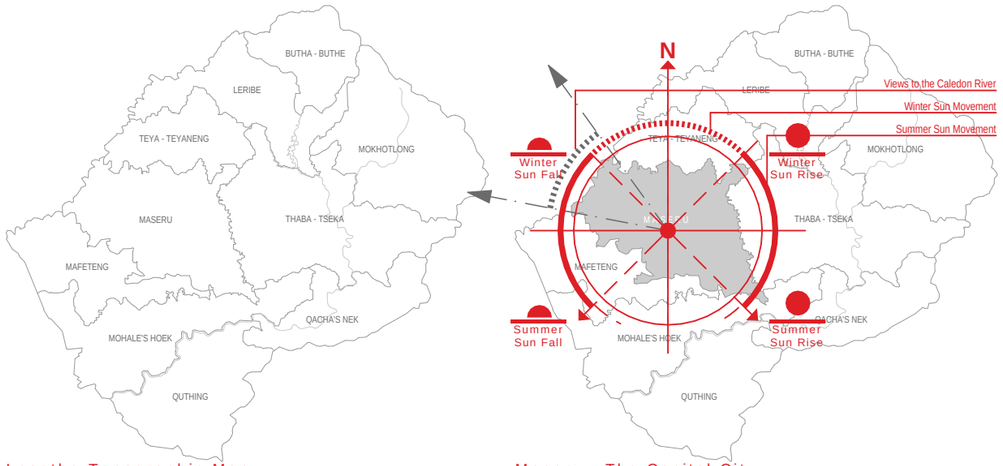
AFFORDABLE URBAN COMPETITION

LINE | PLANE | VOLUME

CONTEXT - Maseru Lesotho



Lesotho Topographic Map

Lesotho, offcially the Kingdom of Lesotho is an enclaved, completely surrounded by South Africa. It is just over 30,000 km2 (11.583 sq mi) in size and has a population slightly over two million. Its capital and largest city is Maseru. Lesotho has one of the lowest levels of urbanisation in the (SADC) region. About 40% of the population lives below the international poverty line of the US $1.25 a day.

Maseru - The Capital City

Maseru is the capital and largest city of Lesotho. Located on the Caledon River, Maseru lies directly on the Lesotho-South Africa border, with a population of 330,760 which is gradually growing. The city was established as a police camp and assigned as the capital after the country became a British protectorate in 1869. When the country achieved independence in 1966, Maseru retained its status as capital.

