Danida / Maji

Rural Water Supply Programme
Iringa, Mbeya and Ruvuma Area

Course / OJT: Supervising Construction Sites

Target Group: Site Foremen

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OUTLINE

PURPOSE OF LEARNING

This Learning Material is developed to act as a guide book for site foremen who supervise the construction of water projects within the Maji/Danida programme. It is one effort in trying to prepare Learning Materials for some of the courses envisaged in the Training Plan (Maji/Danida Rural Water Supply Project, 1991-1994).

The Learning Material intends to explain through text and examples on tasks you are supposed to perform while carrying out the supervision role at construction sites. This is considered necessary in order to minimize the project engineers' supervision on site.

By studying this Learning Material stage by stage you will identify skills to be used to organize and communicate your construction activities on daily basis.

For this Learning Material to be understood, a 7 days' seminar should be organized. This will provide a forum for sharing experiences on different stages. Some examples have been included to relate the text with real situations. Trainers and participants can provide more practical examples to increase clarity.

It is hereby recommended that you should devote time to learn techniques stated in the guide for better understanding of your job.

STAGE ONE

INTERPRETE CONSTRUCTION PROGRAMME

1.0. GENERAL OBJECTIVE:

If you study this stage carefully, you will be able to interprete correctly the construction programme, and draw monthly implementation targets.

2.0. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:

2.1. Obtain an approved design report by the Regional Water Engineer from the project engineer before commencement of construction activities

2.2. Extract a monthly implementation plan from the construction programme activitywise to keep the completion date

2.3. Prepare daily work output targets in order to complete the project as per design using the monthly implementation plan as a basis

1. OVERVIEW:

The time is allocated to individual activities in the construction programme, based on amount of activity and previous experience gained from constructed schemes. Both factors are variable (not fixed), leaving the decision to design engineer's assumption.

You should always keep proper records of actual construction time of different activities for comparing to allocated time. This information should be reflected in progress reports to be discussed in later stages.

To clarify further, a typical sample of a construction programme for a single village gravity scheme is included in the key points. You are to comment whether the time allocated is practical, based on your experiences.

2. KEY POINTS:

2.1. The project construction programme is one component of a design report document. Other elements of this document are:

- Technical notes.
- Cost estimates including transport.
- Drawings.
- Material and manpower requirements.

The design report prepared by the project engineer is checked by another engineer in the department, before sent for approval by/both Regional Water Engineer, RWE and Regional Project Advisor, RPA. Approval signatures are obtained at the summary page of the design report document and on each individual drawing. A typical summary page is shown below:

PROJECT: _____ REGION: _____

REF. NO.: _____ DISTRICT: _____

DESIGN BY: _____

CHECKED BY: _____

APPROVED BY: _____/RPA

APPROVED BY: _____/RWE

- You should note at this stage that all activities at the construction site should be based on approved documents and drawings by relevant authorities. You will take responsibility of individual activities, if found to have used unapproved drawings.

- Minor alterations can be made to the original design with the endorsement of the design engineer by writing.

2.2. Strictly speaking, the construction programme indicates start and end of a particular activity. Experience shows that activities extent for several months before it is completed. Often, you are expected to have monthly construction plan for different activities. From the overall construction programme, you should be able to extract a monthly implementation plan for execution.

Example:

A typical sample of a construction programme for a single village gravity scheme can look as one below: Extract from the design report indicate the following information:

Length of transmission pipeline = 2.5 km
Length of distribution system = 8.0 km
Number of domestic points = 12
Storage tank, 12 m3 capacity = 1 No.
Intake structure, standard = 1 No.

SAZA WATER SUPPLY CONSTRUCTION PROGRAMME:

	YEAR	1991	1992
	ACTIVITY MONTH	M J J A S O N D	J F M A
1	SURVEYS		
2	ORDER OF MATERIALS		
3	CAMP ESTABLISHMENT		
4	INTAKE WORKS		
5	TRANSMISSION MAINS		
6	DISTRIBUTION SYSTEM		
7	DOMESTIC POINTS		
8	CHAMBERS, MARKERS, CROSSINGS		
9	COMMISSION + INSPECTION		
10	STORAGE TANK		

Note that timing of different activities is associated with certain constraints such as weather conditions, availability of special materials etc.

- To establish monthly implementation plan, you should consider earmarked activity independently. From Saza project plan, domestic points are to be constructed in 2 months resulting to six numbers per month. Every activity can be analyzed likewise, and extract a monthly construction plan accordingly.

- Often other minor construction activities are not timed by the construction programme, either assumed to be contained within or result in project over run. You are asked to identify such overlooked activities from Saza project plan for discussion.

2.3. Daily work output targets have to ensure that the monthly implementation plan can be achieved. You should plan to achieve 6 DPs during DP construction activity month, in case of Saza Project. To set a realistic daily target, the number of working days in a particular month should be considered. Resources should therefore be suitably adjusted to record the forecasted plan. You should finally register actual achievement.

STAGE 2:

IDENTIFY MANPOWER REQUIREMENT:

1. GENERAL OBJECTIVE:

If you study this stage, you will be able to relate the manpower requirement with the physical work target.

2. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to do the following:

2.1. Relate daily manpower needs with planned daily work output activitywise on the basis of the construction programme.

2.1.1. Categorize manpower demand for major activities such as intake, tanks, chambers, pipelaying etc based on skill requirement and time allocated by the overall programme.

2.1.2. Define daily production rate of each work gang for individual activity.

2.2. Establish monthly manpower requirement and compare with monthly implementation plan.

2.3. Identify timing of special skills demand.

2.4. Identify/plan number of village participation attendance.

1. OVERVIEW:

The design Engineer is expected to identify the skilled manpower requirement as part of the design report. He/she shows against each skill title, the number, when to be deployed and man-months on the project.

