

Technical Circular T-5/96
Date: August 23, 1996

TO: All HQ Directors, Operations, Planning and Major Projects
All Regional Directors
All District Highways Managers

SUBJECT

Research and Development (R&D), Project Initiation and Approval Process for Operations Department Projects

PURPOSE OF POLICY:

With the Ministry under great fiscal pressure, money spent on research must be limited and directed toward solving the problems needing urgent consideration. Manpower is also constrained again requiring stringent use of resources. Technology, however, is also changing very rapidly opening many new opportunities for applied research.

MoTH's objective with this R&D policy is to direct our research toward a few critical projects that, if successful, would be of significant benefit to the road user when implemented.

Definition of Research

Research and development can be placed in two broad categories, fundamental and applied research. MoTH will generally only support applied research and development projects.

Applied research and development is to take a new technology or product and utilize it in a new and unproved manner to solve or reduce a current Ministry problem or to bring efficiency to the Ministry in the construction or maintenance of roads or moving traffic on our roads. Safer traffic operations would fall into the area of efficiency as would most areas of ITS technology.

Research projects must not be confused with adapting proven technologies to problems that these technologies were developed to address or technology applications that have been used and proven by others. This is just normal business.

Partners For R&D Projects

Proponents of R&D projects are encouraged to seek partnerships with other Sections, Branches and Regions. Seeking partnerships with external agencies for both technical support and funding support is also encouraged. Some examples of external agencies that may provide technical and financial support are ICBC, the TFA, the TDC, (Transportation Development Center), of Transport Canada, UBC, FERC, (Forest Engineering Research Center), or other agencies. The identification of partners on the request for approval of an R&D project supports the position that the R&D proposed is urgent, will address a real problem and is important to a wide community. The use of partners also assists in the rapid implementation of successful research.

Coordination Of Research and Development Projects

MoTH's R&D will not be a centralized function, however, the Manager of Operations Policy, Construction and Maintenance Branch, will be responsible for the coordination of the R&D which includes the coordination of reporting developing programs and project list and assisting in the prioritization and general administration of the R&D program. The Chief Highway Engineer will chair an R&D Project Evaluation Committee comprising 2 Regional Directors, the Director of Construction & Maintenance Branch, and the Manager Of Operations policy.

R&D project proposals are to be made using a standard format which includes the recommendation of the Section Manager as well as the Branch Director. The project proposal will then be forwarded to the Manager of Operations policy who will tabulate the submissions and distribute copies of the proposals to the Operations Department R&D Evaluation Committee. These proposed projects will be considered by the committee and each project will be recommended to be approved or not to be approved, (at that time), to the Operations Department meeting. The Operations meeting will consider the projects and the committees recommendations and then provide advice to the ADM, Highway Operations for the approval or deferral of each proposed R&D project.

R&D Project Approval Request Standard Format

To facilitate the review and approval process for R&D a standard format is proposed (see attached R&D Project Approval Form). Brevity in the application is desirable, but should not take priority over clarity of the proposal. Economic indicators, (the B/C ratio), has been requested and it is recognized that this may be difficult to assess, however, economic efficiencies are generally the reason a proposal is made and the proponent is best to provide this estimate. The economic indicators will only be used as an assessment tool not the answer.

Project Approval procedure

The general procedure for R&D Project approval will be as follows.

- Prior to November 1, R&D project proponents would submit proposals through their management chain to the Manager of Operations Policy in the standard format with partners identified.
- November 1, the Manager Of Operations Policy would put together a consolidated project array with cost estimates of all proposed new R&D projects. A list of ongoing R&D projects and costs that will be carried to the budget FY will also be appended to the list of new projects.
- The Chief Engineer's R&D Evaluation Committee will review the project list and make recommendations to the Highways Operations Committee of the whole both for project approval and for project prioritization within the project array.
- The Operations Committee will then make recommendations to the ADM both for project approval and to confirm or modify the committees prioritization.
- The ADM will consider and provide conditional approval or deferral for each project to proceed in the following budget year with the condition being subject to budget constraints.
- During January of the current year the Manager of Operations Policy will distribute the conditionally approved R&D project listings for the budget year to all Branch / Region Directors and all HQ Section Managers.
- During March of the current year and subsequent to probable budget level allocations being known the ADM will provide final project approval or deferral for each project.