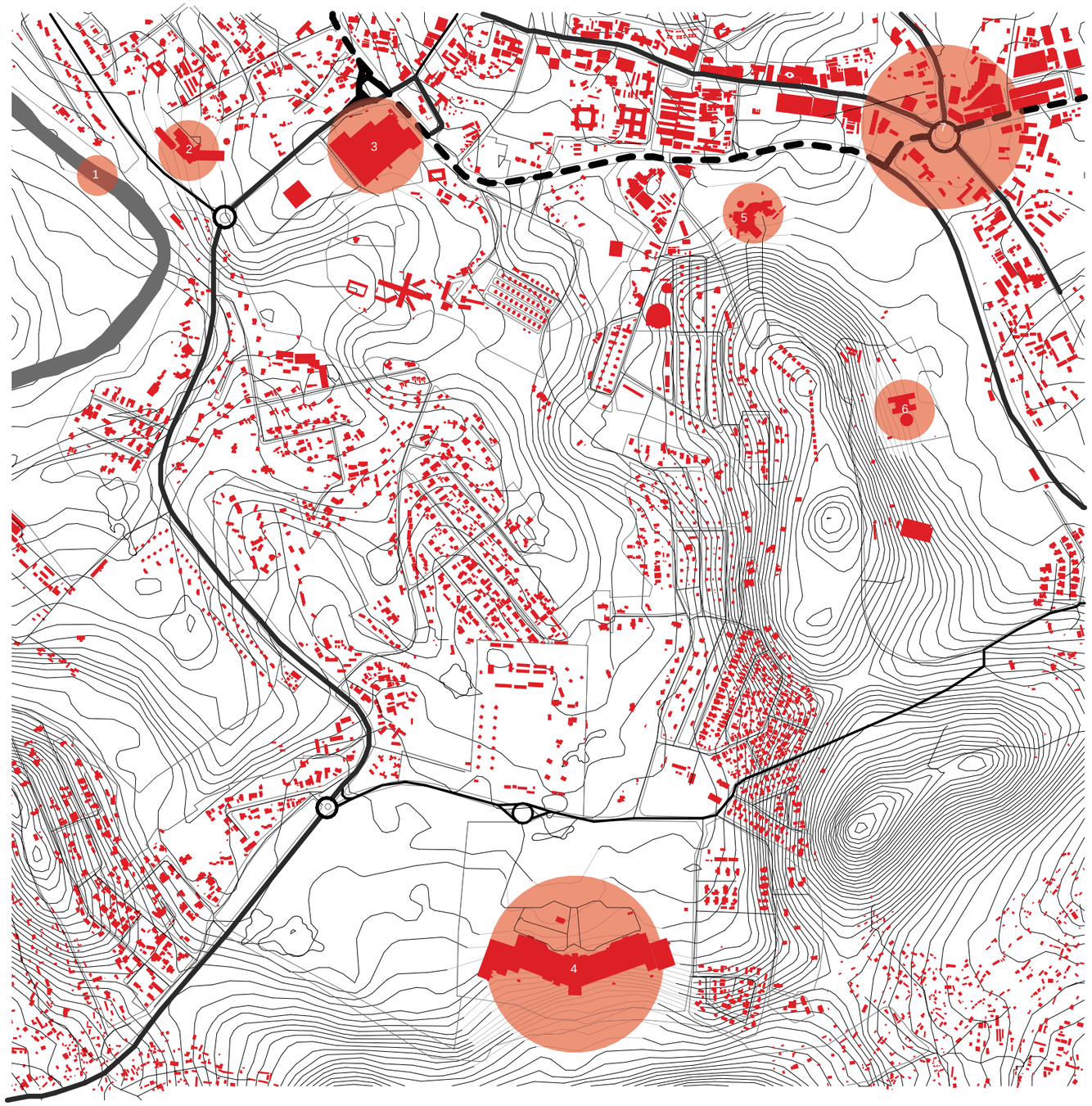
Maseru - Geography & Climate

Lesotho covers 30,355 km2 (11,720 sq mi). It is the only independent state in the world that lies entirely above 1,000 metres (3,281 ft) in elevation. Its lowest point of 1,400 metres (4,593 ft) is thus the highest in the world. Over 80% of the country lies above 1,800 metres (5,906 ft). It lies between lattitudes 28 deg. and 31 deg, and longtudes 27 and 30 deg. E.

Maseru is located in northwest Lesotho by the South African border, denoted by the Caledon River. The city lies in a shallow valley at the foot of the Hlabeng-Sa-Likhama, foothills of the Maloti Mountains. The elevation of the city is listed as 1,600 metres (5,200 ft) above sea level.

Maseru has a subtropical highland climate categorised by warm, rainy summers and cool to chilly, dry winters. The average mean daily temperature during summer - from December to March in the Southern Hemisphere - is 22 °C (72 °F). During winter, between June and September, the average temperature is 9 °C (48 °F). The hottest month is January, with temperatures between 15 and 33 °C (59 and 91 °F). During the coldest month, July, the temperatures range from −3 to 17 °C (27 to 63 °F). The average rainfall ranges from 3 mm in July to 111 mm (4.4 inches) in January.

