

LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDANCE DEMOCRACY UNITY PROSPERITY



PRIME MINISTER OFFICE
Poverty Reduction Fund (PRF)

FINAL REPORT
FOR
TECHNICAL ASSESSMENT



MEK Consultants Co., Ltd.



ACCMIN Consultants Co., Ltd.

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TABLE OF CONTENTS

•	ACKNOWLEDGEMENT		
•	EXECUTIVE SUMMARY		
	➔ Back Ground		
➔	OBSERVATIONS		
➔	RECOMMENDATIONS		
1.	Technical Assessment		
	1.1	Objective of the Technical Assessment_____	1
	1.2	Methodology and Tools Adopted_____	1
	1.3	Sampled Frame and Sampling Sub-projects_____	2
	1.4	Sample Sub-projects by Region and Project Type_____	5
	1.5	Duration of Civil Works _____	6
	1.6	Response of Key Stakeholders_____	6
2.	Design Compliance		
	2.1	Building of Sub-projects_____	8
	2.2	Latrines_____	8
	2.3	Wells_____	8
	2.4	Rural Roads (Bridge and Culverts) _____	8
	2.5	Drainage and Sewerage Sub-projects_____	9
	2.6	Irrigation Sub-projects_____	9
3.	Technical Quality of Sub-projects		
	3.1	Building Sub-projects_____	10
	3.1.1	Splash Aprons_____	10
	3.1.2	Quality of Timber_____	10
	3.1.3	Treatment and Painting_____	11
	3.1.4	Roofing_____	11
	3.1.5	Floors and Floor Quality_____	11
	3.1.6	Furniture_____	11
	3.1.7	Water Supply Facility_____	11
	3.2	Rural Road (bridge/culvert)_____	12
	3.3	Latrines (and similar facility)_____	12
4.	Site Management		
	4.1	Contractor Profile_____	13
	4.2	Sub Contracting_____	13

5. Procedural Findings

5.1	Appraisal Department_____	14
5.1.1	Site Supervision_____	14
5.2	Application and Adherence to the Operation Manual_____	14
5.2.1	Recording and Documentation_____	14
5.2.2	Site Recording_____	14
5.3	Analysis of Data Gathered through Structured Questionnaires_____	14
5.3.1	Identification of Local Priority Needs_____	15
5.3.2	Preparation of Designs_____	15
5.3.3	Selection of Contractor_____	15
5.3.4	Responsibility for Procurement of materials_____	15
5.3.5	Information on Project Implementation_____	15
5.3.6	Completion of Sub-projects_____	15
5.3.7	Environmental Considerations_____	15
5.4	Community Counterpart Contribution_____	16
5.4.1	Level of Local Contribution_____	16
5.4.2	Local Efforts on Sustainability_____	16

6. Conclusions

6.1	General Observations_____	17
6.2	Sectoral Issues Affecting Technical Quality of Sub-projects_____	17
6.3	Roles of Responsibilities of the Appraisal and Supervisory Staff_____	18

7. Recommendations

7.1	Building Sub-projects_____	19
7.2	Rural Roads (bridge and culverts)_____	22
7.3	Water Supplies system_____	22
7.4	Supervision_____	22
7.5	Participation and Ownership_____	23
7.6	Documentation_____	23
7.7	Contractors and Sub-contractor usage_____	23
7.8	Scheduling of Works_____	23

Annexes

1. Samples evaluation survey forms
2. Samples inspections survey forms
3. Tables and charts
4. Photograph
5. Term of Reference
6. Surveyed project
7. Suggested Amendments to Plans

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Phasakone THAVONSOUK
Technical Assessment Team Leader
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Abbreviations

IEC	Information, Education and Communication
ITE	Incomes-generating activities, Training and Environment
MCTPC	Ministry of Communication Transport Post and Construction
MOH	Ministry of Health
PRF	Poverty Reduction Fund
TA	Technical Assessment
TAT	Technical Assessment Team

• **EXECUTIVE SUMMARY**

➔ Back ground

The Poverty Reduction Fund Project (PRF) of Lao PDR is engaged in assisting the development of small-scale, community-based infrastructure and other activities to reduce poverty in poor rural villages. From an initial 10 districts in three provinces in the first cycle (year) of its work in 2003-2004, the work expanded to 14 districts in the second cycle in 2004 - 2005. The PRF disbursed USD 3,101,000 million for sub-projects in the water, transport, education, health, agricultural and other sectors in the first two cycles. The third cycle of its work commenced in June 2005 with the addition of six more districts in two more provinces and an additional sub-project budget of about USD 4 million. Grants are made to village communities for infrastructure and other activities following a menu of options. The villagers make the key decisions on the type of sub-projects for which they are entrusted to manage allocated budgets by themselves.

The Poverty Reduction Fund Project is based on a credit to the Government of the Lao PDR, represented by the PRF, of about USD 19,345,000 million over 5 years from the International Development Association (the World Bank Group). The PRF is a semi-autonomous organization with an administrative board composed of senior government figures, an executive director, and 138 staff based at three levels of the urban hierarchy. Several operational manuals have been prepared and all staff have received thorough training in the methods of the Project.

The objectives of the PRF Project are to support the Lao PDR Government in its efforts to reduce poverty through expanding community opportunities to identify local development needs and manage small scale development projects through financing sub-projects for the rehabilitation and reconstruction of social and economic infrastructure, and other socially productive activities, including creating income generating opportunities through training and other support. Key emphases of the PRF include participation of the communities, transparency and sustainability of the sub-project outputs.

Specifically the project objectives are to:

- (i) Assist villagers to develop community public infrastructure and gain improved access to services;
- (ii) Build capacity and empower villages in poor districts to manage their own public investment planning and sub-project implementation in a decentralized and transparent manner; and
- (iii) Strengthen local institutions to support participatory decision-making and conflict resolution processes at the village, khet, and district levels, involving a broad range of villagers, including women and the poor.

The Poverty Reduction Fund (PRF) was inaugurated on February 4, 2003 for an initial period of five years in the three provinces of Houaphanh (north east Laos), Savannakhet (central Laos) and Champasack (southern Laos). In subsequent years, its activities covered five provinces and a total of 21 districts, or 1,984 villages. Actual expansion will depend on the Lao Government's directives and project capacity.

From February 2003 to 2004 the Poverty Reduction Fund has disbursed 3,101,000 USD million in the first and second cycle in 628 civil work projects excluding of ITE (51) sub-projects and 4,000,000 USD to June 2005 in the third cycle in 446 sub-projects excluding of ITE (87) sub-projects.

