

Chapter 3

Traditional Public Pools

Key Concepts

- Swimmer Loads
- Special Use Pools
- Pool Entrance
- Pool Decks
- Apparatus
- Underwater Lights
- Pool Finishes
- Depth Markers
- Barriers
- Lighting
- Food Concessions
- Programming
- Security
- Special Rooms
- ADA
- Hotel, Motel, and Resort Pools
- Outdoor Pools

The primary purpose of the public pool is to provide a variety of aquatic opportunities to the public at a minimal cost. For the purposes of this text, the definition of a public pool is any pool other than a residential pool, which is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use.

For the sake of this discussion, public pools may also double as school, YMCA, park and recreation pools, or similar types of agency pools. While the residential pool chapter was written mostly for the residential pool owner, this chapter will primarily address the public pool employees, whether they are the pool manager, coach, instructor, or lifeguard. Standards for public pools are provided by local municipalities or health departments. *These local codes should be read, understood and on file at all public pools.*

Residential pools most often do not provide lifeguards, whereas at public pools, lifeguards are often an integral

part of the safety system. Another important distinction between private and public pools is that public pools are regulated by local ordinances and health codes, making the management of these facilities more complicated. Some professionals make a further distinction by claiming that apartment complex, homeowners association and some hotel/motel pools are *semi-public*. However, for the purposes of the discussion here, pools will be considered simply as either public and private.

Because public pools are designed to offer a variety of aquatic opportunities to many different individuals, pool sizes and configurations vary. The most popular community pools today usually have creative pool designs that allow for different activities occurring simultaneously. The trend today, however, is to build shallow (five feet or less) rather than deeper (10 feet or more) pools. Zero depth pools, which create a walk-in or beach-like entry, are also becoming popular. Spray playgrounds with lots of water features but no standing water are also becoming popular while adding a significant margin of safety.

Pool designs should be dictated by programs and priority user groups. A pool cannot be successfully designed or programmed without the target audience in mind. For example, a swimming pool located in a senior citizen community better have lots of warm, shallow water; deep water is of little value to this group.

ADA

Public Law 101-336 or the Americans with Disabilities Act (ADA), which went into effect on January 26, 1992, extends the Civil Rights Act of 1964 to include disabled citizens. The ADA prohibits discrimination against those individuals with disabilities in public places, including pools. This law entitles all Americans equal opportunity and full enjoyment of public services, facilities, employment, goods, and opportunities. Only private clubs and

A



B



Fig. 3-1. A, Access ramp may be needed to comply with the ADA. B, Chair lifts may be used when pool space is at a premium. (A, Photo courtesy of Water Technology, Inc.; B, photo courtesy of Arjo, Morton Grove, Ill.)

religious organizations are exempt from this law. Public pools and spas are significantly affected by this law and the requirements for aquatic facilities have been evolving over time. John McGovern has written an excellent chapter for this book specifically on ADA requirements in aquatic settings. The law may require changes in pool policies and procedures, elimination of architectural barriers, and the addition of services and equipment to aid the disabled. Some pool modifications might include handrails, ramps, chair lifts, wider doorways, non-slip surfaces, improved lighting, and assistants who can aid the disabled (Fig. 3-1). Those overseeing public pools must be familiar with the ADA. Every public pool operator should be familiar with the ADA requirements. A copy of the ADA can be obtained by writing: U.S. Senate Subcommittee on Disability Policy, 113 Senate Hart Office Building, Washington, D.C. 20510.

Swimmer Loads

Public pools often have a maximum user load that should not be exceeded. State or local pool codes normally establish swimmer loads for public pools and may use any one of a variety of formulas. The criteria used to determine swimmer loads may vary between indoor and outdoor pools, shallow and deep portions of pools, deck surface area, and water surface areas. For example, one swimmer load requirement might read "no more than one swimmer per 20 sq. ft. of surface area." In this case, the entire surface area of the pool would be calculated and then divided by 20 sq. ft. to determine how many people

are allowed to be in the pool at one time. The regulatory agency that issues the operating permit for the pool is responsible for calculating the maximum swimmer load, but the aquatic facility manager or pool operator must post and enforce the bather load. It should be noted that swimmer loads are really water quality concepts rather than water safety criteria. Swimmer loads normally are generated during the design stage and are developed so as not to overburden the water treatment plant. That is why surface area, depth, circulation rate and filtration area are the most important criteria for establishing swimmer loads. It is hoped that as swimmer loads increase, so will the lifeguard coverage, but this is not stated in many swimmer load requirements. Public pools must also determine how much of their programming time is going to be devoted to instruction, recreation, therapy, wellness and competition and which of these activities are priority programs.

These priorities must be spelled out as specifically as possible (Fig. 3-2).

Special Use Pools

Whenever possible, separate pools should be constructed for separate programs so that conflicting programs do not run into each other. Additionally, different pools can maintain different water temperatures, which is beneficial to different user groups. Special use pools that have been used successfully, include the following.



Fig. 3-2. A racing, diving, and instructional pool, Stanford University. (Photo courtesy of Counsilman & Hunsaker)



Fig. 3-3. A multiuse family aquatic center with wading pool in foreground. (Photo courtesy of Water Technology, Inc.)



(Photo Courtesy of Water Technology, Inc., Beaver Dam, WI)



The Wading Pool

A wading pool is simply a pool that has shallow depth used for wading. Wading pools typically do not exceed depths of more than two feet (24 inches) of water depth. It is intended for use by toddlers and young children under the age of five years. Many refer to this pool as the “kiddy pool” or “familiarization pool.” Larger, older children should be kept out of these facilities so that they do not become boisterous and injure younger, smaller children. (Fig. 3-3). Children using the wading pool who are not toilet trained should be taken to the restroom often, and the pool should be drained and cleaned often. There must be at least two bottom outlets to prevent disembowelment and evisceration. Snug-fitting drain covers and anti-vortex grates come highly recommended particularly for these shallow water pools. The water depth at the perimeter of this pool should not exceed 18 inches. Walls should not extend more than six inches above the water surface.

Because wading pools present some safety problems for small children, spray pools with no standing water are now beginning to replace kiddy pools. With no standing water possible in spray pools, they are much safer than wading pools with less chance for drowning, entrapments and transmission of recreational water illnesses.

Wading pools with a walk-in entry (zero depth) are becoming increasingly popular, because families with children find them easier to use. This pool should be completely separated and apart from the main pool. The greater the distance of the wading pool from the main pool, the less likely a small child will wander off into the deeper pool; however, distance from the main pool also creates supervision problems. Whenever possible, a four foot barrier or fence with self-closing and self-latching gates should separate the wading pool from other pools.

At some public pools, parents have been asked to supervise their children in this pool rather than lifeguards.

This is a questionable practice, because parents do not realize how quickly a child can drown, are not trained in detecting a drowning child and often become distracted. If assigning lifeguards to wading pools is not possible, then guards should regularly check on this pool as a part of their normal guarding rotation. Safety lookouts are also a good idea for this type of pool. Older children should be kept out of this pool because they can injure smaller children. If smaller children are not being properly supervised by their parents or other responsible adults, the child should be removed from the pool and the parents should be consulted. Younger shallow water lifeguards may offer quality supervision of these pools as well as senior citizens.

As just mentioned, protective covers and antivortex plates on pool outlets and drains are extremely important in the kiddy pool, otherwise small children may become entrapped in them. The wading pool should have a separate filtration and disinfection system but this does not necessarily hold true for older public pools. Concerning wading pool circulation, the recommended turnover rate for wading pools is two hours or less. Fecal Accident Policy information should be posted for parents to read near the wading pool.

The Instructional Pool

This pool is typically a shallow, warm water pool that is used primarily for water play and swimming instruction. The advantage of the instructional pool is so learn to swim programs, aquacize, and similar activities can take place while the main pool is being used by the swim team or other large groups. Sizes and shapes of instructional pools vary, but the maximum water depth should be between three and a half and five feet. Because of the shallow depth of water in this pool, head-first entries must be prohibited (Fig. 3-4).



Fig. 3-4. Instructional pool used for teaching activities. (Photo courtesy Mark Hokkanen.)

