



PACIFIC OCEAN DOMES

PO BOX 6175
Port Villa, Vanuatu
Tel +678 547 4481

Pacific Ocean Domes Ltd. is seeking Vanuatu Government Leadership and other Organizations to provide direction and funding to build Cyclone Shelters throughout Vanuatu, while providing training for the ni-Vanuatu people for self-improvement and success in a future economy

Pacific Ocean Domes

Structures provided by Pacific Ocean Domes represent a groundbreaking development designed to give the maximum safety in times of devastating natural occurrences. Our domes (POD's) answer the question, "What can we do to save lives in countries threatened by cyclones and earthquakes", frequent occurrences in countries on the ring of fire encircles the Pacific Ocean.

Our life saving shelters (POD's) are based on a concept developed over the last thirty years by Monolithic Domes U.S.A... Our technology allows for the construction of economical, environmentally friendly and severe weather resistant, living structures that will provide long term secure habitats.

Technology

The inflatable formwork we use determines the shape and size of the dome. The Pacific Ocean Domes construction process uses an Airform which is reusable and results in lower construction costs.

Pacific Ocean Domes is pioneering the use of a recently developed reinforcing technology called Basalt Reinforcing.

Basalt Reinforcing has many great advantages, some of which are:

- Basalt doesn't conduct electricity,
- Basalt has the same expansion rate of concrete.

and probably the most important of all

- Basalt doesn't rust, which means that the POD's will NEVER suffer from concrete spalling, commonly known as concrete cancer.

Anybody who has lived near an ocean will recognize that spalling is endemic in such areas.

Whilst others have used Basalt Rebar on individual projects, Pacific Ocean Domes not only uses it exclusively on all its construction projects; but does not use any steel in contact with concrete.

We have developed a method to replace the steel in all phases of the construction, where there is

potential for concrete spalling. There is no steel in the concrete of any the buildings featured on this site.

The base of our POD's has a reinforced concrete ring beam with underfloor cross beams poured at the same time as the slab.

Plumbing

There is no underfloor plumbing, thus avoiding potential costly repairs if a pipe breaks during an earthquake. All plumbing comes through the wall. Therefore, if a pipe breaks it is just a simple case of digging up the dirt covering it and repairing the break.

As the life of these buildings will be measured in hundreds of years, this is very reassuring when considering the case of maintenance during such a long lifespan.

The Pacific Ocean Domes are constructed with an Airform, which is a balloon like, inflatable structure that determines the shape and size of a dome, while the basalt provides a corrosion resistant structure for long maintenance free life.

Pacific Ocean Domes structures are:

- Most effective earthquake safe buildings
- Most effective cyclone safe buildings
- Impervious to termite damage
- Fireproof
- Never suffer concrete spalling,

These five issues are the most destructive issues affecting the life expectancy of buildings on tropical islands in cyclone prone areas.

Pacific Ocean Domes is totally confident that no other construction method can defy nature more than our POD's.

FAMILY FOREST JOINT VENTURE

OVERVIEW

Family Forest Joint Venture (FFJV) is an innovative project to enable Ni-Vanuatu to work with Pacific Ocean Domes, a Vanuatu registered business, to build increased cyclone and earthquake safe housing with a projected life of 500 years.

Pacific Ocean Domes has undertaken extensive research and networking with the aim of introducing to Vanuatu an innovative and creative economical construction system that will build durable concrete shell domes which may be used for Nakamals, Schools, Clinics, Government Offices, Housing, Storage, Roadside shops, Gazebos, Workshops and other structures.

The Pacific Ocean Domes construction reinforcement method uses a cutting-edge, proven concrete reinforcing that:

- Basalt eliminates rust.
- Basalt provides the same expansion rate as concrete.
- Basalt provides a higher tensile strength than steel.
- Basalt weighs only 10%-20% the weight of steel.
- Basalt significantly reduces the amount of concrete used in construction.

As a demonstration of its commitment to the future of improved development and employment opportunities in Vanuatu, Pacific Ocean Domes has built 5 domes on property bought for the specific purpose of training Ni-Vanuatu workers in the unique construction methods and the use of basalt reinforcing. These five have been built at a site next to Erakor bridge. There is an Open Invitation to come, see and touch the structures to determine how they will do the job that is needed to save lives. This is technology that has never before been used in the South Pacific region.

THE PRINCIPLES BEHIND FFJV

The 'Family Forest':

The words, 'family forest' are a reflection of the high connectivity of family groups in the Vanuatu Islands. In Western societies, people often refer to 'family trees'; however, in the Polynesian and Melanesian cultures, the family group is far more extensive and has closer connectivity between each of the family trees. This results in a family group being more a forest than a tree.

