



ECOBUILDERS
BUILDING WITH NATURE

**SANDBAG BUILDING
DISCLOSURE DOCUMENT**

FEBRUARY 2019

HISTORY	3
SANDBAG CONSTRUCTION	4
VISION	5
BENEFITS	6
BUILDING SCHEDULE	8
BUILDING COST	10
EXAMPLES OF COMPLETED ECOBUILD STRUCTURES	20
SANDBAG BUILDING AWARDS & VIDEO LINKS	24
ENDORSEMENTS	25
SANDBAG BUILDING LOCATIONS	28
ECOBAGS	31
LICENCE AREAS	33
COMPANY PROFILE	35
SANDBAG BUILDING LICENCEE PURCHASE PRICE	37
FAQ's	39
CONTACT	43

Sand has been the most widely used construction material for at least 10 000 years and even today at least a third of the world's population live in houses built out of sand.

With the high and increasing cost of modern construction materials, many people are beginning to explore ways of achieving cheaper construction techniques. Hence the use of our sand, the most ancient and ubiquitous of building materials.

Since the industrial revolution, fossil fuels have made possible most of the construction in developed countries, meaning that they have overcome the limitations of human labour. This has been at enormous cost in terms of pollution and carbon emissions, massive overconsumption of resources and an increase in unemployment.

People in industrialised countries are rapidly realising that the days of cheap energy and gross wastefulness are numbered. The quest for low cost, healthy, non-polluting, low energy building materials and techniques is gaining momentum and sand is being re-discovered as being a very suitable building material as opposed to concrete, steel and glass.

The idea of making walls by stacking bags of sand on top of each other has been around for at least a century. Its history in military use and flood control have made the idea of sandbags being used to build temporary structures. Using sandbags to actually build houses or permanent structures has been a relatively new innovation.

" SandBag construction offers high levels of insulation, strength, consistency and simplicity while remaining cost effective "

Since sandbag walls are so substantial, they resist all kinds of severe weather and also stand up to natural calamities such as earthquakes (Nepal 2015) and floods (Mozambique 2000). They can be erected simply and quickly with readily available building material. And most importantly, it is affordable.

SandBag building fills a unique niche in the quest for sustainable architecture. The bags can be filled with local, natural materials which lowers the embodied energy commonly associated with the manufacture and transportation of building materials.

The fill material is generally of mineral composition and is not subject to decomposition (even when damp), attractive to vermin, or flammable. In other words it is extremely durable. The fill material is generally completely non-toxic and will not offset noxious fumes into the building.

SandBag construction offers a tremendous advantage of providing either thermal mass or insulation, depending on what the bags are filled with. When filled with sand they provide thermal mass, but when filled with lighter weight materials such as crushed volcanic stone, perlite, vermiculite or rice hulls, they provide insulation. The bags can even act as natural non-wicking, somewhat insulated foundations when they are filled with gravel.

SandBag construction offers the potential to reduce the need for common tensile materials within a structure. This not only saves more energy, but also helps to save our forests which are increasingly necessary for sequestering carbon.

The ease and simplicity of building with sandbags should also be mentioned, since there is much unskilled labour available around the world that can be used for this building methodology. This not only makes the process more affordable, but also more feasible in remote areas where common building materials and skills are difficult to find.

In recent years a process has been put together whereby specially designed sandbags are placed within steel or timber framework. The framework is easy to erect but offers the benefit of helping with the stability of the entire structure. The framework offers no structural integrity - it is simply a guide for the placement and stacking of the bags. The framework is very useful in ensuring the bags maintain a straight edge during their packing process. Door and window frames are secured on this framework.

A sandbag wall offers superior benefits to that of conventional building materials such as brick or concrete blocks - particularly as a result of its resistance to damp and the superior thermal qualities as a result of its thermal mass.

SandBag construction is not dependant on any specific grid measurements. Any specific measurements that are required for wall thickness, size and height of the building or wall openings can be achieved with some slight modifications to the bag size and framework.

The average **delivered** price of a clay brick is R 1.80. For an exterior wall a total of 110 bricks would be required per m². The total cost of the bricks per sq/m therefore is R 198

The **delivered** cost of M190 concrete hollow blocks works out at R 211 per m².

The cost of a filled sandbag, assuming that you have bought sand for R 200 per m³, and a labour cost R 1.81 per bag will cost R 153 per m². This is already 22% cheaper than bricks and 27% cheaper than M190 hollow concrete blocks. Accept the fact that there is a more costly process and labour component to the laying of bricks and hollow blocks vs sandbags - and that cost difference begins to exceed 35%.

"SandBag construction is an eco-friendly, job creating, sustainable alternative method of construction "

Naturally, if sand was available at the source of the building site, then the cost of the sandbag building material drops the cost of the filled sandbag to R 97 per m². This is 51% cheaper than the cost of bricks and 54% cheaper than the cost of M190 hollow concrete blocks.

Conventional bricklayers will lay 600 bricks on average per day. This means that an area of less than 5m² is built per day (assuming a double skinned external wall is being built). Similarly, one should expect 250 x M190 hollow blocks to be laid in a day, which would result in the completion of 18m² per day.

By contrast, 900 sandbags can be laid in a single day, which equates to an area of 25m² - making it five times faster than a brick wall and 20% faster than a hollow brick wall.

However, a better quality and more ecologically friendly house would have been secured for a lesser price than a conventional one. If time is money, then sandbag construction offers the advantage of a very rapid construction rate. It also provides a monolithic high weight construction without bringing moisture into the building structure. If cladding is to be used instead of plasterwork, then the structure would be completed in even less time.

The EcoBuilders SandBag building method is relatively new, but its future is extremely bright. It has the potential to reform the green construction market. It is environmentally, economically and socially sustainable. It is a low impact system on the environment, affordable and most importantly, job creating.

As can be seen from the numerous photographs in this presentation, there are many opportunities for SandBag construction. It can be used for the construction of houses, lodges, garages, store-rooms, clinics and a whole lot more. In our opinion, it would be far better to focus on a different angle when it comes to SandBag construction. It really would be discouraging for SandBag Building licencees find themselves in a positive space, we believe it is vitally important that they focus on the merits of SandBag Building and create a unique niche market. Separate themselves from conventional construction and create their own unique space to market themselves in.

Consider the fact that it is entirely possible to build a small house without using any water for the wall construction. So many parts of South Africa are dealing with issues pertaining to drought and no doubt this is a significant feature to focus your selling efforts on in many parts of the country - right ?

By using a cladding material of steel sheeting, fibre cement boards or better still, magna-boards it would be quite possible to build a small house, a granny cottage or something similar using these materials. Not only would that structure use less water, it would also be put up a lot faster and as a result - cost a lot less to build.

In order that this style become a success it would be necessary to only offer a limited number of designs allowing people to make their choices immediately, because the price would be known to them upfront. Approaching the market with pre-determined designs and price will produce positive enquiries from the consumer - especially given the fact that these structures can be built a lot faster and at less cost.

Naturally, the SandBag walls can be plastered over with a render of conventional plasterwork or lime, but the process mentioned above is much faster and requires a less costly labour process.

" SandBag Building is of great interest to the consumer, and has virtually no opposition, it has the opportunity to produce a great business "

The boards could be supplied pre-cut and this will mean less waste on site as well as helping to produce a faster construction process. These structures could also be supplied with pre-cut PVC ceilings, which will also help produce less cost as a result of less wastage and a faster process.

Having a set of pre-determined designs allows you to prepare a small building business capable of completing at least five structures per month. And that principle allows you to earn a minimum of R 1,5 million in profit within the first year of trading.

By selling the thermal and acoustic benefits of the system along with its opportunities for employment in terms of sewing bags and the manufacturing of the framework, means that various social core companies such as *Vodacom, MTN, Virgin, Pick 'n Pay, Checkers, FNB, SAB, Transnet, Eskom, Sasol, Shoprite* or similar to sponsor your bags for you. The client gets their logo applied to the bags and you get your bags for free. Win-Win !!

Alternatively, if you would approach a sugar mill closest to you and take their bag-ash waste, or the waste from the various mines from around the country - you would have now received your building material for free. Once again - Win-Win !!

All around there are so many opportunities for SandBag Construction. Whether it be the creation of employment, social up-liftment or the simple building of improved structures for profit ensuring that the licencees of SandBag construction and their stakeholders, each receive an improved economic future.

BENEFITS

The advantages of this construction system is that it is environmentally, economically and socially sustainable. It is a low impact system on the environment, low cost and job creating.

- | | |
|------------------------|--|
| TRANSPORT | <ul style="list-style-type: none">• the light weight of the main building material - the sandbag - is easy to transport to the building site• construction can take place at locations where road access is not provided. This reduces the damage and congestion by heavy trucks which carry bricks and cement• sand can be found almost everywhere around the world, in some regions even directly on the construction site. As there is no need for centralised processing you very little transportation of materials is required. The sand makes up 98% if the weight of the walls materials |
| EMBEDDED ENERGY | <ul style="list-style-type: none">• the carbon footprint of this building system is much lower than when conventional materials (cement, clay bricks and steel) are used, each which have enormous embedded energy and hence carbon footprint. The carbon dioxide emission of a single m² sandbag wall drops by 96% compared to a conventional brick wall• sandbag building is 100% recyclable and environmentally friendly• sandbag buildings are naturally insulated and are therefore cooler in summer |

" SandBag construction produces a quality house, without laying a brick and it can cost considerably less "

- | | |
|-------------------------|--|
| FILL MATERIAL | <ul style="list-style-type: none">• local site sourced fill material is used to fill the EcoBags. This dramatically reduces fossil fuel use and transport costs to the site. It also means environmental damage from quarrying is eliminated. |
| WATER | <ul style="list-style-type: none">• the building system does not require the use of mortar between the bags, therefore less water can be used• it is quite possible to build an entire house by placing the bags within the framework and cladding both the interior and exterior with suitable materials. In these types of applications, no water is required |
| TIMBER | <ul style="list-style-type: none">• though theoretically a sustainable resource, wood is becoming increasingly expensive which opens the opportunity for steel framework to be considered instead |
| WASTE PRODUCTION | <ul style="list-style-type: none">• on-site waste generation is almost eliminated - such as timber off-cuts and other resources. Landfills are not part of the Sandbag Building Systems requirement• no bricks lie around the site before, during or after completion, thus eliminating theft, which is a major cost factor on any building site |
| INSULATION | <ul style="list-style-type: none">• the excellent thermal insulation of a sandbag wall results in drastically reduced heating and cooling costs over the life of the building, especially when combined with appropriate passive thermal design |

BENEFITS

LONGEVITY

- appropriately designed structures constructed with sand will outlast conventional construction, making it a highly sustainable construction system, saving on resources and reducing waste

REDUCE, REUSE, RECYCLE

- the sandbag building system epitomises a low environmental impact system. Not only is the use of resources reduced, but the material from which the bags are made are easily recyclable. The raw material from which the EcoBag is made is a by-product of the refining of crude oil into petroleum

STRENGTH

- sandbag construction is much heavier than brick construction, which makes it very strong and able to withstand adverse weather conditions
- sandbag construction has been proven to withstand cyclonic conditions in Mozambique
- sandbag construction has proven to withstand an earthquake in Nepal
- the walls of a sandbag house are bullet proof
- the wet bags behind the plaster enable the plasterwork to cure instead of merely drying. The end result is a very hard and reinforced cement finish

WATERPROOF

- the sandbag building system resists water penetration due to the fact that the sand in the bags is a filter medium - any water penetrating the plaster will simply filter down to the damp-course and exit the wall to the outside

ELECTRICITY

- no electricity is required on a sandbag building site

EMPLOYMENT

- numerous employment opportunities can be created for the sandbag construction system
- the material can be supplied pre-cut ready for sewing, allowing for seamstresses to become employed sewing bags
- employment can be created for the fabricators of the steel/wooden framework
- the filling of bags with sand creates employment for at least four people per building site
- the stacking of bags on the wall of a structure can be done by people who have very little construction experience in the building trade
- all members of the community can get involved, thereby creating a sense of ownership, belonging and contribution among the participants

COST

- depending on how the construction site is set up, the sandbag construction rate can be done very quickly, which will assist in the project's cost reduction
- the average bricklayer lays around 600 bricks per day. On an external double skin wall, this equates to 4.86m² per day. By contrast 900 EcoBags can be laid per day, which equates to an area of 25m² per day, making it 5 times faster in terms of vertical wall coverage
- the structure will cost less to maintain over its lifespan as a result of the structure being impervious to the main problem of conventional construction - rising damp

BUILDING SCHEDULE

All too often builders are multi-disciplined on a construction site. The same builder that lays the bricks is very often the same person who installs the windows, the roof, the doors etc.

