



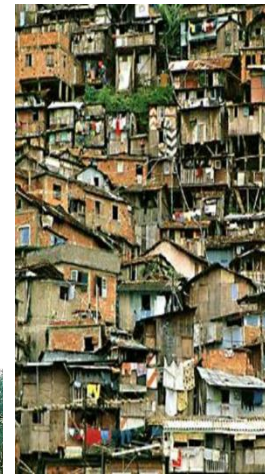
Africa

Mass Housing Solutions

South Africa 2010

The Global Demand for Housing

- The United Nations estimates that 600 million urban and 1 billion rural dwellers live in sub-standard housing.
- Of these estimated numbers, over 100 million people are homeless and 1 in 3 urban dwellers lives in a slum.
- Estimates are that by the year 2030, an additional 3 billion people will be in need of shelter.
- Every week nearly 1 million rural people are born in or migrate to the urban centers.
- Only approximately 10% of the World Bank's funds support low income housing.
- Consequences associated with a lack of safe, affordable housing include:
 - Growing health and mental disorders
 - Increased water quality issues
 - Insufficient waste disposal and control
 - Increase in violence
 - Lack of sufficient educational infrastructure
 - Increased severity of natural disasters – storms, earthquakes, tsunamis
 - Extreme unemployment issues
 - Rise in political unrest
 - Increased breakdown in the family structure
 - Increased economic stress on local communities



The Issues and Hurdles

Countries addressing mass housing issues with scalable solutions have experienced similar hurdles and issues impacting the success of project implementation. These issues include the following:

Funding Issues:

- Financing models
- Investor reluctance due to payback period
- Locating non traditional funding sources and guarantees

Construction Issues

- Scalable solutions
- Long project execution timelines
- Contractors reluctant to work in Africa
- Lack of supporting infrastructure
- Sub-standard construction, quality and durability
- Improper planning and reporting
- Lack of standards

Local Impact Issues

- Lack of utilization of local resources – human resources, materials, associated services
- Not adapting housing style to local culture

Housing Construction Options

Housing solutions use a variety of construction techniques. Though many are innovative, they fail to be scalable to address the mass housing solutions that are needed. The following matrix compares the various types of construction techniques.

Housing type	Cost per sq. meter	Maintenance	Construction Time	Building skills	Durability	Material availability	Eco-efficiency	Scalable Solution	Financing Available
Lumber	High	Med	Medium	High	Low	Limited	Med	Yes	High
Poured Concrete	Med	Low	Rapid	Low	High	Global	High	Yes	High
Mud Brick	Low	High	Slow	Low	High	Global	High	No	Low
Concrete Block	Med	Low	Medium	Low	Med	Global	Med	No	Med
Earth Bag	Low	High	Slow	Low	High	Global	High	Yes	Low
Aluminum Frame	Med	Med	Rapid	Med	Med	Limited	Low	No	Med
Mobile Metal	Med	High	Rapid	Med	Low	Limited	Low	Yes	Med

Poured concrete is considered globally as the best overall solution for durable mass housing.

South Africa Summary

- Approximately 12 million South Africans are in need of better housing.
- According to the Department of Human Settlements, there are more than 2 million homes with no electricity, running water or toilets.
- More than 2 million houses were built in South Africa between 1994 and 2009.
 - Generally, the quality was very poor – many basically a shell with nothing inside.
 - Typical size of the dwellings is approximately 28 square metres.
 - Most were built from brick and mortar.
- Due to demand, informal settlements have ballooned to more than 2,700.
- The government plans to deliver an estimated 630,000 housing units annually between 2010 and 2015.
- In Cape Town, the backlog currently stands at about 400,000 and increases annually by about 15%. This increase exceeds the national average due to migration from the poorer provinces and cities.
- In Cape Town, there are about 220 informal settlements, and more than 1 million citizens living in sub-standard houses.
- The N2 Gateway housing project was to deliver 22,000 - 30,000 homes over 12 months and began 6 years ago. To date, just over 4,200 houses have been constructed.



Our Commitment

Maxwell Moss & Associates and The Tagos Group (based in Houston, Texas) are Strategic Business Partners to bring **Globally-Tested , Sustainable Development Business Solutions** to the African continent specifically targeting:

- Housing Security
- Food Security
- Water Security
- Energy Security
- Job Security

To address the housing shortage and in support of environmental stewardship, MMA & Tagos has teamed with Wall-Ties & Forms, Inc. (based in Shawnee, Kansas, US) and **AfriSam** to immediately begin construction on low cost, mass housing to assist local governments and private investors in addressing a critical shortage of safe, affordable housing.

