

No. PL-30 (135)/74

Dated the 23rd February, 1979

To

All ROs and ELOs of the Ministry

Sub : Research & Development activities of the Ministry

Please refer to Ministry's letter of even number dated the 15th September, 78, forwarding minutes of the last meeting of R & D Advisory Panel. At the meeting decision was taken (see Item 2 of minutes) to actively associate the Ministry's RO's and ELO's for keeping liaison and watching progress of the R&D schemes. In this connection copies of following documents are enclosed herewith :

- i) Guidelines for Research agencies (Appendix IA & IB)
- ii) List of R & D schemes in progress (Appendix II)
- iii) List of members of R & D Advisory Panel (Appendix III)
- iv) List of members of various P & I Groups (Appendix IV)

2. Copies of Ministry's sanction letters for various research projects are already being endorsed to each regional office. It is requested that in keeping with the recommendations of the R & D Advisory Panel, you may kindly keep close liaison with the research agencies concerned and monitor their progress regularly. A report on your observations may be sent to the Ministry periodically.

(Note : Appendix III & Appendix IV not printed)

APPENDIX-IA

OCTOBER 1977 (Revised)

GENERAL GUIDELINES FOR RESEARCH AGENCIES UNDERTAKING RESEARCH PROJECTS (PERTAINING TO ROADS) SPONSORED BY THE ROADS WING OF MINISTRY OF SHIPPING & TRANSPORT.

1. Background

The Ministry has a standing R & D Panel for identification of critical problem areas on which research may be undertaken with central finance. The Panel is headed by the Director General (Road Development) and has representatives from a wide cross section of highway profession. Selection of schemes by the Panel is done in the light of national priorities, taking into account the recommendations made by the Highway Research Board or other quarters such as the Public Works Departments, research laboratories, knowledgeable highway engineers, teaching institutions, Central Govt. Ministries etc.

To expedite and push the research projects, the R & D Panel has constituted a compact Steering Group which is able to meet more frequently.

Once a particular problem has been selected for investigation, a planning and Implementation Group is set up for formulation of the broad programme of work, preparation of preliminary cost estimate, general guidance during implementation, periodic review of the progress, and dissemination of the ultimate findings. Each Group is composed of operating officials, research specialists, representatives of industry, experts from universities, etc. so as to provide a broad cross-section of expertise.

2. Programme Formulation

The initial planning of the work programme, including the precise objectives of research, preliminary cost estimates methodology to be followed, etc. is carried out by the Planning and Implementation Groups. Wherever possible, the probable research agencies may be associated with planning at this stage.

The broad brush plan evolved by the Planning and Implementation Groups is the basis for further planning and costing by the selected research agency.

3. Project Estimates

After initial design of the research scheme, the Ministry will request the selected research agency/agencies for preparation of the detailed cost estimates. The estimates should provide for the needed additional personnel and equipment, laboratory consumables, cost of experimental sections, travel expenses, of the staff, etc. In certain cases, by specific agreement, the agencies may be required to bear a part of the cost, for instance equipment, staff, travelling expenses etc. Year-wise or stage-wise phasing of the expenditure must be clearly indicated in the project estimates finalised.

In the case of co-operative research projects, each agency is required to individually prepare a separate cost estimate on the basis of the work plan given by the Planning & Implementation Group.

Equipment, tools and plant specially purchased for a project may be redeployed by the Ministry after the project is over.

Recruitment of additional staff and their utilisation after completion of the project will be the responsibility of the research agencies. The Ministry will assume no liability of any kind on this account.

4. Principal Investigator

Research agency will be required to name a Principal Investigator for the study and take reasonable care that no change is made till the project is completed.

5. Project Implementation

Once the project estimate is sanctioned by the Ministry, the agency concerned will have to make the necessary arrangements for implementing the scheme within the agreed time schedule. Unless there are strong reasons, the Ministry will not accept proposals for purchase of extra equipment, or for bearing the cost of the staff beyond the work programme initially accepted. As far as possible, the liability of the staff should be incurred only after other arrangements have been sorted out.

