

SWIMMING POOL

Introduction

Concrete is the most commonly used material when it comes to swimming pool construction. A concrete swimming pool is designed to take up full water load along with the capacity to withstand large pressure loads.

The significant loads on the concrete pool structure are the weight of the earth outside the pool and the weight of water held within the pool. The thrust created varies when the water in the pool is emptied for cleaning purposes. It may or may not cause an effect on the concrete based on the design efficiency.

Procedure to Construct Concrete Swimming Pool

the design of pool side walls is carried out based on the regulations of the region. Once the design of the pool is fixed, the construction phase is started. The construction of a concrete swimming pool involves the following steps:

Step 1: Selection of Location and Design

Choose a design suitable for the given land or choose a land area to accommodate a design already planned. The design of the swimming pool mainly involves the shape, depth, area of the pool, the filtration system, and overall size.

The location selected for the pool must be ideal for facilitating regular maintenance. It is recommended to choose a flat terrain, which can help in large cost reduction for excavation and filling process. A land far away from trees helps to avoid pool filled with leaves. The orientation of the swimming pool is best when constructed facing the sun.

Step 2: Excavation of Earth

1. Mark the perimeter of the swimming pool using wooden stakes. To accurately locate the area of the swimming pool, extend a tread along the perimeter.
2. Use a backhoe(or any earth removing equipment) to remove the earth within the perimeter. Always make sure the area enclosed and nearby do not have any drainage, electric line or water line crossing.
3. Dig the area, taking into consideration the space that is occupied by the swimming pool floor.



Excavation for Swimming Pool Construction

Step 3: Construction of Swimming Pool Base

Construction of the pool base is one of the essential phases that influences the life of the swimming pool. If the site has loose soil, then it must be filled and compacted with firm soil.

Compaction can be performed by natural soil or by using gravels. Use aggregates of size between 12 to 40 mm to compact and prepare the base. After adequate filling of compact materials, the base must be compacted with respect to the terrain. Do compaction using a roller or similar equipment based on the area of compaction.

Once the pool base is compacted correctly, pour a small layer of cleaning concrete to the bottom. The thickness of the concrete layer is generally 5 cm.

Step 4: Steel Cage Reinforcement

The next step is to provide steel reinforcement for the pool wall and the bottom. Here, the shotcrete procedure is followed in which a single steel cage reinforcement is provided throughout the interior surface of the swimming pool. In guniting or shotcrete procedure, the concrete structure is constructed in one piece without any gap between the wall and the floor.



Step 5: Pump and Filter System for Swimming Pool

A filter system and pump, together, are arranged on a large tank, either made of concrete, metal, etc. Before concreting, the plumb lines are provided to take water from the swimming pool to the filter system and back to the swimming pool.

The filter system and pump are also connected to the municipal water line to take fresh water to the pool. The arrangement is necessary to replace the water lost from the pool due to splash out or evaporation.

Step 6: Concreting in Swimming Pool Construction

Generally, the thickness of the concrete base and walls of the pool determines the durability. More the thickness, less is its exposure to fissures and cracks. Generally, the thickness of the bottom of the pool is provided greater than the walls. For safety, a standard pool shell requires a minimum thickness of 6 inches, excluding the plaster(As per The American National Standards Institute (ANSI)).

Among the construction methods (Using formwork and shotcrete), the most optimal option is the construction by shotcreting. This method develops a monolithic structure that holds the force better. In the formwork method, walls and floor have a gap which has chances to get separated. Providing more thickness to the formwork can help to avoid this problem.



Concreting in Swimming Pool Construction

Step 7: Waterproofing the Concrete Pool

The most popular ways to waterproof concrete pool are by using tiles, glass, ceramic, or use of epoxy-cement system or any waterproofing membrane. The selection of the waterproofing method is performed based on the water table level of the area and moisture conditions of the soils. The waterproofing of walls and floors is done to make it watertight.

