

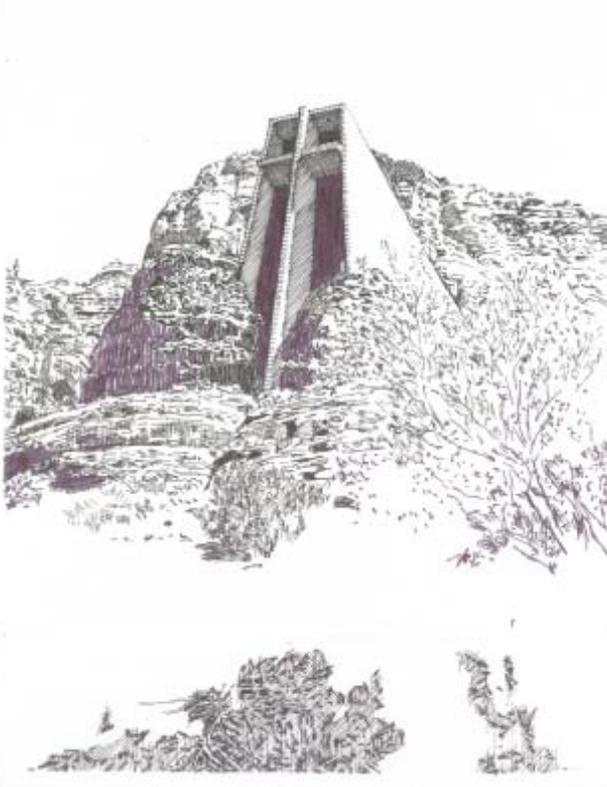


ARCHITECTURE

EHLINGER & ASSOCIATES

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Chapel of the Holy Cross, Sedona, AZ © 2012 Ladd P. Ehlinger



Chapel of the Holy Cross

The Chapel of the Holy Cross in Sedona, Arizona is this edition's print of a sketch by Ladd P. Ehlinger. This chapel is unique, elegant, and has become a shrine for Christian pilgrims of all faiths because of its beauty and unique setting in what I call God's Architecture, and the fact that it complements its setting without competing. The chapel was the inspiration of and commissioned by a woman who was a sculptor, who also owned a vacation ranch in Sedona: Marguerite Brunswig Staude. Ms. Staude originally got the concept for chapel while studying in New York when the Empire State Building was being constructed in 1932. She observed that the cruciform shape of the plan got lost three dimensionally, and mused that this occurred in all historic Catholic churches, from the great cathedrals to simple chapels. They were a cross in plan, but it was not expressed in space and form. Initially, she

played with the idea and enlisted Lloyd Wright, Architect, the son of Frank Lloyd Wright, to design it. At that time Ms. Staude was living in Los Angeles and the Bishop refused to participate in the project. An Order of nuns in Budapest heard about the project and enlisted her to have it built there. Wright proceeded with his design for the Budapest site.

The Budapest project was abandoned with the outbreak of WWII. After the war, she decided to build the chapel in the U.S. rather than in Europe. Lloyd Wright refused to continue his participation further, probably because she had scaled back the size of the project. Ms. Staude searched for and

interviewed many architectural firms, and selected the San Francisco architectural firm Anshen and Allen, with the Design Architect being August K. Strotz, and Richard Heim, Project Architect. The architects assisted Ms. Staude in selecting the site in Sedona, where she had a vacation ranch. The site selected was in the Coconino National Forest, and was essentially unbuildable without an Act of Congress. She prevailed upon the late Sen. Barry Goldwater to assist in obtaining a special-use permit.

With the land use permit in hand, Ms. Staude moved forward by selecting as General Contractor, the firm of Williams-Simpson Construction Company, because of confidence in their capabilities after having built many projects for the Staude's family business. The Superintendent selected was Fred H. Coukos. The challenge for Coukos was

daunting, as Sedona was very primitive in those days. There were no paved roads around the site nor many in Sedona, no ready-mixed concrete available - even the sand had to be imported to be used as a form separator. Coukos surmounted all of the challenges by moving his family to Sedona and literally living the project for eighteen months until it was finished in 1956. The total construction cost was \$300,000, which seems modest even for 1955-56 considering the complexity of the site and the difficulties of the micro-environment.

The Chapel of the Holy Cross was given an Honor Award for design by the American Institute of Architects in 1957. Ms. Staude said: "Though Catholic in faith, as a work of art the Chapel has universal appeal. Its doors will ever be open to one and all regardless of creed, that God may come to life in the souls of all men and women and be a living reality."



