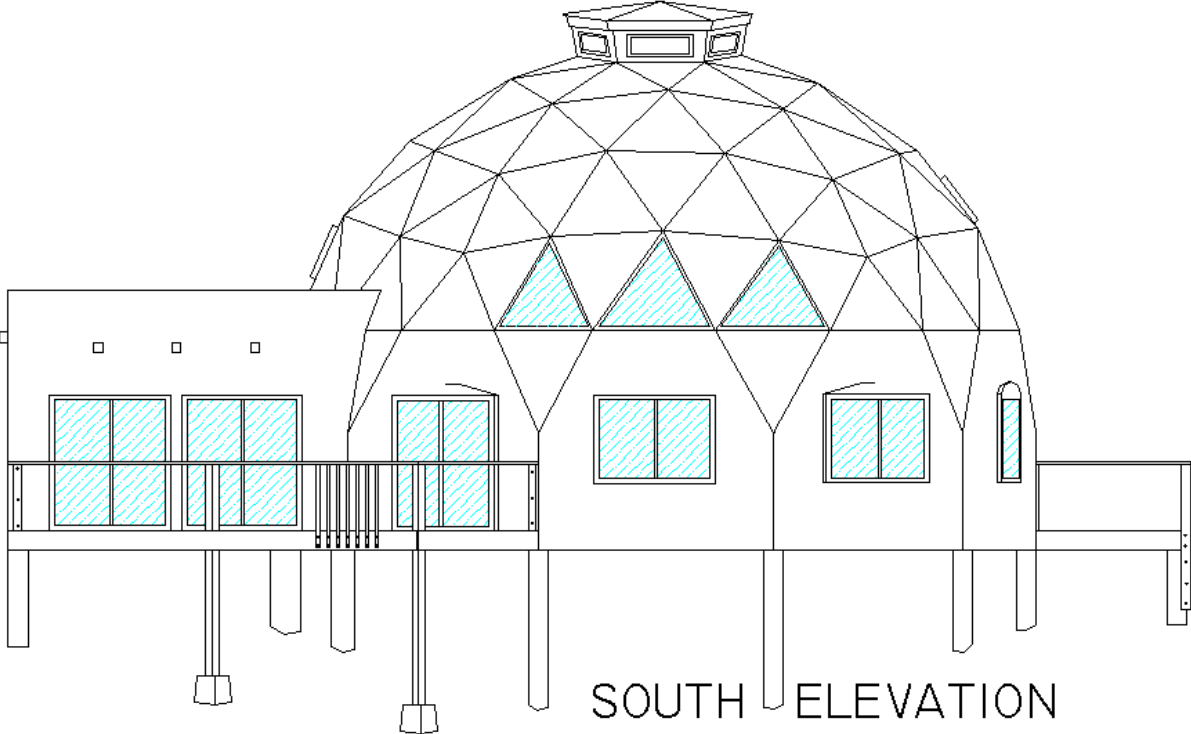
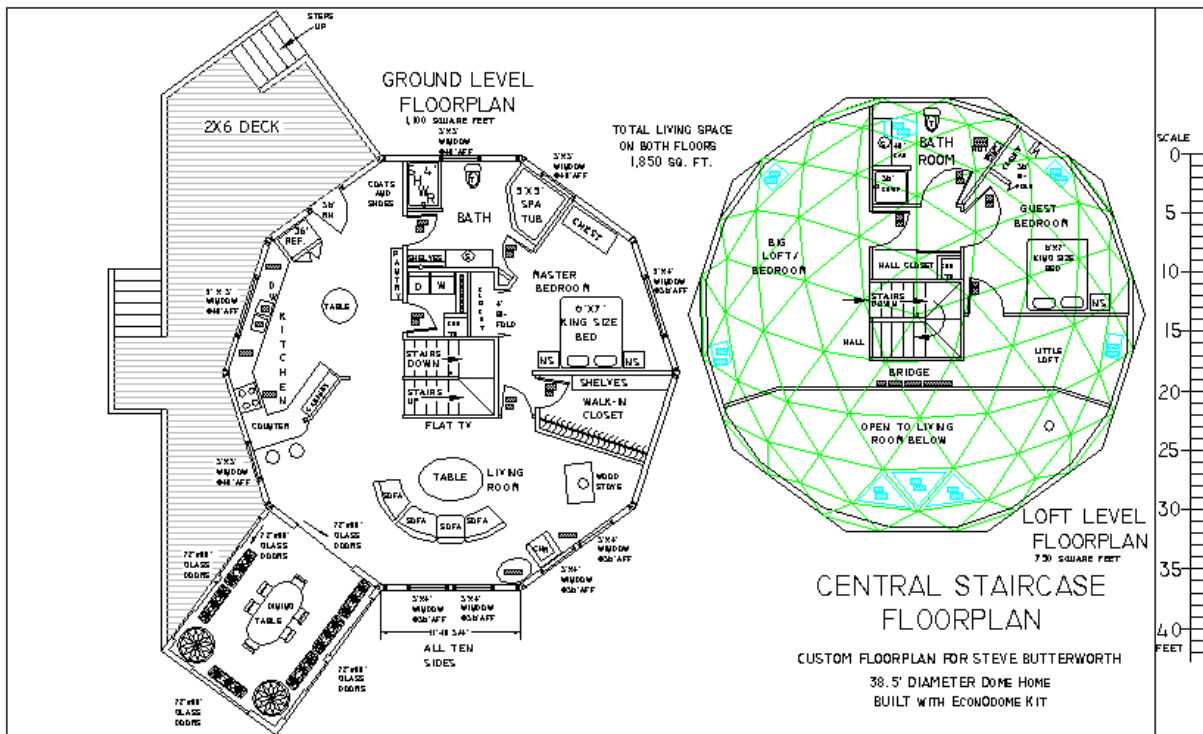