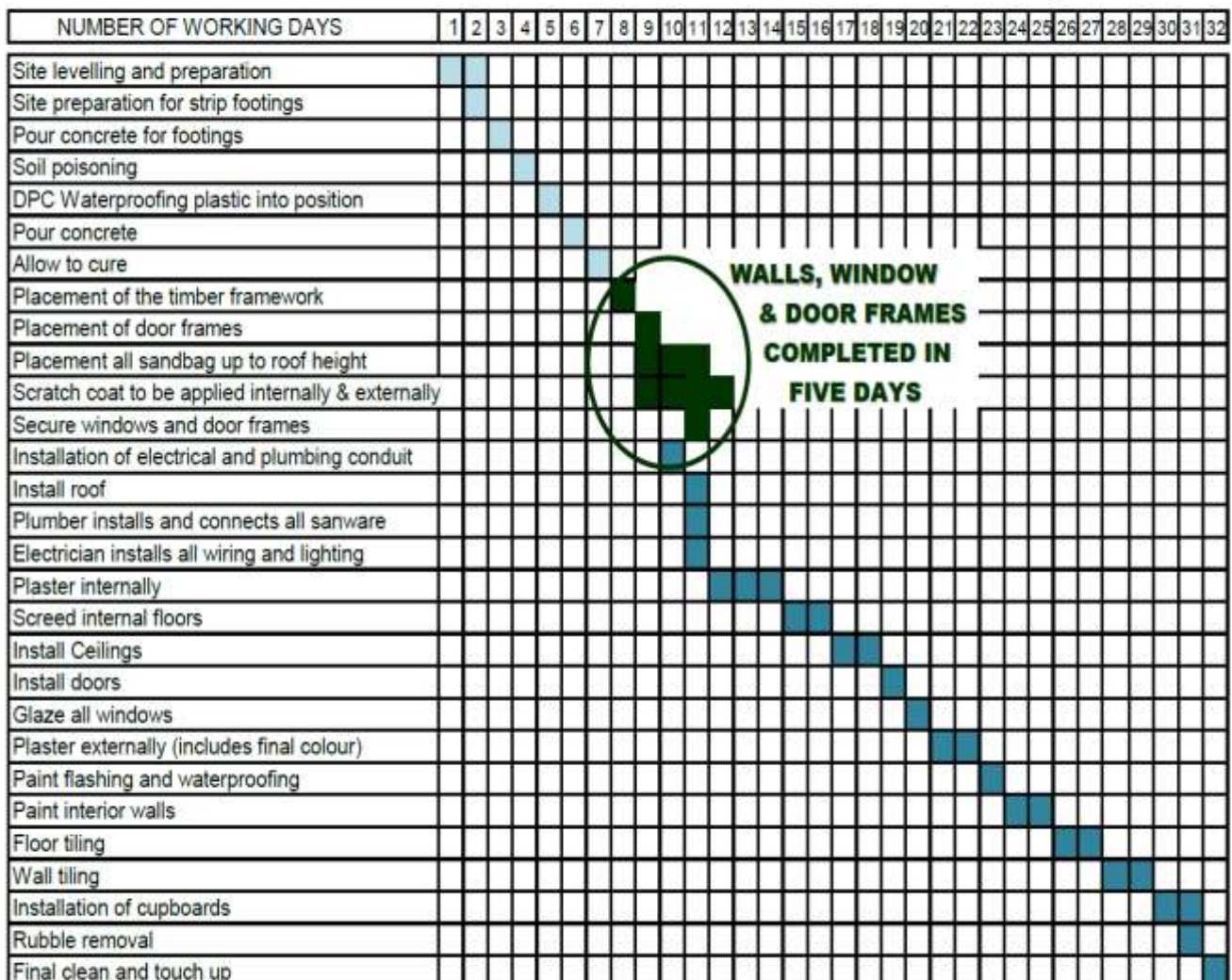
In order for cost savings to be achieved on any site, it is important to nominate specific duties for the building team. There should be a specific team responsible for the erection of the framework, a specific team responsible for the laying of the bags and a specific team responsible for the filling of the bags.

This relates specifically to a quantitative construction process. The repetitive nature of each of these tasks brings speed into each process. And if each of these processes can be speeded up, then the cost of the project will come down.

Not only does this expedite the construction process of the project (and it's resultant costs), it also skills people in the particular tasks that they do. As they become more and more skilled at their repetitive tasks - so does their speed as a result of the skill.

With all the contractors becoming skilled within their particular process, the entire project is able to be completed with an earlier time frame - which in turn brings attention to the building contractor as a result of earlier completion of the construction project. Depending on how the project is managed, the walls of a 40m² building project can be completed within three days.

ECOBUILDERS BUILDING TIMELINE - 46 sqm





**SAVE
YOUR RANDS
BUILD
WITH SAND**



*advertorial

INVEST IN A **GREEN HOME**

Sand has been the most widely used construction material for the last 10 000 years. After 20 years in the Western Cape, sandbag building is now available in KwaZulu-Natal, offering you the opportunity to build a home that is healthier – free of mould, dampness, condensation and cold.

The combination of sandbags and a light beam structure can be seen as a modified timber frame house. Once the roof is in place and the building is plastered, the structure looks and feels like a plastered brick structure. Any room size or floor-to-ceiling height can be achieved. This flexibility is just one of the many advantages that makes this building technology perfectly suited to any project.

Significantly, the cost is far less than conventional building and build time is halved. For example, an average three-bedroom 150m² simplex could be completed in one month at an all-inclusive cost of R3 300/m².

Even more impressive is the structure itself, which is eco-friendly and superior to a conventional brick wall in many ways. A sandbag structure offers a lot more mass and

"The bottom line is that with the sandbag building system, better quality buildings can be built for less money using ecologically sound materials"

Sandbag building offers you the opportunity to build an energy-efficient home – faster, inexpensively and with greater flexibility

is, therefore, impervious to the weather, eradicating waterproofing issues. It is acoustically superior to a standard structure and offers enormous thermal benefits, meaning you'll feel warmer in winter and cooler in summer.

If you are planning to build a new home, take advantage of the new technology available to make your life a lot more comfortable, quiet and secure.

This use of affordable materials has been proven over and over again, and the original budget pays for itself in reduced energy and thermal costs. Plus, the energy-efficient home you build today will earn you higher resale value as more and more potential buyers look for homes with lower electricity demand. You can't miss that tangible feeling of solid quality that says: "This is a home worth living in!"

Ambidex Homes save you energy, save you money and are healthier for you to live in. Help towards creating a healthier future by investing in an energy-conscious and thermally efficient home today. *

We'd love to talk to you about how our products can help you improve the way that you live, so give us a call. Contact Ambidex Projects to find out more:

☎ Andy Strydom 083 445 5123

✉ ecobuild@tiscali.co.za 🌐 www.ecobuilders.co.za

JUNE / JULY 2012

13

BUILDING COST

When it comes to building cost, the most common question asked is "What is the m² cost of building" ? This is a total misnomer and is something that stems from rural house contractors or inexperienced developers selling plot and plan telling prospective clients that the cost of building is x/m².

A cost per square metre can only be a very rough estimate when based on the same ingredients in the mix as well as the same configuration on plan and position, of a structure already built.

To illustrate the misnomer of a cost per square metre question consider the following :



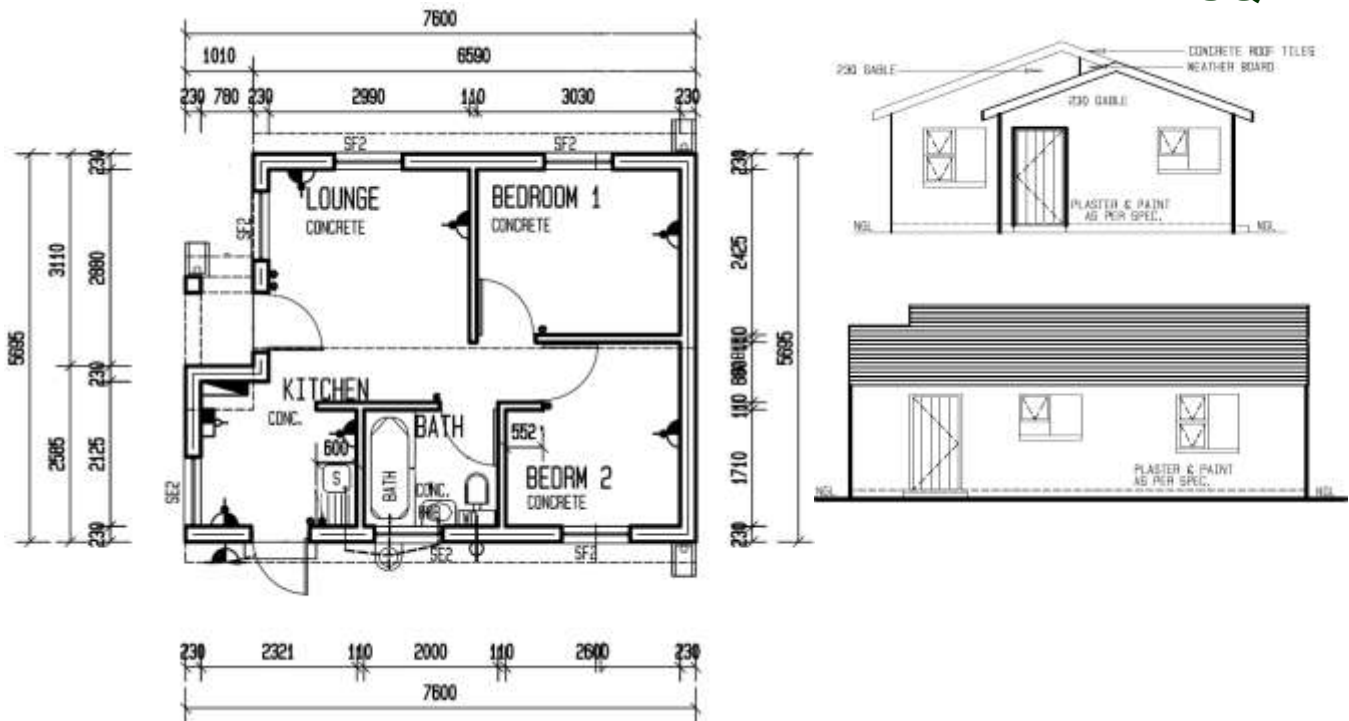
" The average building cost increased by 6.5% in 2018 to R 7437 per square metre "

ABSA Property Analyst - Jacques du Toit

Both of the above houses occupy a floor area of exactly 75m², and yet it is quite clear that House B will without doubt cost more to build than House A. Similarly, in another situation one structure may measure 10m x 10m while the other measures 20m x 5m. Once again, both are the same in terms of square meterage floor area, but one will cost more than the other to build.