The Competition or Main Pool

This pool has traditionally been the focal point of aquatic programming (Fig. 3-5). It contains the most water and has more depth than both the instructional and wading pools. While most older competition pools have a minimum depth of three and a half feet, the recommended minimum depth for competitive pools is now closer to five feet to help prevent neck injuries caused by improper racing starts. This is where the bulk of aquatic activity

occurs and usually contains the racing course for swim team practice and meets. Many lap swimmers gravitate toward this pool. The NCAA and U.S. Swimming organizations should be contacted for dimensions and other recommendations if competitive swimming is to take place in this pool. If starting platforms (blocks) are used in this pool, they should be located at the deep end of a pool. Although the NCAA (2002) requires a minimum of four feet, deeper water (minimum five feet) provides a greater margin of safety, although it must be understood that a catastrophic neck injury can occur whenever a person enters head-first into water less than nine feet deep. When

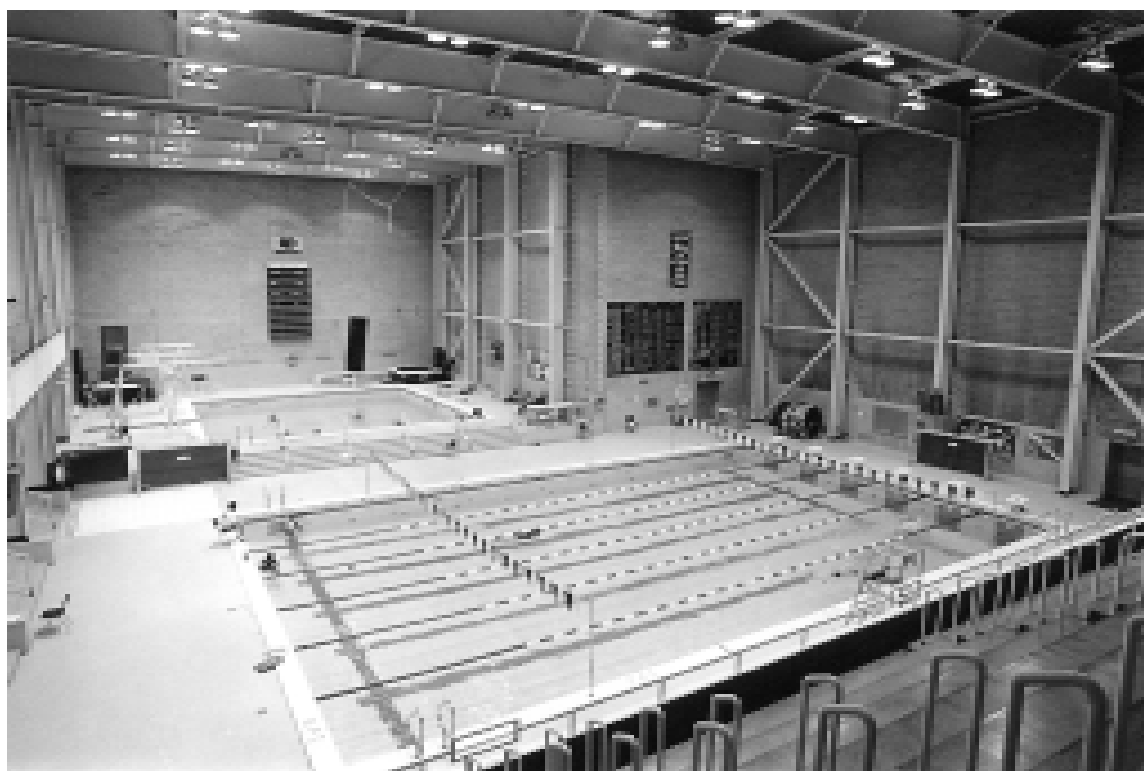


Fig. 3-5. Separate racing pool and springboard diving pool.

not being used by team members, starting blocks should be either covered or removed from the pool deck to prevent injuries. If they cannot be removed, patrons must be prevented from using them (Fig. 3-6).

The Diving Pool

The benefit of a separate diving pool is that deep water activities are removed from the main pool, thus eliminating conflicts between swimmers and divers and other deep water activities. By having a separate diving well, a flat bottom profile can be constructed and sufficient water depth provided to prevent neck and back injuries. If competitive diving is permitted in this pool, the preferred depth is 12.5 feet for one meter diving boards. Before constructing a diving well, the NCAA, U.S. Diving, or FINA regulations should be followed.

The diving well is often used by springboard divers, but when the diving boards are not in use, other activities like SCUBA diving, synchronized swimming, water jogging, lifeguarding, and water safety courses may be conducted there. Diving wells also tend to keep the water temperature warmer, and this type of deep, warm pool is ideal for water joggers.



Fig. 3-6. Removable racing start platform can reduce headfirst injuries. (Photo courtesy of KDI Paragon, Pleasantville, NY.)

Another advantage of the diving pool is that the depth is constant without any slopes. The constant depth should be a minimum of 12.5 feet and can be as much as 17 feet if diving platforms and towers are a part of the facility. Although the diving pool enhances diving safety and improves programming throughout the entire aquatic facility, it is often the most underused pool in the complex, because only accomplished swimmers use it, and participants are unable to stand up in it (Fig. 3-7). When a diving pool is constructed, it is wise to program other activities in the pool when the springboard divers are not training. Specific information about diving boards, stands, rules, and regulations will be discussed in the diving chapter.



Fig. 3-7. Separate diving well with competitive spring boards and towers at the University of Georgia. (Photo Courtesy of Counsilman & Hunsaker)

Although separate pools are ideal for both programming and safety, they are much more expensive to construct and maintain than one large pool. Separate pools require separate filtration systems, heaters, surge tanks, and disinfection systems. If only one pool can be built, several areas in the pool should be separated from the main pool to allow for activities in addition to lap swimming.

New technology has recently been brought to the United States from Europe that drastically reduces the costs of traditional indoor and outdoor competitive pools. Pre-engineered modular swimming pools combine stainless steel construction with PVC membranes to construct on-ground large competitive pools that do not require extensive excavation. If manufactured and installed for Olympic Games or some other large competitive aquatic event, the pool can be easily removed and installed somewhere else following the competitions. For instance,



the water polo pool used in the 1996 Olympic Games was sold and then removed to another location upon completion of the Olympics.

This technology shows great promise in this country in improving the number of world-class swimming venues with a much more affordable, and in many instances, portable pool.

Multi-use Family Pools

As the traditional pools just mentioned age in this country, they are increasingly being converted into multi-

use family aquatic centers complete with whirlpools, waterfalls, fountains, slides, lazy rivers and other activities for families with small children and seniors as well. (Fig. 3-8). Pools designed for competitive and instructional programs only are rapidly becoming things of the past. Multi-use family aquatic centers are becoming so popular that their attendance rates far surpass traditional pools. For more information concerning this new concept in swimming pools contact the National Recreation and Park Association and the World Waterpark Association.

Areas outside the pool but within the aquatic facility are important for the functioning of any aquatic facility. They include the entrance, deck area, bathhouses, and snack bar.



Fig. 3-8. Multiuse family aquatic center or leisure pool. (Photo courtesy of Water Technology, Inc.)

Pool Entrance

The entryway to a swimming pool serves many functions, only one of which pertains to admission. This is often “control central” for aquatic facilities and should include ample office and storage space.

The entry area is where the admission policy to the pool is enforced and also the ideal place to disseminate information to the pool patrons. Rules and regulations should be posted in this area along with pool staff pictures and certifications, provided personal and confidential information about employees is not available to the public.

