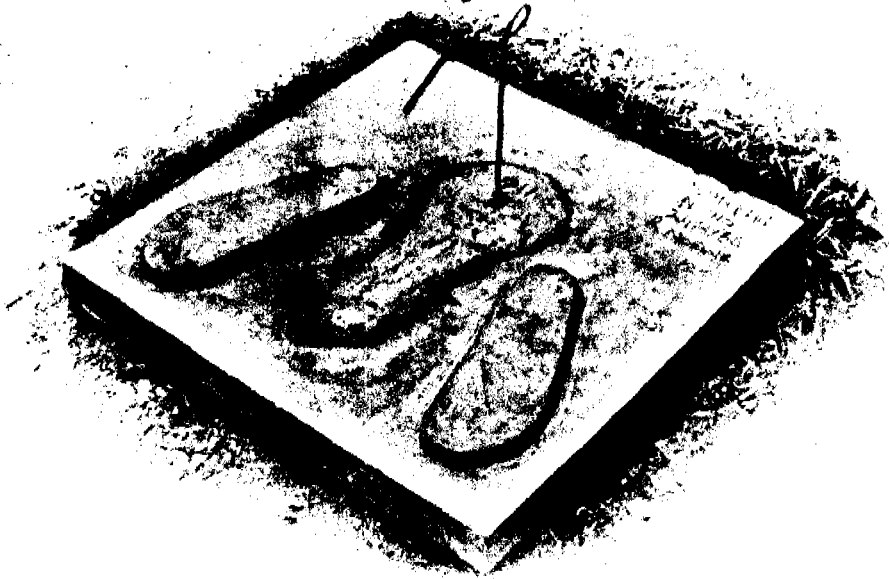


MLM/06/015 URBAN TECHNICAL SERVICES, SANITATION COMPONENT

THE SAN FLAT SYSTEM

**A PACKAGE FOR IMPLEMENTATION OF
LOWEST COST SANITATION IN MALAWI**



UNIVERSITY OF ZAMBIA
SCHOOL OF DISTANCE EDUCATION
DEPARTMENT OF WATER SUPPLY AND
SANITATION (RUC)

**UNITED NATIONS DEVELOPMENT PROGRAMME
OFFICE OF PROJECT SERVICES**

**MINISTRY OF LOCAL GOVERNMENT
TECHNICAL SECTION**

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March, 1989

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EXECUTIVE SUMMARY

This paper has been prepared for the team of members of UNDP's Governing Council visiting Malawi and the Project 27-29 of March 1989.

Within the Urban Technical Services Project the Ministry of Local Government has assisted Urban Councils and a number of other institutions in the implementation of lowest cost improved sanitation. The programme is already covering many parts of the country.

A Rural Sanitation Project (MLW/89/004) is also in the pipeline for implementation through the same Ministry with UNDP funding.

The Project started in September 1987 as a continuation of the World Bank funded Urban Low Cost Sanitation Demonstration Project (INT/81/047).

HEALTH FOR ALL - ALL FOR HEALTH

About one third of all live born children in Malawi face death before the age of five. Diarrheas and other faecal born diseases are also known as the major cause of death among infants and children in developing countries.

Within the ambition to achieve health for all by the year 2000, Malawi Government has set the goal of providing 80 % of the population with improved sanitation facilities before the turn of the century. Through integrated implementation, all for health, this should be possible.

2,000,000 IMPROVED LATRINES

Given 80% coverage, actual population growth and the target of one improved toilet per family, about 2,000,000 improved latrines need to be built.

To achieve this a peak implementation rate of about 300,000 latrines per year is required (which is about 1000 improved latrines per day!!).

ISN 7936
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So far about 15,000 families (100,000 people) have been assisted at 10 different places, well spread over the country. With continued interest from the other Ministries, it will be easy to increase the rate of implementation radically.

AT LOWEST COST EVER

With this in view, the Government of Malawi in technical cooperation with UNDP and the World Bank has developed the San Plat System, a system for lowest cost and effective implementation of improved sanitation in Malawi.

The San Plat System is probably the lowest cost system for improved sanitation in the world, of extreme interest not only for Malawi but most developing countries where the population is using traditional unimproved pit-latrines.

The San Plat System is characterized by a far reaching simplification of the technology allowing for a radical cutting of costs and simplified implementation within a framework of integrated interministerial cooperation.

That is:-

= IMPROVEMENT OF TRADITIONAL LATRINES

Traditional existing or new latrines are improved with a San Plat (=Sanitation Platform), a small slab of concrete that radically improves hygiene, smell and fly control and provides complete child safety. The San Plat is more explicitly described in the pamphlet: HOW TO MAKE A SAN PLAT.

= TWO DOLLARS

The San Plat can be produced locally for less than two US dollars cash input using simple moulds, local labour and only a fifth of a bag of cement, or less, per improved latrine.

= BETTER LATRINES

The training courses in improved sanitation also include guidelines on how to build latrines that are structurally safer and that will last longer, aiming at giving the latrine the same lifetime and status as the house and becoming an integrated part of the home, worth caring for. See also the pamphlet BETTER LATRINES.

= INTEGRATED IMPLEMENTATION

Field personnel from various ministries have participated in courses and are now training local labour and villagers (often women) on how to make San Plats and to build improved latrines. Integrating implementation with other programmes has allowed us to cut also on the overhead costs. Through integrated implementation we have got extension workers for the programme all over the country.