This stage intends to explain to you how this resource is planned. Since the deployment and supervision of manpower is carried out by you, it is important for you to identify need for every particular skill at a particular time. You may find out that some manpower is not required throughout the project duration, can either be borrowed to other projects or terminated.

Village participation labour availability can also be organized efficiently against planned activities. You should always remind village authorities of their project commitments such as paying scheme attendants, O. & M. water fund and attending meetings.

2. KEY POINTS:

2.1. All activities to be undertaken during construction are listed in the construction programme. Refer to stage 1 for a typical programme for Saza village gravity scheme.

Manpower resource is determined based on factors below:

- amount of activity
- time allocated to the activity
- weather situations
- project resources
- experiences of skill on the type of work.

2.1.1. Different activities demand particular type of skills. A masonry skill for tank construction and domestic point could differ in levels. You should be able to note the difference. Manpower skills for major activities (sensitive) should include ability to read respective drawings.

2.1.2. Daily production rate for a construction gang defines a daily work output. This is an important factor to avoid over-employment. In many countries, standard rates are issued by labour authorities to avoid over-staffing. To clarify the concept, read the following example.

Example 1:

. Activity: One standard Maji/Danida domestic point to be constructed in Saza village

. Action: RWE asked two different foremen to present plan to do the assignment

. Proposals: Foreman A: 1 gang + 10 villagers for 5 days

Foreman B: 2 gangs + 10 villagers for 3 days

. Question: If a gang is taken to include a mason with two casual helpers, which proposal do you think is optimal/efficient?

. Answer: I say option A, though not efficient. What are your comments?

Maybe the gang composition should be redefined

2.2. Activities do change from month to month according to the implementation plan. Strictly speaking, manpower needs should also change. Labour hired for special activity say intake works might not be excellent for chamber construction. On the other hand, can be trained using OJT module to work on other activity. You should be able to establish each month manpower requirement and relate available force with coming tasks. Remember manpower means cost.

Example:

Refer to Saza water project from stage 1; Masonry activities during January, 1992 is continued to DP construction and minor work on distribution system.

i) - amount of activities:

6 Nos. DPs

pipe supports on distribution system etc.

ii) - production rate (assumed):

1 gang builds 1 DP in 5 days.

1 gang for distribution system.

iii) - masonry manpower need:

2 gangs including two manson would be deployed during January, 1992.

All other requirements can be analyzed on the same line, and finally establish the monthly manpower demand.

2.3. You are aware that projects need also some special skills to do certain activities. Special skills include welding, rock drilling, blasting etc, often are centralized. Such supporting skills are available for all projects including yard & workshop activities. You are to identify if your project would require this support and when.

2.4. Village participation in construction of water scheme is an important element to this project. Organization of this component to be done by the village water committee. You know the construction programme, and even the monthly implementation target you should assist the village in planning the manpower deployment.

You should ask for the number of villagers to suit your work plan and able to control.

Example:
Daily production rate for trenching per villager - 5m

Monthly plan for trenchwork - 5 km

Calculate number of villagers for the activity per day for the month.

Answer: 50 villagers for 20 working days.

The number can be supervised reasonably well.

STAGE 3:

IDENTIFY MONTHLY MATERIAL REQUIREMENT

1. GENERAL OBJECTIVE:
If you study this stage, you will be able to identify correct monthly material requirement.

2. SPECIFIC OBJECTIVES:
By the end of this stage, you will be able to perform the following:

2.1. Cite the monthly implementation plan from stage 1 activitywise to keep the completion date.

2.2. Identify materials for construction activities.

2.2.1. List materials and equipment required.

2.2.2. Identify available material at site store.

2.2.3. Order material in time.

2.3. Recognize the procurement procedure.

1. OVERVIEW:

Materials have to be purchased in time to enable construction activities to proceed. However, these cannot be bought randomly. Maji/Danida central stores require estimates of material requirements. You should prepare this estimate for your project.

To prepare the monthly material requirement, you need your monthly implementation plans. It is therefore important to update plans to march with real situations.

For some materials such as cement which are used every month, stocking at site stores is recommended.

Materials have to be procured by existing government routines; measures to improve the system to be discussed.

2. KEY POINTS:

2.1. To implement the plan identified in stage 1 for the particular month, you should have adequate materials. To prepare the list of these materials you should always refer to the construction programme.

Pipes and fittings for the pipe laying activities are in normal circumstances ordered abroad in time for plan. Local materials need be identified based on the monthly implementation plan.

If the plan indicate to construct six domestic points, from the DP drawing you will be able to list materials required for one. Total required material will be obtained after multiplying the values by six.

2.2. The procedure for identifying the monthly material needed is as follows:

2.2.1.
- List activities from the plan
- Quantify each activity
- Recognize material for each from drawings.
- Sum the requirement.

The procedure should also include equipments.

2.2.2. Check the required materials against corresponding ledger pages at site store for availability.

2.2.3. All materials which cannot be obtained from the site store should be ordered. Use the standard monthly material request form as shown at the end of the stage.

2.3. You should observe the standard procedure for processing the material order.

- Identify material required.

- Fill in standard material request form
- Get approval from project Engineer
- Forward the request to central stores
- Collect material from stores to site.

Procurement routine follows government system of purchase, you should allow at least two weeks before the required material can be supplied. You are encouraged to plan in advance for the materials. The central store is advised to stock frequently used materials for construction to check delays.

MAJI/DANIDA

MONTHLY MATERIAL REQUEST FORM

MONTH	SCHEME NAME	NO	REQUESTED BY		
STORES:	DESCRIPTION		PART NO:	QTY:	ISSUE VOUCHER NO.
DIRECTLY ORDERED SCHEME MATERIALS OF HAND PUMP STORE MATERIALS:					
BUFFER STORE: MATERIALS:					
CEMENT:					
FUEL	DIESEL:				
	PETROL:				
	KEROSINE:				
SITE ENGINEER APPROVAL:					DATE:

STAGE FOUR

HANDLE CONSTRUCTION MATERIALS AT SITE:

1.0. GENERAL OBJECTIVE:

If you study this stage carefully, you will be able to recognize correct procedures for handling construction materials at your site.