6. Progress Reports

Quarterly progress reports are to be sent to the Ministry within 15 days of the previous quarter giving physical and financial progress in sufficient detail. All major items such as equipment, positioning of staff, construction of experimental sections, laboratory or field studies, findings till that date, etc. should be duly covered. For a better appreciation, it will be desirable that some specimen results are enclosed with the report.

Any difficulties or bottlenecks being experienced in implementation of the project must be clearly brought out in the quarterly reports.

Where any major deviation from the original plan of work appears inescapable, the research again should make a prompt reference to the Ministry for final decision.

(see para 12).

7. Monitoring of Progress

General administering and monitoring of the research projects will be the responsibility of staff looking after R & D in the Ministry's headquarter office who will maintain close liaison with the research agency and render all possible assistance in consultation with the Planning and Implementation Groups. Ministry's Regional Offices will also help in implementation of the project where required.

Apart from constant review by the Ministry's own staff, meetings of the concerned Planning and Implementation Groups will be convened frequently to evaluate the progress of work, determine the degree of compliance with the original plan of action, and solve outstanding problems.

Steering Group and the R & D Advisory Panel will be kept informed of the progress at their periodic meetings.

8. Reports about the Research Undertaken

If any significant findings emerge while the research is still in progress, the research agency may be requested to prepare a short interim report for dissemination.

After the contracted research is over in every respect, the research agency will be required to prepare a final report. The report should be prepared in a manner that it is easily understandable to highway administrators as well as practising highway engineers. For easy assimilation and dissemination, the following broad format is suggested:

- (i) Summary of findings and conclusions
- (ii) Introduction
- (iii) Objectives
- (iv) Plan of work
- (v) Observations
- (vi) Interpretation and discussion of results
- (vii) Conclusions
- (viii) Recommendations of follow-up action about application of results and further research.

Notes : Details of research techniques, calculations etc. should be presented in appendices as far as possible so as to keep the main report as short as possible.

The research agency should supply one copy of the report to each member of the concerned Planning and Implementation Group and 10 additional copies to the Ministry.

Where the project is of a co-operative nature involving more than one agency, the reports of the individual agencies will be consolidated into a composite report by the principal agency if nominated, or by the Ministry.

9. Acknowledgements

The interim and final reports should clearly mention on the front cover as well as suitably in the body of the report that the research in question was sponsored by the Roads Wing of Ministry of Shipping & Transport (if in collaboration with other agencies, this may also be mentioned). Contribution made by the Planning and Implementation Group should also be suitably acknowledged.

Technical papers based on the research should also contain similar credits.

10. Dissemination

The interim and final reports will be reviewed and evaluated by the concerned Planning and Implementation Groups who will advise the Ministry about the best manner of their dissemination. The Groups will also recommend how the research results could be translated for practical usage and the measures that could be taken to promote and stimulate their implementation.

Similarly the Groups will appraise the suggestions made in the reports about further research to be undertaken in the subject area.

11. Completion Certificate

A completion certificate based on the actual expenditure incurred duly verified by audit should be submitted to the Ministry within 3 months of completion of the project. Surplus funds, if any, shall be surrendered soon after the completion of the project and the completion certificate shall invariably indicate this.

12. Revised Estimate

As soon as it is anticipated that the cost of the scheme will exceed the sanctioned estimate, a revised estimate of the probable cost should be submitted to the Ministry and until such time the revised estimate has been sanctioned the expenditure restricted to the sanctioned amount. The revised estimate should be accompanied by a statement comparing the various provisions in the estimate as originally sanctioned and as revised, stating clearly the reasons for variations.

13. Propriety rights and Patents

The ultimate aim of research projects under the R & D programme of the Ministry is to make available fruits of research findings to

the entire engineering profession, subject of course to Ministry's discretion in this regard. Entire propriety rights to all data, computer programmes outcome/findings from the research works will rest with the Roads Wing, Ministry of Shipping & Transport, Government of India. No claim of copyright/patent/propriety rights by others will be valid, except in the case of sponsored schemes entrusted to national laboratories under the CSIR or Ministry of Shipping & Transport, like CRRI which will be governed by the CSIR/CRRI Regulations/guidelines.