Malawi has a large number of San Centers (Sanitation Centres from where the programme is being implemented) from Karonga in the North to Mkwai (Mulanje) in the South. There are permanent San Centres in: Lilongwe, Blantyre, Zomba, Mzuzu, and Karonga.

San Centres have also been established in the rural areas of: Liwonde, Salima, Nchisi, Kasungu-Mtunthama, Nkhotakota, Karonga-Lake-Shore, ...and more are coming.

In Mkwai (Mulanje District) 2000 Mozambican refugee families have been provided with latrines with san plat standard. Three new San Centres are planned for the refugee areas in Dedza.

We are step by step building up a network of San Centres all over Malawi. Eventually every family in Malawi shall have its own improved latrine. The San Plat System has made the ambition to provide health for all by the year 2000 come a good bit closer!

The assistance UNDP and the World Bank have provided has been of utmost importance for the development and coordination of the programme.

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THE SAN PLAT SYSTEM

A PACKAGE FOR IMPLEMENTATION OF LOWEST COST SANITATION IN MALAWI

SANITATION

About 70-80 % of all disease in developing countries is caused or aggravated by faecal born infections.

About 33% of all live born children in Malawi face death before the age of five (From: National Health Plan 1986-1985). Diarrheas are also known as the major cause of infant and child mortality in developing countries. (See: Okun, D.A.: "The value of Water Supply and Sanitation in Development: An Assessment of Health Related Interventions" WASH Technical Report No. 43, 1987, p.6, Table No 3.)

"Human excreta are the the principal vehicle for transmission and spread of a wide range of communicable diseases. Some of these diseases rank among the chief causes of sickness and death in societies where poverty and malnutrition are ubiquitous. Diarrheas, for instance, are together with malnutrition, respiratory diseases, and endemic malaria the main cause of death among small children and infants in developing countries. Cholera is accompanied by numerous deaths in all age groups, although it is children who suffer most fatalities. Other diseases such as hookworm infection and chistosomiasis, cause chronic debilitating conditions that impair the quality of life (however defined) and make the individuals more liable to die from superimposed acute infections." (Feachem, Richard G. et al: Health Aspects of Excreta and Sullage Management--A State-of-the-Art Review. World Bank, Washington D.C. 1980)

Against this background, it has been logical for us to concentrate our efforts on safe disposal of the dangerous faecal matter for the peri-urban and rural population as a complement to what other Ministries are doing in the fields of improved water supply, nutrition, immunization, health education etc.

THE SAN PLAT SYSTEM

THE SAN PLAT

The San Plat is a radical improvement of the conventional latrine slab, making any latrine meet the highest demands of both hygiene and child safety. It has also proved to be very efficient in the control of smell and flies. The San Plat System is the system for lowest cost sanitation.

The San Plat has proved itself to be more than "just" an improved latrine slab. Correctly implemented, it has turned out to give a momentum in the implementation of sanitation programmes. The very low cost combined with an attractive design and good management has made it a best-seller both in Malawi and in Mozambique.

The technology, the training programme and the project management system have been developed and field tested during a period of ten years with support from UNDP, the World Bank and other institutions. What we offer today is a complete programme for rapid implementation of improved low cost sanitation at the lowest cost ever.

THE SAN PLAT SYSTEM IS SIMPLE

"The simpler the better" has been the motto in our development work "as long as we don't compromise with safety or peoples health".

The San Plat is a highly improved latrine slab. The improvements on the latrine slab are the ones that do improve hygiene and safety:-

1. The San Plat has elevated footrests, which help the user to find his right position even at night.
2. The San Plat has a drop hole shaped like a key hole, which is safe even for a small child. It is big enough to use comfortably and small enough to be completely safe.
3. The San Plat has a tight fitting lid. Tight enough to shut out the foul smell, thereby also making the toilet room pleasantly odourless and free from flies.
4. The San Plat is easy to clean with water and a brush. Smooth and correctly inclined surfaces make cleaning easy.

The San Plat is easy to transport (35 kg) and easy to install. No special skill is required. Any layman can do it.

THE SAN PLAT SYSTEM IS COMPLETE

The San Plat System is more than just technology. The San Plat System also includes an implementation strategy, a management system, a training programme and a promotional programme.

The implementation strategy is based on the "urban to rural approach" and the establishment of local San Centres. The "urban to rural approach" may be a hard way, as it normally is easier to work in rural areas than in urban, but it pays off. People in rural areas are more willing to accept what has been developed in urban areas than vice versa.

Another important aspect in the implementation strategy is the integration of improved sanitation in ongoing development efforts, hence reducing the cost for project management to a minimum.

THE SAN PLAT SYSTEM IS LOWEST COST

The San Plat system is probably the cheapest system for improved sanitation in the world. Affordability is a must, not only for the user but also for the implementing institution and a possible donor agency who wants to see as many families as possible benefiting from the aid investments.

A San Plat can cost less than two US dollars. Using local labour and self help, cutting down on expensive material and integrating sanitation with other development efforts has allowed us to beat most records.

VIP-latrines (Ventilated Improved Pit-latrines) built in Malawi and neighbouring countries (i.e. Zimbabwe) use up to 4 bags of cement. The San Plat System allows us to make up to 8 (eight!) San Plats per bag. Only about half a kilogram of reinforcement is needed, principally to make a hygienic handle for the tight fitting lid. The rest of the material is local and provided by the builder. We believe that the San Plat System is close to unbeatable!

