

Dagon International Limited, Myanmar

KANBAWZA BANK HEADQUARTERS BUILDING - A RECENT EXAMPLE OF ENERGY EFFICIENCY AND CONSERVATION IN MYANMAR

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Content

Abstaect

1. Introduction
2. Design
3. Orientation and Landscaping
4. Construction Concept
5. Maintenance
6. Cost Effectiveness

ABSTRACT

Energy efficiency and conservation are just some of the buzzwords around the world. In an attempt to achieving these ends, Kanbawza Bank Headquarters Building Project employed an APPROPRIATE TECHNOLOGY befitting the local conditions. In this paper its design, orientation, landscaping, construction concept, maintenance programmes and cost effectiveness are analysed and discussed. Special emphasis is given to the optimum use of locally available construction materials suitable to prevailing environmental conditions. Its endeavour has been taken as a recent example and a step forward towards future development in these areas.

1. Introduction

Energy efficiency and conservation have been given priority all over the world, as have been in our country. Kanbawza Bank Headquarters Building is one of the recent example of its kind. We are therefore putting forward part of its design, orientation and consideration on the local environment. That was the reasons why it won the award of ASEAN's "The Asean Energy Efficiency and Conservation Best Practices in Buildings."

2. Design

- (a) The structural frame work design for the Building the reinforced concrete mat slab foundation and Reinforced Concrete upper skeleton had managed by the designer.
 - (i) to form a strong and stable building frame to reflect the KBZ Bank's financially strong and economically stable qualities, and at the same time,
 - (ii) to provide simplified (or) easily accessible (or) economically manageable structure especially for the mechanical and electrical works. Therefore, those building service works will surely gain cost effectiveness not only during their implementation (or) installation time but afterwards, throughout the operational and maintenance periods.
- (b) So, the structural designer has used simplified R.C structural frameworks, avoiding all possible ways that can create technical limitations, installation method restrictions, unnecessary modifications of M & E equipment, undersirable running of cables and conduits causing energy losses and problems, and unforeseeable maintenance difficulties. And, the structural designer also provided sufficient headrooms and spaces for M & E installations inside and outside of the structure to allow cost effective wiring and piping layouts.
- (c) Such simplified initial design provisions in structural framework practically allow more economic use of M & E wiring plans & piping schedules, equipment allocation, power control management, systematic load distribution, economical plumbing layouts and connection points for water supply and waste water disposal, and easier maintenance problems.
- (d) Thus, the deliberately designed structural framework certainly provides very good energy effectiveness compared to those merely feature - orientated buildings (or) those strange looking buildings in which complex arrangement of structural components have to be unnecessarily composed of.

3. Orientation and landscaping

Like all ASEAN countries in the South-East Asia region, Myanmar has a tropical monsoon climate, and as Yangon usually receives tropical sun heat (Ranges 19 degree Celsius to 38 degree Celsius), relative humidity 60% to 83% (usually) with a somewhat heavy localized annual rainfall of 80 inches to 120 inches, thus initial design considerations were taken into account regarding building materials, outdoor features, air-condition system, ventilation and maintenance due to weathering .

Myanmar, as a developing country has to be confronted with some degree of economic limitations to employ most sophisticated technologies (or) cutting edge technologies in building construction sector, and therefore architectural design considerations were made to apply only appropriate technologies for energy effectiveness.

(a) Orientation

The building is facing true east. Therefore enjoys the morning natural daylight with the advantage of saving the lighting costs.

Due to local sun path, naturally protected from high noon and afternoon sun heat, thus reducing energy costs for air-con operation.

Naturally protected from direct bitter attack of south-westerly monsoon rain, thus reducing energy costs for maintenance.

(b) Land Scaping

(i) The KBZ Banks building is quite fortunate to be located very close (only 80.00 feet apart) to the famous Yangon University Campus which represents as well maintained national park, in connection with the Yangon Inya Lake waters. Thus natural Landscaping is simply being provided physically and spiritually by the natural environment.

(ii) All the customers as well as office occupants can enjoy pleasant landscaping, fresh gentle breeze that passes across university compound and Inya Lake waters, and thus becomes very cost effective and unnecessary to provide man-made fresh air- circulation, gardening (or) other environmental features which will certainly demand energy costs.

(iii) For visual and psychological pleasure, a small circular water fountain was designed in fount of the east facade of the building, and height of those water nozzle jets were cautiously maintained at very low levels to save energy for long run.

4. Construction Concept

Design to use almost all building construction materials regionally available, thus minimizing time, energy and fuel costs for transporting at materials and maintenance (repair and replacements) of building components.

9" thick perimeter walls were made of conventional size perforated bricks (perforations running vertically) that not only provide good thermal insulation properties but permit moisture movements without significant dimensional changes, thus making the perimeter (or) exterior walls can "breathe".

Such application of locally produced appropriate materials instead of using costly imported metal frames and thickened glass sheets drastically minimizes (specially for low income countries) energy costs not only in building functioning costs but in the manufacturing processes of the building materials.

Interior partition walls (if not related to wet areas) were composed of 10 mm thick cement plaster boards with metal cladding frames providing 75 mm cavity for thermal insulation and wiring purpose. Such use of materials not only produce energy effectiveness for air-conditioning but also reduce in structural loading, maintenance costs, construction time, and problems in office layout alternatives.

Most of all the floor areas inclusive of main entrance steps and internal stairs were covered with granite slabs of local products which are highly resistant to knocks, abrasions and common chemicals. Those granite floors, due to its high compressive strength, low water absorption rate, good resistance to abrasion, excellent ability for retaining its polished finish for long service, certainly contribute in energy effectiveness in office maintenance and repair operations.

All internal doors in the office (except vault rooms and machine rooms) were made of high quality seasoned teakwood with silver grey finish coatings also somehow contribute energy effectiveness in building operational and maintenance activities because of its reliable thermal insulation quality and least dimensional changes by temperature.

5. Maintenance

With its proper design and construction, it requires very little maintenance, although the bank will be providing necessary proper maintenance all though.

6. Cost Effectiveness

It has been fore in the front to use local materials, local work force, local tools and local experience to make his construction a success. It is believed that the job has been done successfully.