

## CHAPTER 3

### GENERAL AND STRUCTURAL DESIGN; EQUIPMENT STANDARDS

#### Section 1. Overall Structure.

- (a) Public pools, spas and similar installations and all appurtenances shall be:
  - (i) Constructed of materials which are considered to be nontoxic to humans and the environment;
  - (ii) Are impervious and enduring, and will withstand design stresses; and
  - (iii) Will provide a water-tight structure with smooth and easily cleanable surface without cracks or joints, excluding structural joints.
- (b) The structural design and materials used for pools, spas or similar installations shall be in accordance with generally accepted industry engineering practices and methods prevailing at the time of original construction.
  - (i) It is recommended that pools and spas be constructed to meet the NSPI Workmanship Standards for Swimming Pools and Spas.
- (c) A public pool shall have no sharp edges or protrusions where walls meet at an acute angle.
  - (i) The pool shall be shaped to provide for complete water re-circulation and mixing.
- (d) The shell and appurtenances, piping, filter system, pump and motor and other components shall be designed and constructed to facilitate protection from damage due to freezing.

#### Section 2. Interior Surface Characteristics, Color.

- (a) Earth shall not be permitted as an interior finish in a pool, spa or similar installation.
- (b) The colors, patterns or finishes of a public pool, spa or similar installation shall not obscure the existence or presence of objects or surfaces within the pool, spa or similar installation.
- (c) All new pool, spa or similar installation interior finish shall be:
  - (i) Light colored except for:

- (A) Water lines that are tiled;
- (B) Racing lane markings (painted or tiled maximum twelve (12) inches wide);
- (C) Turn targets (painted or tiled); and
- (D) Safety markers.

Section 3. Hydrostatic Relief Valve.

(a) A hydrostatic relief valve or a more extensive hydrostatic system shall be installed if necessary to prevent ground water pressure from displacing or otherwise damaging a new pool or spa.

Section 4. Interior Surface Footing.

(a) The surfaces within a pool, spa or similar installation intended to provide footing for users shall have a slip-resistant surface to help reduce the chance for a fall.

(i) The roughness or irregularity of such surfaces shall not cause injury to the feet during normal use.

Section 5. Roofs or Canopies.

(a) Roofs or canopies over pools, spas or similar installations shall be constructed so that water run-off or other forms of pollution do not drain or fall into the pool, spa or similar installation.

Section 6. Plumbing.

(a) Plumbing shall be sized, installed, and maintained according to applicable state regulations or local plumbing codes.

Section 7. Piping; Design, Material, Color Coding.

(a) Pool re-circulation piping shall be sized to carry the following maximum design loads:

- (i) Discharge piping (except 10 ft./sec.

copper and asbestos cement pipe)	(3.05m/sec.)
(ii) Discharge piping (copper)	8 ft./sec (2.44m/sec.)
(iii) Suction velocity	6 ft./sec. (1.83m/sec.)
(iv) Discharge and suction (asbestos cement)	6 ft./sec. (1.83m/sec.)

(b) All pool re-circulation piping shall be rated and capable of withstanding four (4) times the maximum operating pressure at maximum water temperatures.

(c) Plastic pool re-circulation piping shall comply with the National Sanitation Foundation Standard #14 for Plastic Piping System Components and Related Materials.

(d) Metallic piping, except stainless steel used in pool re-circulation systems shall have a corrosion resistant internal lining.

(e) Metal or chlorinated polyvinyl chloride pipe (CPVC) shall be used eighteen (18) inches (49cm) upstream and downstream of heating equipment.

(f) The piping system shall have direction of flow arrows indicated on the pipes.

(g) Public pools shall have a flow diagram of the pool's piping system with operation instructions.

(i) The flow diagram and instructions shall be available on the premises at all times.

(h) A piping system for a general use pool shall be color coded as specified in the following chart:

Pool water	Blue
Fill or makeup water, untreated water	Red
Treated, filtered water	White
Back wash water	Black

## Section 8. Walls

(a) Walls shall not be greater than eleven (11) degrees from plumb for a minimum depth of two (2) feet three (3) inches in the shallow areas.

- (i) Below these depths the wall may be radiused to join the floor.
- (b) If a pool design requires the wall have a greater slope than eleven (11) degrees the slope shall be designed so as not to exceed one (1) foot in twelve (12) feet.
- (c) There shall be no wall ledges in a public pool.

Section 9. Size.

