



# New Technology, Research and Equipment Committee

## Manual of Procedures

Minnesota  
Department of  
Transportation

Office of  
Maintenance

2009



*Your Destination... Our Priority*



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## **I. Manual Purpose**

The Manual of Procedures has been developed and updated to document the administrative processes for the two Maintenance Research funding programs. It will provide assistance to those wishing to pursue operational research opportunities as well as assist those responsible for program administration.

For further information, please contact:

Maintenance Operations Research Engineer (MORE) (chair)	651-366-3454
Maintenance Research and Training Engineer	651-366-3578
Maintenance Operations Research Manager	651-366-3585
Assistant State Maintenance Engineer (secondary chair)	651-366-3549

## **II. Program Overview**

The Maintenance Operations Research (MOR) section encourages and funds applied research and assists in developing innovations. It promotes operational or "hands on" research, encourage the development of ideas and methods that improves transportation and promotes implementation.

The objective is to share research results statewide and to promote the implementation of successful projects. The program's primary research effort is to take a proactive look at projects that take a preventive action instead of reactive.

The following sections describe the program selection process including selection committee and funding sources.

## **III. Program Selection Committees**

The New Technology, Research and Equipment Committee (NTREC) is a sub-committee of Minnesota Department of Transportation's Operations Management Group (OMG). The NTREC chair is the Maintenance Operations Research Engineer. NTREC functions under supervision, leadership and guidance of Maintenance Research and Training Engineer.

NTREC is responsible for overseeing two different funding programs. These funding programs are:

- Maintenance Operations Research Fund
- Maintenance Operations Implementation Fund.

## **IV. New Technology, Research and Equipment Committee Members and Responsibilities:**

Members are from various functional groups involved in different aspects of maintenance operations.

The following functional groups will nominate new members for a three year term:

- Superintendents
- Shop/Equipment Supervisors

- Supervisors
- Transportation Generalist Series
- Bridge Supervisors
- Area Maintenance Engineers

Permanent committee members are represented from the following groups:

- Information Technology
- Equipment
- Office of Maintenance (three members and three non-voting guest staff)
- Safety Office
- Training
- Materials Lab
- Office of Traffic, Safety and technology (OTST)
- Research Services Section
- Environmental Services
- Facilities
- Office of Bridges and Structures

The New Technology, Research and Equipment Committee is responsible for:

- Review and approval of NTREC projects
- Review of on-going and completed projects
- Review and approval of MOR/NTREC documents i.e. MOR/NTREC manual, proposal form, final report form, etc.
- Review and support of successful projects for implementation
- To recommend that statewide specifications be changed or created, bringing results to the attention of a specific functional group
- Promote technology transfer and market the findings of research projects by reports, maintenance bulletins and websites

## **V. Maintenance Operations Research Engineer Responsibilities**

- Provide budget authority approval for projects up to \$12,000.00 per project or for up to an accumulation of \$250,000.00 per Fiscal year
- Coordinate and facilitate the implementation of research findings so that results are transferred to the customer in an effective, efficient and timely method
- Provide guidance to the sponsor regarding the proposal format and research guidelines
- Provide guidance to prepare written work plans for research project
- Write approval letters and make payments 80 percent at the beginning of the project and 20 percent when the final report is submitted
- Promote technology transfer through maintenance website, biennial reports, vendor meetings, conferences and reports, gather lessons learned failures and successes of the projects and present the project results and recommendation to Area Maintenance Engineers and to Operations Management Group

## **VI. Maintenance Operations research Project Manager Responsibilities**

- Oversee and assure projects are completed in a timely manner
- Solicit and provide ideas for potential research projects
- Support the district during the life of the project
- Stay informed on the status, interim results and possible problems during the conduct of research
- Provide guidance in the preparation of final reports
- Actively participate in the field testing by taking notes, photos and videos
- Assist in the implementation process of successful research projects
- Market the program
- Prepare maintenance bulletins
- Attending expos and conferences
- Meet vendors and set up product demos