Joint Venture Opportunity:

Pacific Ocean Domes management recognises the limitations to raising finance for many Ni-Vanuatu and, in an effort to make safer cyclone-resistant housing available to as many as possible, they have developed the concept of a 'joint venture' between Pacific Ocean Domes and the skilled and in-skilled Ni-Vanuatu labour to build a safer, more durable home.

As part of this joint venture, a prospective homeowner can call on members of their extended family group (the Family Forest) to volunteer their labour and skills to help with construction.

Unlike just about every other construction organisation, Pacific Ocean Domes will encourage the prospective homeowners and their volunteers to do the unskilled work relative to the construction process e.g., digging and compacting the ground for the floor footings, mixing the concrete, supplying the sand and aggregate, wheelbarrowing the concrete, placement of the reinforcing, trowelling the concrete and other basic endeavours.

All work will be done under the supervision of the trained Pacific Ocean Domes construction team to ensure the best possible product at the lowest possible price.

Vanuatu National Provident Fund when approached and after reviewing the engineering plans and a site inspection have agreed to make funds available to approved purchasers.

CONSTRUCTION TECHNIQUES AND OPTIONS

Techniques and Materials:

The construction of the domes involves the use of custom made, air-form balloons. These air-forms dictate the size of the structure.

Pacific Ocean Domes has had three air-forms made in the USA in following sizes:

- 15ft diameter / 12ft high: for road-side shops, storerooms, gazebos, emergency shelters, amenities blocks, laundries and other uses.
- 22ft diameter / 16ft high: for a two-bedroom home, kitchen, bathroom and living room, with the potential of a mezzanine floor for additional sleeping areas or storage above. This structure can be the cyclone safety cell with other external structures like outdoor kitchen and the like. The basic design can be adjusted to add additional domes if required and as the family needs demand.
- 29ft diameter / 18ft high: for a two-storey, two, three- or four-bedroom home, bathroom, kitchen and lounge with the addition of a third bedroom, ensuite and living area upstairs.

In the future, if the need arises, air-forms up to 40ft diameter can be added to the options available. These could be classrooms, medical centres, larger shops, fresh food markets, larger houses and many more options.

With the development of additives for cement, the domes can now be made using saltwater and saltwater sand, while still maintaining an acceptable mpa rating. This is possible only because the unique basalt reo does not rust, negating any of the conventional disadvantages of using saltwater or saltwater sand. This special feature affords the opportunity for construction to be done even on the more remote islands.

Pacific Ocean Domes has acquired the necessary specialised equipment to construct the building, equipment that is not available in Vanuatu and which will require training for the specialist workers who will be project supervisors whilst also being actively involved in the construction process.

The 'Bare Minimum' Approach:

In recognition of the skills available throughout the 'family forest', it is proposed that the bare minimum be completed under the construction contract, allowing the finishes to be completed by the homeowner and the extended family. This 'bare minimum' would be the base, the walls, the door jambs, the window frames and the roof-top ventilator. With the fitting of cyclone shutters, the dome would be a safe haven for many people.

Using the 'bare minimum' approach will make the safety domes affordable for more people and allow for personalisation of the end result. The fitting-out and lifestyle features can be added by the homeowner, either in conjunction with family friends, or paid for over an extended period of time as the money becomes available.

THE PRINCIPAL BEHIND FFJV

History:

Daryll Kelly, the principal of Paradise Domes, has been a property investor, real estate agent and developer in Queensland, Australia, for over 50 years. With increased opportunities, he travelled to Vanuatu where he developed friendships in the local community and decided to become a resident. Following the devastation of Cyclone Pam in 2015, his focus on conceiving a tourist resort changed and he set his mind to working out how safer, affordable housing could be developed to the benefit of the people of Vanuatu.

During his research, Daryll realised the potential to use concrete dome housing based on superior materials and construction methods. Using his own funds, he committed to establishing a business and acquiring equipment so construction could start in early 2017 and continue through today.

Future:

Pacific Ocean Domes plans to become a significant construction company **employing both trained building specialists and un-skilled ni-Vanuatu labour to build anywhere in Vanuatu or other Pacific nations.**

Pacific Ocean Domes has the potential to be the construction resource company for relief organisations who want to build emergency housing after a natural disaster. This could lead to international contracts employing Ni-Vanuatu workers to the benefit of the entire Vanuatu community.

Planning for and building life-saving structures for the future should start NOW, it is too late after a death dealing natural catastrophe strikes to say, "I wish we had safe places for our people to go when a cyclone is approaching."

