

New Mexico Department of Transportation
Research and International Programs Division

Research Procedures Manual



As Adopted by NMDOT March 13, 2017

Contents

Introduction.....	3
Chapter 1 – The Research Bureau.....	4
Funding and Authority.....	4
Functions of the Research Bureau.....	4
Research Bureau Strategic Plan.....	5
Chapter 2 – The Research Process	7
Project Solicitation.....	7
Project Selection.....	8
Consultant Solicitation and Selection.....	9
Project Administration.....	9
Project Close-Out.....	13
Appendix A – The Research Bureau Strategic Plan (October 25, 2015).....	15
Appendix B – Participants in the Research Process.....	19
Appendix C – Research Bureau Annual Calendar	21
Appendix D – Forms (Subject to Modification)	22
Appendix E – Instructions for Preparing and Submitting Proposals in Response to RFP/RFIPs	33
Appendix F – Research Bureau Style Manual.....	35
Appendix G – Standard Contents of an Implementation Plan	52
Appendix H – Research Fields.....	54
Appendix I – Financial and Contract Administration	55
Appendix J – Other Research Funding –.....	57
Appendix K – The Research Library	59
Appendix L – Example Request to Respond to Task Order	61
Appendix M – Statewide Research Bureau Summary of Work Products	64
Appendix N – New Mexico State Archiving Requirements	65
References.....	68
Acronyms.....	72

Introduction

The New Mexico Department of Transportation (NMDOT) Research Procedures Manual (RPM) is separated into two chapters. The first chapter provides a description of the legal authorization, funding, agency functions, and strategic plan of the Research Bureau. The second chapter summarizes each phase of the research process – research project solicitation, request for proposal development and issuance, definition of research project deliverables and timelines, research project administration, and project close-out. Strict adherence to the RPM by all participants is required as it reflects guidelines defined in federal and state regulations and financial procedures. The Federal program is a “reimbursement” program as opposed to a grant program, which means federal funding is reimbursed according to allowable costs as they are submitted by participants.

The NMDOT Research Procedures Manual is intended to provide guidelines for all potential participants – public, private or non-profit – applying for or executing Research Bureau contracts. Specific federal and state statutes, regulations and codes that support the guidelines provided in this Procedures Manual are referenced at the end of the document.

Chapter 1 – The Research Bureau

The Research Bureau administers a program of high quality applied transportation research that provides innovative, relevant, timely and cost-effective solutions to the increasingly complex problems confronting the New Mexico Department of Transportation (NMDOT), the State of New Mexico, our Nation and the international community. The Bureau seeks to accomplish this mission through close coordination with our partners and customers, consistent with the strategic goals and key principles established by the Department.

Funding and Authority

Federal laws administered through the Federal Highway Administration (FHWA) provide funding to research programs at state transportation departments. Authorization for the research programs is established under the Fixing America's Surface Transportation Act or "FAST Act" and previous acts.

Title 23 of the United States Code (23 USC), Chapter 5, Section 505 and the corresponding administrative code in Chapter 23 of the Code of Federal Regulations (23 CFR) require a minimum of two percent of federal funds allocated to the state be set aside for state planning and research (SPR). These federal funds derive from four programs: the National Highway Performance Program, the Surface Transportation Program, the Highway Safety Improvement Program, and the Congestion Mitigation and Air Quality. Of this amount, a minimum of twenty five percent is required under 23 U.S.C. 505 (b) to be dedicated to research, development, and technology activities related to highway, public transportation and intermodal transportation systems. Pursuant to federal law, NMDOT uses the other seventy five percent of SPR funds primarily for statewide planning activities. A small amount is used for international programs. Federal SPR funds require a twenty percent state match, which is provided by the New Mexico State Road Fund.

The Research Bureau research program is incorporated into the NMDOT Planning Work Program (PWP), which is updated and approved by FHWA.

Functions of the Research Bureau

The Research Bureau performs the following functions for NMDOT:

Comprehensive Scientific Research

The primary function of the Research Bureau is to identify and manage implementable research projects that effectively address current and future transportation challenges. The process for identifying challenges and soliciting, selecting, managing, and closing projects is described in Chapter Two. Research project contracts are required to have a well-defined scope of work, an unambiguous timetable, and a fixed amount of funding.

Literature and Best Practice Search

In response to requests, the Research Bureau performs literature searches and identifies best practices nationally through an extensive, critical review of recent articles, studies, and reports on a

specific research topic. These searches typically review FHWA reports, Transportation Research Board (TRB) reports, Research in Progress, Transport Research International Documentation (TRID) database, National Cooperative Highway Research Program (NCHRP) reports, and research reports from other state DOTs and from University Transportation Centers.

On Call Research

In some instances, NMDOT requires research be completed on short term, high priority projects that require a unusually quick turnaround. The Research Bureau maintains one or more professional services master contracts with institutions of higher education or private consultants to perform these studies upon receipt of a task order. On call research can also be completed through competitive sealed proposal procurement.

Research Technical Services

Research Bureau staff may complete research for NMDOT staff on specific technical issues upon request, an example being assistance with data or policy analysis.

Technology Transfer

By statute, the Research Bureau may purchase, implement and evaluate innovative equipment, technology, or methods to address a well-defined transportation challenge, including providing training for NMDOT staff. Research Bureau technology transfer funding cannot be used in lieu of operational funding.

Library Services

The Research Library is located in the Research Bureau and provides information, materials and resources to support the needs of the Department and the information needs of outside users.

Pooled Fund Projects

When it is determined a specific research project will provide results that are of interest to multiple states, the Research Bureau may pool research funds with other states to support the proposed project.

University Transportation Center (UTC)

The USDOT provides matching funds to establish national, regional and Tier 1 UTC's at universities around the nation. The Research Bureau may collaborate with one or more UTC's to pursue transportation-related research in New Mexico.

Regional and National Research

NMDOT participates in several national research activities that pursue and implement a national transportation research agenda. As an example, NMDOT supports NCHRP research activities on an annual basis through contributions of SPR funds. The Research Bureau is also a member of the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Research, Region 4 (Western states), which provides ongoing opportunities to discuss transportation policy and share transportation research results.

Research Bureau Strategic Plan

In 2015, the Research Bureau updated its strategic plan. The entire strategic plan is included in Appendix A. The vision and mission statements and Bureau goals are presented below:

Vision Statement

The Research Bureau is a national leader in providing innovative, timely and cost-effective solutions to transportation challenges, is committed to identifying and promoting transportation research advancements and best practices, and is recognized as a trusted, valued and vital source of data, information and analysis.

Mission Statement

The Research Bureau serves the Department, its customers, and the national transportation research community through the pro-active development and dissemination of innovative, timely, cost-effective solutions to transportation challenges. Furthermore, it acts as a catalyst for transportation policy change consistent with the strategic goals of the Department.

Goals

1. Provide innovative, timely and cost-effective solutions to transportation challenges.
2. Be recognized as a trusted, valued and vital source of information, data and analysis.
3. Act as a catalyst for policy change consistent with the strategic goals of the Department, emphasizing applied research and implementable results.
4. Establish effective working relationships outside the Research Bureau and provide exemplary customer service.
5. Establish effective and consistent policy and procedures for the Research Bureau.
6. Improve and integrate library services consistent with the mission of the Research Bureau and the research needs of the department.
7. Develop and track performance measures for each of the primary activities of the Research Bureau.

Chapter 2 – The Research Process

This chapter describes the NMDOT research process in sufficient detail so a participant can determine his or her responsibilities under the stated guidelines. A list of the roles of the participants involved in the research process is included in Appendix B. A timeline for the research process is included in Appendix C.

As stated in the Introduction, specific federal and state statutes, regulations and codes that support the guidelines provided in this Procedures Manual are referenced at the end of the document.

The research process in New Mexico consists of five components: 1) Project Solicitation, 2) Project Selection, 3) Vendor Selection, 4) Project Administration, and 5) Project Close-Out.

Project Solicitation

Research Project Solicitation

Ideas for potential research projects are continually analyzed by Research Bureau staff to ascertain their relative strength and applicability to current and future transportation challenges. However, a formal Research Project Solicitation (RPS) process occurs only twice a year when Research Bureau staff aggregates research proposals from NMDOT staff and organizational units. The RPS is designed to encourage participation from all department personnel, the goal being to identify critical transportation challenges and implementable research projects to address those challenges. Individuals and entities external to NMDOT may propose research projects during the open solicitation period. Only those proposals that have strong internal NMDOT sponsorship will move forward for consideration by the Research Oversight Committee (ROC).

Announcements of solicitation deadlines are distributed to the Department staff by email and posted on the Research Bureau's website. Research requests are submitted to the Research Bureau on the General Research Request Form (Appendix D-1). Upon receipt of the form, Research Bureau staff work with the project advocate identified on the form to refine the problem statement for the proposed research.

Literature Review

After the Research Request Form is submitted to the Research Bureau, the request is assigned to one of the Bureau staff to conduct a literature review. The literature review serves three purposes. First, it informs the project advocate of existing research that may already answer the research question to his or her satisfaction. Second, the literature review may help refine the research question, bringing more clarity and purpose to individual research proposals. Finally, the literature review helps identify the scope, duration and cost of similar research projects in other states, allowing advocates to bring more specificity to their research proposals. Problem statements that have been thoroughly analyzed and refined by advocates through intensive cooperation with Research Bureau staff may, upon recommendation by Research Bureau staff, be submitted to the ROC for consideration for funding. Consistent with FHWA statutes, research projects that are considered duplicative of current or previous research projects cannot be considered for Research Bureau funding.

Problem Statement

For projects that will be presented to the ROC, Research Bureau staff works with the project advocates to prepare a one-page summary of the project – the problem statement – based on the Research Request Form and literature review. Each problem statement will typically include: 1) the project title; 2) names of the project sponsor and advocate; 3) project summary; 4) project justification; 5) anticipated benefits deriving from the project; 6) product or service to be delivered as a result of the project; 7) maximum required budget for the project, and; 8) estimated project duration.

Summary of Available Resources by Year

Prior to the ROC meeting, the Research Bureau administrative staff prepares a summary of estimated funding available for research and technology transfer projects in current and future fiscal years.

Project Selection

Research Oversight Committee (ROC)

Summaries of research project proposals, specific criteria to be used for proposal evaluation, and a summary of available financial resources by fiscal year are presented to the ROC for review. The project advocate is invited to present the problem statement and the proposed research at a ROC meeting. The ROC evaluates and ranks project requests based upon their relative merit and then, after thorough internal discussion, recommends a specific level of funding for each research project along with a required timeline for completion. Of particular interest to the ROC in their evaluation is whether proposed research projects provide innovative, timely, cost-effective solutions to transportation challenges and, of significant importance, can be quickly and effectively implemented. Return on investment calculations is relevant. An explicit connection to the goals and objectives in the NMDOT 2040 Plan is important.

IT Review of Research Projects

Research projects that have an Information Technology (IT) component and have short- or long-term IT impact on the agency must be approved by the NMDOT Chief Information Officer. See Appendix D-5 for an example of the IT Review Memo.

Workplan Update

The research projects approved by the ROC constitute the basis for the Biennial Work Program of the Research Bureau. This Research Bureau Biennial Work Program is integrated into the PWP and submitted to the FHWA. New research projects may also be integrated into quarterly amendments to the Biennial Work Program.

FHWA Approval

FHWA staff review the PWP to verify it meets all federal requirements. If FHWA staff determines the PWP is statutorily-compliant, the agency will grant approval for the selected research projects and allow them to proceed.

Consultant Solicitation and Selection

Technical Panel

For each approved research project, a sponsor and an advocate are identified from within NMDOT. The sponsor is typically a district engineer, division director or bureau chief who certifies the proposed research project is relevant to current or future department transportation challenges and consistent with the goals of the organizational unit they represent. The sponsor holds a position in NMDOT that has the authority and the incentive to implement the research findings once the research project is completed. The advocate is an NMDOT employee with interest and expertise in the subject area, who agrees to actively spearhead the research project and serve as chairperson of the technical panel.

Each approved research project is guided by a technical panel, typically composed of the sponsor, the advocate, other NMDOT employees with a strong interest in the timely completion and implementation of the research subject, and Research Bureau staff. Depending on the nature of the research, representation from FHWA on the technical panel may be requested. The technical panel is identified through cooperation between the sponsor, advocate and Research Bureau staff. Membership in the technical panel may evolve over the life of the project, particularly when additional participants are needed during implementation of the project.

It is essential the sponsor, advocate, and members of the technical panel indicate they are fully committed to the successful outcome of the project, from initiation to completion. Lack of active engagement in a research project by the sponsor, advocate or technical panel can result in the termination of the research project by the Research Bureau.

RFP/RFIP Development and Issuance

Following FHWA approval of the Research Bureau Biennial Work Program or amendments to same, the Research Bureau works with technical panel members to prepare and issue a ***Request for Proposal (RFP) for projects over \$60k and Request for Information Proposals (RFIP) for projects less than \$60k*** to interested parties. These projects are advertised through the State of New Mexico's RFP/RFIP process, governed by New Mexico procurement statutes.

Pre-Proposal Meetings

At the discretion of Research Bureau staff, a pre-proposal meeting may be scheduled for the purpose of discussing individual research project objectives in greater detail and providing information on proposal requirements during the procurement process. These meetings are typically coordinated by the Procurement Services Bureau and conducted by project advocates and technical panel members. Interested researchers are strongly encouraged to attend these meetings.

Project Administration

Kick-Off Meeting

Following the Notice to Proceed letter (NTP), the Research Bureau project manager promptly schedules a kick-off meeting that includes the consultant and members of the technical panel. The kick-off meeting is designed to allow all participating parties an opportunity to discuss research project objectives and confirm – and obtain explicit consensus on – Research Bureau expectations concerning contract deliverables, timelines, cost and other important considerations. The kick-off meeting provides an

indication to all research project participants that their active engagement over the duration of the research project is required for the completion of the project and implementation of the project results. Any concerns participants may have about the research project should be openly discussed and thoroughly addressed at this initial meeting.

Conduct of Research

Following receipt of the NTP letter, the consultant is expected to conduct research fully consistent with the language stipulated in the contract. While each research project is different and each individual contract includes language unique to the required research effort, most Research Bureau contracts include a similar set of required deliverables, including: a) progress reports and meetings; b) interim reports for projects of duration greater than twelve months; c) an implementation plan; d) a multimedia presentation, and; e) a final report. All deliverables are subject to review and approval by the technical panel. Payments of billing statements are contingent upon acceptance of deliverables.