COMPOSITION : FIGURE GROUND - SPACE NETWORK - CIRCULATION - ZONING



Legend

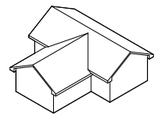
- Freeways
- Main Road
- Minor Road
- Local Road
- Buildings
- Contours
- Networking
- River

Place of Interest

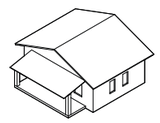
1. Caledon River
2. Maseru Avani
3. Pioneer Mall
4. Maseru Mall
5. Lesotho Avani
6. Parliament
7. Cathedral Area

NATIONAL POPULATION
1 919 552
CITY POPULATION
330 760
ETHNIC GROUPS
Basotho 99.7%, European, Asian and Others 0.3%
RELIGION
Christianity 80%, indigenous beliefs 20%
LANGUAGES
Sesotho, English (official), Zulu, Xhosa
GDP
$ 7.448 Billion

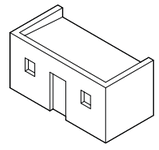
House Typologies



1. Middle Income Homes



2. Low Income Goverment Housing



3. Low Income Self Built Dwellings

1. The Caledon River

2. Avani Maseru

3. Pioneer Mall

4. Maseru Mall

5. Mokorotlong, Crafts Centre

Figure Ground

This is the organisation of perceptual grouping which is a vital necessity for recorgnising objects through vision. It illustrates how dense and packed the buildings are with respect to land use.