THE SAN PLAT SYSTEM IS SUSTAINABLE

Latrines eventually do fill up, or cease to function for any other reason. In such a case the San Plat can easily be installed in the new latrine. Given that it is only the San Plat that really has required external assistance, a new and equally good latrine can therefore easily be built by the owner.

For new latrines additional San Plats can be bought from the nearest San Centre. Given the low cost and the low weight of the San Plat this should not constitute any major obstacle.

THE TRAINING PROGRAMME

The training programme has been adapted to fit personnel from various ministries and levels. Apart from San Plat making it includes technical guidelines aiming at extended possible time of use and protection of water sources:-

1. Construction of stable pits, and larger pit volumes.
2. Improved and elevated foundations to avoid damage by heavy rains.
3. Improved walls and roofs.
4. Better siting of latrines.

The training programme has three levels:-

1. Training at management level for decision makers.
2. Training at supervisory level for extension workers (SAN MEN).
3. Training at grass root level for builders.

The management system has been adapted to local conditions. In the urban areas improved Sanitation has been integrated in the general urban management of the cities. In the rural areas we have joined development programmes of different ministries. In all areas, however, management is focusing on the individual and on personal relation building (PPM = Personal Personnel Management).

The promotion system is also based on the integrated approach. People already in the field shall know, appreciate and practice the system they are implementing. Knowledge and enthusiasm have always been a key to success.

THE SAN PLAT SYSTEM IS ADAPTABLE

A San Plat can be made big or small depending on the local conditions. It can be integrated in the structural latrine slab of an exclusive Septic Tank Based Ventilated Improved Latrine (SVIP). It can be made as a separate element to safeguard the hygienic and child safety conditions of a traditionally built latrine. The San Plat System should include a solution for any site and any pocket.

THE SAN PLAT SYSTEM GIVES MOMENTUM

The San Plat has proved itself to be more than "just" an improved latrine slab. Correctly implemented it has turned out to give a momentum in the implementation of sanitation programmes. In areas where we earlier had only 20-40 percent of the families using latrines we have reached figures up to 100 percent! Its low cost combined with an attractive design and good management has made the San Plat a best-seller both in Malawi and in Mozambique.

Adapted to special needs and conditions the San Plat System could drastically improve sanitation, even in areas where unfavourable conditions prevail.

THE SAN PLAT SYSTEM IS INTEGRATED

Simplifying the technology has made implementation easy. The fact that it also has been so well received by the population has made it popular in different Ministries and among donors.

In Lilongwe, Blantyre, Mzuzu and Zomba the Local Authorities are implementing the system with technical and financial support from the Ministry of Local Government, UNDP and The world Bank.

Liwonde Agricultural Division is implementing the system with the of German aid (GTZ), and Salima Agricultural Division is implementing in Salima and Nkhotakhota with assistance from EEC.

UNICEF is supporting implementation in Nchisi in an integrated child survival project.

In the Karonga Lake-Shore Area, implementation is carried out principally through District Health Inspector as part of an integrated ground water supply project funded by DANIDA and implemented through the Department of Water (Ministry of Works).

In Kasungu-Mtunthama the improved latrines are implemented with support from GTZ

UNHCR has financed 2000 improved latrines in one of the camps for Mozambican refugees, and there San Centres are planned for implementation through International Rescue Committee (IRC) in Dedza.

The Ministry of Health will implement 60.000 latrines with San Plat standard through the USIAD supported HESP Project, and more projects are coming up.

SAN CENTRES

A San Centre (Sanitation Centre) is principally a place where you can receive technical assistance for self help construction of improved pit-latrines. (In the future we hope to be able to use the san Centres also for health education.

The san Centres can be a permanent place where service is provided to the public on commercial basis, but it can also be a temporary structure where san Plats are produced as part of a local campaign for latrine improvement.

In any case, the San Centre is a place where San Plats are produced or sold to the public.

Malawi has a large number of San Centers operating from Karonga in the North to Mkwai (Mulanje) in the South. There are permanent San Centres in:-

Lilongwe: Kawale San Centre and Area 25 San Centre (under construction)
Blantyre: Ndirande San Centre
Zomba: Chinamwali San Centre
Mzuzu: Lunyangawa San Centre
Karonga: Karonga Boma San Centre

You can find other San Centres in the rural areas of:-

Liwonde
Salima
Nchisi
Kasungu-Mtunthama
Nkhotakota
Karonga-Lake Shore
..and more are coming.

In Mkwai (Mulanje District) 2000 Mozambican refugee families have been provided with specially designed latrines (with san plat standard) due to especially difficult soil conditions (black cotton soil). Three new San Centres are planned for the refugee areas in Dedza. On medium term, also the Mozambican refugees in Malawi will have latrines with San Plat standard.

We are step by step building up a network of San Centres all over Malawi. Eventually every family in Malawi shall have its own improved latrine.

COSTS AND FUNDING

Based on preliminary estimates the total value of the programme is around 3 million Kwacha (160 MKW per latrine). The figure should include all costs including an estimated value of self help contribution in terms of collection of natural building material and assisted construction.

Though costs have been cut also on the implementation side through integration of the programme in the general responsibilities of various ministries, it is estimated that approximately 20 % of the total value is needed in donor contribution, totalling at around 25 million USD distributed over 13 years with a top around the years 1994-95 with a necessary donor input of approximately 5 million dollars per year. (A preliminary assessment is annexed.)