Research Project Meetings and Reports

The research process should entail robust, intensive cooperation between the consultant and the technical panel focused on obtaining innovative, implementable research results in a timely, cost-effective manner. Extensive engagement and comprehensive analysis on the part of both the consultant and technical panel is required for successful project management and, ultimately, completion of the research project. Detailed project reports consistent with the terms of the contract are required to ensure the project stays on time and on budget. Progress reports for research projects are required to include, at a minimum:

- Discussion of research activities performed;
- Discussion of plans for the forthcoming activities;
- A summary of research findings and recommendations as appropriate;
- Documentation of activities, including travel, equipment and labor, in sufficient detail to permit verification of allowability of charges reflected in billing statements;
- A statement of adherence to budget and any expected requirement for budget modification;
- A statement of adherence to schedule and deliverable due dates, including any conditions that may affect compliance with these requirements, and;
- Disclosure of any conditions that may affect compliance with contract requirements.

Approximately two weeks after a progress report is received from the consultant, the Research Bureau project manager arranges a progress meeting with the technical panel, the consultant, and his/her research team. At this meeting, the consultant provides a detailed presentation that outlines the status of the research and consistency with the terms of the contract. The technical panel then evaluates all phases of the research project to ensure it is on schedule, defined in terms of completed deliverables.

For each progress meeting, the project manager prepares a meeting sign-in sheet, a written agenda, and a progress approval form. The Progress Approval form can be seen in Appendix D-3. The members of the technical panel, the consultant and FHWA representative complete the Progress Approval form. These forms are used by the project manager to document concerns related to the

progress of the project, preliminary findings, and quality of work. The completed forms also certify that the project meets the requirements necessary to continue contracted work.

Progress reports are due on the date stipulated in the contract. Project extensions are permissible only under extraordinary circumstances, and determined by the project manager and Division Director after discussion with and justification from the advocate, sponsor and technical panel.

Required Advanced Approvals

Pursuant to federal and state laws and to the NMDOT contract boilerplate, there are several possible consultant actions on research projects that require advanced approval by NMDOT:

Replacement of Principal Investigator or Key Research Staff

Replacement of the Principal Investigator (PI) or uniquely qualified members of the consultant research team essential to the timely completion of project objectives is subject to approval by NMDOT. This requirement does not extend to individuals whose role is primarily one of support.

Equipment

All equipment expenditures in excess of \$500 must be pre-approved in writing by the project manager; however, NMDOT approval does not relieve the consultant of the requirement that sufficient budget is established prior to incurring equipment expenses. F&A, IDC, or other overhead charges are not allowed for the procurement of equipment. Equipment purchased with project funds is the property of NMDOT, regardless of where it is located or who uses it during the project.

Travel to Scientific or Technical Meetings

The consultant must notify the project manager in writing of plans to attend scientific or technical meetings, including presentation of scientific papers using Research Bureau contract funds. Written authorization from the advocate, the Research Bureau Chief and Research and International Programs Division Director must be obtained prior to travel or costs will not be reimbursable. If travel is approved, reimbursement will be made at the state-approved rate on a pro-rated basis for those portions of the travel that are directly relevant to the project from which funding is requested. Note: Detailed receipts for authorized travel expenses must be provided before these costs will be reimbursed.

The consultant must submit a Travel Request Form to the project manager for travel to be considered. When possible, forms should be submitted at least three months in advance of travel. See Appendix D-6 for an example of this form.

Papers for Presentation

Papers submitted for presentation on a NMDOT-funded research project must be sent to the project manager and technical panel for review in advance of the presentation.

Subcontractors

Written approval is required in advance for subcontracts even though provision for such may be made in the proposal. If not provided in the proposal, an itemized budget and justification for the proposed subcontractor are required when submitting the subcontract for approval.

Budget Amendment

Budget amendments to Research Bureau contracts that move funds between budget categories but do not increase the total budget must be pre-approved by the project advocate and the Research Bureau Chief or Division Director. Budget amendments to Research Bureau contracts that increase budgets must be pre-approved by the ROC upon recommendation of the project technical panel and approval of the Research Bureau Chief or Division Director. To request a contract amendment, the consultant should complete the Contract Change/Amendment Form (see Appendix D-4). Budget increase amendments and additional phases to a project should not increase the cost of the initial project by more than 25 percent in order to avoid noncompetitive research procurements.

Contract Amendment

Requests for contract amendments must be submitted for pre-approval by the advocate and the Research Bureau Chief or designee before any administrative actions are taken based on the amendment. To request a contract amendment, the principal investigator should complete the Contract Change/ Amendment Form. See Appendix D-4.

Project Deliverables

Project deliverables are included in a contract to effectively capture the process, findings and recommendations of the research project. Consultants are expected to produce high quality, professional reports that are of a quality sufficient for publication and in compliance with the Research Bureau Style Manual (See Appendix G). Compliance with this standard is determined solely by the Research Bureau project manager in cooperation with the technical panel.

Interim Reports

Interim reports are required for projects that are greater than twelve months. Interim reports will document project activities, preliminary findings, future plans, budget, obstacles, travel, and timeline. Compliance of the completed research with the terms of the contract as stated in the interim report is determined solely by the Research Bureau project manager in cooperation with the technical panel.

Draft and Final Report

Sixteen (16) copies of the draft final report are due in the Research Bureau for review by the technical panel and Research Bureau staff no later than the due date as stipulated in the contract; comments from Research Bureau staff are transmitted to the consultant no later than fifteen days prior to contract expiration. After integrating the technical panel comments, the consultant transmits sixteen printed and bound copies of the final report, completed in conformance with requirements outlined in the Research Bureau Style Manual (Appendix G) no later than the contract expiration date. These copies shall be accompanied by an electronic version of the document transmitted through a currently accepted technology in PDF format.

Final acceptance of reports is based on the following criteria:

1. Fulfillment of objectives and completion of deliverables as set forth in the contract;
2. Adequacy of documentation, and;
3. Clarity of presentation.

Compliance of the final report with the criteria listed above is determined solely by the Research Bureau project manager in cooperation with the technical panel.

Based on the acceptance review, a decision is made concerning publication of the report on the Research Bureau website. Such publication will be made at the discretion of NMDOT.

Draft and Final Implementation Plan

Each research project requires the completion of a comprehensive, viable implementation plan as a separate and distinct deliverable. This implementation plan should provide specific guidelines that NMDOT staff can follow to implement the research findings and recommendations. The consultant will discuss the requirements for the implementation plan with the project manager, the Research Implementation Engineer and the technical panel on a regular basis during the research process to ensure the implementation plan provides appropriate technical guidance for NMDOT staff.

A preliminary implementation plan will be provided to the Research Bureau no later than the due date as stipulated in the contract. The final implementation plan shall be submitted along with the final report and multimedia presentation. Standard contents of an implementation plan are included in Appendix H. Compliance of the completed draft and final implementation plan with the terms of the contract is determined solely by the Research Bureau project manager in cooperation with the Research Implementation Engineer and the technical panel.

Draft and Final Multimedia Presentation

In addition to the final report and implementation plan, a web-ready multimedia presentation of the research project is required for the project to be considered complete. This presentation may include drawings, photographs, video and other media which sufficiently describes the details of the project, and shall be crafted to appeal to a broad audience with varying degrees of education and knowledge in the subject area. A draft of this presentation will be due in the Research Bureau no later than the due date as stipulated in the contract, and the final product shall be submitted along with the final report. This presentation is expected to be in Microsoft PowerPoint® file format.

The Research Bureau project manager and the technical panel will determine what details should be included in the presentation. Compliance of the presentation plan with the terms of the contract is determined solely by the Research Bureau project manager in cooperation with the technical panel.

Project Close-Out

Implementation of Research Results

A primary goal of the Research Bureau is to complete innovative, cost-effective research projects that can be implemented by the department in a timely, effective manner. Following the completion of the research project, Research Bureau staff will monitor project implementation for the first year after project completion to ascertain whether research project results were used to address transportation challenges. Obstacles and opportunities to timely, effective implementation of research project results will be recorded by the Research Implementation Engineer to inform and improve approaches used in future research projects.

Advocates will submit a Research Implementation Status report to the Research Implementation Engineer at the intervals of three months, six months and twelve months after project completion. These reports are used as to document product implementation to satisfy federal requirements.

Posting Deliverables on Research Bureau Website

Upon approval by the Research Bureau Chief or Division Director, the Research Librarian will post the final report, implementation plan and multimedia presentation for each project on the Research Bureau website.

Disposition of Equipment

Equipment purchased under Research Bureau contracts with project funds will be disposed of according to federal and state disposition regulations.

Copyrights

All data, written materials, computerized software including programs, databases and spreadsheets, and other information prepared as required under NMDOT Research Bureau contracts, and the copyrights therein, shall be owned by NMDOT unless otherwise agreed between the parties. All materials with potential copyrights obtained through Research Bureau contracts will be subject to editorial revision and publication at the sole discretion of the Department.

Data Rights

NMDOT reserves the right to duplicate, use, and disclose in any manner and for any purpose all data, whether delivered to NMDOT or not, under the contract and to authorize other parties to do so.

Contract Termination

Upon completion of a project, the project manager conducts a close out meeting with the technical panel and implementation engineer to complete the Contractor Evaluation form, discuss disposition of equipment and project implementation. Once all the deliverables are submitted, the project manager disseminates the deliverables to the technical panel and the NMDOT Research Librarian.

In the event that a contract is terminated before the scheduled termination date, the project manager will meet with the technical panel to discuss the need for early termination and requirements for closure.

Refer to the contract for Notice of Cancellation process.

Appendix A – The Research Bureau Strategic Plan (October 25, 2015)

Research Bureau Vision Statement

The Research Bureau is a national leader in providing innovative, timely and cost-effective solutions to transportation challenges, is committed to identifying and promoting transportation research advancements and solutions, and is recognized as a trusted, valued and vital source of data, information and analysis.

Research Bureau Mission Statement

The Research Bureau serves the Department, its customers, and the national transportation research community through the pro-active development and dissemination of innovative, timely, cost-effective solutions to transportation challenges. Furthermore, it acts as a catalyst for transportation policy change consistent with the strategic goals of the Department.

Research Bureau Core Values

The Research Bureau emphasizes integrity, respect, reliability, accuracy, accountability and timeliness in all its internal and external communication and actions; it contributes to the success of the department by building and sustaining positive and cooperative internal and external relationships; it encourages strategic thinking, creativity and continuous improvement in its use of data, information, analysis; it is responsive to the needs of Department staff and customers; it protects and enhances taxpayer investment.

Research Bureau Goals

Goal One: Provide innovative, timely and cost-effective solutions to transportation challenges.

- Action: Develop a methodology to calculate life-cycle cost-savings from Research Bureau solutions.
- Action: Develop a strategy to track and measure implementation of past, current, and future Research Bureau projects.
- Action: Establish and maintain a comprehensive database that tracks Research Bureau projects, monitors their implementation and determines the life-cycle cost-savings of Research Bureau solutions compared to current practices.
- Action: Establish and maintain a database that identifies innovative, timely and cost-effective solutions to transportation challenges – state, regional and national solutions related to applied research and technology.
- Action: Conduct an annual Research Project Solicitation (RPS) process that identifies transportation challenges faced by the Department and projects that address those challenges.

- Action: Develop evaluation criteria for the Research Oversight Committee that emphasizes the selection of research projects that are innovative, timely, cost-effective, implementable and aligned with the strategic goals of the Department.

- Action: Document the reasons specific projects are selected for action by the ROC and provide written justification to the department to ensure the process is transparent and accountable.

Goal Two: Be recognized as a trusted, valued and vital source of information, data and analysis.

- Action: Establish a Research Technical Assistance Program (RTAP) that provides prompt, objective technical assistance for the research needs of NMDOT Executive Management, District Engineers, Division Directors, and Bureau Chiefs and acts as a neutral arbiter on research-focused policy questions facing the Department; write an IDC to Executive Management outlining the specific mechanisms for and approval of this process.

- Action: Ensure an executive summary summarizing the key findings of the research project and their potential implications for the Department is included in each research project report.

- Action: Schedule workshops on a regular basis to disseminate research results and identify solutions to transportation challenges critical to the operations of the Department.

- Action: Produce a Research Newsletter twice a year that communicates Research Bureau accomplishments, national and state solutions to transportation challenges, and other data, information and analysis critical to the applied research needs of the Department and its customers.

- Action: Coordinate with the Training Bureau and Local Technical Assistance Program to establish and maintain a web-based Training Portal that permits access to online training curricula provided by other state, federal, and local transportation departments and agencies.

- Action: Attend key state, regional, and national conferences; write and disseminate reports identifying state, regional, and national solutions to transportation challenges, their implications for the Department, and mechanisms of effective implementation.

Goal Three: Act as a catalyst for policy change consistent with the strategic goals of the Department, emphasizing applied research and implementable results.

- Action: Ensure the Research Bureau informs policy discussions in the Department by having a presence at Executive Management meetings; write an IDC to Executive Management requesting approval of this role.

- Action: Align the Research Bureau's performance measures with those included in the 2040 New Mexico Transportation Plan.

- Action: Schedule outreach meetings to all District offices and other Department staff to ascertain current transportation challenges and the potential role of the Research Bureau in addressing those challenges;

demonstrate direct benefits from research projects; increase the exchange of data, information and analysis to provide solutions to transportation challenges.

- Action: Review selected daily or weekly state and national electronic newsletters and reports for data, information and analysis that pertain to Department staff and develop effective mechanism to disseminate this to interested staff.
- Action: Attend Department meetings on planning processes and provide ideas to Department staff for potential research projects.
- Action: Review specification committee recommendations and ascertain whether Research Bureau project results are included in those recommendations as standard specifications, as contract special provisions, or supplementary specifications.

Goal Four: Establish effective working relationships outside the Research Bureau and provide exemplary customer service.

