

Boat Ramps for Privately Owned Ponds and Lakes

Many smaller ponds and lakes can be enjoyably fished from the shoreline, but larger impoundments are usually more easily fished from a boat. Some landowners keep small boats on-site, but many anglers fish a variety of waters and tow their own boat and trailer from lake to lake. Access for other recreational boats for skiing and water sports may be important in some impoundments.

An easily accessible improved boat ramp provides convenient access to impoundments for anglers, water sports, and management purposes (fish sampling boats, liming, aquatic vegetation control, etc.). A properly located and constructed boat ramp not only provides convenience, but also helps prevent bank erosion caused by dragging boats and trailers in and out of the water at multiple locations. A safe, long lasting, improved boat ramp is an investment that increases both user enjoyment and the value of the property. The guidelines in this publication help ensure successful location and construction of boat ramps in ponds and lakes.

Ideally, a boat ramp should be created during pond or lake construction. It is preferable to build the ramp while the pond is dry, since this provides maximum control over all factors involved. It is possible to construct a boat ramp in a fully impounded pond, but the process reduces control over slope, location, and surface type. Boat ramps may be as simple as prepared earthen slopes or more complex, all-weather surfaces of gravel, crushed rock, stone, or concrete. Regardless of

surface, location of the ramp in the pond is critical for maximizing convenience, utility, and long-term stability.

General Considerations

- The boat ramp should be placed in a convenient, all-weather, vehicle-accessible location in the pond or lake where the surrounding topography accommodates construction with minimal excavation or fill.
- Generally, level or gently sloping areas on the perimeter of the impoundment will be superior to steep grades.
- Ramp length should be based upon low water level of the summer months. The end of the ramp should extend far enough into the water to provide at least 4 foot water depth even during the summer when water levels are typically at their lowest (Figure 1). Generally, ramp length should be at least 40 feet.
- The ramp should be a minimum of 14 feet wide. This will allow room for vehicle operators to exit and enter towing vehicles and walk on the stable ramp surface to load or unload boats.
- Ramp slope should be between 12 and 15 percent (12-15 foot drop per 100 linear feet of ramp length; see Figure 1.)

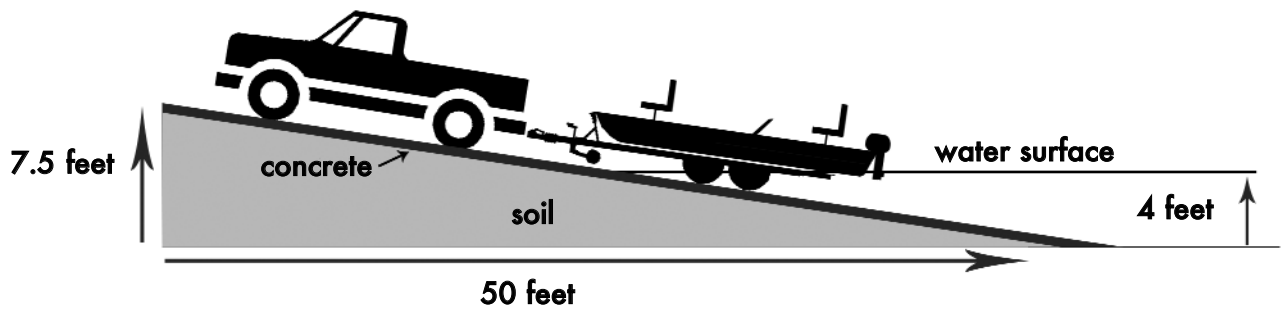


Figure 1. Example cross-section illustrating 15 percent slope on boat ramps.

- It is advisable, but not necessary, to keep the slope constant for the length of the ramp. The slope may be varied to accommodate the terrain, but be sure vehicles and trailers will not scrape the ramp surface at the point of slope change. Ramp slopes greater than 15 percent will result in several problems, including: possible vehicle slippage due to poor traction, loss of drivers' capacity to see the boat and trailer in rearview mirror when backing or pulling out of water, and difficulty loading the boat safely on a trailer. Slopes less than 12 percent may require backing the vehicle into the water to reach a water depth sufficient to float the boat for loading or unloading.

Ramp Surfaces

Ramps can be constructed of many different materials. The frequency of use, cost of construction, and durability of the ramp should be considered when deciding on the type of materials to use. In cases where ramp use is only occasional, an unimproved dirt or grassed surface may be sufficient. In this case, proper slope is critical to assure that the rear wheels of the towing vehicle remain on the dry bank when the trailer is extended into the water.

In most cases, pond or lake owners who desire a boat ramp will prefer a hardened, all-weather surface. Concrete slabs, precast reinforced or prestressed concrete planks, or gravel and crushed rock may all be used to construct a more durable, hard surfaced ramp. Concrete slabs afford maximum convenience and durability whereas precast reinforced or prestressed concrete plank ramps are simpler to construct in preexisting impoundments. Concrete planks may be laid in place on a well-prepared and properly sloped site.