This is also a good location for the first aid kit, telephone, and public address system. Automatic External

Defibrillators (AED'S) that are used in case of sudden cardiac arrest may also be placed in this area. This is an ideal place to keep files on accident reports, health department forms, and all other records and documentation. In the case of outdoor pools, this area should also provide ample shade and protection from inclement weather. A public telephone is desirable in this area. If patrons are not provided with a public phone, the pool phone will be overused and hinder the functioning of the pool office. The pool entrance should not be a place where lifeguards are permitted to congregate. Not only does this practice create a poor public image, but a traffic control problem often results when guards are allowed to "hang out" at the pool entrance when not on duty.

indoor pools. The wet areas of a pool deck are located within 10 feet of the water's edge. Walking and lounging should be provided for on deck areas located away from the wet areas. "NO DIVING" signs should be placed on all pool decks adjacent to water depths of less than nine feet. These signs should be within 18 inches of the pool edge, and the letters must be at least four inches tall. Contrasting colors are also recommended for these signs. Hose bibs should be installed around the perimeter of the pool deck to ease cleaning of the entire pool deck area. Floor scrubbers that put down disinfectant, scrub the deck and then vacuum up residual soap and dirt are quickly becoming popular for indoor pool decks.



Fig. 3-9. Non-slip interlocking vinyl deck tiles. (Photo courtesy of Dri-Dek, Naples, Fla.)

Pool Decking

The deck area must be constructed with a non-slip surface and should surround the entire perimeter of the swimming pool. Pool decks must be designed to remove pool splash-out water, deck cleaning water, and rainwater without leaving any standing water. Adequate sloping of the decks to drains or perimeter areas is important to protect against puddling and algae growth. Placement of deck drains is imperative for quick and efficient drainage. Continuous perimeter deck drains are favored over intermittent singular deck drains, but if these drains are placed too close to the edge of the pools, hosing of the decks may cause dirty water to pass over the drain and into the pool. Outdoor pools normally have larger decks than

As mentioned previously in Chapter 2, there are a variety of construction materials. If concrete decks are to be installed, they should conform to the standards recommended by the American Concrete Institute. Attractive, non-slip, flow-through decking materials are rapidly becoming a big business within the pool industry. Vinyl and rubber decking tiles as well as runners are available to place over existing decks to increase attractiveness and safety (Fig. 3-9). These type of surfaces tend to trap moisture, however, and should be pressure washed and disinfected so as not to harbor mold, fungus and bacteria.

Many facility operators believe that they have inadequate deck space, particularly at indoor pools where space is limited. A spacious deck not only allows for better administration of swimming meets and other events but

also provides an unobstructed view of the water, thus promoting water safety. Naturally, as you increase the size of the deck and thereby increase the “footprint” of the building, construction costs increase accordingly. Painted decks, epoxy coated or carpeted decks while popular, often require corrective maintenance after several years of use. (Fig. 3-10).

Ladders and Steps

All pools should have at least two means of entering and exiting with both the shallow and deep ends of the pool being served. A good rule of thumb to follow is to have an entry/exit device every 75 linear feet of pool wall. Ladders must be constructed of corrosion-resistant material such as stainless steel, although stainless steel does

require cleaning and care. All ladders should be recessed completely to eliminate hazards to patrons swimming past them and also to prevent children from swimming between the rungs. Each ladder should have two handrails or hand holds. The steps on the ladder must be non-slip. Recessed steps built into the wall must also have two handrails or holds and non-slip steps and the recessed treads should drain into the pool to prevent an accumulation of dirt. For specific dimensions of ladders and steps, local and state codes should be consulted. Whenever actual stairways are used in a pool, they should be either recessed from the swimming area or removable. Once again, the steps must be non-slip (Fig. 3-11). When stairways are utilized in a pool, safety devices must be in place to prevent children from attempting to swim through the steps or behind the ladder.

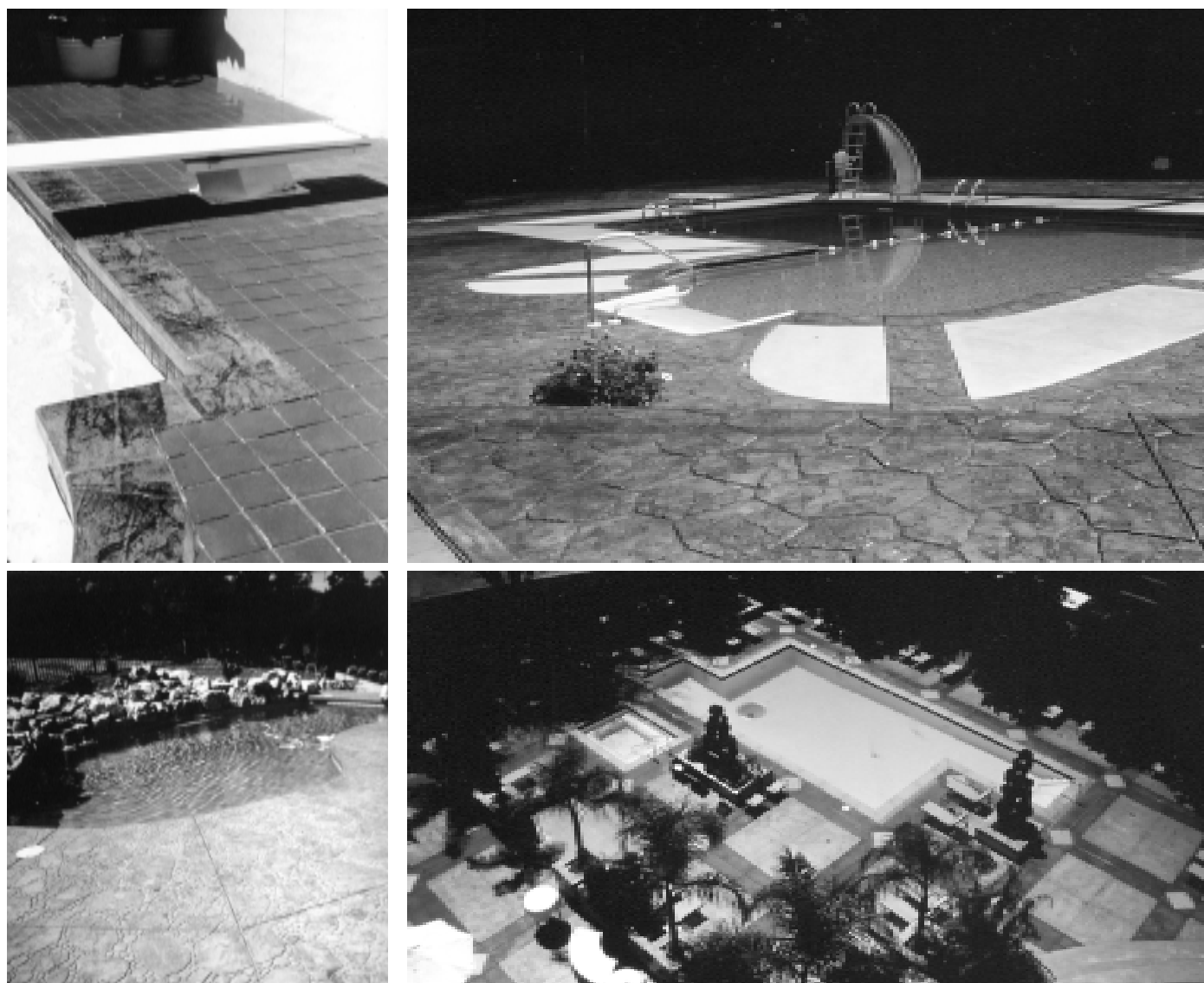


Fig. 3-10. Spacious pool decking combining a variety of materials including concrete, stamped concrete, and brick. (Photo courtesy of Bomanite, Madera, Calif.)

