4 Reasons to Consider the Monolithic Dome!

MONOLITHIC®
Monolithic Dome Institute

"There is no stronger, safer or more energy-efficient building available for the price of a Monolithic Dome,"
David B. South - President, Monolithic Dome Institute

Four Reasons to Consider a Monolithic Dome:

1. **Energy-Efficient**
2. **Lower Construction & Maintenance Costs**
3. **Longevity - Life Span Measured in Centuries**
4. **Survivability - "Near-Absolute Protection"**

The Monolithic Dome is a super-insulated, steel reinforced concrete structure used for homes, schools, gymnasiums, bulk storage facilities, churches and offices!

1. Highly energy-efficient

The shape of the Monolithic Dome is one of the reasons for its energy efficiency. There is less surface area per square foot to heat or cool compared to the square or rectangular building. However, the materials used in its construction are a more important component of energy savings that result in these round structures. Polyurethane foam, one of the best insulating products available today, accounts for a large part of the Monolithic Dome's energy efficiency. Because the foam protects the concrete, a thermal mass provides superior energy efficiency. When the interior of the dome is heated or cooled the concrete warms up or cools off, then maintains that temperature for a long period, and radiates that temperature back into the dome's interior. This translates to a savings on average of 30-50% vs typical construction methods to heat and cool a Monolithic Dome.

2. Lower Construction & Maintenance Costs:

Generally, the construction of a Monolithic Dome costs equal to or less than that of a conventional structure of a similar size. In 2000 and 2001, construction costs for Monolithic Dome schools finished in the upper $70s and low $80s per sq ft. Arizona has the greatest number of Monolithic Dome schools. There, conventional school construction costs about 18% more than Monolithic Dome construction, and, obviously, the conventional schools lack the benefit of ongoing energy savings. Considering costs, inflation must be kept in mind. Construction costs have been increasing by about 9% annually. Location also makes a difference. Construction in California, the Northeast and prevailing wage states is more costly. The on-the-job experience of designers and builders is yet another consideration. (Dome homes normally run from $75-$100 per sq ft.).

Biship Nevins Academy in Sarasota, Florida is the first Monolithic Dome School in the state and consists of five domes.

3. Longevity - Life Span Measured in Centuries:

The lifetime of a Monolithic Dome is measured in centuries. Over the years as needs change, a Monolithic Dome home, church or school may need remodeling but not replacement. In most cases, the clear-span interior of the dome makes remodeling relatively simple. The protective shell will prevent most decay and damage from the elements over time compared to normal structures.

4. Survivability - "Near Absolute Protection"

In the FEMA manual titled "Design and Construction Guidance for Community Shelters", near-absolute protection means that, based on our knowledge of tornadoes and hurricanes, the occupants of a shelter built according to this guidance will be protected from injury or death. In short Monolithic Domes offer near-absolute protection from natural disasters such as tornadoes, hurricanes and earthquakes. Monolithic Dome construction meets and exceeds FEMA's criteria.

Fire Safety: The national Uniform Building Code, categorizes structures based on their ability to resist fire. Type I and Type II structures are built primarily of noncombustible materials such as concrete, steel, metal and masonry are most fire-resistant. Type III, Type IV and Type V are less fire-resistant because they use combustible materials such as wood. All standard US homes are built as Type V fire rated structures which means they are built entirely of combustible materials. A dome is fire rated at Type II or better. The contents inside may burn, but the overall fire safety is incredibly high. If a conventional home or school is built to meet Type II Fire Resistive Codes, the Monolithic Dome, which automatically meets or exceeds that code will cost significantly less.

Monolithic Dome Survives Engulfing Flames of California Wildfire

by Freda Parker, MDI

Because a troubled 16-year-old boy who allegedly started a brush fire in an olive grove at the end of Bryant Street in Calamesa, California, a fire started only about a mile from the Braswells' home: three Monolithic Domes in an aerodynamic design, perched on a 1,500-foot ridge. The temperature was above the 100-degree mark that hot, dry afternoon, so the fire spread rapidly. Within a short time, the Bryant Fire reached the surrounding wall and outlying buildings at the Braswell estate.