- **27 %** (357) of projects have been for education facilities (Primary and Secondary schools) making an investment valued at Lao Kip 23,536,845,234 at an average cost of Kip 65,929,538 per project.
- **39%** (259) of the projects have been for Communication system such as rural roads, bridges and culverts valued at Lao Kip 18,707,183,940 with an average cost of 72,228,509 per project (most projects have involved a series of bridges or culverts or are mixed).
- **23%** (377) of projects for public health including water supply system (spring fed gravity, wells) dispensary, and medical equipment etc, projects have been implemented providing sanitation and access to potable water for many families and villages, which has involved an investment of Kip 9,058,391,661 with an average cost of 24,027,564 per project. These projects have been spread throughout the country and are being put to good and viable.
- **81** projects (5%) for agriculture including weirs, canals, gates and other structures have been implemented and involved an investment of 1,993,290,439 Lao kip with an average cost of 24,608,523 kip per project. These projects have been generated for planting, rice field and others.
- The rest implementing and investment involved with ITE with 138 projects (5%) by 2,732,990,355 Lao kip with an average cost of 19,804,277 Kip per project.

The Technical Assessment team attempted to visit 120 sub-project sites, information was collected from 5 Provinces,

- Houaphan 32 sub-projects (included 6 sub-project testing before full survey performing)
- Xiengkhouang 20 sub-projects
- Savannakhet 27 sub-projects
- Champasak 29sub-projects
- Saravanh 20 sub-projects

All above involving interviews and ocular surveys involving a inspection methodology.

Table 1
Surveyed projects by Provinces and type

PROVINCE	PROJECT TYPE						
	Communicatio	Education	Public Health	Irrigation	Electricity	ITE	Sub total
Houaphanh	8	7	11	4	1	1	32
Xiengkhouang	7	3	10	0	0	0	20
Savannakhet	8	8	6	2	3	0	27
Champasak	9	11	8	1	0	0	29
Saravanh	7	2	10	0	1	0	20
	39	31	45	7	5	1	128

In general we found the quality of work performed acceptable and performed in a good manner. The project surveyed were benefiting to the people.

Of the 128 sub- projects assessed by the TAT gave us some concern for the following reasons

- One project were seen to be cracked at (Secondary school at Sobbao District), there should be informed contractor to remedy due to the contract still with in the guarantee period.
- This is due to inadequately constructed and supervised.

➔ OBSERVATIONS

Design Compliance

Mainly communications (rural road, bridge, pipe culverts) also water system (including spring gravity, wells), Irrigation system (including irrigation canal, canal, earth dam, and weir) conformed to the plans and specification rather than building which (including dispensary, schools). The TAT consistently found many numbers of building elements not conforming completely to the drawings plans and specification provided by the PRF guidance.

Where they deviated from the plans, the majority of cases were not significant; most were to with the followings elements: gable end roof, ceiling project, timber wall was caused by timber used. Also wall plastering and the crucial floor finishing issue however was workmanship error.

How ever these deviations should have been caught and acted upon by the supervisors. This raises the question of the procedures and practices for supervision. How ever more improvement is need in the supervision processes and procedures.

Satisfaction with projects

63% of the sub-projects are appraised as satisfactory by the interviewed people and TAT.

Roughly 25% of their own fund and involving the sub-project were from local communities. Additionally most of the project had involved communities providing labours as part of their contribution for project implementation. Most other projects provide materials such as aggregate, sand, timber, services in-kind for implementation.

Scale of work undertaken

The TAT found that as the scale of projects increased, in some cases the quality of work appears to decline. Complex project such as large irrigation projects require more in-depth study, research, documentation and evaluation in order to improve the nature and quality of work undertaken.

The quality of work may have been affected by:

- The limited capability of relevant personnel to effectively evaluation large-scale applications monitors and supervises the progress by contractors during project implementation.
- The limited available time for implementing sub-projects usually (6 months per cycle, by PRF designed).
- The limited available budgets for supervisions, with the PRF operating costs limited to 25 % of total budgets (referred to Prim Minister degrees 073/PM and 222/PM).

➔ RECOMMENDATIONS

Rural Roads

1. Improve on typical drawing for longitudinal and cross-section profile
2. Improve on typical drawing for pipe and box culvert as well as closely follow up on the pre-cast production from concrete factory.
3. Improve on concrete production on site, provide recommendation on formworks, bracing and vibrating.
4. Ensure continuously pouring concrete with out segregation.

Buildings

6. Improve timber usage by drying for minimum requirement at least 2 months prior using. Either identifies alternative materials locally by selecting hard wood to suit with the actual need.
7. Ensure adequate treatment of timber work prior to installation.
8. Foundation should carefully stand on good sound soil.
9. The watering on brick is needed at least 4 hours before plastering.
10. Compacting soil or sand where floor is concreting and the most important things should be carefully followed the construction drawings

Irrigations

11. Mostly, develop and improved internal capacities to appraise and use modern survey equipment and supervise closely. Closely followed up during the implementation period.

Plans and specification all sub-project type

12. Review and adapt plans in use by other agencies and organization that seem necessary.
13. Improve on information provision to contractors and supervisors, by building their capacities.

Management and partnership

14. Improve information and understanding by communities of their roles and responsibilities, basic supervision and maintenance.
15. Improve documentation in appraisals and supervision.
16. Contractors should be more discussion between contractor and applicant communities.

1. Technical Assessment

1.1 Objectives of the Technical Assessment

In order to continuously monitor the quality of its work, the PRF pursues periodic technical assessment of the sub-projects which it supports. For this purpose the consultant will select at random, sub-projects for an in-depth technical assessment. The findings of the technical assessment should provide concrete feed-back and serve to fine-tune and improve PRF's operational manual, engineering and technical guidance.

The primary objective of the technical assessment is to assess the quality of the civil works, the manner and the management of their implementation, and the value of community participation in its implementation. Parallel to this technical assessment, a beneficiary assessment will be undertaken by another entity and the results are expected to mutually complementary under a separated report.

Therefore, the representative sample of projects to be assessed has to be jointly defined by the PRF and both selected entities that will undertake the technical and beneficiary assessments respectively.

1.2 Methodology and Tools Adopted

In order to achieve its objective, the Technical Assessment (TA) was launched to review sub-projects approved/implemented and analyze of different sub-projects approved in total (1,212) subprojects which will be 120 samples. 10% of the first 40 samples in the first cycle (2003-2004) should be in the three initial provinces. The second 40 samples in the second cycle (2004-2005) should be in the three initial provinces and last 40 samples in the third cycle should cover in two new provinces (2005-2006) in Saravanh and Xiengkhouang Provinces). The selected samples of sub-projects carried out using a random sampling method, giving due attention to following criteria:

- Geographical distribution by three different region in the country
- Distribution of sub-projects by sector type
- Projects implemented under community and contractor
- Location of project sites (remote areas will form at least 50 % of the sample with the remaining from the non-remote areas) and its environmental impact
- Completed sub-projects will form the selected sample

Questionnaire of evaluation and Technical design

The TAT drafted a semi-structured questionnaire to interview stake-holders and collect other necessary data. This draft was discussed with PRF personnel and field tested at six sub-project sites and further refined based on feed-back received. Simultaneously, a technical inspection form for different sub-project types. This was adapting from Term of Reference ToR (V. SCOPE OF WORK) this evaluation and inspection form was also drafted and field-tested (Refer Annex 5 and 6)

Pre-evaluation and technical inspection forms

The field tested has been carried out at Houaphan province, Xiengkhor district. According to the observe field test conducted from the preliminary it was determined where practical to examine the sub-project to increase additional information on the sub-project where they were available. The forms for technical inspection for the pre-inspection was prepared (Please refer to Annex 1) and evaluation form either prepared (please refer to Annex 1).

