

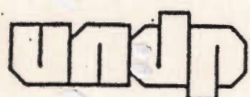
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Appropriate Technology Transfer in Construction



Ninh Van Commune Ha Nam Ninh Province



Technical dossiers and progress

2nd Interim Report

May 1991
DW/GRET



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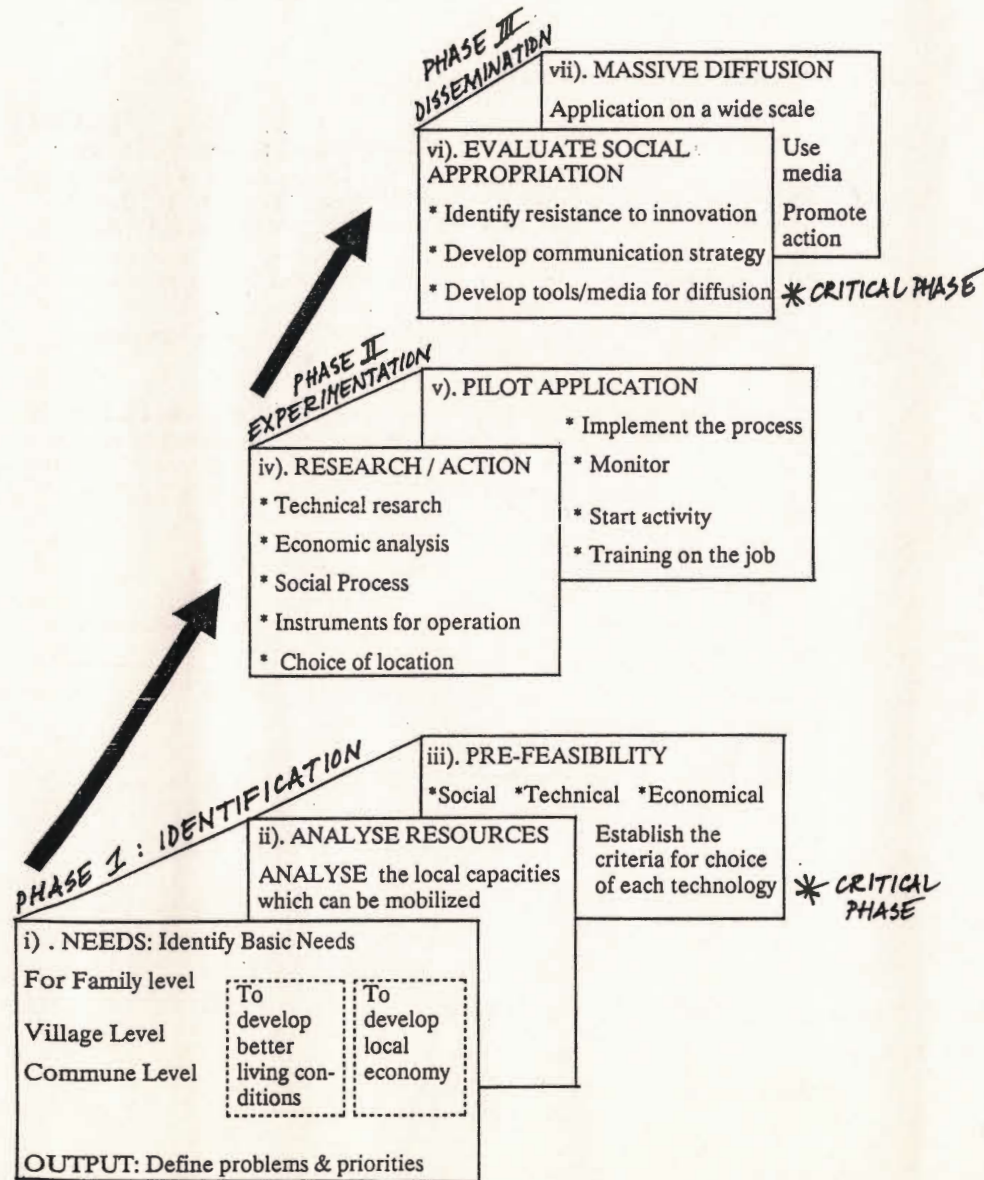
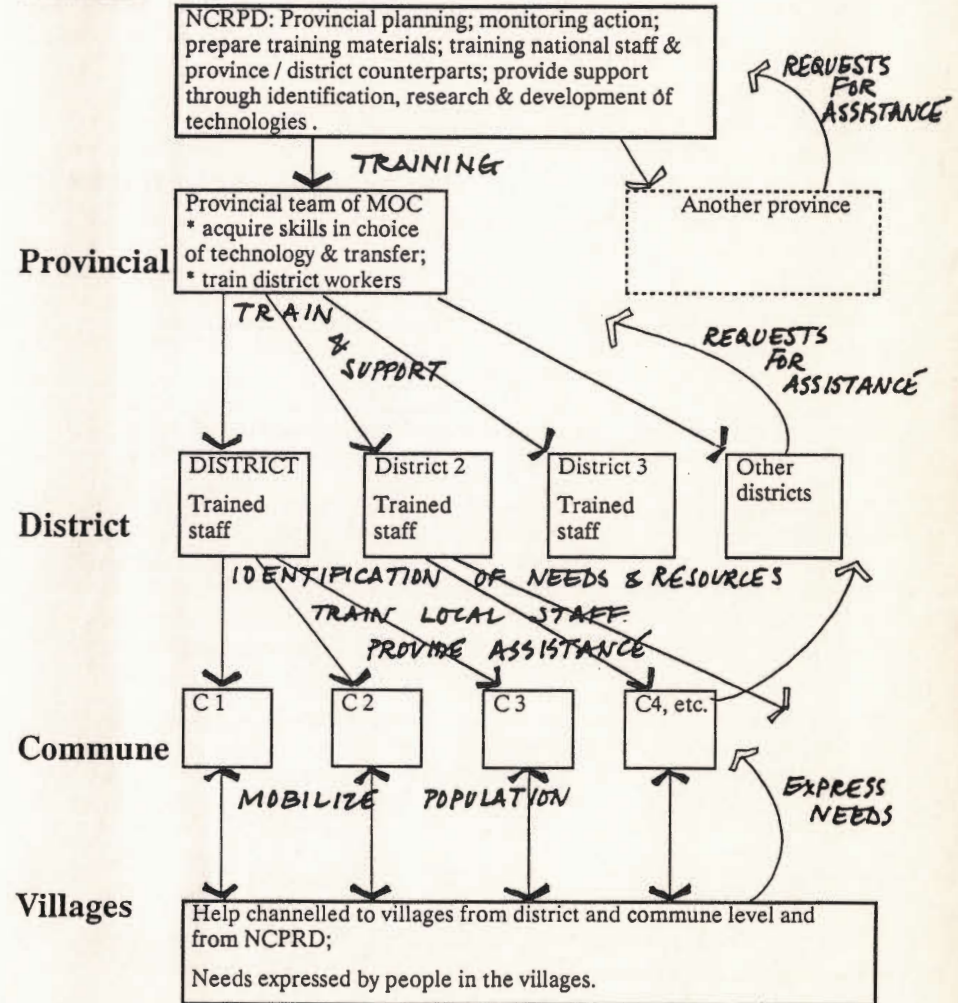


Diagramme: development of provincial and district capacity to assist in commune and village development.

National



1. THE TRANSFER OF TECHNOLOGY: PROGRESS IN NINH VAN COMMUNE

The aim of the UNDP project VIE/86/020 is to contribute to the improvement of living conditions for people in rural communes in Vietnam. An objective is to develop the productive and economic capacity in communes, and to improve the quality of facilities, and basic requirements such as water, sanitation and shelter. An immediate target for the overall project is to develop the capacity of CERPAD to plan rural development activities, and to channel and manage funds and resources for implementing these activities, including strengthening local abilities to undertake this work. In practical terms, the aim of the sub-contract in Appropriate Technology Transfer in Construction is to strengthen CERPAD's capacity to provide advice and develop skills in the communes so that development can be undertaken making optimum use of the resources available to address the different specific problems that each particular commune faces.

Because the number of communes which need help is enormous, a small national Centre should not hope to undertake the work of implementing commune improvements on its own, which would require working directly as an executing organization supervising the practical day to day work in the field. Instead, the role of a Centre has to be that of developing local capacity at provincial and district level to analyze local problems, understand how the available resources can be used, and to manage the implementation of solutions which would be proposed by the Centre. At commune level, the Centre and the provincial and district workers/counterparts have to assist the development of an implementation capacity within the commune structure - for example, training builders to use improved techniques, training People's Committee members to organize and manage road repair teams, training production cooperatives to manufacture and market improved stoves, and so on. This structure involving training at all levels has been shown as a diagramme in the Inception report.

In undertaking this work one fundamental issue is the development of an *ongoing* action and the local capacity to operate it - and for this reason the project talks of the "transfer of technology" rather than the "implementation of technology". An equally important issue is to develop the economic and productive capacity of the commune - including improving or setting up production activities, and including developing the economic infrastructure - such as roads and markets - which encourage the commune's economic growth. In all cases pilot actions should be used to promote techniques which can be repeated - such as using stone arches for building culverts - and the finished product should stand as an example of excellence and high quality from which people can learn.

In implementing pilot actions, the above remarks mean that each action that the Centre undertakes has to be designed and prepared in such a way that it is (a) easily understood from the beginning by the commune and district counterparts; (b) that the all working documents are accurate, relate to the local situation and are really useable by local implementors.

Technology transfer also means making sure for each action that there is a mechanism for ongoing operation, management and financing. For example, this can be putting in place a working process for renting out a road roller to generate income to cover its operating costs, or it can mean developing a sales and marketing strategy so that a proposed innovation (such as improved stoves or simple water filters) will 'survive' on the open market, or that existing production - such as stone crushing - can increase.

The Centre staff should regard themselves not as implementors, where the task is to complete the construction of a finite amount of work - such as 150 stoves or 2 kilometres of road, but instead should regard themselves as trainers, where pilot actions are the means to demonstrate and train.

To develop the capacity of the Centre to fulfill this role, the sub-contract has presented a step by step process for action in each commune, starting with problem and resource identification, continued by experimentation and pilot applications, and leading to the dissemination of those technologies which, on the basis of careful monitoring and evaluation, can be considered worthy of wider application. Because the sub-contract is concerned with technology *transfer*, there is an accent on the development of methods and actions which are *replicable*.

The immediate aim is to establish the conscientious use of a methodology that promotes the careful collection of data on which to assess resources and problems; which gives a sound structure to the identification of solutions and the choice of technology; and which promotes a high standard of work which is necessary if the pilot actions are to serve as a real example in the commune.

At this stage in the programme there is however cause for concern. There remain too many examples of work that does not meet the high and accurate standard necessary if the work is to stand as a good example in the commune. Documents and drawings are too often inaccurate, and accepted as such. There are two consequences: firstly, inaccuracies mean that one cannot know what will be implemented, nor evaluate the results. They imply that the Centre staff have to undertake the work on action implementation themselves, since the working documents are insufficient for others to follow, and this diminishes the usefulness of the pilot action as a training opportunity. The situation is symptomatic of an attitude where the objective appears to be simply to implement actions, rather than transfer technology and develop local capacity.

Secondly, too much of the time of the sub-contract has to be devoted to the effort of improving this standard, and to eliminating errors. This detracts seriously from time which should instead be devoted to the development of training skills, to the design of communication materials and media necessary to ensure the diffusion of successful pilot actions, and to the development of skills within the centre for the analysis of social appropriation of proposed innovations.

2. ACTIONS IN NINH VAN COMMUNE

2.1. Overview

This document reports sub-contract and project progress that has been made by the 11th April 1991. This date coincides with the end of missions by two of the sub-contract consortium field inputs, undertaken by John Norton (16th March through to the 11th April 1991) and Guillaume Chantry (28th March through to the 11th April 1991). DW/GRET also fielded an additional expert input - Peter-John Meynell - from the 2nd March to the 23rd March 1991, in order to provide support and advice to CERPAD on matters concerning water supply and sanitation. This latter input and the recommendations which resulted are the object of a separate report.