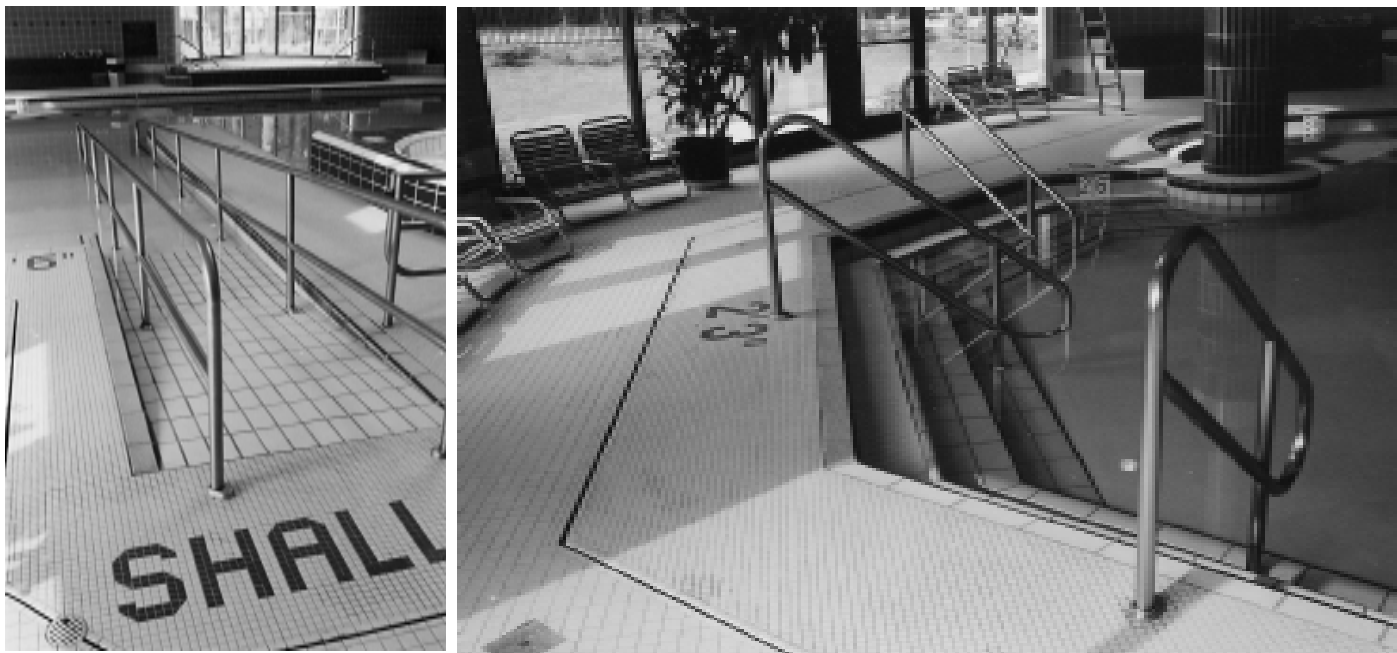


Fig. 3-11. Ramps and steps with stainless steel handrails. (Photo courtesy of KDI Paragon, Pleasantville, NY.)

Coping

Pool copings refer to the construction joint or cap that connects the vertical pool wall to the horizontal pool deck. It is imperative that pool copings are watertight so that water does not pass to the ground beneath or behind pool walls. Copings must also be constructed with a permanent, non-slip surface. Pool copings are often constructed of concrete, stone, or tile. Copings can also serve as hand holds for swimmers entering and exiting the pool when a slightly raised lip is provided. It is also a good idea to make the coping a different color from the swimming pool deck. (Fig. 3-12). When this is done, the coping also provides a warning that the pool edge is near.

Lighting

Lumens and footcandles are two terms used to measure illumination.

In general, the term lumens describes the magnitude of brightness coming off the light fixture or bulb, whereas footcandles refers to the light that reaches the surface below. Footcandles are easily measured by inexpensive and readily available light meters.

Generally, the Illuminating Engineering Society (IES) recommends 50 footcandles for indoor competition pools and 30 footcandles for public recreational pools. Many pool professionals recommend 100 footcandles today for competitive swimming pools and this is important *only if* the pool will be hosting large championship



Fig. 3-12. Coping divides the deck from the pool. (Photo courtesy of Bomanite, Madera, Calif.)

meets and televised events. Newly constructed pools are more likely to have 100 footcandles of light, whereas many existing pools have less than 50 footcandles. Indirect lighting is usually used for smaller indoor pools with low ceilings, whereas direct lighting should be used in large indoor complexes with high ceilings. Whichever lighting is used, glare must not be produced on the surface of the water. It is also important to understand that most light bulbs, regardless of the type, lose their initial brightness

quickly. This means that light bulbs should be changed often. Additionally, when indoor pools are constructed, it is imperative that a practical and inexpensive means of changing the light bulbs and maintaining the fixtures is strongly considered. There are simply far too many indoor pools in existence with lighting fixtures high in the ceilings over the pools that are almost impossible to reach. Many pool experts appreciate catwalks suspended from the ceiling that contain the lighting fixtures. Outdoor pools typically require less light than do indoor pools. See Fig. 3-13 for specific recommendations.

Underwater Lights

Underwater lights do not seem as popular as they once were. Some aquatic facility managers think underwater lights create maintenance problems and are not needed in most swimming situations. Many swimming facilities that have underwater lights rarely, if ever, use them. All underwater lights must be installed according to the National Electrical Code. Ground Fault Interrupters (GFIs) are also an important requirement. A licensed electrician should be consulted whenever installing, repairing, or replacing lights. Whenever underwater lights are being handled, circuit breakers must be turned off. Mishandling of underwater lights may lead to electrocution.

Underwater lights come in two basic types, dry niche and wet niche. The dry niche light is a light unit placed behind a watertight window in the pool or spa wall. This light can be removed, replaced, or repaired without entering the water. The dry niche light is often handled in the filter room or around the pool shell. A tunnel is created in the pool wall, under the pool deck, and houses the light and fixture. A glass lens separates the dry niche light from the pool water. A bulb with too much wattage can damage the lens, which can lead to the draining of most of the pool and consequent flooding. In addition, the lens may break if the light is turned on when the water level in the pool falls below the lens.

A wet niche light is a watertight fixture and a water-cooled fixture placed in a submerged wet niche in the pool or spa wall and is accessible only from the pool or spa (Fig. 3-14). This light must be removed from the pool and placed on the pool deck for repairs. With the wet niche light, both the light and the person repairing it get wet. As a result, many individuals prefer working with dry niche lights. Wet niche lights are cooled by the surrounding pool water and may explode if lighted out of the water.

Lighting fixtures should be between two and three feet below the surface of the water with an additional level of lights at eight- and 10-foot depths for deeper pools.

Class	Application
I*	International, professional and tournament
II	College and Diving
III	High school without diving
IV	Recreational
*Televised	

Recommended Illuminance Criteria for Above-Pool Lighting					
Class	Surface in Horizontal Footcandles			Vertical Footcandles	Uniformity (Maximum to Minimum)
	Indoor	Outdoor	Deck	Platform	
I*	70	50	50	70*	2.0
II	50	30	20	30	2.5
III	30	20	10	10	3.0
IV	30	10	10	10	4.0
*The platform in the principal viewing direction should have 70 to 100 footcandles without direct glare to the divers.					

Fig. 3-13. Above-pool lighting recommendations. (Photo courtesy of IES of North America, New York.)



Fig. 3-14. A, Dry niche underwater lighting fixture. B, Wet niche underwater lighting fixture. (Photo courtesy of KDI Paragon, Pleasantville, NY.)

Pool Finishes

Although there are many different types of pool finishes, some are not appropriate for public pools. Most public pool finishes should be light or white in color for good visibility and to allow lifeguards to see objects on the bottom easily. Of all the pool finishes, perhaps plaster is the most popular, particularly with concrete pools. Plastered pools are often referred to as marbledust, "Marcite," and "Marblelite." This pool finish may have to be replastered about every 8-10 years. Tile as a pool finish is very durable and attractive but also extremely expensive. Once a pool basin is tiled, it rarely, if ever, needs to be repaired or replaced. Often, because of the great expense of tile, pools will combine plaster and tile applications. The tile in this case would be reserved for the water line on the pool wall or racing lines on the pool bottom. Rubber-based paints can also serve as a pool finish. Paints used in this fashion should be chlorinated, rubber-based paints that are resistant to pool chemicals and unbalanced water. These paints are popular when used for renovation projects. Epoxy paints are quite expensive, but they form a hard, impervious surface that many public pools require. Painted pool finishes will have to be repainted frequently, about every five years. *Perhaps the biggest problem with painting a swimming pool is not providing for sufficient curing time before refilling the pool.* Regardless of the type of pool finish employed, it must provide good visibility, ease of cleaning and a non-slip surface. Although vinyl-lined pools are popular in private residences, they are usually not compatible with public pool use, because the finish can be

somewhat slippery, and vinyl may not be able to withstand heavy swimmer loads or the vandalism that is more likely to occur in a public pool.