It is anticipated that a programme of this magnitude will require funds from various donors, with a possible donor coordination by the UNDP and or World Bank offices in Lilongwe, while the Ministry of Local Government is prepared to coordinate the practical implementation of the programme.

CONCLUSION

Malawi has chosen to develop and implement a system for improved sanitation (the San Plat System) that is essentially simpler and more cost effective than the systems we know from other developing countries.

The simplicity of the system combined with a very great acceptability on part of the population has made the system popular among various Ministries and among donors, hence paving the way for interministerial cooperation and implementation through integration within other projects and programmes aiming towards the same goal: Health for all.

MALAWI IS BUILDING BETTER LATRINES!

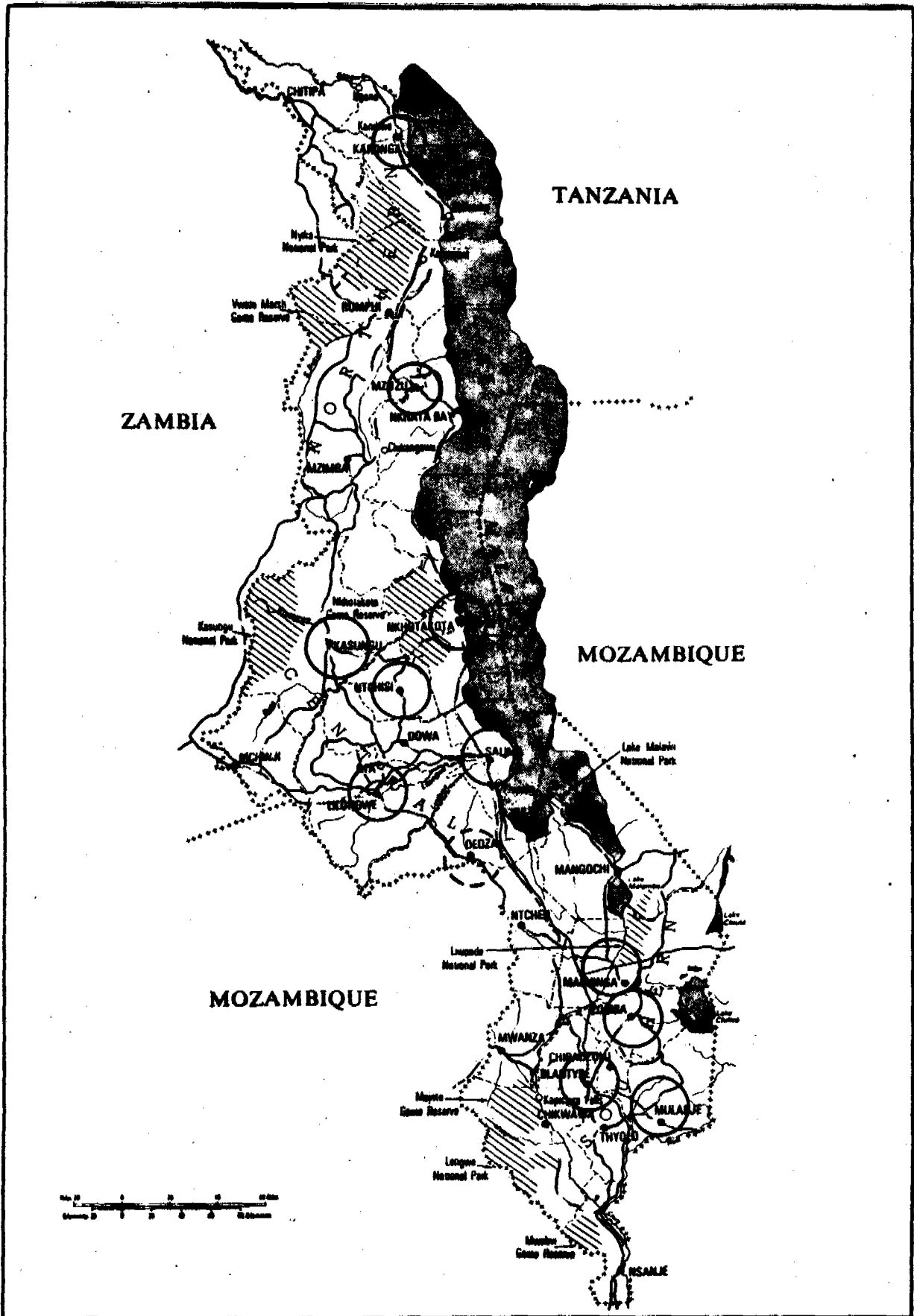
ACKNOWLEDGMENTS

Many people and institutions have contributed to make the programme a success. The development work started in 1979 at the National institute for Physical Planning in Mozambique with support from UNDP/HABITAT, Swedish SIDA and Canadian IDRC.

UNDP and the World Bank supported the URBAN LOW COST SANITATION PROJECT executed through the Department of Water, Ministry of Works. The present phase is executed through the Ministry of Local Government and many other institutions.

SAN CENTRES IN MALAWI

March 1989



SAN PLAT MAKING



The San Plat can easily be produced with ordinary masons tools and three simple moulds.



The footrests get the exact shape and position with the footrest mould, which is centred in relation to the drop hole of the San Plat.