14. Audit and Control of Expenditure

Private organisations/persons to whom research work is entrusted shall be subject to such accounting procedures and audit control as the Ministry may specify. Universities and autonomous societies like IIT's, under different Ministries of Government of India, will follow their own audit system in force at present as regards research schemes entrusted to them.

APPENDIX IB

GENERAL GUIDELINES FOR RESEARCH AGENCIES UNDERTAKING BRIDGE RESEARCH PROJECTS SPONSORED BY THE ROADS WING OF MINISTRY OF SHIPPING AND TRANSPORT

1. Background

The Ministry has a standing R & D Panel for identification of critical problem areas on which research may be undertaken with central finance. The Panel is headed by the Director General (Road Development) and has representatives from a wide cross section of highway profession. Selection of schemes by the Panel is done in the light of national priorities, taking into account the recommendations made by the Highway Research Board or other quarters such as the Public Works Departments, research laboratories, knowledgeable highway engineers, teaching institutions, Central Govt. Ministries, etc.

To expedite and push the research projects the R & D Panel has constituted a compact Steering Group which is able to meet more frequently.

Once a particular problem has been selected for investigation, Planning and Implementation Group is set up for formulation of the broad programme of work, preparation of preliminary cost estimate, general guidance during implementation, periodic review of the progress, and dissemination of the ultimate findings. Each Group is composed of operating officials, research specialists, representatives of industry, experts from universities, etc. so as to provide a broad cross-section of expertise.

2. Programme Formulation

The initial planning of the work programme, including the precise objectives of research, preliminary cost estimates, methodology to be followed, etc. is carried out by the Planning and Implementation Groups. Wherever possible, the probable research agencies may be associated with planning at this stage.

The broad brush plan evolved by the Planning and Implementation Groups is the basis for further planning and costing by the selected research agency.

3. Project Estimates

After initial design of the research scheme the Ministry will request the selected research agency/agencies for preparation of the detailed cost estimates. The estimates should provide for the needed additional personnel and equipment, laboratory consumables, cost of experimental sections, travel expenses of the staff, etc. In certain cases, by specific agreement, the agencies may be required to bear a part of the cost, for instance equipment, staff, travelling expenses etc. Year-wise or stage-wise phasing of expenditure must be clearly indicated in the project estimates finalised.

In the case of co-operative research projects, each agency is required to individually prepare a separate cost estimate on the basis of the work plan given by the Planning and Implementation Group.

Equipment, tools and plant specially purchased for a project may be redeployed by the Ministry after the project is over.

Recruitment of additional staff and their utilisation after completion of the projects will be the responsibility of the research agencies. The Ministry will assume no liability of any kind on this account.

4. Principal Investigator

Research agency will be required to name a Principal Investigator for the study and take reasonable care that no change is made till the project is completed.

5. Project Implementation

Once the project estimate is sanctioned by the Ministry the agency concerned will have to make the necessary arrangements for implementing the scheme within the agreed time schedule. Unless there are strong reasons, the Ministry will not accept proposals for purchase of extra equipment, or for bearing the cost of the staff beyond the work programme initially accepted. As far as possible, the liability of the staff should be incurred only after other arrangements have been sorted out.

6. Progress Reports

Quarterly progress reports are to be sent to the Ministry within 15 days of the previous quarter giving physical and financial progress in sufficient detail. All major items such as equipment, positioning of staff, construction of experimental sections, laboratory or field studies, findings till that date, etc. should be duly covered. For a better appreciation, it will be desirable that some specimen results are enclosed with the report.

Any difficulties or bottlenecks being experienced in implementation of the project must be clearly brought out in the quarterly reports.

Where any major deviation from the original plan of work appears inescapable, the research agency should make a prompt reference to the Ministry for final decision.

7. Monitoring of Progress

General administering and monitoring of the research projects will be the responsibility of staff looking after R & D in the Ministry's headquarter office who will maintain close liaison with the research agency and render all possible assistance in consultation with the Planning and Implementation Groups. Ministry's Regional Offices will also help in implementation of the project where required.

Apart from constant review by the Ministry's own staff meetings of the concerned Planning and Implementation Groups will be convened frequently to evaluate the progress of work, determine the degree of compliance with the original plan of action, and solve outstanding problems.

