Installation Guide

This guide is intended to assist during the installation of a Rainforest Pools & Composites fiberglass swimming pool. Be aware that it is to be used in conjunction with state and local building codes and that any discrepancy occurs between the two then the state and or local building code prevail in all instances. Any users of this guide acknowledge that the author and his agents are not responsible for misinterpretation, failure to understand, omission of instruction or information or any accident that may result.

TOOLS & EQUIPMENT LIST

- Laser level/transit/story pole
- Nylon string line
- Yard spray paint
- Sharpie markers
- Sandpaper (80-120 grit)
- Shovels, rakes, picks/wheelbarrow(s)
- Paper towels/shop rags
- Duct tape
- Straps: (4) 20'; Shackles: (4) 2"-3" (UBolts)
- Hole saws
- Sawzall
- 4" grinder
- Cordless drill with bits
- Caulking gun
- Utility knife
- Hammer
- Pipe wrench
- Screws
- Bottle jacks
- Leather gloves
- Marine grade silicone adhesive

SUGGESTED MACHINERY

- Excavator, bobcat, skid steer, dump truck, crane (with spreader bars) plate compactor
- Water source (tanker, hose etc.)

ONSITE MATERIALS

- Base & Backfill:
  - Clean sand with no organics
  - Washed or screened (no dust) ¼" to ¾" gravel
    - Small: Up to 12' wide: 40 tons / 14' wide: 60 tons (additional if excessive over dig required
- Wood (2'x4's) Screed rails
- Rebar (sticks/mesh)
- Plumbing:
  - Pipe/fittings / Primer/Glue
- Electrical:
  - Conduit (pipe/elbows/unions)
  - Wire/Hardware
- Concrete (either onsite mixer or delivered (3,000 psi)
- Temporary fence with posts

POOL LOCATION: For every foot of pool depth, the pool should be plus one foot off any foundations MINIMUM. Ideally, you want to be able to maneuver a skid steer/bobcat around the pool on all four sides, the more space, the better. Use of homeowners' plot plan, boundary survey, etc. will identify any easements and set back requirements. 12' access from front of the property to the backyard is

ideal. In some cases, small equipment may be required and excavated materials will have to be shuttled out.

A crane may be required to go up and over to get the pool in the back yard. Be sure to consult with crane operator regarding size of crane needed, distance from offload point to excavation hole and weight of shell.

Identify water flow on the property: It is important to set the elevation of the pool such that water will flow away from the pool. Failure to keep ground water away from the exterior of the pool may result in damage to the structure and is not covered by any warranty. When determining final elevation of pool, calculate amount of deck and factor in ¼" per foot for pitch.

Underground obstacles: There is always a possibility of unknown obstacles in the backyard such as abandoned septic tanks, current septic systems, wells, sprinkler systems, etc. Identify these items before commencing installation. A utility locating service MUST be notified prior to excavation.

Factoring in equipment location, length of electrical and/or gas run in relation to pool placement are helpful when planned prior to job commencement.

ESTABLISHING THE GRADE/ELEVATION: The most important factor in any pool installation is setting the pool to the proper height in relation to the property. It is of paramount importance that water run away from the pool. Note locations of downspouts and variables to ensure good placement. A good rule of thumb is to determine final top of pool location and mark that on a fixed structure (house, garage, etc.) Another factor to consider is thickness of the coping and accounting for the pitch back. If there will be 8' deck surrounding the pool, add 2" to elevation factoring in ¼" per foot of pitch.

The depth of the excavation is determined using a transit level and story pole. Once you have placed your transit, DO NOT MOVE IT FOR THE DURATION!

POOL LAYOUT: The dimensions of your Rainforest Pool are to the outer side of the pool beam. Note in permit applications, you should indicate water's edge to water's edge. The beam of a Rainforest Pool is between 4"-6" depending on the model with an overall difference of 8" to 1' between the length and width. Overall length and width measurements may vary up to 3%.

Depending on the customer and the local building inspector, this fact can be a critical consideration. Distances between the water's edge to most property lines, electrical lines, and other structures such as houses, garages, sheds and patios must be exact to plan specifications

Start by laying out a rectangle 2' larger than the pool. Next, layout the center point ensuring the center lines are at 90 degrees. Stake the four corners of the pool and verify distances from fixed structures. Connect the stakes with your string lines. Locate and mark out your skimmer location with a 2' x 2' box outside the pool layout. Now paint your pool perimeter.