- (a) The size of a pool, spa or similar installation shall be governed by the requirements of the activities for which the installation is intended.
- (b) A public pool, spa or similar installation shall not exceed the design limit of user functions described in the following chart:

Outdoor swimming pool	Maximum load = $A^* / 20$
Indoor swimming pool and wading pool	Maximum load = $A^* / 24$
Spa pool	Maximum load = $A^* / 10$
Plunge pool	Maximum load = $A^* / 50$
Where $A^*$ equals the surface area of the pool in square feet.	

Section 10. Water Depth, Requirements.

- (a) A public swimming pool, competition pool, plunge or wave pool shall be a maximum of three (3) feet six (6) inches (1.07m) in depth at the shallowest point.
- (b) The transitional point from the shallow area to the deep area and at the points of separation of diving, slide and amusement areas shall be visually set apart with:
  - (i) A rope and float line;
  - (ii) Depth markers; and
  - (iii) A four (4) inch minimum row of floor tile, painted line or similar means of color which contrasts with the bottom of the pool.
- (c) Zero depth design for pools or similar installations shall be allowed where the bottom of the pool in the shallow area is designed and constructed to meet the pool deck surface at a slope not to exceed one (1) foot in twelve (12) feet to a water depth of one and one half (1½) feet.

(i) In pools where the water depth is less than one and one half (1½) feet, floor inlets shall:

(A) Be provided; and

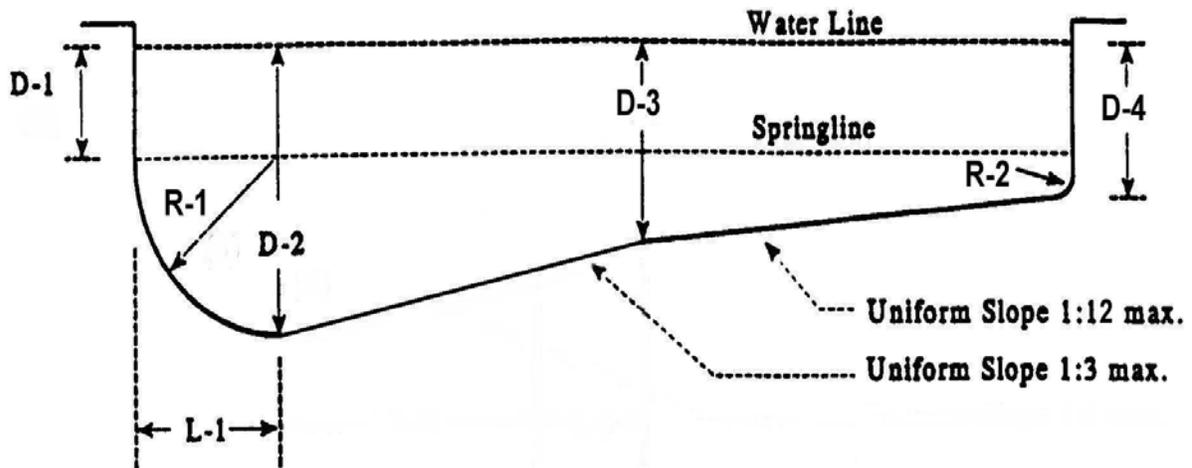
(B) Spaced uniformly with at least one inlet per two hundred (200) square feet or portion thereof.

(d) A wading pool shall not be more than two (2) feet (.6m) in depth as measured from the water line.

(e) A spa pool shall not be more than four (4) feet (1.2m) in depth.

(i) The depth to be measured from the water line.

(f) Depths and clearances for pools without diving boards shall comply with the following figure;



and, table:

