



Health Center Renovation Project



Regional Health Bureau
Addis Ababa City Administration,
Addis Ababa

ZEWDITDU HOSPITAL MAINTENANCE SOLUTIONS

As a result of the request made by your office for a site visit to Zewditu Hospital, on Thursday 27 April 2007, and follow up to our initial report presented on Friday 28 April 2007, please find attached the proposed solutions, preliminary budget estimates and recommendations.

It is strongly recommended that after the immediate maintenance problems of the leaks to the sanitary network around the Pharmacy store in the basement be completed as soon as possible.

In addition, it is strongly recommended that a complete renovation of the entire hospital be completed as detailed in section 2 of the attached, rather than the lower cost of a partial renovation relating to the roof and sanitary networks. As I am sure you will appreciate, the disruption created by the construction works to complete a partial renovation will be similar to that created by a full renovation, without the added benefit of improved facilities for both patients and staff.

Should you have any questions relating to the attached document, please do not hesitate to contact me or my staff.

Yours Sincerely,

E N McIntosh
Chief of Party

Cc: Medical Director, Zewditu Hospital

**PROPOSED MAINTENANCE SOLUTIONS
FOR
ZEWDITU HOSPITAL, ADDIS ABABA**

GENERAL

Zewditu Hospital, Addis Ababa was constructed in 1966 AD, with the most recent renovation works being completed to the roof and sanitary network approximately 6 years ago. Since this time, the status of the facility has continued to degrade through limited resources as well as due to the age of some of the installed materials.

In many cases, the material has reached its design life, such as the cast iron sanitary pipe network which has a design life of approximately 40 years. The original flat concrete roof has had a corrugated iron over-roof installed during a previous renovation contract.

To enable the hospital to continue to provide health care to the population within the Kirkos sub-city of Addis Ababa, an essential renovation programme is required, to resolve the sanitary network and roof leaks.

This report has been divided into 3 sections, to propose a 2 stage approach to resolving the long term maintenance issues for the hospital, with section 3 providing an option for section 2 in case of budgetary limitations:

- Section 1 – Immediate Maintenance Works,
- Section 2 - Estimate of Full Renovation Works,
- Section 3 - Assessment and Identification of Essential Renovation Works,

SECTION 1 - IMMEDIATE MAINTENANCE WORKS

OBSERVATIONS

During an assessment site visit essential maintenance works includes:

- Repair of the fractured waste water pipe in the Pharmacy store in the basement,
- Repair of the toilet in the ground floor toilet adjacent to the lifts,
- Repair of the corrugated roof structure including parapets to reduce leaks during the rainy season,
- Grounding of the electrical distribution box in the basement adjacent to Physiotherapy.

RECOMMENDATIONS

The quickest mechanism to undertake repairs, would be to invite up to 3 quality works contractors to provide offers to undertake the works, to ensure that the repairs last for at least 6 months, while a more detailed engineering assessment and design solution can be identified and approved.

PROJECT ESTIMATE

The total cost to complete the works as described below is estimated at 60,000 ETB:

- Repair of the fractured waste water pipes in the Pharmacy store in the basement. Low temperature brass welding (braising) of the cast iron pipe in the Pharmacy store and in

the corridor outside of the Pharmacy Store, to include labourer, scaffolding and time for identification of leaks including drying of the pipes using welding torch.

- Repair of the toilet in the ground floor toilet adjacent to the lifts. Supply and fitting of new cistern flushing mechanism.
- Repair of the corrugated roof structure including parapets to reduce leaks during the rainy season. To re-fit dislodged corrugated sheets including the supply of nails with rubber seals, seal damaged nails with silicon, to re-fit parapet and other wall flashing.
- Grounding of the electrical distribution box in the basement adjacent to Physiotherapy. Investigation and fixing of the live electrical situation of the distribution box.