ELEVATION: Elevation and grade of the pool area are two of the most often overlooked or miscalculated variables in the installation process. While considering all the variables concerning elevation and grade, always remember that you want water to run away from the pool.

Before excavation, use the provided Installation Planning Guide to calculate all critical measurements below. Check the four corners of the pool layout with the aid of a transit level or a sight level to determine the highest corner. This corner will be used in planning the elevation of the pool. In a typical installation, the elevation of the pool should be 4-6 inches above the existing grade around the pool. However, careful consideration should be given to pool type, size and drainage of the future pool

deck, as well as the elevation of the surrounding landscape and existing structures, patios and sidewalks.

INSTALLATION PLANNING GUIDE

Finish Grade:	_____
Slope	- _____
Top of Concrete at Pool	= _____
Thickness of concrete	+ _____
Top of Pool	= _____
"Shallow end depth	+ _____
Top of bedding material shallow end	= _____
Thickness of bedding material	+ _____
Top of dig Shallow end	= _____
Top of pool	_____
Deep end depth	+ _____
Top of bedding material deep end	= _____
Thickness of bedding material	+ _____
Top of dig deep end	= _____

* Slope = Distance to Pool x .25 (1/4")

** If pool is independent of any existing structures or patios, finish grade is to be 3 1/2" below edge of pool deck.

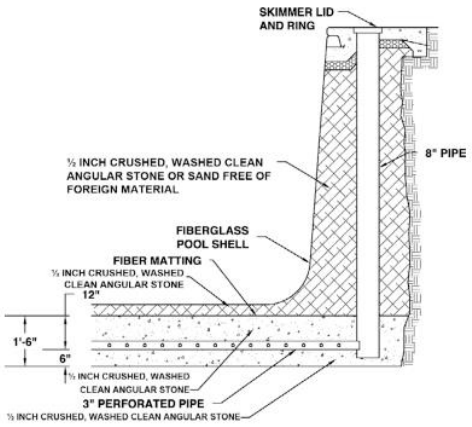
EXCAVATION: It is important to dig as "surgically" as possible to avoid additional labor in hand digging to correct hole or additional materials for backfill for a hole too big. Dimensions provide allow for approximately 2' over dig. It is highly recommended in very sandy areas to have onsite 4' x 8' sheets of plywood to support walls from cave ins.

The clearance is approximately 1' on all the sides. Install 2'x4' screed rails length wise 6"-1' in from the sides and make sure the diagonal measurement is exact to ensure the bottom is square

If dramatic over digging occurs, **never use excavated material to fill in the hole to the desired depth**. We suggest gravel compacted thoroughly. If the sides of the hole are dramatically over dug, gravel should be used. Both should be compacted thoroughly during the backfill process. In the case of over

excavation on the sides of the pool in seasonal high water or poor drainage areas, you may want to mix 10% Portland cement to the backfill for stabilization.

DRAINAGE: (REQUIRED BY RAINFOREST POOLS FOR VALID WARRANTY) – 2 METHODS



1) Allot space for a **sump tube** off the deep end of the pool. RAINFOREST POOLS WILL NOT WARRANT ANY POOL INSTALLED WITHOUT THIS FEATURE OR A DRAIN TO DAYLIGHT.

If for any reason pool a pool needs to be drained, this sump provides a means to determine if groundwater has accumulated under the pool and with a small pump, that water can be removed. RAINFOREST POOLS ARE DESIGNED TO BE KEPT FULL AT ALL TIMES.

Rainforest suggests digging an 18" x 8' x 18" trench across the deep end of the excavation. Six inches of 1/2" clean gravel should be placed in the bottom of the trench. A section of 3" perforated PVC pipe is placed on the rock base and connected to a vertical stand of 8" PVC pipe running to the surface of the excavation. Cover the new sump line with landscaping fabric. The 8" PVC riser pipe should be trimmed with a skimmer ring and lid for aesthetics and safety. After the connection has been made to the vertical stand of 8" PVC, finish covering the 3" perforated PVC pipe with 1/2" to 1" clean gravel to the bottom of the excavation. The bottom of the excavation is now ready for approximately 4" of base material. Be sure to secure the skimmer lid (with screws) to the ring attached to the top of the vertical 8" PVC.