In the context of the Ninh Van programme, these missions relate to the Phase II of activities: the first missions (J. Norton and G. Chantry) in November and December introduced a methodology for resource and problem analysis, the interim mission by GC in February monitored progress, whilst these latest missions have aimed to facilitate the progression from the Identification stage (Phase I/III Pre-Feasibility) through to the Phase II experimentation stage (Phase II/IV Research/Action). The mission by J. Norton in March 1991 coincided with the holding of the 1st seminar organized by CERPAD - the Training Workshop on "Methodology for planning and implementation of rural infrastructure development projects" in Ha Nam Ninh province, at which DW/GRET and CERPAD staff gave presentations related to sub-contract activities.

Overall, since the previous reporting period, (see Progress Report: Ninh Van Commune, Achievements, February 1991), CERPAD staff have been working on at least four parallel fields of action as follow:

1. Action in Ninh Van commune.
2. Preparation and presentation of the Training Workshop on "Methodology for planning and implementation of rural infrastructure development projects" in Ha Nam Ninh province.
3. Planning and selection preparations for work in Vinh Phu province, where communes B2 and B3 will be selected for action in the next sub-contract phase.
4. Ongoing work in Group A communes - Hy Cuong, Dai Ang and Yen Bac.

These represent quite a wide spread of activities, not all directly related to the current sub-contract programme. Some of the actions have been major preoccupations for CERPAD staff, such as the seminar, and overall it has restricted the amount of time available for work in Ninh Van.

2.2. Pilot applications: progress review

The 1st Interim Report¹ outlined the basic needs on which action in Ninh Van was required. This resulted from the findings of the survey that the sub-contract staff and CERPAD undertook in the commune at the end of 1990. Progress on the 12 identified actions was reported in the Progress report of February 1991² as shown in the table, (see fig. 2, Ninh Van research actions achievement, 5/2/1991.)

The missions by J. Norton and G. Chantry in March and April 1991 have provided the opportunity to review the status of these actions and to begin the process of developing programmes for detailed and practical action.

1 1st Interim Report: "Ninh Van Commune, Ha Nam Ninh Province - Basic Needs and Local Resources: Proposed Actions", NCRPD - DW/GRET, December 1990.

2 Progress Report: "Ninh Van Commune, Ha Nam Ninh Province - Achievements", DW/GRET, February 1991.

A. Action 1: Housing improvement

Overall review

As of the 17th March, progress had been slow, with no real practical advancement, and this was disappointing.

Additional enquiries with some local authorities and builders had been undertaken, and the responses suggested to the CERPAD team that there is little interest in developing new ideas. This would in part reflect on the one hand difficulty in imagining how existing practices might be improved on and on the other, where some ideas have been put forward, a quite natural reticence to embrace new, undemonstrated and unproven ideas.

A task for CERPAD should be to show with confidence that, given the availability of resources and their local costs, and given the building problems that are being faced, then specific actions would be possible and can be demonstrated. However, the CERPAD team had not yet managed to acquire a good detailed working and practical knowledge of how building is done despite a number of visits to the commune (e.g. no detailed survey of tile production had been carried out). There appeared to still be too many uncertainties about costs and quantities, and overall this indicates insufficient rigour in the manner in which detailed information is sought out and collected and documented. It would be difficult for CERPAD to fulfill the role of providing good advice until this basic information had been obtained. Some progress has subsequently been made.

Specific progress - March 1991

Materials: Stone dust samples have been collected and taken to Hanoi, but no tests have as yet been undertaken.

Flooring: No practical action had been taken yet to compare different types of flooring, and no real comparison of potential costs established.

Windows: the development of screens using plastic sheeting had been rejected by the teachers in the Ninh Van school, because they feel wear and tear would be considerable, and thus this idea has been dropped by CERPAD.

Stone Building: some stone rollers have been bought by CERPAD and taken to Hanoi; more developed sketches, (see Progress Report, February 1991), have been made as to how these might be used for columns (either round or square), but no practical action taken. Very little action had been taken to learn more about stone building techniques, beyond asking a few masons what they thought - and it should be noted here that a key aspect of the Ninh Van programme is to help preserve, encourage and improve the use of stone as an important part of the Ninh Van commune's potential economic base. Regarding stone wall construction, as of early March 1991 the CERPAD team had not apparently acquired a sufficiently detailed understanding of real quantities of materials and labour used in stone wall building (as opposed, for example, to quantities indicated in handbooks and official norms), and this thus limits CERPAD capacity to make realistic observations about potential innovations and improvements.

The object had been to ascertain whether economies in mortar and wall plaster could be achieved without great increase in labour if semi-dressed stone walls were encouraged. Should this prove to be the case, some economic advantages might be possible through increasing the proportion of local material and labour used and through reducing the amount of non-local material required, (i.e. purchased items such as lime and cement). A subsequent examination of costs has suggested that dressed stone is much more costly

than the other two wall types, and not worth pursuing, but that semi-dressed and undressed stone walls are similar in cost, and thus worth further investigation.

Roof: no practical action taken, and in early March 1991 there was evidence of a poor understanding of the local tile making process. CERPAD expressed interest in developing flat concrete roofs using stone dust (with potential use as a first floor), but flat roofs are for the time being in minority use. For moderate income families tiles remain the most realistic roofing material, and this is likely to remain the case for the foreseeable future. CERPAD also expressed interest in testing the fibre cement tiles being produced by the Institute of Building Materials in Hanoi with the support of UNCHS/UNDP, but had not yet carried out a thorough analysis of the Ninh Van cement tile production process and the costs. Such an analysis is essential so that real comparisons can be made, and proposed innovations seriously compared against the methods and materials which are already in use. We note a tendency to move towards ideas that might be considered solutions, before completing the thorough investigation of the existing situation. Information collection is an area where CERPAD would appear to still need to make quite a lot of progress.

B. Water supply and sanitation

Action 2: Water filter tank

Action 3: Latrines

Action 6: Village Well

Overall review

Since the Progress Report of February 1991, quite considerable work has been undertaken by CERPAD staff on these three actions, and this has been encouraging. Key aspects have been to undertake a detailed, village-by-village analysis of water consumption and needs, and, at a less detailed level, a review of the excreta disposal methods in use in the commune. This resulted in detailed data about village wells, river water, water tanks, household filters and latrines. More detailed information regarding this aspect of the programme is included in the report prepared by P-J. Meynell, which concentrates on this area. His report also suggests additional information that should be collected in future surveys of this type, in order to make the results more useful.

Specific progress

Data Collection: Data from the commune survey has been processed. A rough sketch map of the location of existing facilities has been produced, (a map of very disappointing quality).

Village Well: Phu Lan has been selected as the site for the village well improvement, and the villagers are ready to contribute manpower, and the commune ready to contribute skilled labour. Some ideas about a communal washing area had also been developed.

Key issues

Some key issues emerge. The focus is on three types of action: storing water; filtering out impurities in water; and improving human excreta disposal and its use. Cost is the single most important factor in preventing people from developing a better supply and disposal system, and for many families public facilities for water collection and washing are the only viable option in the foreseeable future. CERPAD regards the public facility development as the most realistic way of helping the poor. Nevertheless, a significant contribution to improving domestic facilities could be achieved by lowering the capital and operational costs of these three types of installation. This is an area on which CERPAD needs to concentrate.

CERPAD should also be able to play a clear role in both advising people in a commune about the best type of installation to choose, and in helping educate the population in (a) how to make and use each type of installation, and in particular (b) to explain why and how certain practices - such as the use of excreta - should be improved. More work needs to be done in this field. The development of communication media should be an important activity in coming months. CERPAD have put forward the good suggestion of developing cassettes as one method of disseminating information.

DW/GRET have made preliminary contact with the Hanoi Water Puppetry Company to investigate the possibility of using traditional puppets as a means of communicating issues regarding improvements to water supply and sanitation in the villages. This is to be followed up in June 1991.

C. Action 4: New settlement planning

No report at the time of the early March 1991 review.

Subsequently, it emerged that work was being undertaken by CERPAD on developing plans for a new 20-plot settlement at Van Le. Criteria being used for the design were as follow:

- the plot size would be 230m²;
- the site is prone to flooding;
- typhoon resistance is a secondary problem.

A site visit was arranged during the DW/GRET mission period. This revealed that the plot size allowed by current law (applicable in Ninh Van) is only 200m²; the target group for this housing are 'newly married poor' with an expectancy of two to three children. They will be farmers, although the new Tam Diep - Van Le road link should open up new stone quarries in the neighbourhood of Van Le, and provide alternative sources of income. The new settlement would be an extension of the existing Van Le settlement to the west, and can make use of existing public facilities including the school. The site is at present paddy fields, bordered by roads on two sides. The present ground level is 1.2 m or more below road level, and to avoid being flooded, ground would need to be raised up at least 1.5 m: this represents a major factor in the design, since infill materials are not available in sufficient quantities at the site.

The site visit permitted a review of house space use in existing buildings, which are as follow:

Main living room:	25 - 30m ²
Verandah:	12 - 15m ²
Second room:	10 - 12m ² (store/daughter's room).
Kitchen:	10 - 12m ²
Bath/well/tank area:	10 - 12m ² (unroofed space).
Latrine:	1 - 1.5m ²
Yard:	20 - 25m ² (multi functional space).
Pigsty:	4 - 6m ²
Studying room (boys):	9m ²
Passage walkway to house:	10 - 12m ²

These dimensions give a better indication of how much land is really needed for a small house.

House types are mostly single storey, with either tiles or concrete roofs. Orientation would be towards the cool wind from the south-east. House construction would be undertaken by the occupants.

On the basis of these findings a new proposal now has to be made, for review in early June 1991. (See programming of activities in Section 6 and Annex 5). It is been suggested that at least three items should be included when developing the new design:

1. Work out how much infill needs to be done; work out how much earth can be found on site for infilling of house lots; estimate cost. Work out how much infill material needs to be transported to the site and where from; estimate total infill costs and cost per m². Consider whether the new site is a viable location, and whether building design could contribute to lowering infill costs, (e.g. use of piles rather than solid infill; construction of two storeys on a smaller surface area; etc.)
2. Develop plans for new plot layout to achieve maximum land economy. The plans should take into account the future possibility of piped facilities being provided. The plans should therefore be worked out to minimize road surface areas and runs and potential service runs. DW/GRET will supply a copy of the Bertauld model so that CERPAD can examine the impact of different physical planning decisions.
3. Develop ideas for showing how the house could be built in incremental stages; start discussions about ideas for developing housing credit. To this end, it is hoped that CERPAD staff will be able to benefit from the visit that Mr Khoi will have just made to the Grameen Bank in Bangladesh.

D. Action 5: Road to Hai Nhan

The proposed road link to Hai Nhan village has for the time being been dropped: it emerges that there is insufficient clarity about the status of the Hai Nhan settlement, which depends on several communes (Ninh Hai and Ninh Van), and is a settlement organized by the district (New Economic Zone), who apparently have no budget for the road development. It is thus unclear who should contribute towards road construction. In addition, since part of this road would pass through land owned or managed by the prison, it is felt by the commune leaders that the prison should contribute, yet for the time being they have not been able to start any negotiation.

E. Action 7: Road maintenance system

At the time of the March review, no practical action had been taken to develop this aspect of the programme. This seems in part to be because attention has been focussed on road building, and in part because CERPAD have seen this activity as one linked to the purchase of a roller for the commune, on which a decision had not yet been made. A more detailed proposal regarding how this activity will progress will be developed, but action is not planned until after the rainy season, in October 1991. Attention in planning this activity needs to focus on developing the organization of road maintenance, and on developing the mechanism by which road maintenance in the commune could be financed, potentially through contracting out the use of the communes roller to other communes and to the district.