Spacial Networking

The figure ground illustrates how the city is disconnected in a very random or organic manner. The nodes demostrate heirarchy of spaces, with commercials centralised and residentials mostly on the sides.

Circulation

Vehicular movement has dominated the city. Nonetherless, with growing popullation, foot paths creat a network of oppotunities for short and effecient travelling esspecially on the developing trend of cycling.

DESIGN CONCEPT - The Journey

Mount Qiloane

Programe

The competition aimed to attract a global audience to design a Low-Income urban Houing in Maseru.

The design brief was to design a housing unit/module which should be of approx 48 sqm (517 sqft) and able to accommodate a small household within the context of Maseru LESOTHO. The module is said to be affordable and promote low urban house.

SPACE REQUIREMENTS:

- Master Bedroom
- Bedroom
- Bathroom
- Eating Area
- Living Area

PROJECT COSTS:

The total house cost should fall under LSL50,000 / $3,750, taking note that electricity and sewage connection or conservency tanks are available at each plot.

Mount Qiloane

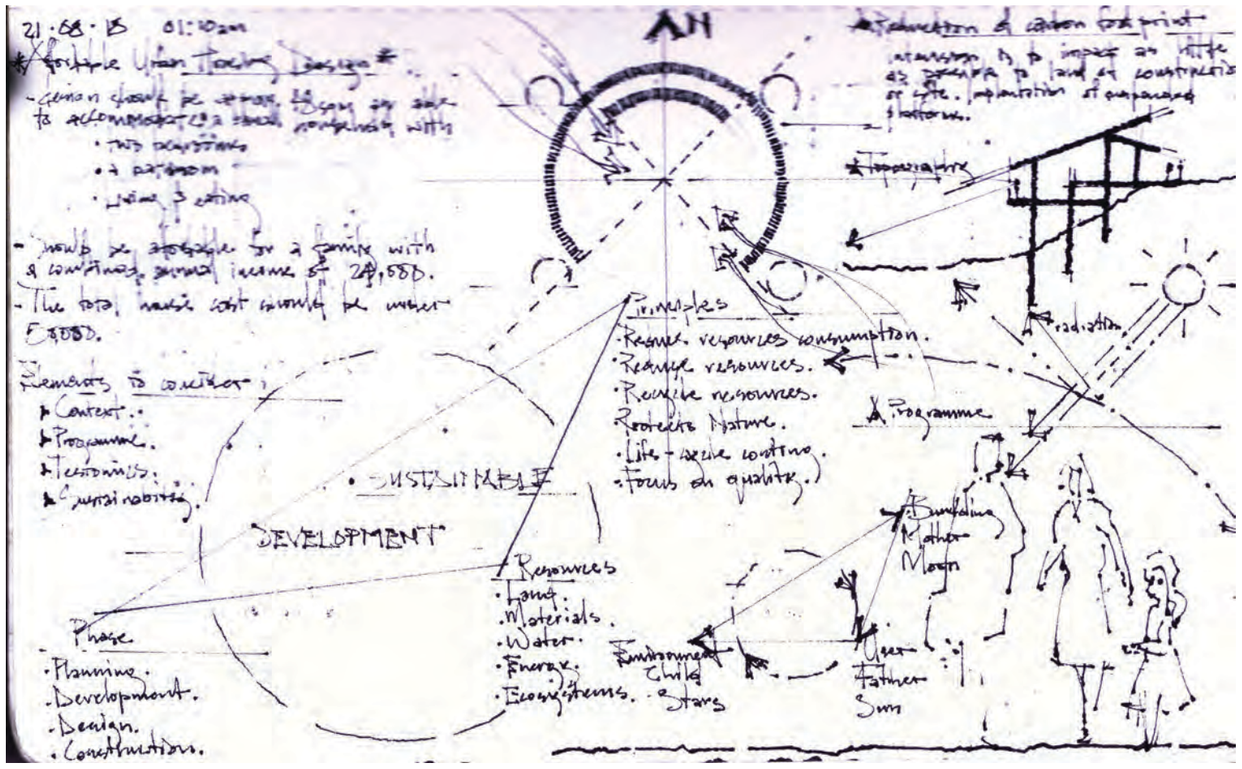
Country:	Lesotho
District:	Maseru
Elevation:	5026ft (1535m)
Population:	24093
Time Zone:	UCT+2(CAT)

