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DOT Research Management Questionnaire Response Summary

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Fort Collins, Colorado

Final Report
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The contents of this report reflect the views of the author who is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views of the Colorado Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

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16. Abstract

This report documents the results of a questionnaire on transportation research programs for each of the fifty states, the District of Columbia, and Puerto Rico. The study was undertaken in order to help establish the Colorado Transportation Institute in Colorado. The questionnaire was designed to survey the nature of the cooperative relationships existing between state DOTs and other providers of research services. In addition, the survey looked into the various aspects of how DOT research divisions throughout the nation undertake their tasks: how they are organized, what functions they perform, what facilities they have, preferences for where and by whom their research is conducted, what research areas/topics they identify as priorities, and which topics they feel are not appropriate areas for DOT-conducted research.

Thirty-nine (75% response rate) questionnaires were completed and returned.

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DOT RESEARCH MANAGEMENT QUESTIONNAIRE RESPONSE SUMMARY

prepared by

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BACKGROUND

In May, 1992, the CDOT Research Division, working with the author, distributed a two-part research management questionnaire to each state department of transportation, plus the District of Columbia and Puerto Rico. A copy of the two-part questionnaire is included as Appendix I. The questionnaire (Part I) was designed to survey the nature of the cooperative relationships existing between state DOT's and other providers of research services. In addition, Part II of the survey looked into how various aspects of how DOT research divisions throughout the nation undertake their tasks, including: how they are organized, what functions they perform, what facilities they have, preferences for where and by whom their research is conducted, and what research areas/topics they identify as priorities and which they feel are not appropriate areas for DOT-conducted research.

METHODOLOGY

Fifty-two questionnaires were sent to the research engineer in each state's (plus the District of Columbia and Puerto Rico) department of transportation. Each one was accompanied by a cover letter inviting participation in the survey designed

to identify strategies and organizational structures that the various transportation departments use to accomplish their objectives.

Thirty-nine questionnaires (75% response rate) were returned for analysis. In some cases, only Part I, which was concerned with examining department research relationships with universities and other organizations, was returned. Somewhat fewer usable questionnaires (from thirty-three to thirty-five (63% response rate) from Part II, which was concerned with research engineer's insights into their own organization and its priorities, were returned.

This report includes a final report on Part I, and a summary report on the general findings of Part II.

INDIVIDUAL STATE DESCRIPTIONS OF COOPERATIVE AGREEMENTS w/ DOT's

1. **Arizona**: Indicates no formal agreement, but others report as them having one. Larry Scofield of the Arizona Transportation Research Center, Arizona State University College of Engineering responded. Call him at 602-965-9267 to get the facts.

2. **Arkansas**: Agreement with the University of Arkansas-Fayetteville for "engineering and research services, amounting to $10,000-$20,000 per year.
Funding: 100 % state funding
Use: access to UAF expertise quickly; provides reimbursement for professor's salaries back to UAF.

3. **California**: Agreement with the University Transportation Center at UC-Berkeley. Headed by Professor Mel Webber at UTC/Berkeley.
Funding: $2.4 million/year
Sources: $1.0-USDOT
$1.0-CALTRANS Hwy Account
$ .4-UC-Berkeley (waived Overhead charges)
Uses: Provides long term strategic research

4. **Connecticut**: Legislatively-established cooperative relationship (see statute, attached) in the form of a Joint Highway Research Advisory Council. The JHRAC is comprised of eight members (4 DOT & 4 University). Established in 1972.
Funding: $250,000/year
Areas of Interest: Engineering, Law, Agriculture, Business

5. **Illinois:** A cooperative association of 16 Illinois universities, established in 1991 and known as the Illinois Transportation Research Center (ITRC).
Funding: $500,000/year
Created by statute to provide a focused point where each university can seek out transportation funding and ultimately develop transportation research capabilities of university-based researchers.
Additional Organization:

6. **Indiana:** Cooperative agreement with Purdue. Established in 1932. INDOT favors this arrangement because of the familiarity of INDOT with Purdue's capabilities. See attachment on implementation methodologies.
Funding: $320,000 per year.

7. **Kansas:** KS DOT has a cooperative agreement with KU and KSU, known as K-TRAN (Kansas Transportation Research and New-Developments Program. The agreement has a 5-year term (it is in its 2nd. year) and provides specific amounts of funding for research endeavors.

