



Saskatchewan
Health

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***SWIMMING POOL
DESIGN/OPERATIONAL
STANDARDS***

Updated 02/00

FOREWORD

These standards should be read in conjunction with The Swimming Pool Regulations, 1999.

Saskatchewan Health, with the assistance of the local health districts, has developed design/operational standards to assist operator/owners of aquatic facilities in meeting the requirements of The Swimming Pool Regulations, 1999. While the design/operational standards in themselves should not be considered law, provisions of the standards become legally binding when they are attached as a condition or term of a licence to operate. Consequently, it is expected that all aquatic facilities will be constructed and operated in accordance with the design/operational standards.

The format of the standards is such that all pools covered by the regulations are expected to comply with the general pool design/operational standards and any other applicable design/operational standards (water theme facility; swimming pool facility, or whirlpool facility). Existing swimming pools, water theme facilities and whirlpools which do not meet the design/operational standards may continue to operate provided that the pool is operated in compliance with The Swimming Pool Regulations, 1999 and that a health hazard does not exist. Alterations to existing pools and equipment are to be carried out in accordance with the standards.

Judicious use of these standards should result in the provision of bacteriologically and physically safe swimming pools, water theme facilities and whirlpools in this province.

SWIMMING POOL DESIGN STANDARDS

1.0 INTRODUCTION

- 1.1 In addition to the general pool design/operational standards the following swimming pool design/operational standards are to apply to a swimming pool which is governed by The Swimming Pool Regulations, 1999.

2.0 CONSTRUCTION

Basin Design

- 2.1 The area of the pool designated as a deep area should extend vertically downward for a minimum distance of 1680 millimetres; and the shallow area of the pool should extend vertically downward for a minimum distance of 790 millimetres.

Deck Areas

- 2.2 (1) A deck area is to surround the entire pool.
- (2) The deck area should not be less than 1.8 metres in width and provide not less than 0.9 metre of clear passage behind a diving board or any slide or other piece of play equipment and its supporting structure.

Depth Markings

- 2.3 (1) The depth of water is to be plainly marked at the point of minimum depth; 1.2 metres depth; and at the points of break between gentle and steep bottom slopes. The words "deep area" and "shallow area" are to be clearly marked in letters at least 100 millimetres high of a colour contrasting with the background at appropriate locations.
- (2) Depth markings are to indicate the depth on the deck in legible numerals at least 100 millimetres high of a colour contrasting with the background. Wherever possible, depth markings should also be located on the wall of the pool basin above the operating water level.
- (3) Depth markings are to be placed on both sides and both ends of a swimming pool. The distance between markings is not to exceed 7.6 metres.

- (4) At the 1.2 metre mark and at any point in the pool where the slope is greater than 1:12, the pool is to be equipped with apparatus to house a safety line with a minimum diameter of 19 millimetres. This safety line is to be equipped with floats.
- (5) All lane divider ropes used in swimming pools should be removed when the swimming pool is not in use for more than 1 hour, to permit proper circulation.
- (6) The position of every safety line or life line is to be marked by coloured buoys attached to the safety line or lifeline at intervals of not more than 1.5 metres.

Diving Boards and Platforms

- 2.4 (1) Diving boards or platforms provided are to be rigidly constructed and properly anchored at the base with sufficient bracing to ensure stability under the heaviest possible load. Manufacturer's specifications regarding installation and usage of diving boards or platforms are to be adhered to.
- (2) Design of diving boards and platforms and their corresponding depths and clearances shall conform with Appendix A.
 - (3) Diving boards and platforms in excess of 3 metres in height shall comply with technical specifications for diving facilities found within the most current Federation Internationale de Natation Amateur (FINA) - Standard.

Drinking Fountains

- 2.5 (1) At least one drinking fountain shall be provided.
- (2) Drinking fountains should be recessed; accessible to all swimmers and located away from the deep end of the swimming pool.

Lifeguard Towers

- 2.6 (1) At least one lifeguard tower shall be provided for every 150 swimmers up to the maximum swimmer load.
- (2) Lifeguard towers are to be elevated between 1.2 metres and 2 metres above the deck and should be sufficiently anchored and stable enough to permit the lifeguard to ascend or descend from the tower quickly and easily.
 - (3) Portable lifeguard chairs are acceptable.

Outlets

- 2.7 (1) One or more drain outlets are to be provided at the lowest point of the pool floor. The total orifice area of all the pool drain outlets is to be at least four times the cross-sectional area of the main pool drain line and be sized to accommodate the main drain recirculation rate.
- (2) If more than one drain is installed in the pool floor near one end, the spacing is not to permit a flow of water greater than 0.45 metres per second through the grating, and slotted openings in the grate are not to be more than 8.7 millimetres wide.
- (3) In pools designed to waste the overflow water, the main drain piping is to be sized to accommodate 100% of the recirculated water.
- (4) In pools designed to recirculate the overflow water, the main drain piping is to be sized to accommodate at least 50% of the recirculated water.
- (5) Anti-vortex drains, consisting of parallel plates, where the water enters the fitting from the sides rather than through the top may be installed, provided the distance between the parallel plates does not exceed 13.5 millimetres. The velocity through an anti-vortex drain may be increased to 1.8 metres per second. The top plates are to be flush with the pool floor and should be securely fastened and made of non-corrosive material.

