

Custom-building Creates A Still Pond Experience

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When architect John Wald of Klai Juba Architects in Las Vegas, Nev., designed his new home, he incorporated a koi pond in the entryway. Wald envisioned a very formal “still pond” look with a Buddha placed at the opposite end of the glass entry. He hired Kent Wallace of Living Water Solutions to facilitate the koi pond construction.

This entryway koi pond was created by Kent Wallace of Living Water Solutions Inc. (Courtesy of Living Water Solutions Inc.)

Slideshow to come on 4/14/10.

Marrying traditional koi pond requirements of a high turnover rate, plenty of dissolved oxygen, bio-filtration and good pre-filtration with the still pond experience proved challenging. Wallace faced working with a small footprint of about 6 feet by 9 feet, the absence of a waterfall and the question of how to install the skimmer. Wald’s desire for a formal edge treatment of sloping tile gently disappearing into the pond did not fit with most skimmer designs. Measuring 5 feet deep plus filtration, the 2,370-gallon pond required a flow rate of 2,500 to 3,000 gph, filtered and returned to the pond without bubbles or visual movement.

To solve these issues, Wallace created a passive system, including a 3-inch vertical pond return in the center of the pond’s drain and a custom-made, large-basket, circular weir skimmer in a shelf in one corner. The crew incorporated steps into the pond design and installed overhead lighting to comply with safety codes.

Pond water exits through the 3-inch gravity-flow bottom drain and the 3-inch gravity-flow skimmer to arrive at a settlement tank containing a static media basket for pre-filtration. After pre-filtration the water travels through a 4-inch gravity-flow line to the bio-reactor with an air-lift, the pumping method for returning the filtered water back to the pond.

The gunnite pond shell was completely sealed with a polyurea coating to ensure against leaks, an important consideration due to the pond’s location.

The air-lift inside the bio-reactor features a 4-tube hub assembly and creates more than 3,000 gph of water flow with the help of a Medo 80 lpm air pump. Wallace installed the air-lift assembly inside an 8-inch housing in the center of the bio-filter.

Wallace said the hub assembly can be removed or installed in minutes without disassembling the bio-filter’s components. Placing the air-lift inside the bio-filter instead of burying it in the ground created a more user-friendly system, he said.

Air purge tanks, also located inside the bio-reactor, act as collection points for water and allow bubbles to escape. They deliver clean, highly oxygenated water without bubbles back through the pipes to the pond.

The Air-lift Dilution Reactor bio-filter uses air to cycle water through the media several times for each total water volume pass through. This creates a highly oxygenated bio-reactor using another Medo 80 lpm air pump. The resulting double air-lift system cycles water through the bio-filter with air and returns the water to the pond with the air-lift pump system.

In the custom-built drain, Wallace surrounded the vertical pond return with a modified air diffuser “doughnut” operated by a Medo 45 lpm air pump on a timer. The return pushes water up and out as it reaches the pond surface.

“The surface of the pond is barely disturbed,” Wallace said.

The circular weir skimmer looks like a hole in one corner of the water’s surface. Effective and fish-safe, according to Wallace, the design prevents fish from unintentionally escaping over the edge or becoming trapped behind a conventional weir door.

Because the air-lift system does not create water pressure to pump through an ultraviolet light housing, Living Water Solutions custom-built the ultraviolet light assembly, placing it inside one of the air purge tanks as a down-flow unit. The quartz sleeve sits in a cup on a stainless steel spring assembly and the whole unit sits submerged in the bio-filter as part of the purge chamber.

Specifications

Builder: Kent Wallace, Living Water Solutions Inc.

Contact Information: Las Vegas, Nev., 702-845-6782 office, 702-544-0519 cell, livingwatersolutions@msn.com, www.livingwatersolutions.com

Project location: Las Vegas, Nev.

Components: Gunnite shell with polyurea coating and green glass tile. Living Water Solutions components: a vertical pond return drain, an Aqua-niche skimmer, a static pre-filter, an Air-lift Dilution Reactor, air-lift pump assembly, ultraviolet light, two Medo 80 lpm air pumps and one Medo 45 lpm air pump.

Crew: averaged two per trade

Time to Complete: two months

Project Cost: more than \$35,000 for all elements