2.0 SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:

2.1. Identify proper documents from the regional project store with supplied materials

2.2. Verify material derivery at your site store

- 2.2.1 List material supplied in site ledger
- 2.2.2. Label materials in the store

2.3. Practice procedure for issue of materials from site store

- 2.3.1. Compute material requirement for activity
- 2.3.2. Monitor all material issues from store
- 2.3.3. Demonstrate responsibility of material usage
- 2.3.4. Operate system for loaning materials to other projects

1. OVERVIEW:

Construction materials should be supplied both in adequate amount and when required, in order to meet individual activity targets. Construction programme for the project can only be realised if required resources are timely mobilized.

You are the main user of all materials supplied at your site for construction work. Proper handling of these materials at site will not only ensure availability when required, but also maintain quality specirications. For example, you need fresh portland cement for construction of all water retaining structures. Poorly handled cement at site will not meet this standard. At times, sites are issued with rebagged cement from the regional stores to be used for miscellaneous activities. Such sub-standard materials should be recognized easily in the store to avoid possible misplacement of use.

Materials supplied to your site are for exclusive use for that project. All costs associated to the supplied materials are charged to the scheme. Unrecorded materials transfer to other schemes should not be allowed.

Materials are issued to schemes not in excess sof demand. Monitoring of all material issues from the site store is your responsibility.

2. KEY POINTS:

2.1. Materials requirement vary from month to month depending on the monthly implementation plan as discussed in stage 1.

Materials expected to be received at the site during a particular month are listed on the monthly material request form prepared by you and approved by the project engineer. This form is illustrated in stage 3.

After formal procurement procedure, the regional project store supplies the requested materials to your site store. The central store supplies materials vide issue vouchers. See a sample of issue voucher below.

For an issue voucher to be complete, it should show the following features:

- reference ledger number and page for the central store
- name/signature of issuing clerk at the central store
- name/signature of collecting person (responsible for delivery)
- approval authority in-charge of buffer stock
- registration number of vehicle to be used

For the feedback to the central store as regards delivery status of material, two vouchers with the same number should follow the materials. You should return the duplicate copy duly signed by receiving clerk back to the regional store for records. A sample of the issue voucher is attached at the end of stage.

2.2. You are expected to verify the material delivery at your site store.

2.2.1. From the copy of the monthly material request form, you have an opportunity to compare the supply against the demand.

In normal cases the central store is able to meet your requirement. The collecting persons who (in many cases) are drivers are fully responsible for materials signed for. Short derivery of any material should immediately be reported to the project engineer with duplicate copy of issue voucher.

2.2.2. Materials received at site store should be booked in respective ledger pages. A sample of ledger book card is enclosed at the end of the stage. The ledger page is so designed to clearly show the existing balance of the individual item at glance. You should demonstrate the importance of updating ledger cards immediately after any entry is made to your stores clerk.

Materials stocked in store should easily be found when required. All materials should be labellet, using bin cards. You will save time to locate some special materials such as, pipe fittings etc. if labelling is done by bin cards. Whereas pipes be stocked in their respective material and size.

2.3. Materials after being received and booked into the site store, are to be used for construction activities. You are still responsible to ensure their proper use according to construction plan as agreed.

2.3.1. You have an activity plan for the month, and you can extract daily output plan of implementation as discussed in stage 1. You kshould therefore be in a position to calculate material requirement to be issued to your activity supervisor. Materials supplied in excess of demand to a particular activity can attract misuse practices.

Example:

Supervisor X is assigned to oversee construction of a domestic point in Saza village.

Identify materials using standard drawing he needs if all pipe fittings have been supplied.

1 say:
- 1/4 truck load of sand
- 1/2 truck load of stones
- 50 Nos. standard concrete blocks
- 10 bags of cement

Do you think this supervisor needs something else?

2.3.2. You should appoint activity supervisors much earlier than the start of the activity. This will give them enough time to identify and process their material requirement.

Supervisors should present their material requirement to you for approval before being issued by the store clerk.

Site stores clerk should issue materials using site vouchers against your approval note on the list of materials. Construction site voucher should be complete before any material is taken from the store.

Monthly material returns should be presented to the project engineer for approval before requesting new materials. You should always work with up-dated ledger cards.

2.3.3. You will ensure that all materials are used for project activities.

2.3.4. Materials can be moved from one site to another through a systematized procedure. There should not be any localized exchange of material.

The construction programme for the scheme is controlled by the project engineer at the regional project centre. Loaning of materials between projects can only take place at project engineer's level. Advance note will come from your project engineer.

Your store will issue materials specified together with two copies of issue voucher to the recipient project. Same procedure will be followed as the one used for issuing materials from central store to site store.

Cost centre adjustments will be effected using the issue vouchers through the buffer store.

MAJI DANIDA
LEDGER BOOK CARD/STATEMENT
DESCRIPTION _____
COUNTED IN UNITS OF _____

PAGE No
PRICE LIST ENTRY No.
PART No A/C No
BIN LOCATION

Date	Receipt Issue Account No	Delivered by Issued For Scheme Name	Scheme No.	In	Out	Balance	Price Per Unit Total	Signature
		C/F FROM PAGE No.						
		C/F TO PAGE No.						