## **VII. Maintenance Operations Research Fund**

- A. Definition:** Maintenance Operations Research Fund is to fund and assist any innovations relating to field maintenance operations; and covering fields such as winter maintenance, road and bridge maintenance, operations management, roadside maintenance, general maintenance, work zone safety and technology transfer.
- B. Purpose:** To promote innovations in Mn/DOT operations and maintenance by stimulating and conducting research; to create an environment for intelligent risk-taking; to make Mn/DOT's maintenance operations safer, easier and more efficient for the maintenance worker; to provide the traveling public with a safer, user friendly, efficient and environmentally sound transportation network; and to facilitate the dissemination of maintenance operations technology through the Circuit Rider Technology Transfer Program.
- C. Available Funding:** Annual budget is \$475,000.00. The annual budget includes the salaries for one engineer, one Transportation Program Specialist level 3 and 25 percent of the salary of a Training and Research Engineer. The annual budget includes the \$25,000.00 for other operating expenses and training. The project budget for MOR/NTREC is \$295,000. It is used for maintenance research and technology transfer activities and implementation each Fiscal Year. Activities that are eligible for partial or full research funding include the development of new or more effective maintenance procedures, materials and equipment.
- D. Other State Research Funding Programs:**
- Mn/DOT Research Services Section
  - Local Road Research Board Research
  - Operational Research Assistance Program
  - National Cooperative Highway Research Program Strategic Highway Research program

## E. Selection Criteria

### 1. Funding and Matching Resources

(20 points)

Does the proposal have matching contributions and available resources (labor, equipment and material)?

- District cash match (10 points)
  - More than 20% - 10
  - Between 10% and 20% - 8
  - Between 5% and 10% - 7
  - Between 1% and 5% - 5
- Other contributions (10 points)
  - Labor - 5
  - Equipment and/or Material - 5

### 2. Potential Return/Benefits

(20 points)

- Reduce staff resources - 10
- Reduce costs - 5
- Reduce time /Efficiency (quicker, safer) - 5

### 3. Safety

(15 points)

- Public and Employee safety - 10
- Environmental Impacts - 5

### 4. Potential Implementation

(15 points)

- Statewide implementation - 15
- Multi-area implementation - 10
- Limited to one area - 5

### 5. Innovation

(15 points)

Is the proposal research, specifically applied research, or innovative in doing business?

- Is it new to Mn/DOT - 5
- Similar products with additional improvements - 5
- Is it made in house - 5

### 6. Mn/DOT Priority

(15 points)

- Snow and Ice - 10
- HSOP (Pavements, Bridges) - 5
- Other Projects - 5

**TOTAL**

**(100 points maximum)**

## VIII. Review Process

The above criteria will be used to analyze and identify appropriate research projects. The Maintenance Operations Research Engineer has the authority to approve funds for individual projects for up to \$12,000. **This will be done once a month or as needed.** NTREC is responsible to review and approve funds for individual projects when proposal amount exceeds \$12,000 per project. **This will be done twice a year.**

## **IX. Implementation Fund**

- A. Definition:** To apply research into work practices
- B. Purpose:** To ensure that the results of successful Maintenance Research projects are implemented into the field operations; to enhance the technology transfer program within Mn/DOT maintenance and to optimize the return on the investment made in research through a structured implementation program.
- C. Available Funding:** Maintenance Operations Implementation Fund is 25 percent of annual budget of \$295,000. It has up to \$73,750 to be used for implementation activities each Fiscal Year.
- D. Implementation Committee Members:** The implementation committee members are current and past NTREC members and meet once per year to select projects. All other correspondence and project reviews are conducted by email.
- E. Selection process:**
- Review field reports for district recommendations. Conducted by MORE.
  - Interview operators for additional feed back and details. Conducted by MORE.
  - Review and compile a list of potential implementation projects. Conducted by Maintenance Operations Research Section.
  - Send all information about potential implementation projects to Implementation Subcommittee
  - Committee meets to review and select a few successful projects
  - Budget is distributed equally among districts
  - Provide districts with an equal budget and a list of projects to select from
  - Have Districts send their selected project to MORE
  - Order all equipment from central office