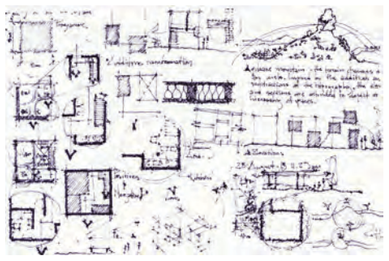
Mount Qiloane, the legendary conical mountain close to Thaba Bosiu, and described by Masupha as Mother and Father, inspired the traditional Basotho Hat called mokorotlo. Qiloane Hill is crowned by a pillar of Cave Sandstone some 100 feet high. It is about 15 feet broad on top, and is composed of three immense steps gradually tapering to a point. Elevation of the hilltop is 5,640 ft (1,719 m)

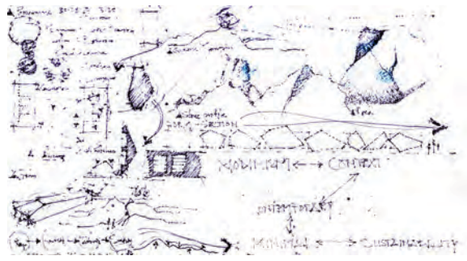
The Journey (design concept)

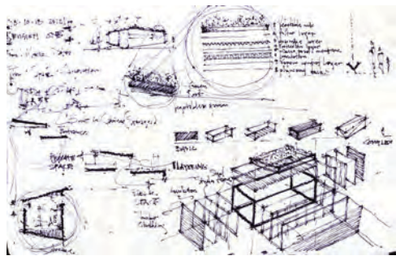
Travelling from one place to another usually on long distances never comes easy. One meets various challenges during the course of the journey and these challenges are manifested on the elevations of the design as each one has its own character and unique feature. With mount Qiloane having a crown of pillar cave sandstone, the idea was to strip that down and design with two key elements; CAVE and STONE. This idealogy helped in the design of the form, merging two prehistroric times, **modern era** and **stone age,** resulting to a contempoprary design infused with ancient history and elements. Having such a great oppotunity, the design had to have a nolstalgic feelining of a rock, create a perception that one is inside a cave to give an idea how our ancestors lived and behaved. The intention is to design using local materials which include **Sand, Steel, Timber** and **Concrete, errected by local labourers and local skilled craftmen.**

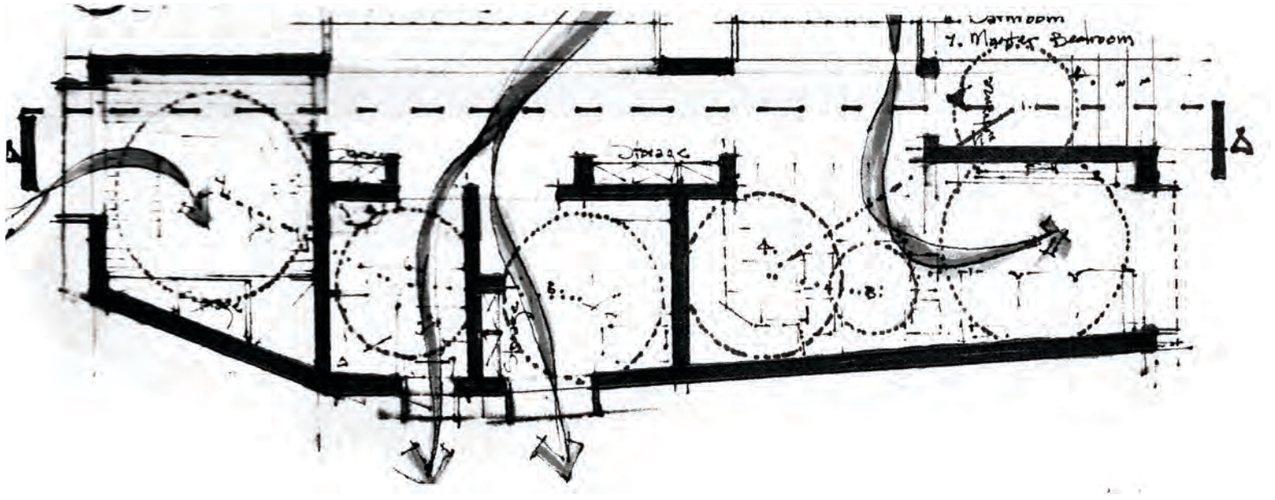
DESIGN DEVELOPMENT - Preliminary Sketches



