

DESCRIPTIVE MEMORY

TECHNICAL SPECIFICATIONS

TB WAITING SHELTERS

1. INTRODUCTION

This document refers to the detailed design for the construction of a waiting shelters for TB patients, within the framework of the “Health System Strengthening” project as part of the grant agreements between the Ministry of Health of the Republic of Mozambique (MISAU) and the Global Fund to fight HIV, Tuberculosis (TB) and Malaria (GF) in Mozambique.

The construction of waiting shelters in the following health facilities is planned for this phase:

- **Gaza Province** (CS de Malehice, HR de Chicumbane, CS de Maciene, CS de Macuacua, CS de Chalucwane);
- **Sofala Province** (CS da Manga Loforte, CS urbano de Macurungo);
- **Zambézia Province** (HD do Ile, CS de Nicoadala Sede, CS de Namacurra, HD de Mocuba, CS de Mocuba Sede);
- **Nampula Province** (CS de Muhala Expansão, CS de Anchilo, CS de Nametil Sede, CS de Chalaua, CS de Murrupula Sede).

1.1. Background

Mozambique is a priority country for TB and HIV, with a high burden for both components of TB and HIV. According to the WHO Global TB Report 2013, the country has the third and fourth highest TB incidence and prevalence rates, respectively, among the 22 countries with a high burden.

The estimated prevalence of TB (all forms) has remained stable over the past decade and estimated at 559 / 100,000 in 2013. Mortality is 69 / 100,000 for patients with tuberculosis and HIV negative and has increased slightly in the past four years; the mortality of HIV-infected TB patients is 148 / 100,000 and is declining. The incidence (all forms) is at 551 / 100,000 and on an upward trend.

The case detection rate (all forms) is steadily increasing, but is still low, standing at just 39% in 2016.

The current estimate is that the case detection rate is low, in part due to limited access to primary health care facilities.

There is a wide variation in the TB burden in the 11 provinces. Five (5) provinces, namely Maputo City, Maputo Province, Gaza, Sofala and Manica are historically responsible for greater reporting. The prevalence of MDR-TB among new TB patients is estimated at 3.7% and 20% among patients undergoing re-treatment.

The construction of 5 wards for patients with MDR-TB and 17 waiting shelters in the health facilities for tuberculosis control will ensure healthier conditions for patients, provide a better working environment for health professionals and reduce the waiting time for patients and relatives while waiting for treatment. As a result, conditions for clinical care for MDR-TB patients will improve.

By improving clinical care conditions, it is expected that infections will be reduced and that patients with MDR-TB will be less reluctant to undergo treatment and, consequently, the outcome of MDR-TB treatment will be improved.

In this regard, UNDP is asked to provide technical support for Global Fund grants to the Ministry of Health in Mozambique. UNDP will ensure that implementation measures are in line with the requirements of the Global Fund and the Country Coordination Mechanism to achieve the goals and improve the system.

1.2. Project description

The project contemplates the construction of a waiting area made up of a waiting shelter of around 66 sqm, dedicated only to tuberculosis patients.

Conceptually, the proposal strives for structural simplicity in order to guarantee functionality and comfort to users.

16 prefabricated concrete benches will be installed, and a tank system for hand hygiene will be attached.

On the hygiene tank, the protection wall will be considered as a panel for placing information on preventive measures.

2. TECHNICAL SPECIFICATIONS

The paragraphs below present the detailed technical specifications for the construction of the Waiting Shelters.

2.1. Rules and Regulations

REGEU (General Regulation of Urban Buildings) was taken into account for the architectural design.

The hydraulic installation was designed considering the technical standards and regulations of the building and public water distribution and wastewater drainage systems.

For the design of the structure, the stipulated in the RSA was used to determine the most unfavourable combinations, and according to REBAP for the determination of reinforcement, cracking and deformation control.

In general, the specific construction rules and regulations for this nature of buildings, are stipulated in the Government Gazette.

2.2. Civil Work

The construction will be conventional with reinforced concrete structure, masonry blocks of cement and sand, cover in IBR sheet, based on wooden structure, with constructive solutions resilient to strong winds and cyclones.