The lid is cast
in the drop hole
of the San Plat.

To be sure of a
completely smell
and fly tight
fit, both the
lid and the
platform are
given the same
number.



The completed
San Plat

The assistance UNDP/OPS and the World Bank have provided has been of outmost importance for the development and coordination of the programme.

Bjorn Brandberg

SANITATION ADVISER, Ag. CTA

- Appendixes:
1. Map of Malawi showing programme areas.
 2. Photos on San Plat making
 3. Engineering drawings
 4. Planning data - Preliminary assesment

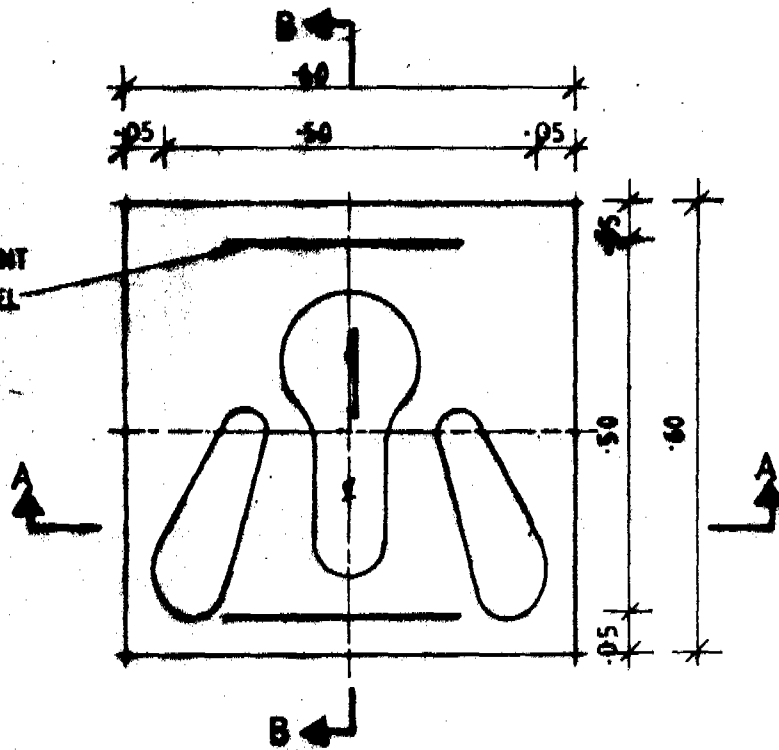
BB/bb
FILE: 1/12/6,8
DOCF: SPS

SANPLAT .60x.60

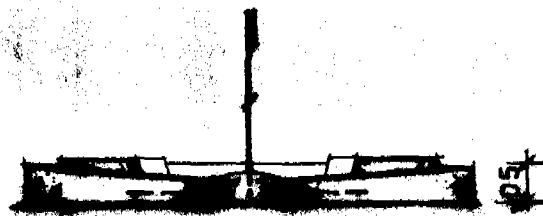
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PLAN

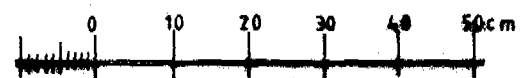
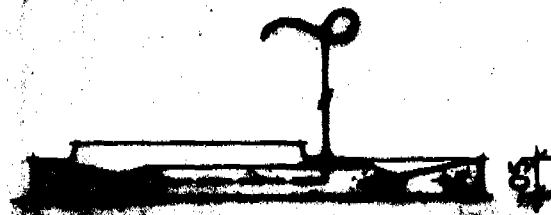
ALL REINFORCEMENT
Ø 6mm MILD STEEL
300mm LONG



SECTION A A



SECTION B B



SCALE 1:10

COMPLETE LATRINES, SUMMARY drawing no: 21-00-1

♦ AFTER REFERENCE NO. SEE DETAILED DRAWING

UPGRADED
EXISTING
LATRINES



LINE

REF. NO:	21.11	21.12	21.13*	21.14*	21.15
old ref. no:					

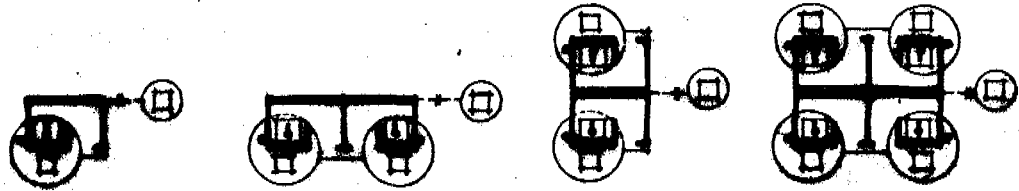
FAMILY TYPE
VIP-LATRINE



LINE

REF. NO:	21.21*	21.22*	21.23*	21.24
old ref. no:	1018	1025	1031	

PUBLIC
VIP-LATRINES



LINE

REF. NO:	21.41*	21.42*	21.43*	21.44*	21.45
old ref. no:		1026			

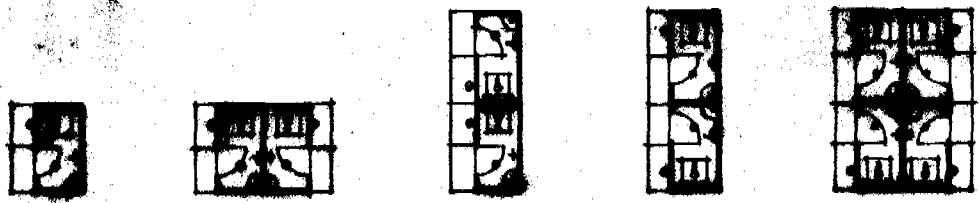
SEPTIC TANK
VIP LATRINES
WITH BATH
90 x 180 m