“ 22nd October 2010 : Engineering News

Cement group **AfriSam's carbon dioxide (CO₂) reduction efforts**, dubbed ‘**Project Green Cement**’, were recognised during the 2010 Nedbank Capital Green Mining Awards, which took place on Thursday evening, where the company **scooped the award in the environmental category.**

Between 2000 and 2009, AfriSam managed to reduce its CO₂ emissions by more than 30%, to an average of 634 kg for every ton of cement produced, notwithstanding an overall cement production increase of more than 50% over the same period.

In 2009, AfriSam also became the first company in the world to introduce a CO₂ rating system on all of its cement bags.

AfriSAM is the leading black-controlled construction materials group in Southern Africa and supplies over 1 000 Contractors.”



RAPID CONSTRUCTION; QUALITY; APPEARANCE; DURABILITY; GREEN

The Partnership

The Tagos Group LLC (US)

- Provides business consulting and world class supply chain services.
- Focuses on operational efficiency, logistics and warehousing, supplier sourcing and management programs for large organizations.
- Focus in Africa is on the introduction of innovative solutions that accelerate the adoption of practices that address social, environmental or economical needs.
- Focuses on marketing and financing of housing projects to insure the projects are sustainable and economically sound.

Wall-Ties & Forms, Inc. (US)

- Founded in 1976, now the world's largest aluminum formwork manufacturer and supplier in the world.
- Premier designer of aluminum concrete forming systems and concrete formwork accessories used in more than 50 countries around the world.
- Produces and ships more than 30 million aluminum forms ties a year and over 300,000 aluminum concrete forms to 45 countries worldwide – 85% of projects are performed outside the US
- State-of-the art construction formwork, technology and support of Wall-Ties building systems allows the contractor to create a monolithic concrete structure that is unsurpassed in energy efficiency and strength.
- Constructed more than 100,000 housing units in 2009; housing units are among the lowest total cost units in the world

Maxwell Moss and Associates (SA)

- A South African, Black-owned, Financial Services & Sustainable Development Company
- Focus: Energy-, Water-, Housing-, Food- and Job-Security;
- Through Global and Local Financial, Professional and Technical Partnerships;
- Local Partners in this Project: Aurecon, AfriSAM, PIC, Contractors, Developers;
- Role in this project: Certification (Agrément SA and NHBRC); Public Sector relationships (DPW, DHS); Tenders; Funding Solutions



Our Solution



Multi-Unit Apartments
(built in less than 60 days)



Single unit Homes
(4 day construction cycle)



Mass "Row" Housing
(2 day construction cycle)

- Uses globally proven technologies and techniques
- Trains and utilizes local unskilled labor for 90% of the workforce
- Utilization of local offset enterprises to support the solution
- Constructs homes and multi-unit facilities in one-third of the traditional method
- Creates the model and standards for future construction
- Produces high quality, long life and low maintenance homes styled to fit the local culture
- Provides three styles of mass housing solutions
- Sources material and supplies locally