F. Action 8: Credit system

This remains an extremely important field of action. CERPAD, in the context of the Training Workshop on "Methodology for planning and implementation of rural infrastructure development projects" in Ha Nam Ninh province, invited Dr Canh, Director of the Hababank, to make a presentation to the seminar participants. CERPAD, through the VIE/86/020 project, have also arranged for Mr Khoi to visit Bangladesh and it is hoped that some of the experience of the Bangladesh Grameen Bank in providing loans to the rural landless poor, and including housing loans, might prove useful in the Vietnamese context. A paper on the Grameen Bank housing loan programme³ has also been translated into Vietnamese and circulated amongst the seminar participants and CERPAD staff.

It is hoped that once Mr Khoi has returned from Bangladesh, more effort can be focussed on the question of rural credit, including initially in the context of the settlement development programme (Action 4), credits for house development.

Credit should also be investigated for the improvement of domestic water supply and sanitation, where the sums of money involved should be quite small. Because inflation poses a major problem to the establishment of a credit system, credits might be usefully linked to material banks in order to reduce the discrepancy between the cost of materials and the diminishing value of loan repayments. Ideas should be developed for expanding the credit cooperative which already exists in the commune.

³ J. Norton, 'Housing Loans for the rural poor - Helping the rural landless poor of Bangladesh'.

G. Action 9: Stone production

Related to the road building activities, CERPAD staff are proposing to build stone arched culverts under the road between Van Le and Tam Diep; they have also expressed interest in using stone arches as an alternative to concrete lintels in the new market (Action 10). The economics of this latter proposal need to be examined carefully.

CERPAD have also purchased stone dust, which they will be testing, in order to see how well it might be able to substitute sand in the production of concrete, and whether roof tiles can be made with it. These initiatives may be fruitful, but depend on there being a surplus of stone dust. At present this surplus is apparently small: developing the use of stone dust must therefore be linked to the growth of stone crushing activities. CERPAD has observed that in the November - February period there had been an increase in the number of stone crushing machines, which suggested that no intervention would be useful in this field. Albeit, the demand has dropped after the new year Tet holiday, suggesting that more could be done on marketing of stone products. There is also a maintenance problem on the cheaper Vietnamese manufactured stone crushers, for which crushing blades need to be replaced on a weekly basis. DW/GRET have suggested that CERPAD investigate ways (and the viability) of improving these blades in order to reduce replacement costs and machine down-time. This should be followed up in the coming months by CERPAD, with a review of progress in June 1991.

There is also an apparent demand for a compressor in order to facilitate the extraction of stone from the mountain side. CERPAD should investigate the viability of supporting Ninh Van in acquiring additional equipment, by examining the capital and operating costs of different available types of equipment, and evaluating these costs against the benefits of increased stone output and revenue.

Overall comment

Stone is one of the main potential resources of the commune, and yet so far not much effort has been put into really examining how this resource could be better exploited. Although a number of avenues for investigation were proposed during the December and February missions by DW/GRET, there does not as yet seem to have been much enthusiasm for addressing this subject.

H. Action 10: Commune Market

The market design had been developed in some detail by late March 1991. There remained however a considerable number of issues to be addressed, each of which could seriously modify the designs that were being proposed. The new market is potentially important for the promotion of the commune's economic growth, but there is rightly concern about how this development could realistically be financed. The commune has suggested that the existing buildings on the market site could be sold as private shops in order to generate capital to finance the new installation. In early March 1991 the existing buildings had not been surveyed, nor had an estimation been made of the added sales value that could be achieved by rehabilitating the buildings before their sale; thus there was only an imprecise idea of how much capital could be raised by their sale. Preliminary plans for the new buildings indicated two covered selling areas, and two new buildings which would contain living quarters and shops: this amount of building seemed in excess of what might in initial stages be realistic or affordable.

As with the new settlement development at Van Le, a site visit was required in order to obtain a better picture of the real situation. This site visit was made in early April 1991, and allowed the existing buildings to be surveyed and a detailed list of the different types of market users to be drawn up. On the basis of this a new proposal can be developed. At the end of the present missions (11 April 1991), time had not permitted the development of a detailed revised draft proposal, and thus should instead be ready for the 1st June 1991.

In developing a revised scheme, it is important to relate the size and complexity of the buildings to the amount of finance that can really be generated by the commune, dictating how much building can be done. Construction techniques need to be selected that will lower costs, and make sure that the new materials and techniques chosen for the market have a good demonstrative value relative to the objectives of the VIE/86/020 project. To this end, in addition to completing the actions outlined in the Progress Report of February 1991, a series of steps need to be undertaken:

1. Determine an accurate m2 construction cost for each building type, based on a clear specification of what techniques and materials might be used. Options should be developed for several different types of materials and building forms. These cost analyses must include the rehabilitation costs of existing buildings, so that rehabilitation costs should be deducted from the realistic sale value, in order to determine the remaining capital that can be invested in the new market installations. In preparing the sketch designs for the new covered selling areas, comparison should be made between hipped and gable-end roof forms in order to assess the comparative costs and typhoon resistance: economies in the amount of roof framing and wall structure should be possible with the hipped roof, which is also a roof form providing better typhoon-resistance.
2. Estimate budget for the revised proposal: provisionally to include one covered selling area, the rehabilitation of existing buildings, the improvement of floor surfaces, the development of access (including access by boat) to the market, and the provision of latrines and washing facilities.
3. Discuss with the commune the basis for sharing costs: determine the exact size of the commune contribution; determine what funds can be generated by the sale of the existing buildings; obtain commitment from existing market users for their contribution; establish how much money is available for the new market. The commune should try to negotiate with the district a reduction on the tax paid at present to the district from market revenue, since at present the benefit to the commune is very small. Alternatively the district should be encouraged to contribute to the costs of the new market.
4. If available funds are too low for the construction of the present scheme, the proposed scheme should be revised with changes in building sizes, technology and materials, access and road arrangements, in order to lower the overall costs. This revised proposal

should then assessed as in points 1 - 3 above, including resubmitting the revised scheme to the Ninh Van People's Committee.

I. Action 11: Van Le - Tam Diep road

The Progress Report of February 1991 listed the work that needed to be done (page 7). In summary, this was to complete the technical studies; to finish comparing different machines for road building and work out their exact running costs; and to organize the road construction process.

At the time of the March 1991 review, little progress seemed to have been made on accomplishing these tasks. It was stressed that much greater precision needed to be achieved before an agreement could be drawn up with the commune enabling work to start and enabling the project's level of contribution to be established. Similarly, the CERPAD team had not yet worked out the operating costs for different types of roller, nor addressed the issue of how the commune would be able to continue financing the operation of a roller once it had been purchased. DW/GRET staff have stressed to CERPAD staff the need to consider the *ongoing* needs of the commune, and to consider the development of a sustainable capacity to undertake tasks or use equipment that might be provided during a project activity. They have also stressed that failure to examine these long-term needs and to make concrete proposals to the commune would almost invariably result in equipment lying idle in the future because the finance to operate it was not available in the commune, and because the mechanisms for generating this finance had not been developed and put in place. Just as relevant to other aspects of the programme, DW/GRET have highlighted here that considering technology and equipment in isolation is insufficient: the organization and finance for each action, both for immediate and long-term operations, must be considered.

J. Action 12: Development of local capacity in rural development

At the time of early activities in Ninh Van, good working relations were established with the People's Committee, and a steering committee set up for Ninh Van development. More recently, whilst contacts continue with the People's Committee, there does not appear to be much on-going effort to involve the latter in the decision making process, nor to improve their ability to undertake communal development programmes on their own in the future, nor to continue to operate activities which have been started under the auspices of the VIE/86/020 project. DW/GRET would strongly like to see this aspect of CERPAD's activities accorded more attention than seems to have been the case in recent months.

2.3. Pilot actions: technical dossiers for implementation

2.3.1. Objectives

The review of progress on actions outlined in Section 2 gave rise to concern regarding the quality of information being collected by CERPAD - or at least that which had been documented. This in turn suggested that there were as yet insufficiently precise working documents on the basis of which working agreements for action and contribution could be signed with the different parties concerned (individual families, the Commune, the District, the Sub-contractors and the main VIE/86/020 project), and on the basis of which action could be taken and evaluated. For CERPAD to be able to provide good and accurate advice and assistance to people in the communes, it is essential to achieve this greater degree of accuracy in detailing work to be done and in the estimating of costs.

To this end, DW/GRET have introduced a 'technical dossier' format for the development of usable working documents. This aims to establish a more precise basis for the advancement of each specific action being developed in Ninh Van, and aims to subsequently enable better monitoring of progress and practical action. At the same time, these technical dossiers form the basis for the production of 'technical' and 'research' notes referred to in the original terms of reference.

For CERPAD, the technical dossiers will -

- (a) provide the basis for agreements on actions, and
- (b) once finalized, serve as publicity for CERPAD to international agencies, describing the types of service that the Centre can provide.

They will serve as the technical dossiers on the basis of which training and future applications can be undertaken.

For the individuals working in CERPAD, the process of developing and working from the dossiers should serve to increase the accuracy and quality of the work they are undertaking.

2.3.2. The draft technical dossiers

The format is presented in Annex 1.

Based on the review of actions described above, 20 revised practical actions were outlined by the CERPAD staff with the help of DW/GRET. By the end of the present missions (11 April 1991) of these 20, 16 dossiers had been prepared by the CERPAD staff. As will be seen below from the examples appended in Annex 2, all the dossiers will require improvement before they can be considered as definitive and presentable versions. Nevertheless, although further work needs to be done on some of the dossiers before any practical action can be started, several actions (1.2; 1.3; 1.4; 2.1; 2.2; 2.5; 11) have been accepted at this stage in order to allow the programme to advance and in order to ensure that commune enthusiasm for the programme does not wane.

Dossiers were prepared in Vietnamese (with four exceptions), and translated into English. In some cases a considerable effort went into the preparation of the dossiers in quite a short period of time. This was regrettably not the case for all the dossiers, and in particular greater effort could have been made for the dossiers 1.1 to 1.4, and dossier 12. It is felt that some of the dossiers reflect a lack of effort to think through a process in detail, and to make sure that the resulting dossier is both a good working tool to guide future actions, and an accurate estimation of the costs and quantities involved.

It would seem that this is the first time that technical dossiers of this sort have been prepared by CERPAD staff. Whilst the dossiers were prepared in some haste, we feel it is necessary to draw attention to certain points where improvement needs to be made in the future (for both these and other dossiers which may subsequently be prepared):

(1) There are still too many errors in the costing and development of budgets. More effort needs to be made to ensure that

- (a) unit costs are correct,
- (b) quantities are correct,
- (c) calculations (e.g. adding up totals) are correct.

These require more care.

(2) The quality of technical drawing needs considerable improvement, in order to transform what are often rough diagrammes into proper working drawings on the basis of which construction can be undertaken. As currently presented, drawings are sometimes incomplete, or do not relate accurately to the work described in the accompanying text. It is recommended that those members of CERPAD staff with good experience in technical and architectural drawing should provide help to the less experienced drafting technicians in order to improve their presentation and technical quality. We would note that in many instances, the quality and accuracy of Vietnamese draughtsmanship is excellent, and thus there is no reason for this not to be the case for the present project.

The table on the following page shows the status of each dossier, as agreed with CERPAD staff on the 10th April 1991.

The status of each dossier/action as of the 11th April 1991 is then summarized.

Note, however, that the general comments made above regarding costing, budgets and quality of technical drawing are applicable in almost every case.