In order to determine the reinforcement, an increase coefficient of 1.50 was applied for overload and permanent load.

The reinforced concrete parts were dimensioned by the finite element method, using automatic calculation processes and the CYPECAD software.

The constitution of the projects must be verified in the drawings that confer the assigned functionalities.

All works must be carried out in accordance with the written and drawn parts of the design and in accordance with the technical descriptions.

2.3. Preliminary Works

2.3.1. Cleaning the Construction Site

The cleaning of the building land consists of the removal of the building site, up to 5m outside the foundations, of all the debris, shrubs and grasses, then proceeding to

regularize the land until reaching the levels indicated in the project. Whenever there are discrepancies between the level curves of the project and the existing relief, either due to the drainage of surface waters or the action of winds, it should be taken into account the project levels and proceed to landfills or earthworks in order to make the shape of the terrain.

2.3.2. Work Implementation

The implementation of the work includes the demarcation of the parts of the work to be built, with the help of theodolite and tape measure taking as a basis the general plan of implementation and the plan of foundations, using the measures contained in them. No foundation should be executed without the approval of the technician of the work, after verifying the implantation executed.

2.3.3. Construction of the barrel

The construction of the barrel includes the construction of the auxiliary structure of peripheral wood and exterior to the main structure, for the demarcation of masonry axes and foundations and marking of project quotas. The barrel should remain in work until the execution of the first two rows of masonry. The main marking points will remain on site until the final marking of the exterior arrangements.

2.3.4. Protection Against Termites

Protection against termites shall be carried out under all foundations by the uniform sprinkling of all surfaces with the product type “Tenure MTC- Sanachem industrial” applied strictly according to the manufacturer’s instructions.

Alternatively, protection against termites may be performed by a specialist company offering a guarantee of at least 10 years.

2.4. Land Movement

2.4.1. Excavation for Foundation Footings

They should be opened 60 cm wide for all walls. The depth should be at least 80 cm at the point to ensure the formation of a good bed for the foundations, according to the pieces designed.

2.4.2. Watering and compaction

The bed of foundations and ground floors will be duly compacted by a mechanical mallet, after regularization with washed inert sand.

2.4.3. Landfills

If it is necessary to make landfills, this will be done by placing successive layers of clean soil, each layer having a maximum thickness of 15cm, watered and compacted mechanically or with a manual macho.

Soils removed from hawks, if they are free of impurities, and plant materials, may be reused for filling the floor boxes and for modelling the outer arrangements.

2.5. Foundations

2.5.1. Rockfill

It should be made in the bed of the foundations, and in the floor box, with hard stone, clean of soil, sand or sludge, not muddy, not icy, not cracked, with regulated dimensions.

2.5.2. Cleaning Concrete

Cleaning concrete B15 with a thickness of 5 cm will be used throughout the area of the foundation basis, over the sand layer in the excavation bed.

2.5.3. Foundation Base

The pillar bases will be insulated, joined by a running foundation, in simple B25 concrete with the dimensions shown in the drawings, resting on the cleaning concrete.

The bases must be concreted “in situ”, using an appropriate formwork, where the concrete must be properly vibrated.

2.5.4. Ground Floor

The ground floor in Concrete B25 will be based on two substrates, the lower substrate being 15 cm thick of gravelly soil cleaned and compacted by a mechanical mallet, and an intermediate substrate consisting of 10 cm rockfill in median stone, duly regularized and compacted.

2.6. Concrete

2.6.1. Concrete Pavement

This layer of concrete will be levelled with the help of a ruler that will rest on guideposts assembled before filling the slab and will have a thickness of 10cm. This thickness will begin to thicken about 30 cm from the outer face of the masonry until it reaches a thickness of 20 cm under the horizontal protection of the masonry.

2.6.2. Concrete Beams

At the floor level there will be a 20cmx20cm floor beam, and at the level indicated in the drawings, a top beam, with 20cmx30cm. These Beams will be executed in reinforced concrete B25, with steel reinforcement A400, according to the structural design.