- Action: Contract with a professional facilitator to develop effective Research Bureau communication skills with customers.
- Action: Establish definitive guidelines and timelines for responses to Research Bureau customers.
- Action: Establish an effective on-call research process that addresses requests in a timely manner.
- Action: Establish effective outreach mechanisms to better serve local, regional and Native American/tribal governments.
- Action: Establish mechanisms to identify opportunities for Research Bureau funds to be combined with resources from other entities and increase the capacity of the Research Bureau to fund and implement research addressing transportation challenges.
- Action: Identify Department staff serving in key posts in AASHTO or other national organizations who can potentially serve as advocates for Research Bureau initiatives.
- Action: Conduct an annual online survey of Research Bureau customers to measure their level of satisfaction with the services provided.

Goal Five: Establish effective and consistent policy procedures for the Research Bureau.

- Action: Evaluate the roles and responsibilities of Research Bureau staff to ensure more effective and efficient organizational practices and outcomes; examine organizational practices at Research Bureaus in other states to inform this review.
- Action: Contract with a professional facilitator to develop effective internal collaboration, communication and planning skills at the Research Bureau.

- Action: Complete revision of the Instructions Manual to reflect FHWA's 2014 Process Review, recommendations from the 2013 Peer Exchange, and best practices and procedures identified since the revision of the Instruction Manual in 2009.
- Action: Complete a review of other state DOT research programs' policies and procedures and identify potential process improvements for the Research Bureau.

Goal Six: Improve and integrate library services consistent with the mission of the Research Bureau and the research needs of the department.

- Action: Establish a greater awareness of the Research Bureau library, its mission, its resources and its services for Department staff through innovative outreach.
- Action: Establish a presence on the Department website that allows Department staff to understand the resources and services available to them through the Research Bureau library.
- Action: Assist all department staff in identifying new publications, websites and research in progress related to transportation challenges.
- Action: Maintain and improve library collection and databases consistent with the mission and goals of the Research Bureau and FHWA mandates.
- Action: Establish partnerships with state universities to increase access to academic library resources and databases for Department staff.
- Action: Respond to Department and other customer requests for library services consistent with the mission and goals of the Research Bureau.

Goal Seven: Develop and track performance.

- In progress

Appendix B – Participants in the Research Process

The NMDOT research process requires participation from a number of organizations and individuals. This Appendix describes the roles of each participant.

FHWA

As the funding agency, FHWA has oversight authority for all Research Bureau activities ensuring that federal regulatory requirements are met. FHWA approves the Biennial Work Program and amendments that authorize research activities. Additionally, FHWA staff approves the annual Performance and Expenditures Report and serve as advisory members on the ROC and TPs.

Research Oversight Committee (ROC)

Policies and procedures in administering the NMDOT research program are determined by the ROC. While the Research Bureau manages day-to-day activities including contract administration, project development, coordination of RPS activities and performance of internal research, the ROC sets the strategic priorities, approves individual research initiatives and authorizes the Biennial Work Program for each state fiscal year.

Project Manager

The project manager serves an administrative function ensuring projects comply with state and federal rules and regulations governing the use of State Planning and Research funds.

Sponsor

To ensure proposed research projects are consistent with strategic priorities and organizational goals, including implementation after project completion, each project is required to have a Sponsor. The Sponsor is typically a NMDOT Division Director, District Engineer or Bureau Chief who certifies that the project is necessary and in conformance with the strategic priorities of the respective organizational sub-unit. The Sponsor should have the administrative authority to implement the research findings.

Advocates

The Advocate is a department employee with expertise or interest in the research subject area who agrees to serve as chairperson of the Technical Panel over the duration of the research project. The Advocate, in cooperation with the project manager, coordinates project meetings and activities with Technical Panel members, participates in quarterly project meetings, reviews project deliverables, and ensures the implementation of research results.

Technical Panel

Each research project is assigned to a Technical Panel consisting primarily of NMDOT staff. At a minimum, the Technical Panel includes the Advocate and NMDOT staff with a strong interest in the research topic. Depending on the nature of the research, a FHWA representative or non-NMDOT staff may serve on the panel. The Technical Panel crafts the research problem statement, participates in proposal selection, selects the research vendor, participates in contract negotiations, guides the research, reviews and approves project deliverables including the final report, participates in the development of implementation plans, and ensures implementation of results.

Principal Investigators

The research is considered to be under the direction of the principal investigator (PI) identified in the research proposal. Because the PI will normally have had a lead role in determining the scope of work in the proposal and has the expertise required for the successful completion of the research project and implementation of the results, it is expected that he or she will be available and responsible for the duration of the contract period.

Research Implementation Engineer

The Research Implementation Engineer ensures research projects are completed such that the research results can be implemented in a timely and cost-effective manner. The Research Implementation Engineer is involved in the research project from initiation to completion. The Research Implementation Engineer is also responsible for identifying innovative research projects and results regionally, nationally and internationally and disseminating that information to relevant NMDOT staff.

Research Bureau Administrative Staff

The Research Bureau Administrative staff provides fiscal monitoring, procurement and payment processing, training, human resources, contract processing, fleet management, and building maintenance.

Appendix C – Research Bureau Annual Calendar

	OCTOBER	NOVEMBER	DECEMBER
First Quarter	<p>[Begins First Quarter of Federal Fiscal Year]</p> <p>1st FMIS Operations Resume</p> <p>Annual – Deadline for SP/AM to enter SP/AM PWP funding requests into FMIS; start of FHWA-NM 30-day review period to approve obligation of funds in FMIS</p> <p>7th Odd-numbered FFYs – Deadline for NMDOT SP/AM Director to submit fourth quarter amendment of PWP to FHWA-NM/FTA Region 6 inclusive of Research Bureau amendments, if any.</p> <p>15th-31st Quarterly and kickoff meetings on research projects.</p> <p>21st Odd-numbered FFYs – Deadline for FHWA-NM/FTA Region 6 to issue comments and/or approval of fourth quarter PWP amendments..</p> <p>31st Annual – Deadline for FHWA-NM to approve obligation of PWP funds in FMIS</p>	<p>Ongoing Research projects continue</p> <p>Quarter Research Oversight Committee meeting</p>	<p>15th First quarter PWP amendments, if any, due to SP/AM Director.</p> <p>31st Deadline for principal investigators to submit quarterly reports. Due to holidays, deadline may be extended by project managers with approval of project advocate.</p>
	<p>[Begins Second Quarter of Federal Fiscal Year]</p> <p>Annual – University of New Mexico Paving Conference</p> <p>Annual – Transportation Research Board Annual Conference</p> <p>7th Deadline for NMDOT SP/AM Director to submit first quarter amendment of PWP to FHWA-NM/FTA Region 6 inclusive of Research Bureau work program amendments, if any.</p> <p>15th-31st Quarterly meetings on research projects.</p> <p>21st Deadline for FHWA-NM/FTA Region 6 to issue comments and/or approval of first quarter PWP amendments.</p>	<p>15th Target date by which NMDOT SP/AM Director, FHWA-NM Planning Program Manager and FTA Region 6 Planner will have met to discuss the following:</p> <ul style="list-style-type: none"> Annual – Project Status Report on current year's PWP Even-numbered FFYs – FHWA-NM/FTA Region 6/ NMDOT priorities, major emphasis areas, special studies, funding levels for upcoming 2-year PWP submittal <p>Quarter Research Oversight Committee meeting</p>	<p>Annual – Research Project Solicitation begins</p> <p>Annual – Deadline for RFPs is mid-late March.</p> <p>31st Second quarter PWP amendments, if any, due to SP/AM Director.</p> <p>31st Deadline for principal investigators to submit quarterly reports.</p>
	<p>[Begins Third Quarter of Federal Fiscal Year]</p> <p>Annual – Research Project Solicitation concludes; Research Bureau begins literature review for proposed projects</p> <p>Annual – NMSU Engineering Conference</p> <p>7th Deadline for NMDOT SP/AM Director to submit second quarter amendment of PWP to FHWA-NM/FTA Region 6 inclusive of Research Bureau work program amendments, if any.</p> <p>15th-31st Quarterly meetings on research projects.</p> <p>21st Deadline for FHWA-NM/FTA Region 6 to issue comments and/or approval of second quarter PWP amendments.</p>	<p>Ongoing Research projects continue</p> <p>Annual – Research Bureau concludes literature review</p> <p>Annual – Research Oversight Committee meeting</p> <p>Annual – Deadline for new small purchase (<\$60K)/exempt professional services contracts and amendments to NMDOT Contract Administration Section is late May.</p>	<p>30th Deadline for principal investigators to submit quarterly reports.</p> <p>End of State Fiscal Year</p>
	<p>[Begins Fourth Quarter of Federal Fiscal Year; Begins New State Fiscal Year]</p> <p>[Note: Fourth Quarter PWP Amendment Cycle only occurs in odd-numbered years]</p> <p>1st Third quarter PWP amendments (and Year 2 budgets in odd-numbered years), if any, due to SP/AM Director.</p> <p>7th Deadline for NMDOT SP/AM Director to submit third quarter amendments, if any, of PWP inclusive of Research Bureau work program amendments (and Year 2 budgets in odd-numbered years) to FHWA-NM/FTA Region 6</p> <p>12th (State Fiscal Year closeout)</p> <p>15th-31st Quarterly meetings on research projects.</p> <p>21st Deadline for FHWA-NM/FTA Region 6 to issue comments and/or approval of third quarter PWP amendment.</p>	<p>1st Even-numbered FFYs – Deadline for SP/AM Director to submit to FHWA-NM and FTA Region 6 a complete review packet of NMDOT PWP; starts 30-day FHWA-NM review period</p> <p>Quarter Research Oversight Committee meeting</p>	<p>1st Even-numbered FFYs – Deadline for FHWA-NM/ FTA Region 6 to convey comments on PWP submittal to NMDOT TPS Division Director. SPB Chief coordinates revisions within 5 working days.</p> <p>8th Even-numbered FFYs – SP/AM Director submits Final PWP packet electronically to FHWA-NM/FTA Region 6 for final review and approval; hard copies to follow by regular mail and/or hand delivery. Re-starts 30-day review.</p> <p>3rd Friday – FMIS Shutdown for End of Fiscal Year Closeout [shutdown ends October 1st]</p> <p>30th Odd-numbered FFYs – Fourth quarter PWP amendments, if any, due to SP/AM Director.</p> <p>30th Even-numbered FFYs – FHWA-NM/FTA Region 6 issue 2-year PWP approval letter to SP/AM Division Director.</p> <p>30th Deadline for principal investigators to submit quarterly reports.</p>

Appendix D – Forms (Subject to Modification)

Appendix D-1

NEW MEXICO DEPARTMENT OF TRANSPORTATION

RESEARCH BUREAU GENERAL RESEARCH REQUEST FORM

Descriptive Title

Type of Research Needed (definitions on last page)

- | | |
|---|--|
| <input type="checkbox"/> Professional Services (Pub. or Priv. Sector) | <input type="checkbox"/> Technology Transfer |
| <input type="checkbox"/> Literature Review or Best Practices | <input type="checkbox"/> Pooled Fund Study |
| <input type="checkbox"/> On-Call | <input type="checkbox"/> In-House |

Urgency: High Medium Low

Research Area—Check the one box that best describes the field of research.

- | | |
|---|--|
| <input type="checkbox"/> Administration | <input type="checkbox"/> Traffic |
| <input type="checkbox"/> Transportation Planning | <input type="checkbox"/> Safety |
| <input type="checkbox"/> Design | <input type="checkbox"/> Environment |
| <input type="checkbox"/> Materials and Construction | <input type="checkbox"/> Aviation/Rail/Transit |
| <input type="checkbox"/> Maintenance | <input type="checkbox"/> Special Projects |

Research Participants—*If this request becomes a research project, identify the following participants [definitions on last page]:*

Advocate: _____

Sponsor: _____

Technical Panel: _____

Research Question/ Problem Statement—*What is the research question, need, or problem?*

Literature Search—*Has a literature search been conducted?* Yes No

If yes, what did it reveal?

Research Objectives—*State the desired end result, what the research will accomplish, or what type of information it will provide.*

Implementation—*Who on the NMDOT staff will implement the research results?*

Is funding available to implement the results? Yes No

Affected Groups—*What groups within and outside NMDOT will be affected?*

Anticipated Benefits—*Discuss the potential benefits of this research, e.g., improved safety, cost saving, more efficient process.*

Benefits Measure—*How will the benefits of the research be measured?*

Strategic Goals—*Which strategic goals listed in the 2040 State Transportation Plan will this research address?*

- Operate with Transparency and Accountability
- Improve Safety
- Preserve and Maintain Transportation Assets
- Provide Multimodal Access and Connectivity
- Respect the State’s Cultures, Environment, History, & Quality of Life
- None of the above

Resource Allocation—*What is the recommended funding amount for the research (does not include implementation)?*

How many months should be allowed for the research to be completed?

Additional Information—*Please provide any additional information that will assist the Research Oversight Committee in evaluating this request.*

Submitted By:

Name	
Title	
Bureau/District	
Phone	
Cell	
Email	
Date	

Definitions

Advocate: An NMDOT employee willing to serve as champion for this research, assist in contract negotiation, participate in regular meetings, review project deliverables and ensure adequate implementation of research findings. The Advocate also serves as the Chairperson of the Project Technical Panel.

In-House: Research that will be conducted by the Research Bureau staff.

Literature Search: An extensive, critical review of recent articles, studies, and reports on a topic. It can include searching practices from other state DOTs; AASHTO; Transportation Research Board (TRB) Publications; TRB Research in Progress (RiP) Database; National Cooperative Highway Research Program (NCHRP) Reports; and the TRID Database.

On-Call: Research that is contracted out with expedited completion.

Pooled Fund Study: A research project that is too large and expensive for one state to fund may be funded by several states pooling their funds together.

Professional Services: A contract with an Institute of Higher Education, such as a university, or with a private consultant who performs a well-defined scope of work, on a timetable, and for a fixed amount of funding.

Sponsor: An NMDOT District Engineer, Division Director, or Bureau Chief willing to certify the need for this research and its importance in meeting the Department's strategic goals.

Technical Panel (TP): Individuals with expertise or interest in the problem who are willing to help guide the research, participate in regular meetings, review deliverables, and provide feedback to the research team and the Advocate.

Technology Transfer: Research that may include purchasing and evaluating innovative equipment, technology, or methods to solve a problem; training staff and developing training materials may also be included.