SECTION 2 - ESTIMATE OF FULL RENOVATION WORKS

BASIC ASSUMPTIONS

In defining this budget estimate for renovation works, the following assumptions have been made:

- All internally installed utility networks have reached their designed service life and require to be replaced,
- The bathrooms and other wet areas require to be upgraded to include appropriate ventilation to the outside,
- Upgrading of doors, windows, floor and wall surfaces.

The following aspects have not been included in the cost estimate:

- Current furniture and equipment would be retained and not replaced,
- Replacement of the lifts and heating equipment and associated network is not included.

PROJECT ESTIMATE

Based on a floor area of 8,600 to 9,000 sq m, with a renovation cost of 1,500 ETB per sq m, the estimated renovation cost of the hospital would be between 12.8 and 15.4 million ETB.

The estimated cost for an engineering assessment and design service ranges from 640,000 to 1,280,000 ETB.

To include the lift and heating aspects within the renovation assessment, detailed investigations would be required, as well as discussions with the Hospital management and RHB, to define the requirement and alternative solution options.

SECTION 3 - ASSESSMENT AND IDENTIFICATION OF ESSENTIAL RENOVATION WORKS

OBJECTIVE OF ASSESSMENT

The objective of the assessment is to identify items that require immediate repair/replacement especially within the sanitary network. An additional objective is to propose design solutions to improve the ability of hospital technical staff to inspect essential utility services and to allow ease of maintenance after the renovations have been completed.

REQUIREMENT

The assessment and subsequent reports should provide:

- Update the original as-built drawings to reflect the current situation,
- Engineering assessment of the condition of the building to include:
 - Water and sanitary networks,
 - Electrical network,
 - Roof covering.
- Preparation of technical documentation to show the identified renovation works, to include:
 - Associated drawings and necessary designs,
 - Bill of Quantities and Works Estimate,
 - Works programme, detailing a sequence of work that requires a minimum of impact on the continued delivery of hospital health care services.

ASSESSMENT CONSIDERATIONS

During the assessment and identification of design solutions, consideration and analysis of the following should be included:

- Sanitary Network – Design solution using improved installation method that will allow easy inspection and maintenance of the pipe network, to include necessary inspection and cleaning access points. Appropriate installation mechanism may include surface mounting of the pipe network.
- Water Network – Review of the possibility of providing a roof mounted water tank(s) with a gravity flow pipe network. The design solution should provide for closing sections of the network for maintenance, without having to close the entire hospital network down.
- Electrical Distribution Boxes – Improved safety relating to access by non authorised persons and grounding/earthing to prevent the possibility of electrical shock.

PROJECT ESTIMATE

As the scope of works equates to approximately 70% of that proposed in section 2, the costs for this would be between 9 and 10.8 million ETB for the renovation works and 450,000 and 900,000 ETB for engineering assessment and design services.

RECOMMENDATION

It is recommended that the solutions proposed in sections 1 & 2 be adopted, with section 3 being approved only in case of severe budgetary limitations.

April 27, 2007

Visit Report for Zewditu Hospital (Addis Ababa City Administration)

General Remarks

Health Center Renovation Project received an urgent request by telephone from the Head of the Regional Health Bureau, Ababa City Administration to provide an immediate assessment of the degenerated sanitary system in Zewditu Hospital, and to identify the major problems of sanitary and sewage installations leakages at the Hospital.

The team composed of the Director of the HCR Project, Senior Consultant Engineer and Healthcare Architect visited and assessed the hospital on April 26, 2007 from 3 to 5 PM.

The 5-storey hospital was built about 40 years ago, constructed with a reinforced concrete frame, flat concrete roof with a bitumen felt waterproof finishing, with the water and waste water pipe networks being engraved (installed within the reinforced ribbed concrete floor or blockwork wall structure). Initial observations indicate that the structure of the building is sound, as no external or internal cracks were seen.

On arrival, the water system for the entire hospital had been closed off in an attempt to prevent additional damage and mess created by the water leak. This was having a major impact on the delivery of essential services within the hospital. Hospital /Staff were concerned that there was a real possibility that the hospital would have to reduce or close services if the water situation could not be resolved immediately.