All proposed R&D projects should be considered and a tentative, approved R&D program should be in place ready to proceed by April 1 of each year contingent on funding availability. Final approval of the R&D program would only be contingent on budget allocation. To achieve this schedule, R&D project proposals must be developed early in the year. The R&D project proposal application is to be submitted to the Manager of Operations Policy, in the appropriate format, by November 1st of the current year for approval consideration with the project to commence in the following budget year if approved. These proposals must have agreements in principle where joint funding with outside partners is being considered. These agreements in principle would be contingent on each agency, e.g., MoTH and ICBC, each having the required funding made available. The agreement would then be finalized at the beginning of the budget fiscal year.

Conditional approval is given for projects in January of the current year subject to budget availability. The ADM will review the R&D conditionally approved program in March of the budget year for final consideration and approval.

The Manager of Operations Policy will provide the ADM, Operations and the R&D Project Review Committee with a copy of the conditionally approved R&D project array and a summary of the budget year demand of that program for total cost, MoTH value of costs and external Partners value of the R&D conditionally approved program cost. The ADM will consider funds availability and either give final approval to the conditional program or indicate a lesser program value that MoTH can achieve to the R&D Review Committee. The Committee will review the Conditionally Approved Project Array and recommend R&D projects to be deferred to meet the new budget target.

The ADM, Operations will consider the proposed R&D project deferrals. After consideration the ADM will provide a project array of the final approved R&D program for the budget year. This will be prior to March 31 of the current year.

The Manager of Operations Policy will distribute the Project Array of the Approved R&D program to all Directors of operations Branch by April 15. The Directors will be responsible for circulating the approved program to their section managers and having the R&D project proponents implement the projects. The proponents shall contact their Partners who have a tentative agreement for financial sharing. If the Partners have final funding approval the proponent shall obtain a firm agreement for the shared R&D and initiate the project. If the Partner was unable to obtain funding then the proponent must advise his Section Manager and the Director and the Manager of Operations Policy that anticipated shared funding is unavailable. The Manager of Operations will then Advise the R&D Review Committee and recommendations for substitute projects from the deferred list will be made to the ADM, Operations.

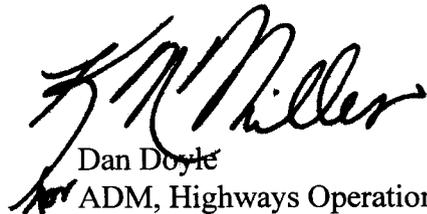
A revised approved list will be circulated by the Manager of Operations Policy as noted above.

The Manager of Operations Policy will consolidate quarterly reports submitted by the R&D project managers for circulation.

Contact:

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John Shaw, Manager, Operations Policy, Construction and Maintenance Branch, 387-7605.


Dan Doyle
ADM, Highways Operations Department

**MOTH Research and Development
Project Approval Schedule
SUMMARY**

Prior to November 1	MOTH staff to develop R&D project proposals including agreements in principal with external partners for outside joint funding
November 1	<p>R&D project proposals submitted to Manager, Operations Policy and consolidated project array with cost estimates completed</p> <p>Highways Operations R&D committee reviews and develops recommended project array.</p> <p>R&D Evaluation Committee recommendations presented to the Highway Operations Committee of a whole for both project approval and project prioritization. Recommendation made to ADM, Highways Operations.</p>
January 2	<p>ADM, Highways Operations provides conditional approval for an R&D program for the following year subject to budget constraints.</p> <p>Manager, Operations Policy to distribute conditionally approved R&D projects for the upcoming fiscal year.</p>
March 1	ADM, Highways Operations provides final approved project array based on budget allocations.
April 15	Manager, Operations Policy distributes approved R&D program.

**MINISTRY OF TRANSPORTATION AND HIGHWAYS
PROPOSED RESEARCH AND DEVELOPMENT PROJECTS
PROJECT APPROVAL FORM**

Project Approval Form Template found at
P:FS_Public_Files@VRHQ_MAIN04@Servers Maint\Policy\proj-962.doc

Proposed by: Branch / Region _____ Section _____

1.) Project Title _____ 2. Project Number _____

1.a.) Problem statement: _____ (Leave Blank)

1.b.) Research Objectives:

1.c.) Research Deliverables:

2.) Partners involved in this research project, (e.g., Regions, Branches, Sections, ICBC, TDC, UBC, etc.).

3.a.) Potential Benefits (e.g. pay back to the Ministry, government, society).

