT components, so that once the research is complete, the IT implementation can be fast-tracked rather than having to go through the full SCC prioritization process at the end of the research project
- IT SAC representative may encourage researchers to use supported technologies and platforms, like .NET, that are already approved and supported by the IT department. This can help expedite the approval process.
- Establish clear communication channels and touchpoints between the research team, business owners, and IT representatives throughout the project lifecycle. Discuss data availability, data quality, etc.

For research projects requiring IT involvement, integrate IT personnel early on in the project development process, with ongoing check-ins, to mitigate the risk of IT related surprises and/or obstacles at the end of the research project.

For Purdue researchers who work on a JTRP project to request access to INDOT applications that are hosted on ITAP (INDOT Technical Application Pathway):

1. PI should provide justification with approval from the INDOT Business Owner and Project Advisor, as well as the name(s) of researcher(s) who need access to the application. Forward all documents to the R&D Office (Attn.: Senior System Analyst).
2. Researchers will submit request for new user enrollment from the ITAP website: https://itap.indot.in.gov. Step by step instructions can be found at: https://itap.indot.in.gov/Help/ViewPdf/2 . When prompted to enter Business Name, type "Purdue University JTRP". The request will be forwarded to the JTRP Managing Director who will confirm with R&D Office and approve the request.
3. When Researchers receive approval of new user enrollment from ITAP, they can proceed to log into ITAP and select "Enroll New Application" to request access to the application of interest.
4. R&D office will notify the INDOT application owner and provide justification for the researchers' requests for access. If a request for application is denied due to data sensitivity or application complexity, the INDOT Business Owner can submit an Intake Form Software Request/Intake Form (sharepoint.com) to request help for retrieving data needed for the research.
5. When the JTRP project is closed, the R&D office will notify the INDOT application owner to remove the researchers' access to the application.

Artificial Intelligence, AI, Applications:

AI related research studies & implementation Activities and their resulting AI Systems are subject to principles and controls in accordance with **Appendix I**. The use of AI Systems not approved pursuant to this policy is expressly prohibited.

Appendix I

State of Indiana Artificial Intelligence Policy (December 2024)

State of Indiana Policy: *Artificial Intelligence*

Version: 1.1 (12/2024)

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1. Purpose

The proliferation of information technology enabled by artificial intelligence presents tremendous opportunity for Indiana State Government to continue to enhance service provision, policy-, and decision-making for the benefit of Hoosiers. At the same time, artificial intelligence presents significant risks that, if not managed effectively, can negatively impact the State of Indiana and our population. The National Institute of Standards and Technology's AI Risk Management Framework makes this clear:

> Artificial intelligence (AI) technologies have significant potential to transform society and people's lives – from commerce and health to transportation and cybersecurity to the environment and our planet. AI technologies can drive inclusive economic growth and support scientific advancements that improve the conditions of our world. AI technologies, however, also pose risks that can negatively impact individuals, groups, organizations, communities, society, the environment, and the planet. Like risks for other types of technology, AI risks can emerge in a variety of ways and can be characterized as long- or short-term, high- or low-probability, systemic or localized, and high- or low-impact.
>
> While there are myriad standards and best practices to help organizations mitigate the risks of traditional software or information-based systems, the risks posed by AI systems are in many ways unique. AI systems, for example, may be trained on data that can change over time, sometimes significantly and unexpectedly, affecting system functionality and trustworthiness in ways that are hard to understand. AI systems and the contexts in which they are deployed are frequently complex, making it difficult to detect and respond to failures when they occur. AI systems are inherently socio-technical in nature, meaning they are influenced by societal dynamics and human behavior. AI risks – and benefits – can emerge from the interplay of technical aspects combined with societal factors related to how a system is used, its interactions with other AI systems, who operates it, and the social context in which it is deployed.
>
> These risks make AI a uniquely challenging technology to deploy and utilize both for organizations and within society. Without proper controls, AI systems can amplify, perpetuate, or exacerbate inequitable or undesirable outcomes for individuals and communities. With proper controls, AI systems can mitigate and manage inequitable outcomes.
>
> AI risk management is a key component of responsible development and use of AI systems. Responsible AI practices can help align the decisions about AI system design, development, and uses with intended aim and values. Core concepts in responsible AI emphasize human centricity, social responsibility, and sustainability. AI risk management can drive responsible uses and practices by prompting organizations and their internal teams who design, develop, and deploy AI to think more critically about context and potential or unexpected negative and positive impacts. Understanding and managing the risks of AI systems will help to enhance trustworthiness, and in turn, cultivate public trust.

NIST AI 100-1.

The purpose of this Policy is to balance these interests, enabling the efficient and ethical use of artificial intelligence by State Agencies.

