Alaska Department of Transportation and Public Facilities

Research Development & Technology Transfer Program Manual

EffectiveJulyl, 2017

Preface

This document applies to the Department's Research, Development & Technology Transfer program, including experimental and demonstration feature projects, from the conception of a project through results implementation. It also applies to the Local Technical Assistance Program,, and the National Highway Institute program. This document fulfills the requirements set out in 23 CFR 420.207(c).

The Department of Transportation and Public Facilities (DOT&PF) Research Development and Technology Transfer program (RD&T2) is funded through the Federal Highway Administration's (FHWA) State Planning and Research (SP&R) program, Local Technical Assistance Program (LTAP), Surface Transportation Program (STP), and state matching funds.

The research staff conducts and oversees research projects on behalf of the Department. Through the Research & T2 staff, the Department also maintains contact with the national and international transportation community to obtain findings that may apply to Alaska and shares them with Department staff, local agencies, and the public through publications, training, and other means. Research staff also assists in implementing these findings.

The RD&T2 staff may undertake work using additional state funds or funds from other agencies.

The goal of the RD&T2 program is support the Department's mission by establishing or improving procedures, techniques, materials, and equipment used by the Department and implementate within the Department and in local communities.

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1.0 Organization and Management

1.1 Overview

The Research, Development and Technology Transfer program:

- Provides the Department and local governments with the latest technology, materials, and procedures for conducting our business.
- Provides an Alaska specific Transportation research program
- Assists Department staff with problem solving by conducting literature searches to identify sources of information to solve a particular problem or developing new design or analysis methods; specifications; and analyzing failures.
- Provides a transportation-based statewide technical training program
- Provides education and technical assistance outreach to local governments and DOT&PF

We discuss each facet of the organization and management of the research program in detail below.

1.2 Research Advisory Board

The Research Advisory Board (RAB) provides research program direction by formulating and approving selection criteria for the upcoming federal fiscal year. The RAC also reviews and ranks Research Needs Statements (RNS) for funding. The RAB includes:

1) The chief engineer

2) A regional preconstruction chief

3) A regional construction chief

4) A regional maintenance & operations chief

5) FHWA Alaska Division Representative

The three regional members will be appointed by the chief engineer for a four-year term. These positions will represent each region and will rotate through the regions. The Research Program Manager will facilitate the board meeting but is a non-voting member. For the project selection process, see Chapter 5.

1.3 Research Expert Advisors Committee

The Research Expert Advisors Committee (expert advisors) consists of technical subject matter experts from various disciplines and DOT&PF sections.

The Expert Advisors Committee provides input on research needs and acts as a sounding board for new ideas.

The committee consists of Department representatives from all technical disciplines. The statewide position is responsible to outreach and coordinate with their regional counterparts

The committee includes:

- Chief of Bridge/Structures
- Chief of Standards
- Statewide Environmental Manager
- Statewide Hydraulics/Hydrology
- Chief of Materials/Geotechnical/Foundations
- Statewide Pavement Design Engineer
- Chief of Ports & Harbors
- Statewide Safety & Traffic
- Chief Program Development and Planning
- Information Systems and Services Division representative
- Administration representative
- Regional representatives (3)

1.4 Chief Engineer (Statewide Design and Engineering Services)

The chief engineer has the following responsibilities in the RD&T2 program:

- Provides direction to the RD&T2 section
- Serves as chair of the Research Advisory Board
- Selects the three regional representatives
- Serves as Procurement officer for research and technology transfer contracts

1.5 Program Manager

The Research Program Manager has the following duties and responsibilities in the RD&T2 program (program):

- Develop the annual work plan to submit to the Research Advisory Board for approval
- Prepare the proposed research work program
- Prepare and administer the program budgets: Ensure that overall program is completed according to work plans and within budgeted amount
- Act as primary point of contact for the research program with the FHWA and regional and national research groups such as TRB, AASHTO and University Transportation Centers (UTCs).
- Act as the Department's representative to national research groups
- Ensure the programs meet the requirements of the Code of Federal Regulations and the Federal Highway Administration and State of Alaska Laws, regulations and policies
- Oversee outreach efforts of technology transfer staff to local communities
- Manage pooled fund studies
- Facilitate tasks associated with the Research Advisory Board
- Facilitate tasks with the Research Expert Advisors Committee

1.6 Research Project Manager

Research project managers have the following duties and responsibilities:

- Solicit, review, and evaluate research needs from DOT&PF employees, universities, and industry and develop those of highest merit for consideration and ranking by the expert advisors and subsequent approval by the Research Advisory Board
- Develop and manage research projects, including; principal investigator selection, budget preparation, setting schedules and contract negotiation and management, and reporting (progress and annual).
- Facilitate technical advisory committee to support and implement research.
- Monitor and review Alaskan, national, and international transportation-related research for relevant and beneficial concepts and outreaches to Department staff
- Develop and execute statewide research implementation and training plans to improve Department specifications, policy, and practice related to the planning, design, construction, maintenance, and management of the state's transportation infrastructure. Work with other sections as required for implementation.
- Submit Project progress on required databases - Transportation Research Information Database (TRIO) and DOT&PF's Management Reporting System (MRS)

1.7 Technology Transfer Center Manager

The Technology Transfer (T2) center manager is in charge of several outreach programs within DOT&PF and to other state, local, and federal agencies, providing state-of-the-art and state-of-the-practice transportation-related training and technology transfer

The T2 center manager has the following duties and responsibilities:

- Solicit statewide and regional input on training needs from state and local government transportation managers for development of an annual training plan.
- Ensure training is provided in a variety of forms: courses, workshops, seminars, webinars, conferences, hands-on sessions, demonstrations, one-on-one sessions, and via loan of training packages
- Provide a transportation information clearinghouse and referral service for all transportation workers in Alaska on a variety of transportation topics
- Establish and maintain a network of contacts with managers in local, state, federal highway agencies, other LTAP/T2 Centers, and with other organizations that have partnering agreements with the LTAP's National Association of Transportation Technology Transfer Centers
- Serve on appropriate national committees working on technology transfer and implementation
- Work with the Research staff to implement the research results related to training and technology transfer.