*Return to: NMDOT RESEARCH BUREAU
7500B Pan American Freeway, NE
Albuquerque, NM 87109
505-798-6730
Research.Bureau@state.nm.us*

Instructions to Principal Investigators Regarding How to Request Changes in a Research Contract

The attached form is required to request a:

Time Extension,
Budget Modification (move funds from one line item to another with no net change),
Equipment Purchase (if over 10% of original budget),
Change in Scope of Work,
Change in Deliverables, or
Additional Funding.

Please follow these steps:

1. Fill in the form completely. Sign and date it.
2. Attach necessary supporting documents (for example old and revised budget, timeline, scope of work, deliverables, quotes for equipment purchases, detailed line item budget for additional new funding).
3. Write a cover letter on your institutional or company letterhead to introduce your request.
4. Send these documents to the Research Project Manager.
5. Call or ask for a Read Receipt to verify your request was received.

The Project Manager will forward your packet to the Project Technical Panel, who may consider it at the next Quarterly Meeting or at an Interim Meeting, if urgent. The Technical Panel may accept, ask for modifications, or reject your request.

If the Project Advocate and the majority of the Technical Panel approve the request, the Research Project Manager will forward your request to either the Research Bureau Chief (for no cost time extensions and budget modifications) or the Engineering Coordinator who presents it to the Research Oversight Committee (for equipment purchases over 10% of original budget, changes in scope of work and deliverables, and additional funding).

After the appropriate concurrence signatures are gathered, the Research Project Manager will draft a contract amendment. When the consultant and the NMDOT agree on the contract language, the amendment will be sent through the traditional mechanism for approval.

Since the entire amendment process as outlined above can take several weeks, you are encouraged to submit a Contract Change Form as early as possible.

Contract Change/Amendment Form

For Principal Investigators Seeking to Make Changes in Time, Line Item Budget, Scope of Work, Deliverables, Equipment Purchases, and/or Funding on an Existing Contract

Project Name:

Control No.

Contract No.:

Principal Investigator: Institution or Company:

Contract Start Date: End Date: Original Funding:

Type of Contact Change Needed (Click on box for all that apply)

- Time Extension
- Budget Modification (move funds from one line item to another; no net change)
- Equipment Purchase (if over 10% of original budget)
- Additional Scope of Work
- Additional Deliverables
- Additional Funding

For each box checked above, answer the following questions (use additional sheets as needed):

What specific change is needed?

What is the justification for each change?

Principal Investigator Signature
Date

Concurrence

As Project Advocate and Chairperson of the Technical Panel, I certify that both the majority of the Technical Panel and I support the above changes.

Project Advocate Signature—Date

Research Project Manager—Date

Research Bureau Chief---Date

ROC—Date

Memo for IT Review of Research Projects

To: Eric Roybal, Chief Information Officer

From: (insert project manager's name)

Re: (insert research project full name and RB assigned number)

Date: (insert date)

As Research Project Manager, I am submitting the following information so you can evaluate any potential short- or long-term IT impacts of this research project per your agreement with the Research and International Programs Division Director Randall Soderquist (6/15/2016).

The Research Project Manager completes this section.

1. Short summary of Research Project emphasizing research objectives and deliverables.

2. **Research Project IT Elements (check all that apply):** None Develop software
 Purchase hardware Purchase software Generate data Share data w/ other databases
 Require annual software licensing Require post -project data management Other

3. For each item checked above, give a description of the element.

4. Once the research project is complete, what IT impacts can be expected during implementation?

The IT Director completes this section.

- No significant IT impacts. Proceed with project.
- Unknown IT impacts. Needs review by IT. Assigned to _____

If needed, the IT Reviewer completes this section.

- There are no significant IT impacts.
- IT has identified the following concerns or conditions which must be addressed by the Project Advocate and/or the Consultant. List:

- The Research Project Manager must schedule a 3-way Conference Call with consultant's technical staff (not salesperson) to address these concerns.

The consultant has provided written agreement to these conditions (attach).

The IT Staff Reviewer and IT Director

- clear
- do not clear

this project to proceed.

IT Reviewer

Date

IT Division Director

Date

**NMDOT Research Bureau
Travel Request Form**

Principal Investigators: Please complete the following request form and submit to Research Bureau Project Manager.

Date of Request: _____

Requestor's Name: _____

Research Project Title: _____

Project Number: _____

Travel Location: _____

Dates of Travel: _____ Estimated Travel Cost: _____

Purpose of travel and relevance to project: _____

Names of Research Team members who will be traveling and their roles on project: _____

If you are requesting to attend a conference please provide the following information:

Name of Meeting/Conference: _____

Conference Sponsor: _____

Nature of the meeting or conference: _____

Names of Research Team members who will be attending and their roles on project: _____

Conference Date(s): _____ Time (s): _____

Conference Location: _____

An estimate of travel costs pro-rated for the portion of the time spent on project related activities:

Appendix E – Instructions for Preparing and Submitting Proposals in Response to RFP/RFIPs

General

Proposals for specific research projects are accepted only in response to a formal Request for Proposal/Request for Informal Proposal issued by, or coordinated with, the Procurement Services Bureau. The NMDOT Research Program is one of applied research, and funds will not be directed toward unsolicited proposals, regardless of merit. Projects approved by the Research Oversight Committee are structured to seek remedies for pressing problems that exist statewide.

Proposals must include all of the elements of essential content in the order described herein. Proposals not meeting these explicit requirements, and proposals that exceed the posted Not to Exceed amount will be considered non-responsive and will be subject to disposal in accordance with Department policy. Proposers are urged to follow these requirements explicitly in order to avoid possible reduction of points or rejection of the proposal.

Proposals become the property of NMDOT; they are treated as privileged documents, and will be subject to disposal in accordance with Department policy following review by the Evaluation Committee.

Proof of Ability to Perform

Projects approved by the ROC are accepted only from consultants that have demonstrated capability and experience in the subject area. This capability is a prerequisite for performing contract research – capability cannot be developed at project expense.

Noncompliance

Proposals not in strict compliance with these requirements, proposals submitted after the submission due date, and proposals that exceed the posted “Not to Exceed” amount will be considered non-responsive.

Deadlines

The deadline for receiving proposals as shown in each RFP/RFIP is strict and extensions will be granted through an Addendum, or Amendment, issued prior to the receipt of proposals. Proposers may withdraw their proposals at any time. For consideration, proposals must be received in the offices of the Procurement Services Bureau by the deadline shown in the Request for Proposals or Request for Informal Proposals. Proposals received after the posted deadline will be considered non-responsive and will be subject to disposal in accordance with Department policy.

Evaluation Factors

The Evaluation Committee will typically rate proposals using the following evaluation criteria:

1. Specialized Research and Technical Competence – This criterion includes an evaluation of the unique abilities and competencies of the research team as they relate to the research problem. Consideration is given to the qualifications and accomplishments, as well as other commitments, of the research team. (25 points)

2. Technical and Financial Resources – This criterion relates to the organizational capacity of the institution, including availability of equipment and other resources. Proposers should be specific in reference to resources and equipment necessary to fulfill project objectives. (25 points).
3. Quality and Content – Proposals will be rated on factors relating to presentation, including conformance with style requirements, organization, clarity and quality of the research plan. Proposers are encouraged to strictly follow submittal requirements as documented in the Manual. (30 points).
4. Past Performance – The history of performance on past projects by members of the research team will be evaluated. In the event that no history on NMDOT research projects is available, the Selection Committee may choose to evaluate performance on projects conducted elsewhere. Proposers should provide references, to include contact names and phone numbers, for past projects. (20 points).

In the event that the proposer is currently performing contract research work with NMDOT, current work penalty may be assessed.

Intellectual Property

Consultants are cautioned that submittal of research ideas or project proposals does not constitute presumptive grounds for intellectual property rights protection. Specifically, identification of a potential topic of research or submission of an idea for a research project, whether solicited or unsolicited, does not, by itself, convey intellectual property rights protection.

Project proposals received in response to RFP/RFIP are considered privileged documents and will not be disseminated beyond the Evaluation Committee prior to selection of the winning proposal. However, it is expected that the selected proposal will constitute the binding scope of work from which the contract will be developed, and no inference to intellectual property rights to information contained in project proposals should be made.

If a Consultant has questions or concerns regarding intellectual property rights considerations, these should be discussed as early as possible.

Retainage and Liquidated Damages

The Research Bureau may, at its discretion, add a retainage clause or a liquidated damage clause to its procurement contracts involving either state or federal funds.

Appendix F – Research Bureau Style Manual

Introduction

The New Mexico Department of Transportation Research Bureau recognizes that our customers expect a high quality of research reporting. In order to assist principal investigators in preparing clear and easy to read manuscripts the Bureau has published editorial guidelines to be used by Research Bureau staff and consultants.

In addition to the Style Manual, it is suggested that authors use supplemental detailed guidelines regarding grammar and usage: e.g., William Sabin, Gregg Reference Manual, McGraw Hill Irwin, Tenth Edition, 2005, or Chicago Manual of Style 16th Edition 2010.

Notice

The State Commission of Public Records, State Records Center and Archives, and the State Library Division of the Cultural Affairs Department require State agencies to abide by **New Mexico Administrative Code Title 1: Chapter 25: Part 10**, effective July 2010. State agencies, and by extension consultants, are required to use a specified basic style and format in State agency publications.

Distribution of NMDOT Research Bureau final reports is also regulated by the State of New Mexico. Research Bureau Reports are distributed to federal depository libraries throughout the country. Both the general public and transportation professionals can access Bureau documents on our Web site: <http://www.NMDOTResearch.com> > Links > Completed Research. These reports will be digitized by the state library.

It is important that we offer consistent and quality products. Consultants should proofread their documents for typographical and grammatical errors, and check compliance with this Style Manual before submitting deliverables to the Research Bureau.

New Mexico Administrative Code

1.25.10.9 Style and Format:

- A. State publications in all formats shall display at the beginning of the publication, name of the agency, publication date, physical address, email address and Website URL.
- B. Pages shall be numbered for identification
- C. Paper publications shall be printed on both sides of pages, back to back, head to head, and of a method which shall be at a minimum cost that is verifiable.
- D. For publications available in electronic format, the approved electronic formats and their preferred order are:
 - 1) portable document format (PDF);
 - 2) PDF/A;

- 3) hypertext markup language (HTML); and
 - 4) extensible markup language (XML).
- E. State publications made available by internet connection shall include the following descriptive metadata:
- 1) Name of the agency;
 - 2) Publication date;
 - 3) Title of the publication;
 - 4) A narrative description of the publication; and
 - 5) Keyword, subject or selected terms from within the publication.

1.25.10.8 Filing Publications

State agencies are required to deposit copies of all state publications intended for public distribution with the state library division within 30 days of publication. Publications may be deposited in any one of three formats: paper (Subsection A), electronic (Subsection B) or through an agency's website (Subsection C).

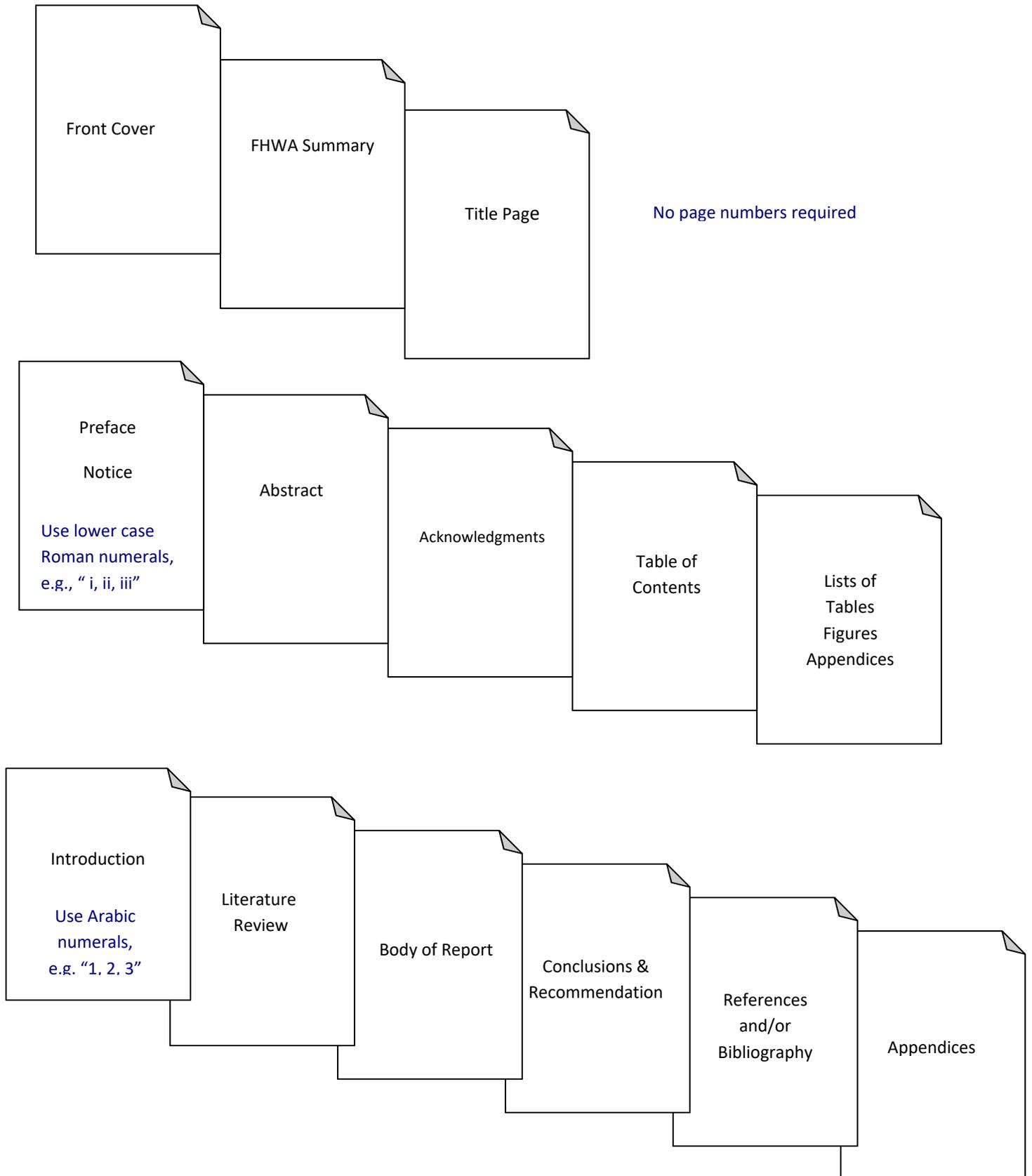
- A. Paper publications shall meet the minimum style and format requirements outlined in Subsection A of 1.25.10.9 NMAC. State agencies shall deposit 30 copies of each publication.
- B. Electronic publications shall meet the minimum style and format requirements outlined in Subsections A and B of 1.25.10.9 NMAC. State agencies shall deposit an electronic copy in an approved format. The electronic shall be submitted to the state library division via one of the following approved delivery mechanisms:
 - 1) e-mail;
 - 2) optical storage media; or
 - 3) file transfer protocol (FTP)
- C. Internet publications shall meet the minimum style and format requirements outlined in Subsections A and B of 1.25.10.9 NMAC. State agencies that elect to publish through the internet shall:
 - 1) enter into a memorandum of understanding with the state library specifying the terms and conditions in which state publications will be from the internet for digital preservation and to ensure the minimum standards for internet publications are met;
 - 2) designate an appropriate contact person to be responsible for electronic state publications and to act as a liaison with the state library;
 - 3) provide the state library guaranteed access, at no charge, to the agency's internet publications; if a "robots.txt" file or similar device is used to prevent harvesting of a state agency site then that file shall include an exception for harvesting by state library's harvesting systems;
 - 4) meet the metadata standards specified in Subsection E of 1.25.10.9 NMAC
 - 5) provide access to publications by providing a link or series of links from the agency's primary URL; for publications accessible only by database searching or

similar means, an alternative path such as a hidden link to a comprehensive site map shall be provided;

- 6) meet the internet publishing requirements of the “Americans with Disabilities Act of 1990” as amended; and
- 7) leave the publication in its original format at a location on the agency’s website for six months after its initial release to ensure that the publication has been collected by the state library.