A ramp also can be surfaced with gravel or crushed rock. The gravel or crushed rock used for a ramp should have less than 5 percent of the material capable of passing through a 200-mesh sieve. Gravel ramps should have a maximum slope of 15 percent, with at least 6 inches gravel depth. Protection of ramp edges and the water end with larger material (crushed stone or rip-rap) is recommended. Protection of the water end is especially important if outboard motors will be used to load/unload boats. The prop wash can erode the pond bottom at the end of the ramp, resulting in sloughing or breaking of the slab.

Concrete slab boat ramps can be constructed in two ways: cast-in-place and push-slab. Cast-in-place construction allows for the best control over slope and final ramp placement, but also requires a dry working area. Push slab construction is usually the better alternative for creating boat ramps in existing impoundments, but it is possible to construct a cast-in-place ramp in an existing impoundment. This approach requires construction of a cofferdam around the proposed ramp area, allowing subsequent removal of the water to facilitate drying and construction. Once the concrete has cured, the cofferdam can be removed, allowing the end of the ramp to be submerged.

Cast-in-place Ramps

It is important to select the correct concrete for ramp construction. The concrete should be 4,000 pounds per square inch (p.s.i.) and properly worked so that the aggregate is approximately ½ inch below the surface. Fiber reinforced concrete is available in many areas, and may be used as an alternative to in-place reinforcement. If non-fiber reinforced concrete is used, reinforce the slab using No. 4 (½ inch diameter)

grade-60 rebar on 12-inch spacing along the length of the ramp and 18-inch spacing along the width of the ramp. The rebar should be 3 inches away from the edges, top, and bottom of the concrete, requiring a minimum concrete depth of at least 6 inches. Regardless of concrete type, the surface of the ramp should be roughened to provide traction when wet, muddy, or covered with algae. A garden rake with metal tines can be used to draw grooves in the ramp surface in a herringbone pattern (Figure 2). Grooves should begin at the center of the ramp and slope downwards to the edge of the ramp. This will help water quickly drain from the ramp. Additional gravel, crushed stone, or riprap may be added to the sides of the ramp to help prevent trailer wheels from running off of the pavement. If riprap is used on the sides of the ramp, it may be necessary to grout the surface of the rock to keep people and animals from stepping into large holes.

Push Slab Ramps

Push slabs should be formed and poured on dry land on a thin layer of sand or small gravel known as crusher run. The slope of the poured slab should be as close to the desired slope as possible. After the concrete has cured (10-14 days depending upon weather), push the slab into place with a bulldozer or track machine. Push slabs should be small enough to be accurately placed by available equipment. A 6-inch concrete slab 14 feet wide and 20 feet long will weigh about 10 ½ tons. The same width slab cast 30 feet long will weigh about 16 tons, which can be accurately and safely pushed with a D-5 bulldozer. If necessary, half of the ramp can be constructed as a push slab, and the remaining above-water section can be cast in place. If this approach is taken, rebar should be laid and left extended in the upper end of the push slab to provide secure tie-in of the cast portion of the ramp. This will prevent the sections from separating over time. It is better to construct a push slab ramp during low water levels to ensure proper ramp length.

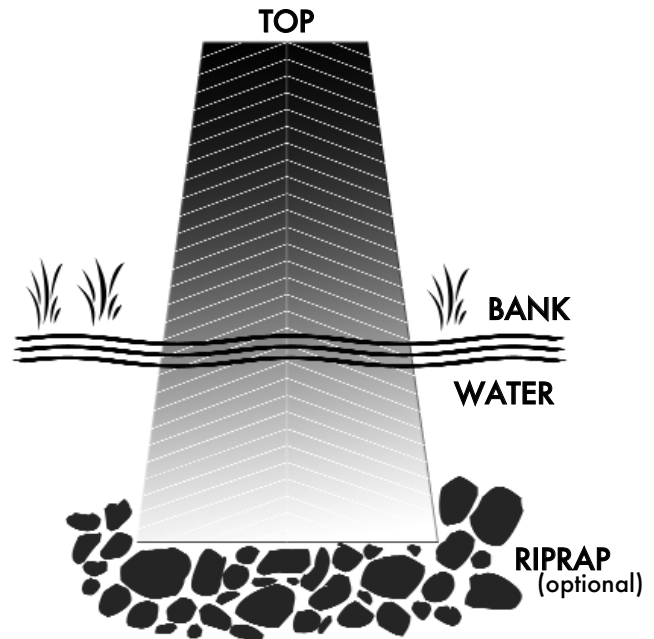


Figure 2. Herringbone pattern of grooves in surface of concrete boat ramp.



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