Addressing the Hurdles

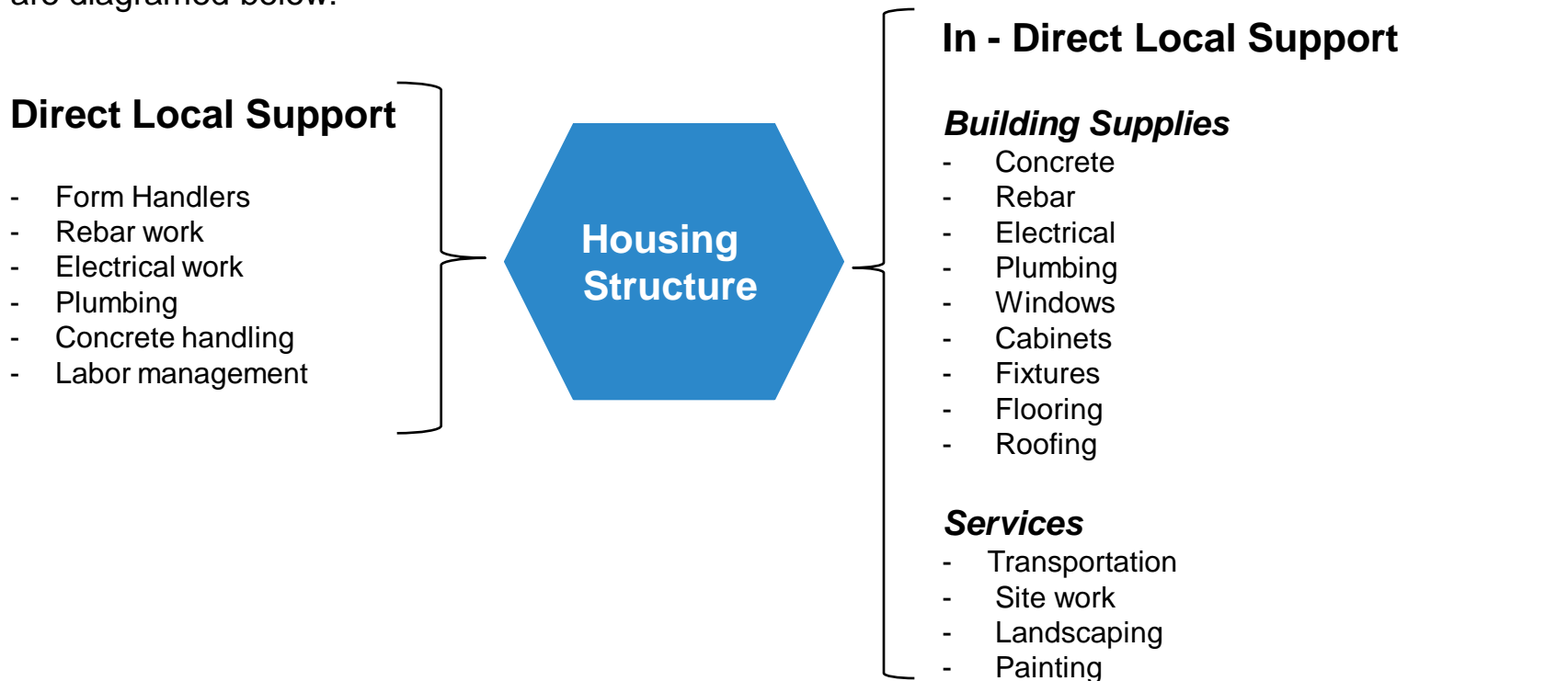
We have a solution which addresses the major hurdles encountered in mass housing projects:

Hurdle or Issue	Solution
Design and Durability	<ul style="list-style-type: none"> • Use globally proven solution • Use innovative construction technique • Use standard poured concrete • Standardized design and scalable • Customized design for local culture • Withstand natural and man made disasters
Total Cost and Return on Investment	<ul style="list-style-type: none"> • Lowest total cost solution • Rapid return on investment • Extremely low waste • Low capital investment
Project Speed and Control	<ul style="list-style-type: none"> • One-third of traditional construction time • Repeatable designs • Re-useable equipment • Easy to train local labor • Project is managed in phases • Experienced project management
Local Resource Utilization	<ul style="list-style-type: none"> • Makes use of in country materials • Use local labor (two week training period) • Create skilled local workforce • Use of or establish local support businesses

The Local Impact

Organizations such as the World Bank, the United Nations, and Habitat for Humanity have performed studies identifying the impact of housing construction on the local community. It has been found that if done correctly, the local economy can greatly benefit both during the construction period and well beyond initial inhabitation of the housing.

Related local business that can be part of the local investment and create longer term economic value are diagrammed below:



Enhancing a community

Our projects focus on building and enhancing a community - all projects include the donation of a local library equipped with hardware and software to support the available technology.

In addition, imagine the benefits of incorporating additional community-enhancing structures in each building design and plan.

- Church
- Convenience Store
- Gymnasium
- Library
- Schools
- Soccer Field
- Tennis Courts



Our Differentiators

Competitive differentiators and benefits of our solutions include:

- Construction adapts to local cultural designs and styles.
- Structures are among the lowest total cost per square meter in the world.
- Buildings are extremely durable providing the lowest, long term maintenance.
- Construction uses standard concrete and ready-mix products.
- Move in can be in a little as 45 days from the start of construction.
- Quality construction driven by standardization.
- Facilities built to support expansion and addition of rooms.
- Utilizes local unskilled labor; trains workforce in 5-10 days.
- Materials and suppliers are sourced locally helping to boost the local economy.
- Projects focus on building a community - all projects include the donation of a local library equipped with hardware and software to support the available technology.