Depth Markers

Depth markers are an integral part of every pool but particularly for public pools. These markings may be painted or tiled but they must plainly and conspicuously identify the water depth (Fig. 3-15). These signs must appear both on the vertical pool wall just above the water line and horizontally on the pool deck or coping close to the water's edge (no more than 18 inches away from the water). Depth markings must be clearly visible both to the swimmer in the water and the patron on the pool deck. Depth markings on the pool deck must be slip-resistant and appear at the minimum and maximum water depths and wherever the slope of the bottom changes. Depth markers should appear periodically on the pool deck when a two-foot change in water depth takes place, but local codes and pool ordinances must be checked before installation of these markers.

Depth markers must be a minimum of four inches high (six- to eight-inch numbers are strongly recommended) with the numbers being a contrasting color from the background. The depth markings should be permanently installed, and whenever possible, meters as well as feet should be indicated.



Fig. 3-15. Depth markers and no diving zone painted on pool deck.

Safety Markings

Depth markings are an important public pool requirement in many states, but additional signs and markings should be used at public pools. Headfirst entries from the side of the pool must be prohibited in less than nine feet of water. If any headfirst entries are permitted in water depths between six and nine feet, it should be for supervised, shallow-water, racing starts only. Diving warnings must be given to all pool patrons often and at regular intervals wherever the water is shallow. “NO DIVING” signs should be placed on the deck near depth markings. It may be wise to make these warnings larger than the depth markers. Some pools incorporate a no-diving zone by painting a red or orange line around the edge of the deck (Fig. 3-16).

Because headfirst accidents can have such catastrophic results, additional precautions against headfirst entries into shallow water should also be taken. The international, “NO DIVING” symbol is now readily available in pool tiles that can easily be added to any existing pool deck. These and other suggestions will be further discussed in the diving chapter of this book.

Warning lines should be painted or tiled on steps or the pool bottom whenever a significant change in depth occurs. These warning lines should be approximately four inches in width and colored black, dark blue, or red (Fig.

3-17). A boundary line should be placed on pool bottoms to divide deep from shallow water. A buoyed line (lifeline) should also be installed across the surface of the pool above the break point and about two feet closer to the shallow end of the pool. Warning lines on pool steps, edges, ledges, and other possible obstructions are very helpful in cautioning swimmers of abrupt changes in depth or surface structures. Using these warnings and equipment are highly recommended to keep non-swimmers out of deep water but they are not foolproof. Parents must watch their children, and adults must exercise common sense.

Pool rules and regulations should be posted at the entrance of the pool, in the locker rooms, and at various locations where these rules are particularly pertinent (Fig. 3-18). Typical pool rules prohibit running, glass, unsupervised swimming, general horseplay, and boisterous behavior. Other signs are also needed to explain policies like dress codes, the use of flotation devices, smoking, and the like. Whenever possible, a written copy of pool rules and regulations should be given to each member of the pool. It is important, however, to place the most important rules regarding safety separately and more prominently than housekeeping rules. When all pool rules are placed on one sign or in one location, the most important messages can get lost amongst less meaningful rules.



Fig. 3-16. No diving markers.

Dr. Tom's Tip: The three most important rules at many facilities should be "No Diving in Shallow Water," "Parents: you are responsible for the safety of your child," and "No breath-holding or prolonged underswimming allowed." All other signs should be given less prominence.

General signage at any pool is extremely important. Rules and regulations not only help to prevent lawsuits, but more important, they also help to prevent accidents from occurring. Particularly in geographic locations with a multicultural character, universal graphic signs using illustrations as well as written messages can be more effective.

As mentioned in the previous chapter, using contrasting colors similar to highway warning signs should also be helpful in conveying the appropriate message.

Lifeguarding Equipment

Many states require that elevated lifeguard chairs be maintained at public pools. Though elevated chairs do give lifeguards an improved vantage point from which to supervise swimmers, lifeguards have been known to injure themselves climbing in and out of the chairs. The vertical ladders on the back of the traditional chairs also present challenges and hazards to lifeguards. Lifeguard chairs may either be permanently installed in the pool deck or be of a

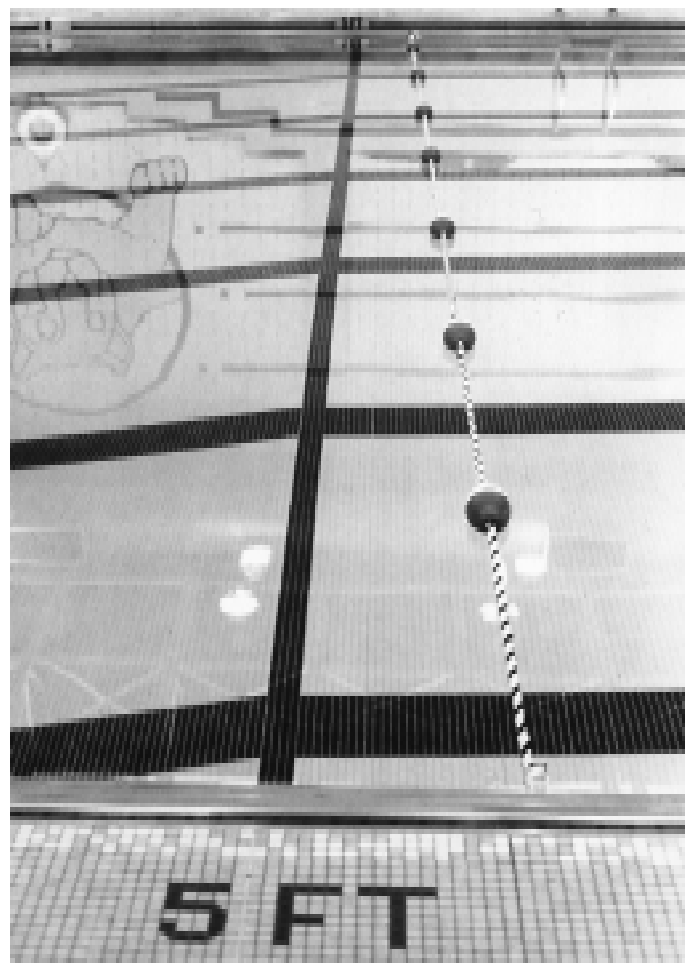


*Fig. 3-17. Warning lines on pool bottom.
(Photo courtesy of Tim Gervinski.)*



Fig. 3-18. Posted pool rules.

portable variety. Portable lifeguard chairs provide many advantages, but they do require slightly more deck space. Perhaps one of the most promising advances in lifeguard stations are elevated stations with steps up the front as opposed to ladders in the back. This allows lifeguards to enter and exit easier and safer than the traditional lifeguard chairs.

In addition, these new lifeguard stations provide standing positions in addition to seats. All in all, the latest technologies in lifeguard stations provide additional safety for the patrons *and* the lifeguards.

Lifeguard chairs must be strategically placed to avoid blind spots and glare from the sun. Chairs should also be positioned closer to sections of the pool that have greater risks. Whenever possible, shade and water should be provided at each chair. First aid kits, gloves, and face shields to protect lifeguards from bloodborne pathogens should be located at every chair. If a water rescue must be initiated from the elevated chair, guards must be trained and reminded not to dive into the water from the chair. Many good lifeguards have been seriously injured by diving from lifeguard chairs. A good rule of thumb used to determine the number of lifeguard chairs is one elevated chair per 2,000 square feet of pool surface area. This should not be interpreted to mean that one lifeguard is required every 2,000 square feet. Local swimming pool codes should be checked, however, before elevated lifeguard stands are purchased or installed (Fig. 3-19).

Because lifeguards are human beings and cannot be perfect, boredom, fatigue and distractions may lead to a lack of vigilance. A whole new industry has been developed in underwater surveillance. Underwater video cameras and computers can now alert lifeguards and managers when there is a body on the bottom in less than 10 seconds.

