



Mambo school toilets

A report and guideline for building a school dry toilet



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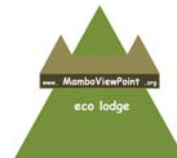
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Introduction

Mambo is a small village in the Usambara mountains in Tanzania. The Mambo Primary school has about 2000 pupils who are visiting the school in 2 shifts because of a lack of teachers and class rooms. Like many schools around, sanitary was not well provided and something had to be done.

Thanks to the Dutch school "Herman Gorter" in Zaandam the budget came available to build 2 new toilets, one for boys and one for girls.

In this document you find the design and the practical implementation of the toilets.

The design and supervision are done for free by the crew of MamboViewPoint eco lodge.

Background

A full documented background of building toilets can be found in *"The Guide to Sanitation and Hygiene for Those Working in Developing Countries"* from the Finish organisation Global dry toilet association <http://www.drytoilet.org/>

The main details from the above document used in Mambo are the following:

- The idea is to separate urine and faeces in order to be able to get fertilizer.
- The possibility to get the fertilizer out once in a while.
- Separation of urine also reduces the needed number of needed toilets since in most cases the urinals can be used instead of the toilets and also the urinals will be used for shorter periods. In our case the result is 1 toilet and 1 urinal place for every 60 kids instead of the theoretical needed 1 toilet for every 15 kids. In rush hours kids only have to wait for a short while.
- Boys and girls have a separate building, away from each other. Because of safety reasons the girls-toilet is not too far away from crowded areas.
- Since the toilets are based in a mountain area, the ground water level is no problem because all water floats to lower levels and is filtered by the sand.
- The toilets have running water-taps for hand-washing and cleaning. The waste water from the taps is used to clean the urinals.
- To reduce smell the toilets are a bit dark and the compost chamber has a chimney on the outside.
- The design is simple and low budget.
- Before putting the toilets in use, training regarding hygiene is provided for staff and children.
- During utilization, supervision and cleaning will be arranged by the school.

Practical design

Faeces are collected in a huge hole that is covered by a concrete cover with one hole for every toilet. In this way, one hole is sufficient for 8 or 10 toilets.

Above the holes the toilets are built. Next to the holes are footsteps and the floor and wall up to about 1 meter is covered with smooth concrete to make cleaning easy. Levelling is done in that way that all the water and wet stuff goes into the holes.

Inside the building urinals have been made. For boys this is a kind of easy but for the girls they are open toilets with walls for every toilet and a sewage to collect the urine.

The pit for the faeces and for the urine are separate. The urine sinks into the ground and the faeces can be taken out through the outside cover. Since the faeces have to rest for one year to become fertiliser it is possible every year to put the faeces in another hole and to leave them there for another year before putting them on the land.

Financial impact

During fundraising the local government made a break down of the building. However the whole sum was granted, it appeared some time later that the budget was based on the toilets they normally make and which are of a poor quality without a separation system and without water.

A second challenge was that the local contractors smelled a project funded by white people and asked too much.

A third challenge was that local authorities see it as a kind of right to gain from funded projects to have some profit for their own pocket.

The last one is solved by the village development fund. No money from this fund given to the local authorities but instead there is an agreement about the priority of projects and the order of realization. After that, the money is going straight to the shopkeepers and technicians who are building. In the case of the school the budget was clear and the money was special donated for this project, so all the money is spent on this toilets and nothing is spoiled.

In stead of contractors it was decided to work on hour-base and to keep an eye on the progress. However this has the risk of taking some more time, the experience with the building of the lodge learned that this system works better. Moreover it is easier to change the design halfway based on new perceptions, if needed. In this way also daily wages came down to an acceptable level.

In the end the granted budget was only enough for one toilet building. Also because of reasons of sustainability the choice has been made not to ask for more grants but to spend money from the village development fund to build the second toilet. To reduce costs it was also possible to upgrade an old toilet building to one with the same specifications as the new one. Though it looks less nice, it definitely functions the same.

