UMC GUIDE RECREATION PARKS & LEISURE
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WINTERIZING OUTDOOR SWIMMING POOLS[1]

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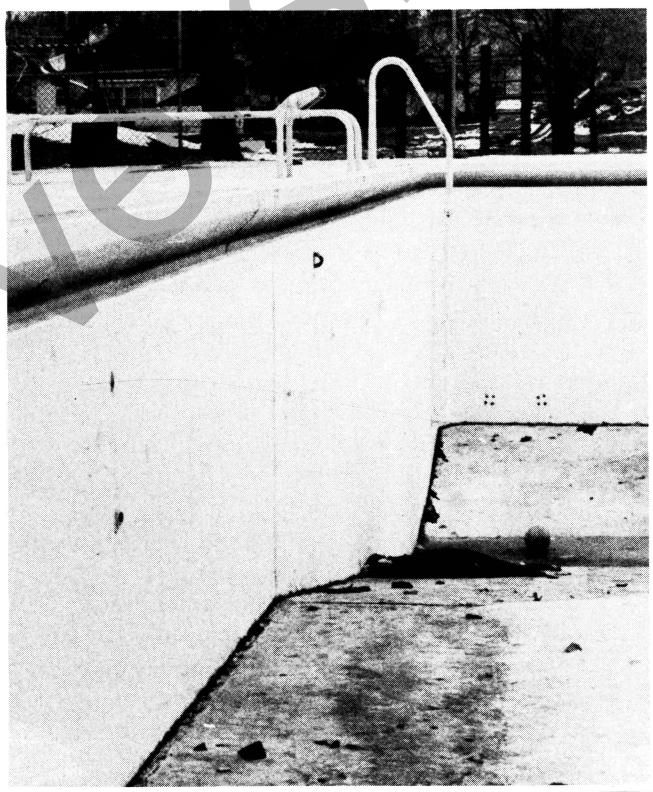
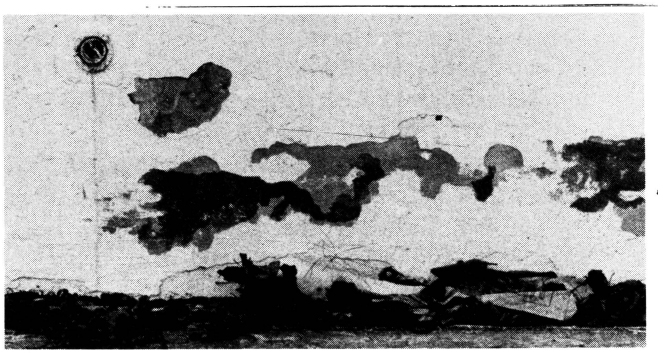
Many of the 200 plus Missouri communities which have public swimming pools give little thought to winterizing their pools. The results of inadequate winterization become evident in the spring. The damage from winter and the result of oversights in draining and improper pool care are obvious.

The following information for winterizing outdoor swimming pools is given to help minimize the damage caused by freezing temperatures and to make the opening of the pool in the spring as easy a chore as possible. The discussion presented is not tailored to any particular type of pool or equipment manufacturer and generally is applicable to all pools. Although most municipal pools will be drained during the winter, winterizing suggestions will be discussed for both pools which will remain filled and those which will be drained.





Closing Procedures

Whether or not the pool is drained can make opening the pool easier in the spring. Draining the pool makes the spring cleaning easier. It eliminates the formation of slime and staining of walls from soaking vegetation and algae. Draining also will prevent damage from the expansion of ice on the surface of the pool.

However, draining the pool will subject it to weathering. Freezing and thawing can cause moisture in the walls to expand which causes the paint, and surface concrete or plaster finish, to chip. Ground frost causes upheaval of earth which may crack concrete pools or cause bulges in the bottom of steel walled pools. Steel pools with joint walls are more subject to damage from corrosion when exposed to air and temperature extremes.

It is possible to drain the pool if the following occur, otherwise the pool should be left partially filled.

[1]Portions of this material were previously published in the Illinois Parks and Recreation Magazine, July-August 1977, and authorized by Mandred F. Judernatz, P.E., vice-president of Gollehrn, Schemmer and Associates, Inc.

- If the pool subgrade has adequate drainage to prevent a high ground water table lift;
- If a pressure release valve is installed in the bottom of the pool;
- If the climate is mild enough to reduce ground frost heaving danger;
- If pool painting is planned for the next season;
- If the pool has at least six inches poured concrete walls.

Plastic-walled pools, those with gunite construction and those with walls less than six inches thick must be left partially filled with water to equalize the pressure inward from the freezing of the ground around the outside of the pool. Pools with six inch walls are usually strong enough to withstand this pressure by themselves.

It is advisable to leave the pool partially filled under these conditions.

- If the temperature will be extreme;
- If the water table may be high;
- If under pool drainage is doubtful;
- If it is desirable to protect the pool paint;
- If an added source of water is desirable for fire protection;
- If the city wishes to use the pool as an ice skating rink (which is not recommended);
- If the walls are not poured concrete.