Field research

Initial field research began in selected province in the northern region, some areas were accessibility problem due to rain occurred. The field work initiate with visits to Houaphan province followed by visits to project in central and southern region. In all 5 provinces were visited and project surveyed.

Field notes

Upon identifying the sub-projects the PRF provincial, district were contacted for an overview of the area and jointly meeting for the overview of the accessibility area. The semi-structured questionnaires were used to obtain data. Additionally, khet team, head of villager were also asked for their view on the project.

Data input

Data collected was fed in Microsoft words, Excel, Power point for the photo editing program for keeping data entry analysis.

At every sub-project site, the TAT members examined various components through an ocular survey (observation) and filled in the relevant inspection for that project type. Certain elements and construction practice were rarely seen (for example foundations, concrete pouring, roofing installations, underneath of soil and water) and therefore, no authentic comments could be made on those unseen elements.

1.3 Sampling Frame and Sampled Sub-projects

The PRF Monitoring and Evaluation section provided the TAT with a list of all eligible projects, totaling 1,212 sub-projects. From this list an initial sample of 120 sub-projects within 5 provinces. Actually the TAT surveyed covered 128 sub-projects. In particularly, the concerning and closed with the samples and one location that TAT though that were necessary. Those samplings followed the criteria set out in the Term of References (ToRs), these sample was approved by the PRF.

Table 2
Distribution of cycle I (2003-2004) sub-project by sector

	No. of sub-project	% of approved Projects	PRF budget (kip)	% of PRF budget
Education	72	29%	2,923,386,449	27%
CTPC	39	16%	2,454,072,825	23%
Health	108	44%	4,579,252,806	42%
Agriculture	29	12%	887,010,234	8%
ITE	0	0%	0	0%
Total	248	100%	10,843,722,314	100%

Table 3
Distribution of cycle II (2004-2005) sub-project by sector

	No. of sub-project	% of approved Projects	PRF budget (kip)	% of PRF budget
Education	139	32%	9,383,119,909	29%
CTPC	89	21%	12,893,043,986	41%
Health	126	29%	5,946,889,150	19%
Agriculture	26	6%	1,679,381,002	5%
ITE	51	12%	1,922,940,368	6%
Total	431	100%	31,825,374,415	100%

Table 4
Distribution of cycle III (2005-2006) sub-project by sector

	No. of sub-projects	% of approved Projects	PRF budget (kip)	% of PRF budget
Education	146	27%	11,230,338,876	26%
CTPC	131	25%	18,707,183,940	43%
Health	143	27%	9,058,391,661	21%
Agriculture	26	5%	1,993,290,439	5%
ITE	87	16%	2,732,990,355	6%
Total	533	100%	43,722,195,271	100%

Table 5
Distribution of cycle I to III (2003-2006) sub-project by sector

	No. of sub-projects	% of approved Projects	PRF budget (kip)	% of PRF budget
Education	357	29%	23,536,845,234	27%
CTPC	259	21%	18,707,183,940	39%
Health	377	31%	9,058,391,661	23%
Agriculture	81	7%	1,993,290,439	5%
ITE	138	11%	2,732,990,355	5%
Total	1212	100%	43,722,195,271	100%

The TAT observed that the majority of the completed sub-project facilities (in all 1,212 sub-projects) have been put to daily serviceable uses that have enhanced community’s access to social and economic infrastructure and amenities, much needed particularly in the rural area of the country.

Sampled Sub-projects

In term of the criteria for defining the sample set in the ToR the TAT made its best efforts to comply with these within the timeframe specified. The criteria adopted were as follows:

ID	Criteria	Compliance
1	“ The TA shall analyze at least 120 difference sub-projects ”	A total of 127 sub-projects were visited involving interviews with the stakeholder as well as technical inspection for quality of the works.
2	“ Geographical distribution by three different regions in the country ”	Project sampled from each region. Northeast, Central and Southern
3	“Distribution of sub-project by sector type ”	Project from 7 differences types surveyed
4	“ Projects implemented under community and contractor ”	70% implemented by communities and 30% by contractors
5	“ Location of project sites (remote area will form at least 50% of the sample with the remaining from non-remote areas) and its environmental impact ”	Over 50% of the sub-projects were visited
6	“ Completed sub- project will form the selected sample ”	127 sub-projects were surveyed

In consultation with the PRF officials, the sample size was increased to provide adequate representation for various project sector/type i.e.; rural roads, water supply, lower secondary schools, irrigation projects, drainage etc., and also to take account of various institutional and geographical factors. In particular,

1. An insufficient number of sampled projects did not permit adequate review or obtaining statistically viable results for certain project types.
2. The selection criteria elaborated in the ToR as presented by TAT prior full survey has been carried out reduced the randomness of the samples to remote areas.

In consultation with PRF, in all 120 projects (1,212 projects of total projects) were visited. Of these, detailed data was gathered 127 sub-projects sites. The surveyed to evaluate physical conditions and assess the technical quality of the civil works did not taken account the number of public holidays and festival seasons in the months of October and November.

The selection of the sample sub-projects encountered some difficulties in terms of:

1. TAT intent to contact with contractors and their representatives on-site, as there was a unavailable.
2. Generally, the samples visited were handed over. There were two projects in Samoy and Toumlan as “work in progress”.

1.4 Sampled sub-project by Region and Project Type
 (Refer to also to Table 1)

The TAT randomly selected 127 sub-projects covering all three regions to begin with in accordance with sampling criteria of the ToR. This was obtained more accurate and viable results for some sub-project types (water System including with well, drilled well and spring gravity fed system, Rural Roads, Irrigation, Primary school, secondary school, dispensary, medical equipment, teaching materials, electrical Projects and ITE sub-project).

Table 6

Surveyed Sampled sub-projects by region

	Education	CTPC	Irrigation	Health	Electrical	IGA + Training	Sub total
North east	10	15	4	21	1	1	52
Central	8	8	2	6	3	0	27
Southern	12	16	1	18	1	0	48
Sub-total	30	39	7	45	5	1	127

1.5 Duration of Civil works

TAT met difficulties to appraise issues a civil works duration because data recorded at khet or village levels were not sufficient to refer the assessment (e.g. the dates for construction start and completion were not available).

1.6 Responses of key Stake-holders

A ‘Beneficiary Assessment’ was carried out in parallel with this TA, and has elaborated further on many of the issues covered in the following section. However, the ToR for Technical Assessment required the collection of information from the main stake-holders in TAT surveyed sub-projects to ensure complementarily and comprehensive verification of field realities. Therefore, the TAT gathered data from the key stake-holder and a brief analysis of which is presented below.