VIE/86/020 - WORKPLAN - APRIL 1991

Pilot applications in Ninh Van

Activity	1991												1992	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1 1.1 Stone dust for concrete			Research	█										
2 1.2 Cement tile tests			Research	█										
3 1.3 Column tests			Research	█										
4 1.4 Stone masonry			Research	█										
5 2.1 Family water filter				█	█	█	█	█	█	█				
6 2.2 Village well upgrade				█	█	█	█	█	█					
7 2.3 Rain water tank & filter				Prepare	█	█	█	█	█					
8 2.4 Public washing point				Prepare	█	█	█	█	█					
9 2.5 Water tank & filter research				█	█	█	█	█	█	█				
10 2.6 Water test kit - order				Order	█									
11 2.6 Water testing programme						█	█	█	█	█	█			
12 2.7 Review communication methods				█	█									
13 2.7 Develop media						█	█	█	█	█	█			
14 3.1 Latrine programme				Revise dossier	█	█	█	█	█	█	█			
15 4. Van Le new settlement				█	█									
16 5.														
17 7. Road maintenance										█	█	█	█	█
18 8. Credit systems						█	█	█	█	█				
19 9. Stone production				█	█									
20 10. Commune market				█	█									
21 11.1 Van Le - Tam Diep road				█	█									
22 11.2 Road Phase 1					█	█	█	█	█					
23 11.3 Road Phase 2								Buy roller	█	█	█	█	█	█
24 12. Improved stoves				█	█									
25 13. Develop commune capacity														

Concentrate action on local training

Status of dossiers - 10 April 1991

Action 1.1. RESEARCH. Stone dust for concrete. The dossier requires revision before work can be started. At present, there is insufficient detail to permit approval of the dossier. The dossier will be revised by the 1 June 1991

Action 1.2. RESEARCH. Cement tile tests. Dossier approved for preliminary action, and funds approved for testing IBM tiles using stone dust. Note: it is considered that this dossier should have contained much more detail on the expected results and the procedures that would be followed in order to produce the necessary information on which to base decisions about continued action. Phase II action will require much more detail and conscientious planning.

Action 1.3. RESEARCH. Testing columns. This is a comparison of costs of building different types of columns, used in house and public facility construction. In order to permit the project to advance, this dossier was approved for preliminary cost analysis, and for the evaluation of the viability of different columns. Structural performance is not being tested at this stage.

Action 1.4. RESEARCH. Stone Masonry. Dossier approved for the construction of trial walls in order to compare material quantities, builder output and potential advantages of each wall type. The results are important to enable a good estimation of costs for the Market.

Action 2.1. ACTION. Family water filter. Dossier approved for preliminary action, but the technical content and budget needs to be reviewed and possibly revised in June 1991.

Action 2.2. ACTION. Village well upgrade. Dossier approved for preliminary action (before the rains), but the technical content and budget needs to be reviewed and possibly revised in June 1991.

Action 2.3. ACTION. Rain water tank & Filter. Dossier approved in principal, subject to some modifications being made to the drawings to reflect the recommendations of P-J. Meynell (outlet pipe, improved lid, etc.) Review in June 1991 for possible approval.

Action 2.4. ACTION. Public washing point. Dossier requires more detail on public washing point design, and should be related specifically to the local situation of the village. Review in June 1991.

Action 2.5. ACTION. Water containers and filters. A general fund of 750,000 Dong has been approved to finance research and testing of simple ideas for producing cheap water containers and filters. Nevertheless, both the costing and drawings presented in the dossier need considerable improvement. Typically, there has been no attempt to compare costs of 'short life' containers such as those made of bamboo and nylon, with 'long life' containers made of stone or brick, even though the latter might actually be cheaper. As indicated in P-J. Meynell's report, it is important to equate short-term and long-term capital costs, and the replacement costs of short-life tanks. As indicated above, credits for tank or filter building could be a realistic alternative approach to self financing of these units.

Action 2.6. ACTION. Water testing. The purchase of a comprehensive water testing kit has been agreed; a considerable amount of work will have to be done to perfect testing procedures, and to determine how CERPAD will continue to cover the costs of tests once

the VIE/86/020 project period is finished. Equipment is being ordered in May 1991, and should reach Hanoi in June or July.

Action 3.1. Latrines. The dossier needs revision before approval can be given. Technical details are not sufficient; more information should be provided about the basis for choosing one of the two methods of latrine proposed (two-pit latrine and pour-flush latrine), and more material should be developed aimed at educating the public on construction techniques and use. Separate budgets should be given for each type of latrine, which is not at present the case. In particular, the drawings for the pour flush latrine should be completely redrawn in a manner which would make the drawings comprehensible to local builders.

Action 4. Van Le new settlement. Detailed draft dossier being prepared for review at the start of June 1991.

Action 5. Hai Nhan Road. Action halted pending clarification of settlement ownership and financing.

Action 6. Revised to become Action 2.2.

Action 7. Road maintenance system. Outline dossier accepted, but no action planned before October 1991. Needs more work on organization and self financing mechanisms.

Action 8. Credit system. No dossier as yet. Action hoped for later in year.

Action 9. Stone production. Actions related to building reviewed in 'Actions 1'. More research needs to be done on the potential for improving the machinery used in stone extraction and crushing, and in marketing. This is an action which needs greater development.

Action 10. Commune market. Revised dossier to be prepared for the beginning of June 1991.

Action 11. Van Le - Tam Diep road. Action approved, including purchase of a road roller. Work should start in April 1991.

Action 12. Improved stoves. Dossier to be reworked and improved by the beginning of June 1991 for review.

Action 13. Dossier and action to be developed: critical issue in overall development of programme.

Overview

As can be seen, only a few of the actions have reached the Phase II Pilot Application stage. Those that have done so now need to be developed with careful monitoring, evaluation of results, and the development of media and programmes to permit the successful dissemination of those actions which prove themselves worthwhile.

2.3.3. Funding of actions

Fig. 2 below shows the breakdown of funding for actions which have been approved in April 1991, of which one part constitutes funding through the Sub-contract on the "Equipment" budget line.

VIE/86/020 Appropriate technologies in construction

Ninh Van pilot applications : budget 1991

Action	Pilot applications			Bud get					TOTAL (Dongs)	TOTAL (US \$)
	Unit	Amount	Total (Dongs)	Users	Commune	District	Project	Sub-Cont.		
1. Housing improvement										
1.1 Stone dust for concrete										
1.2 Cement tile tests			274 000					274 000	274 000	36
1.3 Column tests			300 950					300 950	300 950	40
1.4 Stone masonry			404 200					404 200	404 200	44
2. Water supply										
2.1 Family water filter	46		3 082 000	4 407 000	448 000			4 327 000	3 082 000	411
2.2 Village well upgrade	1		4 08 000	4 000 000	4 805 000			2 008 000	4 805 000	641
2.3 Rain water tank and filter										
2.4 Public washing point										
2.5 Water tank and filter research			750 000					750 000	750 000	400
2.6 Water testing										
3. Latrines										
3.1 Latrine programme										
4. Van Le new settlement										
5. Road Hai Nhan										
7. Roads maintenance systems										
7.1 Equipment										
8. Credit system										
9. Stone production										
10. Commune market										
11. Road Van Le-Tam Diep - Road			88 744 000	57 330 000	48 583 000	40 000 000	42 845 000		88 744 000	43 468
<i>- Contract</i>			3 373 300		4 797 000			4 844 300	3 373 300	450

Action	Pilot applications			Bud get					TOTAL (Dongs)	TOTAL (US \$)
	Unit	Amount	Total (Dongs)	Users	Commune	District	Project	Sub-Cont.		
12. Improved stoves										
13. Develop commune capacity										
TOTAL			444 450 450	58 330 000	22 335 000	40 000 000	42 845 000	6 328 450	444 450 450	44 860
%				54%	20%	9%	41.52%	5.52%		

1 US\$ = 7 500 Dongs (April 1991)

844 US \$

Hanoi, 8/4/1991.

Dr Nguyen-Van Thanh
NPD VIE/86/020

Nguyen Thanh

[Signature]
Bob Hardy
CTA VIE/86/020

John Norton
on behalf of
Development workshop/GRET
Sub-contractor

[Signature]

* No. 11 BY SEPARATE AGREEMENT WITH VIE/86/020

DINH QUANG KHOCI
CHAIRMAN OF PEOPLE'S COMMITTEE
OF NINH VAN COMMUNE

[Signature]

HOANG KIM-BINH
VICE CHAIRMAN
PEOPLE'S COMMITTEE OF
HAI-LIP. DISTRICT.

[Signature]

Figure 2. Ninh Van pilot applications : Budget 1991

2.3.4. Monitoring of actions

Each action needs careful monitoring and reporting, so that the results can be evaluated, and compared with expectation and estimates of the original dossier. To facilitate this, forms have been prepared for the monitoring of costs and the monitoring of contributions for each individual action. Each action will also be monitored following the checklist of items and information prepared by DW/GRET. (See Annex 3).

3. THE TRAINING WORKSHOP ON "Methodology for planning and implementation of rural infrastructure development projects" IN HA NAM NINH PROVINCE

CERPAD, under the auspices of the VIE/86/020 project, organized the first of series of seminars on rural development, held in Ninh Binh from the 19th to the 29th March 1991. On the 26th and 27th March, DW/GRET and CERPAD staff working with the sub-contract staff, made a two day presentation related to the issues regarding the transfer of 'appropriate' technologies in construction. The text of the key note paper presented by DW/GRET is included in Annex 4. In addition to covering general issues, which provided a opportunity for DW/GRET to restate general points raised in earlier sub-contract inputs, the CERPAD staff presented a description of some of the technologies with which they have been working in Group A communes, and also described in outline the approach that has been taken in developing activities in Ninh Van, where an effort has been made to relate actions directly to the practical and affordable needs of the local population. The two day input terminated with a talk about the use of evaluation techniques as a tool for identifying where improvements should be made in the assistance that is provided to communes.

During the seminar, DW/GRET also made a presentation regarding typhoon-resistant construction and the experience of demonstrating and disseminating information about typhoon-resistant construction in the provinces of Quang Bing, Quang Tri and Thua Thien (VIE/85/019) and Thanh Hoa (VIE/89/035).

4. PREPARATIONS FOR WORK IN VINH PHU PROVINCE

Communes B2 and B3 will be selected for action in the next sub-contract phase in Vinh Phu province.

CERPAD staff are in the process of setting up the mechanisms for identifying and selecting communes to work with in the province of Vinh Phu. The programme schedule that has been prepared by CERPAD indicates that technology identification and transfer actions would begin at the end of the commune identification process, in September 1991. DW/GRET propose to review progress on this identification process in June 1991: should it occur that communes have already been selected earlier than programmed, action on the needs and resource analysis will be advanced in order to make sure that technologies already in use by CERPAD are not assumed to be the answer prior to conclusion being reached through a thorough analysis of the existing conditions, resources, local economics and needs.

5. OVERALL REVIEW OF PROGRAMME DEVELOPMENT

At this mid-term stage in the advancement of the sub-contract programme and CERPAD VIE/86/020 activities, it is appropriate to review areas where CERPAD actions are in need of strengthening.

5.1. Institutional framework and CERPAD staffing

The institutional framework of the project seems to have been clarified through the establishment of a clear single working relationship with CERPAD, replacing the earlier somewhat theoretical joint setup of working with CERPAD and the Centre for Appropriate Technology Transfer in Construction (CATTIC). In the case of the latter, apart from the secondment of some staff to CERPAD for the project, CATTIC have not in reality been involved in VIE/86/020. There remains some conflict of activity where CATTIC staff work through CERPAD on VIE/86/020 activities, and in parallel on CATTIC activities, and this would seem at times to divide the attention of the staff involved. In the Vinh Phu phase of activities it might be preferable to try and minimize this division of staff time between organizations.

CERPAD staffing has been increased, notably with the beneficial addition of an architect, working on the Ninh Van market design. As indicated in the Inception Report, DW/GRET still consider that additional staff will need to be recruited to cover:

Communication (graphics/media specialist) allocated 1/2 time to the subcontract activities;

Economist, allocated 1/4 time to the sub-contract activities;

Ethnologist (2 months);

Community Worker (3 months).

It should be noted that the role of information dissemination and of socio-economic development in the communes will be increasingly important in the programme. The CERPAD team remains for the time being too heavily weighted towards technology and technicians (see below for additional comments), and DW/GRET recommend that this staff balance should be redressed.