LINE

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old ref. no:					1019	

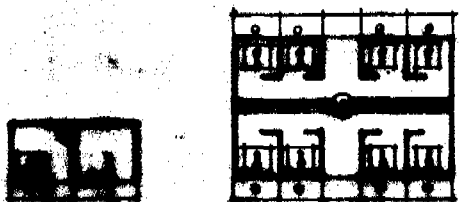
UPGRADABLE
SEPTIC TANK
VIP-LATRINES
120 x 2-40 m



LINE

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old ref. no:						

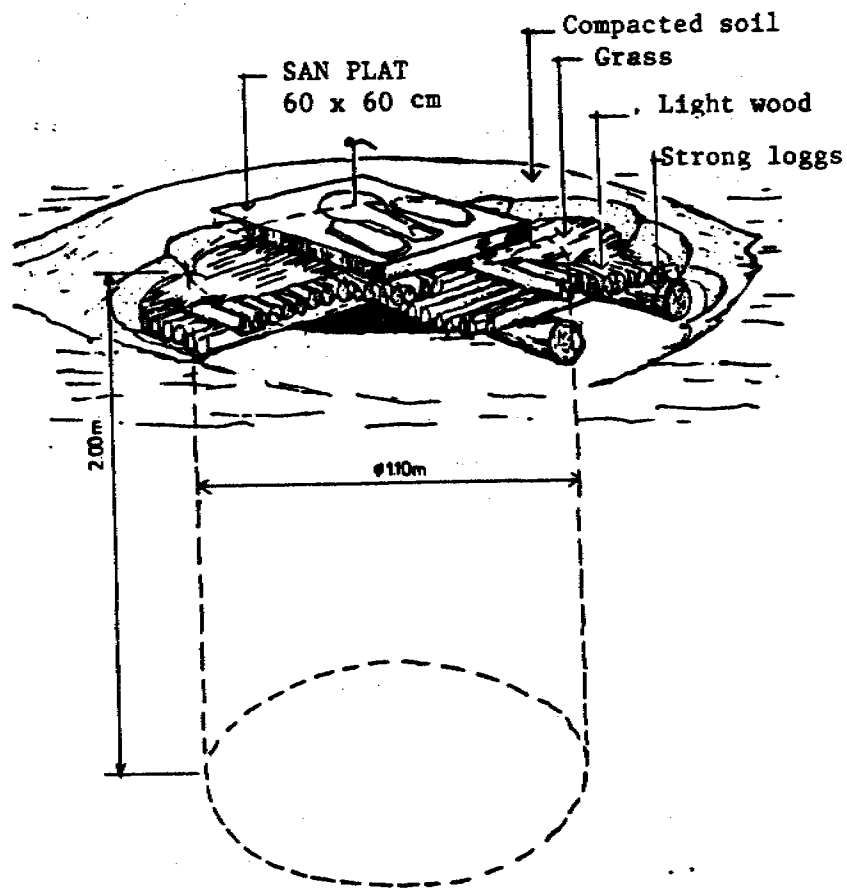
OTHER LATRINE
TYPES



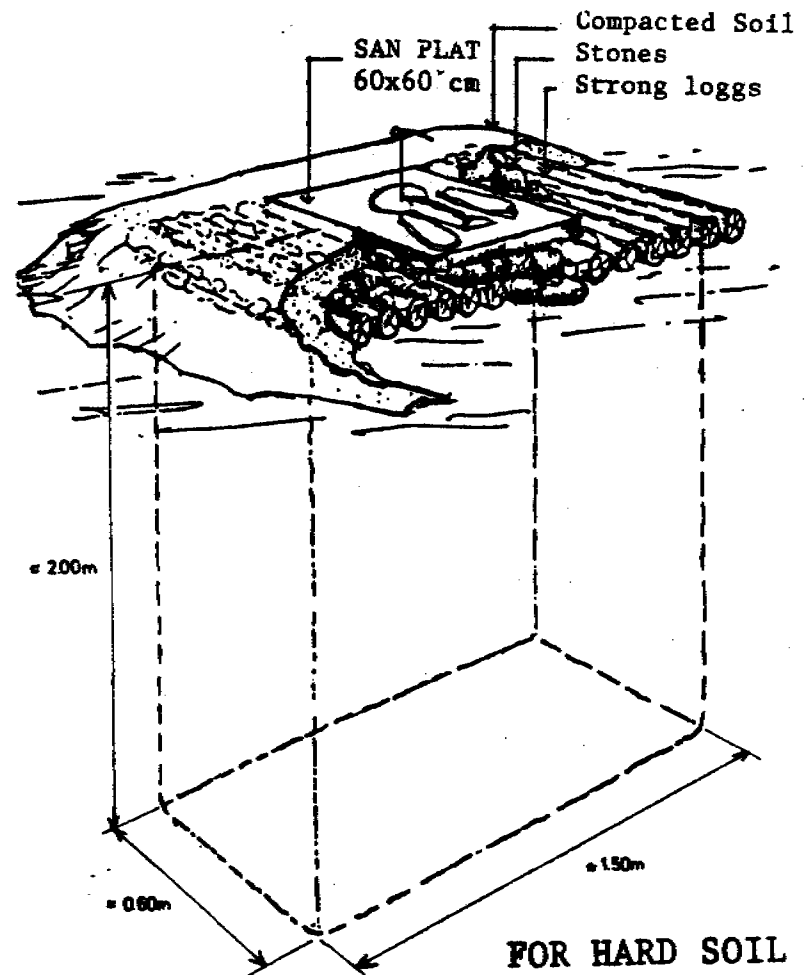
LINE

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old ref. no:	1019		

IMPROVED TRADITIONAL LATRINES

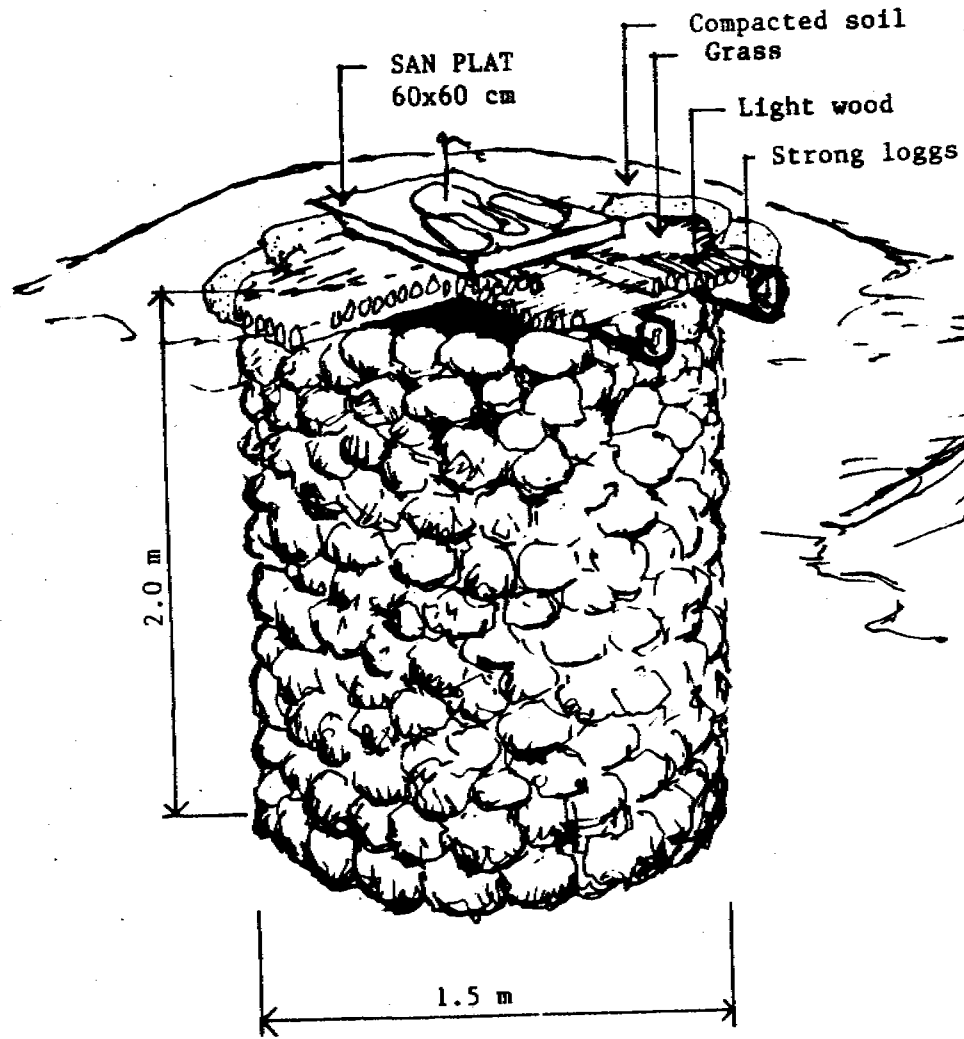


FOR STABLE SOIL

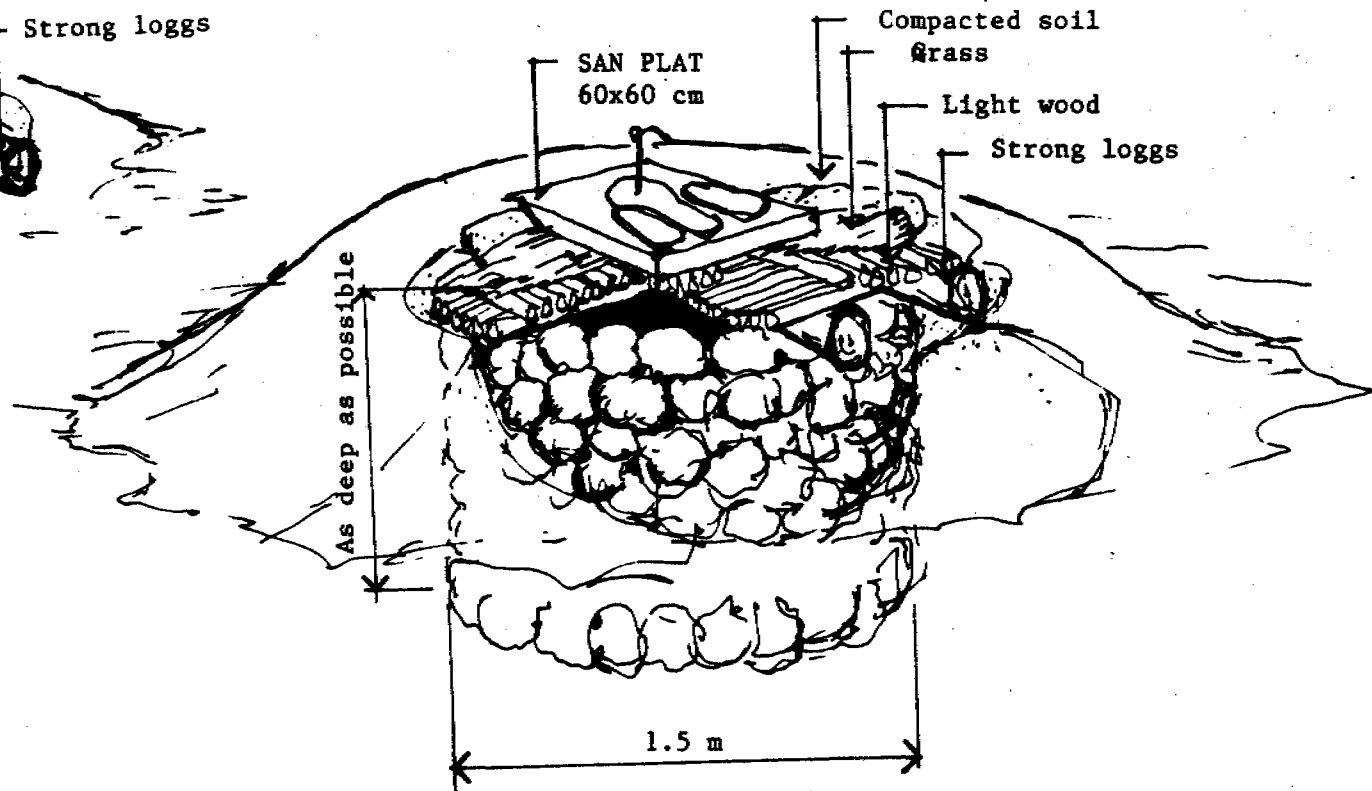


FOR HARD SOIL

IMPROVED TRADITIONAL LATRINES



FOR UNSTABLE SOIL



WHERE IT IS DIFFICULT TO DIG

MINISTRY OF LOCAL GOVERNMENT - TECHNICAL SECTION
MLM/86/015 URBAN TECHNICAL SERVICES, LOW COST SANITATION
TENTATIVE PLAN -- MALAWI TOTAL
PLANNING DATA - PRELIMINARY ASSESMENTS

(TOTCOST)
Prtd: 23-Mar -1988

15:28

NOTE: This is a theoretical calculation based on data collected in the very initial phase of the programme aiming at understanding the size of the programme and costs involved. Costs for development and programme coordination have not been included as not directly proportional to no of latrines built.
