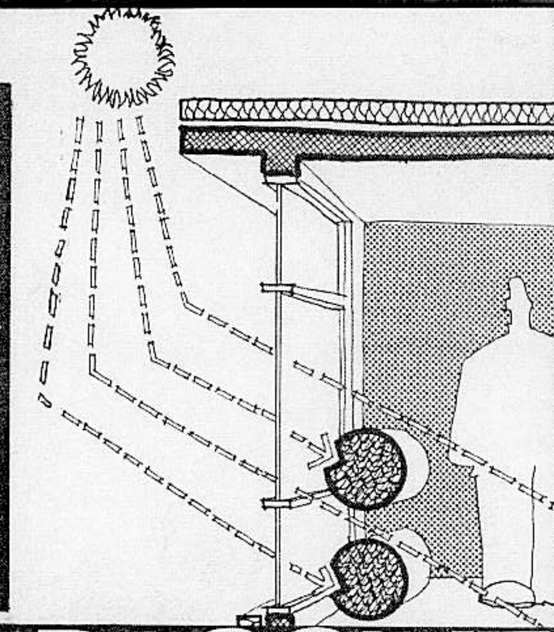
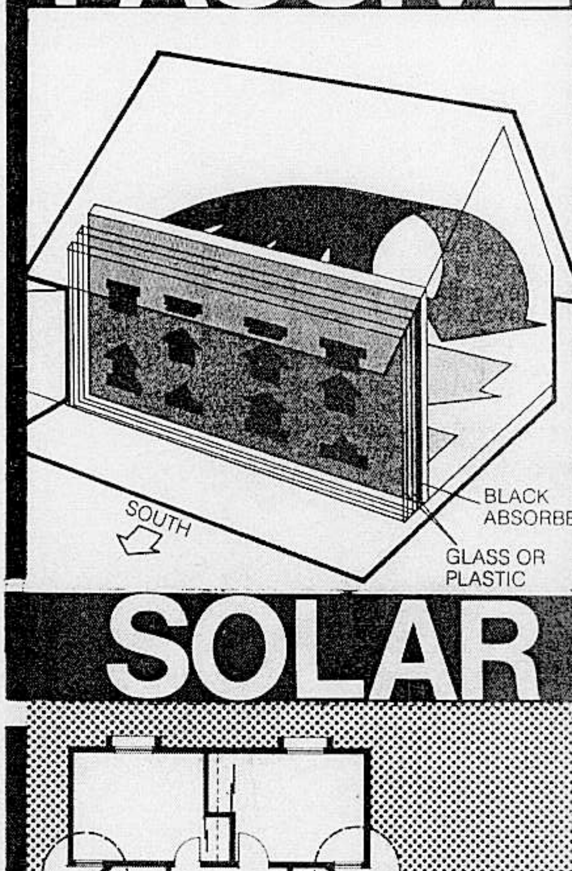
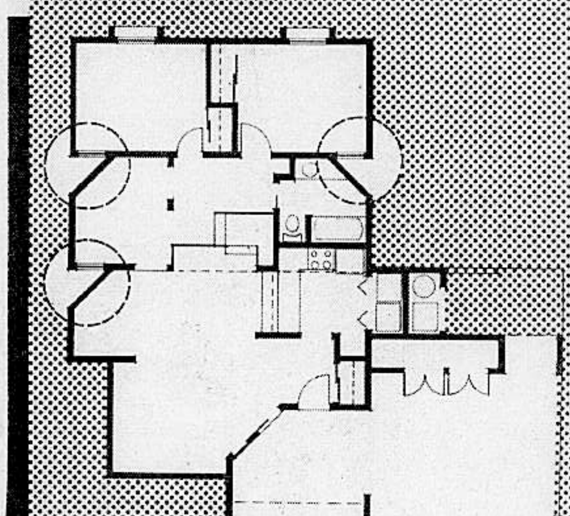
CALIFORNIA ENERGY COMMISSION