Within the Ninh Van core team certain issues are progressively being treated with more energy and professionalism - notably water supply, road building and the development of the new settlement and the market. This may in part reflect a better mutual comprehension between the sub-contractors and the CERPAD staff. (See 5.6. below on Communication and animation). However, there have also been staffing changes which have initially been somewhat detrimental to the development of the broader (organization and finance, as well as technical) aspects of the Ninh Van programme: Mr Khoi (planner and team coordinator for Ninh Van activities) has been moved off the team and replaced by Mr Binh (road construction expert) who has had less planning experience. This can be seen to have decreased the amount of attention being paid to Action 13 - Development of Community capacity - and has allowed the technical considerations of each action to become stronger to the detriment of social, organizational, financial and developmental issues all of which are extremely important. In the short term to compensate for this change in the team, DW/GRET recommend that the team should regularly discuss and review their ongoing programme with the planners available in CERPAD (working on other aspects of the project), and thus keep these issues to the forefront of Ninh Van actions.

5.2. Technology versus Technology, Organization and Financing

As indicated above, there is still too much focus on technology, and insufficient attention being paid to organization and finance, both essential in the development of sustainable appropriate technology actions. The technical/technician approach means that actions are still insufficiently related to important issues:

What are the needs? Does technology provide an answer?

Can the people or the commune afford what is being proposed?

Can the proposed action be repeated again without ongoing financial or technical support from CERPAD?

Are the proposed techniques really adapted to local economic conditions and are they socially appropriate?

Do people really feel the need for the innovation that is being proposed? Would they accept something simpler and cheaper but perhaps less durable?

Although the development of the technical dossiers mentioned above has already served hopefully to raise awareness of some of these issues, there needs to be even greater consideration of the non-technical issues:

organization of time and labour,

division of responsibilities for action,

development of financing mechanisms,

development of communication methods,

monitoring of the social appropriation levels for each action,

monitoring of costs.

In instances where, because of their previous training, some technical staff of the CERPAD team may regard certain aspects other than technology as being beyond their personal area of responsibility, (and this opinion has been expressed by some staff members), then this highlights the need for CERPAD to develop more of a team approach, where each action is considered from all its viewpoints, (technical, social, economic etc.), and not just as a free-standing technical activity to be delivered or built, and thus solely the responsibility of one technician. Rural development and technology transfer require a wide range of skills, and a recognition that many of the problems cannot be solved by technology in isolation.

As an example, finance and credit could and should be important parts of making it easier for people to improve the quality of their water supply or improve their built environment. Staff with suitable potential skills in these fields should be involved directly in water supply or housing activities, so that there is discussion about costs and credit with the technical staff and consideration of the implications these issues may have on the technical design (choice of material, durability etc.).

Similarly, if people are not convinced of the need to improve the storing and handling of human excreta, or of the benefits of water filtration, then social and health workers need to be involved in the field dissemination process and in the development of suitable media.

DW/GRET will continue to encourage the development of a broader approach and capacity within CERPAD which embraces these issues of organization and finance, to complement their existing stronger technical capacity.

5.3. Development of the commune capacity to plan and undertake development actions themselves

The CERPAD staff are constructively using the People's Committee members as the channel for commune decision making and for mobilizing the commune to participate. But just as there is a need to strengthen the broad based capacity of CERPAD, so too CERPAD staff still need to devote more time and effort to the task of developing the capacity of the People's Committee or "Development Committee" (as well as of individuals or cooperatives) to decide on and manage 'development' activities without ongoing technical assistance from CERPAD. This will become increasingly necessary as CERPAD begins work on Vinh Phu communes, and when the staff has less time to devote to Ninh Van (or earlier communes). An objective must be to develop as far as possible a sustainable capacity in the commune to undertake the type of work that CERPAD is initiating. To this end, DW/GRET will be focussing more attention on developing CERPAD's capacity to undertake 'on the job' training of counterpart field workers during the execution of actions in Ninh Van commune (and in subsequent communes), aimed at developing a commune level implementation and management capacity.

5.4. The need to coordinate actions

In developing the implementation programme for the commune, and in working towards an agreement with the commune and with the individual families on levels of financial and labour contribution, there must be a coordinated plan embracing all the activities: at the moment this role of programme coordination needs further strengthening.

For example, if road building and road maintenance are to be undertaken in the autumn, depending heavily on commune labour contributions, will there still be enough labour available for developing the market upgrading programme, or for developing Van Le new settlement, both of which will also require labour inputs from the commune?

The coordination should view all the programmes together, and work out when they can take place relative to the capacity of the commune and families to mobilize resources and labour. It should advise the commune about the global requirements, and work out an order of priority for each action.

Coordination will also need to be applied to the development and application of public information operations - for example, many of the technical dossiers mentioned above suggested using posters, but if all actions used this same media, the impact would be greatly diminished. There needs to be coordination between actions in terms of programming and content.

5.5. Equipment installation

At the start of the DW/GRET sub-contract period in October 1990 equipment for soil testing was supplied to the VIE/86/020 project, as requested in the original ToR. In the first week of April 1991 agreement had been reached to make use of a room belonging to CATTIC to house this equipment. It is regrettable that an effort was not made to prepare the space, (cleaning, installation of tables and chairs, etc.) so that DW/GRET could have helped CERPAD staff to set up the equipment during the March/April 1991 missions, especially since the equipment will be of use in undertaking the tests outlined in the Technical Dossiers 1.1 and 1.2. We recommend that this laboratory space be prepared as quickly as possible, and that a junior technician be allocated for training in the use of the equipment.

5.6. Communication and animation

Communication between sub-contract DW/GRET staff and CERPAD staff has not at all times been easy because of problems of language. This has given rise at times to mis-understanding and to frustration felt both by the project's Vietnamese counterparts and by DW/GRET staff. This has inevitably made it harder for CERPAD staff to fully understand what has been expected of them, and harder for DW/GRET to assess project performance and staff capability. Recently CERPAD have employed two interpreters, and as the latter gain experience the process of communication will become easier.

Difficulties are also encountered in monitoring and following progress on specific actions, where information has not been documented in English. This has sometimes led to a considerable waste of time. In order to avoid this situation in the future, DW/GRET strongly recommend that CERPAD undertakes to translate all working documents on an ongoing basis: for example, document translation should be brought up-to-date on a weekly basis. Translation of documents should not be left until the time when consultants have already arrived in Hanoi. Material that needs to be documented in English includes field notes and results of site visits and surveys.

Since English language classes are no longer being organized, it has also been suggested by DW/GRET that English language courses on cassette could be supplied to staff who at present speak little English.

6. REVIEW OF TIMETABLE

6.1. Overall programme revision

In March 1991, DW/GRET were informed by the project CTA, Bob Hardy, and the NPD, Dr. Than, that, based on a change in approach in the overall planning process, the selection cycle to identify the B2 and B3 communes in Vinh Phu province will now be undertaken from May through to August 1991. This is much later than had originally been planned. Work on evaluating resources and identifying needs and problems cannot begin in these communes until the commune identification process is complete. To accommodate this change in programming, DW/GRET have been requested by the NPD and CTA to re-schedule their programme and to prolong sub-contract inputs through to March 1992, in order that technical assistance can be provided to CERPAD through a more complete cycle of actions in the B2 and B3 communes, from the technology transfer identification phase (Phase I, see Inception report) through to Phase III dissemination.

DW/GRET have agreed to accept this modification to the programme subject to UNCHS approval of a revision of conditions requested by DW/GRET.⁴

Subject to this approval, DW/GRET core team staff (J. Norton and G. Chantry) would themselves undertake the remaining missions allocated at present to extra specialist inputs, thus giving them time for additional missions beyond those previously planned. In addition, it is proposed to re-schedule some of their previously programmed inputs to dates later in 1991 and in 1992. The revised timetable as discussed with the NPD and CTA and transmitted to UNCHS is shown below.

6.2. Short-term programming

Based on the assumption that this re-scheduling is approved, a more detailed programme of actions and inputs has been prepared for the period April through to October 1991. This programme is given in Annex 5. It will be reviewed during the proposed mission by G. Chantry at the beginning of June 1991.

⁴ Conditions outlined in fax transmission from DW/GRET to UNCHS dated 25th March 1991.

7. LINKS TO OTHER PROGRAMMES

DW/GRET have been asked to submit a proposal to UNCHS for an extension to the VIE/89/035 'Rehabilitation in Than Hoa' activities which were undertaken by DW/GRET in 1989/90. This extension would include the installation of a water supply system to the Quang Xuong hospital, and the organization of a short workshop on improving village water supplies and sanitation. DW/GRET have invited CERPAD staff to collaborate with them on the organization of the workshop.

Annex 1. Technical dossier format

TECHNICAL DOSSIER FORMAT

NAME OF ACTION:

NAME OF VILLAGE:

1. Context

Physical...

Social...

Economic...

2. Problems identified

3. Objectives

4. What innovation is being proposed

5. Criteria for choosing this solution

(e.g. affordability, durability, use of local materials, etc.)

6. Drawings of proposed action (details, plans, sections)

List materials required and quantities

7. Construction process

8. Material quantities, cost and labour breakdown

9. How the technology will be operated and managed

10. Detailed implementation process step-by-step

11. Media used for wider dissemination

12. Budget breakdown

TOTAL	
COMMUNE	%
USERS	%
DISTRICT	%
PROJECT VIE/86/020	%

13. Signatures

Annex 2. Draft technical dossiers

Two draft technical dossiers, as prepared by CERPAD staff using the format proposed by DW/GRET (see Annex 1), are reproduced on the following pages. These represent the best dossiers prepared.

ACTION 2.2

WATER SUPPLY AND SANITATION IN NINHVAN COMMUNE

Name of work: Improving and building the public well in Phuleng village.

Name of the village/ family or the locality of experim - entation: the well of Phuleng village

1. Situation discription (material, social, economic context)

The well in Phuleng village is now in the state of being badly damaged due to the uncontinuous maintain-
ance. There is no outskirt well surrounding, so water keeps pouring down into the well following the naturel flow, thus bringing in rubbish and dung.

Because of the naturel lend-sliding and land bank up, the dimension of the well is enlarged, the height from the bottom to the bank amounts 2 metres. During the period from December to February, the well becomes dry, so water is obtained to the well by channelling across the fields. The water obtained by this way is very dirty carrying various disease germs , such as: diarrhoea, trachoma,...

People get used to utilizing water from the well without refining, as they can't effort to have their own tanks for water provision and to dig their own wells.

2. Brief discription of the problem.

The experimentation on the water sample taking from the village well shows that this source of water is not fit for household using and cooking of 37 families.

So it is imperative to improve and build up the village well especially for families who have to use the water from it.

3. Purpose description

The improvement aims at serving the poor families who are not able to make the constructions for their own, thus improving people's health, increasing labour capability and making more products for society.

4. Description on the new, creative things to be proposed.

- Cleaning and sanitizing the water source in accordance to the standards from the Ministry of Health Care.
- Lightening the labour of people (24% of the households).
- Disseminating among population a new habit of using water and sanitizing the water source.

5. Description/ catalogue of standards for choosing this approach: (for example: payable, durable, local materials ...)

- Decrease the cost of the construction by using existing local materials.
- Easy to maintain, operate and use the construction.
- Purify the water source with the standards of rural using water as required by the Ministry of Health Care.