Materials of several old toilets were re-used. The remaining old buildings are removed after finishing the new toilets.

Break down

Breakdown school toilets Mambo		estimated	spent			
aug 29th 2010			Boys*	Girls**	Total	
nr	item	Tzs	Tzs	Tsh	Tsh	\$
1	Septic tanks	28,800	0	358,999	358,999	239.33
2	Septic tank covers and digging	240,000	0	35,000	35,000	23.33
3	bricks	300,000	0	397,200	397,200	264.80
4	nails, pipes, hinges, roofing	45,000	0	1,422,000	1,422,000	948.00
5	shelves	153,600	0	0	0	0.00
6	poles	86,400	0	78,000	78,000	52.00
7	big doors	120,000	0	90,000	90,000	60.00
8	small doors	480,000	0	0	0	0.00
9	cement	360,000	292,500	0	292,500	195.00
10	lime	40,000	0	0	0	0.00
11	sand	100,000	9,000	10,000	19,000	12.67
12	foundation	75,000	0	0	0	0.00
13	gravel	25,000	0	0	0	0.00
14	roofing	672,000	0	0	0	0.00
15	carpenters and bricklayers	300,000	320,000	787,000	1,107,000	738.00
	total	3,025,800	621,500	3,178,199	3,799,699	2,533.13
	Grant	3,025,800			3,025,800	2,017.20
	Village development fund				773,899	515.93
	Balance				0	0.00

Costs per toilet-place: \$ 73.00 (32 places)
 Costs per person \$ 2.50 (1000 kids per shift)