Pool Heat

- 2.8 (1) The water in any swimming pool should not be artificially heated to a temperature above 30°C unless permission to do so has been granted by a public health officer.
- (2) Valved piping should be provided for regulating flow through the heater and for bypassing or isolating the heater.

Skimmers

- 2.9 (1) Swimming pools may be provided with suitable skimming devices which will accomplish the purpose of an overflow channel.
- (2) Where skimmers are used, the minimum number of such shall be determined by providing one device per 40 square metres of pool area or one device per 3 litres per second, based on the recirculation rate for the pool, whichever is greater. **(Revision 02/00)**

- (3) The collection piping for skimmers shall be designed to carry 100% of the designed recirculation rate.
- (4) Skimming devices should be capable of handling at least 75% of total filter rate.

Stairs and Ladders

- 2.10(1) Stairs or ladders shall be installed:
 - (a) at the deep portion of the pool;
 - (b) at the shallow portion of the pool where the vertical distance from the bottom of the pool to the deck or top of the wall is more than 600 millimetres; and
 - (c) where a pool is more than 9 metres wide, at each side of the pool.
- (2) A ramp or step is to be continuous in nature and without spaces or gaps between the edge or side, of this ramp or step and the wall of the pool.
- (3) The stairs or ladders in the deep end of the swimming pool should be placed to direct the swimmer away from the diving boards and diving area.
- (4) Recessed steps with grab-rails may be used in place of ladders.
- (5) Stairs are to be sloped towards the pool to prevent an accumulation of settleable solids. The stairs should be finished in a manner that will contrast with the pool colour.
- (6) Treads on steps of ladders and stairs should not be less than 76 millimetres deep over their full width and have non-slip surfaces. Ladders should be corrosion- resistant and are to be rigidly installed.
- (7) There is to be a clearance of not more than 150 millimetres between a ladder and the wall of the pool on which the ladder is installed.
- (8) All ladders are to be removable.

Turnover Rate

- 2.11 The pool circulation and treatment system is to be designed to recirculate the entire volume of the pool in 6 hours or less.

SWIMMING POOL OPERATIONAL STANDARDS

1.0 QUALITY CONTROL

Alkalinity

1.1 Alkalinity should be maintained within the range of 80-120 mg/L.

Calcium Hardness

1.2 Calcium hardness should be maintained within the range of 125-275 mg/L.

Combined Chlorine Residual

1.3 The combined chlorine residual should not be more than 50% of the total chlorine residual.

Cyanuric Acid

1.4 (1) Cyanuric acid should be maintained within the range of 25-50 mg/L.

(2) Cyanuric acid shall not be used in indoor pools.

Disinfection Residual

1.5 A disinfection residual shall be maintained during operational times in all portions of the swimming pool water. The water in a swimming pool shall have:

(a) a minimum 2.0 milligrams per litre of free chlorine residual;

(b) a minimum 3.0 milligrams per litre of total bromine residual; or

an oxidation reduction potential of at least 650 millivolts and a minimum residual at all times of 0.6 milligrams per litre of free chlorine or 1.0 milligrams per litre of total bromine.

pH Concentration

1.6 The operator shall control the pH within a range of 7.2 and 7.8.

Testing and Records

- 1.7 (1) Testing and recording for levels of alkalinity, hardness, cyanuric acid if used and any other parameter a public health officer considers appropriate shall be conducted and recorded as directed by a public health officer.
- (2) Each operator shall test the pool water and record the disinfection and pH levels as well as oxidation reduction potential level if in use, one half hour prior to swimmers being admitted to the pool, and thereafter at three hour maximum time intervals during the hours of operation.

Turnover Rate

- 1.8 The entire volume of water used at a swimming pool shall be circulated through the filter and disinfecting equipment at least once every six hours.

2.0 SAFETY

Emergency Equipment

- 2.1 (1) At every swimming pool there shall be provided in places conveniently located for emergency use:
 - (a) one or more electrically insulated or non-conducting reaching poles at least 3.7 metres long;
 - (b) two or more buoyant throwing aids, each having securely attached to it a 6.5 millimetres diameter rope having a length of not less than one-half the width of the pool plus 1.5 metres; and
- (2) In addition to the equipment identified in (1), at every swimming pool where lifeguards or supervisors are required, there shall be a spine board which is equipped with a device capable of preventing movement of the head which has adjustable fastening straps at shoulder, waist and feet areas. **(Errata 02/00)**

Maximum Swimmer Load

- 2.2 The total number of swimmers permitted at any one time on the pool deck and in the pool is not to exceed the maximum swimmer load as determined by the following:
 - (a) one person for each 0.9 square metres of the surface area of water in that part of the pool where the water depth is less than 1.5 metres; and **(Revision 02/00)**

