

Technical Resolution

In order to be able to illustrate the technical solutions incorporated in the design, it is important to hold the requirements set as a measuring tool next to the solution. Thus the baseline document is incorporated in the technical resolution document to integrate the different aspects of the design process so as to better illustrate the design.

Baseline

The aim of the baseline study is to establish criteria and guidelines for the design. The Sustainable Building Assessment Tool will be used as a guide to establish the relevant criteria. In broad terms the building has to be socially, economically and environmentally responsible.

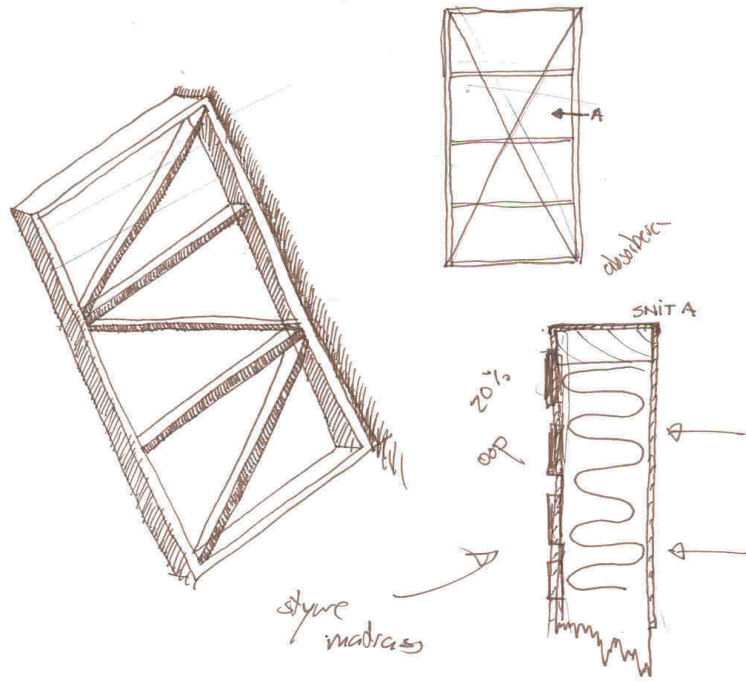


Fig 92 : sliding revolving panels with sound absorption

The project is situated on a busy node of Extension 22. With lots of current and proposed activities the sound level generated may become distracting. Mathane Avenue to the east is a major source of noise. The project responds to the situation by utilizing a number of different methods. The building is set back from the road to allow for the natural noise reduction offered by distance and a soft (planted) landscape. The sliding revolving panels of the Place of Meeting, which faces the road, are equipped with a sound absorbing material in the form of a stiff mattress.

The library space is separated from the busy open public space between it and the Place of Meeting by a trombe wall. Areas which require quiete, such as the study area and residential units are set to the back of the site, screened by buildings and bordering on the residential side of the scheme.

Occupant comfort

Optimal occupant comfort is dependent on the following factors: ventilation, lightning, temperature and sound. The cost consideration within community architecture requires the use of natural and passive systems as far as possible. Noise levels should be reduced to the minimum, especially sharp, constant or high-pitched noises. The site is situated on a slope and has views of the mountain and Mamelodi East. Utilizing these views will create a sense of place and greatly enhance the quality of the place.

A combination of fixed window panels with separate ventilation openings and movable window frames with a ventilation block grid as screen was utilized to meet the diverse requirements of the scheme. Such requirements include sun protection, safety, cost and economy of use.

In those places, where separated ventilation is provided, the openings utilize 190 x190 mm concrete blocks with spaced openings and a movable wooden panel on the inside to allow individual control of specific indoor ventilation. The ventilation openings are situated at both the top and bottom portion of a wall to facilitate the flow of hot and cold air during the summer.

Specific calculations for each enclosed space ensured that all openings are of sufficient size for optimum ventilation and lightning.