Geographical base of Contractors

Probing by TAT indicated that the surveyed sub-projects were implemented by contractors from (northern, Vientiane in central and southern regions; refer to table below for disaggregated details). In one case, a contractor from Vientiane was implementing a project Saravanh. TAT’s further enquiries indicated that nearly one-third of the respondents were uncertain as to how the contracts were identified and recruited.

Table 7
Contractor locations

Region	Northern	Central	Southern	Don’t know
# of sub-projects	9	7	13	0
Percentage to total	31%	24 %	45 %	0

Qualification of Contractors

The details specified were not interview with direct contractor. Also the information gathered here with the interview with PRF’s district either with khet level.

Profile of Labourers

During its surveyed, the TAT did not met with the laborers on site due to most of the surveyed sub-projects already been handed over. In case of remaining sub-project in Saravanh province TAT only interviewed with khet teams and head of villagers.

Perception of the Provincial Authorities

As per the Manual of Operation, the PRF informs concerned provinces of the sub-projects appraised and approved regular basis. A number of officials from different provinces seem to aware of such regular letters from PRF and stated an interest in having more information on PRF’s work in their respective provinces. As PRF’s portfolio increases, much more coordination, on a regular and systematic basis, will have to be done to ensure wider dissemination of information of PRF sub-project and its works.

Profile of the Internal supervisory

Most of the internal supervisors were qualified engineers or technicians holding a diploma/degree, with an average of three years work experience. Of them, nearly half were supervising multiple sub-projects (more than one project at a time). The terms of reference for the internal supervisors urge them to maintain regular communication and provide feed back to PRF. At the time of project launch workshop, the role and responsibility of the Khet technical facilitator are expected to be elaborated. Further, PRF has conducted at least three orientation workshops for the external supervisors to learn the procedures of the organization.

The TAT noted that while communities could generally identify the concerned internal supervisors, who served on the sub-project in their village, many could not provide a brief description of the role/responsibility of internal supervisors' duties and the frequency of their visit to project sites during implementation. To our queries, over a third of beneficiary respondents believed that the internal supervisors visited at least once a week. Thus, it is apparent that internal supervisors had only occasional communication with beneficiary representatives.

2. Design Compliance

The PRF has adopted, over a period of time, design standard and specifications. These designs and specifications are usually drawn from other sources. However they appear to be rarely reviewed and updated. With every contract/works package, plans, designs and specification details are provided to the contractor and the applicant and are referred to in the contract agreement signed between PRF, the applicant (or representative) and the contractor. The contractor is also obliged the fill-in a “contractor” declaration, forms stating that they understanding the contract, plans, designs and specifications. Any variation to the agreed plans/specifications should be accordance to the PRF’s rule, recorded and reported to PRF.

2.1 Building Sub-projects

All building sub-projects surveyed had some minor deviation vis-à-vis the agreed plans and specifications. The TAT also observed the lack of documentation on such deviations as required by the Manual of Operations. In general, such differences are considered as normal in the construction sector, but should have been recorded and documented. Although few of these variances endanger any of the projects, the TAT believes that the frequency and the cumulative impact of these deviations and variances contributed to reduction the overall quality of work as gauged against the approved PRF plans and specifications.

The TAT also noted that most contractors were given a photocopy of a generic design/plan that is faded out and on which much of the text is clearly legible. Additionally, instructions provided were basic and our interviews suggest that contractors were left with many lingering doubts on various issues.

2.2 Latrines

The PRF has adopted the design developed by Ministry of Health (MoH).This design suitable for small village and school used. The design it seen that costless, less heavily on reinforced concrete and appropriate for facilities. The construction cost (an average 200 USD) per unit of this building element was viewed by the TAT as giving good value.

Many of latrine facilities constructed, both on their own and as a component of a school project, showed similar design problems such as: no water usage, wall cracks etc.,.

2.3 All wells (well, drilled well and spring gravity fed system)

Of the PRF sub-projects, all well were found to have adequate utilization, but with recurring maintenance problems.

- Most of the wells visited were used for potable water; the remainder was only used for washing and other non-drinking purposes.
- Nearly one-fifth of the splash aprons did not function correctly and pooled water on them, a number were also seen to be eroding after only one year in use.

2.4 Rural Roads (Bridges)

The PRF has adopted designs from various sources, especially Ministry of Communication, Transport, Post and Construction (MCTPC) which in their consistently detailed. Contractors and internal supervisors seem to have a better grasp of the designs and technical specifications of this project type. It was left that some current designs used were provided none of information on how the measuring volume be estimated.

Further more information providing to contractor should be improved and specified correctly which part was belong to community contribution and also on site supervision which will subsequently contributing to improvements in the overall quality of works.

- Sub- merge bridge projects in Saravanh province were seen to have inferior concrete quality due to inadequate formwork, deficient vibration during pouring often leavening reinforcement bar exposes.
- The representing of concrete samples should be recorded, tested for the best resulting of compressive strength of 28 days.
- The cost of concrete testing should be included in the contracted price bill of quantities and or specified in to the technical specification. Contractor should responsible for all testing cost arising.
- Concrete testing cases is required only large volume.
- Roughly, one-fifth of sub-projects had insufficient back-filling and erosion protection. There should be direct site indicating by internal supervisor to prevent erosion during the rainy season.

2.5 Drainage system (pipes and box culverts)

These sets of sub-projects are small in number but have significantly higher implantation costs. The TAT observed that the specification of the pipe culvert should be clearly state the type and class of concrete. Simplistic designs for each sub-project have been prepared, sometimes the after completion of topographic survey, and then implemented.

2.6 Irrigation Sub-projects

There should be well preparation of the design for small-scale of the irrigation system. The data collection from site survey by the TA district should be accuracy and unchanged. Preventing the repeated the cost estimate proposal and changing the design during the implementation period that probably get a confusion and mistaken.

3. Technical Quality of Building Sub-projects

3.1 Building Sub-projects

This group of sub-projects comprised of primary and lower secondary schools, dispensaries and forms the bulk of projects supported by PRF's. The internal supervisors are responsible for site management and ensuring actual technical quality as described in the plans and specifications. They are also tasked to verifying quality of materials supplied by the contractor and adherence to time-schedules, as elaborated in the plans and contract agreement. They should also rerecord and report, difficulties, if any, to PRF for advice and further action.

However, progress monitoring of civil works appear as inconsistent and probably not carried out on time. For example, as observed earlier, most build facilities had some deviation from the approved plans and specifications and consequently simple, and avoidable, technical problems were observable. The most common defects observed in the sub-projects relate to:

- Inferior timber quality (which contributed to other problems)
- Inadequate treatment of timber used particularly of roof structures
- Frequent leaking in the roof covering
- The quality of splash aprons
- Deviations that have taken place vis-à-vis specification provided for floors/flooring quality
- Deviations that have taken place vis-à-vis plans and specifications provided for gable end roofs
- Imperfect finishing conditions and quality

It should be noted that a number of these problems are also attributable to inferior quality of timber used in the building and such difficulties were common in Lao PDR, but could have been avoided with attentive supervision and immediate action. Further, if the site monitoring is not carried out on time, the khet technical facilitator; naturally, tend to compromise on quality to avoid re-doing tasks or for fear of increasing cost.