(*) Upgrade of an old toilet with materials from 3 other old toilets
 (**) New

Links

www.MamboViewPoint.org
<http://www.drytoilet.org/>



Old school toilet



New girls toilet



New boys toilet



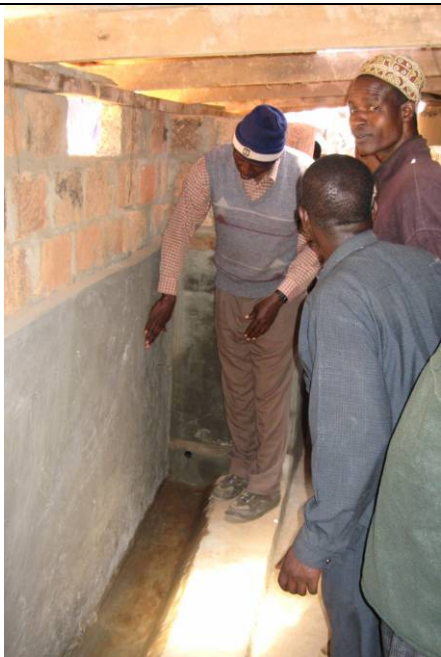
Water tank outside



Inspection of the new girls toilet



Hand wash basins girls



Boys urinal



Tank cover and air outlet at the backside



Girls urinal



Toilet with footsteps



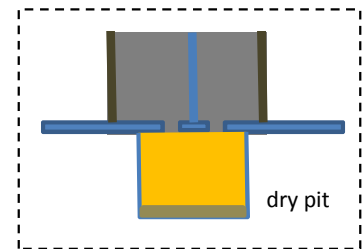
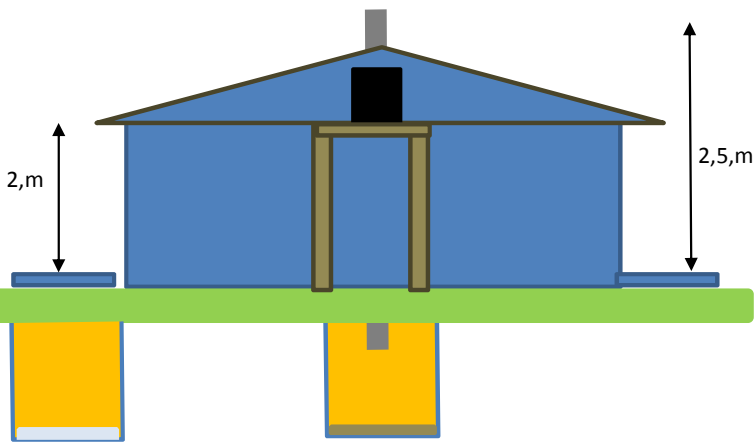
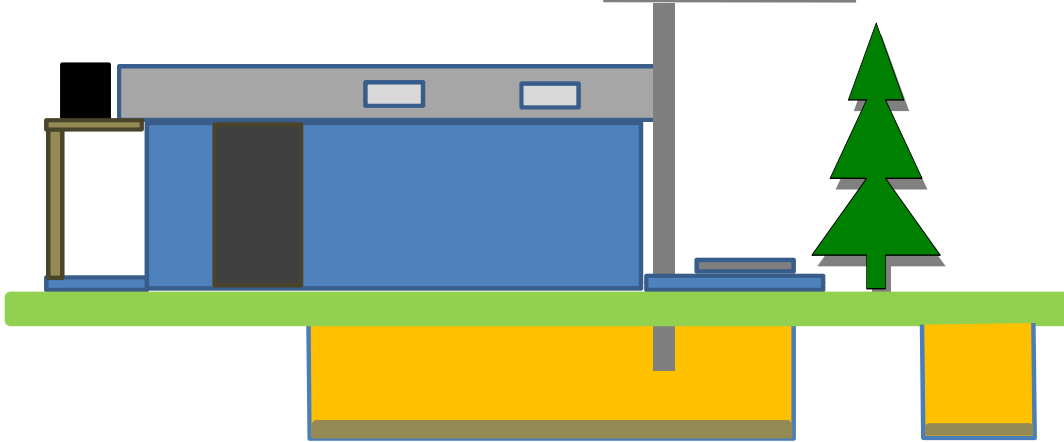
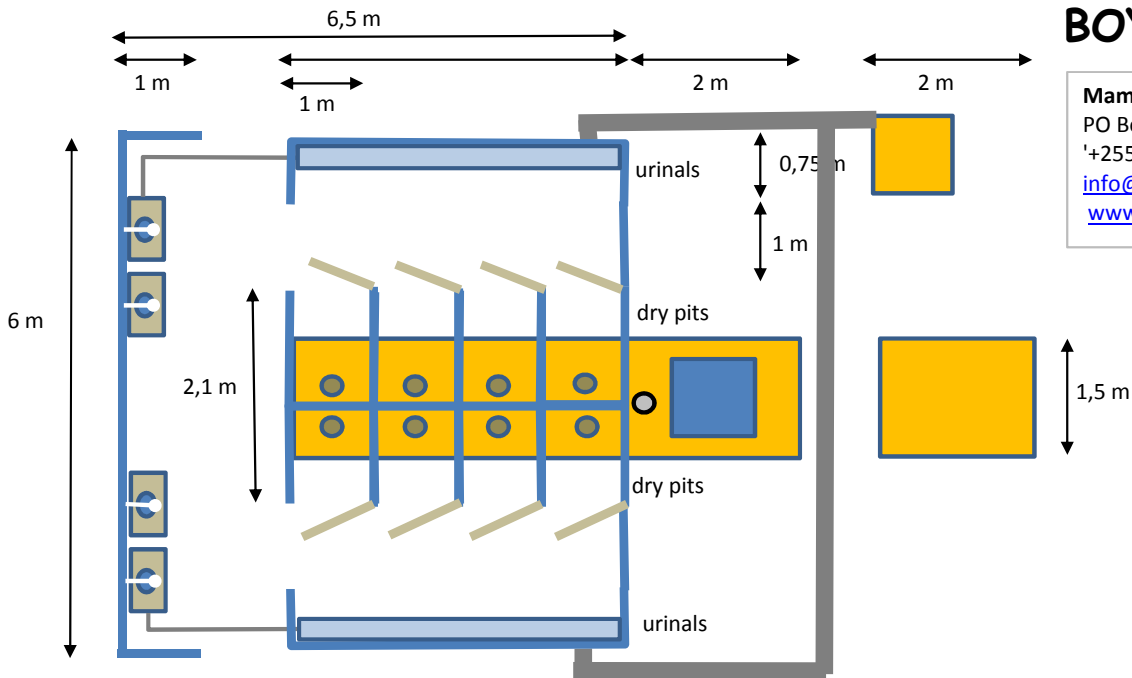
New boys toilet