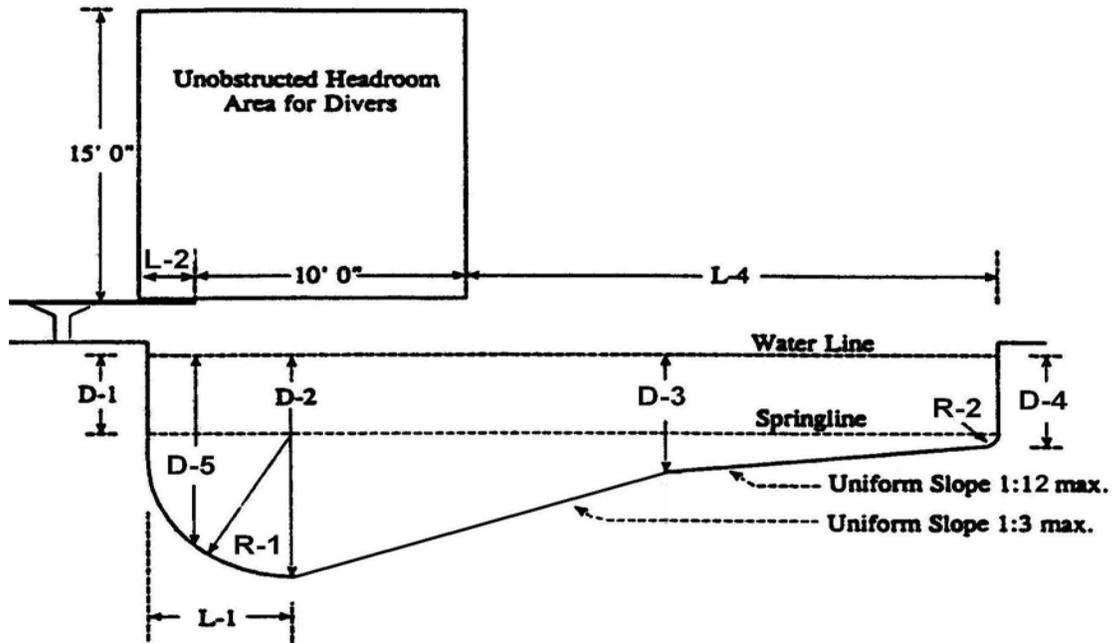
LONGITUDINAL SECTION

Dimension	D-1	D-2	D-3	D-4	L-1	R-1	R-2
Minimum	2'6"	(1)	---	0'0"	3'6"	---	0'6"
Maximum	---	---	5'0"	3'6"	---	(2)	1'0"

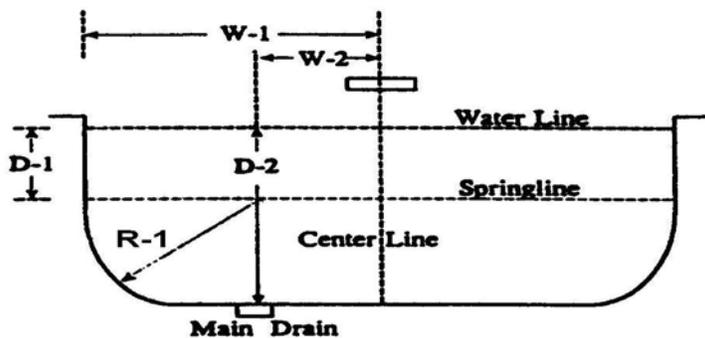
(1) Shall be located to provide complete drainage of the pool.

(2) D-2 minus D-1.

(g) Depths and clearances for pools with diving boards thirty (30) inches or less above the water line shall comply with the following figures and table:



