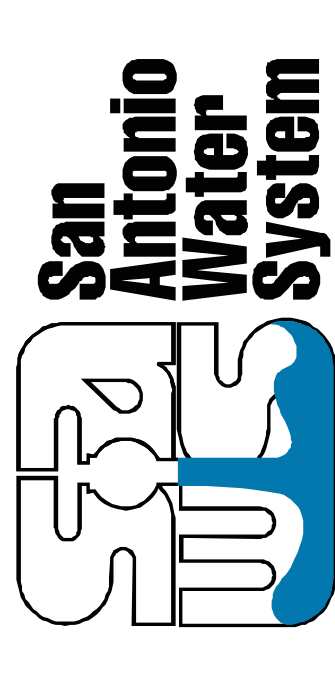


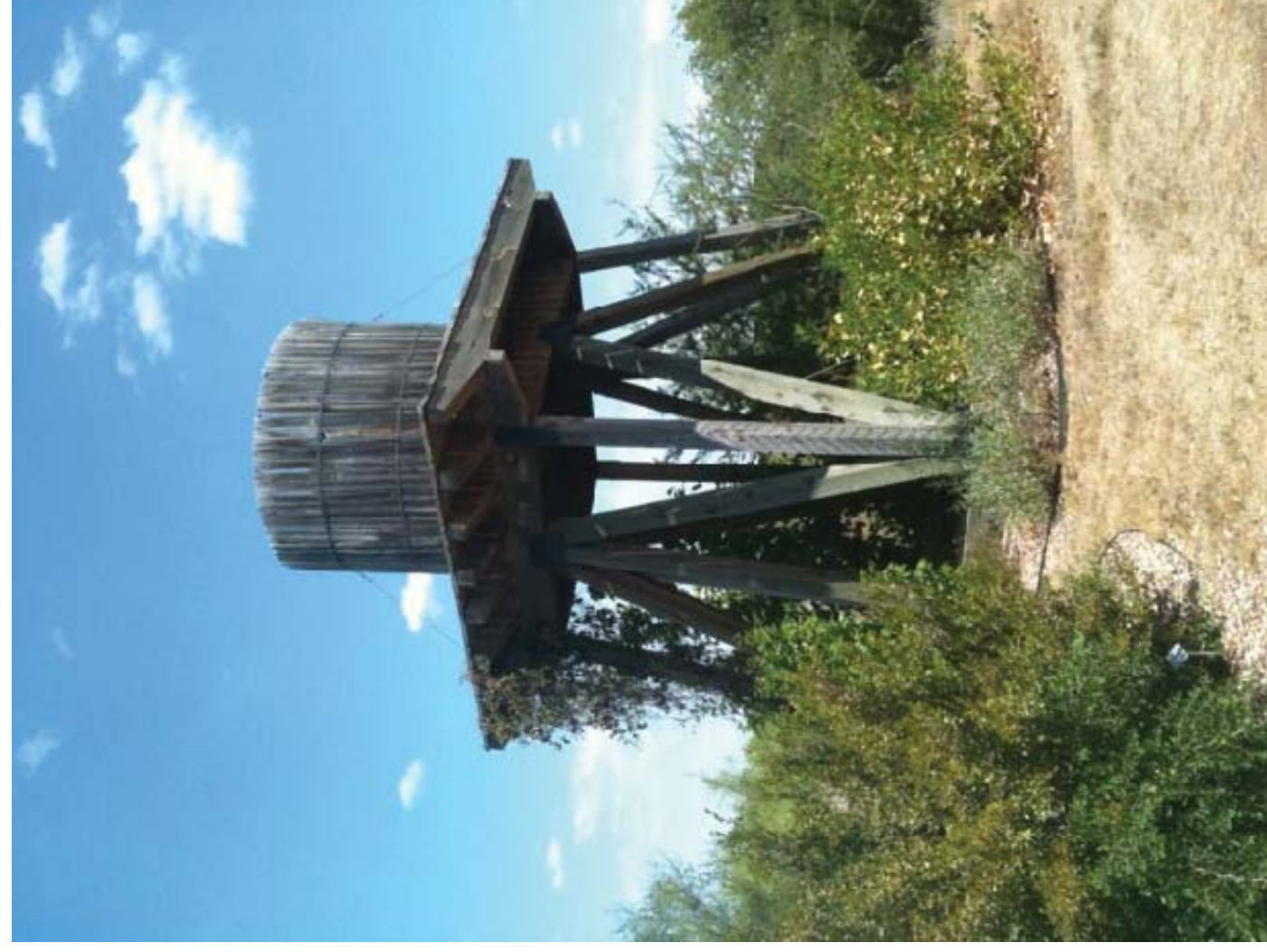
Rainwater Harvesting Design



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Three Ways to Succeed OR Fail

Certified Designers



- Design should take scope of irrigation into account
- Should require specialty training & testing in RWH
- Checklists for minimum standards for plan review

It is critical that design and installation challenges be resolved before construction begins. This attractive raised tank requires water to be pumped up a small pipe at a slow rate from an underground tank where it is initially collected. The system quickly developed problems and was operational for only a short time.