2.6.3. Concrete Columns

The columns will be 20cmx20cm made of reinforced concrete B25 with steel reinforcement A400, according to the structural design.

2.7. Masonry

2.7.1. Foundation Masonry

The foundation masonry will consist of masonry of 20cm solid blocks of concrete. The blocks will be laid with cement mortar and sand ratio of 1: 4, running along the running base.

2.7.2. Lifting Masonry

The masonry for elevation will be built, in hollow blocks of cement and sand of 15cm, laid with cement mortar and sand ratio of, according to the project's indications.

The blocks are laid with cement and sand mortar and are vertically aligned despite counterfeiting.

2.8. Coverings

2.8.1. Material

The roof of the building will be made of 0.6 mm thick aluminized IBR sheets, supported on a support structure made of treated pine wood, consisting of trusses and purlins, according to the roof detail in the project.

2.8.2. Connections and Fixings

All connections and fixings must be made with appropriate accessories, according to the specifications of the suppliers:

- The connections between the truss parts must be made with stamped-tooth plates at least 1.2 mm thick.
- The connections between the parts of the trusses must be made with stamped-toothed plates of at least 1,2 mm thickness. The connections between the pieces of the moulds must be made on the frame or 30 cm from the frame.
- The connections between the trusses and the timbers are made with metal sheets on both sides with a minimum thickness of 1.2 mm, with at least 6 nails (3 on each side of the sheet) of 0,44x4,5 cm long for 5 cm thick pieces of wood.

The roof trusses must be anchored to the crowning beam using 5 mm thick U flat iron metal plates, as detailed in the project. The roofs should have spacing of maximum 0.60 m. The roof plates must be fixed with screws / nails following the guidelines:

- For ridge, 1st and 2nd edge line: nails in each wave
- Middle of coverage: Alternate nails every 2 waves on the same line (alternate position of nails between lines)
- Nails and washers must follow the guidelines of the plate manufacturer. Washers must be made of nylon or EDPM rubber.

During the preparation of the work, the coverage programming project to be approved by the technician must be executed.

2.9. Finishes

2.9.1. Plastering

All walls, beams and pillars will be plastered with cement mortar and sand to the line 1:5, after carrying out all preparatory work.

2.9.2. Screed

The floor finishing will be in polished screed of cement and sand ratio of 1;3.

2.9.3. Painting

Top quality paints appropriate for the purposes for which they are intended, with brand and colours yet to be chosen, will be applied. Every building must be painted in two coats, after applying the appropriate insulators.

2.10. Hydraulic Installations

2.10.1. Water Supply

The water supply design was executed according to the scheme presented.

The water supply network is in Hidronil tubes, $\frac{3}{4}$ " of section.

All connections and pipe bends must be made with appropriate fittings, according to the specifications of the suppliers.

2.10.2. Sewerages

The entire sewage network will be carried out in plastic tubes materialized in uPVC - rigid vinyl polycrystalline or equivalent, class 4, 6 and 10 for internal and external plumbing respectively.

All connections and pipe bends must be made with appropriate accessories, according to the suppliers' specifications.

2.10.3. Grey Waters

The grey waters will be directed directly to the drain to be built, with a 1.50m section and 2.00m depth, according to the drawings. The white water from the treatment booths will pass through the chemical boxes before being inserted into the sewer drainage system.

2.10.4. Drains

The drain, with a section of 180 cm, built in masonry walls with open joints, the bottom will be in gravel and the cover in reinforced concrete slab, according to the detailed drawings.

2.11. Electrical Installations

The electrical installation must be carried out in accordance with the applicable rules and regulations and in accordance with the diagram shown.

The network will comprise the installation of 2 fluorescent lamps for lighting and two watertight exterior sockets.

3. FINAL PROVISIONS

For all issues omitted in this specification, it is recommended to follow the regulated techniques, the process of its construction, as well as to use the best materials and the usual procedures set out in the laws in force in the Republic of Mozambique.

Maputo, 5th February 2020.