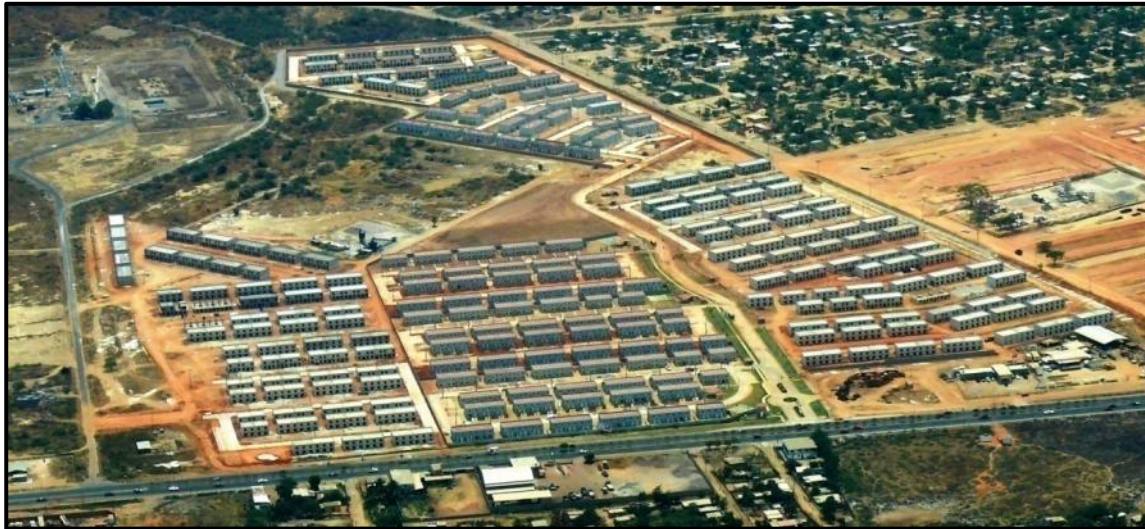
Case Studies



Venezuela - Caminos de Tarabana Development

Notes:

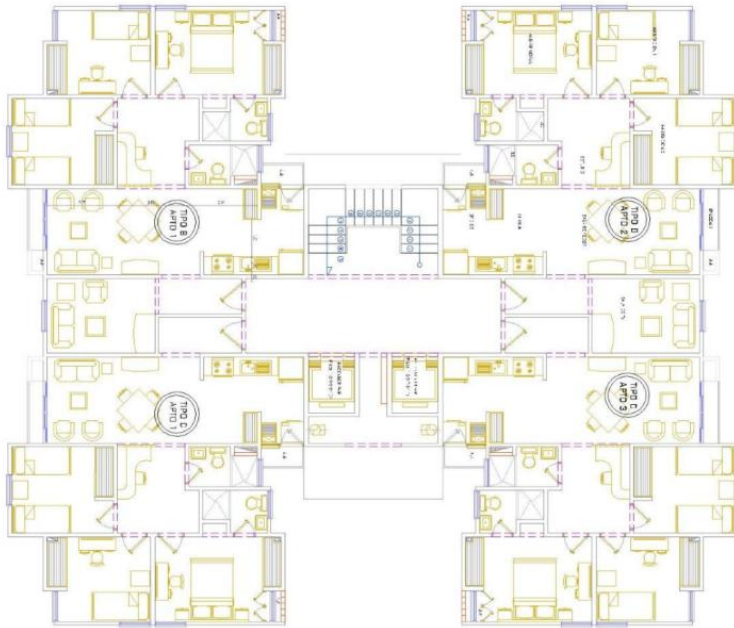
- 2 WTF forming systems
- Volume per house is 18 cubic meters of concrete



Venezuela – Ciudad Montemayor Development

Scope:

- 24 buildings - 4 apartments/floor, communication area and staircase. 1,228 apartment units with area of 75 - 90 m2 distributed: 1 master bedroom, 1 guest room, 2 bathrooms, living room and integrated kitchen with dining room.



Venezuela – Ciudad Montemayor Development

Project History:

- February, 2008 - Land preparation started
- August, 2008 - first slab foundation was poured
- November, 2008 first concrete pour of WTF forming system
- September, 2010 – Scheduled completion
- Construction time of each building from slab foundation to customer “move-in ready” is 90 - 120 days



Venezuela – Ciudad Montemayor Development

Notes:

- 1 WTF forming system set



Summary of Advantages

- Rapid construction (Single storey top structure completed in two days);
- Robust construction
 - Earthquake resistant (real world experience - Chile);
 - Competent person report –"Up to 400 year structure";
- High quality finishing and low maintenance costs;
- Energy savings (- 5 Star rating by USA Agency);
- Greater than 95% of material supply is local;
- Labour intensive and ideal for unskilled labour (12 workers per unit –training programme on-site and lasting 12 days max);
- Large roll-outs (economies of scale) allow savings in the order of 10% over conventional building methods;
- In existence since the 1970's and now present in 50 countries with well over 100,000 units a year being built currently;
- System of choice for large project roll outs in many developing countries;
- Used for up-market dwellings and up to 60 stories high (Hong Kong);
- SA Plan incl.: Rental Stock (Student Accommodation; Inner City Apartments); GAP Housing; Schools; Clinics etc.
- Boosts construction industry, cement/ concrete and building material supply businesses (currently in slump) when used in a national economy.



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