1.8 Training Coordinator

The training coordinator has the following duties and responsibilities:

- Seek out appropriate transportation-related training and workshops from other sources
- Consult T2 client base to identify transportation-related training needs, and to determine the most cost-effective and useful way to meet these needs
- Assist in developing need-based, long-term training schedules
- Design training plans and develop curricula for a variety of transportation-related training, and develop associated materials and classroom modules
- Establish and maintain a network of peer contacts with other LTAP centers with the goal of using them as a training resource and a referral base
- Track status of training in T2, NHI, and research implementation

1.9 Principal Investigator

The principal investigator (PI) may be a DOT&PF employee, university employee, other government agency employee, or a consultant. The PI has the following attributes and responsibilities:

- Must have expertise with the technical area being investigated, the underlying theory, and research techniques
- Must possess technical competence in appropriate fields and be designated in the project proposal
- Must agree to directly manage the research work on a particular project

1.1 O Research Sponsors, Project Champions and Technical Advisors

A Research Sponsor is an executive level DOT&PF employee who provides ongoing leadership, engagement and commitment to a research project. A Sponsor has authority and control of appropriate resources to implement research results. The Sponsor may also serve as a project Champion and on the TAC.

A Champion is a technical advisor with responsibility, experience, knowledge, and/or interest in the technical field under investigation by the research project.

Research Champions and other technical advisors have the following duties:

- Work with the Research Project Manager and the Pl to develop the project proposal, to ensure useful research is conducted
- Attend project site visits, project meetings (status, work sessions, final, conference presentations, etc.), and offer technical advice and constructive criticism on the project
- Periodically review project work to compare the approach and progress made relative to the stated project objectives, and determine if the research is appropriate and viable
- Review reports and research products to ensure they meet the requirements outlined in the project proposal and that results are in a form useful for meeting the Department's needs
- Work with the project manager to outreach and implement the research results

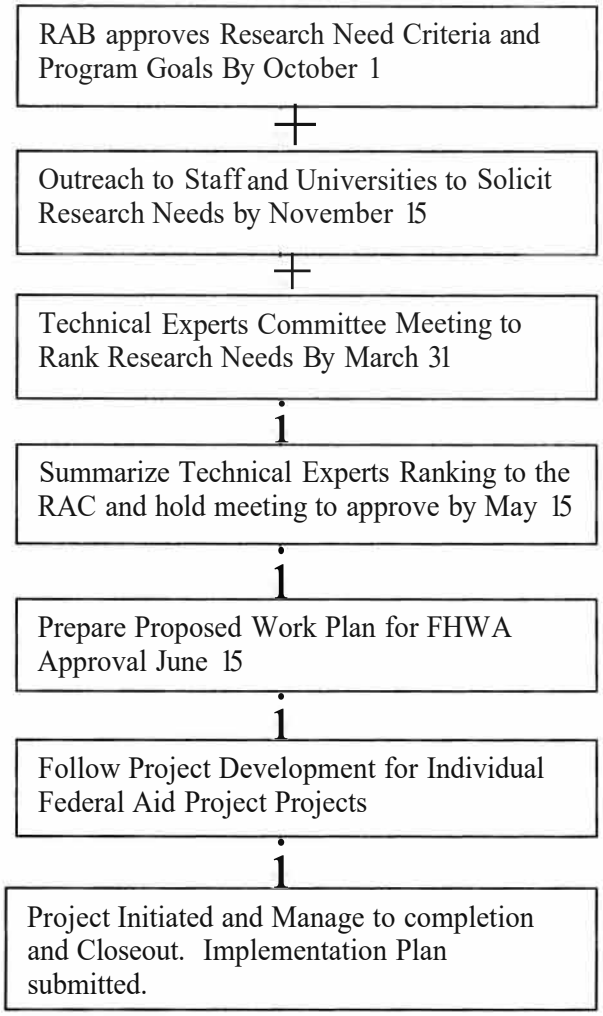
1.11 Technical Advisory Committee

Whenever a research project is large enough to require involvement of more than two technical advisors to ensure successful research, the research project manager will work with the project Champion to establish a technical advisory committee (TAC).. For SP&R-funded projects, invite the FHWA to suggest a staff member to act as a technical advisor. For large projects, several technical advisors may be named, and may include representatives from the university and/or private industry. Each member of the TAC is charged with the duties described under Section 1.10 , Technical Advisor.

1.12 Research Program Process

The research program flow chart defines the workflow for a research project from proposal to implementation. More information on research needs proposal and selection is in Chapter 5.

Research Project Selection and Programming Process



2.0 Work Program and Funding

2.1 Research Work Program

The Research Work Program is the listing of all active research projects, along with the estimated costs and funding sources. The work program will include financial summaries showing the funding levels and federal, state or other entity share of that funding. The research program manager will certify that the Department is in full compliance with the requirements of 23 CFR 420.209 and 23 USC 505. See 23 CFR 420.209 for specific language for certification.

Periodically it may be necessary to consider adding new projects to the Research Work Program without waiting for the annual selection process.

The FHWA must concur if the additional project is compatible with the existing SP&R Work Program.

