

DFTW Design Challenge



Background on DFTW



UNDER CONSTRUCTION



THE PLAYGROUND

The Domes For The World Foundation was founded by my Father in 2005.

I've been in the Dome business since I was 3 years old. I was around when my father, and his brothers, invented the Monolithic Dome and built the first prototype in 1976. Since then I have watched a wild idea blossom into a full-fledged international industry.

One of the reasons for the success of the Monolithic Dome can be accounted for when you look at the business practices and beliefs of my father, David B. South. For years, he and his brothers built one dome after another. But in the 90's David had another crazy idea. What if instead of trying to enforce his patent, he gave away the technology to whomever wanted it?

in 1994, as president of Monolithic, Inc. he began hosting workshops for anyone who wanted to learn how to build Monolithic Domes, and then also, EcoShell Domes.

The Domes

Monolithic Domes are thin-shell reinforced concrete domes. Polyurethane foam is used as insulation and the forming is done using an inflated Airform(r). They are quick to build, cost effective, extremely energy efficient and disaster resistant. FEMA agrees the Domes provide Near-Absolute Protection.

EcoShells use Airforms as well, but no polyurethane. They are perfect for housing in equatorial and temperate emerging countries because they can be built in three to five days, they are earthquake, tornado, hurricane and fire resistant, and they cost much, much less money to build than other conventional homes the same size.

AND, because they use 50% less materials to build than any other house, they are very environmentally sound. They are permanent and no natural resources (like forests) are consumed during construction.

A great idea takes hold

By the turn of this century, as a direct result of the on-going Dome Builder's Workshops, the Monolithic Dome Industry had started to really take hold. Now there are around 2000 domes world-wide. They are in 48 states and 40 countries.



Enter Domes For The World

Ever since that first dome was built I would hear my dad talk about how much good could be done in the world by the introduction and construction of EcoShell Domes in emerging countries. He has always had the heart of a philanthropist, but not the wallet.

A few years ago he mentioned to me he wished someone would go after trying to help some of the people affected by the tsunami(s), earthquakes, monsoons and most of all, poverty.

We incorporated and I started pounding the pavement in my spare time. I told everyone who would listen: We want to build schools in Sudan; Cities in South Africa; Villages in Indonesia; Homes in Pakistan; Storages in Ethiopia; and Orphanages in Uganda.

And not only that, but we wanted to build infrastructures which provide room for growth and most importantly, sanitation, alternative energy and potable water.

Early Success

Success came swiftly. We helped build a school in Sudan and a women's shelter in Ethiopia. We consulted on small EcoShell housing projects in Haiti, India and Kenya.

And then I met Dr. David Randle, President of the WHALE center; Dr. Noel Brown, ex regional director of the United Nations Environmental Programme and current Secretary General of Friends of the UN; and Mr. Taj Hamad, Secretary General of the World Association of NGOs (WANGO).

In August 2006 Mr. Hamad asked our team to go to Indonesia to do a feasibility study to see if our big ideas would work. When my architect and I returned, we presented our findings. WANGO asked us to immediately return and start the work. Their funder loved our proposal.

We built 80 domes to replace the destroyed homes, school and mosque near Yogyakarta, on Java, at the site of the devastating earthquake of May 2006.

The project moved swiftly and smoothly. We saved so much money during construction that more buildings, better roads and landscaping were added to the original scope of the project.

That project proved many things:

EcoShell Domes can be built swiftly-- we built the entire village in 5 months.

They are inexpensive to build because they use very little cement and rebar-- we were always under budget.

Local, unskilled labor adapts quickly to Dome construction-- we had ONE U.S. superintendent on the job and 370 locals benefitted from the salary, food and training we provided.

It is possible to build EcoShells at a rapid rate by hand. No use of shotcrete machines or mixers are needed. (Although we did employ the use of a few small mixers)

People adopt the Domes as their new homes immediately, and they love them-- I received many letters from villagers saying they were grateful they didn't have to worry about losing their life or their loved ones' lives in another earthquake.