Organization: The system is organized as a 3-tier system including: a 7-member Program Council (5 KDOT, 2 Univ), which has final authority to issue research priority directions, approve the research budget, and approve completed research results; a Technical Committee, which solicits research ideas, assigns ideas to Area Panels, approves research projects, and develops a recommended research program for approval of the Program Council; and seven Research Area Review Panels targeted at major transportation research areas. Research is carried out by university researchers. **(See Attachment # , Organization Chart).**
Funding:
Advantages/Disadvantages: the development of a flow of high quality transportation research targeted to KS transportation needs, financial support to engineering students, continuing education opportunities for KDOT professionals, enhanced quality of faculty, staff, and graduates in transportation, attracted federal research resources for use in Kansas, and an expanded and better organized transportation research resource Kansas.

8. **Kentucky:** The Kentucky Transportation Cabinet contracts with the Kentucky Transportation Center at the University of Kentucky. It uses university faculty members as its resource people.
Funding: HPR funds

9. **Louisiana:** LDOT and Louisiana State University jointly sponsor the **Louisiana Transportation Research Center**, which was established in 1986.
Funding: $7.1 million (federal, state, ALF) (See attachment)
Purpose: "to provide research on current problems encountered by DOTD staff; to assist in implementation of research results, and to provide training opportunities for continuing professional development of DOTD employees." See the attachment on LTRC for additional information.

10. **Maine:** Maine DOT has cooperative agreement with University of Maine to conduct research as determined by the DOT.
Funding: HPR = $280,000
State = $170,000
Univ. = $50,000
Advisory Committee: Comprised of one university official and the balance of DOT employees.

11. **Minnesota:** MN/DOT contracts with the University of Minnesota and updates the agreement each biennium. Specific task order contracts are negotiated for specific research projects. The arrangement also provides base level funding for the U of Mn. Center for Transportation Studies, directed by Dr. Richard Braun.
Funding: Legislature appropriation for the exclusive use of U of MN. Funds are occasionally augmented from administration discretionary sources.
Advantages/Drawbacks: Simplifies access to specific skills/expertise in the

university environment. The basic agreement takes the boiler plate out of routine contracts and shortens the turn-around time. The biggest drawback is that it limits access to just one institution.

12. **Nebraska:** The Nebraska Department of Roads has a cooperative agreement with the University of Nebraska at Lincoln. It was established in 1979.
Funding: It uses only state funds, although the respondent indicated that they may use HP & R funds in the future.
Process: The basic agreement establishes general terms and conditions, with specific task orders being issued for specific projects.

13. **New Mexico:** Alliance for Transportation Research. A cooperative formed among Los Alamos, Sandia Labs, UNM, NMSU, and the New Mexico State Highway and Transportation Department. "The Alliance commits vision and resources to help transport people and products safely, efficiently, and environmentally.
Focus Areas: Have identified seven functional research emphasis areas, with associated research teams: Research areas are: Data and Communications, Ground Truth Sensors, High Speed Rail/Magnetic Levitation, Human Factors, Materials, Simulation, System Architecture.
Funding: Primarily federal support from the participating laboratories.
Self-Selection: On the basis of common interest in future transportation and commitment to world-class products. ATR has no recruiting activities in the industrial community, but is ready to provide services to corporate entitities **who commit resources** with one or more Alliance partners to further the research. Industry partners are part of an Industry Advisory Committee to ATR.

14. **North Carolina:** NCDOT has negotiated a master agreement with the UNC System Office in Raleigh creating the Institute for Transportation Research and Education (ITRE) and includes activities of all sixteen universities of the University of North Carolina System and Duke University. It was created in 1978 through a legislative action. It engages in many other activities beyond transportation- related research. Current Master Agreement has been in existence since 1988.
Funding: $3.6 million in FY 1990. Sources include approximately 40 % from NCDOT, 32 % from USDOT, 14 % from the NC Dept. of Public Instruction for bus routing program, 6% from cities/counties, 6% from other state agencies, and the balance from other sources.
Programs: Main emphasis is to provide coordination/guidance to state/ local/university activities that deal in the broad category of transportation.
Personnel: UNC employees
Private Firm Association: ITRE has taken a stance to not compete with the private sector and had few associations with them.
Advantages/Disadvantages: Greatest advantage is the access to principal investigators in the engineering schools, and access to facilities in those institutions. The greatest

disadvantage appears to be the impact of limiting the growth of the NCDOT's R & D Branch.
Contracting: The NCDOT considered for the FY 92/93 program the use of a competitive request for proposal selection process on a trial basis; this trial process has not yet been used.
ITRE is the recipient of a $1.0 million ISTEA grant for Tech.Trans. program development.