## **X. Supportive Documents**

The following are forms and template use for the Maintenance Research Program:

- Project Proposal Form
- Project Final Report Form
- Project Rating and Selection
- Project Funding Approval Letter and Research Waiver
- Letter of Concurrence from the Area Maintenance Engineer
- Maintenance Research Website Address:  
<http://www.dot.state.mn.us/maintenance/research/research.html>

**New Technology, Research and Equipment Committee  
Maintenance Operations Research  
Project Proposal**

Date:

**Project Information**

Project Name:  
Project Contact:  
Phone Number:  
District/Subarea:  
Evaluation Period      6 Months      1 year  
Number of unit proposed:

**Vendor/Product Information**

Vendor:  
Contact Name:  
Address:  
Website:  
Make/Model #

**Funding**

Total Cost: \$     (Reminder-include tax and shipping)  
Amount requested: \$  
District match/cash: (EST) \$  
Number of units requested:  
Liquid volume requested:  
District soft match/contributions of:  
 Labor  
 Equipment and/or Material

**Additional Information**

1. Project Description/Purpose:
  
  
  
  
  
  
  
  
  
  
2. What equipment or services will this project replace or improve?
  
  
  
  
  
  
  
  
  
  
3. How will this product/equipment benefit MN/DOT and how will it affect daily activities when used?



4. How will the project be evaluated or measured? Fill all boxes that apply and explain.

- |  |   |
|--|---|
| <input type="checkbox"/> Saves Time      | <input type="checkbox"/> Saves Manpower   |
| <input type="checkbox"/> Saves Material  | <input type="checkbox"/> Saves Money      |
| <input type="checkbox"/> Reduce Injuries | <input type="checkbox"/> Reduce accidents |

Explain.

5. To the best of your knowledge, has this or something similar been tried within MN/DOT before?

6. Identify implementation potential? Explain.

- Statewide
- Application Specific (what area) bridge, vegetation, etc. \_\_\_\_\_

Explain:

**NOTE:** Please send the proposal and all supportive documents to Farideh Amiri, Mail Stop 722 or email at [farideh.amiri@state.mn.us](mailto:farideh.amiri@state.mn.us) . For questions or other information contact Farideh Amiri at 651-366-3545 or Ryan Otte at 651-366-3585.

**New Technology, Research and Equipment Committee  
Maintenance Operations Research  
Project Report**

Project Name: \_\_\_\_\_

Date: \_\_\_\_\_

Project Contacts: \_\_\_\_\_

- District/Subarea \_\_\_\_\_
- Sponsor \_\_\_\_\_
- Project investigator \_\_\_\_\_

Funding:

- Amount requested \$ \_\_\_\_\_
- District hard match/cash contributions (EST)\$ \_\_\_\_\_
- District soft match/contributions of:
  - Labor
  - Equipment and/or Material

1. Provide or attach a summary of results?
  
  
  
  
  
  
  
  
  
  
2. What are the operators' comments on the level of difficulty for installing, using, removing, adjusting, etc. with this piece of equipment?
  
  
  
  
  
  
  
  
  
  
3. What are the cost savings areas and how much savings were achieved? (equipment, labor, material)
  
  
  
  
  
  
  
  
  
  
4. What are the time savings areas and how much savings were achieved? (equipment, labor, material)
  
  
  
  
  
  
  
  
  
  
5. What are the material savings areas and how much savings were achieved?
  
  
  
  
  
  
  
  
  
  
6. How did the equipment perform? (compare it to what you use right now if applicable)
  
  
  
  
  
  
  
  
  
  
7. How would you rate the vendor's level of support during the test period? Use a scale of 1 to 5 (best):
  
  
  
  
  
  
  
  
  
  
8. Are there any changes or modifications you would recommend as possible

improvement to this product?