STAGE FIVE

ALLOCATE TRANSPORT TO ACTIVITIES

1. GENERAL OBJECTIVE:
If you study this stage, you will be able to organise the site allocated transport effectively for construction activities

2. SPECIFIC OBJECTIVES:
By the end of this stage, you will be able to perform the following:

2.1. Operate monthly allocated transport for construction

2.1.1. Identify transport for construction materials

2.1.2. Identify transport for village participation

2.1.3. Recognize transport for other purposes

2.2. Prepare weekly transport plan

2.3. Monitor transport use according to the plan

2.4. Demonstrate responsibility of transport usage

1. OVERVIEW:

Maji/Danida allocates permanent transportation on monthly basis to construction sites. It is this transport which constitutes major share of scheme transport cost

The transport section allocates vehicles to sites from detail transport requests prepared by project engineers. Transport is charged to schemes based on total kilometers a scheme has run. By limiting yourself to planned activities only, the construction site can optimize the transport utilization

Often due to lack of communication it results in duplication of transport resources at sites

Based on the transport requested by the project engineer for the site, you should be able to prepare weekly transport plan. You have to ensure that the allocated kilometers are not exceeded

At the construction site, transportation of villagers and construction materials is the major share of monthly transport costs. If you stick to planned activities only, you can maintain allocated transport.

2. KEY POINTS:

2.1. Transport is requested based on the activities to be carried out during the month. Activities are drawn from the construction programme (stage 1)

Number of transport trips to ferry both materials and villagers to construction sites are estimated. The standard format used to request transport is attached at the end of stage.

You often see, transport being sent to the village to collect villagers without prior planning. This type of transport is not requested for and can then be termed as "misuse"

2.1.1. You should use drawings to establish amount of materials required for all planned activities during the month. Then you are able to identify exactly the transport requirement for each week. Remember concentrated construction approach is the best option regarding transport

2.1.2. Similarly, based on agreed village participation routine, the transport requirement for this component can be fixed

2.1.3. Transport for other purpose constitute minor component. However, by improved communication at site, transport duplication can be minimized

2.2. You now know all the components of transport requirement in a week. You also have a copy of transport request from the project engineer for the month. You should be able to prepare a weekly transport plan. Allocated kilometer for the month should not be overrun by the plan

EXAMPLE:

The construction site was allocated 3000km for the site transport according to the request. The site foreman should prepare a weekly transport plan

Experience show that the distribution of transport cost among different components is as follows:-

Transport materials	50%	1500km
Transport villagers	30%	900km
Other purposes	20%	600km

If it is assumed similar activities during the month, then the weekly transport plan will be 500, 300, 200 km respectively.

2.3. Once the plan is prepared, it should be communicated to other staff. The weekly transport plan will be more useful if presented in detail instead of only specifying kilometer limit

Element of control should be exercised by you. Vehicle movement be authorized by signing the log books. It has often been pointed out that site foremen sign log books for the month on return at the yard, leaving the entire exercise a mere formality

2.4. You are expected to demonstrate your responsibility of transport usage to the rest of the staff. You will be held responsible when the amount of transport allocated to your site is exceeded

DANIDA WATER PROJECT MONTHLY TRANSPORT REQUEST FORM PERIOD: 19
SCHEME NAME: REGISTRATION NO:
PROJECT ENGINEER / HEAD OF SECTION: DATE:

TYPE OF VEHICLE	REASON:	FROM DATE:	TO DATE:	NO. OF TRIPS:	@KM:	TOTAL KM:
SITE TRUCK:	SITE TRUCK - YARD CAMP			1		
-DO-	BRICKS/SAND/AGGREGATES					
-DO-	CHIPINGS/CEMENT/MAT.					
-DO-	DAILY SCHEME WORK					
-DO-	OTHER:					
-DO-						
-DO	SITE TRUCK CAMP/YARD			1		
ADD. TRUCK:				SITE TRUCK TOTAL KM		
SMALL VEH:				ADD. TRUCK TOTAL KM TRUCKS TOTAL KM		
SURVEY:						
SURVEY:						
SURVEY:						
-DO-						
-DO-						
-DO-						
-DO-						
-DO-						
-DO-						

SMALL VEHICLE TOTAL KM _____

NB! TO BE FILLED IN AND FORWARDED TO THE TRANSPORT SECTION NOT LATER THAN THE 25th OF EACH MONTH. THE REQUEST MUST COVER THE TRANSPORT REQUIRED FOR THE FOLLOWING MONTH.

STAGE SIX

CONDUCT OJT TO SCHEME ATTENDANTS

1. GENERAL OBJECTIVE:

If you study this stage, you will be able to train the scheme attendants using OJT module during the construction phase

2. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:-

2.1. Obtain OJT module form operation & maintenance section for carrying out the training

2.1.1. Identify correct timing for different stages

2.1.2. collect training materials

2.2. List relevant activities for the scheme attendants to perform as part of training

2.3. Prepare training report

1. OVERVIEW:

A scheme attendant is the villager appointed to be trained for carrying out future repairs of the village water supply scheme. His/Her training is planned to take place during the scheme construction stage. The Maji/Danida water project supports this training free of charge.

You are the trainer, the OJT module has also been developed by the project. You are to conduct the scheme attendants training using the OJT module. The Kiswahili translated OJT module will be suitable because the scheme attendants have only primary education.

The OJT module will be conducted in phases to correspond with on-going construction activities. The scheme attendants will constantly be tested and evaluated practically.

At the end of the OJT module, the scheme attendants should pass the test on scheme repair exercise.

2. KEY POINTS:

2.1. The OJT module was prepared by the O & M section for scheme / handpump attendants with primary education background.

The available OJT recommends mode of training to be seminars. A number of scheme attendants are gathered at one station for a period not exceeding one week. The seminar combines scheme attendants from different schemes. It should be considered that this is a final stage aiming at evaluating your training efforts during construction.

The scheme attendant has to be trained both on theory and practical aspects related to the particular water scheme. You have a major role to play in ensuring that the scheme attendants are able to carry out trouble shooting on the scheme.