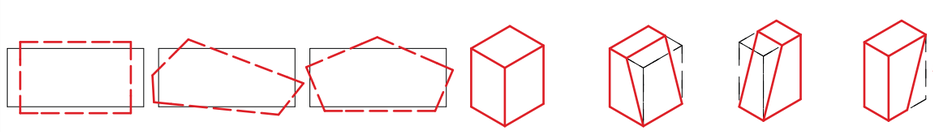






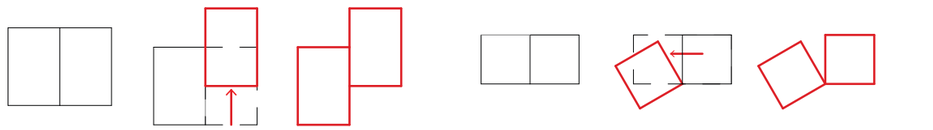


DESIGN DEVELOPMENT - diagrams



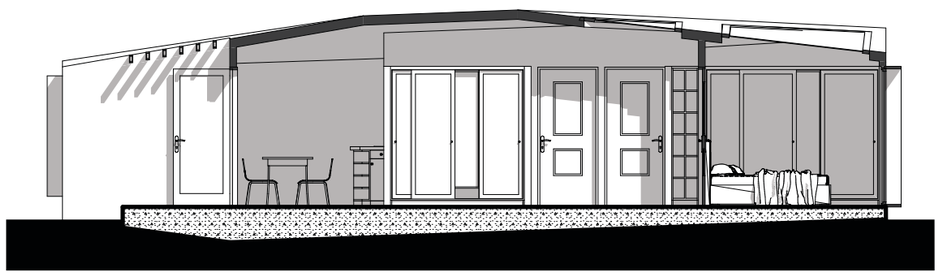
UNIT: Plan - Basic - Complex

UNIT: Form - Subtruct - Shear

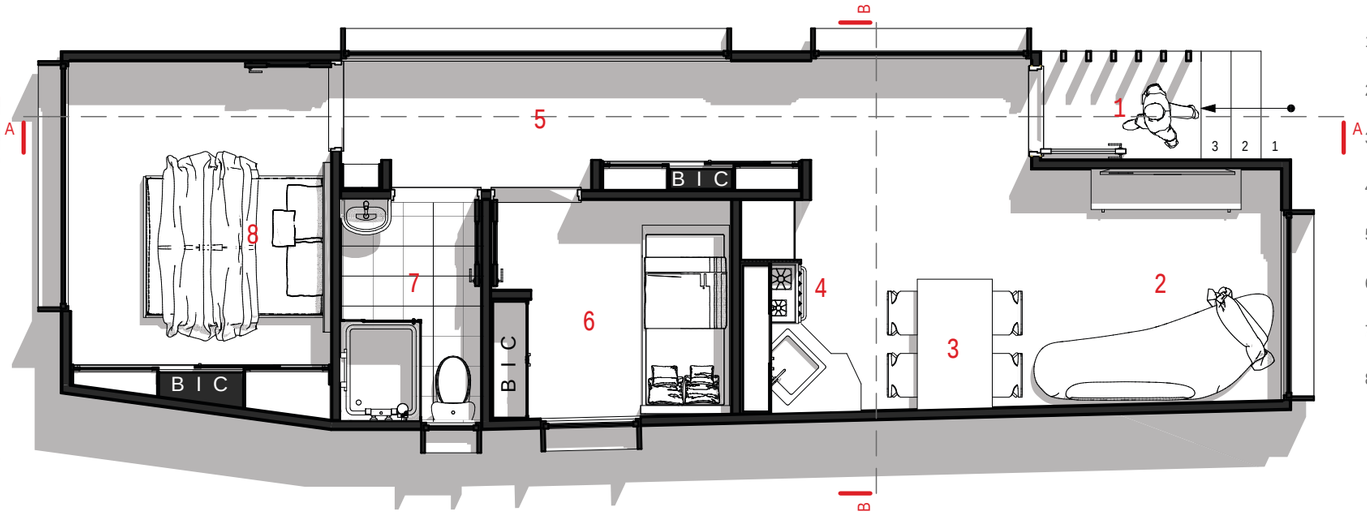


MULTIPLE: Form - Basic - Shift

MULTIPLE: Form - Basic - Rotation



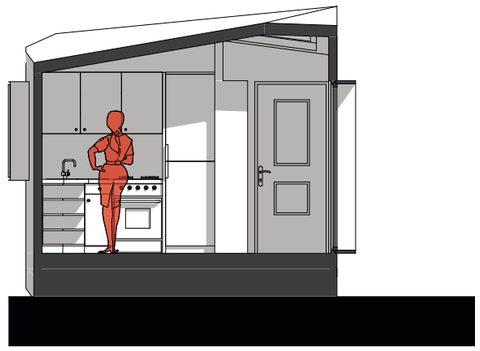
RESPONCE TO CONTEXT



1. Entrance Porch
2. Living Area
3. Eating Area
4. Kitchenette
5. Circulation
6. Bedroom
7. Bathroom
8. Master Bedroom

Plan Layout - Space Arrangement

Section A - A



Section B - B

North Elevation

CONSTRUCTION SCHEME - Eco Beams and sand bag walls

WHY BUILD WITH SAND BAGS?

With sandbags you can build better quality houses for less money by using absolutely ecologically sound and natural materials. It is impossible to say generally how many percent you save compared to a conventional house. Too many different factors influence the impact of the sandbag system, like climate, standard of interior work and labour costs. The low-cost housing can save more than 40% by applying all Ecobag features. However, you will have a better quality and more ecological house for the same price as for a conventional one.

Ecological Reasons

In contrary to most other building materials, there is no need to process the sand. There is no energy consumption for burning bricks or producing cement. The energy required for making the polypropylene bags can be neglected as the bags are very thin and contain the smallest amount of materials.

Superior Material Qualities

The Ecobag System exhibits tremendous thermal stability. The occupants will be kept cool in summer and warm in winter, due to a high thermal mass. Millions of small air spaces between the grains of sand are responsible for comparatively good thermal insulation.

Simplicity of Construction

The construction technique can be learnt easily within a few days by people without experience in the building trade. A regular „builder" would pick it up immediately. The relatively small sandbags weight only 7 kg and the Ecobeams are also very light in weight and can be handled easily by one person in all phases of the construction.