SETTING THE POOL: Either a boom truck, crane, lull or excavator may be used to place a Rainforest Pool into the prepared hole. It is advisable to inspect the pool prior to offload for any damages from transport. Note that pools larger than 12' wide should be lifted with a spreader bar and 20' straps. Rainforest Pools have multiple lifting points and care should be taken if using chains to protect any points chains are touching the pool finish. ALWAYS USE A TAG LINE TO CONTROL THE POOL WHEN IT IS IN THE AIR FOR SAFETY.

Once the pool is set in the pool for the first time, lift it back in the air to inspect for a proper fit, that the entire pool floor sits on the prepared bed. A proper fit is achieved by (1) ensuring the entire pool floor is touching the prepared bed and (2) by walking around the inside of the pool feeling for any low spots.

LIFTS SHOULD BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE STANDARDS SUCH AS OSHA AND ASME. SPECIFIC STANDARDS THAT BE APPLICABLE ARE LISTED BELOW. THIS IS NOT AN ALL-INCLUSIVE LIST AND OTHER REGULATIONS MAY APPLY DEPENDING ON THE LIFT IS PERFORMED AND EQUIPMENT USED. ASME 830.5 OSHA 29 CFR 1910.133 OSHA 29 CFR 1910.179 OSHA 29 CFR 1910.180 OSHA 29 CFR 1926.753.

IT IS THE BUILDER'S RESPONSIBILITY TO PROPERLY ASSESS THE SITUATION AND ACCOUNT FOR VARIABLES SUCH AS, BUT NOT LIMITED TO WEATHER, EQUIPMENT CONDITION, LOCAL REGULATIONS, ETC. BEFORE OFFLOADING CAN OCCUR. ANY DAMAGE RESULTING FROM LIFTING THE SHELL IS THE RECIPIENT'S RESPONSIBILITY.

Using the transit, test at least 4 spots around the pool to check the height of the pool. Make sure the pole rests on the beam and ideally away from ledges, seats or benches as those points will likely sag a little bit. Raise and set as many times as necessary to place pool into the ideal location.

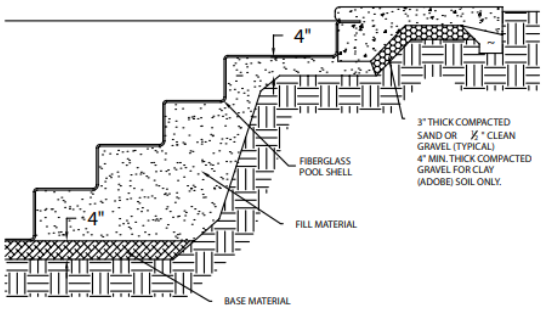
INITIAL BACKFILLING:

With the pool in its proper place, initial backfilling can commence. Begin with locking in the corner radiuses by placing material tightly where the wall/floor and step/floors meet. It is extremely important that these locations and properly compacted. It is helpful to have your backfill materials placed around the excavated hole for easy access. As the pool is filled with water, the same amount of backfill material should be placed around the pool. KEEP WATER AND BACKFILL LEVEL WITHIN 6” OF EACH OTHER.

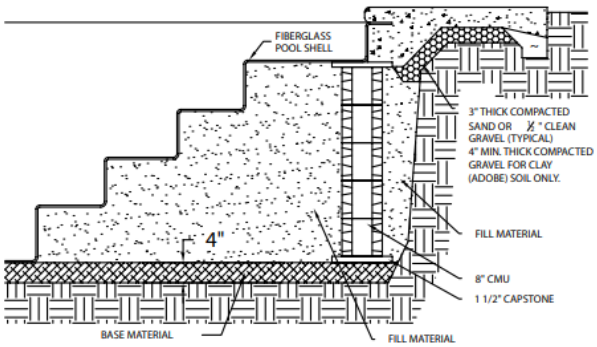
Continue to verify pool heights as backfilling and water continue. IF USING SAND OR LIME CHIP, BE SURE TO WASH IN MATERIALS WITH WATER AND COMPACT AS PROGRESS CONTINUES. THIS SHOULD BE DONE EVERY 12”-18”

Pay special attention and care to benches, seats and ledges that are fully backfilled. Flowable Fill (100PSI concrete, excavatable) is an excellent product to use. Continue process until water is 20” below coping install plumbing at this point.