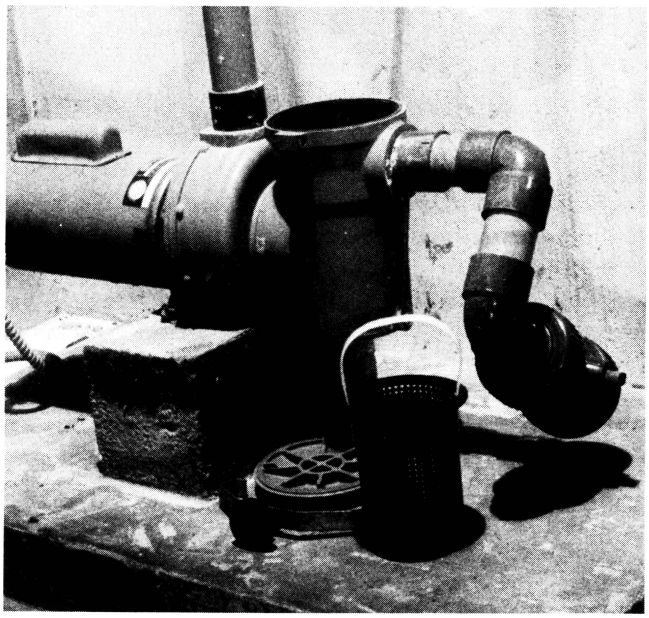
Water cannot be left in the pipes leading to the pool inlets if freezing is expected to reach that depth. If water is to be left in the pool, it must be lowered to below inlet level and the inlet plugs, because rain and snow will cause the water level to rise during the winter. An open drain plug is needed at every point in the piping where the water might collect.

The following are general pool closing procedures which should be observed for all pools.

1. Backwash filters several times and drain.
2. Open drain valve at filter tank and start draining pool through filter, or if the pool has a main drain bypass, drain through it.
3. If the filter is sand and gravel type located above pool water level, add two cups of granulated chlorine through the top opening and drain the filter by removing the drain plug.
4. For a filter located below the water level, follow the procedure in number two above except close the main valve first.
5. When water level drops below the high point in the filtered water supply line, flow from pool through filter will cease and the supply line from filter to inlet header around pool should be empty.
6. Leave filter tank drain open until tank and piping are completely drained. Make sure there is no water in the supply line between pump and the high point at the supply line by partially removing valve on supply line at filter or in filter pit.
7. After this is completed, open main drain valve on pool drain line. Some pools may not drain completely by gravity and will need to be pumped out.
8. If the pool has a hydrostatic pressure relief valve at the bottom of the pool, leave it open if pool is to be drained.
9. Drain wading pool completely and leave all valves on drain and supply lines open.
10. If pool has skimmer boxes remove skimmer baskets for pool and/or wading pool and place old clothes or towels in skimmer housing. Then replace cover and store basket.

The Filter and Piping

1. The main drain valve on the pool drain line should be closed tightly after lowering of water level, or left completely open if pool is drained. If there is no valve on main return line to filter (outside of filter pit) the pool water has to be lowered until it reaches the flow elevations of this pipe at filter tank. This will drain the exposed portion or the main return in filter room. If this is not desired, a thermostatically controlled heater should be installed in the filter pit to prevent the line from freezing.



2. Make sure the skimmer, main pool and wading pool return lines are drained within the filter room and leave all valves open. Open all valves to drain filter cell and pre-filter chamber.
3. Be sure to drain the manifold in the filter tank. It may be necessary to loosen the bolts on the flange union connecting the pump and filter to allow this to drain, depending upon the design of the pump installed.
4. Remove filter elements and clean filter tank and leave drain valve at tank open. Be sure all valves from filter to storm sewer line or outfall line are in open position. Inspect and wash the elements clean with a hose, and wash bottom of the filter clean. It is recommended that they be placed in cardboard cartons.
5. Clean soda ash feed unit container and drain hose to filtered water supply line. Disconnect feeder pump and store in a dry place. Leave all valves open.
6. It is preferred that all chemicals in the filter room be stored above the floor (use 2 x 4's spaced four inches on center) and leave space along outside walls.
7. Disconnect chlorine cylinder and return same with any remaining unused cylinders to supplier. Drain potable water line to chlorinator and all water from chlorinator. Leave drain plugs out.
8. Empty diatomaceous earth feeder and wash thoroughly with water. Drain purge water line or vibrator type feeders, leave drains open.
9. Open valve on make-up line to drain pipe, leave valve open.
10. Open drain valve or remove bottom plug on filter pump for complete drainage of pump housing. Be certain there is no water left in the pump. Reference is made to pump operators manual usually furnished with equipment at the time of installation.
11. At the bottom of the mercury manometer is a small drain opening. Hold a clean bottle under this opening and drain the mercury and water from the manometer. Remove excess water from the mercury, stopper, and store the mercury in a safe place. Inspect all lines to make sure they are completely drained.
12. If the pool has a water heater, drain by removing the drain plug and opening all the valves to allow water lines to drain back to the pool.
13. If the pool has a lint and hair strainer remove the drain plug in the bottom of it.
14. Oil the pump impeller with about six squirts through the small plug in the top of the pump housing to prevent rust over the winter. Run pump a few seconds to distribute the oil.
15. Remove basket or hair and lint catcher and drain the pump housing.