The configuration of the walls and the specifications of the build determine the price of the basic construction element. Every one of the items mentioned hereunder have a specific influence on the final price;

- the cost of materials in the area where the structure is being built
- the type of soil will determine the type of foundation required
- whether the soil is flat or sloped
- the number and size of the windows required for the structure
- the roofing layout
- the type of roofing material that will be used
- the number of doors required within the structure
- the configuration of the electrical layout
- the size of geyser to be installed
- the specification of the sanitary-ware
- the specification regarding cupboards and tiling
- the specification of the flooring
- municipal connections of services
- type and configuration of the roof trusses being used
- false ceiling specification



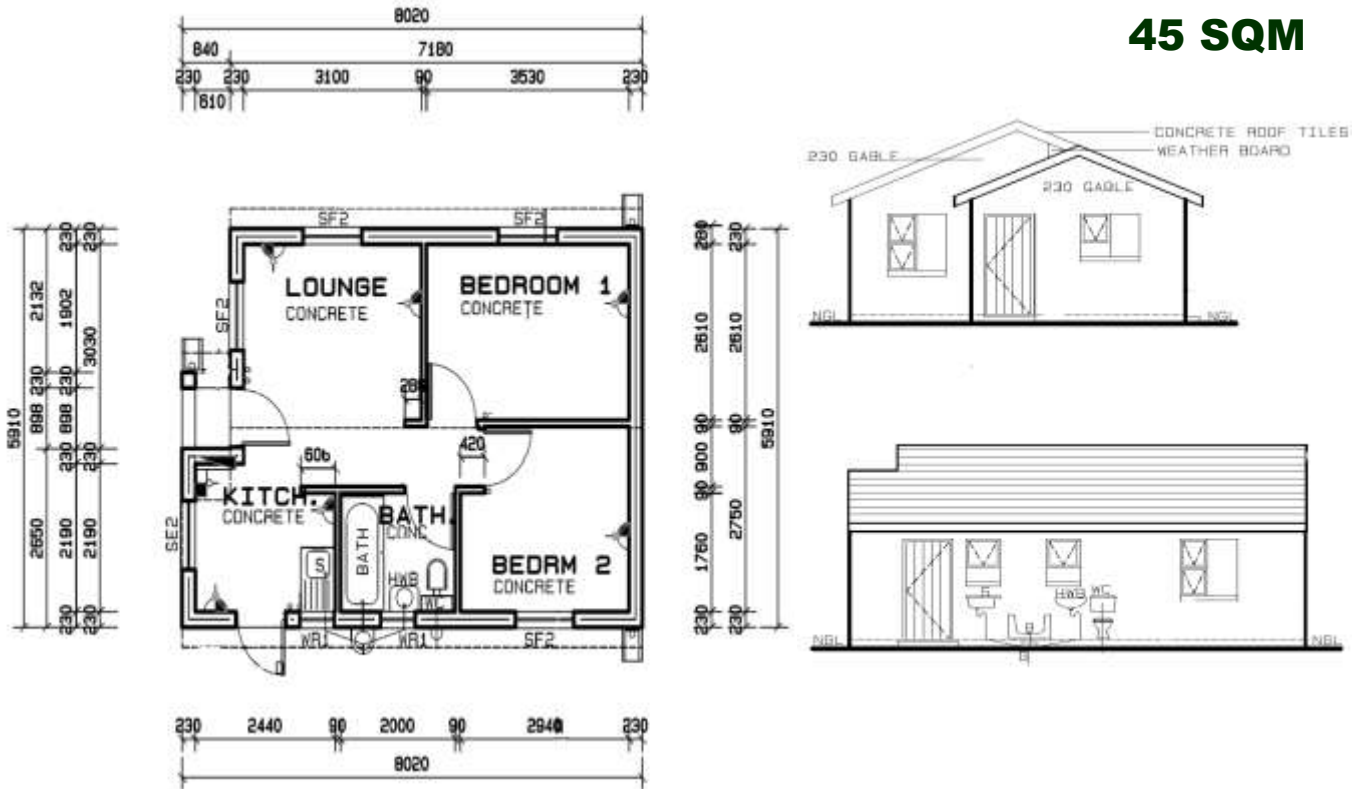
Soil Poisoning	R	10 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 3600 including courier cost	R	207 m ²
Supply of sand and filling of the bags	R	178 m ²
Laying of the bags @ 600 bags per day per labourer	R	65 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	96 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	78 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	35 m ²
Erection of timber framework on site	R	22 m ²
Steel window frame & glass	R	185 m ²
Steel door frames & timber doors	R	169 m ²
23.02 metres x 180mm ring beam	R	197 m ²
Plastering the wall surface area of 198.775m ²	R	520 m ²
Steel roof truss & concrete tiles	R	352 m ²
Electrical includes geyser	R	226 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	238 m ²
Floor tiling (tiled throughout the house)	R	150 m ²
Painting (includes undercoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 458 m ²

This house could be built for R 145 236

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 129 066 (R 3 073m²)

BUILDING COST

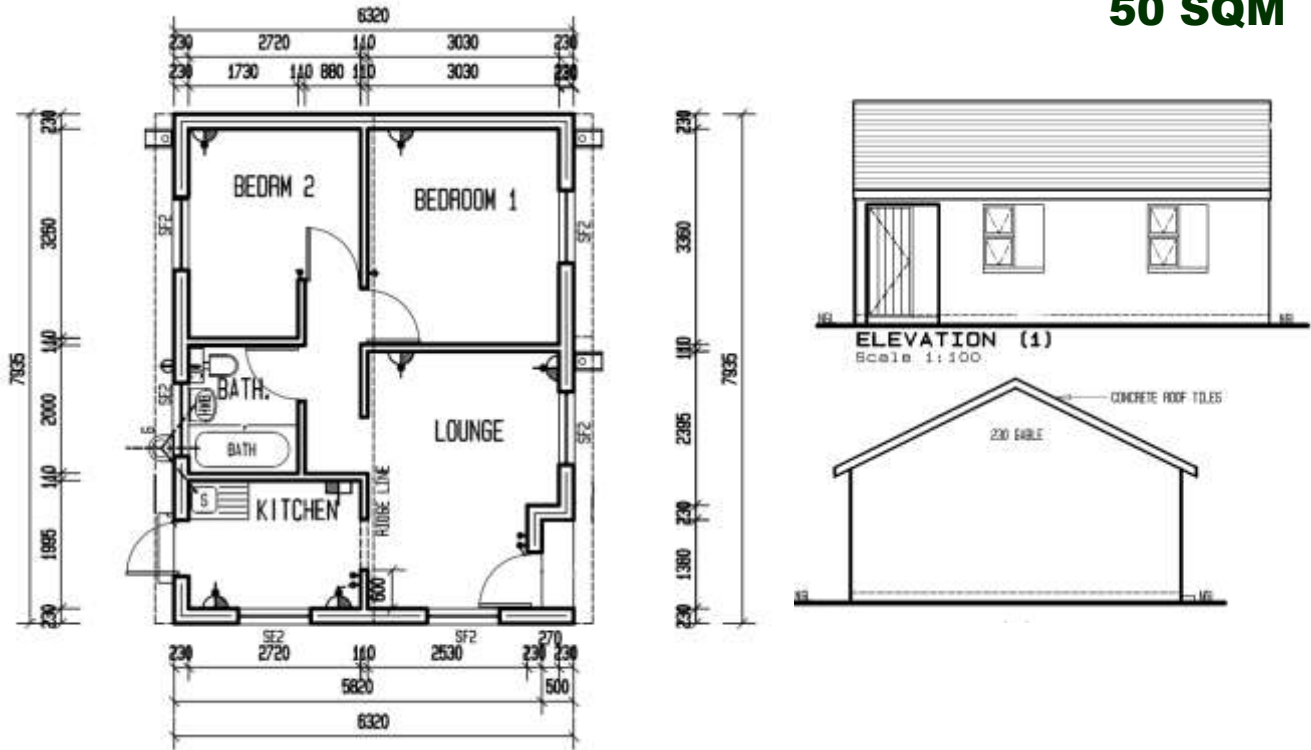
45 SQM



Soil Poisoning	R	10 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 4000 including courier cost	R	211 m ²
Supply of sand and filling of the bags	R	165 m ²
Laying of the bags @ 600 bags per day per labourer	R	64 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	94 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	76 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	34 m ²
Erection of timber framework on site	R	22 m ²
Steel window frame & glass	R	173 m ²
Steel door frames & timber doors	R	159 m ²
27.37 metres x 180mm ring beam	R	219 m ²
Plastering the wall surface area of 208.116 m ²	R	508 m ²
Steel roof truss & concrete tiles	R	352 m ²
Electrical includes geyser	R	226 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	238 m ²
Floor tiling (tiled throughout the house)	R	150 m ²
Painting (includes undercoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 431 m ²

This house could be built for R 154 395

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 137 475 (R 3 055m²)