6. Construction design (details, / fields/ sections)

- See the enclosed diagrams.*
- 1st stage: - pump water out, scrape the well bottom.
- repair the bank, bank up and heighten the existing bank by another 0,5m.
 - build the stone well of \varnothing 4m, 5m deep.
 - make a channel from the river to the well.
- 2nd stage: - make ground for tank construction
- build the refinery tank and container.
 - build the tank surface

7. Description of the performance.

9. Technological operation and maintainance

- assumed by the hamlet
- assigned by individuals in
 - +operating
 - +constant controlling and finding damages
 - +repairing in time

10. Detail description of the performance (step by step)

- investigating and surveying : October- December/ 1990
- studying, designing : Jan - Apr / 1991
- negotiating on the construction : from April 1991
- directing techniques, conducting performance from Apr- July 1991
- evaluation, appraisal and dissemination: from August- Dec 1991

11. Description of the mass media using for wide-scale dissemination:

- disseminating on loudspeakers
- encouraging and mobilizing among working groups, units

12. Expression of the budget source

Item	Total	Payer		
		commune	population	sub-contract
- material	2.703 500	703.000		2.000 000
- labour	1.602.000	602.000	1.000.000	
- machines on performance	500.000	500.000		
		1.805.500	1.000.000	2.000.000

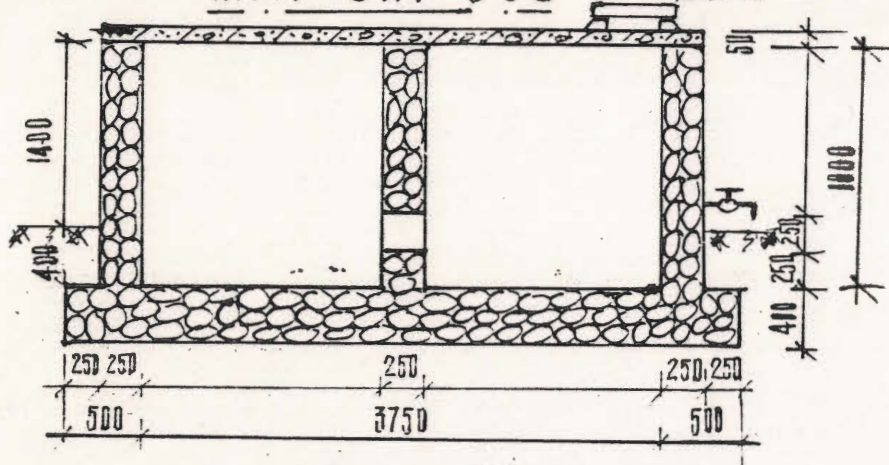
- accomplish.

8. List of material volume/ price/ labour

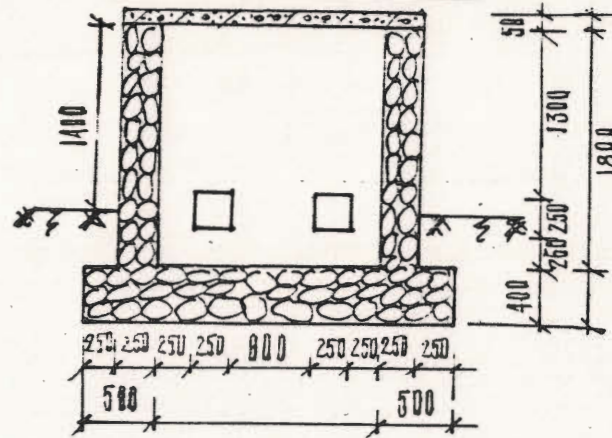
Item	materials	unit	volume	unit price	total price
material	cement	ton	2,8	400.000d	1.120 000
	great stone	m ³	50	6.500	325.000
	broken stone	m ³	6	15.000	90.000
	stone powder	m ³	35	10.000	350.000
	lime stone	ton	1,8	200.000	360.000
	iron Ø 6	kg	30	3.500	105.000
	steel net	m ²	1,5	9.000	13.500
	electric pump	piece	1	200.000	200.000
	water pipeline	m	10	12.000	120.000
	valves and taps	piece	4	5.000	20.000
					2.703 500
labour	- scrape and bank	labour	80	5.000	400.000
(men	up				
power)	- dig, build stone	-	75	6.000	450.000
	well				
	L make channel	-	8	5.000	40.000
	L dig, build tank	-	70	6.000	420.000
	L make tank surface	-	16	5.000	80.000
	L bank the well wall	-	30	5.000	150.000
	L installing +fitting	-	2	6.000	12.000
	L the pumper				
	L accomplishing	-	10	5.000	50.000
					1.602 000
machines	pumping water out	shift	5	100.000	500.000
on perfo-					
rmance					
TOTAL					4. 805 500

BỂ CHỨA NƯỚC MƯA GIA ĐÌNH $W_b = 10 m^3$

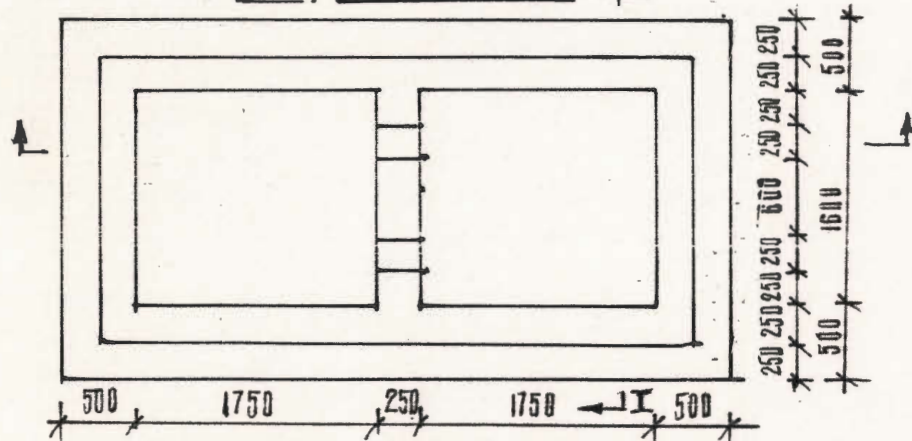
MẶT CẮT ĐỌC *nắp bể*



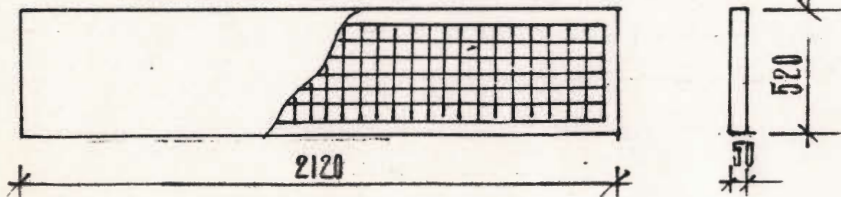
MẶT CẮT I.I



MẶT BẰNG I



CHI TIẾT TÂM ĐẠN NẮP BỂ



THÔNG KÊ VẬT LIỆU

Số TT	Vật liệu	Đơn vị	Khối lượng	Ghi chú
1	Xi măng	kg	1580	
2	Đá hộc	m^3	14,500	
3	Đá dăm	m^3	2,500	
4	Mạt đá	m^3	8,000	
5	Vôi cục	kg	400	
6	Sắt phi 6	kg	30	
7	Lưới thép	m^2	0,04	
8	Vòi nước p20	chiếc	1	
9				

TRUNG TÂM, PHÁT TRIỂN NÔNG THÔN Y1E 86/020	BỂ CHỨA NƯỚC MƯA GIA ĐÌNH $W_b = 10 m^3$		Bản vẽ số
			Hoàn thành
GIÁM ĐỐC	CHỦ NHIỆM THIẾT KẾ	CAN	KIỂM
NG. VĂN TÂM	Lã-q. Bình	PHAN THỊ LIÊN	Lã-q. Bình

ACTION 11.1

VAN LE - TAM DIEP ROAD CONSTRUCTION

Name of action: Expand and improve Van Le - Tam Diep road.

Name of village: Van Le village, Ninh Van commune,
Hoa Lu district, Ha Nam Ninh province.

1. Describe context:

a. Van Le - Tam Diep road links with Van Le village, Ninh Van commune. Tam Diep township is situated with the total length of 1100 m, 800 m of which belong to Ninh Van commune and 300m belong to Tam Diep township, through 1A national road.

The road which runs through 2 shallow fields of Ninh Van commune is always flooded and now remains unoperational. The total area of this field is up to 135 ha. In Van Le village, there is a stone mountain range, which at present hasn't been exploited yet because of lack of ease for transportation. Van Le - Tam Diep road cannot undertake the transportation as the foundation is narrow and low and made of earth and is often covered with water in rainy season.

b. People face with difficulties of organization for improving economy, reclaiming and exploiting stone in this area as well as developing the new settlement because of bad roads.

c. If Van Le - Tam Diep road is expanded and improved, 135 ha of this area will be reclaimed and stone production will be better and supply for the south of Ninh Van commune with the capacity: 50 tons per day. And the distance of road can be reduced to 10 km so far.

2 - Problems to be solved.

Although it is very useful to build Van Le - Tam Diep road but up to now the leaders and people in Ninh Van commune have not built this road. They only embank a earth road for walking because they cannot afford to buy materials for feeder road and culvert construction.

If authorities and people in commune were helped with budget for buying material, equipment and with the labour of people in commune. The road line will be built to improve the living conditions and develop production.

3 - Main objectives.

- Build this road line aim at reclaiming 135 ha of land along the road by building roads as well as irrigating.
- Make a fundamental base for exploiting stone in Van Le to supply to the south areas of commune. The distance of transportation will be reduced to 10 km and annual load of transportation is reduced to 180000 tons/km.
- Improve new settlement of the commune.

4 - Proposed work to be implemented.

On the base of existing foundation of road , it's proposed to widen the foundation from 3.50m to 4.50m for lorry. Embank the foundation higher than the surface of field of 1.50m for preventing from flooding in rainy season. Spread stone on the road for transporting every season.

5 - Main critters for building constructions.

- Undertake cars or traffic with nearly 10 tons.
- Cars or traffic can be travelled through all the year around.
- wide enough for cars or traffic meeting.
- Suitable for the capacity of investment which can be mobilize.
- Durable for 5 years.
- Use materials available in the commune.
- Undertake for transportation and irrigation.

6 - Proposed designs for building:

On the base on basic needs above, road line will be constructed as following (see drawings).

7 - Building process:

In order to implement building construction which has been proposed, 2 phases will be needed as:

1st phase:

- * widen and make road foundation higher as designed
- * Building culvert system.

The 1st phase will be implemented in April, May, June / 1991.

- 2nd phase: * Build surface road with stone layer.

The 2st phase will be implemented in Oct, Novem, Decem/1991.

8 - Quantity and cost for building:

Object	Items	Quantity	Unit Cost	Total
Widen & embank foundation higher	1. Dig, embank & widen	3345m ³	5000d	16725000d
	2. Take earth from mountain	1650m ³	7500d	12345000d
	3. Ram earth by hands	3300x2 x6600m ²	1000d	6600000d
	4. Transport earth from mountain	1650m ³	3000d	4950000d
Total:				406 50000d
Make sur-face road with tone, gravel and broken tone	1. Materials			
	- Stone for foundation.	910m ³	6500d	5915000d
	- Gravel	300m ³	12000d	3600000d
	- Gravel for sur-face.	430m ³	12000d	5160000d
	- Stone for sur-face.	130m ³	19000d	2470000d
	- Broken tone.	70m ³	10000d	700000d
Total:				17845000d
Total:	2. Labour force			
	- Trowel foundation.	3300m ²	7000d	23100000d
	- Spread surface	3300m ²	2500d	8250000d
	- Spread materials for preventing corrosive	3300m ²	100d	3300000d
Total:				31680000d
Total:	3. Transport.			
	- Transport stone	1840m ³	300d	5520000d
Total:	4. Roller			
	In order to press surface road	3300m ²	930 ^d 1333d	3.069.000 ^d 4400000d
Total:				58444000d

Object	Items	Quantity	Unit cost	Total
Build culvert with stone (being experimented)	1. Materials			
	- Stone	21m3	6500d	136500d
	- Square stone	360m3	18000d	64800d
	- Cement	320tons	400000d	1280000d
	- Sand	950m3	10000d	95000d
Total:				1576300d
	2. Labour			
	- Dig ground to build culvert	60m3	5000d	300000d
	- Build wall culvert foundation	205w.d	5000d	1025000d
	- Build vaulted culvert	30w.d	5000d	150000d
	- Fill up with earth	33m3	5000d	165000d
	- Embank culvert frame	5.50m3	5000d	27500d
	Total:			1695000d
3. Transport				
- Transport stone	51tons	2000d	102000d	
Total for culvert				3373000 ^d
Total:				110068300d

9 - Operation and maintenance:

Construction is finished, it will undertake for every kinds of traffic with the capacity: under 10 tons from Tam Diep to Van Le bridge and after improving Van Le bridge, the traffic can go to producing places and rural settlement in commune. Improvement of Van le bridge will be implemented in 1992.