In addition to elevated chairs, lifeguards and pool patrons must have rescue equipment conveniently and conspicuously available to them. Lifesaving equipment should include the following:

- A strong, light pole at least 12 feet long with a large, blunt hook located at one end, often called a shepherd's crook.
- A ring buoy or other throwing device with a line attached. Although many codes state that a line must be attached, larger more buoyant ring buoys may be more effective without a line attached.
- An emergency telephone with important numbers listed. This phone should be restricted to emergency use only. A 911 call box with audio alarm comes highly recommended.
- A backboard for use of trained individuals in case of a neck or back injury (Fig. 3-20).



Fig. 3-19. Portable, elevated lifeguard chair (Photo courtesy of Paragon Aquatics).

A



B



C

Fig. 3-20. A, Rescue tube, ring buoy, and emergency procedure posted. B, A large ring buoy. C, Backboard for care of spinal injuries. (A, Photo courtesy of Tim Gervinski.)

Poseidon

How the Poseidon System works

Poseidon**Overhead cameras**

Poseidon Technologies
 72-73 Burchholme Street
 Newbury Berkshire RG14 5DU - United Kingdom
 Tel : +44 870 241 3238 - www.poseidon-tech.com

The surveillance screen unit

The Surveillance Screen Unit can be installed next to the pool. It is the command centre for the system and an ideal device with an integrated flashing light and buzzer. It is ideally waterproof and has a touch-sensitive screen to make it use completely trouble-free.

The central processing unit**Alert pager**

Lightweight and water-proof, Poseidon alert beepers indicate an incident with sound and vibration, and clearly display the exact coordinates of the swimmer in difficulty. Their range covers the entire building.

Swimmer in difficulty**Global-view camera units**

The global-view cameras are optimized for underwater use in swimming pools and are of excellent optical quality. They consist of two cameras oriented at 45° with the field of vision exceeding 130° for complete and overlapping surveillance of the pool. The cameras are sealed within the pool walls under the surface of the water. They were specially designed to avoid obstructing swimmers.

The global-view cameras are linked to the central processing unit where images are analysed in real time. The computer can identify suspicious trajectories (such as slow sinking or immobility at the bottom of the pool) and trigger an alarm.

Outdoor Pools: Special Considerations

Outdoor pools are faced with additional problems that are often not concerns for indoor pools. These concerns are many and varied. First and foremost, lifeguards and patrons should be educated about the harmful effects of the UV rays produced by the sun. Whenever possible, ample shade should be added to outdoor pools and sunblock should be available free to employees and on sale for patrons. With all the information available on skin cancer today, it would be irresponsible not to provide protection from the harmful rays of the sun. Although large beach umbrellas are often the simplest remedy in this regard, they can often become airborne during windy conditions and have, in fact, caused serious accidents. When umbrellas are used for shade, extra care must be taken to fasten them down securely and they must also be taken down when a storm is approaching (Fig. 3-21).



Fig. 3-21. Elevated lifeguard protected by umbrella from both sun and rain. (Photo courtesy Water Safety Products, Melbourne Beach, Fla.)

Fortunately, a variety of new shade products is available.

Indoor pools are protected from the ultraviolet rays of the sun. Unfortunately, outdoor pools are bombarded with these damaging rays, which also dissipate chlorine levels and also promote algae growth. When pools are located in sunny, hot regions, it is extremely difficult to keep sufficient levels of chlorine in the pool. For this reason many outdoor pool operators are moving toward the use of stabilized chlorines that are not affected by the ultraviolet rays of the sun. Stabilized chlorines are therefore able to withstand the sunlight and remain in the water longer, thus saving money and avoiding low chlorine levels. The use of stabilized chlorines saves significant sums of money. Stabilized chlorines also have some disadvantages associated with them and will be discussed in detail in Chapter 7. As a general rule of thumb, states *below* the Mason-Dixon Line are more likely to use stabilized chlorines than states *above* the Mason-Dixon Line.

Outdoor pools often have increased trouble with algae growth. This is not only due to the sun but is also caused by wind, rain, and other organic materials being blown into outdoor pools. Sunlight does have a significant effect on algae growth. As the weather warms up and as the weather changes, aquatic facility managers must be prepared to deal with increased algae growth. Daily brushing of the pool bottom and walls goes a long way in preventing algae growth.

Lounge chairs are often provided at outdoor pools. Pool furniture is moved and abused greatly during the course of a season. Sturdiness and stacking ability are two basic requirements for selecting pool furniture. Cleaning pool decks and lounging areas becomes extremely difficult if chairs cannot be stacked. Also, lounging areas should be kept away from the wet deck areas and as far away from the pool deck as possible so as not to cause sight obstructions of the pool or impede rescue efforts. Whenever possible, lounging areas should be kept separate from pool and deck areas (Fig. 3-22).

Some outdoor pools literally lock their lounge chairs to fences in order to keep them from spreading out over the lawn and from being thrown into the pool at night. Lounge chairs can be easily and permanently stained during the summer months. Simply wiping them down with warm, soapy water may keep them clean longer. Some companies also provide a service by completely refurbishing these chairs during the winter months.



Fig. 3-22. Swimming pool furniture on spacious pool decks. (A, Photo courtesy Bomanite, Madera, Calif.)

Pool Cleanliness

Outdoor pools are typically more difficult to keep clean because so many more undesirable materials may enter the pool. Leaves, grass clippings, and other foreign objects are of particular concern. Leaves not only clutter the pool bottom but can easily clog skimmers and gutters, thus reducing proper filtration. Pollen, dirt, dust, rodents, and other small animals often find their way into outdoor pools. Once again, these are not only unsightly but also reduce the flow of water back to the filters.

Experienced pool operators increase the surface skimming of their pools as more objects find their way into the pool. With increased skimming action, less debris will sink to the bottom. If a large amount of debris does make it to the bottom of the pool, pool operators will then take more water from the bottom outlet (main drain) to pull the undesirable material out of the pool.

A good pool cover, as well as wind screens on perimeter fences, can also help reduce the amount of undesirable matter going into the pool. Whenever possible, trees and shrubs and even lawns should be kept well away from the pool edges to prevent leaves and clippings from entering the pool.

Barriers

The entire aquatic facility must be bordered on the perimeter by a strong, durable fence or wall, preferably eight feet in height. Fencing requirements vary in different states and for different types of pools. It is imperative that at least the minimum fencing requirements are met. All barriers must be designed to deter unauthorized entry and should not have any external handholds or footholds. Chainlink fence, which is very popular, durable, and relatively inexpensive, actually provides easy climbing access for trespassers. A better but more expensive alternative to chainlink are fences with vertical slats. Fences must be checked on a regular basis for holes and other openings. Signage located periodically on the fence should warn trespassers about unlawful entry. A large double-doored gate must be available for the entry of emergency vehicles and chemical deliveries (Fig. 3-23).

Lighting

Outdoor pools should have adequate lighting for security reasons, even if night-time swimming is not planned. A night watchman is also a good idea if trespassers and vandalism are a possibility. It is not uncommon for



Fig. 3-23. An eight-foot chain-link fence securing a semi-public pool.

this night watchman to provide other pool services, such as vacuuming and bath-house clean-up. When lighting is planned for evening swimming and programs, care must be taken so that excessive glare is not produced on the surface of the water. Glare at night will inhibit the lifeguards' ability to watch and protect patrons.

Food Concessions

Anytime food is served at a swimming facility, whether it is sold on the premises or brought in by patrons, it must be consumed in special areas reserved for eating and drinking only. Smoking should also be banned at most swimming facilities. It is interesting to note that U.S. Swimming bans smoking anywhere in an aquatic facility during a swimming competition. Keeping an aquatic facility clean can be a nightmare if eating and drinking are allowed to take place anywhere in the facility. Snack bars should provide for eating with tables and refuse cans clearly marked and kept away from the pool decks. Fencing and signage also helps in keeping food and drink away from the pool and deck areas. Above all, glass must be kept out of the facility. Particularly with outdoor pools, as food and drink consumption increases, so will bees and flies.