3.b.) Estimated present value of life cycle transport benefits if the research is successful, (8% discount rate).

4. Organization(s)/Department(s)/Individual proposed to perform the research

5. Project organization

Project Sponsor _____

Project Manager _____

Other organization _____

6. Cost estimate of the R&D project (salaries, consulting, materials/equipment, other) Show R&D costs by fiscal year for multi year projects and showing STOB 01 costs separately. If R&D is a component of a project, show total project cost and R&D related cost estimates.

7. Funding source(s) (partnerships and/or other sources)

8. Estimate of the probability of achieving research objectives

High _____ Medium _____ Low _____

9.a.) Perceived research priority

High _____ Medium _____ Low _____

9.b.) Estimated benefit cost ratio,(3.b.) / 6.)).

10. Project Schedule (identify expected start and completion date for each component of the project (research, testing/monitoring, final report, etc.)

11. Project Applicant _____

12. Project approval.

12.a.) Recommendation of the Branch / Region.

Section Manager _____

Branch Director _____

12.b.) Recommendation of the Operations Department R&D Review Committee.

Project recommended to proceed; Yes: , No:

12.c) Recommendation of the Operations Department Meeting.

Project recommended to proceed; Yes: , No:

12.d.) Conditional approval of the ADM Operations Department subject to fund availability.

Approved/Not Approved, _____ ADM, Highways Operations

(Date)

INSTRUCTIONS FOR FORM COMPLETION
PROPOSED R&D PROJECT APPROVAL FORM

1. The proponent to provide a short descriptive title for the project. The project number will be assigned by the R&D Coordinator.
 - a) Provide a brief, clear statement of the problem which the R&D project is to address or provide a solution to.
 - b) Provide a brief, clear statement of the projects objectives, i.e. what is expected to be achieved.
 - c) Provide a brief listing of the deliverable that are expected from a successful project.
2. List the Partners that have agreed to play a role in the project and whether the role is funding, technical assistance, advice, etc.
3. Benefits that would accrue from a successful R&D project.
 - a) Provide a brief, clear statement of the anticipated benefits and to whom they may accrue, e.g., MoTH, contractor, road user, etc. "Why do you want to carry out this R&D project?"
 - b) Provide an estimate of the value of the incremental benefits over a life cycle. This is not meant to be a multiple account analysis but only incremental transport benefits that may accrue. Estimate the present value of these benefits based on a discount rate of 8%. Many assumptions will be required here but the proponent will be in the best position to estimate these. If the successful research will result in a cost saving for each kilometer of new base course then an estimate is needed for how many km of new base course will be constructed each year over a 20 year period and the present worth of these savings is estimated.
4. Identify the unit or agency which will be responsible to actually carry out the project, e.g., UBC, Geotech. & Materials, etc.
5. List the project management proposed if the project is approved.
6. Provide a total cost estimate for the R&D project. If the R&D is a component of a project, identify both the total project cost and the R&D component. If the project requires multi year monitoring as part of the R&D component this should be included. If the proposal is a multi year proposal both the actual total cost and the discounted present worth cost should be estimated, the latter for B/C ratio estimates. The cash flow should be shown for each year of a multi year project. If the project is to be carried out by MoTH the cost of labor or STOB 01 should be shown as a separate line item in the cost estimate.
7. Indicate where the funding is to come from identifying partners who would be contributing to the project such as ICBC.
8. How does the proponent estimate the probability of the project being successful?
9.
 - a) How does the proponent rank the proposed project relative to their perception of R&D needs.
 - b) The proponent is to estimate the B/C ratio base on the estimated present worth of the benefits of the project divided by the present worth of the cost of the project. A discount rate of 8% is to be used to estimate the present worth.

10. Project schedule. Identify expected start and completion date for each component of the project.
11. Who is proposing the project?
12. Recommendation section;
 - a) This is the Branch's recommendation to the committee,
 - b) This is the committee recommendation to the Operations Department Directors meeting,
 - c) The Operations Department recommendation to the ADM, Operations,
 - d) This is the "Approval in Principle" of the ADM of the project proceeding providing adequate funding is available in the next FY. This approval must be reconfirmed in March of the current year once budget allocations are known. The proponent of tentatively approved projects must ensure that these projects are included in the budget cycle; i.e., if the project is to be funded under the Rehabilitation sub - vote then Construction and Maintenance Branch must be requested to have this shown as a tentative demand on that budget.

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