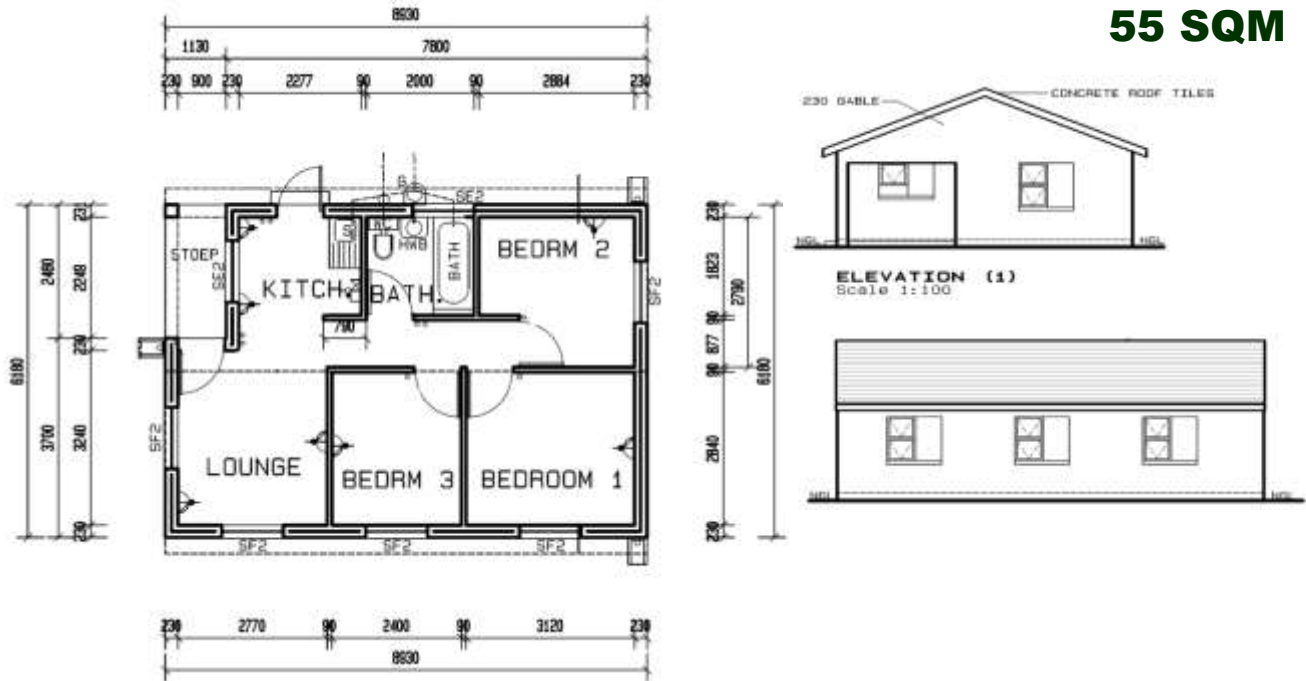


Soil Poisoning	R	12 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 4300 including courier cost	R	210 m ²
Supply of sand and filling of the bags	R	175 m ²
Laying of the bags @ 600 bags per day per labourer	R	65 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	95 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	75 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	34 m ²
Erection of timber framework on site	R	22 m ²
Steel window frame & glass	R	155 m ²
Steel door frames & timber doors	R	143 m ²
28.551 metres x 180mm ring beam	R	205 m ²
Plastering the wall surface area of 239.091 m ²	R	502 m ²
Steel roof truss & concrete tiles	R	330 m ²
Electrical includes geyser	R	240 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	280 m ²
Floor tiling (tiled throughout the house)	R	170 m ²
Painting (includes undercoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 443 m ²

This house could be built for R 172 150

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 152 900 (R 3 058m²)

55 SQM



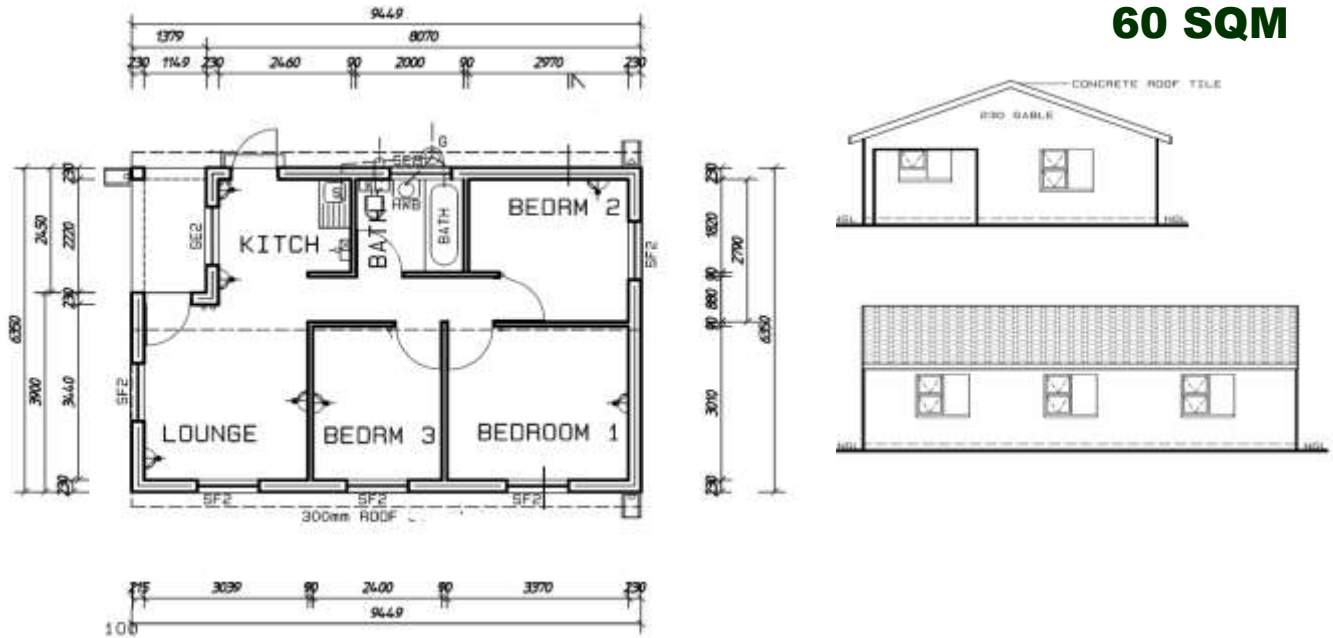
Soil Poisoning	R	12 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 4100 including courier cost	R	175 m ²
Supply of sand and filling of the bags	R	165 m ²
Laying of the bags @ 600 bags per day per labourer	R	65 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	96 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	74 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	34 m ²
Erection of timber framework on site	R	22 m ²
Steel window frame & glass	R	124 m ²
Steel door frames & timber doors	R	168 m ²
31.35 metres x 180mm ring beam	R	204 m ²
Plastering the wall surface area of 229.3704 m ²	R	437 m ²
Steel roof truss & concrete tiles	R	321 m ²
Electrical includes geyser	R	240 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	280 m ²
Floor tiling (tiled throughout the house)	R	170 m ²
Painting (includes undercoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 317 m ²

This house could be built for R 182 105

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 163 405 (R 2 971m²)

BUILDING COST

60 SQM



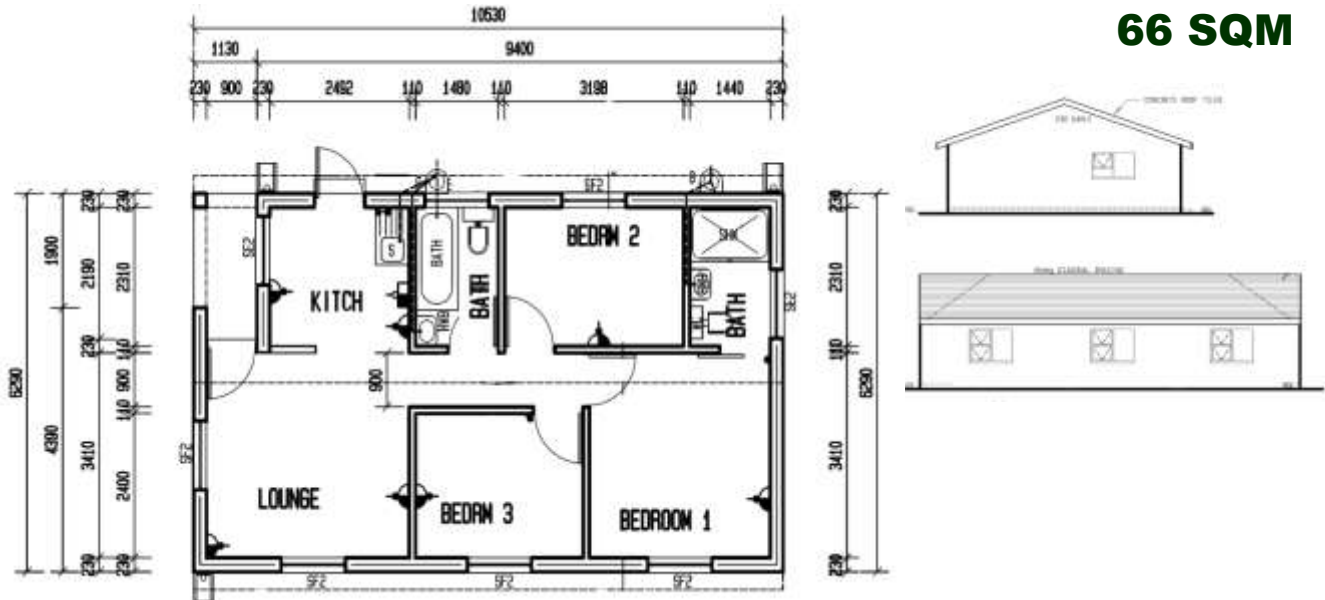
Soil Poisoning	R	12 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 4800 including courier cost	R	189 m ²
Supply of sand and filling of the bags	R	152 m ²
Laying of the bags @ 600 bags per day per labourer	R	65 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	95 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	75 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	34 m ²
Erection of timber framework on site	R	22 m ²
Steel window frame & glass	R	155 m ²
Steel door frames & timber doors	R	138 m ²
32.977 metres x 180mm ring beam	R	197 m ²
Plastering the wall surface area of 262.8798 m ²	R	460 m ²
Steel roof truss & concrete tiles	R	311 m ²
Electrical includes geyser	R	250 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	290 m ²
Floor tiling (tiled throughout the house)	R	180 m ²
Painting (includes underscoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 355 m ²

This house could be built for R 201 300

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 161 160 (R 2 686m²)

BUILDING COST

66 SQM



Soil Poisoning	R	12 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 5200 including courier cost	R	188 m ²
Supply of sand and filling of the bags	R	165 m ²
Laying of the bags @ 600 bags per day per labourer	R	66 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	96 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	78 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	38 m ²
Erection of timber framework on site	R	24 m ²
Steel window frame & glass	R	119 m ²
Steel door frames & timber doors	R	152 m ²
34.77 metres x 180mm ring beam	R	190 m ²
Plastering the wall surface area of 290.3532 m ²	R	462 m ²
Steel roof truss & concrete tiles	R	310 m ²
Electrical includes geyser	R	250 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	580 m ²
Floor tiling (tiled throughout the house)	R	180 m ²
Painting (includes underscoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 640 m ²

This house could be built for R 240 240

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 216 942 (R 3 287m²)