A gravity scheme has several functional components which the scheme attendants have to operate and repair in case of break down. The training should cover all elements of the scheme. The important items to be included are:-

- Intake works
- Pipelines - both gravity and distribution systems
- Storage tanks
- Source protection in catchment
- Break Pressure tanks
- Pipe markers
- System accessories e.g. airvalves, washouts, etc.

2.1.1. Construction phase of a scheme is planned systematically as indicated by the programme. New activities start when proceeding one are either completed or about to be completed. This is to proportionate manpower and other required resources such as transport etc. OJT module should also be conducted the same manner

It is recommended that relevant chapters covering activity for construction to be started should be introduced to the trainees as theory class. Later after the activity, the practical aspects are discussed in details. You should, therefore follow the construction programme in fixing your training routine of different stages

Example:
Consider the construction programme for Saza project, the OJT programme for the scheme attendants can look like below:

SAZA WATER SUPPLY CONSTRUCTION PROGRAMME
OJT MODULE TIMING

	YEAR	1991	1992
	ACTIVITY MONTH	M J J A S O N D	J F M A
1	SURVEYS		
2	ORDER OF MATERIALS		
3	CAMP ESTABLISHMENT		
4	INTAKE WORKS		
5	TRANSMISSION MAINS		
6	DISTRIBUTION SYSTEM		
7	STORAGE TANK		
8	DOMESTIC POINTS		
9	CHAMBERS, MARKERS, CROSSING		
10	COMMISSION + INSPECTION		

■ PRE-ACTIVITY THEORY CLASS (2-3 Days)
× ON JOB PRACTICALS
○ ACTIVITY TEST CLASS (1 Day)

2.1.2. Training materials according to the OJT module include training aids such as film, overhead projector, and slides apart from usual items like fittings, pipes, blackboards, chalk etc.

You will agree with me that training aids will not be required for this continuous training which impulses more practical?

2.2. You will list all activities which the scheme attendants should participate during construction as part of training. These activities will be identified during the theoretical classes to be held at the site camp before implementation of activity

Add more on the following list of activities:

i) Plumbing of intake structure
ii) Internal plumbing of storage tanks, break pressure tanks
iii) Installation of air valve and wash outs
iv) Fixing pipe markers on important points
v) Branching pipeline to DPs
vi) Assembling of a DP stand
vii) Installation of gate valves etc.

2.3. You have to report back to the project engineer on how the training is being conducted, its progress and programme of all scheme attendants within your scheme. the idea behind the feedback channel is to determine whether all scheme attendants are capable to make future repairs or not. If some of them are to be substituted, the village can be advised before the construction is completed

STAGE SEVEN

COMPILE PROGRESS REPORTS

1. GENERAL OBJECTIVE:

If you study this stage, you will be able to understand essential elements of a progress report to be prepared in order to communicate with higher authorities

2. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:-

2.1. List elements of a progress report to be included

2.2. Recognize future use of your progress reports

2.3. Compile a monthly progress report

2.3.1. Specify causes of shortcomings to plan

2.3.2. Make general observations to the progress

1. OVERVIEW:

Progress reports form an important component of the project implementation. They relate the plans prepared with practical achievement

A good progress report should contain as much relevant information related to project implementation as possible. Required information can be extracted from the report without making further consultations.

You supervise construction activities of a water project, your report should contain all elements associated to the practical execution of the project. Example, without reporting the availability of villagers during the month leaves the report incomplete and so on.

You should present one report per month to the project engineer before the monthly progress meeting. There are several meetings debating on the progress of the same scheme at the end of the month. You should ensure that all presentations are based from the same original report prepared by you. This will avoid contradictory statements.

The key points will clarify on typical for implementation progress

2. KEY POINTS:

2.1. To be able to relate the actual performance with the monthly implementation plan, the following elements should be known. They should indicate actual against plan.

i)	Village participation attendance (number)
ii)	Materials
iii)	Transport, in kilometres
iv)	Manpower, both skilled and unskilled (number or manmonths)
v)	Construction activity
vi)	External support
vii)	Meetings - site staff and project committee
viii)	Site visits, project engineer, RWE, RPA, CD, etc.

You should note that construction activities refers to the construction programme and later interpreted as discussed in stage 1. If in the reporting month, work was pipelaying activity, kilometer of pipeline laid will apply and so on. For more than one activity all are considered independently.

To include all above elements in your report, you have to take note of daily developments related to construction. The site clerk if well explained can be used in recording this information.

Example:

A site foreman was presenting his monthly progress report during the meeting. The meeting proceeded as follows:

Chairman: Lets now have the report for Saza project

Foreman: (Had few sentences on a piece of cigarette paper) Thank you, Saza project has performed quite well this month

- Storage tank construction continued well

- Pipelaying was delayed because we are waiting for pipes from abroad
- Villages continued to excavate a lot of trenches
- Village activities suffered due to poor turn out
- Saza project is lacking essential drawings

Thank you Mr Chairman, that was my report

Chairman: That was the report for Saza, anybody with questions or observations?

Member: When do we expect Saza project to be completed?

Foreman: According to the construction programme, it is to be completed in April 1992

Chairman: What is the problem with village participation?