There are two basic ways of dispensing food at pools: self-service vending machines or full-service snack bars. While many public pools (full-service) enjoy the profits of a full-service snack bar, there are also several disadvan-

tages, including personnel and hygiene concerns. A popular trend today is to contract out food concessions to an outside group or organization. Recycling programs and zero-waste biodegradable products are strongly urged for any aquatic facility with a concession stand on the premises.

Public pools must have a minimum of one drinking fountain, but preferably one per 2,000 square feet of pool surface area, whether or not food and beverages are served. Because this type of pool may produce burns, bee stings and cuts, additional training and first aid equipment may be required of the staff.

Programming

An important aspect of the public pool that is not normally a part of a private pool is programming. Once again, to program correctly, pool management needs a clear set of priorities. Some things that must be programmed are:

- Vacuuming (very early in the morning to allow dirt to settle)
- Lessons (mid mornings and late afternoons)
- Team practice (early morning after vacuuming and early evenings)
- Recreational swims (all other times)
- Lap swimming (before and after people go to work, at lunch time, and whenever possible during the day)
- Special groups and shows



(Photo courtesy of Water Technology, Inc. Beaver Dam, WI, www.watertechnologyinc.com)

Each of these activities should be prioritized with those individuals in charge. Also, if outside groups are renting the facility for special practices or programs, a group use policy should be in place and signed off on by all parties involved.

Security

Securing the pool from trespassers and vandals after the pool closes is a difficult but important task. Not only can someone get seriously hurt after hours, but a great potential for vandalism also exists. There are several things that can be done to safeguard the outdoor pool at night.

Security Light

Every outdoor pool should have a bright light illuminating the surface of the pool and surrounding areas. With such a light, police officers and security guards can simply drive by and look at the surface of the water. Surface water that shows any sign of activity may indicate that someone has been in the pool. Most pools turn totally quiescent within 10-15 minutes of the last swimmer exiting the pool.

Electronic Devices

Several electronic devices help defend against unauthorized entry into the pool. Water sensors can detect almost any water disturbance and can activate an alarm at the local police station. Closed-circuit television cameras, electronic eyes, and many other electronic burglar alarm-type devices can protect the pool but can be expensive.

A Night Watchman

Hiring someone in the evening to watch the pool at first glance appears to be a boring and expensive proposition. If, however, the person assigned to security in the evening can also perform duties like pool vacuuming and bathhouse cleaning, this situation may even save the pool money. A night watchman is a good idea for many outdoor pools. It should be remembered that this employee need not make arrests or physically deal with intruders but rather simply call police upon unlawful entry. Older, mature lifeguards and desk attendants have often filled this capacity.

Locker Rooms

Locker rooms, showers, and toilet facilities are an integral part of every aquatic facility. A wonderful experience at a swimming facility can be easily ruined by a bad impression of the locker room facility.

In addition, with the advent of *Recreational Water Illnesses (RWI's)*, swimming patrons want and need to know how to prevent themselves from getting sick in swimming facilities. The locker room is perhaps the best place to post this information. The facility fecal accident policy should be posted conspicuously and include information like:

1. soapy showers required before swimming
2. washing of the hands whenever adults and children use the toilets
3. using waterproof swim diapers for non-toilet trained children
4. checking children's diapers often
5. banning all individuals who have had diarrhea within the last two weeks, and other practical protocols.

Dressing and sanitary facilities should be provided with separations for each gender and without interconnections. All new aquatic facilities should consider adding a family or unisex changing facilities for parents with younger children of the opposite sex. These rooms must be well lighted, drained, and ventilated. Mold, fungus, and algae are prone to grow if special precautions are not taken. Locker rooms and sanitary facilities must also be planned to allow for daily housekeeping and regular maintenance.

Partitions separating dressing rooms, showers, and toilets in aquatic facilities are often troublesome areas. Partitions must be constructed of durable materials, yet because of the high humidity content and general wetness in this area, they must not be prone to water damage and mold. In addition, partitions should be installed so that cleaning walls and floors with hoses, mops, and brooms is not only possible but convenient.

All locker room and shower floors must have a non-slip surface yet be smooth enough to ensure ease of cleaning. Carpet, runners, and the like, while making for a non-slip surface, often create slip hazards and are difficult to clean, plus they may harbor fungus, mold and bacteria. Ample floor drains must be installed to provide for proper drainage. Floors must be sloped toward drains not less than one-fourth inch per foot, with an adequate number of floor drains for proper and complete drainage.

Tiled floors are excellent for locker rooms, but of course they are very expensive. The grout *between* individual tiles helps tremendously in making tile floors non-

slip, therefore the smaller the tile, the more non-slip the surface will be. Although larger tiles are more aesthetically appealing to many, they are often more slippery than floors composed of smaller tiles. If individual tiles are larger than the foot size of swimmers, the floor becomes more slippery. This is because larger tiles allow swimmers' feet to hydroplane on water before hitting the grout between tiles. Smaller tiles provide recessed grout that allows water to drain from individual tiles and also provides a roughened surface for swimmers.

Concerning lavatories and urinals for male swimmers, one lavatory (sink) and one toilet for the first 100 users and one additional for every 200 users is a good rule of thumb to follow. These fixtures should be roughly doubled for female swimmers. Local and state codes should be consulted to be certain a facility is in compliance.

A minimum of two shower heads should be made available for each gender, and for every additional 50 swimmers, a shower head should be added. The water temperature at discharge should not exceed 90° F, and the flow rate of each shower head should not exceed two gallons per minute. Thermostats and water heaters for showers should not be accessible to users. Fortunately, low-volume shower heads are now available that save significant amounts of water but maintain strong pressure.

Soap dispensers should be available at each lavatory but must be made of an unbreakable material. Likewise, only unbreakable mirrors should be located above each lavatory. Sanitary napkin dispensers should be available in all female facilities. All plumbing fixtures must be in accordance with local plumbing codes. Fixtures should be easy to clean and resistant to corrosion.

Electrical outlets in locker room areas deserve special attention. All outlets must be installed with GFIs and located away from wet areas and lavatories. Wall-mounted hair and hand dryers are preferred over the personal handheld variety.

Spectator Areas

Whenever possible, spectator and visitor areas should be isolated from decks and swimming pool areas. Shoes and street clothes are not compatible with wet deck areas and can cause problems in both traffic control and deck sanitation. If spectators must be allowed within the pool perimeter and deck area, they should be kept separated from areas used by bathers. If possible, spectators should have separate toilet facilities. At least one drinking fountain should be available for spectators and guests.

Operation and Management

As mentioned earlier in this chapter, all facets of aquatic administration are affected by the American Disabilities Act (ADA).

Hiring and supervising personnel, programming, facility management and many other areas of pool management, must follow ADA guidelines. All pool owners, operators, and staff must become familiar with this law to mainstream persons with disabilities into aquatic facilities and programs.

Every public aquatic facility should be maintained under the direct supervision of a properly trained aquatic facility operator or manager. The pool operator must be trained in sanitation, safety, pool maintenance, record keeping, legal liability and several other important areas. Many states require the pool operator to be certified, and some municipalities train and certify pool operators working in their region. The National Recreation and Park Association and The National Swimming Pool Foundation both offer excellent two-day training and certification programs in Pool Operations.

Lifeguards should be required at every public swimming facility. They should be properly attired and easily recognized. Lifeguards should be certified in lifeguarding techniques, first aid, and CPR, but more important, the pool manager or operator should specifically train lifeguards for the facility at which they will be working. This key link between pool operator and lifeguard must not be overlooked. Both preseason and in-service training is required. Lifeguards require adequate rescue equipment and frequent breaks.

Above all, lifeguards must be supervised constantly. More information will be presented on lifeguards in the Lifeguarding Chapter.

Job descriptions must be given to all employees, including lifeguards. Written and oral instruction are needed for all procedures, including water rescues and other emergencies. These instructions are also needed for the maintenance of pool water, including chemical disinfection and adjustments, filtration, backwashing, vacuuming as well as water testing, just to name a few.

Pool rules, regulations, policies, and priorities must be written and posted in a conspicuous place. Pool patrons should also receive a written copy. Lifeguards and pool personnel must also understand and enforce all rules as well as OSHA and right-to-know laws.