70 SQM

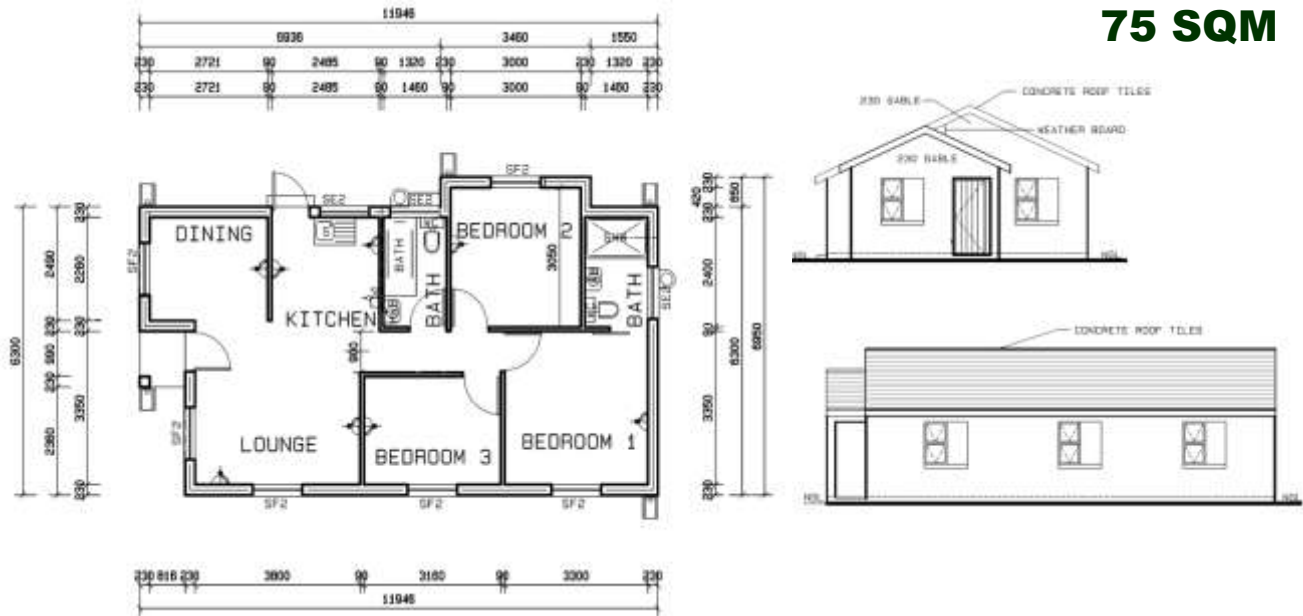


Soil Poisoning	R	12 m²
Raft Foundation @ R 480 m²	R	480 m²
Number of bags 5200 including courier cost	R	188 m²
Supply of sand and filling of the bags	R	165 m²
Laying of the bags @ 600 bags per day per labourer	R	66 m²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	96 m²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	78 m²
Manufacturing 50 timber frames per day with 2 labourers	R	38 m²
Erection of timber framework on site	R	28 m²
Steel window frame & glass	R	143 m²
Steel door frames & timber doors	R	134 m²
36.122 metres x 180mm ring beam	R	186 m²
Plastering the wall surface area of 288.4992 m²	R	434 m²
Steel roof truss & concrete tiles	R	331 m²
Electrical includes geyser	R	250 m²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	580 m²
Floor tiling (tiled throughout the house)	R	180 m²
Painting (includes underscoat & waterproofing)	R	90 m²
PVC Ceilings	R	160 m²
	R	3 639 m²

This house could be built for R 254 730

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 230 020 (R 3 286m²)

75 SQM

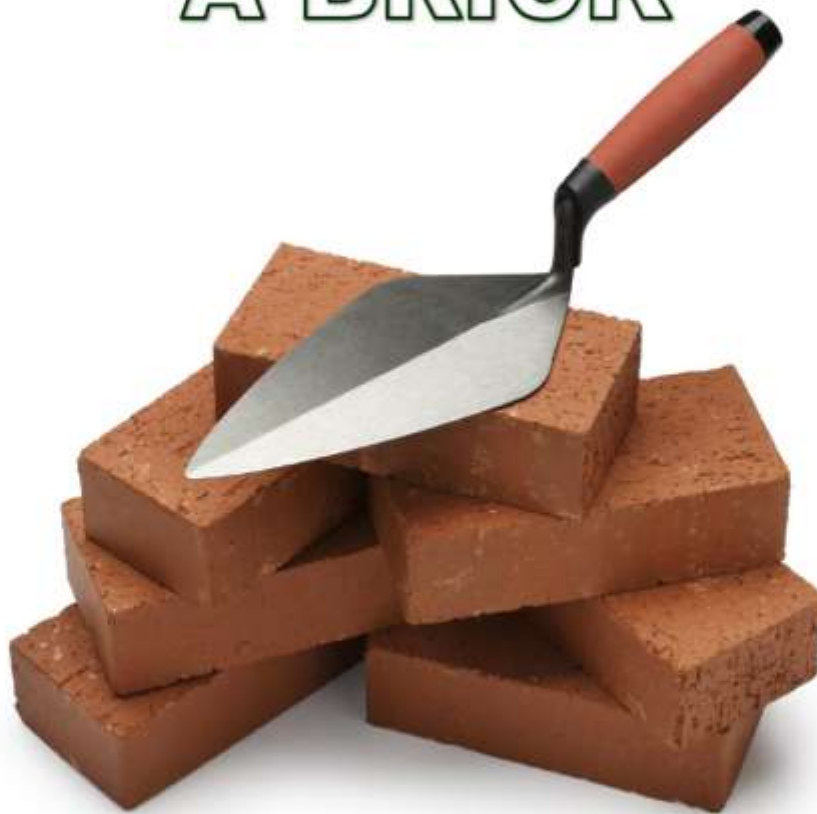


Soil Poisoning	R	12 m ²
Raft Foundation @ R 480 m ²	R	480 m ²
Number of bags 5700 including courier cost	R	192 m ²
Supply of sand and filling of the bags	R	165 m ²
Laying of the bags @ 600 bags per day per labourer	R	68 m ²
Timber battens 38mm x 38mm @ R 10 per linear metre	R	98 m ²
Spacers 159mm (L) x 114mm (H) @ R 30 p/linear metre	R	75 m ²
Manufacturing 50 timber frames per day with 2 labourers	R	38 m ²
Erection of timber framework on site	R	28 m ²
Steel window frame & glass	R	136 m ²
Steel door frames & timber doors	R	125 m ²
39.238 metres x 180mm ring beam	R	188 m ²
Plastering the wall surface area of 314.4492 m ²	R	440 m ²
Steel roof truss & concrete tiles	R	312 m ²
Electrical includes geyser	R	250 m ²
Plumbing (Shower, toilet, handwash + kitchen unit)	R	580 m ²
Floor tiling (tiled throughout the house)	R	180 m ²
Painting (includes underscoat & waterproofing)	R	90 m ²
PVC Ceilings	R	160 m ²
	R	3 617 m ²

This house could be built for R 271 275

Naturally, if the infill prices can be sourced cheaper, then this structure could be built for as low as R 244 500 (R 3 260m²)

TODAY YOU CAN
BUILD A
QUALITY HOUSE
WITHOUT LAYING
A BRICK



AND IT COSTS LESS



ECOBUILDERS
BUILDING WITH NATURE

EXAMPLES OF COMPLETED ECOBUILD STRUCTURES



STELLENBOSCH - 1994



WILDERNESS - 2012



MITCHELLS PLAIN LOW COST HOUSING - 2008



MANENBERG MUNICIPAL OFFICES - 2013



MTUNZINI - 2013



PLETTENBERG BAY - 2012



GREYTON - 2013

EXAMPLES OF COMPLETED ECOBUILD STRUCTURES



EXAMPLES OF COMPLETED ECOBUILD STRUCTURES



SAINT HELENA BAY - 2010



MONTAGU - 2015



OUDTSHOORN - 2015



BETTYS BAY - 2013



DESERT GRACE LODGE, NAMIBIA - 2018



KEEKOROK LODGE, MASAI MARA, KENYA



SERONDELA LODGE, NAMIBIA - 2017



MARA RIVER LODGE, KENYA - 2011

EXAMPLES OF COMPLETED ECOBUILD STRUCTURES

MHONDORO SAFARI LODGE, SOUTH AFRICA - 2012



BAKWENA LODGE, BOTSWANA - 2012



60 SANDBAG SCHOOLS, SUDAN - UNITED NATIONS 2010



SCHOOL IN CAPE TOWN - 2012



LOW COST HOUSE, PAARL - 2010



RICHARDS BAY - 2010



LOW COST HOUSE - NO WATER USED IN ITS CONSTRUCTION



LOW COST HOUSE, DUBAI - 2010



CURRY STONE AWARD

An International award for the construction of low cost housing in Mitchells Plain - Cape Town. The brief was to design and build a small low cost housing initiative with total cost not exceeding USD\$ 5 000 per unit. The result was a double storey unit of 26m² downstairs and the bedrooms upstairs occupying a space of 26m².

2008

GREEN STAR AWARD

The Manenberg Human Settlements offices built in Cape Town, was recognised by the Green Building Association with a 4 star green building rating

2013

GAIA AWARD

The Gaia award was issued to SandBag construction for best construction methodology. This award is issued by the owners of the biggest construction show in the world, BIG 5, held annually in Dubai.

**2014 &
2015**

<https://www.youtube.com/watch?v=V7ZtMVhZHVA>

<https://www.youtube.com/watch?v=uBDRZU9CeQI>

<https://www.youtube.com/watch?v=vcjyCcFiVUw&t=124s>

<https://www.youtube.com/watch?v=MQaubMObCio&t=129s>

<https://www.youtube.com/watch?v=jYZf7nTgaMU&t=147s>

<https://www.youtube.com/watch?v=ROIUffk0Mcc&t=65s>

<https://www.youtube.com/watch?v=jYZfnTgaMU&t=149s>

<https://www.youtube.com/watch?v=YvmxNkRSi0Q&t=122s>

<https://www.youtube.com/watch?v=OHlvKiWd14&t=52s>

<https://www.youtube.com/watch?v=jmUlfkr61W>

<https://www.youtube.com/watch?v=7V2G2-XyU84>



human settlements

Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA



GAUTENG PROVINCE

ECONOMIC DEVELOPMENT
REPUBLIC OF SOUTH AFRICA



social development

MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA



public works

Department:
Public Works
REPUBLIC OF SOUTH AFRICA



the dti

Department:
Trade and Industry
REPUBLIC OF SOUTH AFRICA





Agrément Certificate 2012/417

Copyright © Agrément
South Africa, February 2017

Subject:
Eco Build Sandbag Building System

Certificate holder:
Green Perspectives cc

P.O Box 71

La Lucia

4159

Telephone: 083 445 5123

Email: andy@ecobuilders.co.za

The master copy of this document appears on the website:

<http://www.agrement.co.za>

Validity

Users of any Agrément certificate should check its status: all currently valid certificates are listed on the website. In addition, check whether the certificate is [Active or Inactive](#).

The certificate holder is in possession of a confirmation certificate attesting to his status.



SANS 10400 *The application of the National Building Regulations*

Quick guide

Contents	page 4
Preamble	page 5
Conditions of certification	page 6
Assessment	page 8
Compliance with the National Building Regulations	page 8
Technical description	page 12
Drawings	page 17

P O Box 395 Pretoria 0001
Telephone 012 841 3708
Fax 012 841 2539
e-mail agrement@csir.co.za
<http://www.agrement.co.za/>

Use

The certificate covers the use of the Eco Build Sandbag Building System in all regions of South Africa for the erection of single-storey buildings for occupancy classifications set out below (**SANS 10400: Table 1 of Regulation A (20) (1)**):

- moderate and low-risk commercial service buildings (B2 and B3)
- offices (G1)
- domestic residence (H3) (*limited to home owner developer*)
- dwelling house (H4) (*limited to home owner developer*)
- moderate risk storage (J2)
- low risk storage (J3)

This certificate and Agrément South Africa's assessment apply only to Eco Build Sandbag Building System buildings that are designed and erected as described and illustrated in this certificate, and where the terms and conditions of certification are complied with.