3.1.1 Splash Aprons

This building element is supposed to surround all building projects, and is intended to assist in avoiding erosion and undermining of the structure.

The building visited, were seen to have some form of difficulties with parts of the aprons. These difficulties ranged from cracks to failure of the apron and most can be attributed to inadequate detailing on the plans, non-compliance with the specifications and details, and inadequate site supervision. Many of sub-projects surveyed were clearly not built in accordance with specification.

3.1.2 Quality of Timber

The PRF specification clearly states that quality to be used by the external¹ and internal² supervisors are required to ensure compliance to the effect. Consequently, contractors tend to accept and use any timber that is locally available.

external¹: district technical supervisor staff.

internal²: khet technical supervisor staff.

The quality of timber, therefore, emerges as the key issue in at least two-thirds of the sub-project sites. Further, on a number of sites, old form-work timber was seen been used.

The TAT also observed that the use of poor quality of timber effects a number of other building components i.e., roof structures, doors and windows, furniture and has caused these components to be rated 'low' by the TAT.

3.1.3 Treatment and Painting

The timber components of most buildings had treatment. While at least one-fourth of the components seem to have had good treatment of timber, often the treatment was found to be inadequate. In a few cases, treatment was done after the timber-work was completed (e.g., in some places rafters and batten were treated on three side only). In many projects, the majority of timber was treated but some was not, and on this aspect no explanation was readily available. The TAT believes that such issues should have caught the attention of the supervisors and timely action could have minimized the impact.

Where walls and timber were painted they were often seen to be peeling and flaky. Additionally paint coverage was often uneven with projects and it appeared that some areas received far less paint than other areas.

3.1.4 Roofing

The PRF's plans clearly state specifications for roofing and how the structure is expected to be put in place. The khet technical facilitator is responsible to monitor work at each stage.

Roofing is a vital component of any building, and when it fails the impacts are far greater, and can quickly lead to problems in the building usage and in other building elements (walls, interior timber work).

3.1.5 Floors and flooring Quality

The majority of sub-projects visited had completed the installation of floors, so appeared to meet the general specifications. The quality of the flooring partially of the sub-projects visited was feeble with cracks. PRF's plan also requires the contractor to 'smooth/polish' internal floors, and this was rarely done. The floors of two-thirds of the sub-project were seen to be very uneven and rough, indicating insufficient time to cure and may have deteriorated even during construction.

3.1.6 Furniture

For most sub-projects, where the appraisal deems is necessary. In particular, school projects were always provided with furniture for the pupil to sit and learn. The irregular availability of quality timber has impacted on the conditions of furniture provided. A number of school directors reported on sub-standard timber used for furniture and lack of treatment that seem to hasten deterioration. This is an area that requires further discussion within PRF and closer monitoring by the supervisory staff to ensure that good furniture is provided.

3.1.7 Water Supply Facilities

Aprons

The sub-project of wells visited had some difficulties with the splash apron; some had starting to pit due to substandard quality concrete. Others had been badly laid out and implemented and did not drain properly, but pooled water, often forcing villagers to break part of the apron to get the water to drain.

3.2. Rural Roads (bridges/culvert)

The lack of basic transport infrastructure has been identified as being one of the principle contributing factors to Lao PDR's under development. PRF has been contributing vital components (usually bridges and culverts) to transport infrastructure rehabilitation and improvements. The TAT visited rural road projects, mainly undertaken by communities.

The principle issue with the bridge and culverts was the quality of concrete work undertaken; few of the projects surveyed were seen to have deficient quality concrete primarily due to

- Inferior quality of formwork: When concrete was poured, in many instances, the 'shuttering' has sipped.
- Little or no vibration: This seems to have caused the concrete to set abnormally not filling all the spaces and reducing the overall strength and quality of the concrete.
- Manually mix concrete: Manually mixed concrete reduced the over all quality and it may not have sufficient strength. Additionally the aggregate may not be mixed properly.

Additionally, many villages have been busy and not provided sufficient fill compaction, which caused the embankment to deteriorate more rapidly than intended. Efforts should be made post harvest to encourage the villages to get the necessary work done.

3.3 Latrines (and similar facilities)

PRF has provided sanitation facilities at nearly all the education and health facilities. The PRF has also provided latrines independently as a programme. The TAT evaluated latrines provided in schools, other facilities and also on their own.

Cost

As mentioned previously, the current design is based upon one utilized by the Ministry of Health. However the average cost is 200 USD per unit which was mostly providing by the rest of negotiation budget with contractor.

4. Site management

Many sub-projects are intended to produce a number of different benefits, some of which may be qualified, but others of which are qualitative and more difficult to measure. The PRF is putting in place a reliable mechanism of “appraisal” to review (beneficiary representative) to sustainably manage the outputs and inform local agencies on possible recurring and maintenance costs. The technical quality of PRF sub-projects are intended to be achieved through such rigorous appraisal process (confirming plans, designs and specifications), beneficiary capacity, cost-benefit returns, transparent methods to select contractor and adequate and timely site management. The appraisal procedures seek to determine the location, size and scale of the project and the capacity of the beneficiary-applicant-representatives to ensure post-hand over maintenance of the facilities created.

Site supervision is provided through two channels: (a) PRF’s internal supervisor staff, who visit required number of times during implementation of civil works; and (b) external supervisor, who serves as the resident engineer and expended to constantly monitor and support implantation. The Manual of Operation describes required steps, checklists, formats and examples for monitoring each cycle of implementation, including progress and hand over reporting.

In its cycle II works, PRF has taken particular steps to ensure sustainability of sub-projects facilities crated. These are partially reflected in the appraisal of applications, at the site, prior to approval by the Executive Committee. Attention is also focusing on the closely participate fully in the benefits of the projects. The sustainability manual, put in place by March 2003, emphasizes on prior plans of the stakeholders to optimally use and maintain the facilities. All operational staffs are oriented toward it and are expected to comply with it.

By early 2003, PRF also established its regional office in three provinces, Houanphan, Savannakhet and Champasak had gained momentum. As PRF notes in its Manual of Operation, the success of a sub-project will depend on part on the support of key stakeholders and proper management of the implementation process and post-hand over maintenance. This section describes some of the above elements, as observed by the TAT, and provides an overview on the need to strengthen site management and enhance partnership arrangement with local stake-holders.

4.1 Contractor Profile

About one-fifth of the contractors for the surveyed projects were from Vientiane followed by enterprise from other provinces. We also observed that a project in the far away southern regions was implemented by a contractor from Vientiane. The table below indicates the distribution of contractor to projects visited by the TAT. Importantly, most provinces had more than one contractor operating for PRF sub-project.

For at least one-fifth of the sub-projects, the applicants themselves had identified and nominated the contractors; however, of this only four percent of the nominated contractors were found eligible, as per PRF criteria. Further, one-fifth of the respondents believed that the Social Fund introduced contractors for their consideration.