15. **Oklahoma:** ODOT has a cooperative agreement with OSU and OU which uses both state and HPR funds to support research efforts. Approximately 25-35% of the department's research program is under the coop. agreement. The program was initiated in 1971.

16. **Pennsylvania:** The Pennsylvania Transportation Institute at Penn. State University is a unit of the Penn. State Intercollege Research Programs and Facilities Division. It provides personnel and facilities from the university to accomplish PTI goals. See attachment for additional information.

17. **Texas:** The Texas Department of Transportation has three cooperative agreements with the Univ. of Texas, Texas A & M and Texas Tech to create the Texas Transportation Institute.
Funding: HP & R = $9.6 million plus $570,000 of state monies in 1992.

18. **Vermont:** Vermont and several other New England states participate in the New England Consortium, which enables them to lease expertise from the university community when needed. The scheme saves overhead. Research in the Vermont Agency for Transportation (V.A.T.) is decentralized to functional areas (e.g., traffic, planning, etc.)

19. **Virginia:** The establishment of the Virginia Transportation Research Council (VTRC) is via a formal agreement between the Virginia Department of Transportation and the University of Virginia at Charlottesville, School of Engineering and Applied Sciences.
Management: The effort is overseen by an Administrative Board consisting of representatives from VADOT and UVA. It is chaired by the Secretary of Transportation.
Funding: HP & R = $2.3 million; State = $1.8 million. 100 percent of the Department's research program is housed in VTRC.
Emphasis Areas: Research proposals are generated by VTRC staff with guidance from 9 different research councils. **(See Attachment #).**

20. **Washington:** WSDOT has an interagency agreement with the University of Washington and Washington State University to establish the Washington State Transportation Center (TRAC). Research is contracted through TRAC by the universities via Basic Agreement Task Orders between WSDOT and each

university. TRAC is eight years old. WSDOT provides TRAC with an office in Olympia; however, because the TRAC director is a faculty member at UW, the office is rarely used.

Funding: TRAC funding comes from the state's MVET, Federal HP & R, direct Federal funds, UMTA funds, and other state agency funds. Approximately 60 % of the department's research program flows through TRAC. TRAC is provided a stable funding base each biennium through the interagency agreement terms.

Process: TRAC provides WSDOT with the ability to easily and quickly contract with the two universities, to purchase research equipment and materials from specific vendors, and to hire both graduate students and research engineers to conduct projects. **(See Attachment # for structure)**

Advantages/Disadvantages: The greatest advantage of TRAC is seen to be the designation of an individual in the Department and in the University environment for whom transportation issues are paramount. It provides a strong, cooperative linkage between the different needs of WSDOT and the universities.

SUMMARY OF DOT

RESEARCH MANAGEMENT ORGANIZATION QUESTIONNAIRE-PART II

Up to thirty-five usable questionnaire responses were received from research engineers across the country. The following paragraphs provide highlights of their responses.

1. What organizational unit within the DOT has the primary responsibility for the management of the department's research program?

   The research division/branch (including the materials lab in 14 instances) was indicated in 28 of the 35 responses. Other offices mentioned included the planning division (3 times), the technical services division (1 time), transportation programming (1), state highway administration (1), and the assistant state highway engineer (1).

2. Is the research management organization also actively involved in conducting department research projects?

   Twenty-five of the thirty-five respondents (71 %) indicated they were involved in conducting research projects.

3. Which of the following (research management) functions are performed by your research management office?

   Functions receiving:

≥90% support:	Document reviews, project surveillance
Between 80% and 90%:	Problem identification, proposal development, project management, transfer of new technologies, of new technologies, contract administration, implementation of findings
Between 70-80%:	None
Between 60% & 70%):	RFP development, participating in projects
Other functions mentioned:	library, SHRP coordinating office, new product monitoring, budget stewardship, program development and prioritization, product evaluation

4. How many **staff members** are there in the office that manages your research program?

Professional Staff:

1-2 staff:	11 states
3-4 staff:	4 states
5-6 staff:	8 states
7-9 staff:	5 states

Seven other states reported more than 10 professional staff members in the research management office, with two states reporting more than 21 professional staff members.