Our Ref: Innov/Letters/Ecobuild

14 March 2017



MR A C STRYDOM
P O Box 71
La Lucia
4159

Dear Sir,

THE ECOBUILD SANDBAG BUILDING SYSTEM

The National Home Builders Registration Council acknowledges your Agrément certificate (#2012/417). This letter serves to confirm that (as per Part 2 Section 10 of the Home Building Manual) "Should a system or element have an active/current certificate of approval issued by Agrément South Africa, such a system or element may simply be submitted, together with a copy of the relevant Agrément Certificate(s) and duly completed certificates in Part 1 Section 3, Appendix C (C1)."

Upon enrolment please ensure you supply a copy of the full active certificate. And, in the case of a licensee, also provide a copy of 'confirmation of registration as licensee' from Agrément South Africa.

Yours Sincerely,

Jeffrey Mahachi (Pr.Eng, Pr.CPM)
Acting CEO - NHBRC

tel: +27-11-317 0074 | fax: 0866-378-792 (direct)
cell: +27-82-904-9569 | toll free: 0800 200 824 | email: jeffreym@nhbrc.org.za
Physical Address: Phase 4 Medscheme Building, 10 Muswell Road South, Bryanston

Cc Ms. L. Khumalo: Acting Manager - Technical
Mr. P. Byron: Structural Engineer

Phase 4, Medscheme Office Park, 10 Muswell Road South, Bryanston, Johannesburg, 2021 ☐ P O Box 461 Randburg 2125

Telephone +27-11-317-0000 ☐ Website www.nhbrc.org ☐ Docex 96, Randburg

• S. Mashinini (CEO) • Prof. Rev. V Mehana (Chairperson)

• D. Maja • S. Nene • S. De Goois • B. Mhlabeni • A. Golliger • N. Kuljeeth • S. P. Hlahane • M. Mkhize

LODGES & RESORTS

Desert Grace Lodge, Soussessvlei, Namibia

Rukiya Safari Camp, Wild Rivers Nature Reserve, Hoedspruit, Limpopo

Gocheganas Lodge, Windhoek, Namibia

Epacha Game Lodge, Epacha Private Game Reserve, Outjo, Namibia

Keekorok Lodge, Masai Mara National Reserve, Kenya

Mara River Lodge, Masai Mara National Reserve, Kenya

Serondela Lodge, Chobe National Park, Kabulabula, Namibia

Chobe Bakwena Lodge, Kasane, Botswana

Damaraland Sandbag Lodge, Torra Conservancy, Namibia

Dugong Lodge, Vilanculos Coastal Wildlife Sanctuary, Vilanculos, Mozambique

Chobe Safari Lodge, Kasane, Botswana

Mhondoro Safari Lodge, Welgevonden Game Reserve, Marakele National Park, Limpopo, South Africa

HOUSES

18 Regency Crescent, Leopard Rock Estate, Platteklouf, Cape Town, Western Cape

6 Dolphin Close, Hout Bay, Western Cape

14 Gousblom Crescent, Wilderness, Western Cape

52 Hilltop Road, Scarborough, Western Cape

74 Mountainside Boulevard, Wasabi Park, Gordons Bay, Western Cape

1 George Street, Ashton, Western Cape

32 De Keulders, Gansbaai, Western Cape

4 Berg Street, Klawer, Western Cape

7 Annandale Close, 14 Annandale Road, Diep Rivier, Western Cape

3 Regent Square, Woodstock, Cape Town, Western Cape

8 Italeri Street, Hartebos, Mossel Bay, Western Cape

27 Suikerbos Road, Durbanville, Cape Town, Western Cape

SANDBAG BUILDING LOCATIONS

84 10th Avenue, Kleinmond, Western Cape

9 Regul Street, Brackenfell, Western Cape

20 Station Road, Darling, Western Cape

37 Cormorant Circle, Kommetjie, Western Cape

cnr Woodlands Drive & Brackenfell Road, Pinehurst, Cape Town, Western Cape

18 Strathblane Way, Melkbosstrand, Western Cape

11 Myhof Road, Glosderry Estate, Claremont, Western Cape

34 Drakenstein Gevangenis, Wemmerhoek Road, Franschoek, Western Cape

11 Ganet Close, Kommetjie, Western Cape

1455 Gousbloom Crescent, Wilderness, Western Cape

Vergelegen Wine Estate, Somerset West, Western Cape

Fisant Road, Sedgfield, Western Cape

Protea Avenue, Still Bay West, Western Cape

Gordon Street, Still Bay East, Western Cape

Kabeljou Street, Gouritz, Western Cape

Oyster Drive, Boggomsbaai, Western Cape

Daniels Street, Mossel Bay, Western Cape

Grysbok Avenue, Reebok, Mossel Bay, Western Cape

Maalgate Street, Herolds Bay, Western Cape

Sands Road, Wilderness, Western Cape

Watsonia Road, Brenton-on-Sea, Western Cape

Hall Street, Hornlee, Knysna, Western Cape

Ridge Drive, Knysna Heights, Knysna, Western Cape

Frolick Street, Plettenburg Bay, Western Cape

Formosa Street, Stormsriver, Western Cape

Stompneus Street, Oyster Bay, Eastern Cape

SANDBAG BUILDING LOCATIONS

Fisant Road, Sedgefield, Eastern Cape

Rukiya Safari Camp, Wilderness Nature Reserve, Hoedspruit, Limpopo

21 Peil Street, Beacon Bay, East London, Eastern Cape

1 Hayward Street, Deal Party, Port Elizabeth, Eastern Cape

18 Gantonn Close, Port Alfred, Eastern Cape

135 Garhard Street, Centurion, Gauteng

3 Charlene Place, Kragga Kamma Park, Port Elizabeth, Eastern Cape

16 Sardinia Bay Road, Port Elizabeth, Eastern Cape

47 Hugo Street, Waterkloof Glen, Pretoria, Gauteng

1 Cedarwood, Woodlands Estate, cnr Garsfontein & De Villa Bois Muriel Streets, Pretoria, Gauteng

Beachyard Drive, Beacon Island Estate, Plettenberg Bay, Eastern Cape

Susan Street, Plettenberg Bay, Eastern Cape

Vygie Avenue, Struisbaai, L'Agulhas, Western Cape

Krom Street, Struisbaai, L'Agulhas, Western Cape

Lane Road, Arniston, Western Cape

Fabrieks Road, Bredarsdorp, Western Cape

Snapper Street, Witsand, Western Cape

Voelklip Avenue, Jongensfontein, Western Cape

Papawer Street, Blue Horizon Bay, Eastern Cape

Reinett Road, Clarendon Marine, Eastern Cape

13th Avenue, Gonubie, East London, Eastern Cape

13 Hobby Close, Mtunzini River Estate, Mtunzini, Kwa Zulu Natal

Bushbaby Lodge, D49 Road, Hluhluwe/Duma Zulu, Kwa Zulu Natal

Marabou Estate, Natal Midlands, Kwa Zulu Natal

6 Quarry Road, Assagay, Durban, Kwa Zulu Natal



ecoBAG

LOCAL



- * 100% South African
- * Localised employment
- * An import substitute

AFFORDABLE



- * Affordable fabric
- * Strong fabric
- * Saves 28% on plaster cost

LONG LASTING



- * Non woven Polyprop blend
- * Ongoing stringent testing
- * UV Stabilised

BRANDED



- * Great marketing tool
- * Increase brand visibility and awareness

100% RECYCLABLE



- * Environmentally friendly
- * Reduce, reuse, recover and recycle

TAILOR-MADE



- * One stop solution for customised unique needs
- * Style, Design, Dimensions

ECOBAGS are specially manufactured for the SandBag Building process. The bags measure 270mm (W) x 400mm (L) with a 130mm fold out flap. The bags are offered in a double stitched non woven polypropylene/polyester blend fabric. The grammage of the fabric is strong enough to store the required amount of sand within the bag without tearing.

Once filled with sand the **ECOBAGS** become 230mm in width x 370mm in length x 75mm in height. This measurement may change according to the density of sand being used to fill the bag. When using granulated river sand the weight of the filled bag is 10,190kg.


The weight of the bag will depend on the density of the sand being used.

EcoBags are laid in a stretcher bond style and 32 bags are used per sq/m.

EcoBags were tested by the SABS according to SANS323 on report number 2532/C1/P95 dated 2012-05-24 to establish that double stitching of the seams was in fact superior to an over-lock safety stitch, a safety over-lock stitch and high frequency welding.

TEST	TEST METHOD	TEST RESULTS	
		Warp	Weft
Hydrostatic Head	SANS 5266:2005		120mm
Air Permeability	FX 3300		125.6m ³ / m ² / min
Water Vapour Transfer	SANS 6163:2006		10743 g / m ² / 24 hrs
Water Permeability	ASTM D4491-99e	Ψ Permittivity	4 . 369 s ⁻¹
		co-efficient of permittivity at 20°C	0 . 002

ECOBAGS

PARAMETER	TEST METHOD	SPECIFICATION
COLOUR	CODE MASTERBATCH GREEN	63 - 1349 / Sch 720
WEIGHT	DIN EN 1849 - 2	55 ± 2gr/m ²
TENSILE STRENGTH MD CD	DIN EN 12311 - 1	75 N / 5cm ± 10% 75 N / 5cm ± 10%
NAIL TEAR STRENGTH MD CD	DIN EN 12310 - 1	50 N ± 10% 50 N ± 10%
ELONGATION MD CD	DIN EN 12311 - 1	> 50% > 50%
WIDTH	DIN EN 1848 - 2	270 mm
LENGTH	DIN EN 1848 - 2	400mm length with 130mm flap
FLAME RETARDED	DIN 4102	NO
HYDROPHOBIC TREATMENT		NO
PACKAGING		2000 EcoBags per plastic wrapped bale
PACKAGING DIMENSION		Length 113cm Width 60cm Height 48cm
PACKAGING WEIGHT		31,5 Kg
PRICE PER BAG ex WORKS DURBAN EXCL COURIER COST	 QUOTED IN SOUTH AFRICAN RAND	ZAR 1 . 98 PER BAG or ZAR 3 960 PER BALE



GREEN PERSPECTIVES

ANDY STRYDOM

sales @ ecobuilders . co . za

www . sandbagbuilders . co . za

0027 83 445 5123

LICENCE AREAS

The following areas have been identified as areas suited for a sandbag business to be sustainable. Areas marked ** are suited for the sewing of sandbags.



