

MAINTENANCE OPERATIONS

RESEARCH FUND

MAINTENANCE OPERATIONS RESEARCH FUND

DEFINITION: Maintenance Operations Research Fund is set out 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.

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 motoring 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 (CTAP).

AVAILABLE FUNDING: 95% of annual budget of \$470,000 **\$446,500 annually**
Note: Salary allowance from the total budget is set at one engineer and 1 Transportation Program Specialist level.

SCOPE: Maintenance Operations Research Fund will have up to \$446,500 (95% of annual Maintenance Research Program budget) to be used for maintenance research and technology transfer activities 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.

CRITERIA:

1. Statewide implementation/Technology Transfer
2. Safety (Public and Employee)
3. Potential return
4. Innovation
5. Matching Resources
6. Priority to Mn/DOT maintenance operations
7. New to Mn/DOT Maintenance
8. Mn/DOT Proposal

REVIEW PROCESS: The above criteria will be used to analyze and identify

appropriate research projects. The Maintenance Operations Research Engineer (M.O.R.E.) has the authority to approve funds for individual projects for up to \$12,000. **This will be done once a month.** 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.** NTREC also has the responsibility of reviewing the success of conducted research.

MAINTENANCE OPERATIONS RESEARCH FUND

List of References

1. Funding Authority for the Maintenance Operations Research Engineer (M.O.R.E.)
2. Project Proposal Outline
3. Project Selection Criteria
4. Project Rating and Selection
5. Project Approval Consideration
6. Sample of a Project Funding Approval Letter w/Research Waiver
7. Sample of a Letter of Concurrence from the Area Maintenance Engineer
8. Project Manager Duties and Responsibilities
9. Field Test Report Format
10. NTREC Duties and Responsibilities
11. Listing of Other Research and Implementation Funds Available

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 1: Funding Authority for the Maintenance Operations Research Engineer (M.O.R.E.)

The Maintenance Operations Research Engineer has authority to approve projects:

for up to \$12,000 per project **AND**
For up to an accumulative amount of \$250,000 per Fiscal Year.

Any project proposal that does not fit the above criteria shall be presented in front of the New Technology, Research and Equipment Committee (NTREC) for review.

Proposals will be reviewed monthly.

Mn/DOT Maintenance Research Project Proposal

Date:

Project:

Proposal Sponsor/Champion:

Office-Sub Area-District:

Principle Investigator:

Amount of Funding Requested:

Do you know if this or something similar has been tried before?

Description of project:

How will the project be evaluated or measured?

When will the project end, completion date?

If successful, could the project be implemented statewide or only in certain areas?

NOTE: Please include all information possible. Include sales brochures, literature, videos, etc. and then send to Farideh Amiri, Mail Stop 722.

For questions or other information contact Farideh at 651/282-5434, or John Tarnowski 651/297-1843, or Ken Nelson at 651/282-5435.

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 3: Program Criteria: Project Selection Criteria

1. Statewide Implementation/Technology Transfer 20 points

Can the proposal be implemented statewide?

Example:

- Ease in getting research implemented with funding, available product and personnel. ex. Prewetting is now wide-spread within Mn/DOT. (high rating)
- A potential successful project may be so costly, that the ability to acquire the product and implement may be difficult. (low rating)

2. Safety (Public and Employee) 10 points

Does the proposal improve safety for the public and employee?

Example:

- Stop/slow paddles would improve safety for the public and employee (10 points).
- Retractaflap has no direct impact public safety (0 points) but improve employee safety (5 points).
- Temperature sensor has no direct impact on public or employee safety (0 points).

3. Potential Return 15 points

Does the proposal have a high monetary return compared to the life-cycle costs (initial cost plus maintenance costs plus any replacement costs) over the project life?

Example:

- A piece of equipment that would greatly reduce salt/sand use and related costs as compared to project costs would receive a high rating.
- A low-cost safety device may be rated high for safety but low for high payoff if it would not appreciably reduce related maintenance operation costs.

REFERENCE 3. Cont...

4. Innovation 15 points

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

Example:

- A proposal that is new equipment (at least to Mn/DOT), methods (processes), materials or innovative packaging of presently available resources to provide a new end product. (high rating)
- A proposal incorporating technology no different than presently used (low rating)

5. Matching Resources 10 points
(e.g. manpower, funds for research)

Does the proposal have an enthusiastic champion, the needed manpower, available resources, and matching contributions?

Example:

- Anti-icing involving Mn/DOT's truck station have the manpower with training and experience and "in-kind" contributions such as labor, equipment, or materials. (high rating)
- A thin concrete overlay over bituminous may have extensive funding needs may well show that this proposed research be funded by Materials Research rather than Mn/DOT Maintenance. Proposals related to traffic engineering or corrosion prevention where maintenance doesn't have the needed expertise. (low rating)

6. Priority to Mn/DOT Maintenance 15 points

Is the proposal related to Mn/DOT Maintenance?

Example:

- Projects which can provide a significant reduction in operation costs, a substantial increase in maintenance worker safety or a substantial environmental enhancement benefit to Mn/DOT maintenance areas (high rating).
- Projects offering uncertain (or unquantifiable) benefits within a very limited to one work area (road, bridge, building, sign, shop, etc.) (low rating).