4.2 Sub-contracting

Officially sub-contracting is prohibited with out PRF approval. However, as is common in construction sector, this can not be avoided. Our respondents indicated that civil works in more than one-tenth of sub-projects had been sub-contracted on some form or other.

5. Procedural Findings

PRF acts as a financial intermediary, considering projects submitted for supports. It does not identify and prepare project in its own right. To assist with this task it has developed a Manual of Operation details its procedures and implementing department. A project cycle mechanism has been developed to act as a procedural tool to guide its operations, namely; promoting it operation to villages, khet, district and provinces, appraisal of project application, identifying implementing partners, and supervision of implementation projects. The activities of some of these are outlined below.

5.1 Site Supervision

The TAT found that some of the supervision practices were not properly implemented and upon identifying deviations from plans/specifications, timely action was not taken. Considerable number of variances as well as implementation errors vis-à-vis the approved plans and specifications supplied by PRF were noted and reported to PRF. Many of these simple yet avoidable differences were in obvious in sight and clearly visible to an informed observer. The cumulative effect of such minor deviations should be highlighted for supervisory staff to look at.

Generally, the frequency and quality of reports submitted by supervisor's record only on completed tasks and commonly deficient, with little or no details on particular components of civil works in progress. On average, an internal supervisor seem to visit once a week every sub-project under allocated to him/her. As observed earlier, the number and periodicity of reports submitted is far and few, and in any case deficit workmanship or deviations from the plans or specifications were not sufficiently recorded and reported. In this context, the role and responsibilities of the external supervisors appear as incoherent and probably resulting in slackness in site supervision.

5.2 application and Adherence to the Manual of Operation

The PRF has been utilizing a Manual of Operation March 2003 for its cycle work and to which most of the personnel have been orientated to and trained in. The Manual clearly outlines various procedures to be followed during the project cycle. Adherence to the Manual is especially important when bidding procedures are to be followed and documented. The manual also describes procedure for recording and maintenance of on-site observations, action taken and files.

5.2.1 Recording and Documentation

A number of reports field requires that supervisory staff maintain a site records and periodically note all observations and comments. The TAT found that site records are rarely used to record deviations or comments and only receipt of materials or bill of quantitative were noted by khet teams. Little information was recorded on the "key events" or on qualitative and quantitative aspects of work undertaken. The TAT attempted to use the site records to follow the visits by the khet teams, but with so little information it was difficult to determine number of supervisory visits and nature tasks performed. In additional, the site records contained few remarks on the number of skilled and unskilled labourers engaged and no reference was made on sub-contracted task.

5.3 Analysis of data gathered though Structured Questionnaire

The ToR required the collection and analysis of additional information from various stakeholders involved with the project and also on how the submitted project was identified. It also wanted to know, how the

applicants come to know about the PRF fund, who prepared the application and supporting documentation, how was the contractor selected etc. The output of this information analysis is set out in the following sections.

5.3.1 Identification of Local Priority needs

Respondents reported that a little of the sub-projects were identified and selected by respective Project support Committees (or similar local entities). Most of the sub-projects were identified by community – based entities at village and khet level and then the sub-projects were identified at district and provincial level combined.

5.3.2 Preparation of Designs

A large majority did not applied, only small applicants have used designed that are utilized by PRF, particularly for rural road projects. All school sub-projects surveyed used plans by Ministry of Education other entities.

5.3.3 Selection of Contractor

Nearly one-third of the respondents did not know as to who and how the contractor was selected to implement civil works. Partially of the respondents believed that PRF had introduced the contractor for their consideration

5.3.4 Responsibility for the Procurement of materials

A significant number of respondents reported that the contractor was responsible for the procurement of materials used for the civil works. A little more of the respondents seem to have role in verifying quality of materials patched.

5.3.5 Information on Project Implementation

At the Project Launch Workshop, PRF provides information related to sub-projects requested by the communities, and approved for funding by the PRF. Other necessary matters, in particular commitment of community contribution and their participation and also rose.

5.3.6 Completion of Sub-projects

Over half of the replies felt that the projects had either been completed on time or were on schedule. While few sub-project felt that the projects were either delayed or behind schedule.

5.3.7 Environmental Considerations

Most sub-projects implemented by PRF had little or no direct impact on the environment. There were no major cases for heavily land slide; either the sub-project location did not any disturbing or removing from the villagers.

5.4 Community Counterpart Contributions

It is condition for support from the PRF that communities make viable contribution for the successful implementation of project. The minimum requirement is for 20% of the overall cost.

5.4.1 Level of Local Contribution (in kind of cast)

The numbers of project respondents stated that the village/khet had provided voluntary labour inputs for projects. Apart from paid labour from the community, this contributed of the labour force met on sites.

Few could give an accurate figure on the numbers of people directly involved on the projects, on average it appears that 15 to 20 workers on each site were from the community. In some cases, the number of families in a village/khet divided work. Which was each family would be responsible to move 1 m³ of soil as their contribution.

On rural roads and water supply projects stated that communities provided backfill. Where contributions were of materials they were generally found to be acceptable. Often the contributions estimated by PRF involved the land on which the project would be undertake, which however voluntary labour inputs were often seen inadequately completed. Partially of the rural road projects, the backfilling was seen to have been uncompleted, or had eroded away during the recent rainy season. Many respondents remarked that they had been currently to busy with crops to take part in voluntary work, they would get to it after the harvesting. Often when back filling had been completed it was not compacted and would rapidly erode if any further rain comes.

5.4.2 Local Efforts on Sustainability Components

In order to strengthen proper maintenance and sustainable use of the facilities created, PRF has put in place “sustainability” programme and this component has been making efforts to provide the beneficiary communities with close guidance to engage in regular post-hand over monitoring visits, and offer periodic advice on the durable use of the facilities and encourage the active involvement of the local authorities (and line agencies) in the proper maintenance of the facilities crated.

The TAT noted that at least two-third of project respondents were aware that they, the people living in the villages and khet were directly responsible for the ongoing maintenance of the facilities and infrastructure. However, when further queried on their particular initiatives, most communities seem to offer financial contributions to maintain the facilities. Probably, technical needs have not been seen as sustainability issue.

6. Conclusions

Prior to stating what we have concluded from this technical assessment, it is important to remember that our analysis was only about ‘technical components’ that include quality of civil works, site supervision and management. An assessment such as this draws out generalities too. For example, on one or two occasion our respondents made comparative comments and some of which are captured in the text. The most important issue, however to be that each sub-project is unique in terms of its purpose, local representation, appraisal and supervisory style and capabilities and capacities of concerned contractors to understand the task/demand and properly deliver agreed goods and services. After many years of work for its success and organization like PRF is dependent on its staff, which bring in varied levels of experience and commitment, illustrate their expertise and capacity.