DETAILS

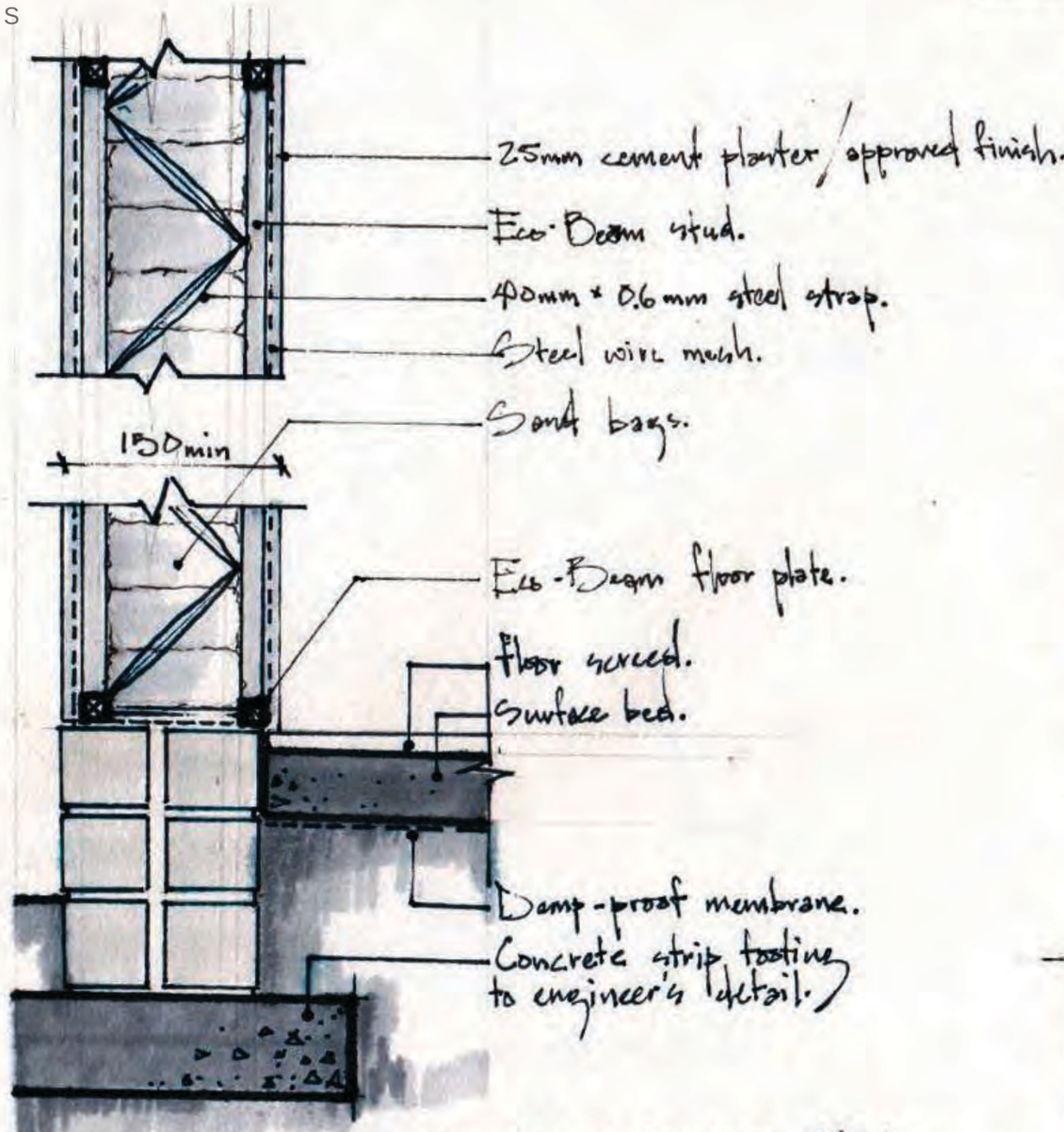


FIGURE 1: TYPICAL SECTION - FOUNDATION TO WALL

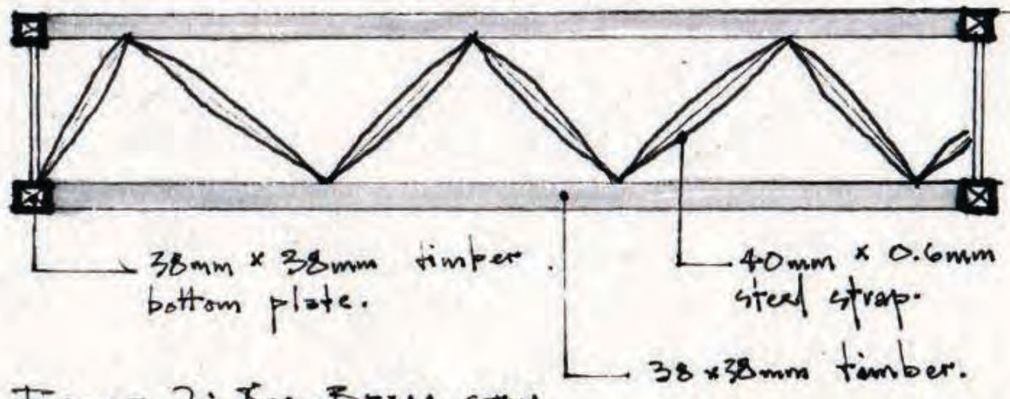


FIGURE 2: ECO-BEAM STUD.