D. State agencies digitizing older publications previously issued in paper shall provide a digitized copy in an approved format to the state library; the state library shall deliver a copy to the state records center and archives via an approved delivery mechanism.
[1.25.10.8 NMAC – Rp, 1 NMAC 3.4.10.9, 7/15/2010]

Anatomy of a Research Report



Manuscript Specifications

Front Cover

Format

Authors should maintain the integrity of the front page design chosen by the Research Bureau, including the color scheme. Do not number the front cover

FHWA Summary

Do not number the FHWA Summary

1. Insert the Research Bureau report number found in the ITP
2. Leave blank
3. Leave blank
4. Enter title and subtitle. Title to be consistent with that of the ITP. A sub-title may be added to the title by the consultant for clarification
5. Enter the month and year of the final report
6. Leave blank
7. Principal author: last name, first name, initial or middle name. Other authors: first name, middle initial or name and last name.
8. Leave blank
9. Use full mailing address
10. Leave blank
11. Contract number found in the contract (e.g., COxxxx)
12. Enter: Research Bureau
New Mexico Department of Transportation
7500 Pan American Freeway NE
Albuquerque, NM 87109
13. Enter "Final Report" and year
14. Leave blank
15. Leave blank
16. Abstract
17. Key words are important for customers to find information. If in doubt use the TRB thesaurus.
<http://trt.trb.org/trt.asp?>
18. "Available from NMDOT Research Bureau"
19. Non
20. None
21. Insert the final number of pages
22. Leave blank

Metrication

Do not paginate Metrication page. The metrication table should be inserted when a report contains formulas. Authors are encouraged to provide measurements in both SI (metric) and U.S. customary units. The measurement unit of the original research should be followed by the equivalent conversion in parenthesis.

When converting U.S. customary measures of weight (force) and mass into SI units, express weight (force)

in newtons and mass in kilograms; express poundforce per square inch (ibf/in.²) of pressure or stress in kilopascals (kPa). For SI units, use prefixes instead of powers of 10.

For tables and figures, provide only the units of the original research and show the base unit conversion in a footnote: for example, 1 mi=1.61 km. Alternatively, in figures, equivalent units may be shown on the top and right axis of data plots.

Metrication Conversion Table

When You Know	Multiply by	To Find
Length		
Inches (in)	25.4	Millimeters (mm)
Feet	0.305	Meters (m)
Yards (yd)	0.914	Meters (m)
Miles (mi)	1.61	Kilometers (km)
Area		
Square inches (in ²)	645.1	Millimeters squared (mm ²)
Square feet (ft ²)	0.093	Meters squared (m ²)
Square yards (yd ²)	0.836	Meters squared (m ²)
Acres	0.405	Hectares (ha)
Square miles (mi ²)	2.59	Kilometers squared (km ²)
Volume		
Fluid ounces (1fl oz)	29.57	Milliliters (mL)
Gallons (gal)	3.785	Liters (L)
Cubic Feet (ft ³)	0.028	Meters cubed (m ³)
Cubic Yards (yd ³)	0.765	Meters cubed (m ³)
Mass		
Ounces (oz)	28.35	Grams (g)
Pounds (lb)	0.454	Kilograms (kg)
Short tons (2,000 lb)(T)	0.907	Megagrams (Mg)
Temperature (exact)		
Fahrenheit temperature (°F)	(F-32)/1.8	Celsius temperature (°C)
Illumination		
Foot-candles (fc)	10.76	Lux (lx)
Footlambert6s (fl)	3.426	Candela/m ² (cd/m ²)
Force and Pressure or Stress		
Poundforce (lbf)	4.45	Newtons (N)
Poundforce per square inch (psi)	6.89	Kilopascals (kPa)

Title Page

Do not number the title page

- Include: **Title** (bold);
- Authors, first name, initials, last name and affiliation.
- Research Bureau Report Number found on the front page of the action plan.
- Month and year of publication
- Research Bureau URL: <http://www.NMDOT Research.com>
- Research Bureau Email: Research.Bureau@state.nm.us

- NMDOT Research Bureau
7500 Pan American Freeway NE
Albuquerque, NM 87109
PO Box 94690
Albuquerque, NM 87199-4690
(505) 798-6730
- Copyright New Mexico Department of Transportation (use copyright symbol)

Preface, Notice and Disclaimer

- Begin to number pages using lower case Roman numerals, e.g. i, ii, iii
- Preface – Purpose of research
- Enter “Notice”
“The United States Government and the State of New Mexico do not endorse products or manufacturers. Trade or manufacturers’ names appear herein solely because they are considered essential to the object of this report. Information is available in alternative accessible formats.

To obtain an alternative format, contact the NMDOT Research Bureau, 7500 Pan American Freeway NE, Albuquerque, NM 87109 (PO Box 94690, Albuquerque, NM 87199-4690) or by telephone 505-798-6730.

- Enter “Disclaimer”
“This report presents the results of research conducted by the author(s) and does not reflect the views of the New Mexico Department of Transportation. This report does not constitute a standard or specification.”

Abstract

A summary of activity and findings.
Number page using lower case Roman numerals.

Acknowledgements

Recognize persons who have assisted in the project including FHWA.
Continue numbering pages using lower case Roman numerals.

Table of Contents

See sample page XX.

Lists of Tables, Figures and Appendices

Use same method as Table of Contents

Manuscript Page Setup

- **Margins:** 1 inch borders
- **Word Processor:** Word 6.0 or higher. Times New Roman 11-12 point and black text only. e.g., this document is written in 11 point with 12 point headings. May use 10 point in graphics.
- **Numbering:** Insert page numbers at lower center of each page. **Do not** number the front cover, the letter on the back of the front cover, the title page. Preliminary pages beginning with “Preface, Notice and Disclaimer” before the introduction should be paginated with small Roman numerals “i-iv” etc. The body of the report should be paginated using Arabic numbers 1,2,3,4 etc.

- **Line Spacing:** Text – Single line spacing. Double space between paragraphs. Where a blank page is necessary insert the phrase, “Page intentionally left blank.”
- **Printing:** Double-sided for manuscripts. This may mean a few blank pages where a page begins a new chapter on the right-hand page. In these cases insert: ‘This page is intentionally blank.’

MAIN HEADINGS

Centered 12 point, bold

Do not indent first line after a main heading.

Subheads: All subheads should be flush with the left margin.

FIRST-LEVEL SUBHEAD

(all capitals, boldface, on separate line)

Second-Level Subhead

(initial capitals, boldface, on separate line)

Third-Level Subhead

(initial capitals, italic, on separate line)

Fourth-Level Subhead (initial capitals, boldface, on the same line as text, with extra letter space between the subhead and text)

Fifth-Level Subhead (initial capitals, italic, on the same line as text, with extra letter space between subhead and text)

Table

(Insert title above the table: “TABLE” is all capitals, title is initial capitals; all type is boldface, extra space but no punctuation after number; punctuate at the end of title). Grid lines and color may be included.

TABLE 1 Percent of total land developed during study period.

Development Period	% Total Area Developed
Prior to 1986	12
1986-90	14
1990-1996	15
1996-2000	18
Total 1986-2000	59

Figure

(Insert caption below the figure; “FIGURE” is all capitals; title is initial capitals; all type is boldface; extra space but no punctuation after number, period at end of caption.)



FIGURE 1 Load Rating Prestressed Concrete T-Beam Bridge by Proof Testing

Widows and Orphans

Widows and orphans are those words or short phrases at the end or beginning of paragraphs left to sit alone at the top or bottom of a page, separated from the rest of the paragraph.

A widow is a line of text or one word at the top of a page. An orphan is a line of text or a word at the bottom of a page.

Use a minimum of two lines of text at the top and bottom of a page. At the end of a paragraph use at least two words on the last line of the paragraph.

Tables and Figures

Figures/tables should be embedded in the text, as close as possible to the related text. Color is permissible, although authors should make sure that color tables and figures translate into black-and-white (grayscale), or make the necessary adjustments to present the tables and figures in black-and-white.

- All tabular material should be single spaced using a font no smaller than 11 points Use the same font for all tables.
- Place titles flush left to align with the left margin of the table and highlight by using boldface. Do not submit a table with more than one part. Each part should be a single separate table with an appropriate table number and title.
- Give each column in the table a head. (In some cases, the first (stub) column may have no head). Place abbreviated measurement terms in parenthesis under the column head. All heads should be aligned in flush left format.
- To adhere to Accessibility Guidelines for the vision-impaired reader, avoid the use of “spanner” heads. For example, “Production per Year” and “Production by Day” should appear as:

Production
per Year

Production
per Day

- When a dash (-) is used in a table, indicate its meaning in a footnote (missing data, incomplete research, data not applicable or unavailable, or problem investigated but no results)
- Check the accuracy of all totals included in tables before submitting the paper
- For use of “measurements,” see section on metrication
- Do not place a box or rules frame around a finished table
- Figures should be clear and legible
 - Use the same font for all figures (Times New Roman)
 - Letters and symbols must be uniform and the same size throughout the figure (e.g., if wording on the ordinate and abscissa is in 12-point type)
 - The symbols used to identify the data points also should be in 12 point type
 - Line weights (except for lines indicating different data series in a graph) also must be uniform

Equations

All variables should be defined at first use, either in the text or in a list associated with the equation.

1. Fractions in displayed equations should be stacked, in accordance with preferred mathematical practice.
2. If a displayed equation is numbered, use an Arabic numeral in parenthesis, placed flush right.
3. Carefully distinguish the following:
 - All capital and lowercase letters
 - Capital O (“oh”), lower case o (“oh”), and 0 (zero)
 - Lower case l (“el”) and number 1 (one)
 - Letter X, Greek chi, and multiplication sign x
 - Prime ‘, apostrophe ‘, and superscript ¹ (one)
 - English and Greek letters such as:
 - B and beta, upper-or lowercase k and kappa,
 - n and eta, b and nu,
 - u and epsilon, u and mu,
 - Upper- or lowercase p and rho, and w and lowercase omega

Footnotes

Do not use footnotes to the text. Incorporate the information into the text or delete the notes.

Abbreviations, Acronyms, and Symbols

Abbreviations, acronyms, and symbols need to be fully defined the first time they are used in the paper; the definition should be given first, followed by the abbreviated term in parentheses.

Appendices

Appendices are acceptable in Research Bureau reports.

References

The reference list should contain only references that are cited in the text, numbered in the order in which they are first cited.

Note: The first author is usually identified by last name, first name and initial(s) or given name. Subsequent authors in the list are determined by first name followed by initial(s) or given name(s), then the last name.

References should be numbered in the order they appear in the body of the report. Double space between citations.

Denote a reference at the appropriate place in the text with an italicized Arabic numeral in parenthesis, e.g., (2). Do not denote text references with superscripts.

- Do not cite as a reference personal communications, telephone conversations, or similar materials that would not be available to readers electronically or in printed form in a library or from the originating agency. Instead, cite the unpublished work in the text and enclose the author's name along with the term "unpublished data" in parentheses.
- Do not repeat a reference in the list, and do not use *ibid*, *idem*, *op. cit.*, or *loc. Cit.* If a reference is cited more than once in the text, repeat the number assigned to the reference.

Use the following content guidelines and samples in preparing reference lists:

Printed Sources

Be sure that references to printed sources are complete. Include names of corporate or personal authors or editors, or both, title of article, chapter, book, or report; publisher or issuing agency; volume and issue or report number; page numbers; location of publisher, and date of publication.

TRB Publications

Dewan, S. A., and R.E. Smith. 2003 Creating Asset Management Reports from a Local Agency Pavement Management System. In *Transportation Research Record: Journal of the Transportation Research Board*; No. 1853, TRB, National Research Council, Washington, D.C., pp. 13-20.

Book:

Newland, D.E. 1998. *Random Vibrations: Spectral and Wavelet Analysis*. John Wiley and Sons, Inc., New York,.

CD-ROM

References to CD-ROMs should include the same information as references to printed sources and have "CD-ROM" after the title.

Solaimanian, M., J. Harvey, M. Tahmoressi, and V. Tandon. 2004. Test Methods to Predict Moisture Sensitivity of Hot-Mix Asphalt Pavements. In *Moisture Sensitivity of Asphalt Pavements*. CD-ROM. Transportation Research Board, National Research Council, Washington, D.C., pp. 77-110.