Additional steps for the pool if it is to be left full.

1. Open main drain valve on pool drain line until water in pool has reached desired level, below the lights and inlets.
2. Logs or barrels to break the water surface are not recommended. They freeze with the ice and do not provide "expansion" as is sometimes thought. If they get loose, they also can damage the sides of the pool.
3. Add recommended winter dosage of algaecide and/or chlorine to pool water (one gallon of algaecide for each 25,000 gallons of water and one pound of granular or tablet form chlorine for each 10,000 gallons of water), and check every other week until the pool freezes to see that water contains a minimum of .4 parts per million). This will eliminate the algae from forming on the sides and will facilitate cleaning in the spring.
4. Pump out automatic surface skimmers and add 1 quart of alcohol or antifreeze to each. If the skimmers have an equalizer line plug it with a rubber winter plug after removing the base plate.
5. The faces of the inlet fittings should be removed and the rubber winter plugs inserted. This will prevent water from filling in at lines and freezing in them.
6. Cover the overflow gutter fittings to prevent snow melt and rain water from filling the lines back to the filter. This can be accomplished by winter plugs if the fittings are of the round type and by a device similar to an old bathtub stopper if the fittings are square or oblong.
7. Lower the pH in the pool to at least 7.2 by using sodium bisulfate.
8. Drain the fill spout if there is one in the pool.
9. Remove the underwater lights and place them on the deck of the pool with a wooden box over them. You may instead wish to wrap the light in heavy canvas, tying it securely around the electrical wire. Anchor the lights by running a cord to a stake in the ground or tying the cord to a fence.
10. Install a pool cover if available.

Deck Equipment

1. Remove diving boards from stands and store in a dry sheltered place. Do not store heavy items on the boards, and do not store them flat unless continuously supported.
2. All removable items such as ladders, diving stands, guard chairs and hard rails and other accessory equipment (vacuum cleaner, deck drain, benches, umbrellas) should be stored inside the bath house or filter room. Store all hoses inside.
3. Check deck hydrants and make sure they are open at the hydrant and at their supply source.

The Bath House

1. Do not have power supply shut off, but turn all main disconnect switches to "off." Usually it costs less to pay the small monthly charge during the winter than to pay the service charge for reconnecting the power in spring. In addition, there is power available when needed for maintenance work.
2. Turn off all light and power switches and shut off and unplug all electrical appliances.
3. Drain hot and cold water piping completely at low points in line by using proper drain valves.
4. Open shower valves to allow water to drain, if possible remove shower head and valve and leave pipe open.
5. Leave all valves and hose bibbs open.
6. Have utility company shut off main water supply and remove or drain water meter.
7. Drain mixing valve.
8. Leave all valves and drains open, leave all drain plugs out.
9. Drain and clean water heaters and storage tank as recommended by the manufacturer's manuals. Leave drain valves open.
10. Have utility company turn off main gas supply as necessary and turn off all gas stop cocks and pilot light at water heater.
11. Place antifreeze in all floor and shower drain traps.
12. Drain flush tanks of toilets and urinals and place antifreeze in traps or lower water level and add suitable quantity of antifreeze. Keep seat cover closed. Cover urinals and toilets with polyethylene sheet to keep out moisture which could displace antifreeze in trap.
13. Drain traps of lavatories and drinking fountain by removing plug at gooseneck and leave open.
14. Open roofs can be closed with ⅜ inch (minimum) plywood sheets fastened with carriage bolts and wing nuts or with wire tied to joists. Cover plywood sheets with polyethylene and staple to plywood. This is not a water-tight protection, but will keep out most of the moisture, snow and other debris.
15. All other unprotected openings in outside walls (entrances, check windows, etc.) should be closed in a similar manner to the method suggested for roof openings, but polyethylene sheets may be omitted.
16. Lock all doors and gates securely and be sure windows are closed and locked.
17. Wrap polyethylene sheeting around drinking fountain and hold wrapping in place with strings and staples. Leave drain plug out.
18. It is recommended that removable bicycle racks be placed inside the pool enclosure.
19. The electric clocks and public address equipment should be disconnected and stored inside the office. All loose deck items, signs, etc. should be suitably stored.
20. Lubricate all motors and change the oil in any speed reducers, gasoline engine driven vacuum cleaner pumps, etc. in accordance with manufacturer's instructions. Drain any pumps that are stored.
21. In general leave all valves and plugs open, cover exterior motors and equipment. Clean up all debris, leftover towels, shoes, etc.

Implementation of the above procedures will eliminate almost all the anxiety on opening the pool, including wondering what will need to be repaired or replaced because of something left undone during the closing procedure. It also will reduce significantly the amount of work required to prepare the pool for use in the spring.

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