The Research Program Manager may make minor amendments to the work program with the Chief Engineer's approval. Minor amendments change budgets for the approved work program by less than 10 percent of the total or $100,000, whichever is greater.

2.2 Funding & Reporting

The Research Program Manager is responsible for the financial management of the research program.

The Research Program Manager will use department procedures to ensure research activities are eligible for federal participation per Title 23.

The Research Program Manager tracks projects to ensure that research project managers keep their projects within established budgets, and provide quarterly budget reports to the chief engineer and annual reports to the RAB on the status of current projects and their budgets.

This annual report covering the federal fiscal year ending September 30 is also submitted to FHWA to comply with regulation below by December 31, of each year. The report contains summary information about each open research project for the federal fiscal year.

23 CFR §420.117, Program monitoring and reporting:

"In accordance with 49 CFR §18.40, the State DOT shall monitor all activities performed by its staff or by sub recipients with FHWA planning and research funds to assure that the work is being managed and performed satisfactorily and that time schedules are being met.
(b) (]) The State DOT shall submit performance and expenditures reports, including a report from each sub recipient that contains as a minimum:
(i) Comparison of actual performance with established goals;
(ii) Progress in meeting schedules;
(iii) Status of expenditures in a format compatible with the work program, including a comparison of budgeted (approved) amounts and actual costs incurred;
(iv) Cost overruns or underruns;
(v) Approved work program revisions; and
(vi) Other pertinent supporting data. "

2.3 Local Technical Assistance Program

The annual LTAP's T2 Center work plan includes activities anticipated during a calendar year, together with the funding resources for the year. The LTAP manager develops the work plan and budget as guided by the National LTAP strategic plan and focus areas. This program follows the LTAP focus areas of Safety, Infrastructure Management and Workforce development. The Chief Engineer and FHWA must both approve the work plan before enacted.

LTAP funding comes from FHWA's national LTAP funding at a 50-50 match ratio. The LTAP manager is responsible for the financial management of the T2 center program. He or she determines funding availability and prepares an annual proposed work plan and budget for the director's and FHWA's approval. Upon approval, the manager implements the work plan. Implementation includes assessing the need for changes to the work plan, tracking expenditures, and ensuring that project funds are spent appropriately.

The LTAP manager also prepares annual reports for submission to FHWA, in the Center Assessment Report (CAR) and the Program Assessment Report (PAR), due January 31 annually.

2.4 National Highway Institute Program

The technology transfer center manager will develop the annual NHI work plan, under direction of the Research Program Manager, on a calendar year basis. Work plan development includes contacting directors and section chiefs to identify and establish training needs. The training coordinator is the primary contact with NHI, and is responsible for procuring courses, establishing presentation schedules with the NHI coordinator and the instructor, and developing course flyers. The coordinator also is responsible for procuring an appropriate training location and securing an in-house local coordinator to receive and check shipped NHI training materials. NHI funding is a portion of the annual STP program. The program is funded on a federal fiscal year basis, and operates on a calendar year basis.

3.0 State, National and International Activities

3.1 General

The Research Program Manager is the Department's liaison with state, national and international research programs. These programs include the specific groups and programs described in this chapter as well as others, such as the Strategic Highway Research Program (SHRP) and AASHTO's Standing Committee on Research (SCOR), National Cooperative Highway Research Program

The Department supports and participates in the National Cooperative Highway Research Program (NCHRP), a joint program of AASHTO and FHWA. The Transportation Research Board (TRB) administers the program. NCHRP, established in 1962, provides a program of systematic, well-designed applied research. Program funding comes entirely from contributions from state transportation agencies. FHWA recommends contributions of 5.5 percent of each state's SP&R allocation of federal highway funds. NCHRP contributions do not require the 20 percent in state matching funds common to other SP&R-funded research activities.

NCHRP projects are developed in a two-stage, two-year process. In the first stage, NCHRP solicits ideas for research projects of a national scale from state representatives. In stage two, these projects are condensed and refined from more than 100 first-stage projects to 50 or more second-stage projects. Next, NCHRP solicits interest from national experts in the project area to participate in project panels. The panels develop project statements, solicit proposals, and select research agencies to perform the work. Finally, the participating states vote to select the projects that will be completed with the available funds.

The Research Program Manager is responsible for coordinating NCHRP project submissions and panel participation.

3.2 Transportation Research Board

The TRB is a unit of the Academies of Science, Engineering and Medicine. TRB supports and coordinates transportation research activities, publishes research results of interest to states, and conducts special research projects when appropriate. The Department supports the activities of TRB through annual contributions. TRB manages TRIO-database that combined the records from TRB's Transportation Research Information Services (TRIS) Database and the OECD's Joint Transport Research Centre's International Transport Research Documentation (ITRD) Database.

The Department receives electronic copies of all Transportation Research Records and NCHRP reports, literature search services, and waivers of registration fees for Department attendees at annual TRB meetings.

The Research Program Manager distributes electronic publications internally. TRB maintains a selective distribution system for its publications.

The Research Program Manager is the Department's permanent representative on the TRB.

3.3 Transportation Research Information Database

TRID is the Transportation Research Information Database, a computerized information file maintained and operated by the TRB National Research Council. It is sponsored by FHWA, the Federal Transit Administration, National Highway Traffic Safety Administration, U.S. Department of Transportation, the 50 state highway and transportation departments, the District of Columbia and Puerto Rico, American Automobile Manufacturers Association, National Asphalt Pavement Association, U.S. Army Corps of Engineers, and Association of Railroads. TRIO provides access to more than one million records of transportation research worldwide.

TRIO covers both U.S. and international research.

TRIO is a free service for Alaska DOT&PF and all other states that are annual TRB sponsors. Sponsorship occurs via payment of annual membership dues. Research staff is the as contact point for this service.