Periodicals

Dawley, C. B., B.L. Hogenwiede, and K.O. Anderson. Mitigation of Instability Rutting of Asphalt concrete Pavements in Lethbridge, Alberta, Canada. *Journal of Association of Asphalt Paving Technologists*. Vol. 59, 1990, pp. 481-508.

Sansalone, M., J. M. Lin, and W. B. Streett. 1998 Determining the Depths of Surface-Opening Cracks Using Impact Generated Stress Waves and Time-of-Flight Techniques. *ACI Materials Journal*, Vol. 95, No. 2, pp. 168-177.

Websites

References to websites should include corporate or personal authors, title of document, date of document (if available), web addresses (complete URL), and date accessed by the author.

Value Pricing Homepage. University of Minnesota, Hubert H. Humphrey Institute of Public Affairs, Minneapolis. <http://www.hhh.umn.edu/centers/sip/projects/conpric/index.htm>
Accessed July 15, 2002.

Books Online

Guide to Developing Performance-Related Specifications. FHWA-RD-98-155, FHWA-RD98-156, FHWA-RD-98-171, Vol. III, Appendix C. <http://www.tfrc.gov/pavement/pccp/pacespec/>
Accessed March 5, 2003.

Magazines Online

Nemmers, C. Transportation Asset Management. *Public Roads Magazine*, July 1997, <http://www.tfrc.gov/pubrds/July97/tam.htm> Accessed Jan. 2002.

Unpublished Papers

References to unpublished papers presented at meetings should include name(s) of author(s); title of paper; and title, sponsor(s), location, and dates or year of meeting.

Corbett, J.J. Toward 2004. Environmental Stewardship: Charting the Course for Marine Transportation. Presented at 83rd Annual Meeting of the Transportation Research Board, Washington, D.C.

Program Manuals, Tapes or Other Documentation for Models

References to these items should cite the specific edition, the department responsible, and the year of release.

MINITAB User's Guide 2: Data Analysis and Quality Tools. Minitab, State College, Pa., 2000, pp. 27-52.

Undated

If a reference has no date, use "undated."

DOT FHWA SUMMARY PAGE - Sample

1. Report No. NM04STR-02		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Effect of Misting Rate on Concrete Shrinkage: Interim Report for Bridge Deck Concrete Mix Design				5. Report Date	
				6. Performing Organization Code.	
7. Author(s) Kelly Silliman and Craig Newtonson				8. Performing Organization Report No.	
9. Performing Organization Name and Address New Mexico State University Box 30001, MSC 3CE Las Cruces, NM 88003-8001				10. Work Unit No. (TRAIS) Leave blank	
				11. Contract or Grant No. CO4616	
12. Sponsoring Agency Name and Address NMDOT Research Bureau 7500B Pan American Freeway PO Box 94690 Albuquerque, NM 87199-4690				13. Type of Report and Period Covered Final	
				14. Sponsoring Agency Code	
15. Supplementary Notes Leave blank.					
16. Abstract Concrete shrinkage at early ages can produce shrinkage cracks that reduce durability. The curing method used during construction can have a direct effect on shrinkage. To quantify the effect of mist rate on shrinkage, five concrete slabs were placed. Each slab was misted at a different rate for four hours, beginning at the start of concrete placement. After misting was completed, the slabs were covered with wet burlap for seven days. Strains in the concrete slabs were monitored for 28 days. Previous research on early-age shrinkage has shown that providing 100% relative humidity above the concrete can reduce shrinkage by as much as 300 µε in the first four hours. Results in this paper show that over the course of 28 days, approximately 10-15% of the 300 µε benefit is lost to increased shrinkage. Shrinkage between four hours and 28 days increased as the mist rate was increased. Misting produces a decrease in total shrinkage of approximately 73 percent. The magnitude of this decrease indicates that misting during construction would provide substantial benefits. Therefore, a field trial and demonstration project is recommended as future work.					
17. Key Words bridge deck, concrete, fogging, misting, curing			18. Distribution Statement Available from NMDOT Research Bureau		
19. Security Classif. (of this report) None		20. Security Classif. (of this page) None		21. No. of Pages 30	22. Price

Form DOT F 1700.7 (8-72)

EFFECT OF MISTING RATE ON CONCRETE SHRINKAGE:

Interim Report for Bridge Deck Concrete Mix Design

by

Kelly R. Stillman
Graduate Research Assistant
New Mexico State University

Craig M. Newton
Associate Professor
New Mexico State University

Report NM05STR-02

A Report on Research Sponsored by

New Mexico Department of Transportation
Research Bureau

in Cooperation with
The U.S. Department of Transportation
Federal Highway Administration

February 2006

<http://www.Research.com>
Research@state.nm.us

NMDOT Research Bureau
7500B Pan American Freeway NE
PO Box 94690
Albuquerque, NM 87199-4690
(505) 798-6730

© New Mexico Department of Transportation

PREFACE

The research reported herein evaluates the effect of mist rate on shrinkage strains in normal sized concrete slabs exposed to weather. The purpose of this work was to investigate the effectiveness of misting or fogging during construction as a method for mitigating shrinkage cracking.

NOTICE

The United States Government and the State of New Mexico do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report. This information is available in alternative accessible formats. To obtain an alternative format, contact the NMDOT Research Bureau, 7500B Pan American Freeway NE, Albuquerque, NM 87109 (PO Box 94690, Albuquerque, NM 87199-4690) or by telephone (505) 798-6730.

DISCLAIMER

This report presents the results of research conducted by the author(s) and does not necessarily reflect the views of the New Mexico Department of Transportation. This report does not constitute a standard or specification.

TABLE OF CONTENTS

Introduction..... 1
Background..... 3
 Current Curing Practices..... 5
 Measuring Shrinkage..... 6
Experimental Methods..... 7
 Concrete Materials..... 7
 Formwork and Specimen Preparation..... 7
 Misting System..... 7
 Shrinkage Measurements..... 8
 Weather Monitoring..... 10
 Mist Rates..... 10
 Strength Testing..... 10
Results 11
 Quality Control Results..... 11
 INVAR Movement Results..... 13
 Bolt Displacement Results..... 14
 VWSG Results..... 14
Discussion..... 19
 Vibrating Wire Strain Gauge Data..... 19
 Effect of Misting on Total Shrinkage..... 19
 Effect of Misting on Shrinkage..... 21
 Effect of Material Properties on Shrinkage..... 21
Summary and Conclusions 23
 Summary..... 23
 Conclusions..... 24
 Future Work..... 25
References..... 27

NOTE: List tables, figures and appendices in the same manner.

Check List

1.	Have you run a spell checker through your document?	
2.	Has your document been checked for grammatical errors?	
3.	Are your margins set for 1 inch borders	
4.	Did you include an FHWA summary page?	
5.	Are your pages paginated according to the Editorial Guidelines?	
6.	Did you use single line spacing?	
7.	Does your title page include the title of the report; Report Number; Names of authors and their affiliation; State Agency with physical address; State URL; Research Bureau email?	
8.	Are your headings and subheading in accordance with the Editorial Guidelines?	
9.	Do you have Widows and Orphans at the beginning or end of a page?	
10.	Are your Tables and Figures in accordance with the Style Manual?	
11.	Are all your acknowledgements on the Acknowledgement Page?	
12.	Are your references complete with prince source and electronic location where available, and did you note the date of access?	
13.	Did you use the Editorial Guidelines formats for referencing citations?	
14.	Do your Table of Contents, Lists of Tables and Figures align?	

Appendix G – Standard Contents of an Implementation Plan

The Implementation Plan should include:

- Executive summary
- Implementation plan status
- Results of open discussion of implementation during the final technical panel meeting
- Implementation plan outline:
 - Provides detailed guidance for use by NMDOT personnel in the implementation of research results.
 - Simple, concise, and straightforward handbook to guide the technical panel through the implementation process.

Impact of Implementation, such as:

- Cost compared to benefits
- Safety
- Optimize resources
- Accurate data
- Improved planning and forecasting
- Improved storage, processing, and reporting of data
- Improved budget forecasting
- Improve construction, maintenance, design
- Federal funding
- Reduce inefficiencies, inaccuracies and redundancies within the current practice of data collection, analysis and forecasting
- Provide simple and effective access to the information

Who is the target audience? Who will be involved in implementing results?

Resources Needed:

- Personnel requirements: Skills/training
- Equipment requirements, including necessary software and maintenance requirements, costs, and schedule; include vendor information, cost, contact information
- Externalities: weather, utilities, power, communications, procurement rules, installation, calibration, permitting, surveys

Describe Tasks/Procedures Necessary to Complete Implementation:

- What the task will accomplish
- Resources required to accomplish the task
- Key person(s) responsible for the task
- Criteria for successful completion of the task (e.g., “user acceptance”)
- Necessary planning and coordination, how and where to acquire software, equipment, training, Perform calibration

Budget: Staffing, New Equipment, Maintenance, etc.

- Staffing: Ideal and realistic
- Training:
 - Who can provide training, where, cost, how often
 - Identify specific skills and knowledge

Points of Contact**Implementation Schedule:**

- Order in which tasks should be accomplished, keep budget constraints in mind
- How long each task should take to complete

Limitations/Obstacles:

- Description of factors that may impede implementation, and appropriate countermeasures
- Description of any known issues or problems relevant to implementation planning.
- Answers the question, "Are there any specific issues, restrictions, or limitations that must be considered as a part of the deployment?"
- Staffing, financial, procurement delays, limited IT support, communication between departments, operating system

Return on Investment:**Description of how to determine if implementation is successful****Supporting Documentation:**

- Charts, diagrams, and graphics may be included as necessary to provide a clear picture

Project Specifics:

- What organization structure is required? Or how does implementation fit into current organization structure?
- How to improve NMDOT operational process
- How to implement Training? Considerations should be made to training that does not involve out-of-state travel...bring training to NMDOT
- How to perform QCQA? Who Performs it? How often? When?

What Further Research is needed?**Summarize:**

Suggested organization for the implementation plan:

1. What exactly is being recommended? (this would restate what is in the final report, but more succinctly)
2. What are the benefits of these recommendations? (in other words, why is this recommendation being made)
3. What is the cost of these recommendations? (in dollars and staff/equipment required)
4. How should these recommendations be implemented?
 - a. Highest priority recommendations
 - b. Order of implementation
 - c. Time needed to implement them

*****Project Advocates are required to submit an implementation progress report 3, 6 and 12 months after completion of the project.**

Appendix H – Research Fields

NMDOT research is organized into ten broad research fields which represent the core areas of transportation research, and two additional fields:

- Administrative
 - Construction
 - Design
 - Environment
 - Maintenance
 - Materials Science
 - Multi-modal
 - Planning
 - Safety
 - Structures
 - Special Projects
 - Technology Transfer
- Improvements in policy and information transfer
 - Improvements in construction method
 - Highway and intermodal system design
 - Environmental impacts of transportation activities
 - Transportation maintenance activities
 - Improvements in construction materials
 - Modal connectivity and operations
 - Forecasting, modeling, and inter-agency collaboration
 - Improvements to transportation safety
 - Bridge design, construction and maintenance
 - All other areas of research
 - Propagation and acquisition of promising new technologies

Appendix I – Financial and Contract Administration

Processing Invoices

During conduct of research, the consultant shall submit billing statements to the Research Bureau administrator. Billing statements shall include documentation of all costs and expenditures in sufficient detail so as to permit the Research Bureau administrator and project manager to verify the accuracy and allowability of these charges. Billing statements shall be accompanied by receipts for expenditures and other documentation as requested by NMDOT to adequately document and verify the allowability of invoiced costs. In the event that the billing statement is insufficient, the Research Bureau administrator will notify the consultant of the deficiency within fifteen days of receipt of the billing, and payment will not be made until the deficiency has been corrected. Subsequent billing statements will not be accepted for payment until the deficient billing statement has been corrected. Final billing statements are due no later than the date stipulated in the contract.

Reporting of Labor Costs/Level of Effort – Institutes of Higher Education

In the event that the consultant is an IHE that chooses to report labor costs on a percentage distribution basis as outlined in 2 C.F.R. §200.400, billing statements shall be accompanied by a certified statement from the Principal Investigator or Responsible Official that labor costs charged therein accurately reflect the percentage of time for which work was performed during the given billing period. This *Level of Effort* certification is to be submitted on university letterhead, affixed with the original signature of the Principal Investigator or Responsible Official. Example wording for this certification is as follows:

“This is to certify that labor costs charged on the attached invoice (INSERT invoice number) for Contract Number COXXXX, (INSERT CONTRACT NUMBER), research project number (INSERT RESEARCH PROJECT NUMBER) totaling \$XXXX.XX (INSERT TOTAL SALARY AMOUNT) accurately reflects the percentage of time expended on the project by the Contractor employees during this billing period.”

Insufficient Information

Should invoices demonstrate an insufficiency in information, the consultant will be contacted to provide the absent information.

Facilities and Administrative Costs (F&A) – New Mexico Institutes of Higher Education

For federally participating research projects, F&A rates will be administered in accordance with applicable federal regulations. The default F&A rate for consultants at institutions of higher education has been established by NMDOT as 20%.

Subrecipient

A subrecipient relationship can only be established where federal-aid funds are involved. Additional auditing requirements and other compliance regulations apply.

- A federal sub-recipient relationship includes a non-federal entity that expends awards received from a pass-through entity to carry out a federal program, but does not include an individual that is a beneficiary of such a program.

- For sub-recipient contracts, the F&A rates negotiated between the institution of higher education and its federal cognizant agency will apply.
- The institution of higher education will provide NMDOT with certification of current federally negotiated F&A rates during negotiation proceedings for subrecipient contracts.
- If current F&A rates have not been negotiated between the institution of higher education and its federal cognizant agency, a provisional rate will be established in accordance with 2 CFR 200.400
- It is anticipated that the majority of research contracts between the state and the IHE will be of the vendor variety; however the nature of the contractual relationship will be determined on a case-by-case basis.

Payments

Upon receipt of a free of error invoice, payments are made within 30 days.

Contract Administration

The Research Bureau administrator assists the project manager with the overall administration of research contracts to include ensuring that contractual billing statements are thoroughly audited for accuracy and allowability of charges; and research project documentation of contracts, briefs, justification memo, proposal, invoices, etc.) is maintained in their appropriate files.