Step 8: Construction of Coping

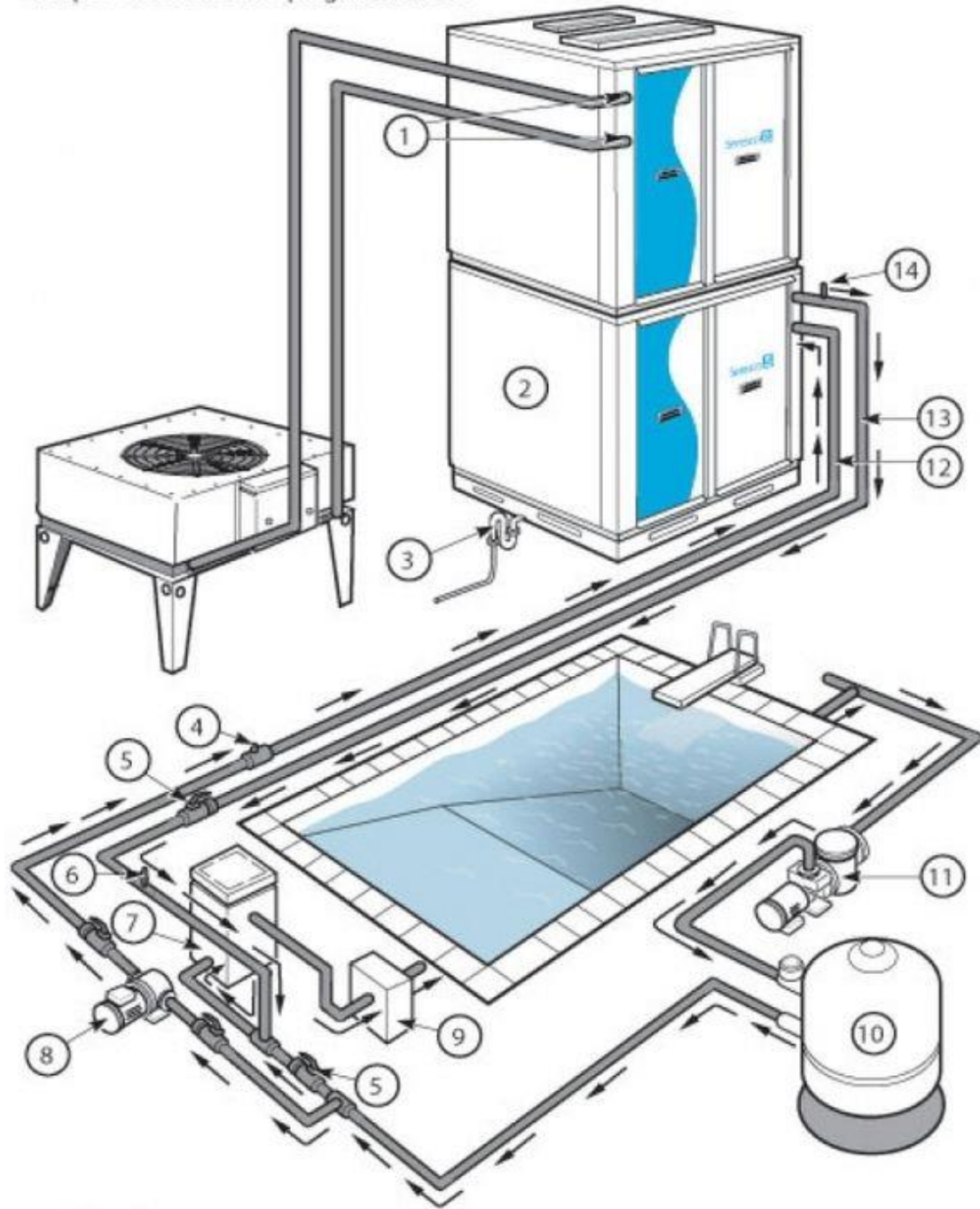
Coping is the walking room provided around the pool's edge. It can be made either by concrete, marble, tile, or stone. 1.



Coping Installation for Swimming Pools

Proper Pool Water Piping Installation

Seresco



Legend

- | | |
|--|-----------------------------|
| ① Refrigerant Piping to Remote condenser | ⑨ Automatic Chemical Feeder |
| ② Seresco Dehumidifier | ⑩ Pool Filter |
| ③ P-Trap | ⑪ Main Pool Pump |
| ④ Check Valve | ⑫ Water Inlet |
| ⑤ Ball Valve | ⑬ Water Outlet |
| ⑥ Flow Meter | ⑭ Air Vent |
| ⑦ Auxiliary Pool Heater | |
| ⑧ Auxiliary Pump | |