EASTERN CAPE

ALIWAL NORTH	HUMANSDORP
BHISHO	JEFFREY'S BAY
BUTTERWORTH	KING WILLIAM'S TOWN
CRADOCK	MIDDELBURG
DESPATCH	PORT ALFRED **
EAST LONDON	PORT ELIZABETH
FORT BEAUFORT	QUEENSTOWN
GRAAF-REINET	UITENHAGE
GRAHAMSTOWN	UMTATA **

GAUTENG

ALBERTON	MABOPANE
ALEXANDRA **	MAMELODI
ATERRIDGEVILLE	MEYERTON
BEKKERSDAL	MIDRAND **
BENONI	MOHLAKENG
BOKSBURG **	NIGEL
BOPHELONG	ORANGE FARM **
BRAKPAN	PRETORIA
CENTURION	RANDFONTEIN
DAVEYTON	RATANDA
DUDUZA	ROODEPOORT
EDENVALE	SEBOKENG
EVATON	SHARPVILLE
GERMISTON	SOSHANGUVE **
HEIDELBERG	SOWETO
KAGISO	SPRINGS
KATLEHONG **	TEMBISA
KEMPTON PARK	THOKOZA
KHUTSONG	TSAKANE
KRUGERSDORP	VANDERBIJLPARK
KWA THEMA	VEREENIGING
LENASIA **	VOSLOORUS

LIMPOPO

BELA BELA	MUSINA
ELLISRAS	PHALABORWA
GIYANI	POLOKWANE **
LEBOWAKGOMO	SESHEGO
LOUIS TRICHARDT	THABAZIMBI
MOKOPANE	THOHOYANDOU
MOOKGOPHONG	TZANEEN **

FREE STATE

BETHLEHEM	
BLOEMFONTEIN **	PARYS
BOTSHABELO	PHUTHADITJHABA **
FICKSBURG	SASOLBURG
HARRISMITH	THABA N'CHU
HEILBRON	SENEKAL
KROONSTAD	VIRGINIA
LADYBRAND	WARDEN
MARQUARD	WELKOM
ODENDAALSRUS	WESSELSBRON

KWA ZULU NATAL

AMANZIMTOTI	
DUNDEE	MOOI RIVER
EMPANGENI **	MTUBATUBA
ESHOWE	NEWCASTLE **
ESTCOURT	OSIZWENI
HOWICK	PARK RYNIE
INANDA	PIETERMARITZBURG **
IXOPO	PINETOWN
KINGSBURGH **	PONGOLA
KOKSTAD **	PORT SHEPSTONE **
KWADUKUZA	TONGAAT
KWA MASHU	ULUNDI **
LADYSMITH **	UMLAZI
MADADENI	VRYHEID

LICENCE AREAS

MPUMALANGA

ACORNHOEK	
BETHAL	MIDDELBURG
eMALAHLENI **	PIET RETIEF
ERMELO	SECUNDA
LYDENBURG	SIYABUSWA
MBOMBELA **	STANDERTON

NORTH WEST PROVINCE

BRITS	
GANYESA	MMABATHO
GA-RANKUWA **	PAMPIERSTAD
HARTEBESPOORT	POTCHEFSTROOM
KLERKSDORP **	RUSTENBURG
KOSTER	SCHWEIZER-RENEKE
MABOPANE **	SETLAGOLE
MAHIKENG **	STILFONTEIN
MARIKANA	TAUNG
MATHIBESTAD	VRYBURG **

NORTHERN CAPE

BARKLY WEST	
DE AAR	KIMBERLEY
DOUGLAS	POSTMASBURG
JAN KEMPDORP	UPINGTON

WESTERN CAPE

ATLANTIS	LANGA
BELLVILLE	MACASSAR
BLUE DOWNS	MALMESBURY
BRAKENFELL	MFULENI
CERES	MITCHELLS PLAIN
CROSSROADS	MOSSEL BAY
DURBANVILLE	NYANGA
EERSTE RIVIER	OUTDSHOORN
ELSIES RIVIER	PAARL
GEORGE	PAROW
GOODWOOD	PLETTENBURG BAY
GRABOUW	ROBERTSON
GUGULETHU	SALDANNAH
KAYAMANDI	SOMERSET WEST
KHAYELITSHA	SWELLENDAM
KNYSNA	VREDENBURG
KRAAIFONTEIN	WELLINGTON
KUILS RIVIER	WORCESTER



**FURTHER SANDBAG
BUILDING LICENCING
OPTIONS ARE EXTENDED
TO THE FOLLOWING
COUNTRIES ;**

**BOTSWANA
LESOTHO
MOZAMBIQUE
NAMIBIA
SWAZILAND
ZIMBABWE**



GREEN PERSPECTIVES

OUR CORPORATE PROFILE



intergrating ecology and technology



GREEN PERSPECTIVES is a South African based eco-building company. Our focus has shifted from building thermally and energy efficient structures to teaching people how to build using the sandbag method of construction, as a result of so many enquiries received, interested in this method of construction.

The SandBag Building system has been applied to a number of projects all over the world, and in many cases Green Perspectives acted as consultant on many of these projects. In 2014, Green Perspectives received the Gaia award at the world's largest construction show - the BIG 5 Show held annually in Dubai, for its SandBag Building Presentation. Given the enormous interest shown at this show, the decision was taken to offer it's IP to people allowing them to not only learn this eco-friendly method of construction, but also to provide meaningful employment opportunities across the globe.

With over 800 sandbag structures completed, Green Perspectives has invested an enormous amount of time and experience in the development of the SandBag Building System. Now it is time to transfer that knowledge to small entrepreneurs who would like to apply this method of construction within their areas.

Our specific interest is to apply this method of construction where it is needed most - in areas desperately in need of creating employment. There are a number of areas where the construction of simple sandbag structures would be of great social benefit;

- a) Rural areas, where thermally efficient and cost efficient structures would provide better quality houses and schools;
- b) Areas close to sugar mills, where their waste - bag ash, could be used as the fill material for the communities to build houses with;
- c) Areas close to mines, where their waste can be used as the fill material to build houses with.

COMPANY PROFILE

Our sandbag building system has been applied to



- ✓ Soshanguve Innovative Hub - Pretoria - South Africa
- ✓ Motala People's Village Project - Motala - Mozambique
- ✓ 10 x 10 Low Cost Housing Project - Mitchells Plain - South Africa
- ✓ Manenberg Housing Office - Cape Town - South Africa
- ✓ Cedar Green Estate - Ikeja - Lagos - Nigeria
- ✓ Zini River Estate - Mtunzini - South Africa
- ✓ Leopards Creek Estate - Platteklouf - Cape Town
- ✓ Bakwena Lodge - Chobe - Botswana
- ✓ Desert Grace Lodge - Soussesvlei - Namibia
- ✓ Green Power Station Utility Buildings - Totana - Spain
- ✓ Cidade Sustentável de Pedra Branco - Brazil
- ✓ Rainbow Children's Home - Paamei - Nepal
- ✓ Belingtar Primary School - Dhading - Nepal
- ✓ Shree Jana Primary School - Samundradevi - Nuwakot - Nepal
- ✓ Woodlands Spa & Forum - Cradle of Humankind - South Africa
- ✓ Société d' Aménagement - Zenata - Morocco
- ✓ United National Children's Fund Schools - Marolondo - Madagascar
- ✓ Eco Village - Perechynska - Ukraine
- ✓ Housing Complex - Korumburra - Victoria - Australia
- ✓ Montessori Secondary School - Drøbak - Norway

Our activities have had a positive impact on the communities among which we build. The bulk of our employees have been drawn from this base. As a result of the jobs created among local communities, a variety of skills have been passed on - encouraging a meaningful and sustainable future for these people.

This partnership program encourages support from Provincial and National Government, and makes a positive contribution towards poverty alleviation, community development and aids significantly towards service delivery and local economic development.



**9 Village Way, Sunningdale, Durban, South Africa
P O Box 71, La Lucia, 4159, Durban, South Africa**

andy @ ecobuilders . co . za

www . sandbagbuilders . co . za



CEO - ANDY STRYDOM

The founder member is well versed in alternative methods of construction.

Offer a wide range of experiences in alternative building solutions as well as project and site development skills.

BECOME A LICENSEE

IN BUSINESS FOR YOURSELF, BUT NOT BY YOURSELF



The price to supply you the necessary Intellectual Property in order that YOU can own an exclusive SandBag Building Business in your area is a once off cost of R 300 000 with no renewal fees or royalty fees.

The advent of sandbag construction in South Africa is one of the most exciting developments in recent times within the "Green Construction Space". While our method of sandbag construction has been applied to many areas throughout the world, it has always been our intention to apply our expertise to apply this as a franchise set-up among the many South Africans who are looking for better ways to provide sustainable economic opportunities for themselves and their families.

Tried, tested and perfected over the last 35 years, and with well over 800 sandbag houses built in South Africa alone, the time has come to open up the opportunities for entrepreneurs to earn money as a result of this unique building system.

The savings in time, costs, waste and unsightly rubble should speak volumes in terms of the significant opportunities that this building system can offer. SandBag construction's impact on the environment and its many advantages should immediately tell you how meaningful that business could be for you.

" SandBag Construction is the New Green "

The most environmentally friendly and sustainable construction method imaginable

South Africa is known for its droughts. Imagine the benefit of a building system that ***does not need water.***

What would that mean for you ?

Imagine a building system where the wall-fill material was provided to you, ***free of charge.***

What would that mean for you ?

Imagine a building system where the bags themselves could be supplied to you, ***free of charge.***

What would that mean for you ?

Imagine a building system where the walls could be ***built five times faster than conventional bricks.***

What would that mean for you ?



" SandBag Construction is able to help eliminate images such as these and contribute towards a more acceptable situation "



FREQUENTLY ASKED QUESTIONS

Is SandBag Building safe to build with ?

Absolutely ! SandBag construction has been repeatedly tested over the past thirty years and on almost every occasion sceptics have been surprised at the results. Our sandbag is able to withstand 200kN of load force without breaking, which translates into a Mpa strength of 35MPa.

Is SandBag Building legal ?

Yes, the system has undergone numerous tests and has been approved by the Agrément Board. It's certificate has been included with this document. As a result of this the SandBag Building system is accepted by the NHBRC (National Home Builders Regulatory Council) in South Africa.

Has the SandBag Building system been tested by the SABS ?

Yes, it was tested and approved by the SABS in 1996. However, the Agrément Board (part of the CSIR in Pretoria) have taken over the testing of alternative building systems.

Is the SandBag Building system be accepted by municipalities ?

Yes, provided that plans are submitted with the Agrément certificate attached.

Will insurance companies insure these structures ?

Yes, providing that they have a structural engineers certificate authorising and approving the built structure.

Are special plans required for this method of construction ?

Not at all. The only information that an architect or draughtsperson requires for the drawing of plans would be the thickness of wall measurement. And they would specify on the plans that the walls are to be built out of sandbags.

Can any sand be used ?

No clay, no shale and no beach sand. But other than that, any sand will be fine for this method of construction.

What is the thickness of a SandBag wall ?

All the walls (internal and external) are 230mm thick. This provides a very effective thermal mass and acoustic benefit to the structure.

Can you drill holes into the walls ?

Yes, cupboards and the like can be hung off sandbag walls without any issue.

How does the electrical and plumbing services fit inside a SandBag wall ?

Once the framework is up, the electrical and plumbing conduits are put into position - then the bags are stacked around these conduits.

What sort of foundation is required for SandBag Building ?

It depends on the type of soil you are building on. If you were building on a clay patch of land, we would recommend a conventional raft foundation. However, in many situations a sandbag foundation would be ideally suited for a sandbag structure. It would be best to follow a structural engineers advice as each project should be analysed based on its soil base.

How thick is the plaster on the walls ?

Our sandbags have been specially designed to create a reasonably flat and squared finish. This bag design reduces the plaster requirement on SandBag construction by 26%. On average, the plaster finish is 18mm thick on both sides of the bag.