Occasionally contract modifications are necessary and require a contract amendment. These modifications include any combination of scope, budget and time. In order to request a contract amendment, the consultant must submit an Amendment Request Form to the project manager after discussing the request with the advocate and technical panel. Due to the time required to process amendments, amendment requests should be submitted to the project manager as soon as need is determined. Any changes to a contract must be agreed upon by the Technical Panel, Research Bureau Chief and ROC.

Project Closeout

Project closure is conducted by the administrative and project management sections to ensure that all documentation is complete and disposition of equipment is determined. Closeout procedures include the compilation of project management and financial folders. The Technical Panel files are collected as well.

Final Billing Due Date

The final billing statement will be due no later than the date stipulated in the contract. Once final billing statement is paid and final reimbursement is made from FHWA, the project's control number and encumbrance will be closed.

Format and Backup Documentation

All itemized billing statements should indicate contract number, invoicing period, beginning budget, current expenditures, and cumulative expenditures. Back up documentation should be legible and include receipts for all expenditures.

Appendix J – Other Research Funding – On-Call, Technology Transfer, and University Transportation Center Projects

ON-CALL RESEARCH

Periodically the Bureau issues a RFP for multiple on-call research consultants. These consultants are given a master contract and awarded a set amount of funds (typically less than \$100,000) that will only be expended upon issuance of a task order for a specific project. When a short-term need arises, the ROC approves issuance of a task order. Research Bureau staff work with the technical panel to prepare a Request for Response to Task Order with a quick (one-week) turnaround. Consultants then have the option of responding to a Request for Response to Task Order. The project manager and technical panel review responses and authorize the task order to the consultant whose response is most advantageous to NMDOT.

The technical panel meets to evaluate responses received, using the Evaluation of Responses to Task Order sheet to select the most meritorious response. If necessary, the project manager can take any technical panel concerns to the consultant for clarification or negotiation. Once the consultant and technical panel agree to the terms, the project manager develops the Task Order Authorization Form. The completed authorization form is submitted for processing and signature of consultant, Research Bureau Chief and Deputy Secretary.

Once the task order is signed by both parties, the Research Bureau administrator sends a copy of the order and a notice to proceed to the consultant. The project manager also sends a notice to any non-winning consultants.

The project manager manages the task order and oversees all activities associated with the project. It should be noted that, due to the short duration of most on-call contracts, the technical panel may meet more frequently than quarterly or may decide to hold asynchronous meetings by responding to draft chapters by email rather than in-person.

TECHNOLOGY TRANSFER

The NMDOT Research Bureau sets aside funds for technology transfer activities. Technology transfer is defined as activities and expenditures that lead to the introduction, promotion, adoption and communication of new ideas, techniques, applications, processes, or products by users.

Technology transfer activities broadly include education, dissemination, demonstration, field applications, technical support and other activities that lead to eventual innovation. In practice, the Research Bureau spends technology transfer funds for three purposes:

1. Acquisition and evaluation of promising new technologies,
2. Organizing/paying for training, conferences, and other events to disseminate information about emerging transportation innovations, and
3. Library materials

Funding for these expenditures is approved through the RPS process. Any NMDOT staff member may submit a proposal for technology transfer funding following the standard research solicitation process.

UNIVERSITY TRANSPORTATION CENTERS

The USDOT's University Transportation Center (UTC) program was initiated in 1987 under the Surface Transportation and Uniform Relocation Assistance Act to advance transportation technology and expertise through research, education, and technology transfer at university-based research centers. The 2013 UTC grant competition provided support for five national UTCs, ten regional UTCs, and twenty Tier 1 UTCs. The University of New Mexico (UNM) participates in two of these UTCs:

- The Southern Plains Transportation Center is a regional UTC for District 6 and is headquartered at the University of Oklahoma. University members of the SPTC include Langston University (Oklahoma), Louisiana Tech University, Oklahoma State University, Texas Tech University, University of Arkansas, UNM, University of Oklahoma, and University of Texas, El Paso. NMDOT has partnered with UNM to fund and implement SPTC projects, especially those conducted at UNM. This partnership is mutually beneficial as NMDOT supports projects aligned to the SPTC research focus and receives, in turn, research with a strong potential for implementation by the agency. These joint projects also support the education of college students who may become future transportation professionals in New Mexico. SPTC research focuses on the impact of weather on transportation.
- Safety and Operations of Large-Area Rural/Urban Intermodal Systems (SOLARIS) Institute at the University Nevada, Reno is a Tier 1 UTC with a research focus on transportation safety. In addition to UNR, university members of SOLARIS include Arizona State University, Desert Research Institute, UNM, and the University of Nevada, Las Vegas.

NMDOT personnel may collaborate with a UNM professor to seek funding through the SPTC or SOLARIS. If successful, NMDOT may be asked to provide or identify matching funds (either cash or in-kind). To explore collaboration with a UTC on a research project, NMDOT staff should contact the Research Bureau Chief.

At the time this Manual was drafted, a new round of UTC competition (2016) was underway, with proposals anticipated from UNM, New Mexico State University and New Mexico Tech.

Appendix K – The Research Library

The NMDOT Research Bureau Library mission is to provide information, materials and resources that support the mission, programs and research of NMDOT. The Center supports these programs by acquiring, organizing, managing and preserving the information in its own collections, and offering supportive reference services to the employees of NMDOT, local agencies, New Mexico's Federally Recognized Indian Nations, Tribes and Pueblos, consultants and the general public.

Circulation Rules

Loan Periods and Return of Material

Library patrons are limited to borrowing up to 10 items. This limit represents the total of items that any one patron can have on loan at one time. Most NMDOT Library materials are loaned for a period of 4 weeks. Most NMDOT Library media resources including CD-ROMS, DVDs, and videos are loaned for a period of two weeks. The circulating reference materials have a one week loan period. Most reference materials are non-circulating and can only be used in-house.

Renewal Process

Most items can be renewed as long as there are no recalls on them. Patrons who are unable to return items in person should contact the librarian directly to make alternative arrangements. No renewals are allowed on materials that have a standing request for loan or have a past-due status of more than two weeks.

Recalled Material

All recalled and/or past-due items must be returned to the library and renewed in person. In order to best serve all patrons of the NMDOT library, all users are asked to follow the circulation policies that are in place to preserve, promote, and circulate the collection.

Overdue Material

All items should be returned by the due date or renewed if so desired. When items become overdue, emails or telephone calls will be made to remind the borrower that the items are overdue.

Inter-Library Loan

The NMDOT Librarian is networked with other librarians and libraries throughout the state of New Mexico and across the United States. Depending on the type of information request, there are also international resources.

NMDOT staff that identify a useful book or journal that is not currently in the NMDOT library collection should contact the NMDOT Librarian in the Research Bureau and request that the book or journal be borrowed and possibly purchased.

Document Services

Patrons that are in need of articles or book chapters may be able to receive these items using NMDOT document delivery services. Library patrons are encouraged to contact the librarian to discuss such information needs.

Literature Search

Upon request, the librarian will assist in compiling bibliographies on work-related issues for NMDOT staff. The librarian uses various bibliographic and scholarly databases to find citations relevant to the research question.

Online Catalog

The online catalog can be accessed from the main NMDOT web page. The catalog provides access to the NMDOT library collection and will provide users with the shelf location and Library of Congress classification.

<http://nmdotlibrary.softlinkliberty.net/liberty/libraryHome.do>

Other Resources

The NMDOT Research Library uses the valuable resources of the TRB, which is part of the United States National Academies (USNA). TRB and the USNA produce and maintain the research database referred to as TRID.

Appendix L – Example Request to Respond to Task Order

New Mexico Department of Transportation Request for Response to Task Order Number NM

**Task Order Short Name:
Culvert Asset Management System Best Practices/Pilot Project**

On-Call Transportation Research Services

Date Issued: 1//16

Contract No.

I. Task Description

Most culverts in New Mexico are reaching the end of their serviceable life (60-70 years at best). It would be prudent to establish a database on the condition of our existing culverts so that appropriate action can be done to avoid potential hazards to public safety. Systematic inspection of culverts would prevent catastrophic failures and would facilitate lower-cost interventions (i.e. sliplining) in lieu of total reconstruction of culverts and highways. This would also reduce the likelihood of sinkholes in highways that can cause traffic fatalities and injuries.

This research project would identify best practices for implementation of a Culvert Asset Management System (CAMS). The project would review existing practices in other states to facilitate identification, inspection and maintenance of underground drainage infrastructure assets. It would identify key data that should be collected for each culvert. The project will also function as a pilot project to identify how to ensure that NMDOT asset databases can be integrated into a single Transportation Asset Management Plan database by identifying critical data fields and precise data specifications that should be used for all NMDOT asset inventories, consistent with Agile Assets software. The study will also recommend how to integrate and expand the existing culvert shapes file into a complete CAMS database.

The consultant shall conduct the following activities so as to best achieve project objectives:

Task 1: Identify Culvert Asset Management Systems and Best Practices in Other States

Objective: Identify best practices in Culvert Asset Management Systems in other state departments of transportation (including Ohio, Minnesota, New York, North Carolina, Utah, Virginia, Washington and any other leaders in this field.)

Subtask 1A: Literature Review

The Consultant shall conduct a thorough and comprehensive literature review to assemble the current pool of written knowledge about Culvert Asset Management systems in other states. The literature in various databases such as Transportation Research International Documentation (TRID), Google Custom Search State DOT, and Lexis will be searched. Consultant shall summarize publications from state DOTs (esp. Ohio, Minnesota, New York, North Carolina, Utah, Virginia, and Washington), Federal Highway Administration, National Cooperative Highway Research Program, Strategic Highway Research Program, University Transportation Centers, and AASHTO that have addressed or are currently addressing topics related to culvert asset management. This is not the exhaustive list of information sources to be included in the above task; other sources of literature and databases will be included as appropriate.

Subtask 1B: State DOT Survey

The Consultant shall contact appropriate staff in other state departments of transportation (including Ohio, Minnesota, New York, Utah, Virginia and other leaders in this field) to identify 1) platform and software used for CAMS, 2) specific data collected, frequency of inspection, and analysis and reporting mechanisms included in the CAMS, 3) whether/how the culvert inventory and/or inspection databases are integrated into a central transportation asset management database. The consultant shall identify three or more options for best practices related to development of culvert inventories and inspection schedules.

Subtask 1C: Synthesis of Information

In this subtask, the Consultant shall synthesize the information collected in Subtasks A and B to document best practices in the development and use of Culvert Asset Management Systems.

Task 2: Identify key data fields and data formats that can be used for all NMDOT inventories to facilitate integrating all fixed asset data into a single TAMP database in the future.

Objective: Use the CAMS study to inform other current and future asset inventory programs on required data fields and formats to facilitate integration into the AgileAssets database.

The consultant shall present recommended data fields in the CAMS database to the NMDOT Assets Management Division and Information Technology Bureau staff and identify key common fields in the existing AgileAssets database. In collaboration with senior Assets Management Division and Information Technology Bureau staff, the consultant shall recommend specific data fields and formats that should be implemented in all current and future asset inventory programs to facilitate integration.

II. Deliverable

The consultant shall submit a comprehensive report that summarizes the findings of the study and provides recommendations and best practices, including but not limited to summaries of practices in other state DOTs.

The Consultant shall provide monthly progress reports to the members of the technical panel summarizing activities performed in sufficient detail to fully document progress for the month.

Consultant shall attend a kick-off meeting with members of the technical panel. Monthly meetings shall be conducted between the Parties to this Agreement to discuss project progress. The monthly meetings may be in-person or through an electronic medium (conference call, Go-to-Meeting, Skype, etc.).

A draft of the report shall be submitted to the Research Bureau no later than 60 days before the final report is due. After receiving feedback from the Project Technical Panel, the consultant shall revise the draft as needed and submit the final report.

The draft and final reports will be of publishable quality, produced in print and electronic format, and adhere to the NMDOT Research Bureau Style Guide, available at http://www.dot.state.nm.us/content/dam/nmdot/Research/Information%20and%20Instructions%2006_22_09.pdf.

NOTE: Maximum Funding Available \$ 35,000

III. Work Plan

Describe briefly the approach to completing the tasks outlined on page 1.

IV. Total Cost

Estimate of the cost of the services or task requested: _____
(Hourly rates shall be consistent with Section 2a of the agreement.)

V. Personnel

Names and job titles of all personnel assigned to the task:

Name and Contact Information for Project Manager (daily contact):

VI. Completion Dates

Estimated date for completion or delivery of the services:

Draft Report _____

Final Report _____

Appendix M – Statewide Research Bureau Summary of Work Products

This list is intended to summarize the work products of the Bureau. Note that every item may not be required/undertaken.

Ongoing Checklist

- Develop and issue Invitations to Propose and Request for Proposals
- Project administration
- Project closeout
- Posting research findings to Research Bureau website and national transportation databases
- Equipment disposition
- Work with FHWA-NM to identify new transportation management areas

Quarterly Checklist

- Project managers meet with their assigned Technical Panels and Principal Investigator(s) to discuss progress on assigned research project to review/approve work performed to date
- Review/approve quarterly reports and invoices; communicate approval/revisions
- Research Oversight Committee meets to review updates and adjustments
- As needed, compile and submit Planning Work Program quarterly amendments to FHWA-NM/FTA Region 6 for approval

Annual Checklist

- Research Project Solicitation meeting
- Research Oversight Committee meeting for new project evaluation(s)
- Request obligation of Research funds (may also happen on quarterly basis)
- Prepare and distribute Notice to Proceed to contracting entities (may also happen on quarterly basis)
- Develop and review Annual Performance and Expenditure Report
- Review Annual Lists of Obligated Projects

Every 2 Years

- Prepare draft Planning Work Program and discuss with FHWA-NM
- Compile and submit final Planning Work Program to FHWA-NM for approval
- Prepare and compile Year 2 budgets for second year of Planning Work Programs and submit to FHWA-NM for approval

Every 4 Years

- Host a Peer Exchange

As Needed

- Review and update the Research Procedures Manual; maintain current version on NMDOT website

Appendix N – New Mexico State Archiving Requirements

Archiving is the process of accumulating and storing documents that record the function and work products of the NMDOT. New Mexico state law regarding archiving and record keeping requirements is more stringent than federal law; therefore, the following state laws apply.