The Domes stay as cool inside as other homes. They stay cooler than other homes if they have some shade.

The Airforms can take a beating-- we built 80 domes with 3 Airforms and the Airforms are still in use today.

We can train and leave behind construction crews to continue building-- our Indonesian superintendents are building homes one by one for \$2500 USD each (donated by individuals or companies).

If you build it...

And we learned one very important thing: If you build it, they will come. People from all over the globe have flocked to see New Ngelepen by the busload. Students, teachers, government officials, international news crews, tourists, and more.

Next time we would leave an office at the site and allow for commercial space for the villagers to sell their wares and refreshments. We would even consider a small hotel.

About Us:

DFTW Foundation is a non-profit, 501(c)(3) tax status organization which provides training, tools and methods for constructing not only superior shelter but complete community systems to those who need them most. Monolithic EcoShell Domes are at the heart of those methods.

Sustainable buildings, according to the U.S. Green Building Council, save energy, water and materials; preserve the local surroundings; assure the health of their occupants; and require little maintenance.

Mr. Perry Gray-Reneberg, professor of industrial technology at Humboldt University, says, “Monolithic Domes [and EcoShells] inherently resist the wasting of more precious resources in that they sustain human life and protect our considerable investment of time. We work to build, commune with nature and one another, and thrive as a culture and society. If our structures are no sanctuary from stray bullets, indiscriminate winds, devouring insects, or raging fires, then they are not sustaining.

Monolithic Domes [and EcoShells] demand our labor once to assure the security of ten generations to follow. Building for the future involves community-wide efforts to educate public servants and economic leaders with what our grandchildren will have as common sense: Monolithic Domes [and EcoShells] sustain all communities of Earth.”

The Monolithic EcoShell Dome

The name “Monolithic” means “one piece” and refers to the Monolithic Dome Institute which developed the EcoShells. The name “EcoShell” means “Economical, Eco-Friendly and Thin-Shell”. At DFTW we normally refer to these Domes as simply, EcoShells.

EcoShells are constructed with 2 or 3 inches of concrete and a modest amount of rebar.

EcoShells use less than 50% of concrete and rebar when compared to a conventional, rectangular building of the same square footage.

The compound curve of the dome makes it stronger than virtually any other structure. They also takes less money and time to construct. ‘

EcoShells are constructed of readily available and environment-friendly materials. Trees and other local natural resources are conserved. Construction can be done by hiring local labor with very little special skills and/or equipment.

These Domes are as disaster proof as a building can get. They will withstand tornadoes, earthquakes, hurricanes, and fire. They cannot be burned, eaten by bugs or destroyed by mold. They will last for centuries. And because of the concrete's thermal mass, interior temperatures remain stable

EcoShell Construction

The EcoShell starts as a combination ring-beam footing and concrete slab floor reinforced with steel rebar. Vertical steel bars embedded in the outer ring later attach to the steel reinforcing of the dome itself.

An Airform -- fabricated to the proper shape and size -- is placed on the ring base. Using blower fans, it is inflated and creates the shape of the structure to be completed. The fans run throughout construction of the dome.

A grid of vertical and horizontal rebar placed over the exterior of the Airform. The verticals go against the Airform and the horizontals on the outside.

Next, enough concrete is applied to the exterior of the Airform to embed the rebar and can be trowelled smooth.

After the concrete has set, the Airform is removed from the inside and re-used.

The rebar still showing on the inside is brushed with a wire brush to remove any loose material. Then a finish coat of concrete is applied to the inside surface.

RESOURCES FOR DESIGNERS:

For information on designing Monolithic Domes and EcoShells see: <http://www.monolithic.com>. Use the search bar if you get lost in the sea of information.

For more information on DFTW's projects see: <http://www.dftw.org>

To see a short video of the project in Indonesia see: <http://www.dftw.org/projects/newngelepen/video.html>

Definitely read this article! http://www.dftw.org/technical/us_ecoshell/index.html

For a short construction tutorial, go here: <http://www.dftw.org/articles/ecoshellhowto/index.html>

For specific questions, email either rebecca@dftw.org or wes@dftw.org

Challenge Description

We have need to cross a major design hurdle. While the project in Indonesia was on all accounts a success, the donor felt, in the end, that the homes resembled “igloos”. This is an issue I deal with all the time.