Support Staff:

0 staff:	3 states
1-2 staff:	17 states
3-6 staff:	7 states
7-9 staff:	3 states

Five states reported having support staff levels greater than ten people, with two states reporting more than 25 support staff members.

5. A series of questions were concerned with **who conducts transportation department research** and what portion of it is conducted by those various sources.

Nearly all respondents indicated that research was conducted in-house and by universities and other educational institutions. Fourteen indicated private consultants are also used, while seven reported that other government organizations (USGS, NCHRP, pooled, TRB) were research resources those departments used.

Eight respondents indicated that less than 10 % of their department's research was conducted in-house, while five states indicated that more than 90% of their research was conducted in-house. The remaining 23 states indicated their research was distributed between universities, private consultants, and in-house capabilities.

When research was undertaken inside the department, the materials laboratory was the focal point of such research in 19 states and was identified most often (30 times) as the department's primary research facility. Other offices frequently mentioned for the conduct

of research were: the research office (13), the bridge design office (6), and transportation planning (4).

6. Related to the question of where research is conducted was a question concerning **respondents' preferences for getting most of the department's research done** satisfactorily.

Equal numbers of respondents (37%) indicated that conducting the department's research in-house or through universities was satisfactory. An additional 23 % had no preference. A small percentage preferred cooperative ventures between transportation departments, universities, and private industry. Private consultants or non-profit research organizations were selected by one respondent each.

7. What **process** do you follow to obtain research proposals to be included in your program, who determines which proposed research projects will be included, where do the funds come from, and how do you monitor research progress?

Eighty-five percent of those responding indicated proposals are solicited internally (to the department). Less than five percent of those responding indicated they accept unsolicited proposals from universities or other sources as ways to get their program accomplished.

Seventy-nine percent of those responding indicated that department personnel (usually management and the research engineer and his staff) determine the program. The remainder of respondents indicated joint university/department committees, advisory boards, and, in one case, a state legislature, determine the program.

Sources of funds are predominantly FHWA, HP & R funds. Thirty-one states reported receiving state funds for the department's research program, in addition to HP & R monies. Six states reported universities provided some support, while a few individual states reported support from private sources or "other".

Research progress is monitored most often by quarterly progress reports (14 states), regular meetings with the principal investigator (8 states), and by steering committee/technical committee which meets semi-annually (11 states).

8. In what **areas** do you have **research initiatives** underway or planned?

As might be expected, 100% of those responding (34 states) indicated research was underway in traditional highway topic areas. Fifty percent (17 states) indicated that IVHS was an important topic area. Local transit systems (6 states), intermodal integration (6 states), trucking (5 states), heavy rail (5 states) were the topic areas receiving the most mention. Individual states mentioned research in alternative fuels, land use/transportation linkages, safety, environmental topics, information management, and roadside development as additional areas of interest.

9. Respondents were asked to indicate the approximate percentage of the type of research currently performed in the following categories:

Conceptual/Theoretical: focus is long term, 10-20+ years to implementation
Developmental: focus is intermediate term, 3-5 years to implementation
Applied: focus is short term, immediate - 3 years to implementation
Other: for research that doesn't fit any of the other 3 categories

Nineteen states indicated that at least seventy percent off the current research could best be described as "applied research". An additional eleven states indicated that between thirty and seventy percent of their research was "applied". Seventeen states reported that between ten and thirty percent of their current research was "developmental." Twelve states indicated at up to ten percent of their research efforts could be categorized as "conceptual". Fewer than ten states indicated any research in the "other" category. Clearly departments of transportation view their research mission as heavily focused in the "applied research" category, with "developmental research" the second most important category. "Basic research" is not seen as a major focus of research emphasis for departments of transportation.

10. When asked to indicate the types of research which ought to be emphasized, a broad spectrum of responses was received.

Traffic/safety operations (related to IVHS) and maintenance topics (structures/seams, geotechnical, hydraulic) (8 states)
Pavement studies (7 states)
Environmental/mitigation (6 states)
Applied research (problem solving) (6 states)
Construction and materials (6 states)
Emerging Technologies (3 states)
Recycled materials, seismic design & structure retrofit, planning and modal, local concerns, robotics, privatization, transportation finance, transportation alternatives, each received one response

As with the previous question, the research focus remains relatively traditional, with only a few states viewing a DOT's role as getting into emerging technologies research, environmental mitigation issues, or public policy arenas.