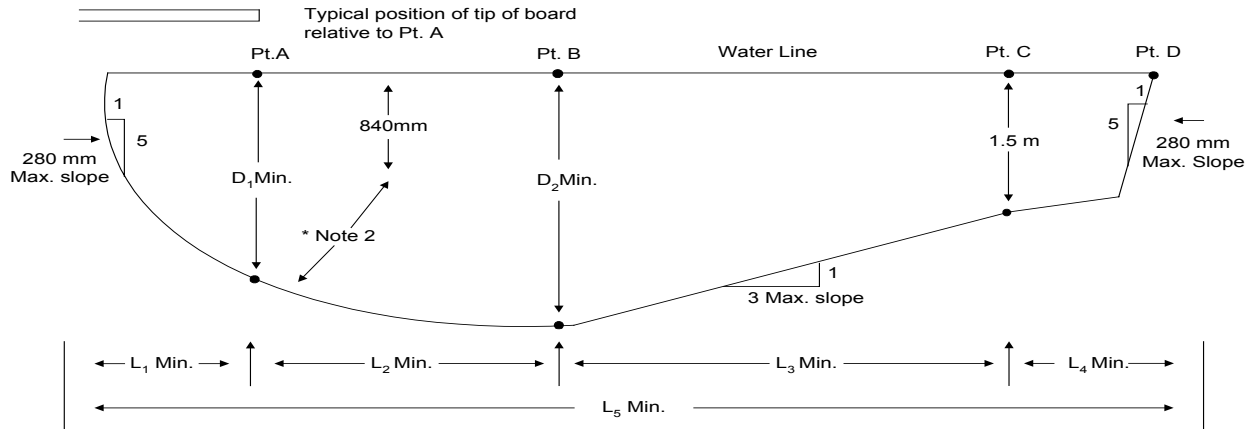
- (b) one person for each 2.32 square metres of the surface area of water in that part of the pool where the water depth is greater than 1.5 metres; but, where a diving board is provided in part of a pool, the available surface area of water for that part is reduced 27.8 square metres for each diving board or tower. **(Revision 02/00)**

Lifeguards

- 2.3** In addition to meeting the qualification requirements described in The Swimming Pool Regulations, 1999, lifeguards should be of an age that enables them to fully understand the responsibilities associated with the position of lifeguard and are capable of supervising swimmer safety. **(Revision 02/00)**

APPENDIX A

SWIMMING POOL DESIGN/OPERATIONAL STANDARDS DIVING BOARDS AND PLATFORMS MINIMUM REQUIREMENTS



- NOTE:**
1. L_4 is a minimum dimension to allow sufficient length opposite the board. This may of course be lengthened to form the shallow portion of the pool.
 2. (1) The transitional radius from wall to floor where floor slopes join the wall shall:
 - (a) have its centre no less than 838 mm below the water line in deep areas or .75 metres in the shallow area;
 - (b) have a radius that is at least equal to, or greater than, the depth of the pool minus the vertical wall depth measured from the water line (or tolerance allowed in (2) minus 76 mm to allow draining to the main drain).
 - (2) Pool walls shall not be greater than 11 degrees from plumb for a minimum depth of 838 mm from the water line in deep areas, or 686 mm in the shallow areas. Below these depths, the wall may be radiused to join the floor.

RELATED DIVING EQUIPMENT		MINIMUM DIMENSIONS								MINIMUM WIDTH OF POOL AT:		
DIVING BOARD LENGTH	MAX. BOARD HEIGHT OVER WATER	D_1	D_2	R	L_1	L_2	L_3	L_4	L_5	PT.A	PT.B	PT.C
3 m	2/3 meter	2.1 m	2.6 m	1.7 m	.8 m	2.4 m	3.2 m	2.1 m	8.5 m	4.6 m	5.5 m	5.5 m
3.6 m	3/4 meter	2.3 m	2.7 m	1.8 m	.9 m	2.7 m	3.6 m	1.2 m	8.5 m	5.5 m	6.1 m	6.1 m
4.9 m	1 Meter	2.6 m	3.0 m	2.1 m	1.2 m	3.0 m	4.6 m	.6 m	9.4 m	6.1 m	6.7 m	6.7 m
4.9 m	3 Meter	3.3 m	3.6 m	2.6 m	1.8 m	3.2 m	6.4 m	0 m	11.4 m	6.7 m	7.3 m	7.3 m

L_2 , L_3 and L_4 combined represent the minimum distance from the tip of board to pool wall opposite diving equipment.

***NOTE:** Placement of boards shall observe the following minimum dimensions. With multiple board installations minimum pool widths must be increased accordingly.

Deck Level Board to Pool Side	2.4 m
1 Meter Board to Pool Side	3 m
3 Meter Board to Pool Side	3.3 m
1 Meter or Deck Level Board to 3 Meter Board	3 m
1 Meter or Deck Level Board to another 1 Meter or Deck Level Board	2.4 m
3 Meter to another 3 Meter Board	3 m