Annual maintenance will be done as following phases:

- Spread materials such as broken stone for preventing from corrosive: 0.02m³/m².
- Weld and repair holes and big holes without delay while operating.
- Fill up and embank broken points on the roads.

10 - Implementation process.

- a. Survey: October and December / 1990.
- b. Study designs: January - April / 1991.
- c. Construction agreement: April / 1991.
- d. Exercise technical : April / 1991
- e. Build road foundation and culvert: April - June /1991
- g. Receive 1st phase of building: July / 1991
- h. Build surface road: October - December / 1991
- i. Receive 2st phase: December / 1991
- k. Practise operation level and maintenance of roads.

11. Organize for propaganda and dissemination.

In order to make wide diffusion in commune aimed at mobilizing people to contribute for building and maintaining and operation, these following methods may be set up:

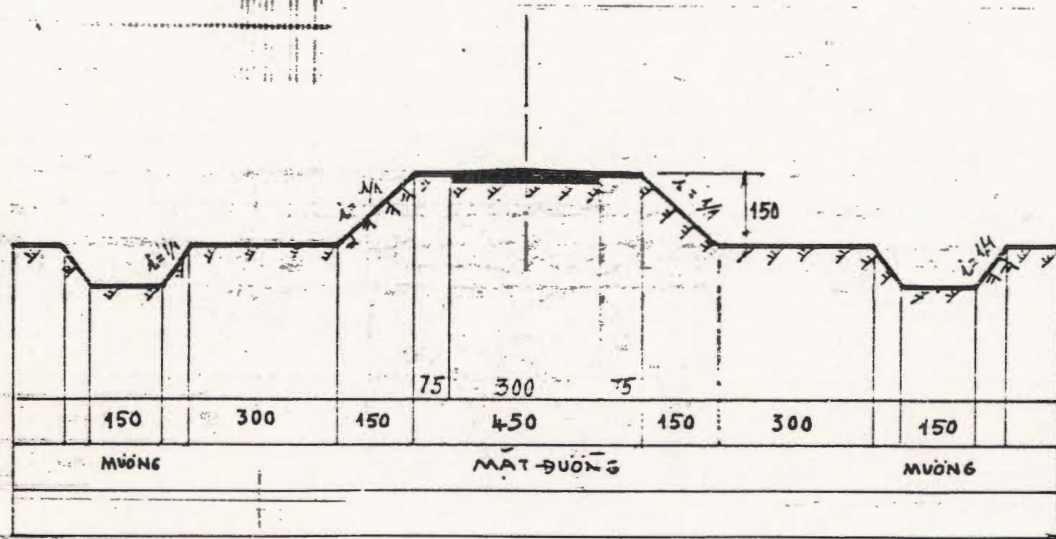
- Disseminate and propagandize over public louderspeakers.
- Propagandize by holding some meetings.
- Propagandize and mobilize some production groups...

12. Investment resource:

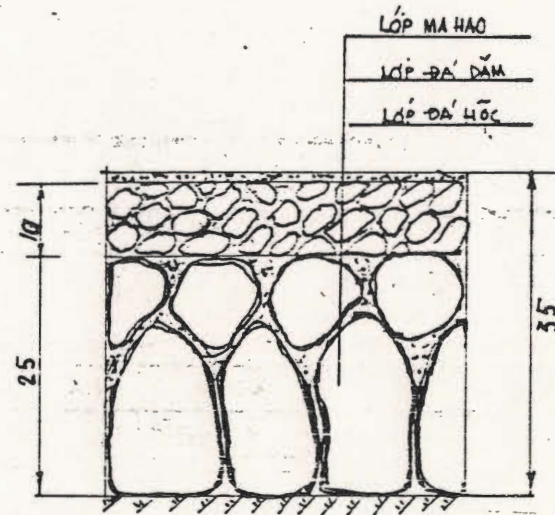
Items	Quantity	Unit cost (1000d)	Total (1000 ^d)	Unit payment (1000 ^d)				
				Com.	People	Dis.	Project	Subcon
1. Build road foundation	1100m	36955	40650	5000	25650	10000		
2. Build surface road	3300m ²							
-Materials for surface	3300m ²	541	17845	5000			12845	
-Labour for surface	3300m ²	9600	31680		31680			
-Roller *rent	3300m ²	0.930	3069	3069				roller (22000)
*having roller		0.930	3069					
-Transport	1840m ³	300	5520	5520				
3. Build culvert	1 cul.							
-Materials for building	1 cul.	15763	15763					15763
-Labour for building	1 cul.	1695	1695	1695				
-Transport	51tons	2	102	102				
			1021373		57330	10000	12845	1576,3
			+22000	20386				+roller (22000)

XÃ NINH VÂN ĐƯỜNG VAN LÊ - TAM ĐIẾP

MẶT CẮT NGANG ĐƯỜNG



KẾT CẤU ĐIỂN HÌNH



CHIỀU DÀI TUYẾN : 1.100 m

MẶT CẮT NGANG NỀN ĐƯỜNG : 4,50 m

MẶT ĐƯỜNG : 3,00 m

CAO ĐỘ : 1,50 m ÷ 1,80 m

KHỐI LƯỢNG ĐÀO ĐẬP ĐẤT : 4.995 m³

DIỆN TÍCH MẶT ĐƯỜNG : 3.300 m²

KHỐI LƯỢNG ĐÁ :

ĐÁ HỐC : 910 m³

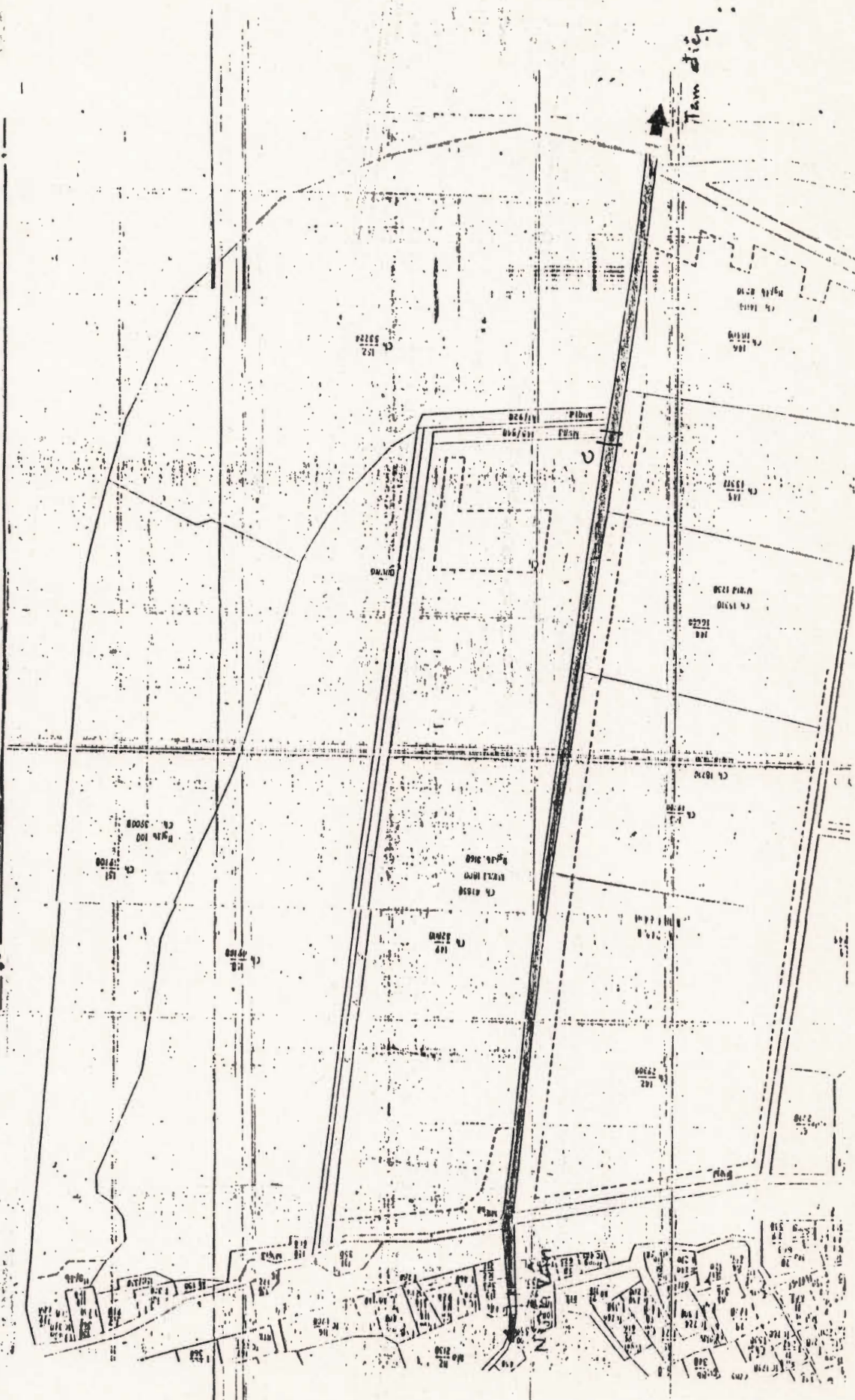
ĐÁ DẪM 2x4 : 130 m³

ĐÁ DẪM 4x6 : 730 m³

ĐÁ MẶT : 70 m³

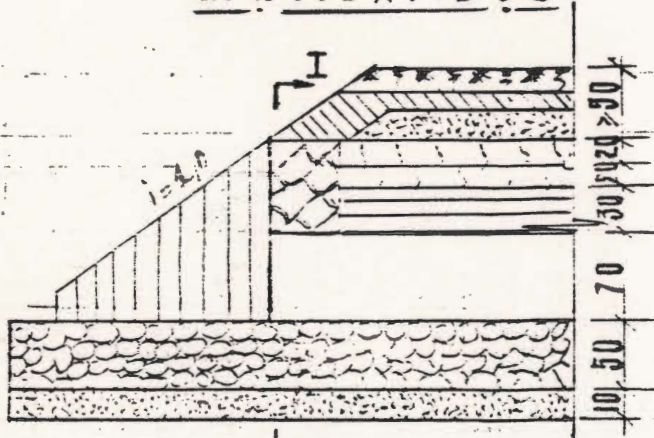
TRUNG TÂM PHÁT TRIỂN NÔNG THÔN DỰ AN VIỆC ĐC/ĐDP	DỰ AN GIAO THÔNG NÔNG THÔN ĐƯỜNG VAN LÊ - TAM ĐIẾP MẶT CẮT NGANG VÀ KẾT CẤU -		ĐƠN VỊ S ¹
			HOÀN THÀNH
GIAM ĐỐC	HỢP ĐỒNG	CHỦ NHIỆM	THIẾT KẾ
NG: VAN THAM		LÀ QUANG BÌNH	NG: L. CƯỜNG