This technical assessment was commissioned, as part of the on-going efforts, to identify issues inhibiting site supervisions which will enable PRF to redefine strategy directions for its sub-project management. This assessment, assuming technical quality as a comprehensive factor, highlights some points that PRF may use to start identifying issues and developing time-bound action plans concerning sub-project implementation and site supervision.

To start with this, the PRF is an institutional mechanism that is seen to be flexible, simple and demand-driven for financing different types of local infrastructure projects and it’s Cycle III is beginning with the crystallite to a certain degree. In the last two years PRF has generated, as our discussion above illustrated, as a body of knowledge, lessons and observation on the technical components of its work. But, to maximize the contribution that PRF and make to local development, it should be aware of the strengths and limitations of its technical capability as well as the conditions that hinder or facilitate filed operations. Our conclusions will have to be viewed against that background. The concluding section examines these common themes and lessons.

6.1 General Observations

In general, all sub-subprojects of Cycle III in all three regions (covering of five provinces in the country) wherein PRF had provided support and observed that majority of the civil works were built to satisfactory standards with acceptable and average quality for Lao PDR. Of the sub-projects surveyed by the TAT, only a few were a source of concern. PRF’s nation-wide coverage indicates the capacity of PRF to distribute resources to communities previously underserved and beyond major population centers. The TAT also noted that facilities created by PRF sub-projects have been put to daily valuable use by the communities. Despite limitations, present level of coordination with provincial authorities seen to encourage transfer of experiences from PRF. to other agencies and lean from one another

For PRF to be successful in terms of technical quality, adequate and timely supervision is essential, although it is time-consuming, expensive, and labour-intensive, especially in areas in which geography and the poor quality of transport infrastructure makes travel difficult.

6.2 Sectoral Issues Affecting Technical Quality of Sub-projects

In terms of the education facilities, none of those visited were built completely to the specifications and plans provided by PRF. Where variances/deviations were observed with the approval plans and specifications, the deviations was minimal and acceptable s few posed any real threat to the structures.

One of the most used facilities, rehabilitated by PRF are bridge/culverts that have opened up communities access to social services and markets. In case of this set of sub-projects (rural roads), the TAT observed that variations in workmanship seem to have affected the overall technical quality with much of the form work having slipped or warped possibly at the time of concrete work. Further the level and quality of vibration was generically found to be inadequate.

The PRF has implemented, nation-wide, for rural supply projects and many of these are providing access by communities to safe water supplies. This sub-sector of projects requires detailed 'operation and maintenance plans' prior to implementation. PRF's sustainability programme has elaborated some of these issues; however, there is no well-defined sub-project-wise strategy to which all operational staff have been oriented. This has resulted in a lack of coherent direction among the appraisal and supervisors staff.

Up-to date PRF has undertaken small-scale benefiting substantial number of beneficiaries. Even though, such sub-projects required specific detailed planning, preparation of designs and specification of each sub-project. The visited sub-projects visited by TAT raise concerns on adequacy of preparatory work done.

6.3 Role and Responsibility of the Appraisal and Supervisory Staff

The issue of adequate and timely supervision (including proper appraisal) will have to be seriously considered and thoroughly reviewed and all relevant areas fine-tuned. In this regard, little compliance to the

Manual of Operations by the field staff (appraisal and supervision) may have contribution in the quality of civil works carried out by PRF.

This leads on the general issue of supervision, all of the variances with the plans and specifications. In the problems identified by the TAT should have been picked up by the supervisors. In terms of existing procedure (especially documentation and reporting) little information could be obtained from the site records, further, the number and quality of reports field by khet technical facilitator was inadequate, few reports were of significant use. There is a need to tighten up supervising procedures, possibly by increasing responsibility and participation by applicant communities and also introducing a more process oriented approach to supervision.

A contributing factor to the weakness on supervision of projects assessed by the TAT has been the rotation of supervision personnel on projects. Many supervisors changing during the course of the project period and it appears that no real hand over was done between supervisors, this should be avoided.

To make supervision effective, PRF's supervisory staff must also be willing to adhere to Manual of Operation and enforce their rules and regulations uniformly and consistently. When supervisory staff violates Manual of Operation, PRF management should be willing to impose an appropriate measure to rectify and where necessary impose penalty.

7. Recommendations

Based on our analysis and understanding, were some specific recommendations which generally fall into three groups: (a) measures to enhance appraisal and supervisory tools and their timely enforcement to improve staff capacity and performance; (b) particular elements that we consider as important for strengthening technical quality of civil works; and (c) general site management. Some of the recommendations were notes in elsewhere in this report too. Herein we enumerate some of the more important proposals, by project type, which we are recommending:

7.1 Building Sub-projects

(a) *For the splash aprons,*

1. A redesign of splash apron is suggested to improve its bearing capacity. This should include:
 - 1.1. Dry mixing cement, sand, and using this to fill the spaces in rubble/stone base during compacting.
 - 1.2. An adherence to the stone sizes,
 - 1.3. Placing a bricklayer (more than three courses deep with proper fill below) under the edge. To help support the edge where most cracks and failures behind, and ensuring adequate filling behind.
 - 1.4. Strictly sticking to the requirement for 100mm of 4x6 fill, and the 40mm of mortar.
2. Improved detailing on the plans
3. Improve information during discussions with contractors.
 - 3.1 On how it should be constructed
 - 3.2 That they follow the specifications and officially agree that they understand the requirements.
4. An instruction to supervisory staff to specifically check this element of the building during construction this part should be community supervisor specified in accordance with the local materials.
 - 4.1 Check that the agreed depth of mortar is used
 - 4.2 Check where possible that the aggregate is rightly sized, compacted and filled with the sand/cement mix.

(b) *Timber quality*

5. Recommended early release funds so that procurement of timber could be done before hand and adequate seasoning done prior to usage. Such a step will identify inadequately seasoned timbers and assist in removing infested) insect or fungal logs.
6. Advise supervisory staff to verify proper and secure storage for the timber, to improve seasoning.
7. Detailed specifications to notify contractors of what will be deemed unacceptable timber

8. Direct supervisors to check on timber on timber quality, usage and dimensions on site, preferably prior to installation.
 - 8.1 Where possible khet construction supervisors should be involved with the timber procurement to improve in quality of timber purchased.
9. Liaise, with provincial material suppliers, about seasoning of timber for PRF projects.

(c) Treatment and Painting Timber

10. To ensure that all timber is properly primed and paint prior to installation, as frequently done after install leaving at least one surface untreated.
11. Request local workers to be responsible for this task.
12. Direct supervisor to check on the treatment timber installed.

(d) Walls

13. Reducing wall height to 2.8 m from 3.2 m, as no real ventilation gain and in many cases the communities intend to install ventilation.
14. Improve on ventilation block design, as the type in plans does not give effective ventilation.
15. It is advisable to remove window shades. This will reduce costs and help in avoiding minor problems that seem to occur in civil works.