Building an EconOdom

By Steve Butterworth, December 6, 2011





I am a retired teacher with some experience in most phases of building and renovation. I always wanted to live in a dome and also wanted to build my own home. Luckily I was able to afford to combine both these wishes. Never having lived in a dome before, it was a bit of a risk. Now that I have lived in a dome, I do not regret it a bit. Living in a dome, especially the one we designed and built, is a daily pleasure for my wife and I.

Before I started building our dome home, I was able to check out two EconOdomes in my area that had already been built. One of the domes was entirely built by the owner, a man who had lots of experience building homes. It took him two years ("24/7", by his account) to complete. The other dome was done with the help of a contractor. Both were the 38.5 foot (diameter) size. I went the middle way-I was my own contractor and hired sub trades for most of the plumbing, electric and drywall work. In addition, I had an experienced guy who worked with me nearly every day throughout. He was a good framer and all around builder, and with all those angles, even he was sometimes challenged. Our dome was in move in shape in 12 months.

Having visited and talked to the two other EconOdome owners was a real help to me in designing the plans for our dome and I recommend that anyone contemplating a dome try to see at least one before taking the plunge. We came away with the desire to have a feeling of space, with as much storage as possible. To accomplish that, we added some extra components to the basic dome design:

1. Two bay windows.
2. A gallery design for the second floor that covered about half the floor space, opening up the interior to the very top of the structure.
3. An additional room (the sunroom) attached to the west side.
4. A third floor loft/attic.
5. A cupola with windows all around.

I am glad I purchased EconOdome kits. The EconOdome kits, which provided the framing pieces, including door, window and skylight framing plus blocking, and also the 130 exterior insulated triangle panels used to cover the framing, worked well. The EconOdome frame kit saved time figuring out all the compound cuts. The pre-cut exterior triangle panel kit also saved a lot of cutting and assembly time. The cupola frame kit was an add on to the Basic frame kit. It is a complex structure in its own right, with five sides, a slanted roof and five window openings. I might still be trying to design and assemble it.