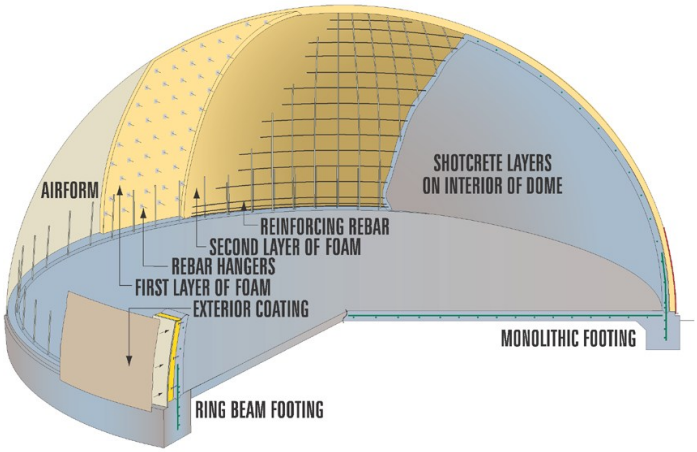
The Bryant Fire did destroy the free-form, faux rock wall about 30 feet long, built from polyurethane foam to conceal their swimming pool and protect pool equipment. The wall extended from the edge of their ridge to the garage and was to be coated with stucco. The fire also damaged the electrical box on the outside of the dome and caused smoke damage on the inside. Consequently, the Braswells could not live in their dome home for more than six weeks after the fire while the electrical system was repaired, painting completed and carpeting replaced.

Ruths's Story
A fire captain from a neighboring county came over and asked, "What's this thing (the dome) made of?" We told him, and he said, "Well, you do know that if this structure had been made of normal construction that you would have a pile of ashes now."

He then told us that at one point the firefighters thought they would have to abandon fighting and give up on saving our house. Then they saw that it could withstand the fire, so they decided that if any of their crew got in trouble, they were going to break the doors down and put the guys in the dome so they would be safe. I said,. "You would not have to break the doors down. I unlocked them all for you." And they stuck it out. They had to move their trucks three times, but they did it.

Additional losses for the Braswells included three antique vehicles, a foam machine, a compressor, a utility trailer and miscellaneous equipment, that were not inside the domes, for an estimated total of about $300,000.

Other than replacing the exposed free-form, faux rock wall and other cosmetic issues, the domes survived intact and protecting all interior contents. A little smoke damage is a small price to pay for saving your precious valuables, memories and loved ones.



The Construction Process

FOOTING: A Monolithic Dome starts as a concrete ring foundation, reinforced with steel rebar. For smaller domes, an integrated floor and ring foundation may be used. Vertical steel bars embedded in the ring beam footing are later attached to the steel reinforcing of the dome itself.

AIRFORM: Fabricated to a proper shape and size, is attached to the concrete base. Using fans, the Airform is inflated - creating the shape of the dome and is both the form for construction of the dome and the outer roof membrane of the shell when it is finished. The inflator fans run throughout the construction of the dome shell.

FOAM: Approximately three inches of polyurethane foam insulation is applied to the interior surface of the Airform.

REBAR: Steel reinforcing bars, or rebar, is attached to the foam using special "hooks" embedded in the foam. The rebar is placed in a specially engineered layout of hoop (horizontal) and vertical steel rebar.

SHOTCRETE: A special spray mix of concrete, is sprayed onto the interior surface of the polyurethane form, embedding the rebar. After three inches of shotcrete is applied, the Monolithic Dome is a steel reinforced, concrete structure.

EXTERIOR: Exterior coatings are an essential aspect in the longevity to the Dome Exterior. Coatings serve as a UV shield to protect the Airform and foam insulation as well as achieve a desired appearance.

Dome of a Home Survived Hurricane Ivan on September 16, 2004

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