Foreman: Please may I ask the CPA to reply to this question with your permission
(he forgot that the CPA was not a member to this meeting) Oh! I will find out the answer later, sir

Chairman: Ok, let's move to the next project, Chabu

You should consider a typical progress report presented by your fellow colleague. Please make some observation from this otherwise brief report

Can I comment as follows:-

a) The report contains unquantified activities
b) The foreman is implementing randomly without relating it to plans prepared
c) The implementor do not know the overall performance
d) Foreman is unable to take control of all elements of activity
e) Site meetings not held, no forum for communication

You need to know the future use of your report to avoid unclear communications

2.2. Progress reports prepared by you provides an important input for all future reports to be prepared. They come from the centre of activity and are therefore realistic. If you present report containing guessed information, this will result in all further reports being unreliable and useless

The following reports depend on your progress reports:

- Project engineer's report to the monthly progress meeting
- RWE's quarterly report to the ministry for fund request processing
- RPA's quarterly report to the donor agency through PICU
- VIPA's quarterly report for community participation
- RWE's report to the RDD for evaluating development targets

2.3. To prepare a good report which will find future use, all elements listed in key point 2.1. must be included.

To report on all elements listed, you need information which has to be compiled on a daily basis

Tips for preparation of a good report

- Always carry out the construction per plan
- Avoid unnecessary work rescheduling
- Make work supervisors to give feedback daily
- Avoid general statements during reporting
- Monitor staff attendance on their assignment

Report you are submitting should only cover activity progress up to the reporting date. Never forecast performance for your report

If you are unable to quantify the activity from the plan, which it shouldn't consult your project engineer to clarify the target

The standard format to assist you in compiling the progress report is shown below:

STANDARD REPORTING FORMAT

Scheme: _____ District: _____

Ref No.: _____ Region: _____

Month/Year: _____ Site Foreman: _____

Time Schedule: _____ Starting Date: _____

Completion Date: _____

A	ACTIVITY	PLAN	ACTUAL	REMARKS
	1. Camp Construction			
	2. Intake structure			
	3. Transmission pipelines:			
	3.1. setting out, km			
	3.2. trenching, km			
	3.3. pipe laying, km			
	4. Storage tanks			
	5. Distribution pipelines			
	5.1. setting out, km			
	5.2. trenching, km			
	5.3. pipe laying, km			
	6. Domestic points			
	7. Break Pressure Tanks			
	8. Chambers, markers, crossings			
B	Ressources			
	1. Transport, HDV km			
	LV km			
	2. VP-attendance, No.			
	3. Labour			
	3.1. skilled, No.			
	3.2. unskilled, No.			

General Remarks:

Site staff meeting: _____

Project committee meeting: _____

Construction materials: _____

2.3.1. While compiling your progress report, often you will note shortcomings as compared to plan

It is always useful to the design engineer to know the specific causes. It could be that the prepared plan was too ambitious and therefore unrealistic. This feedback should be reflected in your report activity. Even those activities with their monthly targets exceeded should be shown.

2.3.2. Always the report should contain general observations (if any). These can also reveal recommendation for improvement to the job situation

STAGE EIGHT

PARTICIPATE IN RELEVANT PROJECT MEETINGS

1. GENERAL OBJECTIVE:

If you study this stage, you will be able to participate actively in all relevant meetings concerningk your project.

2. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:-

2.1. Agree on points for the site staff meeting agenda

2.2. Conduct monthly site staff meeting

2.2.1. Identify meeting participants

2.2.2. Accept open and free discussions

2.2.3. Process meeting resolutions

2.3. Advise on points for the project committee meeting agenda

2.4. Attend project committee meeting

2.4.1. Define activities for village participation

2.4.2. Reveal future implementation plan

2.4.3. List all the resolutions agreed

1. OVERVIEW:

Meetings provide opportunity to communicate among parties involved in the project. Meetings also help you in organising the construction team, equipment, materials and village participation component.

To obtain maximum advantage from such important forum, meetings should be well prepared and conducted. Members be given opportunity to present views openly and be activated to propose possible solutions. You should not treat criticisms to be personal, but aim at achieving better working climate

Two meetings should be conducted every month, These are site staff meetings held at the construction camp and the project meeting involving all covered villages by the project

You are the link member of both meetings. To have an effective meeting both the attendance should be good and the agenda be exhaustive

Both meetings being regular, permanent chairperson and secretaries should be known to enable follow up of resolutions

2. KEY POINTS:

2.1. To have a successful site staff meetings the agenda should be well composed. This meetings is called to review the activities during respective month and also discuss issues related to construction team

Progress of project activities is compared to the prepared plan and major constraint identified and minuted. You will agree with me that major interest for the construction team in this meeting is on how the construction site is administered

You should give equal opportunity to all members of the construction team within a certain deadline to propose points for the agenda. As far as possible, the agenda should be drawn from these points submitted. This will motivate team members to deliberate actively on matters of common interest.

2.2. You will be the chairperson for the staff meeting held once a month. A secretary will be appointed among the members, a community participation representative a potential candidate

2.2.1. All employees staying at the construction camp are members to this meeting

2.2.2. Individuals be allowed to present and clarify agenda points brought by themselves. You are to provide clarifications related to these points according to the project guidelines

Members be encouraged to freely air their opinion on particular issues. You should note areas of disagreement for reference and consultation. Proposals for improvement should also be presented to project engineer

2.2.3. The meeting will end up with several resolutions. These should be minuted by the secretary. The following procedure

is recommended for processing the meeting resolutions:

- Minutes be compiled
- Minutes copied to project engineer, site file and CP section for information/action
- You should follow up resolutions
- Prepare agreed follow up notes

2.3. The project committee meetings involve representatives from all covered villages, ward/division secretaries, district water engineer, and representatives of your construction team. It is a co-ordination meeting to keep track of the project

This is an important meeting you should not miss, because it reviews both village participation and technical inputs of the project

In normal circumstances, the meeting is run by more or less a standard agenda. This agenda is prepared to ensure that all important items related to future O & M of the scheme are discussed.

The standard meeting agenda is as following:

i) Opening of meeting
ii) Minutes of previous meeting
iii) Matters arising form the meeting
iv) Progress of work activities
v) Work plan for next month
vi) O & M water fund situation
vii) Any other business
viii) Closing of meeting

You should point out any other agenda you think is to be taken up and not covered by the above agenda. Both the chairperson and secretariat should be among the beneficiary group. You can only advise

2.4. If the project covers more than one village, the meeting should be held in different villages on rational basis. This will give each village equal opportunity to organise the discussions on water issues. It will also provide opportunity to study individual village water committees separately.