It was found that the hospital faces serious problems especially relating to the sanitary installations, namely, sewage lines, clean water lines and ventilation and electro-mechanical systems such as boiler and ventilation systems. Even though a maintenance contract was completed 5 years ago, other elements of the building such as ceiling and floors of physiotherapy unit had degenerated to serious problems from water leaks, dampness, lack of continued maintenance and proper house keeping with regular supervision.

Water leakages

It was found that most of the problems related to water leakage from the sewage installation and/or clean water supply and/or rain water straight form the roof or a combination of all. The problem of leakage becomes aggravated by the old fixtures , engraved installations (installed within the wall or floor structure) that does not allow easy access for both inspection and repair by maintenance staff thus allowing water to leak to the next floor below. For example one major leak observed by the HCR Team was in the basement floor pharmacy store due to a major crack in a waste water cast iron pipe. The original installation did not allow for any expansion/movement of the pipe or for easy removal in case of repair

Therefore the assessment identifies that the entire sanitary installation requires a complete investigation to identify damaged elements and fixtures to be replaced. Additional consideration should include the replacement of the entire pipe network which should be surface mounted for ease of inspection and repair..

Roof Leaks

Due to previous roof leakage (estimated to be about 15 years ago) an over-roof of corrugated iron was constructed. The construction of the corrugated iron sheet structure results in a nearly flat slope, that cannot discharge heavy rainfall and over flows, resulting in significant leaks onto the concrete roof below. In addition, the moisture trapped beneath the corrugated iron sheeting becomes absorbed by the concrete roof, leading to blistering of the synthetic paint on the wall and ceiling surfaces in the rooms below.

Wind damage has lifted many nails as well as the flashings around, the ventilation fan, chimney and vent pipes, irregular corners of the building and the walls and roof parapets, resulting in additional leakage points throughout the entire over-roof structure.

The technology of membrane type roof water-proofing systems has improved over the last 10 years, and it is recommended that the corrugated over roof structure be removed to be replaced with a membrane treatment finishing over the original concrete surface. Installation by a competent local specialist company should provide a guarantee of not less than 10-15 years.

Wall, floors and ceilings

The general status of wall, floors and ceilings are in a good condition. However, because of roof leakage and water moisture, in certain areas the paint and floor finishings have become damaged leading to pungent smells and fungi growth. This problem is more aggravated in the physiotherapy units and basement floors.

It is recommended that after completing the high priority refurbishment of the sanitary and water pipe installation, as well as the roof repair, other building elements such as ceiling, wall and floor finishing and openings requires a renovation programme especially those parts of the building damaged as a consequence of the ongoing water leakage.

Proposed Solutions

Considering the major sanitary problems of the Zewditu Hospital and the scope work required to bring the facility to the current FMOH hygiene standard, will require a major financial investment, high level expertise and time. In addition, it is recommended that an annual plan for preventive maintenance and house keeping is developed to protect the investment.

It is recommended that the solution to bring the hospital to standard level requires two stages: -

I. Requirement of Immediate Interventions

Mend the leakages by identifying the problem area or/and closing temporarily the sanitary areas that have serious problems.

II. Requirement of Long Term Interventions

- By conducting a complete renovation study of the hospital, it will be refurbished and rehabilitated up to the required level,
- Develop and implement regular, maintenance and housekeeping management complete with a regular supervision process. An alternative to the employment of maintenance workers could be the creation of a maintenance contract with a local contractor for all hospitals within the City Administrative area.

If you have questions regarding the preliminary assessment, please contact

Sallehunae Kefyalew
Senior Project Officer

Noel McIntosh
Project Director

Email – sallehunae@crownagents.com.et

noel@crownagents.com.et

Tell (office) 0116628969 / 70 / 71 / 72
4th Floor, Sevita Building, Addis Ababa