11. When asked to indicate which areas of research should be avoided by state DOT research programs, 13 of the 29 respondents indicated "none". The remaining responses, each receiving no more than two responses, included air, rail, mass transit, short term policy studies, conceptual/theoretical research, water, IVHS, and basic research.

12. The final questions dealt primarily with respondents' perceptions of the adequacy of their current research management structure, their thoughts about changes that might be made to make state transportation research programs more effective, and about formal procedures for implementing research findings.

With respect to the adequacy of current research management structure, two-thirds of those responding felt their current structure was satisfactory. That conclusion was attributed to the broad-based representation included on the department research advisory committee, the ability to address individual research topics, the capability to develop studies in areas deemed most critical to the department and the fact that the present structure seems to meet the department's current needs.

With respect to potential changes, respondents offered numerous specific suggestions, including:

- increasing workforce available to conduct research
- more formal implementation methods
- increasing the coordination between DOT's and the universities
- increasing knowledge of national research efforts
- minimizing duplication among AASHTO, RAC, and TRB
- improved communication between states
- helping universities to make research more application oriented
- increasing understanding of cost effectiveness of research programs
- review qualifications of research staff and match to research projects

Twenty-one of the thirty-four respondents indicated they did not have formal procedures for implementing the research findings of their programs.

May 8, 1992

Dear Colleague:

The Colorado Department of Transportation is exploring its relationship with various Colorado research universities and other public and private organizations capable of doing transportation-related research. I have been retained to help identify strategies and organizational structures that other DOT's use to accomplish similar objectives, either in house, or through formal or informal cooperative relationships of some type. I appreciate your willingness to participate in this two part survey.

The enclosed questionnaire is in two parts. The first (and shorter) part focuses on those special arrangements your DOT may have with other organizations to accomplish your research mission. Other organizations includes universities, other non-profits, for-profit consulting firms, or other private sector organizations. The second part is more general and is concerned with how your department manages its research program. Among the topics surveyed are funding sources for the program, who conducts the research, and how it is managed. In addition, it invites your thoughts about changes in DOT research activities you see on the horizon. The survey will enable the profession to examine how DOT research management practices have changed since a similar survey was conducted by the Washington State Department of Transportation in 1983, nearly ten years ago.

If you would like to discuss this in greater detail by phone, fax, or in person, please let me know. My telephone number at Colorado State University is 303-491-7633. My fax number is 303-491-0596.

Please try to complete both parts by May 27. If you are unable to do that, please make every effort to complete Part I by that date and return it to me. Part II is also important and should be completed and returned to be **not later than June 12, 1992.**

Thank you, in advance, for your cooperation.

Cordially,

Dr. Jim McCambridge,
Department of Management
Colorado State University
Fort Collins, CO 80523

DOT RESEARCH MANAGEMENT ORGANIZATION QUESTIONNAIRE
PART 1

Name of Responding Organization:_____

Name & Title of Individual completing survey:_____

1. Do you have a **formal** cooperative research program (similar to TTI at Texas A & M or TRAC at the Univ. of Washington/WSU) with one or more universities in your state on a continuing basis? If your answer is no, please proceed to Q. 2. If yes, please answer 1a-h.

   1a. Please describe the form of relationship (e.g., coop. agreement, research center or institute)

   1b. How is the program funded?

   1c. What percent of your program is included under this arrangement? _____ %

   1d. How long has this formal arrangement existed? _____ years

   1e. What **advantages** do you feel this arrangement provides?

   In hiring practices?

   In purchasing procedures?

   In contract management/administration?

In identification of research capabilities/investigators?

In facilities development/access?

In funding stability?

In other areas?

1f. What **disadvantages/limitations** do you feel result from this arrangement?

1g. What changes to strengthen/improve this arrangement do you think would be beneficial?

1h. If a research center/institute is established by this program, please enclose table of organization and include the name of the institute/center director.

PLEASE RETURN PART 1 BY MAY 27, 1992 TO: Dr. Jim McCambridge, Dep't. of Management, Colorado State University, Fort Collins, CO 80523

DOT RESEARCH MANAGEMENT ORGANIZATION QUESTIONNAIRE
PART 2

2. What organizational unit within your Department of Transportation has responsibility for the management of your research program?