FREQUENTLY ASKED QUESTIONS

Is anything placed between the bags ?

No. The filled bags are simply dry-stacked on top of one another in stretcher bond form to create the wall space that is being built.

What is placed in the bag - just sand ?

Yes, just sand. However, there are other materials that will work just as well. A 50/50 combination of coarse ash or flay ash and sand, recycled glass, cane trash (bag ash) from sugar mills or any of the tons of material that is lying around at the numerous mines around the country.

Is a chicken wire placed on to the bag prior to plastering ?

Some people insist on it - but we ignore this process. Instead we paint the bags with a water-based bonding and keying liquid (Alcolin PermoBond), and then apply the plasterwork straight on. This saves a lot of time vs using chicken wire. If there is an insistence to use a mesh for some reason, we would rather suggest that a fibreglass mesh be used, such as DuraMesh.

What type of windows can be used with this method of construction ?

There are no restrictions with regard to the type of windows that can integrate with sandbag construction.

What type of roof can be used with this method of construction ?

There are no restrictions with regard to the type of roofing that can integrate with sandbag construction.

Can double storey structures be built with this system ?

Yes, it has been done on countless occasions.

Can multi-storey structures be built using SandBag Building ?

No. The cost of its foundation (allowing for the sandbag weight) would be too expensive to make the sandbag building project unviable in these particular instances.

Could you do renovation/extension work to an existing SandBag Building in the future ?

Absolutely ! There would be a process of tying the new structure into the existing structures walls and its new openings would be opened up with an angle grinder.

Where does the framework come from ?

The framework is made in one of two methods - either timber or steel. Sometimes people prefer the steel because of white ants/termites in their area. As far as a timber frame is concerned it is made from the two most common sizes freely available anywhere. Considering the cost of transport it is best to have these frames made up closest to you. Either, you have the means of making the frames yourself or a handyman type person could make them up for you.

Does this framework have to be treated in any way ?

We would suggest that the timber framework is coated with a bitumen type coating in order that it does not eventually rot within the wall space. This will also prevent plasterwork cracking at the point where the plaster comes into contact with the wood.

Where do the bags come from ?

The bags are supplied ex Durban to you by way of a courier service. These bags are supplied in bales of 2000 bags per bale and they cost R 3 960 (R 1.98 per bag).

What is the size of these bags ?

The bags are 400mm in length x 270mm in width. They become 370mm in length x 230mm in width x 75mm in height once they have been filled with sand.

FREQUENTLY ASKED QUESTIONS

How many bags are required per m² ?

A total of 36 if laid in a stretcher bond style.

Can we make these bags ourselves ?

Yes, but bear in mind that you would need to finance a sewing operation which can be quite expensive to set up. However, there are always opportunities for corporate companies to sponsor your set up once they see the merits of the building system as well as the opportunities it creates for employment generation. In these instances we would supply you with the material, which has been pre-cut for you into panels ready for the sewing of the bag.

Can anyone build with this technology ?

SandBag Building is a specialised building technology. People who build using this methodology would have to be trained and each of them would have to be registered with the relevant authorities.

Who builds these SandBag houses ?

Only the registered licencees. These are individuals or organisations that have received the necessary training and adhere to the specified process and procedures involved with SandBag construction.

How many people are required to construct a SandBag house ?

This would depend on the size of the house and should time not be a crucial factor with your project, the amount of unskilled labourers may be reduced. But generally, you would need 2-4 people to fill the bags, 4-6 people to erect the framework and 6-8 people to lay the bags. These are simple estimates dependent on the size of the structure involved.

Do you provide support and training on the entire SandBag Building process ?

Absolutely ! We provide training on your construction site (once a project has been secured), which also includes the sales and marketing approach to sandbag construction in your area.

Is SandBag Building a franchise ?

It operates similarly to a franchise operation in that each SandBag builder is expected to achieve the same result, regardless of its location. Each SandBag licensee is offered the benefit of trading exclusively within an area, without risk of having to compete with somebody else offering exactly the same product.

What does your fee of R 300 000 include ?

This fee provides you with access to the intellectual property of sandbag construction. It allows you to apply the principles of sandbag construction to earn your own money for as long as you apply the marketing and business principles to it. The fee also includes your registration to the Agrément Board, which identifies you as a licensed user of a legitimate building system. Furthermore, you also receive a small sales video that you will use for whatsapp distribution. Your contact details will be included on the sandbagbuilders.co.za website and you will be given personalised sandbag brochures to hand out to clients in your area. A FaceBook marketing campaign will also be dedicated to your specific region bringing sales enquiries to you within the first few days of your new business venture. All the necessary tools, workbench and a supply of timber, nails and bags are supplied to initiate your business.

You will also receive a computer flash drive containing a full library of photographs showing sandbag construction as well as a host of technical drawings and information that can be used for sandbag marketing purposes.

Are there any further royalty payments or renewal fees involved ?

No, there are no further fees payable. Whatever you earn is yours to keep.

FREQUENTLY ASKED QUESTIONS

How much money could I earn ?

That is entirely dependent on you. The harder you work, the more you will earn. Let us take for example, the option of you building somebody a small house of 40m². There would certainly be room for you to charge at least R 500 per m², for its construction. That means your capital outlay for this business can be repaid within a year. There are not many businesses out there that could achieve that !

Do I need to have my own website ?

No. There would be no point in there being many websites selling the same thing. The power of the sandbag brand comes by each individual claiming their stake and having themselves registered on one common website, namely www.sandbagbuilders.co.za

How do I get my sales leads ?

We start off by generating sales leads to you specifically through a FaceBook marketing campaign. This campaign will be focussed on a geographical area of 10 kms from your location. Furthermore, we also prepare a small video which we recommend that you distribute among all your contacts through whatsapp. As and when your business grows, the Facebook campaigns should be highlighted further.

Do I need building experience to own the SandBag Building system in my area ?

No. Competence, commitment and passion is our primary concern. While it is most certainly helpful to understand the principles of construction, one must have a passion for a business. If the idea of sandbag construction resonates with you, then it is mainly the passion that will drive the success forward. One can always team up with a small NHBRC registered building company in your area, to drive your passion forward.

Do you supply plans ?

Absolutely ! As mentioned on page 5 of this document, it is critical that you rather focus on specific designs for sandbag construction. In your area look at the type of structures that you could build quantitatively. We take those types of structures and prepare between 10 - 12 designs, and that is what you focus your efforts on.

In this business, on any given day - your conversations could range from the building of a crèche, to a house to a school to a bathroom renovation. Unfortunately, that will produce no positive results. It would be better for you to start your area with a specific listing of designs - along with their associated costs. That is the best way to product positive results, which is what any new business owner is wanting.

What are the courier charges ?

All of our deliveries are done ex Durban. Courier charge is dependent on the size of each shipment, so courier charges can vary. Normally we use Time Freight or Door-to-Door to effect delivery to you, but you are free to choose your own courier service.

What information would you require to supply a cost estimate ?

Our projects department only work on architecturally designed plans, which should show the following;

1. A detailed single storey plan, including room and overall dimensions
2. A section specifying the wall height, roof pitch in degrees and overhang
3. Complete window and door schedules

We are not familiar with the KwikBrix process - but would like to implement it on one of our projects in Africa - would you be able to assist ?

Yes, one or two of our members (depending on the project location and size), will go to the site and establish the requirements of material supply, aggregates and block yard size. This will allow us to understand the exact cost of all materials. The client will be responsible for the costs of air flights etc.

CONTACT

The new policies of the South African Government, as a result of President Ramaphosa becoming president of South Africa, resulted in the opening of sandbag licencees nationwide.

There is a new drive within the South African Government to create meaningful employment, particularly within the manufacturing sphere. The experience that we have accumulated as a result of building with sand through our contracting companies - Ambidex Projects and Green Perspectives as well as the 233 building contractors we have consulted with since 1982, has created the platform for us to transfer this knowledge and provide the opportunity for entrepreneurs to create their own financial road of prosperity.

Green Perspectives is no longer a construction company. It is a company that focuses on the sale of its intellectual property through a licencing programme. It's primary focus is to engage with entrepreneurs who will open their own sandbag building operations and build structures according to the specifications of the EcoBuilders SandBag Building system.

The role of Green Perspectives is to provide entrepreneurs an opportunity to own their own profitable business. The owner of Green Perspectives will focus on the transfer of its intellectual capital towards entrepreneurs who buy into the vision of the EcoBuilders SandBag Building system.

Green Perspectives is currently discussing with interested parties nationwide the opportunity of using this unique building system to provide a very lucrative business opportunity within the respective trading areas they are applying for.

" The SandBag Building system offers entrepreneurs the opportunity to engage in a unique business that is well accepted by the consumer in general "

Green Perspectives CC is a registered company (2010/164523/23) that focuses on the establishment of facilities that produce the sandbags and framework to the specifications of EcoBuilders, which are then used to construct homes according to the specifications set out by the building authorities and EcoBuilders.

EcoBuilders are currently proceeding with the engagement of licence holders nationwide who have expressed an interest in using this building methodology within the respective trading areas they are applying for.

Registered Office

GREEN PERSPECTIVES CC

9 Village Way, Sunningdale, Durban 4051

P O Box 71, La Lucia, 4159

Phone

031 572 3322

email

info @ ecobuilders . co . za

www.sandbagbuilders.co.za

All discussions pertaining to acquiring an EcoBuilders SandBag Building System manufacturing licence should be discussed directly with Mr Andrew Strydom. He is the nominated officer for this project and is completely familiar with the process of marketing, business development, manufacturing and the implementation of a licence for the EcoBuilders sandbag building system. He is also familiar with the various products that will support this building methodology.

Key Licence Officer

ANDREW STRYDOM

Mobile

083 445 5123

email

andy @ ecobuilders . co . za

CONTACT



ANDREW STRYDOM

Mobile

083 445 5123

email

andy @ ecobuilders . co . za

The founder member is well versed in alternative methods of construction and has applied them into numerous projects across Africa. Andy offers a wide range of experiences in consultancy, building solutions as well as project and site development skills.



KIM NICOLAY

Mobile

082 587 5172

email

kim @ ecobuilders . co . za

Offers a mechanical engineering and project management expertise that makes him valuable in the implementation of the technical complexities of a building project. Kim's particular passion within the KwikBrix portal will be to provide training to nominated builders.



CHRISTOF KALUMBU

Mobile

00264 81 259 7940

email

cmkalumbu @ gmail . com

Tasked with the sales responsibility of the sandbag building system throughout the 14 provinces of Namibia. Christof's particular interest will be to expose our empowerment programme to the numerous entrepreneurs situated throughout Namibia.



ANDY HORN

A qualified architect with a particular passion for the design and construction of natural buildings for which he has received several awards for. Andy's experience creates cost based solutions to clients building designs.



ANIL RAMSUNDER

With over 40 years experience in the textile industry provides all the expertise with regard to the sandbag manufacturing. Anil is able to offer particular value with regard to training entrepreneurs how to own their own small scale bag manufacturing operations.



JACQUE COETZEE

Has been involved with the structural design of numerous sandbag construction projects throughout Southern Africa. Jacque's many years of structural engineering expertise provides solutions that clearly support the clients design initiative.