The meeting should continue to be held in the villages even after the scheme is handed over by the project. The frequency of the meeting can be reviewed if found necessary. To achieve this goal, you should not provide any services which are not sustainable after handover, such as transport to pick members from villages

2.4.1. You know from stage 1, the project monthly implementation plan. You are able to inform members of activities to be carried out precisely

You should clearly distinguish activities demanding village participation input from those exclusively technical. On the basis of the plan, you will calculate the number of villagers for each activity and when. The copy of this routine plan should be given to the community participation representative for detail agreement with the individual villages

You should be able to say, for example week activities will be exclusively technical and no CP input needed, if your plan indicate that

2.4.2. List all the working resolutions agreed during the meeting proceeding. You should organise resolution follow up trips to the villages. Findings from these follow-up trips should be reported to the next meeting for action.

STAGE NINE

MAINTAIN STANDARD QUALITY OF WORK

1. GENERAL OBJECTIVE:

If you study this stage, you will be able to maintain standard quality of work in all construction activities.

2. SPECIFIC OBJECTIVES:

By the end of this stage, you will be able to perform the following:-

2.1. Identify work specifications for different activities

2.1.1. Pipe laying activity

2.1.2. Concrete structures

2.2. Identify work specifications for different activities

2.2.1 Use approved documents/drawings by relevant authorities

2.2.2. Verify proper concrete mixes for structures

2.2.3. Select right technical supervisor for each work activity

1. OVERVIEW:

Engineering activities have specifications guiding their execution against failure and substandard quality of work.

Water projects which you are constructing have a design period of 20 years. This only refers to the system capacity only. It means that after 20 years, the system expansion will be required. But all concrete structures and pipelines should still be usable if not sabotaged

You are the site agent to ensure that all required standards are maintained on all activities. Every activity however small it might be contributes to the whole job.

2. KEY POINTS:

2.1. Work specification standards are normally shown on the drawings to be used for execution. You have to make sure that all specifications are clear to you. Please consult your project engineer in case of doubts

2.1.1. All types of pipes are classified; and each class requires special conditions. Different countries and suppliers specify the classes in different ways. But they can be linked by how much water pressure the pipe can resist

Example: / Question

Match the pipe classes representing the following:-

PN 6 Class .....

PN 10 - .....

PN 16 - .....

(Answer: B, C, D respectively)

Some of the pipe types can be laid on the ground and not affected by weather situations, unlike plastic pipes. Plastic pipes require trenches of standard quality to avoid deterioration

All class of pipes required in a section are shown on design drawings. You are expected to certify the pipe class prior to pipelaying activity

2.1.2. Concrete can be prepared of different qualities depending on specifications. For example, a 1:2:4 concrete is richer than 1:3:6 even though the number increases

Each structure demand particular concrete mix according to the design. As a site agent you are expected to certify the concrete quality. the mixes are prepared by volumetric measurements

2.2. To maintain quality of work, you should avoid errors, some of them already explained in different stages of learning materials

2.2.1. All documents and drawings you use for construction have to have approval signatures as explained

2.2.2. Keep control of concrete mixes: Over riching concrete result in waste, Under riched concrete endangers safety

2.2.3. Role of supervision on different works plays an important part. Choose the right supervisor for each work activity

Danida/Maji
Rural Water Supply Programme
Iringa, Mbeya and Ruvuma Regions

Course/OJT:	**Proper use of Domestic Points**
Target Group:	**Tap Attendants**
LM Developer:	**Sekela Mukinga**

Learning Materials Development Workshop, DSM, January 20 - February 7, 1992

Sekela Mukinga

Purpose of Learning Material

The aim of developing the Learning Material for the Tap Attendant has been mainly to fulfil the following objectives:

Having gone through this Learning Material the Tap Attendant shall be able to - in collaboration with her/his fellow villagers - help in improving health and sanitation elements, particularly with respect to the water supply in the village.

It shall also have the end result where the Tap Attendant as well as other villagers improve the attitude of self responsibility towards the scheme and finally improve the role of women towards decision making in the village towards water as well as other issues.

This Learning Material has been designed in such a way that it contains the methods/skills on how to train domestic points' users who are the normal villagers, on how to use water points hygienically and efficiently.

It also teaches or contains the methods on how to improve communication network between the Village Water Committee and the scheme attendant in the day to day work, as regards the water.

The questions of follow-up to better use of DP's as well as in the DP surroundings are also emphasized. The Learning Materials guide also speaks and advise on how to supervise the surrounding of DP's and how the villagers can do in their day to day planning with regard to water and sanitation issues.

It is expected that once the Learning Materials guide has been successfully used it can be a source whereby our water supply schemes produce to the long term as well as intended objectives normally improved water supply with an intention of having better health for the people who will participate more/better in the country's development.

The learner should be advised that the end result of his learning could act as a very important element in change of attitude, whereby the project is maintained by the villagers themselves.

STAGE ONE

1. General Objective:

After this training the Tap Attendant will be able to train the DP users to keep the surrounding clean.

2. Specific Objectives:

After the session the Tap Attendant will be able to:

2.1 Identify the equipment and materials for training

2.2 Inform the village leader, village water committee and scheme attendant

2.3 Arrange the place where the training will be (venue)

2.4 List the topics (agenda) for training

2.5 Conduct a training

1. OVERVIEW

In training you must know what you want to train and which tools and materials you will use to train DP users, where the trainee can be.. Think about the language which you can use, if possible, discuss with them. Use a simple language.