Pacific Ocean Domes has built an outstanding PROOF OF CONCEPT display site for all to see, and we call on the Vanuatu Government not to turn their back on this opportunity but to find a way for Pacific Ocean Domes to bring our safe structures to reality for all Vanuatu citizens.

What do you see for the future of Vanuatu?

What Questions do you have?

Do you want:

1. A SAFE SECURE AND RESILIENT VANUATU
2. Something that will last HUNDREDS OF YEARS
3. Structures impervious to TERMITES
4. Structures impervious to FIRE
5. Structures impervious to EARTHQUAKES
6. Structures impervious to CYCLONES
7. Structures impervious to VOLCANIC ASH
8. Structures impervious to CONCRETE CANCER (Spalling)
9. Structures that are ECOLOGICALLY FRIENDLY
10. Structures that are VERY LOW MAINTENANCE
11. Structures that are THERMALLY EFFICIENT (save on heating and cooling)
12. Structures that are BRIGHT AND AIRY

The ANSWER:



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Port Villa, Vanuatu

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Pacific Ocean Domes provides energy-efficiency, environmental friendly, strength and survivable building structures for: Nakamals, Government buildings, Business Offices, Schools, Dormitories, Hospital, Medical Facilities and Residential Housing

MISSION

Our Mission is to provide safe, affordable, sustainable structures for people allowing allowing a higher standard of life and safety in times of natural disaster



ADVANTAGES

- Pacific Ocean Domes construction process saves both money and time.
- A Dome interior can be designed for any activity or use and with virtually any theme.
- The Dome disaster-resistance usually merits lower insurance premiums.
- Pacific Ocean Domes have strength that produces longevity.
- Lifespan is measured in centuries, not years.
- Domed are constructed to be passed down and used by generations.
- Easy maintenance complements the dome longevity. Lasts beautifully, with easy care.
- Pacific Ocean Domes are micro-energy users. Minimum energy needed to maintain a comfortable interior, usually one fourth of that used by other types of structures.
- Takes less energy to heat or cool a Pacific Ocean Domes structure than it does to heat or cool a super-insulated metal building, or a conventional house blanketed in an airtight wrap.
- Domes cannot be destroyed by most natural or manmade disasters.
- Domes providing near-absolute protection.

NATURAL DISASTER PROTECTION

Pacific Ocean Domes structures are proven survivors of tornadoes, hurricanes, earthquakes, and fires.

- In the U.S.A., Hurricane Katrina did more than \$100 million of damage to a DuPont facility and the Category 5 hurricane nearly totaled their plant. Through it all, 30 of Dupont's Hurricane Crew – professionals who assess damage after a hurricane – sat secure and comfortable in their Dome.

- A reporter once asked a dome home owner, why did he build a round dome building. The homeowner said he wanted it streamlined like a car. The reporter then said, “But this is a house, not a car.” The homeowner gave a simple response, “Yes. But every few years, all homes along the coast have an opportunity to go 100 miles per hour.”



Severe Tropical Cyclone Pam (2015) was the second most intense tropical cyclone of the south Pacific Ocean in terms of sustained winds and is regarded as one of the worst natural disasters in the history of Vanuatu. A total. 15 people lost their lives either directly or indirectly because of Pam with many others injured. The cyclone crippled Vanuatu's infrastructure: an estimated 90 percent of the nation's buildings were impacted by the storm's effects.

GREEN ENVIRONMENTAL

Pacific Ocean Domes structures are green buildings – they are considered among the greenest of today’s building alternatives

SCHOOLS

In 2017 Vanuatu announced plans to roll out free education up to year 10, and that starting in 2018 there was to be free early education as well as secondary education for students from year seven to year 10.

The Pacific Ocean Domes structures offer the opportunity for an open campus design that maintains traditional island themed structures, but provide a clean, standardized, and modern open-air classroom complex that provides a safe and secure shelter in times of natural emergencies.



Figure 1A current classroom



Figure 2Recreation Area



Figure 3Classroom Complex



Figure 4Admynn-Meeting Room

UNIQUE DESIGN

Pacific Ocean Domes incorporates a unique Building Design using basalt reinforcement bars to prevent rust and concrete cancer



OLD SCHOOL ZONE



NEW SCHOOL ZONE

Pacific Ocean Domes Ltd a Vanuatu Company

Built in Vanuatu by Ni-Van workers

Tel +678 547 4481

www.pacificoceandomes.com

[Email: daryll@pacificoceandomes.com](mailto:daryll@pacificoceandomes.com)

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