PASSIVE



SOLAR



HANDBOOK

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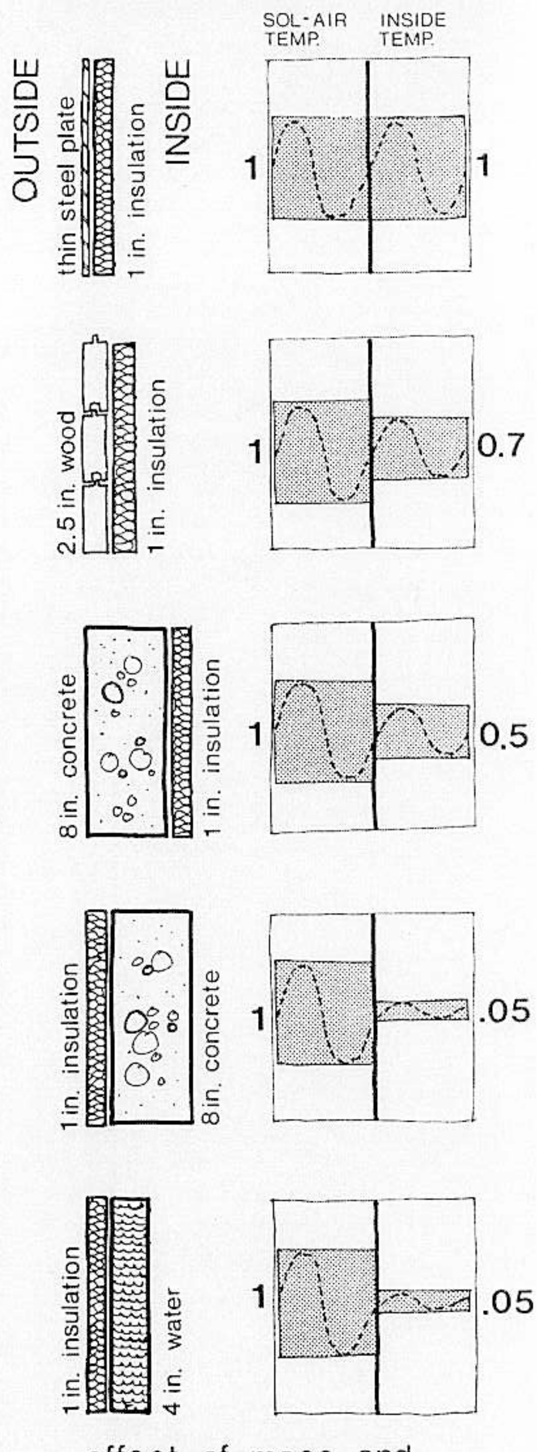
Sacramento . Field verification of performance curves.

average--our building might be comfortable during spring and fall, but will consistently be too hot in the summer and too cold in the winter. In the historical forms of these architectural types there could be very little done to resolve this problem. Now, however, we are able to "tune" passive buildings to seasonal changes. But before discussing how this is done, let's consider whether the traditional, heavy building can be improved upon.

1.4 OPTIMAL USE OF MASS AND INSULATION

A heavy wall must have two qualities in order to dampen diurnal changes in the exterior environment and thus keep the internal temperature of a room relatively constant: heat capacity--the ability to store heat, and low heat conductivity--the ability to resist, or to insulate against heat flow. If one intermittently exposes an adobe brick first to a blow torch and then to cold water (and if each exposure time is relatively short) the temperature of the brick never reaches either extreme, but oscillates somewhere in between. The heat capacity of the brick keeps its temperature from rising rapidly with the small heat addition, or dropping rapidly with the small heat extraction. The brick's insulating quality prevents heat from entering or leaving very rapidly.

Adobe, however, doesn't happen to have the optimum combination of heat capacity and insulation. This problem can be resolved by the way the material is used which is as important as what material is used. The most effective way of maximizing the two qualities--heat capacity and insulation--in a building wall is to use two separate materials. Ideally, one would choose a material with little heat capacity but high resistance to heat flow, and a material with high heat capacity having little resistance to heat flow. By placing the insulating material next to the external environment, little heat is allowed into or out of the building. And with the high heat capacity material next to the inside environment, what heat does enter or leave (primarily through windows and interior heat generation) can't change the temperature of the heat capacity material rapidly. Thus, little heat is let in or out, and the high capacity material slowly stores heat. The building's thermal mass damps out temperature fluctuations.



effect of mass and insulation

"My Monolithic™ Dome buildings are saving me 75% on heating and cooling bills."