Lig + Ventilasic

Kamoor = < 6,16 m²

∴ venster > 0,616 m²

ventilasic > 0,308 m²

□ = 0,023 m²

Stude sentrum = 116 m²

∴ venster openinge > 11,6 m²

ventilasic openinge > 5,8 m²

Vensters = 7 × 0,32 m² + 2 × 3 m²

= 2.24 + 6

= 8.24 m² + 0,32 + 3 m² = 11,56 m² ✓

Ventilasic = 2.24 + 3 + 3 = 8.24 m² ✓

Fig 93 : Calculations for ventilation and natural lighting openings



Fig 94: Main vehicular circulation within Lusaka.

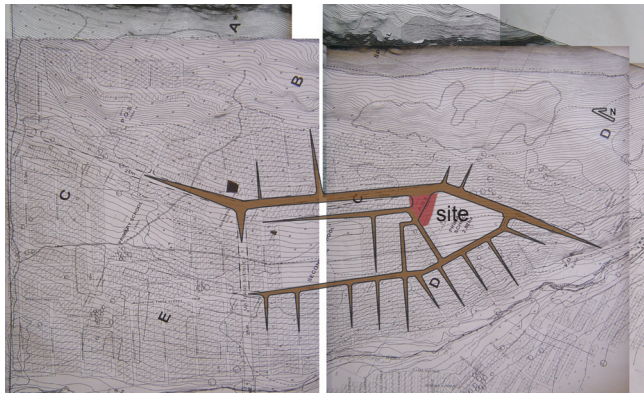


Fig 95: Pedestrian circulation around the site

The facility is located off Mathane Avenue, which is the main vehicular artery. The site forms an integral part in the pedestrian circulation of the area, as it is an important link between those living on either side of Mathane Avenue. In terms of access the facility is thus ideally situated.

The whole of Lusaka is visible from the surrounding areas since it is located on the slopes of the Magaliesberg mountain range. Since the surrounding structures are mainly small single story buildings, the facility, which consists of larger, double storey buildings, stands out in the immediate surroundings. From further afield the water tower helps in establishing the centre in the consciousness of the community.

The only part of the site which is not accessible to a wheelchair is the first level of the orphanage, which contains sleeping arrangements for five children and a bathroom. These are duplicated on the ground floor. Access to the first floor of the library and support centre is obtained through the use of a wheelchair lift.

Inclusive Environments

Baseline social

Community Facilities should be accessible to the public. Locating the facility close to major transport and circulation routes increases accessibility. Visibility of the facility is important in terms of establishing a presence in the community. The facility should be designed to accommodate disabled persons in terms of their access, toilets and other amenities. Furniture and fittings must not impede the movements of users, especially the disabled. All spaces in the facility must be easily accessible. The internal layout and circulation must be easily read and used.

Access to Facilities

Easy access to facilities within a community decreases with the distances which people have to travel. Within a disadvantaged community facilities such as study centers and child care are vital. Lusaka is at a distinct disadvantage in terms of accessible community facilities. The model addresses the situation by incorporating a number of vital services and other services, such as counselors, computer and internet access and a day care center. Limited residential facilities for the use of destitute and vulnerable children will be provided as well as living facilities for a full time house-mother and pastor. Although the facility will not house a wide range of land-uses, such as housing commercial and retail, it does cover a wide spectrum of social and community activities. The latter will result in a place which has many functions and uses.



Fig 96 : Catering Student at the stanza Bopape Adult Training centre

Ultimately the whole project belongs to the local congregation. It is initiated and managed by the congregation. Thus the facility is owned and managed by members of the local community.

The community is involved throughout all the phases of the building, from inception to construction and management. The Stanza Bopape Training college (discussed as a precedent study) trains local community members in catering, welding and brick making. These trained individuals will be used for manufacturing the steel columns and concrete blocks. The kitchen will be out sourced to Stanza trained caterers.

The local community will further be involved in the construction phase . While these people may not possess a high level of skills, they will be employed for the infill structure. During the construction of the load bearing structure by a skilled contractor, the infill walls could be done by the local community members, since it requires only low level skills. Further community involvement will entail the use of mosaics and construction with recycled materials. Freedom of expression and individualism will enhance the level of human interaction with the building.