I KNOW this can be overcome. I look at images of Santorini, Greece and their white washed domes and I know it's just a matter of finding the right designer.

I have some serious investors wanting to utilize our technology to build better housing for the poorest of the poor and those pulling themselves up out of poverty. They have yet to see something that convinces them that the Domes can be as beautiful or even as “conventional” as they are functional.

A few simple architectural details and excellent community design would go a long way towards accomplishing this goal.

We need a conceptual, artistic rendering that will catch the imagination of major sponsors. This rendering would be of the ultimate green city. It would include a mix of high and low density housing, parks, recreation areas, a commercial center, pedestrian walkways, bike paths, hotel and public complex including a school and community center.

Challenge Parameters

The design must mix high and low density housing.

No homes over 40' in diameter, but different profiles within the allowed radius of curvature are allowed. (re: the radius of curvature, refer to: <http://static.monolithic.com/plan-design/rc/index.html>)

Most single family units should be between 20 and 24 feet in diameter.

The Domes can be built up to 5 stories tall for the high density housing.

Must include green space and playgrounds. Optional: soccer field, basketball court, etc.

A commercial complex is needed for grocery stores, banks, laundry, clothing shops, etc. with room for a flea market-type area where residents could sell their wares.

The municipal complex would include a school, primary school, government offices and a community center. (The community center could be built up to 100 feet in diameter)

The design must be conceptual, but wholly buildable.

The design can be of a small village up to an entire city. Have fun, and really go for it!

You are welcome to enter a single sketch or full set of drawings.

And then there are the rewards...

On November 15th in Salt Lake City, Utah DFTW will be holding it's annual fundraiser cosponsored by Jazz for Peace. We will announce the winners at the function. We will be naming five winners.

The winning designers will be notified beforehand so their renderings can be put on display at the event.

On November 17th the winning designs will be highlighted on our website and also on the Monolithic.com website. Profiles of the designers along with any information they would like, will be put online. The Monolithic.com website is one of the top 100,000 websites

on the internet! Introduction into the Monolithic Dome community could be the first step into a new world of construction design. Monolithic Constructors, South's Industries, and other builders are always looking for new designers.

Also, the winners will get one year free membership to the Monolithic Dome Institute, which includes a listing on their index of designers, architects and engineers and referrals.

All designers will retain copyright ownership of their submissions with the following caveats: Each entry must agree to have their submission put online and on display if they win. Also, the winners must agree we can use their designs in our promotional materials.

ALSO

If one of the winning designs leads to a project of 500,000 USD or larger being accepted or funded, remuneration will be granted in accordance with services rendered. For 1 full-color rendering, \$5000. For full-set of drawings including floor plans, renderings and sketches, \$10,000-\$15,000.

AND BEST OF ALL

This could lead to more collaboration and an ongoing business relationship.

The deadline for submission is November 7, 2008.

The Judges and Parameters

The following people will be judging the challenge.

David B. South, Chairman, DFTW, President, Monolithic, Inc.

Rebecca South, President, DFTW

Taj Hamad, Secretary General of World Association of Non-Governmental Organizations (WANGO)

David Randle, President, WHALE center (<http://homepage.mac.com/globalhealing/>)

Wes Haws, Lead Superintendant DFTW; Superintendent, South Industries

Each of us has a skill set different from each other, but complimentary. David's background is in engineering; mine is in nonprofit work and visual design; Mr. Hamad's is in international cooperation and connection; Dr. Randle is an expert on alternative energies and sustainable development; Wes has built more EcoShells than anyone in the industry. He will be our main contact for designers and will consult regarding constructibility.

Judging will be based on:

The handling of mixing high-density and low density housing

Artistic style/vision

Real-world translation

Use of affordable, but excellent, architectural details

Build-ability

Green vision

Overall impact