

NATURAL SPACES DOMES

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50 Ways to please your mother – Earth!

This list represents Earth friendly features we used in the building of our geodesic dome complex.

Natural Spaces Domes World headquarters in North Branch, Minnesota, has 9 domes. They include our certified Energy Star 5 Plus Bear Creek Dome, Forest dome, Office dome, Guest dome, Minnedome, two shop domes and a Screen Porch dome. We invite you to visit our facility and see the features we list below. We practice what we preach.

1. The exterior dome shell uses 60% less structural materials to build than a similar-sized conventional box house.
2. In our Bear Creek Dome, we utilized 18" thick walls and roof providing an R-value of 64. Our other non-dome walls are 12" inches thick with an R-45. Most Minnesota homes have R-19 walls and R-49 roofs.
3. Formaldehyde-free fiberglass insulation with no phenolic resins made from 35% recycled glass along with insulation made from recycled blue jean material.
4. Two blower door tests were done during the construction of Bear Creek Dome. We utilized smoke bottles and an infrared thermal scan gun, allowing us to "tighten" the house and eliminate air and thermal "leaks". We achieved a rating of 3 ACH.
5. Extensive use of triple pane skylights (by Natural Spaces Domes), greatly reducing energy loads and drafts caused by cold inside glass. Solar tinting on upper southeast facing skylights reduces summer time heat gain and overheating.
6. Use of triple pane glass instead of Low "E" coatings in selected areas, increasing the indoor plant growth, creating a healthier environment.
7. Marvin triple-pane windows for all the conventional (non-skylight) glass areas with Low E coatings and argon gas between panes.
8. Main windows positioned southeast to take advantage of winter morning solar gain and eliminate hot southern and western sun.
9. Use of Cupolas on the dome structures combined with operable windows at the floor levels, allowing for natural cooling and fresh air intake thru non-mechanical means. Ground cooling design features mean night time air is cooler in summertime. The circulation in a dome allows for easier natural air flow.
10. Extensive daylighting from skylights & windows allow outdoor views from all work stations & offices, reduces need for internal lighting during daylight.
11. Use of Velux Sun Tunnel for daylighting over work area.
12. 98% of all lighting is LED lighting. The remaining 2% is low wattage halogen.
13. Frost Protected Shallow Footing system eliminates extensive excavation.
14. The concrete slab radiant-heating system utilizes hot water flowing through PEX tubing. It is proving to be extremely energy efficient for a 3200 sq. ft. home located north of Minneapolis/St. Paul, Minnesota. The 10 year average cost is \$520 total –for ALL winter, October thru May.
15. Two boilers for radiant heating to provide a backup system if the power goes out and to test the cost efficiency of gas versus electricity. Natural gas "Munchkin" boiler 92% efficient. Electric boiler is 100% efficient.
16. Instantaneous, high efficiency, natural gas water heater provides unlimited hot water without storing 80 gals of hot water 24/7.
17. All appliances have high Energy Star ratings. The mini-split air conditioning system has a SEER rating of 19.
18. Electric stove to prevent toxic gas emissions inside the house.
19. Dual-flush toilets for water conservation. (.8 gals or 1.2/flush.)
20. Clivus Multrum composting toilet in operation in Forest Dome since 1975.

21. Low-flow shower heads. (1.5 gpm)
22. The "whole house" water filtration and softening system uses less water and no salts while processing all water usage.
23. The air-to-air heat exchanger (HRV) constantly brings in fresh air and exhausts stale moist air.
24. Low noise, highly energy efficient bath fans.(180 CFM)
25. Concrete floors utilizing flyash additive which is ash from coal- burning plants.
26. Concrete floors were stained, eliminating the need for carpets or other floor covering.
27. The majority of the wood used is FSC certified.
28. Extensive use of fallen and reclaimed wood such as the white oak window sills and bathroom counter tops, entry porch cedar posts, and rough- sawn pine door trim. The white pine wall paneling is fallen wood from our property. The white pine for the floors and stair treads was harvested due to road construction ("road-kill?") in the immediate area. The railings are non-debarked fallen cedar from northern Minnesota. Reclaimed redwood is from an 1890 Grainbelt Beer brewing vat that was repurposed.
29. Cabinetry is from IKEA, which are built with non-toxic materials and sustainably managed forest products.
30. Zero hard-surface exterior paving areas allows water to flow into the ground for plants and trees.
31. Recycled crushed concrete driveway topping.
32. Man made exterior concrete "stone" wall surfacing eliminating repainting and maintenance of riser walls and cupola walls.
33. Minimal usage of PVC piping, reducing toxic chemicals.
34. Use of machine-hewn 2x6 "log" siding on exterior walls with non toxic stains. This will "age" naturally requiring minimal maintenance especially with wide roof overhangs. Eliminates the use of PVC "vinyl" siding.
35. Recycled steel mantle has a special rusted surface that never needs finishing.(Cor-ten steel)
36. Fireplace hearth rock is taconite stone from an abandoned northern Minnesota iron mine.
37. Galvanized steel entry porch "cool roof."
38. Mold-free sheetrock with no paper facing on non-dome interior walls.
39. All bedrooms equipped with an electrical shut-off switch eliminating all electromagnetic fields in the bedroom and around the beds.
40. Fireplace utilizes two 6" diameter outside air tubes for combustion with sealed glass doors. Fireplace designed with vents to heat other rooms in dome.
41. Non-toxic no VOC paints, stains and wood sealers from AFM Safe Coat and Pittsburgh Paints throughout the house.
42. No sealer or coating on interior wood triangle dome panels.
43. Ceramic Tile made from recycled product.
44. Wildflower and native habitat protected and encouraged yard. No "artificial" lawns.
45. Recycling and composting areas planned into cabinet layout.
46. Handicap accessible throughout main floor, all doors 36" wide, front door is 42" wide, no steps which increases the long term use of the home.
47. Extensive use of existing Evergreen trees for shading & cooling.
48. Use of dead & downed trees from only a few acres of our 50 acres and scrap wood from our dome building shop is burned in a detached, high efficiency wood heating system, providing heat for 10,000 sq. ft. of enclosed space in 5 domes. Installed in 1994, it still meets EPA standards in 2021.
49. Reuse of many architectural antique items in the design of the structures.
50. Motion sensor lighting switches in some rooms turn off lights when you leave the room and turn them on when you enter.