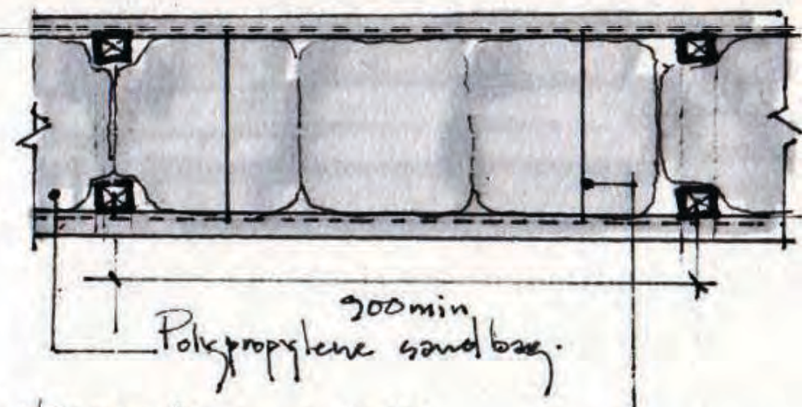


FIGURE 3. WALL PLAN

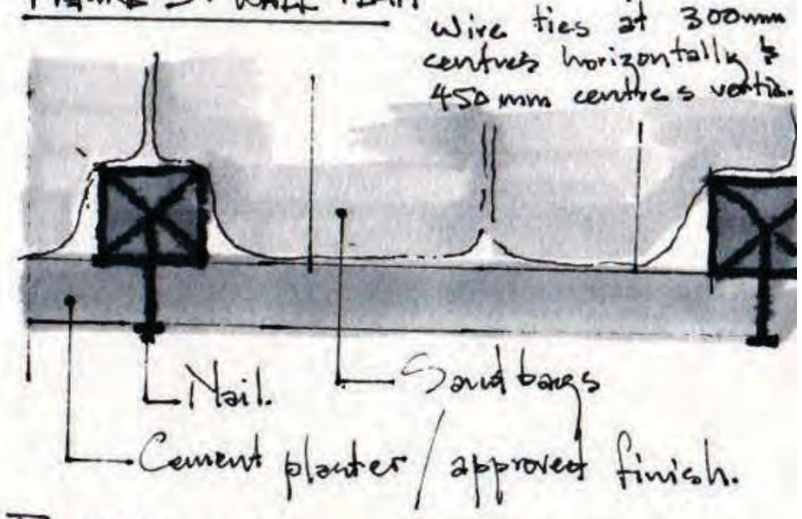


FIGURE 4. STUD TO FINISH DETAIL.

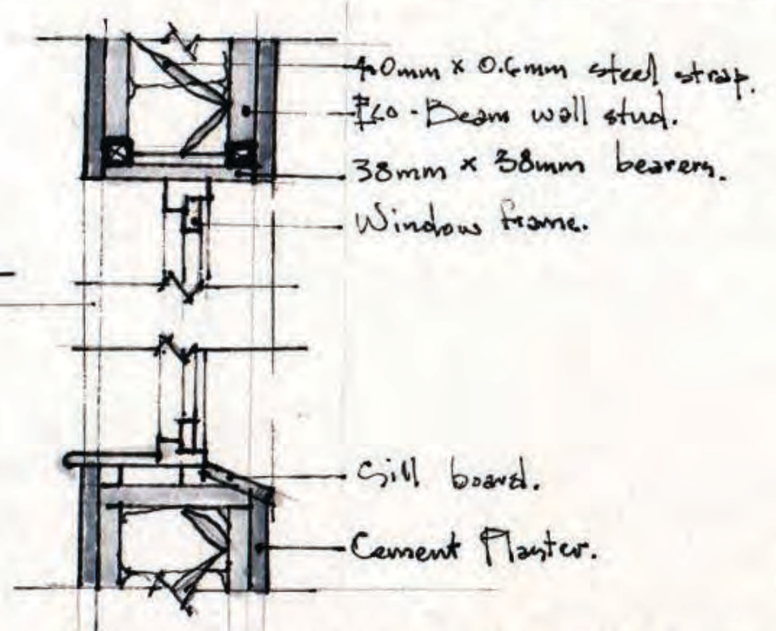


FIGURE 5. WINDOW FRAME DETAIL.

AFFORDABLE HOUSING
COST

No.	Item	Materials	Qty.	Price
1	Eco - Beams	38mm x 38mm x 6m timber	60	M3 060. 00
		40mm x 0.6mm x 30m steel strap ROLL	3	M 500. 00
2	Wire Mesh	Steel Square Weave Wire Mesh /m^2	104.5m^2	M1 567.50
3	Concrete	Coarse Sand	6m^3 (Truck)	M 800.00
		Fine Sand	35m^3 (5 Trucks)	M4 000.00
		Cement	30 bags	M2 280.00
		Crushed Stone	6m^3 (Truck)	M1 500.00
4	Timber	Gypsum Plaster Board	104.5m^2	M1 768.00
		38mm x 114mm x 6m	52m^2	M1 240.00
5	Sandbags	Bread Flour Bags	N/A	Donation
6	Water	N/A	N/A	Donation

NOTE:
No Labour Cost Included
No Furniture Cost Included

Total M13 115.50