2. Applicability and Interpretation

This Policy shall apply to all AI Systems, excepting and to the extent those are governed by conflicting provisions in State or Federal law. For the sake of clarity, it applies to AI Systems including, but not limited to, those that are open source, those developed by a State Agency, those developed by a third party, those purchased as commercial off-the-shelf solutions, and combinations thereof.

Interpretation of this Policy, associated standards, procedures, guidance, and relevant law shall be at the discretion of the State Chief Privacy Officer, in consultation with relevant stakeholders.

3. Revision History

Version	Date	Name	Revision Description	Supersedes
1.0	2/2024	J. Cooper T. Cotterill	Initial version.	n/a
1.1	12/2024	J. Cooper T. Cotterill	Clarifies scope, explicitly requiring approval of all AI use.	1.0

4. Authority

This Policy is promulgated by the Office of the Chief Data Officer pursuant to IC 4-3-26 as a component policy of the State of Indiana Policies on Information Privacy and Information Quality.

5. Ownership

Please direct questions and concerns to the following owner(s) of this Policy, which will coordinate stakeholder communication as necessary:

1. The State Chief Privacy Officer

6. Definitions

1. "AI Implementation Activities" means the planning, design, development, deployment, operation, and monitoring, whether occurring independently or collectively, associated with an AI System.
2. "AI System" means an engineered or machine-based system that can, for a given set of objectives, generate outputs such as predictions, recommendations, or decisions influencing real or virtual environments. AI Systems are designed to operate with varying levels of autonomy.
3. "Agency Privacy Officer" means the associated individual in each State Agency designated under the *State of Indiana Policy: Information Privacy*.
4. "Data" means Government Information and Personal Information, collectively, as set forth in IC 4-3-26-7 and IC 4-1-6-1(2), respectively.
5. "External Partner" means an individual, or related employing organization, that is under contract or other similar agreement with a State Agency.

6. "NIST" means the National Institute of Standards and Technology established by 15 U.S.C. §272.
7. "NIST AI RMF" means the AI Risk Management Framework 1.0 (NIST AI 100-1), adopted January, 2023.
8. "OCDO" means the Office of the Chief Data Officer established by IC 4-3-26-9.
9. "Policy" means this *State of Indiana Policy: Artificial Intelligence*
10. "Process" means any operation or set of operations performed, whether by manual or automated means, on Data or on sets of Data, such as the collection, use, storage, disclosure, analysis, deletion, or modification of Data.
11. "State Agency" has the meaning set forth in IC 4-3-26-2.
12. "Violation" means all activities contemplated by the Policy that are not expressly allowed by the Policy.

7. Exceptions

All exceptions are considered policy deviations and may be granted in accordance with applicable law by the Chief Privacy Officer or designee. Administrative or technical requirements may indicate the need for exemption from this Policy, for specific matters. Following an appropriate risk assessment, the Chief Privacy Officer or designee, can acknowledge and/or escalate exception requests. Exceptions will be timely documented in the system designated by the OCDO for that purpose.

Requests for exceptions must use the appropriate form and be approved by the Agency Privacy Officer or designee, prior to submission. At a minimum, the request must document the following:

- the subcategory of the NIST AI RMF Core for which the exception is needed;
- the business justification and impact of the exception;
- the additional risks identified as a result of exception implementation; and
- the compensating controls that are planned or implemented to reduce the additional risk to an acceptable level.

All exceptions must be documented in accordance with this Policy. Exceptions must be reevaluated on a grouped and rolling annual basis, in January. Exceptions granted in the three (3)-month period preceding an evaluation period will first be revaluated during the next reevaluation period.

8. Violations

8.1 Violation by State Employees

Violation of this Policy by an employee may subject the violating individual to removal from relevant AI Implementation Activities, as applicable. Violation will commence a review by the OCDO and Office of Technology of all access related to the violating individual. Violation of this Policy may constitute employee misconduct and will be addressed in accordance with applicable law and policy, including but not limited to the State Employee Handbook.

8.2 Violation by External Partner

Violation of this Policy by an External Partner may subject the External Partner to removal from relevant AI Implementation Activities, as applicable. Such a Violation will commence a review by the OCDO and

Office of Technology of all access related to the External Partner and may avail the relevant State Agency to remedies under contract through which the External Partner is engaged with the state.

This statement of penalties is not intended to be exhaustive, and the omission of any penalty does not negate the ability of any proper party, including a data subject, to bring an action for violation of law.

8.3 Violation of Obligations by a State Agency

Violation of this Policy may subject the violating State Agency to termination of relevant AI Implementation Activities, as applicable, or to other remedial actions, as determined by the OCDO or Office of Technology.

9. Policy

9.1 Background

The Management Performance Hub empowers the legal exchange and utilization of Data by and between State Agencies. A core component of this responsibility is the application of controls that enable the efficient and ethical use of Data to inform service provision to, and decision-making for, Hoosiers. The Management Performance Hub exercises its policymaking function through the OCDO.

