

# *Connecticut P-1 & P-2 CEU Class*

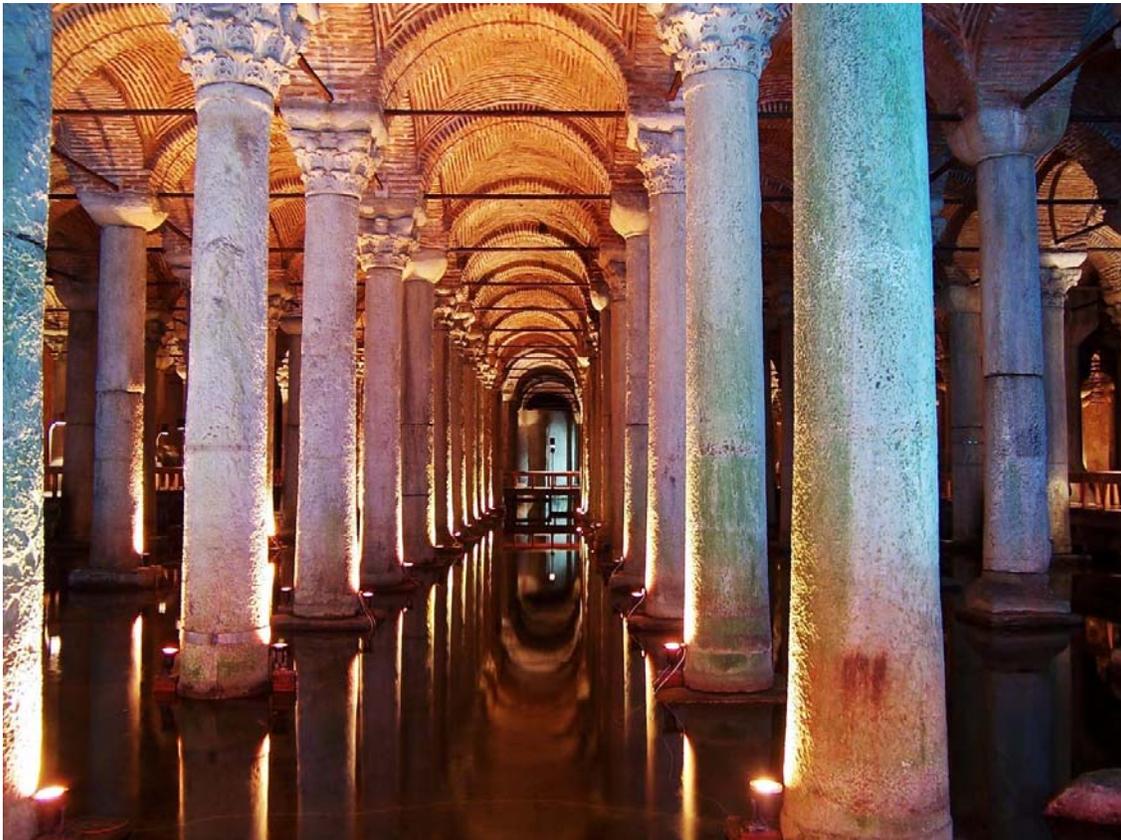
## *Rainwater Harvesting*

### **A Short History**

Rainwater harvesting can be traced back over 3,000 years in recorded history. At the start rainwater harvesting systems were very basic. The system usually just consisted of an excavated cistern which collected the rain fall where it was used for whatever purposes the individual or tribe might require. Evidence exists of even a simpler way to collect the falling water by using a large leaf and funneling the water into some type of container such as a coconut for drinking.

In ancient Rome, the empire had atriums that were fed b by rainwater cisterns. These systems were commonly found throughout the Roman Empire and many can still be found there today.

Istanbul Turkey has such a large underground cistern, the Yerebatan Sarayi, which translates to sunken palace, that it is supported by 12 rows of 28 columns, each with a height of 30 feet each. The cistern measures 453 feet by 212 feet (105,000 square feet) and can hold up to 2,800,000 cubic feet of water. It is so large that a boat can navigate through its columns.



Other countries around the world have used and still use cisterns for collecting rainwater for various purposes, but unlike today, years ago when they did not have knowledge of microorganism's and many people died from drinking the polluted, stagnant waters. Today if this water is to be used for human use such as drinking or cooking, we know that at a minimum that it should be boiled.

Today's systems still use cisterns but methods in obtaining, piping and distribution are more complex. The modern system contains methods for keeping debris out of the system at the source and/or a means of collecting and flushing the debris before it reaches the cistern. Cisterns no longer just hold water but also have means to safely handle any overflow. Distribution has also been upgraded from the simple grab a bucket and take it away to gravity fed or pressurized pump systems.