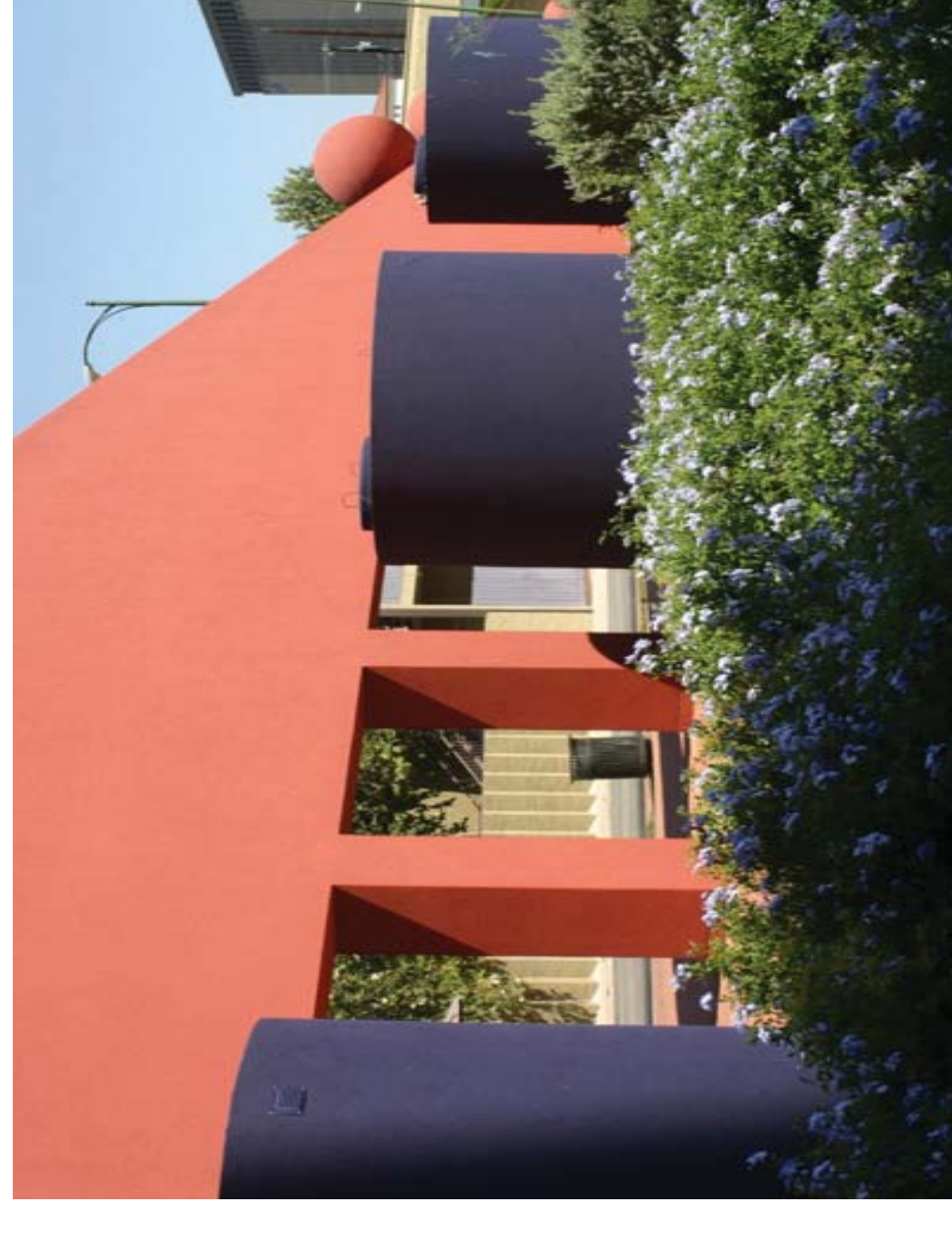
Certified Maintenance



- What happens after the ribbon cutting is over?
- Maintenance staff need support for complex systems
- Best intentions will not yield results without operations plans!

The large storage tanks from this parking structure have great promise, but the system functions poorly based only on gravity because the pumps installed never worked properly after installation. This should have been better tested after project completion.

Certified Installation Contractors



- Plumbers & Irrigators need training on RWH
- Project Manager must watch to ensure the plan is followed
- Contract for installation must hold installer accountable for plan and initial operation

This system collected condensate from a large public library. It ceased functioning after a few years due to a lack of support from library maintenance staff. It is hoped that a new planned system has resolved this with a long-term maintenance agreement.

Top Problems with Rain Water Harvesting Systems

Undersized Tank

A reasonable goal is to offset at least 50% of the water that would be applied to the landscape over the course of a year. The calculation should not be based only on total inches of rain and roof size. The water in/out of the tank must be modeled month by month to estimate how much actual potable water will be useful each month and if the tank may actually be dry during the months when irrigation is actually required.



The term "green bling" has been used to refer to projects where the storage is so small that savings from the system will be insignificant. This attractive 10,000 gallon tank is prominently displayed at an apartment complex, but connected to a system that draws over 50,000 gallons for one irrigation cycle.

Lack of First Flush / Treatment

It is not uncommon to see fouled water in tanks from systems that neglect a first flush either in design or installation. If an area has long, wet periods and irrigation is being used for spray irrigation, it may also be necessary to consider a chlorine residual system.

Potable Back-Up Settings

It is unfortunately easy to have the automatic potable water back-up system be set incorrectly or malfunction. If it is set too high, there is no room for water in the tank when it rains. If the system malfunctions, it can waste millions of gallons as the tank simultaneously overflows and keeps filling.

Inappropriate Potable Water Connection

Cross connections that can cause health hazards are a common problem with reclaim tanks. The gold standard is an air gap.



This tangle of water connections makes it a challenge to determine which pipes are potable and where they are going. Standards on connections and how they are labeled would help.

Non-Rain Opportunities Ignored

Rain is often not the only or best opportunity to offset potable water at a site. Condensate water, cooling tower blow-down and sometimes nuisance water from basements are options that can be added to tanks for reliable yield.



The San Antonio Development Services Center collects condensate for landscape irrigation. The one ongoing challenge has been that the storage cannot keep up with the high yield of water which results in complaints from observers who see overflow from the tanks.