The research project managers and staff enter information about the Department's active and completed research into TRIO. Research Program Manager submits final reports (PDF) to TRIO and other entities listed in Table 6-1, as required by 23 CFR 420.207(a)(4).

3.4 State Planning and Research Program

The State Planning and Research (SP&R) Program is the mechanism for funding highway research and planning work. FHWA funds the program by dedicating 2 percent of the annual highway construction funds to SP&R. A minimum of one-quarter of SP&R funds must be spent on Research, Development, and Technology Transfer activities. SP&R funds generally must be matched with state funds in the ratio of 80 percent federal to 20 percent state funds. Some programs funded by SP&R do not require a state match. SP&R projects must be managed in accordance with 23 CFR 420.

3.5 Federal Highway Administration Direct Research Programs

The Department may participate in projects developed and funded directly by the FHWA, The Research Program Manager recommends participation in these programs to the RAB. The Technology Transfer manager coordinates projects training and seminars forDOT&PF.

3.6 Pooled Fund Studies

The Department may participate in pooled fund studies, in which resources from several states or other government agencies, universities, and/or industry sources are combined to support a single research effort. Contributions to such cooperative studies, if they have been approved by the FHWA as part of their national or regional Pooled Fund Study program, do not require the 20 percent in state matching funds common to other SP&R-funded research activities. Proposals for participation in Pooled Fund Studies must come to the board for approval. The Research Program Manager coordinates nominations for Pooled Fund Studies.

To participate in a pooled fund research project, the Department's technical representative will submit the Pooled Fund Approval Form to the Research Program Manager. The program manage submit the batch annually to RAB for their review and approval.

Upon approval, the technical representative will report on progress of the research project annually. When a pooled fund project is complete, the technical representative will submit the Pooled Fund Evaluation Form.

3.7 Experimental Features in Highway Construction

This program enables federal highway construction funds to be used for promising but unproven materials, methods, and techniques where such use of federal funds would not normally be allowed. To be eligible for the experimental features program, the work plan for the project must include an evaluation of the experimental feature upon completion of the work. The evaluation plan must be approved by the FHWA prior to or concurrent with approval of the construction project's Plans, Specifications, and Estimate. If the experimental feature fails, repair or replacement costs are also eligible for federal-aid funds. This happens during the project's design phase.

The Department supports use of this program to encourage innovation in highway construction in general, and specifically for full-scale demonstrations of concepts developed in the research program. Construction funding pays the costs of experimental features and post construction evaluation. Long term monitoring is generally set up as an experimental feature research project.

The Research and Development staff assists Department staff in developing evaluation plans and coordinating program activities with the FHWA funding evaluation activities that extend beyond the construction phase of a project, and they compile and disseminate project results.

3.8 Rapid Research

The Rapid Research Response program supports a portfolio of research projects by rapidly responding to opportunities to improve practices, procedures, and processes within the department as they arise and on an ad hoc basis.

The rapid research response program generally includes the following:

- Literature review and reviews of other state practices
- Funds short term, high priority research projects that provide urgently needed information or address urgent problems.
- Funding is normally less than $50,000
- Unique and timely research and technology demonstration efforts.

- Policy-related research to address the immediate needs of decision-makers.

Most rapid response projects do not "touch" the ground. For those projects that involve "digging in dirt", a separate NEPA document must be established. In order to complete this action, the project champion or sponsor must complete a RNS with associated drawings and location must be provided to Research staff.

3.9 Local Technical Assistance Program

The Local Technical Assistance Program (LTAP) and Tribal Technical Assistance Program (TTAP) are composed of a network of 58 Centers - one in every state, Puerto Rico and regional Centers serving tribal governments. The LTAP/TTAP Centers enable local counties, parishes, townships, cities and towns to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance and newsletters.

Through these core services, Centers provide access to training and information that may not have otherwise been accessible. Centers are able to provide local road departments with workforce development services; resources to enhance safety and security; solutions to environmental, congestion, capacity and other issues; technical publications; and training videos and materials. Three cores services are external Safety, Infrastructure Management and Workforce development.

4.0 Research Project Selection Procedures

4.1 Solicitation of Research Needs Statements

Except as noted in Section 3. l, Research and Development staff develops research projects from Research Needs Statements (RNS). The Research staff solicits RNSs bi-annually from Department staff via the Expert Advisors Committee. RNSs are accepted (solicited or unsolicited) at any time and held until the official selection process and ranking by the Expert Advisors' Committee and eventual approval by the RAB. If there is additional funding available, research staff will formally solicit needs as needed.

The RNS solicitation explains the research program and the needs identification process, schedule, and deadlines. The RNS form is shown as Figure 5-1 and is located at http://www.dot.state.ak.us/stwddes/research/research.shtml.

Research and Development staff reviews the RNSs and reject statements that are inconsistent with the mission of the Department or are inappropriate for the funding sources available. Staff investigate problems for which solutions may already exist by conducting literature searches or interviewing outside experts. Research and Development staff may expand or combine the remaining RNSs as appropriate and determine whether any RNSs from the prior years should be reconsidered.

RNS are organized according to the following discipline:

- Administration & Policy
- Bridge & Structures
- Environmental
- Hydraulics & Hydrology
- Maintenance & Operations
- Material & Construction
- Safety & Traffic

4.2 Expert Advisors' Committee

The Research Program Manager will facilitate the Expert Advisors' Committee. The RNS Champions or Research project manager presents the Research Need to the group. The SME included in the Research Selection Committee will score the RNSs based on the Research Needs Scoring Criteria as shown in Figure 5-2. Only the top three to four RNS for each the following areas: Materials including pavement; Bridge and Safety. The other areas will have their top 1 or 2 presented to the RAB.