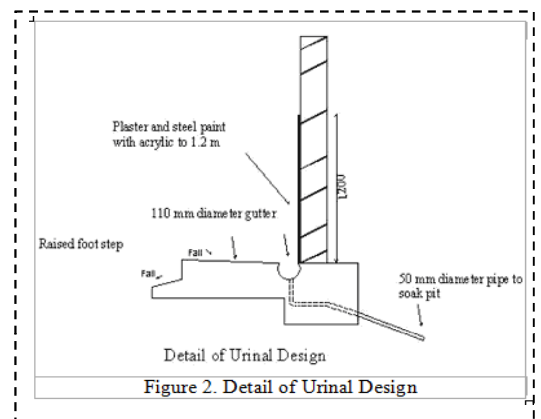
Hand wash basin boys

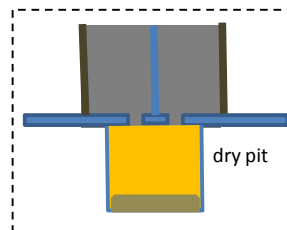
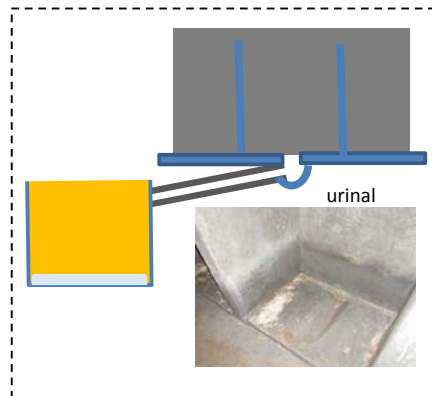
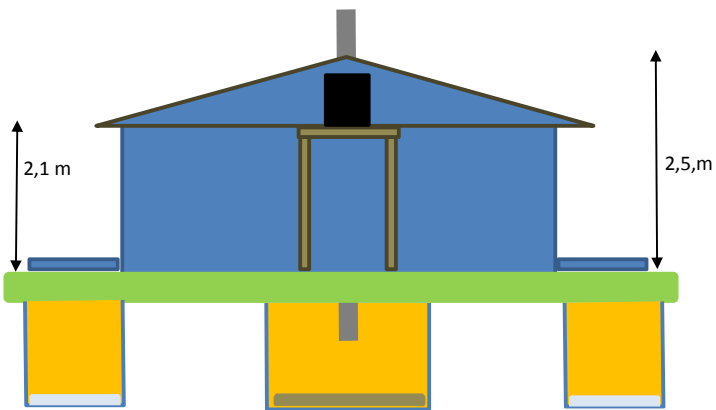
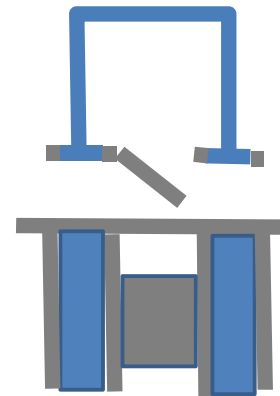
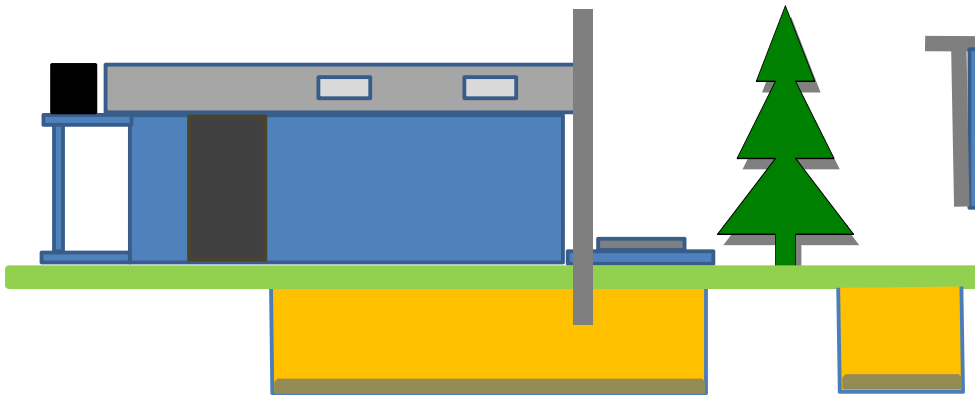
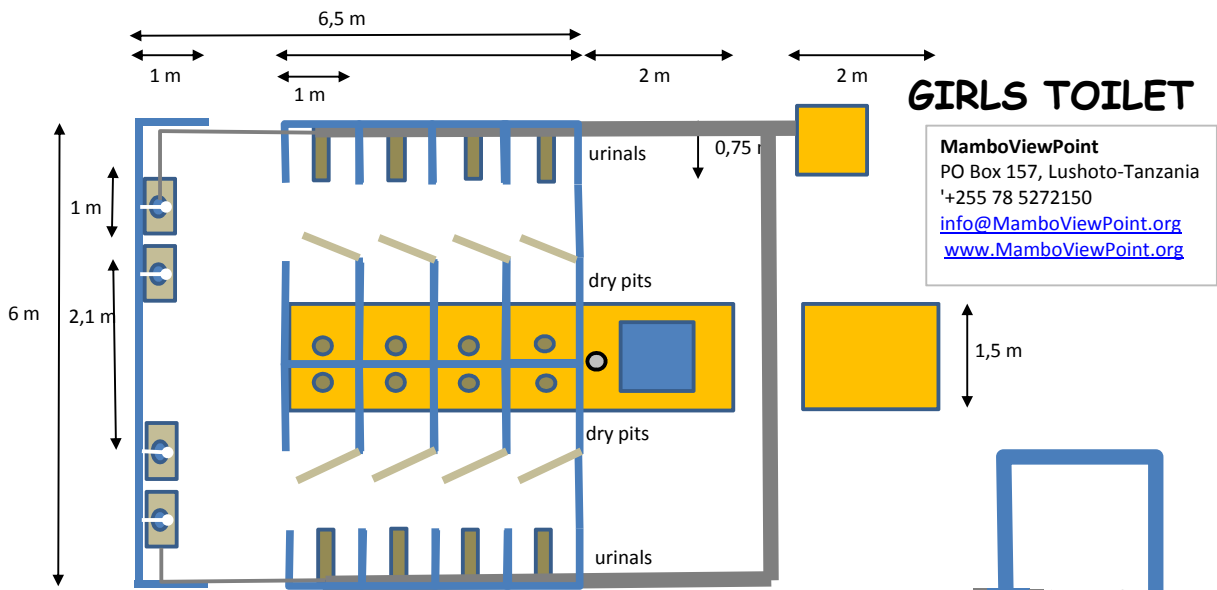
BOYS TOILET

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Realization toilets Mambo Primary school
 Client: Village council Mambo
 Financing: OBS Herman Gorter te Zaandam, The Netherlands
 Architect en management: MamboViewPoint
 Implementation: Workers and helpers from Mambo
 Start: december 26 th 2009
 Completion: August 2010





Realization toilets Mambo Priamary school
 Client: Villagecouncil Mambo
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