Today, many initiatives that involve the Processing of Data are conducted using AI. While the State of Indiana wishes to realize the benefits of AI to empower positive innovation to advance the Hoosier condition, it is incumbent on governance leaders in Indiana to apply appropriate controls, thereby ensuring that proposed uses of AI realize its positive benefits while avoiding its negative risks. As has been discussed in *Sec. 1, Purpose*, a core objective of this Policy is to enable the deployment of trustworthy AI Systems by Indiana State Government. Again, the NIST AI RMF makes this clear:

> For AI systems to be trustworthy, they often need to be responsive to a multiplicity of criteria that are of value to interested parties. Approaches which enhance AI trustworthiness can reduce negative AI risks. This Framework articulates the following characteristics of trustworthy AI and offers guidance for addressing them. Characteristics of trustworthy AI systems include valid and reliable, safe, secure and resilient, accountable and transparent, explainable and interpretable, privacy-enhanced, and fair with harmful bias managed. Creating trustworthy AI requires balancing each of these characteristics based on the AI system's context of use… Neglecting these characteristics can increase the probability and magnitude of negative consequences.

NIST AI 100-1.

To this end, AI Implementation Activities and their resulting AI Systems are subject to the following principles and controls. The use of AI Systems not approved pursuant to this policy is expressly prohibited.

9.2. Adoption of the NIST AI Risk Management Framework

It is the policy of the State of Indiana that a State Agency conducting AI Implementation Activities and operating an AI System do so in accordance with the NIST AI RMF.

The NIST AI RMF Core is made up of four primary categories: Govern, Map, Measure, and Manage, each with multiple subcategories that guide the user to achieving the aim of deploying trustworthy AI Systems. In partnership with relevant stakeholders, the Agency Privacy Officer of a State Agency conducting AI Implementation Activities shall ensure that the resulting AI System is assessed in accordance with this Policy, as implemented by the *State of Indiana Standard: State Agency Artificial Intelligence Systems.*

For the sake of clarity, the Agency Privacy Officer shall be responsible for submitting readiness and maturity assessment documentation to the OCDO at designated milestones during the planning and pre-deployment phases of AI Implementation Activities. Post-deployment assessments are triggered by specified occurrences. Reference the Standard for detailed instruction.

9.3. Notice to Individuals

A core tenant of the NIST AI RMF is transparency, which involves the extent to which information about an AI System and its outputs is available to individuals interacting with the AI System. After deployment of the AI System, transparency is greatly enhanced by providing relevant notice to users.

The Indiana Fair Information Practice Act requires agencies to provide notice to individuals in certain circumstances. For instance, when personal information is collected, a notice must articulate, among other things, the statutory authority which supports collection, how the agency will use the information, and whether disclosure by the data subject is mandatory or voluntary. Given the unique issues presented by AI, an AI System requires a 'just-in-time' notice to adequately inform the user of otherwise-concealed processes associated with the interaction.

In this context, the just-in-time notice enables the disclosure of specific information practices and is posted or presents itself at the point of information collection or interaction with the AI System. For instance, in the event a State Agency uses AI to make a recommendation to a user through a web browser, the just-in-time notice makes clear to the user that AI is involved and details relevant Data Processing that might otherwise be unclear.

Relevant notices must be reviewed and approved by the State CPO, in accordance with *State of Indiana Policy: Information Privacy.*

9.4 Additional OCDO Activities

1. In accordance with OCDO policies and procedures, the OCDO shall require an Indiana enterprise data catalog scan of the state-owned or -licensed source system related to the AI System.
2. The OCDO shall work in conjunction with the Office of Technology to enforce appropriate web filtering rules and to make available to State Agencies approved AI Systems.
3. The OCDO shall work in conjunction with the Department of Administration and Office of Technology to ensure that appropriate contractual controls are imposed on External Partners related to AI Implementation Activities and AI Systems.

4. At its discretion, the OCDO shall promulgate, and may audit conformance to, standards, procedures, and guidance in furtherance of this Policy.

10. References

1. *NIST AI Risk Management Framework 1.0 (NIST AI 100-1)*, https://doi.org/10.6028/NIST.AI.100-1.
2. *NIST AI RMF Playbook,* https://airc.nist.gov/AI_RMF_Knowledge_Base/Playbook.
3. State of Indiana Policy: *Information Privacy 2.0,* https://www.in.gov/mph/cdo/files/20230811-FINAL-State-of-Indiana-Information-Privacy-Policy.pdf.
4. State of Indiana Standard: *State Agency Artificial Intelligence Systems,* https://www.in.gov/mph/cdo/files/State-of-Indiana-State-Agency-AI-Systems-Standard.pdf.