BLOCKING STEPS/BENCHES/LEDGES:



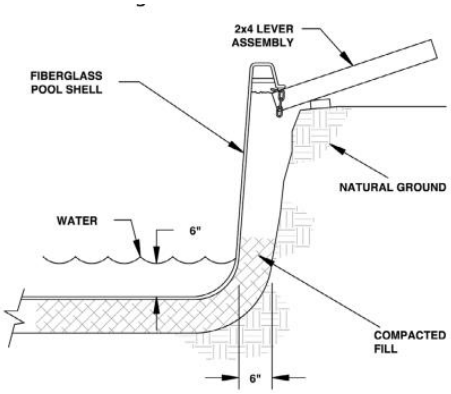
It is advisable to minimally dig the area under ledges, steps and benches to leave as much dirt undisturbed as possible.



However, instances that require additional support, the following diagram should be followed:

Blocking the steps is performed after the pool shell has been set within level and water reaches the tread of the next to last step tread (2nd from floor). When installing CMU piers, start by placing a 1-1/2” capstone block on the base material. On top of the capstone block, stack CMU’s (cinder blocks) until they reach a point just under the outermost edge of the top step, tanning ledge or beam of the shell.

Since the step area of the pool shell is often lower than the rest of the shell, jack the step package up using a bottle jack and a section of 2” x 6” lumber under the outside radius of the top step (where the top tread meets the top riser).

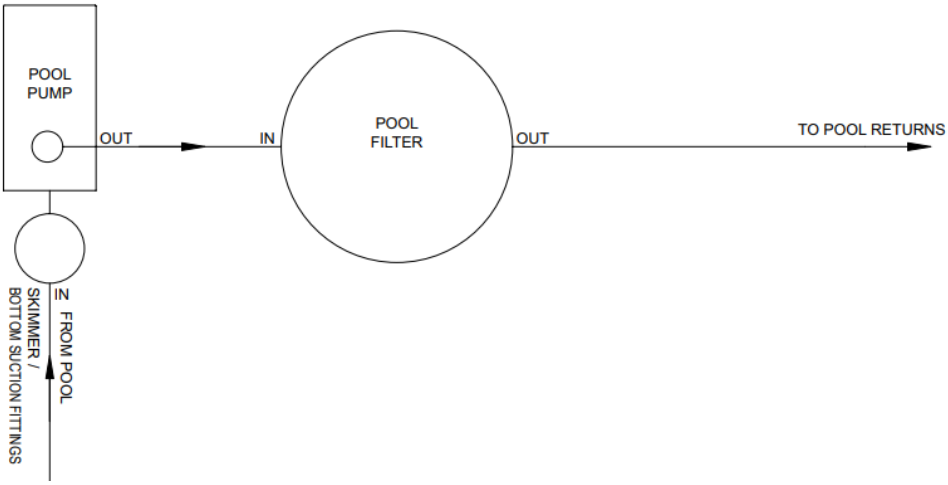


Jack the steps to be level with the rest of the beam of the shell. Shim the gap between the top CMU and the bottom of the tread/riser radius with another capstone block and/or ¼" concrete backer board. When the bottle jack is released, the pool shell should be level within industry guidelines. Bottle jacks should be removed from the job site once the piers are in place. Do not leave bottle jacks or organic material, such as wood under the pool shell for support. Properly placed piers should be ½ under the step of the shell, with the remaining portion of the top block/shim remaining outside the step/riser tread. **Do not place piers completely under the top step or tanning ledge (swimout) as stress will be transferred to the radius between the horizontal and vertical surfaces, resulting in stress fractures.**

IT IS OF CRITICAL IMPORTANCE THAT WHEN BACKFILLING REGARDLESS OF THE MATERIAL USED THAT IT IS COMPACTED. GRAVEL COMPACTS UPON PLACEMENT AND IS A HIGHLY DESIRABLE MATERIAL. HOWEVER, CLEAN SAND OR LIME CHIPS MAY ALSO BE USED PROVIDED THEY PROPERLY WASHED IN.

If using sand, it is recommended to use an injection wand.

PLUMBING:



Water is drawn through the skimmer and main drains (if used) via the pump, through the filter and back to the pool via the returns. Your Rainforest pool includes one skimmer, two main drains and three returns. Rainforest recommends 2" schedule 40 PVC pile, pressure tested to 35PSI for 30 minutes.

Prior to completing the backfill, it is advisable to pressure test all lines to ensure there are no leaks. At this point, installation of the skimmer is recommended.