— Phillip Ricks, Owner, K-P Foods, Inc.

The Monolithic Dome may be the best engineered, best insulated and least expensive permanent building in the world today.

Though only a recent innovation, over 200 Monolithic Domes are in use across the country today. They are being used in every capacity — from warehouses to government offices, from factories to freezers, from retail stores to storage, and many homes.

Monolithic Domes are typically being built for half the cost and in half the time of comparable structures. They are often built in the middle of the winter.

In every size and capacity, owners are reporting significant savings in heating and cooling the Monolithic Dome.

K-P Foods, Inc., manufacturer of a frozen dessert product, uses a 1250 square foot Dome to store its product at -5 degrees (F). Based on refrigeration experts' opinions, the freezer should be using **four** times the 5 tons of generator power it uses.

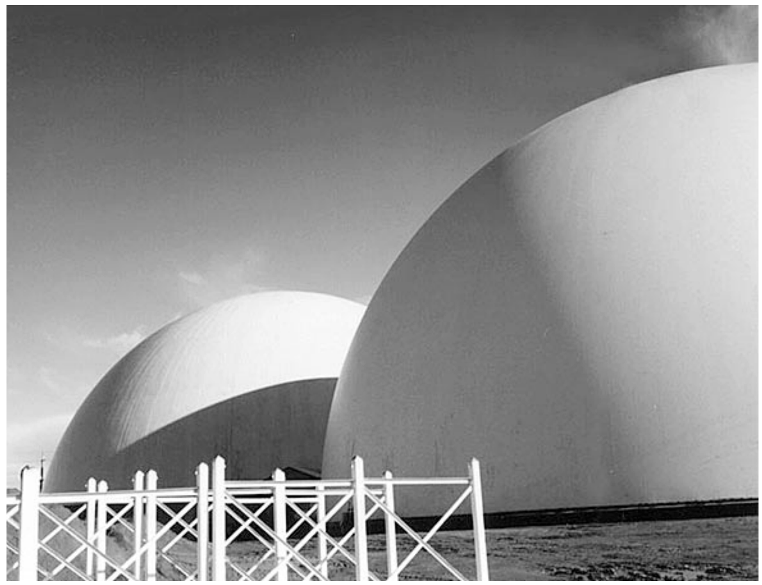
K-P's manufacturing plant, 6,350 square foot dome, is heated in winter with 120,000 BTUs of power. Experts insist the plant needs **five** times more heating power. K-P owner Phillip Ricks has substantiated his savings by comparing his electric bill with others.

To understand why the Monolithic Dome is so energy efficient, you need to know how it is built.

Construction begins by inflating a fabric form. The inside of this form is sprayed in a continuous sheet with two to five inches of polyurethane foam. A custom-designed network of steel bars is attached to the interior side of the foam and then sprayed with 2 to 6 inches of high-density concrete.

An engineering report: Why the MonolithicDome is so energy efficient:

The massive concrete shell acts as a "heat sink," storing incoming heat and releasing it slowly to reduce peak loads.



CALAMCO Cold Storage facility. Each Monolithic™ Dome is 230 feet in diameter and can store 13,000 tons of fruit — that's over 600 semi-truck loads.

Polyurethane foam has the highest insulative value of any building insulation.

Since the insulation is bonded to the **outside** of the concrete, it reduces the amount of heat being transferred into or lost from the concrete to outside conditions, thus increasing the temperature buffering effect of the concrete.

Because the urethane is sprayed in a continuous shell, there are no joints, thus eliminating leaks. The Dome is seamless and nearly air tight.

The Monolithic Dome has many other important advantages, including its great strength, durability, and resistance to fire and corrosion.

Learn more about why so many businesses are choosing the Monolithic Dome. If you'd like, we'll put you in touch with other Monolithic Dome owners.

With energy and building costs constantly rising, you really deserve to investigate further.