The chapel is of reinforced concrete construction, the aggregate of which was the local red rock crushed, which gives a slightly pink cast to the walls. The space is simple, as is the enveloping form. There is a basement, that is now used as a gift shop. There were many retaining walls that had to be built, along with numerous rock anchors to fully seat the structure. There is a parking lot just below the chapel with a winding exposed aggregate bridge ramp up to the chapel forecourt. The seating inside is composed of simple benches so as not to intrude upon the space. The Stations of the Cross are artfully composed of huge



The Electric Tankless Water Heater Comes of Age

The hot water tank has been a boon and a bane for home-owners since its introduction. It must be constantly heated, costing \$30-\$50/month in power (depending on size), it needs frequent

(gpm). For example, a tankless water heater with a 4.5 gpm flow is rated at a 35 F temperature rise to 105 F, which is fine if your water is 70 F, but if your water is 60 F, then the flow rate drops to 3.5 gpm, and so on.

If you want 120 F water, then you've reduced the flow rate to about 3 gpm on this 4.5 gpm rated unit, by creating a 50 degree rise from 70 F incoming water, and it will be even slower in colder weather that requires a larger rise.

So how much hot water do you need? At full running capacity; here's a flow rate list of common household plumbing:

Lavatory Sinks: 1/2 gpm

Kitchen Sinks: 1 gpm

Shower Heads: 2 gpm

Bath Tub: 4 gpm

Dishwasher: 1.5 gpm

Washing Machine: 1.5 gpm

So, if you wanted to take a bath while someone showers, at the same time a load of laundry is running and the dishes are cleaning, you'd need a whole-house tankless water heater rated to 9 gpm, or higher if you want this sort of hot water usage during the winter.

For an electric tankless heater, this sort of whole house usage is pushing the limits, but it is available. For most regular home usage, a 6 gpm unit is currently in a decent cost range comparable to a 50 gallon tank heater (\$600), and is sufficient even in nasty cold snaps, provided the family is willing to stagger their hot water demands so they don't overlap.

Which brings one to the final problem with electric tankless water heaters: the amount of power that they draw. While, ultimately, they use much less power than a tank heater, they use much more power in the short term, and thus require larger wires and several breakers. For the 4.5 gpm unit mentioned earlier, it requires 3 x 40 amp breakers and draws up to 100 amps while in use. Larger units will require even more.

This means service to a house for units this size will need to be a minimum of 200 amp services, and in addition to a plumber to install, an electrician. If a power service upgrade is required, it could nullify any long-term cost savings that would otherwise be realized. However, for new construction, or in a house with available power, electric tankless water heaters are now ready for realization.

iron spikes on simple brass plates. There was initially a Corpus sculpture that hung on the cross structure of the glazed wall that elicited criticism for years from the clergy and art critics. Ms. Staude defended it, yet when it suddenly disappeared one day, she refused to discuss it or acknowledge that it was gone or had ever existed.

Sedona is famous for its red rock formations and the belief that there are four major "vortexes" (vortices?), which exude the energy of the earth. The site of the Chapel sits in an area of one purported vortex.

The authoress of the Chapel, Marguerite Brunswig Staude is as unique as her Chapel handiwork. She was born in New Orleans on November 9, 1899 to Lucien and Marguerite Brunswig, ne Wogan. Lucien was a French immigrant, who had achieved the American dream, becoming rich in the wholesale drug business. He had come to New Orleans to expand his business as a widower, met Marguerite's mother, and married her. Ms. Wogan's family had come to New Orleans after the slave revolt in Haiti, and assimilated into the local society. When young Marguerite was about six years old, Lucien moved the family to Los Angeles to expand again, much to his wife's chagrin. She did not accept the move until he built her a French chateau to live in after a few years. Young Marguerite would always refer to her parents as "Madame et Monsieur" for her entire life.

maintenance (should be flushed annually), and failures can be very damaging. A blown tank can do a lot of water damage, and the cost of replacing heating elements, pressure valves and other problematic parts are cost comparable to just buying and installing a new water heater.

If a natural gas line is available, the cost savings and dependability of a tankless natural gas water heater have long been established (about 25% cheaper operating costs), and product and installation costs have come down enough where the recovery time over initial cost difference is reasonable (about 10 years).

Electric tankless heaters, however, have had a couple of further hurdles to overcome.

The basics of choosing a tankless water heater boil down to two basic questions: temperature rise of the water required, and the gallon-per-minute (gpm) flow required.

In the Southeast, the average water temperature is between 60 F and 70 F, but cold snaps can bring it down to 50F, requiring a larger temperature rise. For general household use, the maximum temperature required is about 110 F, for clothes and dishwashing.

For a tank heater, the concern during cold weather is recovery time - you effectively have less hot water to use than other times because of the replacement water coming into the tank. If you take an hour-long shower and use all of the hot water, it can take a while for the tank to reheat the fresh water.

In a tankless water heater, running out of hot water isn't the concern - the concern is how quickly it can heat it to the desired temperature, and this affects its flow rate