4.3 RAB Prioritization of Research Needs Statements

At least three weeks prior to the board meeting, the Research Program Manager distributes the compiled Research Needs Statements and scores from the Expert Advisors Committee to the RAB. The RAB is responsible for reviewing the statements prior to the board meeting.

The Research Program Manager will present all of the RNSs with opportunities for the RNS Champions and Sponsors and the Expert Advisor Committee to respond to any questions from the board. The RAB members will then score and rank the RNSs, according to the criteria in Figure 5-2.

In addition to ranking the Research Needs Statements, the board may:

1. Add or remove Research Need Statements from consideration
2. Alter Research Need Statements and return
3. Make recommendations to Statewide Research regarding scope, investigators, schedules, budgets, or other matters pertinent to the research needs.

Figure 5-1
Research Needs Statement Form

Alaska DOT&PF Rnarda, O.W..,mmt, alld T•cllmology Tnnsf•r Rnearda, Drnlopmmt, & 11 Needs Statt'lllntt (Ibis is llot a Rne•c:b Proposal)	

RD&T2 Plan Correlation (FY)	X
Organizational Enhancements	
Infrastructure Preservation	
Safety	
Mobility	
Environmental Sustainability	

Title:

DOT&PF Project Champion(s): Cl11'qp11edJ

DOT&PF Project Sponsor(s) pquimd):

Proposed Technical Advisory Committee:

Problem Statement & Background:

Literature Search Summary:

Objective:

Potential Benefits:

Relationships to, the Existing Body of Knowledge:

Tasks/Constraints: (List only tasks or conditions that are absolutely necessary, otherwise leave blank.)

Implementation product and follow-on activities:

Estimated Funding Requirements & Support:
Estimalm cost
Matching funds or In-Kiod Senices/Scnm:e?

Submitted by:	Dat•:

For Additional Information:
Carolyn Morehouse, P.E., Chief, Research Development & Technology Transfer
Alaska Department of Transportation & Public Facilities, Division of Design & Engineering Services
(907) 465-8140, Carolyn.morehouse@alaska.gov

Figure 5-2
Research Need Statement Scoring Criteria

Respond to each question, one point is given for yes, zero points for no. Tally point total for each research need.

1) Is the research need of statewide importance?

2) Does the research need have a champion and is there high likelihood for implementation in the form of a new process, specification, process, policy, etc.?

3) Does the research need support strategies included in the Strategic Highway Safety Plan?

4) Does the research need support performance measures?

5) Does the research need support cost savings for M&O?

6) Does the research need support efficient project development, design, or construction?

7) Does the research need support improving the quality of M&O service or capital projects?

9) Does the research need have university, multi-agency or local community financial support?

10) Does the research need support economic development within the state?

5.0 Research Project Procedures

5.1 Proposal Preparation Requirements

The research program manager assigns projects to the project managers. , the project manager first decides whether to do the project in-house or to outsource it. The research project manager needs to prepare an estimate and ask the agency for a proposal prior to drafting the Reimbursable Services Agreement or a Professional Services Agreement.

5.1.1 University of Alaska System

House Bill 72 in 2015, http://www.legis.state.ak.us/basis/get_bill_text.asp?hsid=HB0072Z&session=29 requests that agencies consider the University of Alaska to fulfill their research project needs.

Part of the department's research program Mission is to promote local, Alaska research at our universities. This will be the first place considered. However the university has to show they have expertise since the research must be done by the most qualified organization. The researchers must have completed projects in the past without issue. Reimbursable Services Agreement **(RSA)** are the means to contract with other State Agencies. All RSAs are administered through the RSA desk at DOT&PF.

5.1.2 Other Universities and Private Sector

Research projects funded by the federal government are exempt from State of Alaska Procurement per AS 36.30.850(b)(19) http://www.legis.state.ak.us/basis/statutes.asp#36.30.850. If it's outsourced, the manager may prepare a Request for Proposal (RFP) or select a vendor based on their expertise and ability to complete the work the project manager must prepare an independent estimate prior to requesting any proposals. The proposal is forwarded to the research Program Manager for review and approval. The project manager then negotiates the final proposal, prepares the contract, and forwards it to the contracting officer (chief engineer) for signature.

A principal investigator who has not completed prior research projects in a timely manner or has not produced acceptable products in the past is not eligible to participate in additional research projects until all prior research projects are completed or problems in previous work products are corrected.

If the Research engineer chooses to use another state agency or university, An administrative contract or a Professional Services Agreement must be prepared and approved (signed) before any work may take place.

5.2 Administrative or Professional Services Contract, MOA, RSA Negotiations

The research Champion will review scope of work before the contract or RSA is awarded.

Professional Services or contracts for supplies or services for research projects funded by money received from the federal government or private grants are exempt from following the State of Alaska procurement code as described in AS 36.30.850(b)l and in 49 CFR.

Both federal and state funded research contracts are reviewed by the department's contract section and are approved by a Procurement Office. By following this established process the research contracts comply with the nondiscriminatory provisions of 23 CFR 200 with respect to Title VI of the Civil Rights Act of 1964 and the Civitl Rights Restoration Act of 1987. The contract section also makes sure all research contracts are compliant with the disadvantage business enterprises (DBE) requirements under section 1001(b) of the Transportation Equity Act for the 21 st Century and 49 CFR Part 26.

5.3 Research Project Reporting

Research reports are the primary record of the development, investigative procedures, and the

findings in a project. Final reports are required for all research projects. Other reports described in this section may or may not be required as determined by the project manager.