7. New to Mn/DOT Maintenance 10 points

Has the proposal been tried within Mn/DOT?

Example:

- Micro surfacing which has been extensively and very successfully used in other states and countries but had not been tried and successfully evaluated and reported by Mn/DOT. (high rating)
- Research of products which are in use within Mn/DOT or where properly documented research results are available to Mn/DOT maintenance. (low rating)

REFERENCE 3. Cont...

8. Mn/DOT Proposal 5 points

Possible Other Funding Sources Available
Possible Partnerships or Matching Funds
Other

MAINTENANCE OPERATIONS RESEARCH FUND

**REFERENCE 6: Sample of a Project Funding Approval Letter w/
Research aiver
W**

Memo

Office of Maintenance Office Tel: 651/282-5434

Maintenance Research and Operations Section Fax: 651/296-6758

Mail Stop 722, 2nd Floor South

395 John Ireland Blvd.

St. Paul, MN 55155-1899

[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/xxx.

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

Minnesota Department of Transportation



Minnesota Department of Transportation
M

Research Waiver

Office of Maintenance Office Tel: 651/282-5434
Mail Stop 722, 2nd Floor South Fax: 651/296-6758
395 John Ireland Blvd.
St. Paul, MN 55155-1899

June 14, 2004

To: Venders involved with Mn/DOT Maintenance Operations Research Projects

From: Farideh Amiri
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 vendors 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 _____



MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 7: Sample of a Letter of Concurrence from the Area Maintenance Engineer

Minnesota Department of Transportation



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.

Date: _____

Signature: _____
[Name]

cc: [Sponsor]

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 8: Project Manager Duties and Responsibilities

The Project Manager appointed within the Maintenance Operations Research Unit has the responsibility for overseeing and closely following the project process. As part of this

responsibility, the Project Manager's duties are to:

solicit and provide ideas for the field personnel on possible/ necessary research projects

provide guidance to the Sponsor regarding the proposal format and research guidelines

provide guidance in preparing written workplans for research project

support the Sponsor during the conduct of research through staying informed of the status, interim results, costs and possible problems during the conduct of research

Provide guidance in the conduct of research by taking actively part in field research, designing structured field tests, recording the field research (notes, reports, photos, video, etc.)

provide guidance in the preparation of interim/ final reports (field test report) for the research project

assist in the implementation process of the successful research results

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 9: Field Test Report Format

Date:

Project Title:

Person Completing Report:

District/Sub Area/Office:

Phone Number:

Total Duration of Project:

Project End Date:

Total MORE Funds used for project:

What method/s were used to evaluate the project?

What were the results of the testing or evaluation?

Conclusions:

Estimates of possible or actual cost savings, reduction in materials, equipment, or labor because of the use of this project:

Recommendations:

What changes or modifications do you feel would improve this project?

Send to: Farideh Amiri, Mail Stop 722, For questions about this form contact Farideh at 651/282-5434, John Tarnowski at 651/297-1843, or Ken Nelson 651/282-5435

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 10: NTREC Duties and Responsibilities

- Review on going and completed projects
- Closure by committee on unexpected failures
- Support successful projects for implementation and statewide application
- Gather lessons learned, failures, and successes
- Present recommendations to Operations Management Group (OMG)
- Request for a statewide practice/ agreement/ standard
- Recommend that statewide specifications be changed or created
- Rule a specific research topic completed within the Maintenance Operations Research Program - should be considered implementation or deployment rather than research
- Bring results to the attention of a specific functional group
- Promote technology transfer and market the findings of research projects by either but not limited to reports, Maintenance bulletins, and websites
- Other

NTREC will meet three times every fiscal year. Two of the meetings will be for review and selection of proposals. The other meeting will be for administrative purposes, updates of existing and completed projects, and carry out responsibilities as listed above.

MAINTENANCE OPERATIONS RESEARCH FUND

REFERENCE 11: Listing of Other Research Funds Available

1. Mn/DOT Office of Research Services Funds (STIP& COPTRS)
2. Mn/DOT Office of Research Services Implementation Funds (STIP)
3. Mn/DOT District Research and Development Funds
4. Mn/DOT Traffic Operations Research Fund
5. Mn/DOT Bridge Operations Research Fund
6. Minnesota Local Road Research Board Research Funds (LRRB)
7. Center for Transportation Studies, Minnesota T² Program Funds
(Local Technical Assistance Program, LTAP)
8. Federal Highway Administration (FHWA) Research Funds
9. National Cooperative Highway Research Program (NCHRP) Funds (FHWA)
10. Priority Technology Program (PTP) Funds (FHWA)
11. Highway Innovative Technology Evaluation Center (HITEC) Funds (FHWA)
12. National Transportation Product Evaluation Program (NTPEP) (AASHTO)
13. Pooled Research Funds: AASHTO, or State Planning & Research (SP&R)
14. Other

FHWA: Federal Highway Administration

AASHTO: Association of American State Highway Transportation Officials

LTAP: Local Technical Assistance Program