New Mexico Administrative Code (NMAC)	Name/Description
1.18.805.24	Federal Planning Reports
A	Program: planning
B	Maintenance system: chronological by calendar year, then by date created
C	Description: reports containing various federally mandated interstate and roadway information. Reports are output from TRADAS, 1.18.805.23 NMAC and accident records citation system, 1.18.805.232 NMAC, 1.18.805.16 NMAC. Some of these reports may include highway performance monitoring system report, monthly volume summary at continuous counter sites reports, monthly and quarterly speed schedule audit reports, federal speed compliance monthly and quarterly speed summaries, etc.
D	Retention: 10 years after close of calendar year in which created
1.18.805.31	Federal and State Apportionments Reports Files
A	Program: planning
B	Maintenance system: chronological by federal fiscal year
C	Description: reports concerning obligated federal and state funds for various highway-related projects (that is, construction, planning programs, feasibility studies, consultants, etc.). Files may include reports from the federal highway administration, departmental staff reports, correspondence, etc.
D	Retention: 5 years after end of federal fiscal year in which created
1.15.2.114	Manuals of Procedures
A	Program: administrative records
B	Maintenance system: agency preference
C	Description: manuals of procedure prepared and published by state agencies for the guidance of public officers and employees engaged in operations required for the efficient operation of state and local government, including but not limited to acquiring space, budgeting, accounting, purchasing, contracting, vouchering, printing, appointment and dismissal of employees, record maintenance, etc.

New Mexico Administrative Code (NMAC)	Name/Description
D	Retention: until superseded by new manual of procedure
1.15.2.117	Reports
A	Program: administrative records
B	Maintenance system: agency preference
C	Description: [RESERVED]
D	Retention (1) annual, biennial or other periodic reports required by Article V, Section 9 N.M. Constitution or by specific statute: permanent (2) routine, interim or progress reports: 2 years after close of fiscal year in which created
1.15.2.151	Feasibility Studies
A	Program: administrative
B	Maintenance system: agency preference
C	Description: studies requested/conducted prior to the acquisition, installation, implementation and/or purchase of new technologies, equipment, properties, projects, etc. [Studies may be incorporated into other files (that is, project files)].
D	Retention: (1) studies requested or conducted by agency: 5 years after completion or cancellation of study (2) courtesy copies received by agency: until informational value ends
1.15.2.307	Publications
A	Program: public relations
B	Maintenance system: chronological by publication date
C	Description: printed work regardless of format or method of reproduction published by any state agency or political subdivision for distribution and that is produced by the authority of or at the total or partial expense of a state agency or is required to be distributed under law by the agency; and is publicly distributed outside the agency by or for the agency.
D	Retention: (1) Publications filed with the state library per Section 18-2-4.1 NMSA 1978: (a) Agency's copy: until superseded or until information no longer needed for reference

New Mexico Administrative Code (NMAC)	Name/Description
	(b) State library's copy: permanent (c) State archive's copy: permanent (2) All other publications: transfer to archives for review and final disposition
1.15.4.208	Revenue Contracts and Grants
A	Program: revenue records
B	Maintenance system: [RESERVED]
C	Description: contracts and grants for the receipt of monies by the New Mexico state government from other sources includes, but is not limited to, block grants, negotiated grants, federal agency grants, etc. Where there is required reporting of expenditures to a federal agency, retain records for 6 years after termination of grant/contract or retain records for 5 years after submission of final expenditure report, whichever is longer.
D	Retention: 6 years after termination of contract
1.15.4.307	Contract/Agreement Files
A	Program: expenditure records
B	Maintenance system: [RESERVED]
C	Description: records concerning contracts let through bid by the state purchasing division, technical/professional service contracts, lease/rental contracts, agreements, etc. File may include contract/agreement, bid information, contract/agreement specifications, correspondence memoranda, etc.
D	Retention: 6 years after termination of contract/agreement

References

Federal Highway Administration (FHWA), 2012. *Highway Functional Classification Concepts, Criteria and Procedures – 2012 Edition*. December.

Federal Highway Administration and Federal Transit Administration, 2007. *The Transportation Planning Process: Key Issues -- A Briefing Book for Transportation Decisionmakers, Officials, and Staff*. A Publication of the Transportation Planning Capacity Building Program. Publication Number: FHWA-HEP-07-039, updated September 2007.
<http://www.planning.dot.gov/documents/BriefingBook/BBook.htm#2BB>

CODE OF FEDERAL REGULATIONS

2 CFR 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. This supercedes 2 CFR Part 225. “Cost Principles for State, Local, and Indian Tribal Governments (OMB Circular A-87),” *Title 2, Grants and Agreements, Subtitle A, Office of Management and Budget Guidance for Grants and Agreements, Chapter II, Office of Management and Budget Circulars and Guidance, Subchapter [Reserved], Code of Federal Regulations*. Washington D.C. January 1, 2012.

23 CFR Part 420. *Title 23, Highways, Chapter I, Federal Highway Administration, Department of Transportation, Subchapter E, Planning and Research, Part 420, Planning and Research Program Administration, Subpart A, Administration of FHWA Planning and Research Funds, Code of Federal Regulations*. Washington D.C. April 1, 2011.

- Section 420.101: What is the purpose of this part?
- Section 420.103: How does the FHWA define the terms used in this part?
- Section 420.105: What is the FHWA's policy on use of FHWA planning and research funds?
- Section 420.107: What is the minimum required expenditure of State planning and research funds for research development and technology transfer?
- Section 420.111: What are the documentation requirements for use of FHWA planning and research funds?
- Section 420.113: What costs are eligible?
- Section 420.115: What are the FHWA approval and authorization requirements?
- Section 420.117: What are the program monitoring and reporting requirements?
- Section 420.119: What are the fiscal requirements?
- Section 420.120: What other requirements apply to the administration of FHWA planning and research funds?

23 CFR Part 450. “Planning Assistance and Standards,” *Title 23, Highways, Chapter I, Federal Highway Administration, Department of Transportation, Subchapter E, Planning and Research, Code of Federal Regulations*. Washington D.C. April 1, 2011.

- Subpart A, Transportation Planning and Programming Definitions

23 CFR Part 450. "Planning Assistance and Standards," *Title 23, Highways, Chapter I, Federal Highway Administration, Department of Transportation, Subchapter E, Planning and Research, Subpart B, Statewide Transportation Planning and Programming, Code of Federal Regulations*. Washington D.C. April 1, 2011.

- Section 450.200: Purpose
- Section 450.201: Applicability
- Section 450.204: Definitions
- Section 450.206: Scope of the statewide transportation planning process
- Section 450.208: Coordination of planning process activities
- Section 450.210: Interested parties, public involvement, and consultation
- Section 450.216: Development and content of the long range statewide transportation plan

23 CFR Part 450. "Planning Assistance and Standards," *Title 23, Highways, Chapter I, Federal Highway Administration, Department of Transportation, Subchapter E, Planning and Research, Part 450, Planning Assistance and Standards, Subpart C, Metropolitan Transportation Planning and Programming, Code of Federal Regulations*. Washington D.C. April 1, 2011.

- Section 450.310: Metropolitan planning organization designation and redesignation
- Section 450.312: Metropolitan planning area boundaries
- Section 450.314: Metropolitan planning agreements
- Section 450.320: Congestion management process in transportation management areas
- Section 450.322: Development and content of the metropolitan transportation plan
- Section 450.324: Development and content of the transportation improvement program (TIP)
- Section 450.326: TIP revisions and relationship to the STIP
- Section 450.328: TIP action by the FHWA and the FTA
- Section 450.334: Self-certifications and Federal certifications

40 CFR Part 93. "Determining Conformity of Federal Actions to State or Federal implementation Plans," *Title 40, Protection of Environment, Chapter I, Environmental Protection Agency, Subchapter C, Air Programs, Code of Federal Regulations*. Washington D.C. July 1, 2000.

49 CFR Part 18. "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments," *Title 49, Transportation, Subtitle A, Office of the Secretary of Transportation, Code of Federal Regulations*. Washington D.C. October 1, 2009.

49 CFR Part 611. "Major Capital Investment Projects," *Title 49, Transportation, Subtitle B, Other Regulations Relating to Transportation (Continued), Chapter VI, Federal Transit Administration, Department of Transportation, Code of Federal Regulations*. Washington D.C. October 1, 2012.

49 CFR Part 613. "Planning Assistance and Standards," *Title 49, Transportation, Subtitle B, Other Regulations Relating to Transportation (Continued), Chapter VI, Federal Transit Administration, Department of Transportation, Code of Federal Regulations*. Washington D.C. October 1, 2012.

NEW MEXICO ADMINISTRATIVE CODE

- 1.18.805.16 NMAC. "Electronic Document Management System," *Title 1 General Government Administration, Chapter 18, Executive Records Retention and Disposition Schedules (ERRDS), PART 805, ERRDS, Department of Transportation, New Mexico Administrative Code*. Santa Fe, New Mexico. September 29, 2008.
- 1.18.805.23 NMAC, "TRADAS System," *Title 1 General Government Administration, Chapter 18, Executive Records Retention and Disposition Schedules (ERRDS), PART 805, ERRDS, Department of Transportation, New Mexico Administrative Code*. Santa Fe, New Mexico. September 29, 2008.
- 1.18.805.232 NMAC. "Accident Records Citation System," *Title 1 General Government Administration, Chapter 18, Executive Records Retention and Disposition Schedules (ERRDS), PART 805, ERRDS, Department of Transportation, New Mexico Administrative Code*. Santa Fe, New Mexico. September 29, 2008.
- 1.4.1 NMAC "Procurement Code Regulations." *New Mexico Administrative Code*. Santa Fe, New Mexico August 30, 2013
- 2.40 NMAC "Expenditure of Public Funds." *New Mexico Administrative Code*. Santa Fe, New Mexico. August 30, 2013

NEW MEXICO STATUTES ANNOTATED

- NMSA 1978, 67-3-14 "State Transportation Commission; Powers and Duties; Road Funds."
- NMSA 1978, 13-1-28 through 13-1-199, "New Mexico Procurement Code."

PUBLIC LAWS

- Public Law 103-454. *Federally Recognized Indian Tribe List Act of 1994*. Washington D.C. November 2, 1994.

UNITED STATES CODE

- 23 USC Chapter 1. *Title 23, Highways, Chapter 1, Federal-Aid Highways, United States Code*. Washington D.C. January 3, 2012.
- Section 101: Definitions and declaration of policy
 - Section 103: Federal-aid systems
 - Section 104: Apportionment
 - Section 106: Project approval and oversight
 - Section 133: Surface transportation program
 - Section 134: Metropolitan transportation planning
 - Section 135: Statewide and nonmetropolitan transportation planning
 - Section 148: Highway safety improvement program
 - Section 150: National goals and performance management measures
 - Section 167: National freight policy

23 USC Chapter 2. *Title 23, Highways, Chapter 2, Other Highways, United States Code*. Washington D.C. January 3, 2012.

- Section 202: Allocations
- Section 203: Federal lands transportation program
- Section 204: Federal lands access program
- Section 213: Transportation alternatives

23 USC Chapter 3. *Title 23, Highways, Chapter 3, General Provisions, United States Code*. Washington D.C. January 3, 2012.

- Section 328: Eligibility for environmental restoration and pollution abatement
- Section 329: Eligibility for control of noxious weeds and aquatic noxious weeds and establishment of native species

23 USC Chapter 505. *Title 23, Highways, Chapter 5, Research, Technology, and Education, United States Code*. Washington D.C. January 3, 2012.

- Section 505: State planning and research

42 USC § 7407. “Air Quality Control Regions,” *Title 42, The Public Health and Welfare, Chapter 85, Air Pollution Prevention and Control, Subchapter I, Programs and Activities, Part A, Air Quality and Emission Limitations, United States Code*. Washington D.C. January 23, 2004.

42 USC § 7506. “Limitations on Certain Federal Assistance,” *Title 42, The Public Health and Welfare, Chapter 85, Air Pollution Prevention and Control, Subchapter I, Programs and Activities, Part D, Plan Requirements for Nonattainment Areas, Subpart 1, Nonattainment Areas in General, United States Code*. Washington D.C. August 10, 2005.

42 USC § 12101. “Findings and Purpose,” *Title 42, The Public Health and Welfare, Chapter 126, Equal Opportunity for Individuals with Disabilities, United States Code*. Washington D.C. September 25, 2008.

49 USC Chapter 53. *Title 49, Transportation, Subtitle III, General and Intermodal Programs, Chapter 53, Public Transportation, United States Code*. Washington D.C. January 3, 2012.

- Section 5301: Policies, Findings, and Purposes
- Section 5303: Metropolitan Transportation Planning
- Section 5304: Statewide and Nonmetropolitan Transportation Planning
- Section 5306: Private Enterprise Participation in Metropolitan Planning and Transportation Improvement Programs and Relationship to Other Limitations
- Section 5309: Fixed Guideway Capital Investment Grants
- Section 5326: Transit Asset Management
- Section 5329: Investigations of Safety Hazards and Security Risks
- Section 5336: Apportionment of Appropriations for Formula Grants

Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act of 1990
ADE	Assistant district engineer
CFR	<i>Code of Federal Regulations</i>
CMAQ	Congestion Mitigation and Air Quality
CTSP	Comprehensive Transportation Safety Plan
DOT	Department of Transportation
FFY	Federal fiscal year
FHWA	Federal Highway Administration
FHWA-NM	New Mexico Division of the Federal Highway Administration
FY	Fiscal year
ITP	Invitation to propose
MAP-21	Moving Ahead for Progress in the 21st Century
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NMSA	New Mexico Statutes Annotated
NCHRP	National Cooperative Highway Research Program
NTP	Notice to Proceed
PI	Principal investigator
PPM	NMDOT Planning Procedures Manual
PWP	Planning Work Program
R&D	Research and development
RFP	Request for proposals
ROC	Research Oversight Committee
RPS	Research Project Solicitation
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SP/AM	State Planning and Asset Management Division (NMDOT)
SPR	State Planning and Research
SPTC	Southern Plains Transportation Center
TEA-21	Transportation Equity Act for the 21st Century
TRB	Transportation Research Board
TRID	Transportation Research International Documentation

UNM University of New Mexico
USC *United States Code*
UTC University Transportation Center