SKIMMER INSTALLATION:

Locate where the skimmer will be installed, ideally 2" below the coping. Remove the faceplate from skimmer and using this as a template, mark on the shell where it is to be cut out. When the pool is at ideal operating level, the skimmer box should be ¾ full. Cut the skimmer out using an angle grinder. Check the cut out by placing the face plate into the hole and check that it is parallel with the top of the pool coping and that there is plenty of room for the screw holes. Leave the plate there and mark the screw holes with a Sharpie. Remove the plate and drill the holes.

RETURNS:

Return fittings should be located on the pool as to push debris towards the skimmer and be 14” below the coping. BE SURE TO PLACE FITTINGS ON FLAT EXTERIOR SURFACES OF THE POOL. Using the grinder, smooth the back of the pool where fittings are to be located and knock down any rough spots. This also applies to the skimmer cut out. It is important to only use clear neutral silicon to affix fittings to the shell. Continue this process for light niches, bubblers, additional returns, etc.

The plumbing system must be designed to comply with ANSI/APSP-7 STANDARD FOR SUCTION ENTRAPMENT AVOIDANCE IN POOLS AND SPAS (latest revision). Once pressure testing and inspections if required are completed, equipment can be placed, and pool can be completely backfilled.

ELECTRICAL: ONLY LICENSED ELECTRICIANS SHOULD MAKE THE NECESSARY CONNECTIONS AND WORK MUST DONE IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE AND ANY LOCAL CODES.

BOND BEAM/CONCRETE:

Rainforest fiberglass pools are standard cantilevered coping and require a bond beam of approx. 12” wide (refer to fig. 6 or 7). During the concrete pour care should be taken that the concrete is worked into this area under the coping of the pools that air voids are minimized. If desired, ¾” holes may be drilled every 36” to aid in bleeding air under coping. This helps anchor the pool in place. Use rebar, wire mesh, or fiber in concrete that reaches 3,000 PSI in 28 days. **Note:** Refer to fig. 6, 7, blue-prints, or site-specific engineering specs/drawings based on each jobsites’ needs and requirements.

Fig 6: Concrete for Paver/Brick Deck

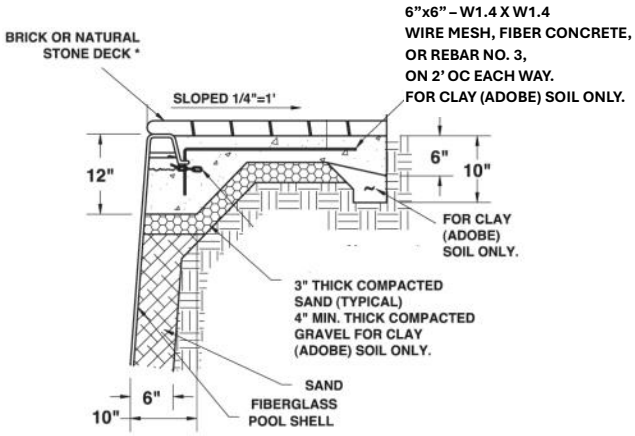
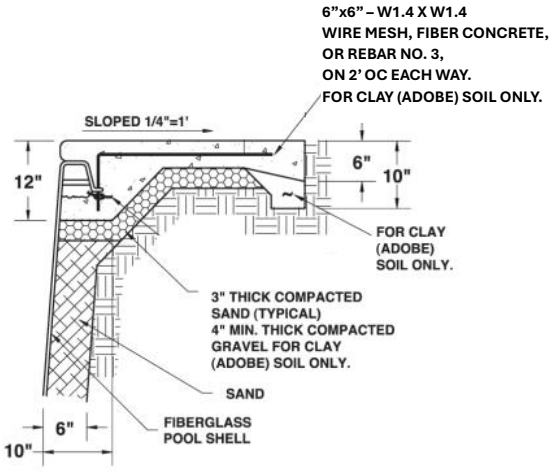


Fig 7: Typical Concrete Cantilever Deck



Warning to Buyer: This pool is designed to be kept full at all times. The shell could be damaged if the water level is allowed to drop below the skimmer. When appreciable draw-down is noticed, or if it becomes necessary to drain the pool, contact Rainforest Pools, or your builder for instructions. The pool shell may be damaged and separation from the concrete may occur if the pool is allowed to overflow or if heavy water drainage is allowed to over-run the deck to pool shell connection. Keep the water level in the middle of the skimmer. RainforestPools will not be held responsible for any unforeseen problems or circumstances which arise from inadequate site drainage or incorrect deck installation.