The purpose of reports is to monitor the progress of a project, maintain coordination between PI and project managers, and communicate the findings to the Department. Clear and concise communication is essential to:

- Ensure that readers understand the material
- Maintain administrative and financial records for documentation of contracts and agreements
- Ensure that the research work is consistent with the research study proposal, and that project changes are documented
- Provide timely disclosure of significant scientific or technical advancements and to identify problems that may require assistance from the Department or participating agency to resolve
- Provide final documentation of technical findings
- Promote implementation of study results

5.3.1 Progress Reports

The Principle Investigator submits at least quarterly reports to the research project manager. The research project manager submits monthly progress reports to the Research Program Manager via MRS. These reports allow readers to quickly evaluate the progress, problems, and probable future direction of a project.

. The Research Program Manager submits quarterly spreadsheet from MRS for SP&R studies to FHWA.

5.3.2 Interim Project Report

The interim project report disseminates the findings of a distinct task in a research project. Generally, the need for an interim project report is anticipated and is included in the scope of work in the project proposal. If significant unexpected or early findings occur during the course of conducting research, amend the proposal to add an interim report to the scope of work.

The interim report format will vary depending on the information. Generally, it will follow the guidelines given in the following section for final reports, but may be abbreviated as the project manager deems appropriate.

5.3.3 Final Report

The final report is a major product of a research project, and the principal investigator is typically its author. The report should include an executive summary and should be a complete record of the project, providing a history of the study and a thorough description of the objectives and research methods. Clearly state the conclusions and implementation recommendations in active voice. Also state the application of the findings, and when appropriate, identify further research needs. The appendix should include raw data and a technical brief for the final report.

Final reports must acknowledge sponsorship by the Department and other funding agencies, such as the FHWA for all SP&R studies. All reports must contain a disclaimer stating that the information is the opinion of the author(s) and does not represent the views of the sponsoring agencies

Submit the final report first in draft for Department review and acceptance. As a minimum, the documentation must include the data collected, analyses performed, conclusions, and recommendations.

The Principle investigator must review final reports prior to publication to ensure they are technically and grammatically correct, meet the goals of the proposal, and provide the best available information and conclusions in an understandable and usable format. Project managers and technical advisors are responsible for reviewing draft reports. The author is responsible for editing and grammar/punctuation.

The project manager coordinates the report review assignments and schedule. The normal review and response time is 30 days. Written review comments must be transmitted to the authors within the 30-day review period. The principal investigator(s) must attempt to incorporate review recommendations into the report. If this is not possible, the principal investigator(s) may address the comments by separate correspondence.

Once the review process is complete, the principal investigator produces a clean original and an electronic version in a mutually agreed-upon format of the report for the Program manager. Final reports for SP&R studies must include a title cover page, a

completed Federal Technical Report Documentation Page (Form 298) immediately inside the cover. A copy of this form and instructions are shown in Figure 6-1. The form 298 is followed by standard federal disclaimer language and required units conversion table.

All final research reports from projects funded by FHWA needs to be send in PDF form to the entities listed in Table 6-1:

The research project manager will provide constructive feedback for Principle Investigators and the end of each project. They can ask each member of the TAC to fill a project evaluation sheet or summarize all comments into one.

Figure 6-1
Technical Report Documentation Page

REPORT DOCUMENTATION PAGE			Form approved 0MB No.
Public reporting for this collection of information is estimated to average I hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestion for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project(0704-1833), Washington, DC 20503			
I. AGENCY USE ONLY (LEA VE BLANK) {Insert 7 digit federal project number}	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
4. TITLE AND SUBTITLE			5. FUNDING NUMBERS
6. AUTHOR(S)			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)			8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) State of Alaska, Alaska Dept. of Transportation and Public Facilities Research, Development and Technology Transfer 2301 Peger Rd Fairbanks, AK 99709-5399			I0. SPONSORING/MONITORING AGENCY REPORT NUMBER {Insert 7 digit federal project number}
11. SUPPLENMENTARY NOTES Performed in cooperation with			
12a. DISTRIBUTION/ AVAILABILITY STATEMENT No restrictions			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words)			
14. KEYWORDS :			15. NUMBER OF PAGES
			16. PRICE CODE *NIA*
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT *NIA*

STANDARD FORM 298 (Rev. 2-98) Prescribed by ANSI Std. 239-18 298-102

Final reports for other studies must include an abstract..

5.4 Publication and Distribution

The Research, Development and Technology Transfer staff may publish and distribute final research reports, or the university staff or consultants may do so as part of the project agreement. Occasionally studies may not reach meaningful conclusions, and reports on such studies may not justify full distribution. Limited report distributions require the concurrence of the funding agency (generally the FHWA). Distribution must occur, as a minimum, in accordance with the list in Table 6-1. Reports are also available on the DOT&PF Web page: http://www.dot.alaska.gov/stwddes/research/index.shtml and click on AK DOT&PF Research Reports - Search.

5.5 Presentation of Findings

If the findings of a report are of widespread interest, the project manager or Research Program Manager may request presentation(s) of the report and findings. Presentations may take the form of seminars, training sessions, or workshops. Audiences may range from selected invited specialists to the public.

If a project proposer believes that the research results will be appropriate for general presentation, he or she should include the presentation in the original project proposal. Otherwise, presentations may be recommended as an implementation measure at the conclusion of a study (see Chapter 7).