3. Is the organization that manages the research program also actively engaged in conducting research projects? ____ Yes No ____

4. Which of the following functions are performed by your research management office? (Please check all that apply)

____Problem Identification
____Proposal Development
____Project management
____Document reviews
____Transfer of new technologies
____RFP development
____Contract Administration
____Project Surveillance
____Implementation of findings
____Participating in projects as member of research team

____Other (please explain):

5. How many staff members are there in the office that manages your research program?

____ # of professional staff ____ # of support staff

6. A table of organization of your research management office including titles of staff members and their responsibilities is enclosed: ____Yes No____

7. Please indicate **which** of the following conduct your research and approximately **what percent** (%) of your research each conducts:

%	Org. conducting research
____	Personnel within the department
____	Universities and other educational institutions
____	Private consultants
____	Other state and local government agencies
_____	Other (Please identify):
100 %	Total

8. If research is conducted by organizational units within your department, please indicate which offices are most actively engaged in research.

9. What research facilities (e.g., materials laboratory, test track) are available within your department to conduct research? Please list.

10. Based on the experience of your department in getting research performed satisfactorily, would you prefer to have most of your research conducted:

___ Within the department
___ By universities
___ Non-profit research org.
___ Private consultants
___ Cooperative ventures between DOT, universities, and private industry
___ Other
___ No preference

11. What process do you follow to obtain research proposals to be included in your program?

12. Who determines which proposed research projects will be included in your program?

___ Management
___ Committee of department personnel only
___ Joint department/university committee
___ Other (please describe)

13. What are the sources and amounts of funds for your research program? (Indicate all those that apply)

Source	Amount (per year/per biennium)
___ FHWA	_____
___ FTA (formerly UMTA)	_____
___ FRA	_____
___ FAA	_____
___ State Funds:	_____
___ University Funds:	_____
___ NCHRP Contracts	_____
___ HP & R	_____
___ Corporate sources	_____
___ Other private (for/not for profits)	_____
___ Other: (please identify)	_____

14. Do you have research underway or planned concerning the following facilities and transportation modes? Check all that apply.

___ Highways	___ Local transit systems
___ Air Transportation	___ Heavy rail
___ Light rail	___ Ferry Systems
___ Intercity bus systems	___ Park and ride facilities
___ Trucking facilities/services	___ Intermodal integration
___ IVHS	___ Other areas: (Please list)

15. How do you monitor progress of research projects?

16. Please indicate the approximate percentage of each of the following types of research you currently perform.

    ____ Conceptual/Theoretical: focus is very long term: 10-20+ years to implementation

    ____ Developmental: focus is intermediate term--3 to 5 years to implementation

    ____ Applied: focus is short term--immediate to 3 years to implementation

    ____ Other: for research that doesn't fit any of the other three categories

17. What major types of research or operational problems do you believe should be emphasized in your department's research program?

18. What areas of transportation research do you believe should be excluded from state DOT research programs?

19. Do you feel your current research management structure is the most appropriate and effective way to maximize the attainment of your objectives in question 17? Why or why not?

20. What changes do you believe should be made to make state transportation research programs more effective?

21. Do you have formal procedures for implementing research findings? ___ Yes No ___ (Please describe)

22. What entity conducts your Technology Transfer activities? (e.g., DOT R & D staff; universities, DOT operations staff, other)

23. How are these activities related to your rural technology transfer program (RTAP), if one exists in your state?

24. Does your DOT maintain a technical library? ____ Yes No ____
If yes , what role does it have in your T[2] program?

25. Do you have a research advisiory committee? ____ Yes No____

25a. How many members? _____
25b. Composition? DOT members _____
University members _____
Other (?) _____

25c. How are they selected?

25d. Does it prioritize the projects to develop a research program? ____ Yes No ____

25e. What other functions does it serve?

Please forward your completed questionnaires, TO's, and any other information you feel would be appropriate to me not later than June 12, 1992. Thank you for your cooperation.

RETURN COMPLETED QUESTIONNAIRE BY June 12, 1992
TO: Dr. Jim McCambridge
Department of Management
Colorado State University
Fort Collins, CO 80523

Would you like to receive a copy of the results of this survey? If so, please list your name and address or attach your card to this questionnaire.

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