Detailed conclusions must not be drawn from the figures.

INPUT DATA

BASE DATA

Geogr area.....MALAWI TOTAL

Population..... 7,982 thousands (For city/town/area and base year as indicated above)
Pop growth %... 3.66 (Estimated)
Households..... 1,330 thousands (Calculated)
Users/latr..... 6.0 people (Estimated)
Cost per unit.. 160 MKW (Estimated. Material, labour, self help and field coordination.)
Donor contr.... 20 % (Suggested)
Rate of exchange 2.52 MKW/USD (March 1989)

BASE DATA (Calculated/estimated) in thousands

Year.....	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Population.....	7,982	8,274	8,577	8,891	9,216	9,554	9,903	10,266	10,641	11,031	11,435	11,853	12,287	12,737
Pop growth.....	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
Users/latr.....	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
No of latr.....	1,330	1,379	1,429	1,482	1,536	1,592	1,651	1,711	1,774	1,838	1,906	1,976	2,048	2,123

IMPLEMENTATION (Suggested coverage of total in % of total no of households)

Year.....	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PLAN LATR .	0.00	0.30	1.00	3.00	7.00	15.00	31.00	50.00	65.00	74.00	78.00	80.00	80.00	80.00

PRODUCTION (Number of latrines built, thousands)

Year.....	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PRIV LAT (Acc).	0	4	14	44	108	239	512	855	1153	1360	1487	1580	1638	1698
PUBL LAT (Acc).	0	1	3	9	22	48	102	171	231	272	297	316	328	340
TOT LAT (Acc)...	0	5	17	53	129	287	614	1,027	1,383	1,633	1,784	1,897	1,966	2,038
TOT/YR (No)...	0	5	12	36	76	158	327	413	357	249	151	113	69	72

INVESTMENTS (Millions)

Year.....	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Acc MKW.....	0.794	2.745	8.535	20.645	45.857	98.241	164.252	221.342	261.213	285.409	303.441	314.547	326.060
Donor contr Acc MKW....	0.159	0.549	1.707	4.129	9.171	19.648	32.850	44.268	52.243	57.082	60.688	62.909	65.212
Donor contr Acc USD....	0.063	0.218	0.677	1.638	3.639	7.797	13.036	17.567	20.731	22.652	24.083	24.964	25.878
Donor contr per yr USD.	0.063	0.155	0.460	0.961	2.001	4.157	5.239	4.531	3.164	1.920	1.431	0.881	0.914