Swimmer loads are determined by criteria established by the local health department or other regulatory agency.

The maximum allowable number of swimmers in a pool at one time can be determined by pool surface, depth, water volume in gallons, and other factors. Indoor and outdoor swimming facilities usually have different swimmer loads. Pool management must know and observe swimmer limits prescribed for their pools. Swimmer limits are sometimes written on the pool permit. Lifeguard-to-swimmer ratios such as one lifeguard for every 25 swimmers appear to be well intended but are extremely difficult to enforce. Depending on the type and skill level of the pool patrons, this lifeguard-to-swimmer ratio may be increased or decreased, but perhaps emergency response time and square footage of water surface may be better indicators of the number of lifeguards required.

All required pool applications and permits must be submitted with the state or local authority. Pool permits must be renewed annually and should be posted for all to see at the aquatic facility.

Public pools must be maintained in accordance with local and state codes and must pass all inspections by the regulatory agency to remain open. It must be emphasized that health departments and other regulatory agencies provide *minimum* standards, and most aquatic facilities may want to exceed those printed standards. Permits are often revoked or suspended when the pool constitutes a health or safety hazard to the user. The facility operator should close the pool or park immediately upon discovering any unsafe condition. While the facility is closed, the hazard must be removed, repaired, or replaced before the pool is reopened to the public. For example, if a rung on a ladder is loose, it must be tightened immediately, or someone might slip and fall while exiting the pool. If an antivortex plate is missing, the spa or pool must be closed until it is replaced. When poor water clarity obscures the bottom of the pool at its deepest point it must be closed and not reopened until the water is cleared. These and many other safety violations can cause a facility to be closed until the deficiency is corrected.

Pool management would also be wise to meet regularly with fire, police, ambulance, and EMT officials to ensure that the emergency action plan at the aquatic facility is consistent with emergency care procedures by the professionals responding in the local municipality. Lifeguards and the emergency response team should be trained to work well together. All pool records should be kept for a minimum of five years. More on swimming pool management and operations will be discussed in Chapter 19.

First Aid Room

Every public pool should have a first aid room that is reserved for emergencies only and is fully stocked with

emergency equipment and supplies. The larger the facility, the larger the first aid room should be. The first aid room should have a cot, several blankets, a sink, and if at all possible, a shower and toilet. Lifeguards and other employees should not use this as a staff room.

Some large water parks even station a registered nurse in the first aid room during operating hours. Spine boards and other emergency equipment required by local codes should also be kept here. The first aid room may be an ideal place to post all staff first aid and CPR certifications. When questions concerning the requirements of the first aid room arise, the local health department or another regulatory agency should be contacted. Bloodborne pathogen information and personal protective equipment should be located in this first aid room.

The location of this room is important. Not only should it be visible to all patrons, but it must also be readily accessible to emergency vehicles. It should have immediate access to outside streets. A phone dedicated for emergency use only should be located in the first aid room. Emergency numbers and procedures should be posted clearly and conspicuously near the phone (Fig. 3-24).

Staff Room

Whenever possible, a separate staff room should be available for lifeguards and other employees to rest and relax, away from the swimming pool patrons. At an outdoor facility, this becomes very important in getting the lifeguards out of the sun. If a separate building or room is not possible, perhaps a tent would be helpful. A refrigerator, couch, and reading materials, particularly those related to water safety and emergency care would be beneficial. Employees only should be allowed in this area of facility.

Hotel, Motel, and Resort Pools

Although hotel, motel, and resort pools are public pools, technically, it would be more accurate to describe these facilities as semipublic. While admitting the public, the usual entrance restriction is that the swimmer be a guest of the hotel, motel, or resort. According to a survey of frequent travelers conducted by *U.S. News and World Report*, 92% of the respondents expected to have a swimming pool at their hotel, motel, or resort. More important, the swimming pool was more heavily used than any other amenity. In another study conducted by Holiday



Fig. 3-24. First-aid room.
(Photo courtesy Mark Hokkanen.)

Inns, the swimming pool was found to be the most important factor in the selection of a vacation hotel.

The hotel, motel, and resort pools are mentioned separately in this chapter not only because of their popularity but because they have special problems associated with them. Apartment and condominium pools have similar concerns as the hotel or motel pools except for the transient clientele.

A common problem that exists with many of these facilities is a design problem. Many hotel, motel, and resort pools are smaller pools with many “big pool” amenities placed in them. Although most of these types of pools have removed their diving boards, many still have slides even when they do not have sufficient surface area or depth to allow for these activities. Another safety concern with these pools is the clientele that use the pool. The following generalities often exist at many hotel, motel, and resort pools.

- Transient clientele
- May not understand rules
- Alcohol consumption
- Very old
- Partying
- Very young
- Unfamiliar with pool
- No lifeguard on duty

It is wise to discuss these variables further to better understand some of the risks associated with hotel, motel, and resort pools. Many individuals who use these pools are either on vacation or attending professional meetings. Because they are away from home, they are unfamiliar with the pool dimensions and safety practices in the locality of the hotel. Alcohol is often consumed. In addition to traveling professionals, these pools attract retired individuals as well as young families with small children who are vacationing. As a result, a very heterogeneous or mixed ability group is found in a relatively small body of water. To make matters worse, lifeguards are generally not on duty. (Fig. 3-25). Because the pool is designed to be aesthetically



Fig. 3-25. Hotel/motel pool. No lifeguard on duty sign.

pleasing to guests, child barriers are often missing, thereby making it easy for children to wander into the pool. Hotels, motels, and resorts may not have any knowledgeable staff to run the pool.

For the reasons mentioned above, this special category of pool probably needs extra attention and may require the services of a professional pool company that can manage the pool properly. Another alternative would be to get staff members trained and certified as pool operators through the National Swimming Pool Foundation, the National Recreation and Park Association, the YMCA, or some similar organization. In addition, guests must be warned that the pool is unguarded and not monitored by the staff. Signs like “*Parents: Please watch your children—it only takes seconds for a child to drown*” “*Enjoy our pool but please be careful and exercise common sense,*” are the type of signs that should be created and added to the semi-public pool landscape.

Summary

Public aquatic facilities require diligent planning, management, and supervision. All those working in and around the water should be trained in several areas, including first aid, CPR, lifeguarding, water safety instruction and certified pool operations. For specific certification requirements, local authorities responsible for swimming pools should be contacted. Lifeguards alone cannot ensure the safety of the patrons attending these facilities; it takes commitment from the entire safety team that includes management and support staff as well as the lifeguards on duty.

References

- ANSI/NSPI, (1992). *Standards for public swimming pools*. Alexandria, VA: The Institute.
Pool and Spa News: May 7, 1990.
RP-6 (1989). *Current recommended practice for sports lighting*. New York: Illuminating Engineering Society.
www.aquaticsafetygroup.com

Bibliography

- American Red Cross. (1992). *Swimming and diving*. St. Louis: Mosby.
Clayton, R.D., & Thomas, D.G. (1989). *Professional aquatic management* (second ed.). Champaign, IL: Human Kinetics.
Gabriel, J. (1992). *Diving safety: A position paper*. Indianapolis, IN: U.S. Diving.
Gabrielson, A.M. (1987). *Swimming pools: A guide to their planning, design, and operation* (fourth ed.). Champaign, IL: Human Kinetics.
Kowalsky, L. (Ed.). *Pool/spa operators handbook*. San Antonio: National Swimming Pool Foundation.
NSPI (1992). *Pool and spa market study for 1991*. Alexandria, VA: The Institute.
NSPI (1983). *The sensible way to enjoy your pool*. Alexandria, VA: The Institute.
Pope, J.R., Jr. (1991). *Public swimming pool management*. I and II. Alexandria, VA: National Recreation and Park Association.
Williams, K.G. (1991). *The aquatic facility operator's manual*, Hoffman Estates, IL: National Recreation and Park Association, National Aquatic Branch.
Updated/revised edition available.



(Photo courtesy of Water Technology, Inc.)

Copyright of Complete Swimming Pool Reference is the property of Sagamore Publishing, LLC and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.