(Reserved for picture)

2. KEY POINTS

2.1 There are many materials you use for training, but for the Tap Attendant it is better to explain and use a simple story which is related with your material. Also, if you cannot use explanation, so use pictures to help the inability of words and abstractions to explain.

Also, it is better to know the cultural, education and experiential background of the learner in order to prepare materials.

(Reserved for picture)

2.2 Communication is a good way to achieve successful achievement of training. You cannot arrange the training for DP users meeting before informing the leader of the village. So, first you inform the village water committee, then the village water committee informs the village chairman - so

you go together to talk with the chairman. You can't use a letter, because it takes a long time to communicate.

2.3 The preparations of training you must know where the venue can be. Before you arrange the place you must tell the Tap Attendant and give ideas.

2.4 Before you arrange anything you must know what you want to train. You cannot go to the venue when you didn't know what you want to train the DP users. So first you must arrange the agenda or topics, e.g.:

Date	Time	Topic	Presenter
1.3.92	9:00- 10:00	How to clean the DP surroundings	
	11:00 -1:00	How to handle (keep) the tap	

2.5 After you have a list of topics you conduct the DP users meeting where you arranged it.

STAGE TWO:

1. General Objective:

After this stage you will be able to work together with village water committee, scheme attendant, and village government for a common purpose.

2. Specific Objectives:

By the end of this session, you will be able to:

2.1. Arrange the meeting with scheme attendant and village water committee.

2.2. Conduct a meeting.

2.3. Report to village water committee and scheme attendant if there is any problems.

1. OVERVIEW:

In work together with village water committee, scheme attendants, village government, and villagers you must have a good communication with others. You must talk with them and discuss with them exchange ideas. If you are not able to talk with them, you can have many problems. Through good communication, you will get good results.

2. KEY POINT:

2.1. You must cooperate with VWC and scheme attendant, at least to give your ideas. Although the village water committee and scheme attendant they can learn something. Every thing which you arrange to tap attendant must be open to VWC and Scheme attendant. Because they are working together. So when you arrange meetings for tap attendants, arrange together with scheme attendant and village water committee.

2.2. Work together that means the tap attendant can arrange the meeting but she can invite the member of village water committee to the topic or agenda, and the scheme attendant can introduce the topic how to handle a tap.

2.3. You need to report every time when problems occur. You report to village water commit-

tee and scheme attendant e.g. tap broken you must report to scheme attendant that problem.

STAGE THREE:

1. General Objective:

After this training the tap attendat will be able to make follow-up to their surroundings of DP.

2. Specific Objectives:

By the end of this session the tap attendant will be able to:

2.1. Monitoring the surroundings of DP.

2.2. Collections of water funds from by-law.

2.3. Advise the adult and children do not playing, washing and bathing there.

2.4. Check the soak-pit if it not flowing.

1. OVERVIEW:

Normally when you conduct training you must follow-up the learner if they learn something. Also for DP users you must go follow-up in order to know if they learn. For follow-up you must check the work which done.

Without follow-up the DP users can forget what they learn. Follow-up you can not get information from other people, but you go person to person to check the work e.g. you can arrange every morning to pass to the DP to check if the surrounding clean. So you examine by follow up. When you are checking you must have a time table of work clean in order to know who are supposed to clean that day.

TIME TABLE FOR CLEANING:

DATE	NAME OF BALOZI	NAME OF DP USERS	WORK
1.3.92	ASON ANDREW	1. M. ADRIAN	CLEANING THE SURROUNDINGS EG. GLASS, TO
		2. S. CHAULA	CUTTING
		3. A. MARTHA	SWEEPING, IRRIGATION FLOWERS.
2.3.92	"	1. K. MBUTOLWE	-DO-
		2. BUPE JWANI	
		3. F. ASAGWILE	

2. KEY POINTS:

2.1. The tap attendant must have monitoring time table for DP users in order to know what it is going on, example of time table (see time table above).

2.2. In follow-up you must know how many people are fined, and how much money are ready collected. In this case it depending if their misusing that they can fined. In follow-up you must check the receipt book to know how much money are collected.

2.3. The tap attendant must know the by-law which are discussed with village government, in order to follow up. The village government must have by-law for the DP misusing.

2.4. The surroundings of DP must be in good condition, also the soackpit. Tap attendant must check the soak-pit if it over flowing if a flowing then tell the people who are supposed to clean in order to reduce dirty.

STAGE FOUR:

1. General Objective:

By the end of this session the Tap attendant will be able to arrange the women groups discussion.

2. Specific Objectives:

By the end of this session the Tap attendant will be able to:

2.1. Make women groups for discussion.

2.2. Explain to take care of children at the DP.

2.3. Explain the importance of water in our life and keeping water in our homes (house).

1. OVERVIEW:

The women group discussions help women to fill free to talk sometimes the women are shy when they are together with men. So women group dis-

cussion helps to have a good talk with other women. The Tap attendant she can convince other women by using explanation of the water project that it is to the benefit of women. Group discussions help to exchange ideas.

2. KEY POINTS:

2.1. You can make small groups of at least five to ten (5-10) people and make discussion. So you arrange the programme in groups. Before you arrange the programme you must communicate for exchange of ideas. For the group discussion you can use a drawing.

2.2. In group discussion, the women can discuss together how they can take care of children at the DP. You use two different drawings:

(1) showing dirty DP and

(2) showing the clean Dp.

Explain to the children who are misusing the DP what action should be taken by the mother.

(See the different drawings):

Drawings:

2.3. The importance of water in our life and keeping water in our house/homes. You should make sure that the women are trained how to keep clean water in our house. Explain by drawing how you can clean water by boiling it. Explain to have two pots in the house, one for drinking only and another for other business. And to train the children to keep the water clean. We boil water in order to prevent sickness. Water can look clean but can still carry a sickness for people.