Table 6-1
Mandatory Distribution List for Published Reports

Prepared in accordance with FHWA guidelines under 23 CFE Part 420 Subpart B

**ELECTRONIC COPJES i file is too big send via CD, flash drive or other common media or direct web/inks*

Recipient	Address	#Copies
FHWA	FHWA's local contact - Alaska Division's Research Contract.	1
	FHWA Research Librarian thwalibrary@dot.gov 6300 Georgetown Pike; McLean, VA 22101-2296	1
	Office of Corporate Research, Technology and Innovation Management Federal Highway Administration, HRTM- 10 Turner-Fairbank Highway Research Center, Room T-305 6300 Georgetown Pike; McLean, Virginia 22101-2296 John.moulden@dot.gov	1
NTIS	National Transportation Information Service 5301 Shawnee Rd.; Alexandria, VA 22312 input@ntis.gov	1
NTL	National Transportation Library NTLDigitalSubmissions@dot.gov	1
TRID	Transportation Research Board Library, **(TRID)** 500 Fifth Street Washington, DC 20001 http://trid.trb.org/submit.asp	1
NWU	Transportation Library, Northwestern University Attn. Robert Sarmiento 1935 Sheridan Road, Evanston, IL 60208 r-sarmiento@northwestern.edu	1
AUTH	Electronic Copy to each author	1
DOT&PF	Electronic Copy Alaska DOT&PF Technical Advisory Group members	
LIB	asl@alaska.gov Megan Kearney Alaska State Library, Attn: 465-6332 , Government Publications, PO Box 110571; Juneau AK 99811-0571	

6.0 Research Implementation

6.1 General

The main goal of the Department's research program is to implement successful research results or incorporate them into standard practice through the research and T2 staff.

The Research, Development and Technology Transfer staff stays informed of research outside the Department and recommends implementation of others' research as warranted. In addition, the research engineer coordinates implementation of research results from:

- Experimental features built as part of construction projects
- Projects conducted by other State of Alaska agencies or local governments
- Projects conducted by other states, federal agencies, or foreign governments
- Projects conducted by the private sector, following all copyright and patent laws

Implementation should be considered from the inception of a project. Identify and contact potential users of the research results, and consider them for appointment as technical advisors. Potential users should be involved throughout the project.

6.2 Implementation Recommendations

Within three months of the conclusion of a research project (or earlier if preliminary results warrant), the project manager and technical advisor(s) prepare plan. These recommendations may be an endorsement of recommendations made in the project final report, if the recommendations include adequate implementation measures. They can also use the implementation Evaluation form to track implementation activities.

When considering implementation recommendations, the project manager and technical advisor(s) should ask and answer these questions:

- What are the "products" expected from this research? For example a proposed specification, a design manual or guide, field or laboratory procedures, a training manual, hardware for demonstration, software and instructions ready for computer application, equipment, etc.
- How and where can findings be applied within the Department? Who is the audience or "market" for this product?
- Will findings require the revision of existing methods or the issuance of new specifications, standards, designs, or procedures?
- Will the implementation of the findings be economically justifiable to the Department?
- Will implementation of the findings improve service to the citizens of the State of Alaska?

6.3 Implementation Techniques

There are a number of techniques available to implement new research findings. Here are a few examples:

- *Production and distribution of reports.* Reports have the advantage of reaching large numbers of people at a relatively low cost. However, due to the large volume of reports circulated today, it is difficult for practitioners to separate useful information. Therefore, the project manager must ensure that the information presented in a report is clear and concise. If long reports are required, the project manager should require an executive summary of the research results.
- *Seminars* provide a ready means to disseminate information to relatively large groups, and they provide two-way communication between the user and the researcher. Managers need not wait until the completion of a project to present seminars.
- *The Department's Alaska Transportation Technology Transfer Program (T2)* can help develop workshops, webinars, trainings and tech briefs to train people to use new techniques and products that have been developed through the Statewide Research program.
- T2 also circulates *Technology for Alaskan Transportation,* a newsletter with a distribution of more than 2,000. It may be used to inform readers of the initiation of a project, developments, or results. It may also be used disseminate information about national or international research.

- The FHWA's *Experimental Features Program* allows the state to incorporate new ideas into a federally funded highway construction project. If the idea fails, FHWA will participate in the reconstruction of that feature. Where new equipment is required, a project to purchase and demonstrate the equipment may be appropriate.
- If newly developed techniques are difficult, the project manager may be required to *work directly with individuals* to demonstrate and teach them new procedures. While this may be time consuming, it may be one of the most effective means of implementation.
- *Suggest a change in Department policy and procedures.* The project manager must work with the appropriate Department staff to ensure that the change is made through the proper channels.

7.0 Program Evaluation

7.1 Project Evaluation

At the completion of a project, the project manager evaluates in writing the performance of the researchers, and sends a copy of the evaluation to the principal investigator. If the principal investigator rebuts the evaluation, the project manager must reconcile factual disputes before finalizing the evaluation. For Professional Services Agreements (PSA), the *Alaska PSA Manual* requirements apply.

7.2 Evaluation of Implementation

Statewide Research will monitor implementation efforts for three years following completion of a research project and document those efforts in the project file. Monitoring is not necessary if there was no recommended implementation action (that is, if research results were negative) and may be suspended sooner if implementation has reached a clear completion point, such as adoption of a new standard test method.

7.3 External Program Evaluation (Peer Review)

Statewide Research program manager conducts peer reviews of the program periodically as required by 23 CFR 420.207(b). The most recent review was conducted in May of 2016.

Peer review teams consist of individuals from outside Alaska and include at least two members selected from the FHWA list of peer reviewers. Other members may be from the FHWA, universities, the Transportation Research Board, research units from other state departments of transportation, or the private sector.