(e) Roofing

16. Supervisors to be instructed to check tile quality prior installation. When such verifications takes place it would be advisable to include representatives of PSC and that external supervisors record and document their observations for internal supervisors to look at. Further, external supervisors should also be advised to verify the quality of batten both prior to and after installation (particular attention should be paid to spacing of batten).
17. When tiling is finished spread a layer of sand over the roof surface, this will assist in filling in the gaps between the tiles, reducing leaks.
 - 17.1 Recommended to the contractors to “wet” the roof (when sufficient quantities of water are available), to check whether there are any leaks.
18. Review tile type used, the current tile produced alternatives available?
19. Removal gable end roofs are strongly recommended. If the gable roofs are to be retained, and justified, and impermeable layer of ‘flashing’ is needed at the joint between the wall and roof to protect the rafters and battens.
20. In case of steel roof structures:(a) review and revise the specifications and plans used provide better instruction on acceptable weld types possible use of 3-D projects of acceptable joint types;(b) joints on steel battens should not be aligned in a row;
21. In case of joint welds in steel roof structures:
 - 21.1 Option 1: Provide simple bracing around the joint on two sides to strengthen the joint. These could be bolted and welded to improve joint.
 - 21.2 Option 2, Split 00mm of steel section at the end of the batten, reduce the section and insert into the other batten welding the joint.

22. Rafters meeting at the roof apex should be bolted with joining plates and welded together.
23. Steel elements should be welded on all sides; welds should be continuous and not just spot welds.
24. Instruct supervisor to check a sample of joint; to ensure welds are correct.
25. Ensure that steel elements are primed and paint prior to installation.

(f.) Floor Quality

26. Specifications and plans details, as recommended by Ministry of Education on floor quality, will have to be reviewed and updated.
27. Instruct supervisory staff to check on levels and smoothness of floor to adhere to the PRF specifications.
28. Periodically evaluate the possible cost implications of tiling of floors.
29. Upon pouring concrete, provide written instruction to contractors to level and smooth the floors and ensure that the surface is covered with sand during the remainder of the construction.

(g.) Plans and Specifications

30. It is recommended that buildings plans/design developed by the Ministry of Education and its specifications be obtained and reviewed on a periodic basis. For such purposes, regular coordination on technical matters with this Ministry may be useful.
31. Draft revised plans and specifications, providing better detailing and instructions the use of 3rd project should also be used for selected detailing especially;
 - 31.1 Steelwork
 - 31.2 Beams
 - 31.3 Timber work
32. Develop and or adapted appropriate information.
 - 32.1 On cement/concrete production-recommend box method for improved monitoring.
 - 32.2 Wood quality; mention the common problems and what is not acceptable.
 - 32.3 Treatment of timber.
34. Transfer all plans to 'Auto CAD' or other drafting package to allow for ease of amendments.
35. Improve detailing and information on plans, format plans into component work, to assist in gauging progress of work onsite.
36. Provide internal supervisors and contractors with an original set of plans stamped by PRF and containing the relevant project number. Discuss plans and any necessary issues with them prior to groundbreaking.

(h.) Latrines

37. Existing designs are expensive and inappropriate and therefore its usage to be reconsidered and alternative designs (those used other agencies) could be adopted.
38. Options

- 38.1 Provide either one simple latrine per classroom or possibly one per 100 students or which ever is less.
 - 38.2 WHO/FAO/UNESCO recommends 1 latrine cubicle per 25 female students, and 1 latrine cubicle per 100 male students and one urinal per 40-60 male students.
 - 38.3 PRF will not provide the latrines in all areas that unsuitable providing with supply water for their usage.
39. Refer to sample design in Annex 7

7.2 Rural Roads (Bridge and Culverts)

Concrete works

40. Concrete work is still variable; attempts should be made to improve the quality of concrete used. Improvements are needed particularly in
 - 40.1. Form work construction: as slippage are common causes of poor quality
 - 40.2. Vibration- this may run on conflict with labour intensive practices.
41. Provide improved information on manual mixing of concrete and cement

Backfilling

42. Inform stakeholders of the importance of backfilling and compaction around projects, especially before the rainy season. Also the need after when time is available.

7.3 Water supply systems

All wells (well, drilled well, spring gravity fed system)

43. Improved local information collection is needed during appraisal process; this should involve seeking inputs from provincial department of water resource and information from locals on any existing wells in the locality.
44. Require contractors to put the depth and output of the well on the apron, for reference.
45. Inform the national water database of the location of provide wells.

7.4 Supervision

46. Develop a check list approach for supervising and evaluating the progress of work at different stage.
47. Involve the communities more in supervision, go around the site with external and internal supervisors and ask whether certain work (this should be base on different building components) undertake are acceptable on the external and internal supervisors and communities. These checklists should be signed off by the communities' supervisor, PSC representative and returned to PRF where it will aid the internal supervisor monitoring the project.
48. Where works is not acceptable meet with contractor, and agree upon appropriate action, again signed by each party contractor, external and internal supervisors, with a copy forward to PRF for reference.
49. Internal supervisors need to visit the project sites more frequently, and lodge acceptable report in works progress.
50. Provide additional capacity building for internal, external supervisors and occasional workshops for regional contractors to gather information promote improved practices etc.

Management and Partnership

7.5 Participation and Ownership

51. Develop simple and appropriate information, education and communications (IEC) materials to help with projects, coverings;
 - 51.1. **Roles and responsibilities**, of communities construction supervisors, khet implementation team, TA district and contractor selection and appointment, the requirement to hire a percentage of workers from the relevant community.
 - 51.2. **Explaining simple community contracts-** for possible use by communities and contractors.
 - 51.3. **Simple supervision;** covering timber issues, cement/concrete, floors production, issues of quality of work. Information sheets should be clarified with simple clear drawings etc.
 - 51.4. Move towards involving khet/village representatives (possibly through the Project Support Committees) more in the monitoring of progress of works.
 - 51.5. Improve communities in certify payments to contractors for work undertaken.
 - 51.6. Improve awareness on maintenance and responsibilities for facilities and infrastructure.

7.6 Documentation

52. Improve requirements for reporting of supervision; provide an outline of supervision reporting.
53. Develop and utilize checklist for supervision, (see supervision above)
54. Require internal supervisor to place reports on work package files, currently the only report often on files is of the ground breaking ceremonies.
55. Including a copy of all contract-related documents in work packages.

7.7 Contractor usage

56. Contractor should be more responsible to the communities and not just to PRF.
57. Improve record keeping by community's supervisor of groups working on site.
 - 57.1. Develop a data collection form, on what they are to do, the costs involved, ensure they are informed of the obligations on quality, seek agreement by parties concerned (PRF TA district communities supervisors, contractor, project support committee) on this.
58. Communities should be encouraged to employ local (province based) contractor, rather than accepting outside contractors. Quality could be sacrificed for local

7.8 Scheduling of Work

59. Consideration should be given to the Cycle of implementation of certain projects (sub-merge bridge, drainage, weir, earth dam and other irrigation system) these should not be realistically attempted during the rainy season.
60. Consideration should also be given to the seasonality of voluntary inputs by communities. During the latter quarter of the year, increasing agricultural activity (harvesting) account when scheduling work and also promoting community.