Participation and Control

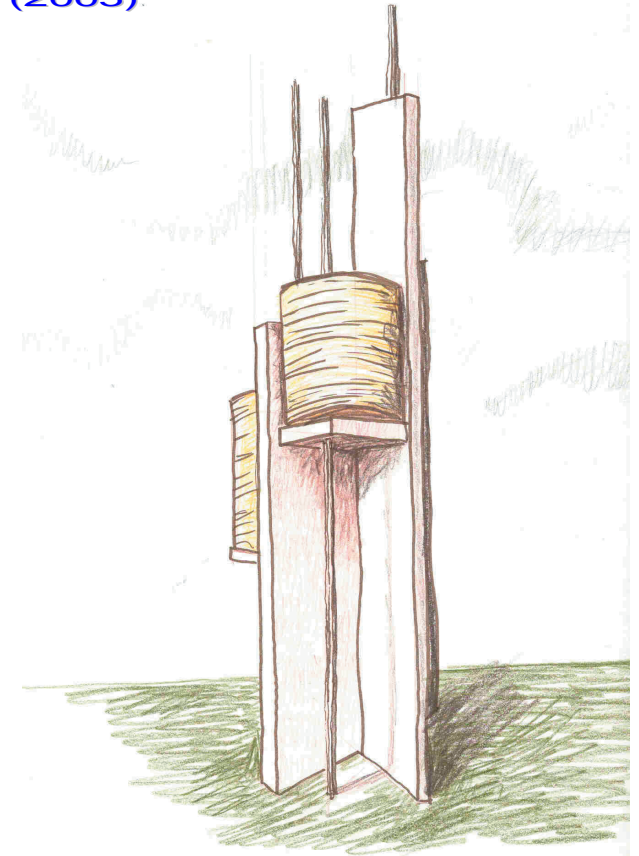
Community and individual participation and control in the project, is of great importance. A period of survey in the community will provide the opportunity for communal and individual input. This will provide for the maximum community and individual control in the building itself and it will increase the level of participation and ownership. The custodians of the building need to be trained in operating and maintaining all the processes installed. Participation of the community in the construction phase will increase the sense of ownership and engender a spirit of empowerment.

Individual control of the internal climate is facilitated through the use of adjustable ventilation openings. Ventilation and shade control within the Place of Meeting is facilitated through the use of revolving-sliding doors.

Education is one of the main activities supported by the facility. Small children are educated in things such as personal hygiene, nutrition, safety, and pre-school preparation in the day-care facility. The study centre, computer facility and library are education tools for higher level learners. Learning programs such as computer literacy courses will be provided.

The centre will play a role in educating the broader community on the issue of social responsibility as well. By actively engaging them in the plight of the children, the centre will promote awareness of the different issues, as well as establish a sense of responsibility within the broader community. The facility will also educate the user on issues relevant to building sustainability. By using such systems as passive heating and water collection within the centre, the user will be educated through use and through the visible functioning of these systems. The recycling of materials such as glass, paper, aluminum cans and organic waste is prominently displayed and accessible.

Fig 97 : Water tower



Education

Upliftment starts with education. Utilizing the project to educate and inform adds meaning and understanding. The building will educate the user on the processes involved in it's functioning. Systems such as load bearing structures and construction methods, water catchment and waste recycling needs to be as visible as possible

University of Pretoria etd – Rheeder, A (2005)

Recreation and play has direct implications on the health of an individual and the community. The project provides for both as well as a vegetable garden for nutritional needs and health education. The kitchen will provide both the children in the different programs, as well as staff and the community with nutritional meals. The facility is well ventilated and lighted by natural daylight. Strong connections with the outside are established with many areas functioning as transitional spaces between indoors and outdoors. Many spaces, including the meeting hall, day-care facility and after school facility have direct access to the outside.

Health

Part of the support of the community and the child is to create areas where less privileged people can utilize necessary facilities and services which they are unable to afford. The health of the community can be greatly increased by providing exercise and recreation areas, as well as providing health related services such as a nurse and a food scheme. Growing vegetables for supplementing the diet of undernourished kids also plays a role in educating people on the role of adequate nutrition. Creating a healthy environment for the kids and other users is paramount. Buildings should therefore be well ventilated and dry.



Fig 98 : Urban agriculture at Stanza Bopape training centre