As soon as I committed to going with the EconOdome, Wil Fidroeff, the owner of Faze Change Produx-Econodome, was there whenever I needed advice. He did the architectural plans and design with us as well. His experience in dome building and dedication to cost efficiency and service were really remarkable.

One of my challenges was the site, which is on a slope. Because it was on a slope (and I wanted at least a partial basement), and the ground was hard to dig out, it was decided to build the house on pillars. The engineering called for 17, 18 inch diameter poured concrete columns. These columns had to be equal altitude and spaced an exact distance apart so that the bottom framing timbers would rest on the outside edge of the columns and all fit together. This was a real challenge! The layout for placing the columns was not a one man job!

When the columns were poured and the horizontal framing timbers attached to the stainless steel straps embedded in the concrete of the columns, the framing began. First the glue lam beams, then the plywood decking and then the pre-fabbed perimeter riser wall frames. Above the riser walls pre-fabbed vertical trapezoid frames were put into place. And above that the individual framing boards (struts) for the triangle panels were attached with more screws. About 3,000 screws later, the basic framing, including the cupola was in place. Then the blocking boards and more screws to attach them were installed. Because the EconOdome tries to be really strong, 3 stainless steel straps were attached on the outside at the intersections of the triangles (nodes). With the blocking, the straps and the inherent strength of the dome structure, the result was a strong rigid frame. This frame became even stronger when the 130 exterior triangle panels were nailed on the outside.

A word about the pre-cut exterior triangle panels-Each triangle panel sandwich was comprised of a layer of plywood and a layer of inch thick R-Max (R-7) foil faced insulation triangle pre-laminated to a pre-cut triangle of DensDeck Prime Roof Board. DensDeck Prime Roof Board is a UL approved commercial waterproofing cover board (exterior cladding) with woven fiberglass matting on both sides. The cracks

between the triangle panels were filled with spray foam. This created a contiguous layer of insulation on the outside that really enhanced the insulative property of the shell because there were no intervening framing members to conduct the cold. This complete shell of closed cell foam insulation also has the effect of eliminating unwanted infiltration heat loss and gain.

After the triangle panels were in place and sealed, the seams were taped and sealed with Vap-R-Lok elastomeric primer and saturant. Vap-R-Lok primer and saturant was used to saturate the fiberglass matting and polyester cloth strips that were placed over all seams and fastners. The sealing process is called the "saturated seal". Then a texture coat of Recycled Rubber Roofing was then sprayed and rolled over the exterior shell. A final color coating of UV resistant elastomeric paint was then roll painted over the exterior surface.

Once the exterior was finished, insulation was sprayed inside everywhere, including underneath the main floor. Because of the southern exposure and the other insulative features of the design, we have a home that is about R-45. In practical terms, yesterday (December 6), our home was about 74 at 9 p.m. After a night where the temperature got down to 24, it was 65 inside in the morning-with no heat except the dying woodstove in the intervening period. Now, at noon, the inside temperature is 72 and it is 38 outside. No heat except the sun since last night. We will probably put the woodstove on around sunset for three or four hours tonight.

The interior framing was the creative part. The original plans called for a straight run of stairs to the second floor. This was modified to an L shape stairs with a landing. The bedroom downstairs shows a closet on the west wall. This was eliminated and two closets were put in with an additional 'Harry Potter' under the stairs storage area accessed from the bedroom. I can't begin to tell you what a difference the two bay windows meant. They provide extra storage, light and the illusion of more space. The third floor loft is directly below the cupola and was another addition. Since the second floor rooms are open to the ceiling, a loft area with a gallery wall was built (with attic ladder access) there.

Picture gallery



First, the pads for the columns



Column forms ready to pour



Timbers fit!



First kit pieces-risers



Then the individual compound cut triangle pieces. One at a time...



All framed up with blocking in



North side



Panels on, windows and doors going in.



Drywall in- bay windows in background



Dining room and sunroom



Living room, stairs up, kitchen to the left.



Kitchen and pantry door



loft, cupola and rooms on either side,

I am happy to share more information with anyone who is interested. Please feel free to contact me at sbresolana@gmail.com.