Steering Group and the R & D Advisory Panel will be kept informed of the progress at their periodic meetings.

8. Reports about the Research Undertaken

If any significant findings emerge while the research is still in progress, the research agency may be requested to prepare a short interim report for dissemination.

After the contracted research is over in every respect, the research agency will be required to prepare a final report. The report should be prepared in a manner that it is easily understandable to highway administrators as well as practising bridge engineers. For easy assimilation and dissemination, the following broad format is suggested :—

- (i) Summary of findings and conclusions
- (ii) Introduction, stating the terms of reference, etc. and background and need leading to the selection of the topic for research:
- (iii) Objectives defining briefly the problems:
- (iv) State of Art/literature review: A brief survey of the present status and critical review shall be made therein.
- (v) Plan of work : Describing the methodology proposed instrumentation set up, laboratory and field experiments to be taken up, etc. inclusive of analytical work, if any, to be done.
- (vi) Observation : The observed data should be presented in an agreed format, capable of appreciation and analysis.
- (vii) Interpretation and discussion of results.
- (viii) Conclusions
- (ix) Recommendations of follow-up action about application of results and further research.

Notes : Details of research techniques, calculations etc. should be presented in appendices as far as possible so as to keep the main report as short as possible.

The research agency should supply one copy of the report to each member of the concerned Planning and Implementation Group and 10 additional copies to the Ministry.

Where the project is of a co-operative nature involving more than one agency, the reports of the individual agencies will be consolidated into a composite report by the Principal agency if nominated, or by the Ministry.

9. Acknowledgements

The interim and final reports should clearly mention on the front cover as well as suitably in the body of the report that the research in question was sponsored by the Roads Wing of Ministry of Shipping & Transport (if in collaboration with other agencies, this may also be mentioned). Contribution made by the Planning and Implementation Group should also be suitably acknowledged.

Technical papers based on the research should also contain similar credits.

10. Dissemination

The interim and final reports will be reviewed and evaluated by the concerned Planning and Implementation Group, who will advise the Ministry about the best manner of their dissemination. The Groups will also recommend how the research results could be translated for practical usage and the measures that could be taken to promote and stimulate their implementation.

Similarly the Groups will appraise the suggestions made in the report about further research to be undertaken in the subject area.

11. Completion Certificate

The completion certificate based on the actual expenditure incurred duly credited shall be submitted to this Office within 3 months after the completion of the project. Surplus funds, if any, shall be surrendered soon after the completion of the project and the completion certificate shall invariably indicate this.

12. Revised Estimate

As soon as it is anticipated that the cost of the scheme will exceed the sanctioned estimate a revised estimate of the probable cost shall be submitted to this office and the expenditure shall be restricted to the sanctioned amount until such time as revised estimate is sanctioned. The revised estimate shall be accompanied with a statement of comparison of various provisions made in the project estimate as originally sanctioned and as revised stating clearly the reasons for variations therein.

13. Propriety and Patents

The ultimate aim of the research projects under the R & D schemes of this Ministry is to make available the fruits of the research findings to the entire engineering professions, subject to any discretion of this office. Entire propriety to all the data/computer programme outcome/findings of the research work will rest with the Roads Wing, Ministry of Shipping and Transport, Government of India. No claim of copy right/patent/propriety by others will be valid, except in the case of works entrusted to national laboratories under or Ministry of Shipping and Transport like C.R.R.I. the CSIR as sponsored schemes which shall be governed by the CSIR/C.R.R.I. Regulations/guidelines.

14. Audit and Control of Expenditure

Private organisations/persons to whom research work is entrusted shall be subject to such accounting and audit control and procedures as the Ministry may deem fit to impose. Universities and autonomous societies like I.I.T's under different Ministries of Government of India will extend their audit system at present in force to research schemes entrusted to them.

APPENDIX II

R & D SCHEMES APPROVED BY THE R & D PANEL FOR BEING TAKEN UP IN THE CENTRAL ROAD SECTOR DURING 1976-77.

I. R & D Schemes on Road Topics

F SCHEME

- R. 1 Survey and evaluation of locally available materials
- R. 2 Highway Planning and Economic Studies
- R. 2 Study of spectrum of axle loads on roads in different regions.