Statewide Research staff assists the peer review team by providing information and documentation, and by paying for costs associated with the review, including team members' travel to Alaska. These expenses are entered as a line item in the SP&R Work Program and are eligible for 100 percent federal funding. The peer review team provides the Research Program Manager with a written report, and he or she forwards a copy of the report to FHWA. If the Research Program Manager chooses to respond to the peer review report, he or she also sends a copy of the response to FHWA.

Statewide Research also assists other states by participating as members of peer review teams, if the staff can accommodate the work around scheduling and staffing constraints.

7.4 Program Evaluation and Performance Measures

23 CFR 420 includes requirements for Research programs, Figure 7-1 provides a comprehensive list of federal program requirements and it's corresponding location in these Standard Operating Procedure.

The section uses Performance Measures as developed by the Department's Result Based Alignment to determine the effectiveness of the research and t2 programs.

AK Section	23 CFR420 Section	Compliance Regulation
1.5, 2.1	117,205	The program must be implemented in incompliance with its approved wotkprogram_
1.5, 2.1	111,115,209	Annual approval of State DOT Research and Development Work Program
4.1, 4.2, 6.2, 6.3	115 ,, 209	Documentation that describes the State OOT's management process and the procedures for selecting arrlirr:plemrtirg T activities must be developed by the State DOT and submitted to the FHWA Division ofce for approval. Significant changes in the management process must be submitted by the State DOT to the FHWA for approval.
7.3	209	Periodic reviews of the State DOT's Management Process of the RD&T
Section 2.0, 4.1, Figure 5-1	207	The State DOT's RD&T work program must, as a minimum, consistofa descript on of the RD&T activities to be accomplished during the program period,estimated costs for each eligibility activily, and a description of any cooperative activities including the State OOT's participation in any transportation pooled fund studies and the NCHRP. The State DOT's work program should include a list of the major items with a cost estimate for each item. The wotkprogram should also include any study funded under a previous work program until the final report has been completes for the study.
2.1	207	The State DOT's RD&T work program must include financial summaries showing the funding levels and share (Federal, State and other sources) for RD&T activities for the program year.
4.1,4.2	209(aX1)	The State must use an interactive process for identification and prioritization of RD&T activities for inclusion in an RD&T work program.
2.2 3.4	209(a)(2)	The State must use all FHWA planning and research funds set aside for RD&T activities to the maximum extent possible.
2.2	209(a)(3)	The State must have procedures for tracking program activities, schedules, accomplishments, and fiscal commitments.
1.6 3.3	209(a)(4)	The State must use support and use of the TR S database for program development, reporting of active RD&T activities, and input of the final report information. (Note 'IRIShasbeenrenamed to lRID-not yet reflected in the CFRJ)
7.1,7.2	209(a)(5)	The State must have procedures to determine the effectiveness of the State OOTs management process in implementing the RD&T program, to determine the utilization of the State OOTs RD&T outputs, and to facilitate peer exchanges of its RD&T Program on a periodic basis.
5.3.3	209(a)(6)	The State must have procedures for documenting RD&T activities through the preparation of final reports. At aminirmnn, the documentation on must include the data collected,, analyses performed,, conclusions, and recommendations. The State DOT must actively implement appropriate research findingsand should document benefits.
7.3	209(a)(7)	The State must participate in peer exchanges of its RD&T management process and other State DOT'sprograms on a periodic basis. Note: FHWA has guidance defining "period" as at least once every 5 years for a minimum of 2-3 days.
AK SOP Section	23 CFR 420 Section	Compliance Regulation

2.1	209	The State must include a certification that it is in full compliance with the requirements of this subpart in each RD&T work program. Note the language to be used for this certification is specified in the regulation.
5.3 5.4	l 17(e)	Suitable reports that document the results of activities performed with FHWA planning and research funds must be prepared by the State DOT or subrecipient and submitted for approval by the FHWA Division Administration prior to publication. The FHWA Division Administrator may waive this requirement for prior approval.
5.3.3	117(e)	The FHWA's approval of reports constitutes acceptance of such reports as evidence of work performed but does not imply endorsement of a report's findings or recommendations. Reports prerared for FHWA-funded work must include appropriate credit references and disclaimer statements.
5.2	121 (c)	The State DOT must administer the RD&T program consistent with their overall efforts to implement section 1001(b) of the Transportation on Equity Act for the 21 "Century (TEA-21) and 49 CFR part 26 regarding disadvantaged business enterprises.
5.2	12 l(h)	The nondiscrimination provisions of 23 CFR 200 etc. with respect to Title VI of the Civil Rights Act of 1964 and the Civil Rights Act of 1987 apply to all programs and activities of recipients, subrecipients and contractors receiving FHWA research funds, whether or not those programs or activities are federally funded.
5.2	1210)	Procedures for the procurement of property and services with FHWA research funds must be in accordance with 49 CFR and/or other applicable regulations.
2.2	113	(a) Costs are eligible for FHWA participation provided that all costs: 1) are for work performed for activities eligible under the Section of title 23 applicable to the class of funds, 2) are verifiable from the State DOT's or the subrecipient's records, 3) are necessary and reasonable for the proper and efficient accomplishment of project objectives and that they meet other criteria allowable for allowable costs, 4) are included in the approved budget or amendments thereto, 5) were not incurred prior to FHWA authorization, and (b) indirect costs are allowable if supported by a cost allocation plan and indirect cost proposal prepared, submitted and approved as required.
2.2	117(b}	The State DOT must submit performance and expenditure reports, including a report from each subrecipient, that contain as a minimum: (i) Comparison of actual performance with established goals; (ii) Progress in meeting schedules; (iii) Status of expenditures in a form at compatible with the work program including a comparison of budgeted (approved) amounts and actual costs incurred; (iv) cost overruns or underfunds; (v) Approved work program revisions; and (vi) other pertinent supporting data.