MẶT BẰNG TUYẾN ĐƯỜNG VAN LÊ TAM DIỆP

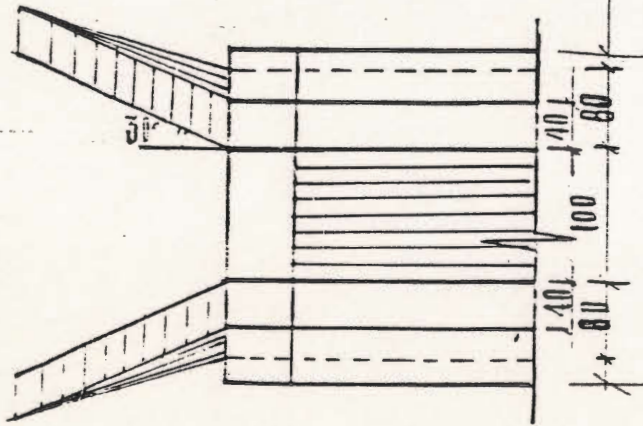


CÔNG VÒM ĐÁ

MẶT CẮT DỌC



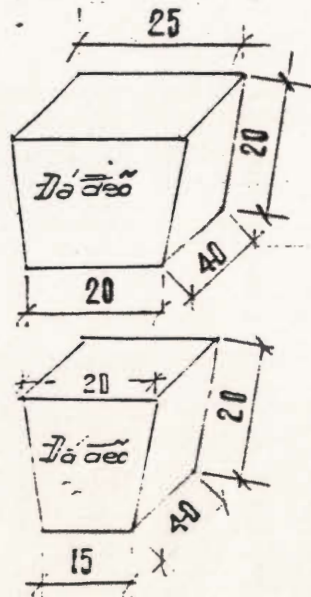
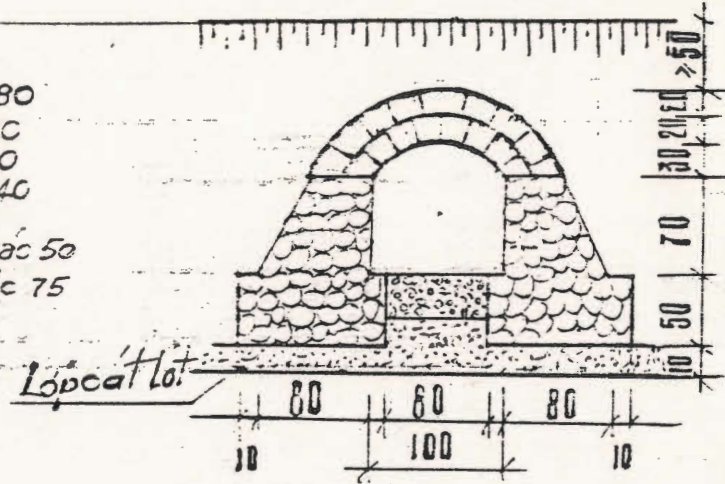
MẶT BẰNG



Quy cách xây công

- Khẩu độ công : 1m
 - Vòm công :
 - Chiều cao công 0m 70
 - Chiều dài công 5m 50
 - Chiều dày tường công 0m 80
 - Chiều dày vòm 0m 40
 - Chiều sâu móng 0m 50
 - Chiều dày lát đáy công 0m 40
 - Xây vữa xi măng cát
- Tường công mác 50
Vòm công mác 75

MẶT CẮT II



KHỐI LƯỢNG VẬT LIỆU

- Xây móng công : $0,5 \times 1 \times 8 \times 2 = 8,00 \text{ m}^3$ đá hộc
- Xây tường công : $0,7 \times 0,8 \times 5,5 \times 2 = 6,160 \text{ m}^3$ đá hộc
- Xây vòm công : $0,4 \times 1,63 \times 5,56 = 3,60 \text{ m}^3$ đá đẽo
- Xây đáy công : $4,00 \text{ m}^3$ đá hộc
- Lát đáy công : $0,4 \times 1 \times 5,5 + 0,4 \times 0,5 \times 1,6 \times 2 = 3 \text{ m}^3$
- Vữa xi măng < mác 50 > $9,00 \text{ m}^3$
- Vữa xi măng < Mác 75 > $2,00 \text{ m}^3$
- Đá hộc $20 \text{ m}^3 : 132.000$ Đẽo : $3,60 = 65.000$
- Xi măng $3200 \text{ kg} : 1280.000$

Annex 3. Action monitoring - checklist / Monitoring of costs v. budget

VIE/86/020

Pilot applications in Ninh Van : Monitoring

(Fill in one form for each action)

I/ GENERAL ACTIVITIES

Indicate with dates, names of technicians involved :

- Research/work in CERPAD-Hanoi
- Field work in Ninh Van
- Others activities (contacts, meetings...)

II/ PHASE I : NEGOCIATION/ORGANIZATION

a/Indicate meetings held in Ninh Van with local authorities, social organisations, production team, services... with date, number of participants, objectives of the meeting, and the results obtained.

b/Choice of families for implementation : describe the process you have followed :

- making contact with local authorities, organisations, families;
 - indicate criteria for selection of families;
- and indicate the choice of families:
- their name, composition of family, activities, income, existing living conditions. Indicate agreed level of participation.

c/Mobilization of labour force : indicate the different steps in mobilization process: meetings, discussions... Indicate results - how many people per day, etc, what action.

III PHASE II : CONSTRUCTION

(1 page for each prototype)

a/ Technical aspects;

- detailed planning of works;
- number and type of workers;
- problems or difficulties encountered;
- changes to the plans made during the work;
- control of building materials quality (how has this been done?);
- supervision (what process, and how well has it been done)

b/ Economical aspects;

Carefull monitoring, for each operation, of :

- Quantities of building materials delivered on the site day by day;
 - Quantities of building materials used day by day;
 - Quantities of labour used day by day;
- (Detailed for each day/quantity of work done should be entered in a site work book to be kept by the works

supervisor, who will be present every day that work takes place.)

- Fill in the sheets (Monitoring of costs/contributions) from the dialy work book).

Note: it has been agreed that a maximum tolerance of 10% above or below the estimated quatities will be accepted.

c/ Social aspect

- Training activities :

- trained people (indicate number, activity, skill...);
 - indicate method of training;
 - indicate training materials and other materials used.
- Means of diffusion - describe what (if any) methods have been used, and provide texts of announcements, copies of documents, etc.
- radio annoucement (text, dates, location...)
 - visits (who met, where to, why?)
 - meetings (who with, why, what result?)...

IV/ DOSSIER PHOTOS

For each operation, photos in black and white, and slides must be taken, documenting the detailed process - this is particularly important for later on developing of illustrated material for dissemination and communication. Keep receipts of film, which will be reimbursed.

V/ RESULTS

From both the technical and economical point of view, compare the construction as actually carried out, with the informaton in the preliminary Dossier.
Propose activities to extend the action in the Commune.

Ninh Van pilot applications

Monitoring of costs

Action :
Operation :

Estimation : / /91 Completion : / /91 to / /91

Item	Estimated cost						Real cost						Difference		
	Orig.	Unit	Quant.	Unitary cost	Sub-total	%	Date	Supplier	Quant.	Current price	Sub-total	%	Quant.	Unit. cost	Sub-total
Total					(Dongs)						(Dongs)				
					(US \$)						(US \$)				

Estimated cost				Real cost				Difference	
Components		Amount	%	Components		Amount	%		%
* Labour				* Labour					
*Building materials :	Local			*Building mat. :	Local				
	National				Nat.				
	Imported				Imp.				
	Total				Total				
*Transport				*Transport					
*Others				*Others					
Total				Total				Total	

Annex 4. Key note paper on Technology Transfer, Training Workshop, Han Nam Ninh province

The term "appropriate technology" has been increasingly used over the last 20 years. But what does it mean? It implies that there are a range or type of technologies which are in themselves "appropriate" and that by their very nature these can be used widely to solve problems.

Unfortunately, this is not so. An "appropriate technology", usable anywhere, does not exist, and because of this many "appropriate technology" projects around the world have failed. This is because they have not managed to resolve identified and locally perceived problems in a locally acceptable and sustainable way. They fail mainly because they cannot continue to be used once external support from a centre or agency, (for operating costs, subsidies, technical support and maintenance,) is withdrawn. These are all factors which have to be taken into account if sustainability is to be achieved. And in Viet Nam - with millions of rural poor - replicability and sustainability with minimal financial support is essential. Otherwise, costs are prohibitive.

Nevertheless, for any given situation, any sort of technology might be appropriate; it might be "high" technology or traditional technology, provided it corresponds realistically to the available resources, human, material or financial, of the target group that is being aimed at, and provided it corresponds to the social and cultural reality of the people concerned. Above all, it must correspond to identified and perceived needs. There are thus certain criteria which must be followed for a technology to be truly "appropriate":

- it must correspond to an identified need, which is also locally perceived;
- it must use locally available resources;
- it must be socially and culturally acceptable;
- it must be replicable and sustainable without external support.

The people best placed to assess these criteria and the future users - the "target group". Thus the process of developing and transferring appropriate technologies is - must be - a joint process, involving the population and those, such as CERPAD and yourselves, who are trying to help them.

This help is important. Organizations such as CERPAD have a key role to play in analyzing a given problem, in making sure that a proposed solution is in reality a *solution*, and that it meets the criteria given earlier.

For in effect, the role of technicians is to ensure that a new idea or improvement is in reality cost effective and affordable, and provides the people with something better than they had before.

And it is ultimately our conscience which must make sure that people are not encouraged to adopt technologies which in the end will leave them worse off than they are now. There are, in other countries, too many examples where this has happened.

So, what exactly is technology transfer?

It means taking an idea - which might be a process or a technology - which has been identified as responding to the criteria mentioned above, and *transferring* it to the people who are in reality and over a long time going to use it and do the work.

Transfer means making sure that the target group have the information, tools, organization, and finance necessary for the technology to be appropriate, to work and to be replicable.

Who are we aiming at?

The main target group is identified as those living in rural areas, and yet we can divide most communes into at least three groups:

- the wealthy, those who have a good surplus
- a middle range, people with little or no surplus
- and the poor, people who typically receive a food subsidy each year.

When working to improve conditions in rural communes, it is the wealthy and the middle range whom it is easier to help, and at whom "appropriate technology" projects are most easily directed.

The poor are far harder to help, and thus it is important to recognize two things:

1) the inability of the very poor to save money or obtain credit is a key factor which stops them from benefitting from "improvements" and which therefore contributes directly to keeping them poor.

For example - because you can't afford to buy durable building materials, you have to replace parts of your house every year, or every two years. After several years, you will have spent as much money on short life materials as you would have done on durable ones, but you have not improved your home at all.

2) Because the poor can seldom afford good quality durable solutions to their problems, it is often important to consider proposing intermediary solutions which are perhaps less durable or which perform less well, but which allow a gradual improvement of conditions over several years.

A key factor in both cases is that economy and finance are critical, more so in fact than "technology".

This is important. One should not consider technology on its own. A successful transfer and application of a technology is combined in every case with questions and concerns about FINANCE and ORGANIZATION. A technology transfer programme which does not address these three things together - *technology, finance, and organization* - will invariably run into difficulty.

Annex 5. Programme of actions in Ninh Van / Inputs

VIE/86/020

Sub contract - Ninh Van Pilot Applications
Follow on actions - April to October 1991

- 10 April Agreement on revised timetable, progress and estimated budgets for each action (see attached sheet).
- 10 - 15 April Start actions 2.1, Water filter/ Family well
2.2, Public well
11.1 Van Le - Tam Diep road
(Binh) Go to Ninh Van, and obtain signed agreement with People's Committee (Commune and District) regarding level of participation and financial contribution. For each action, project provides a detailed breakdown of budget and labour inputs.
- Project staff to send by fax copy of signed agreement to DW/GRET in France for confirmation that this agreement has been reached in accordance with agreement signed by DW/GRET on 10th April.
- 22 April - 1st June
Implement actions 2.1, 2.2, 11.1
Follow up on each, prepare progress reports in Vietnamese and English, for hand over by 1st June at latest.
- 10 April - 1st June
Prepare or complete dossiers for other actions (those not completed by the 10th April), and provide English translation ready for the 1st June.
- 1st June Two week mission by G. Chantry
Programme:
Day 1: Receive progress reports on actions started in Ninh Van, and revised dossiers (all texts in English). Review by Chantry.
- Day 2, 3 & 4: Visit Ninh Van with team to monitor progress. Evaluation of impact and resistances to actions.
Analysis of commune mobilization and people participation. Review of problems.
- Days 5 & 6: Hanoi - discussion and agreement on new and revised dossiers.
Technical assistance inputs on started actions.

Days 7,8 & 9: Working groups on - Methods of evaluation (technical, economic, social acceptance); methods of diffusion (analysis of resistances, development and use of media).

Days 10 .& 11 Planning of new actions in Ninh Van:
Planning evaluation of actions, and means of communication and dissemination. Detailed action and programming.

July - 15th Sept.

Monitoring by project team of actions in Ninh Van;
Prepare materials for diffusion on successful operations.

Prepare and send monthly progress report to DW/GRET in France.

15th Sept 24th Oct 1991. Missions by Guillaume Chantry and John Norton. Programme to be supplied after June mission by G. Chantry.