9. Do you recommend this project for area or statewide implementation?

10. What are your conclusions and other comments?

11. Other supportive documents:

- Pictures
- Videos
- Operators questioners/surveys
- Feds approval letter
- etc

**NOTE:** Please send the Report and all supportive documents to Farideh Amiri, Mail Stop 722 or email at [farideh.amiri@state.mn.us](mailto:farideh.amiri@state.mn.us) . For questions or other information contact Farideh Amiri at 651-366-3545 or Ryan Otte at 651-366-3585.





# Project Funding Approval Letter and Research Waiver

## Minnesota Department of Transportation

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### Memo

**Office of Maintenance**

Maintenance Research and Operations Section  
Mail Stop 722, 2<sup>nd</sup> Floor South  
395 John Ireland Blvd.  
St. Paul, MN 55155-1899

Tel: 651/366-3545

Fax: 651/366-3555

[Date]

To: [Sponsor's name]  
[Sponsor's Sub-area/Location]

From: Maintenance Operations Research Engineer

Subject: **Funding Proposal for [Project Name]**  
Proposal Dated [date meeting held]

Approved: \$

This proposal is approved for the actual cost of the project up to the amount listed above. (Describe project or any contingencies)

The following are information needed for this project to begin:

- 1) A concurrence letter which is attached will need to be signed by (Area Maintenance Engineer) before the project begins.
- 2) A New Product Preliminary Information Form, which is attached, will need to be completed by the product manufacturer. In addition the Research Waiver form will need to be signed by representatives from the manufacturer.
- 3) The District will up-front the cost to initiate the project and handle any actual purchases related to the research. To receive eighty percent of the approved amount we need an invoice and pictures of the project.
- 4) Upon completion of the research, we must receive the following for the final 20% reimbursement:
  - A) A field test report. A template can be provided by the technical liaison.
  - B) Copies of prepared purchase orders/contracts, accounting and payment screens of the purchases
  - C) Picture(s) of project
- 5) The technical liaison assigned to this project is (Project Manager). If there are updates or any questions, please contact (Project Manager) at 651/366-3585.

Thank you for your proposal. I hope that we will continue to see new innovations from you.



**Minnesota Department of Transportation**

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**Research Waiver**

**Office of Maintenance**

Maintenance Research and Operations Section  
Mail Stop 722, 2<sup>nd</sup> Floor South  
395 John Ireland Blvd.  
St. Paul, MN 55155-1899

Office Tel: 651/366-3545  
Fax: 651/366-3555

[Date]

To: Venders involved with Mn/DOT Maintenance Operations Research Projects  
From: Maintenance Operations Research Engineer  
Maintenance Operations Research Engineer  
Subject: Implementation Waiver

Thank you for your interest in participating in a Mn/DOT Maintenance Operations Research project. To insure understanding of all participants involved, this letter is to inform venders of Mn/DOT's intentions at the end of the project.

1. Mn/DOT reserves the right to decide if the project, upon its findings, is suitable for Mn/DOT use.
2. By conducting the research project Mn/DOT does not imply any further purchase or implementation of any kind.
3. Mn/DOT reserves the right to report findings of the research projects in reports and other means whether written or verbal.
4. Mn/DOT assumes no responsibility for repercussions of reports on projects whether direct or indirect to venders involved or participating in Maintenance Operations Research Unit projects.
5. The use of this product is for research purposes and does not imply endorsement from Mn/DOT.

Please feel free to contact the Mn/DOT Maintenance Operations Research Engineer if you have any questions or comments.

I have read and understand this Research Waiver, (two signatures required)

Date \_\_\_\_\_ Company Representative Signature \_\_\_\_\_

Date \_\_\_\_\_ Company Officer Signature \_\_\_\_\_

# Letter of Concurrence from the Area Maintenance Engineer



## Minnesota Department of Transportation

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### Memo

District [ x ]

To: Maintenance Operations Research Engineer  
Central Office, MS 722

From: [ Name ], Area Maintenance Engineer

Subject: [ Project Name ]

\_\_\_\_\_ Please proceed with the above research project.  
District [ x ] will give this project our full support.

\_\_\_\_\_ Please take these concerns in to account before proceeding with the above project.

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Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
[ Name ]

cc: [ Sponsor ]