## **How to Create the Complete Rain Harvesting System**

For the next slides we will be demonstrating the components of a "RAIN HARVESTING" system. We would like to thank the RAIN HARVESTING Co. for allowing us to use their information and drawings. The installation and components will be broken down into 12 steps.

Rain water can be used for any purpose that we use water for. Obviously if it we were to use rain water for human consumption it must be brought up to potable water standards.

Step 1: Check the roof's surface to see if it is suitable for collecting quality rainwater. **Check with RAIN HARVESTING on what exactly to look for which makes the surface suitable.**

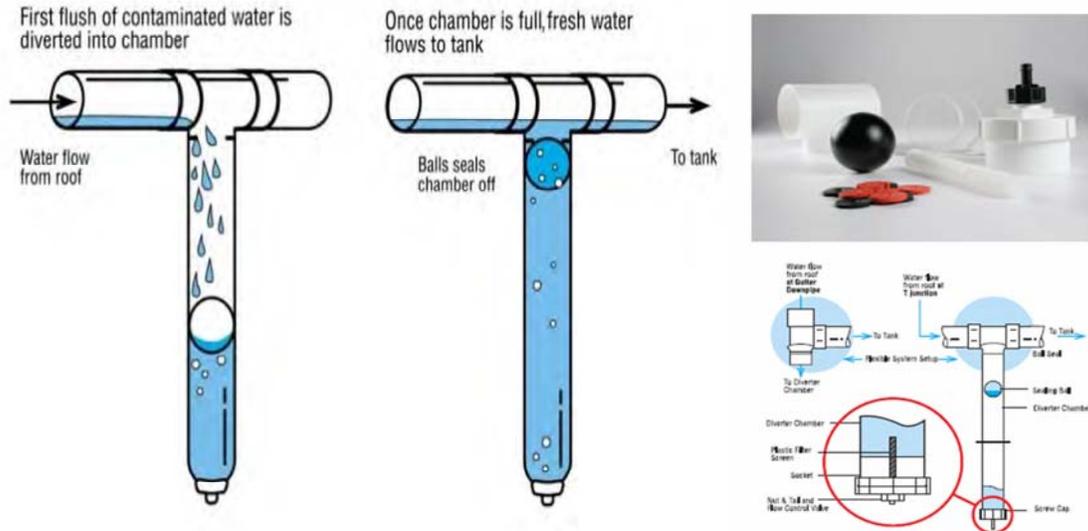
Step 2: Install gutter mesh to prevent leaves and debris from blocking the gutters.

Step 3: Gutter outlets, fits to the underside of the gutter to prevent obstruction of water flow. **Check with RAIN HARVESTING on how gutter outlets prevents debris from entering the system also get cut-away drawing of the gutter outlet to show on power point.**

Step 4: Rain Heads—deflect leaves and debris, keep mosquitoes out of the system.



Step 5: First Flush Water Diverter/s—first water is diverted into the flush with any small debris from the roof. Sediment settles to the bottom where it is flushed before it enters the cistern. When the flush fills, clean water is sent to the tank.



Step 6: Cistern Screen—installed at the tank to further help in keeping insects out of the cistern. **Check with Rain Harvest, I cannot isolate cistern screen and cistern pictures for steps.**

Step 7: Cistern—Water containment tank. **Check with Rain Harvest on how to size for project.**

Step 8:--Insect proof screen or flap valve, end of pipes to the tank, and ensures tank vented properly. **Check with Rain Harvest on how this helps to vent tank.**

Step 9: Cistern top off—if required, fills the tank with water when water level in tank drops to a designated level.

Step 10: Pump system—if required, distributes water. **Check with Rain Harvest, stainless steel or bronze pump if used for domestic water supply.**

Step 11: Rainwater filter—installed downstream of the pump to help reduce sediment, color and order.

Step 12: Water level monitor—monitors level of water in the tank. There are wireless monitors which display the tank level in the building.



DIAGRAM 1 - Hole size for tank fitting  
Approximately 1"



DIAGRAM 2 - Maximum communication  
distance - Up to 150 feet in normal 'line  
of sight' conditions

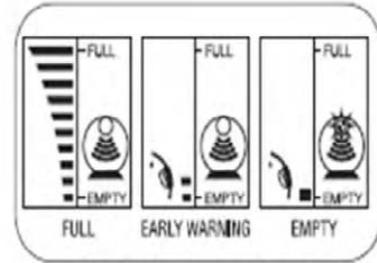


DIAGRAM 3 - Continuous display on small  
LCD Panel of Receiver  
10 bar graph level display

Contact RAIN HARVESTING, Cannot put drawing with all 12 steps on same page here.