LONGITUDINAL SECTION

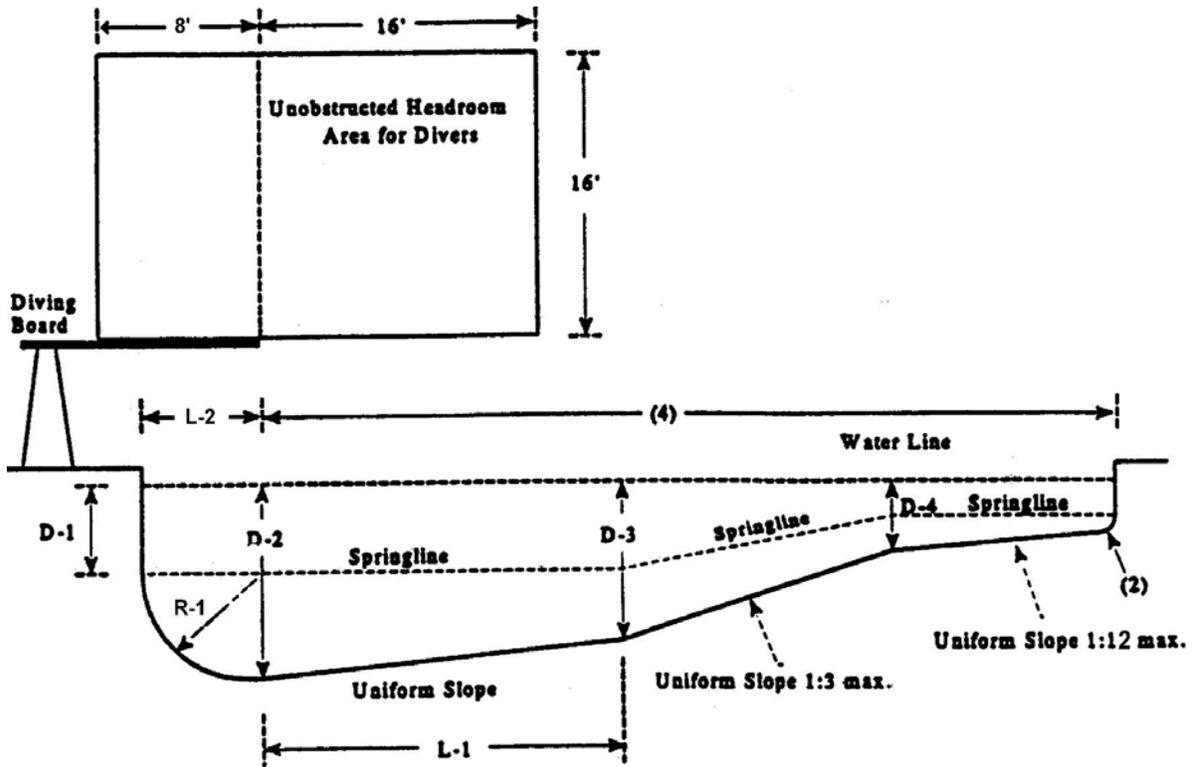


### TRANSVERSE SECTION AT D-2

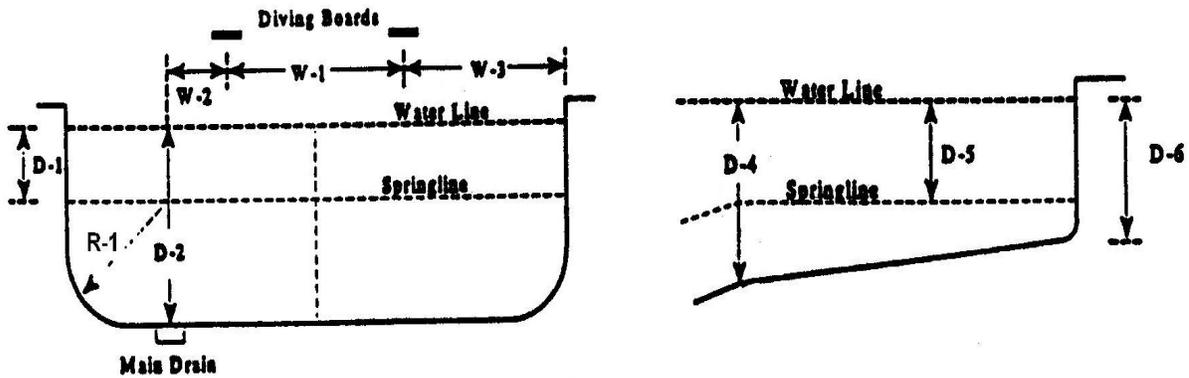
Dimension	D-1	D-2	D-3	D-4	D-5	L-1	L-2	W-1	W-2	R-1	R-2
Minimum	2'6"	8'6"	4'6"	0'0"	7'0"	6'0"	2'6"	9'0"	3'0"	—	0'6"
Maximum	—	—	5'0"	3'6"	—	10'0"	4'0"	—	—	(1)	1'0"

1) D-2 minus D-1.

(h) Depths and clearances for pools with diving boards greater than thirty (30) inches above the water line shall comply with the following figures and tables:



LONGITUDINAL SECTION



TRANSVERSE SECTION THROUGH D-2      ENLARGED SHALLOW END SECTION

Brd	Dim	D-1	D-2	D-3	D-4	D-5	L-1	L-2	W-1	W-2	W-3
1 m	Min.	6'0"	12'0"	11'0"	4'6"	2'6"	20'0"	4'0"	10'0"	5'0"	11'0"
2 m	Min.	7'0"	13'0"	12'0"	4'6"	2'6"	20'0"	6'0"	10'0"	5'0"	12'0"

Section 11. Floor Slopes.

(a) Floor slopes in public pools shall, at a minimum meet the following requirements:

- (i) All slopes shall be uniform;
- (ii) The shallow area shall be uniform to a depth of five (5) feet (1.52m) and shall not exceed one (1) foot (.3m) of fall in twelve (12) feet (3.66m); and
- (iii) The transition area between the deep and shallow portions of the pool shall not exceed one (1) foot (.3m) of fall in three (3) feet (.91m).

(b) The wall/flooring transition radius shall:

- (i) Have its center no less than two (2) feet six (6) inches (.79m) below the surface of the water;
  - (ii) Be tangent to the point where the radius meets the wall or the floor;
- and
- (iii) Have a radius at least equal to the depth of the pool minus the vertical wall depth measured from the water line.

Section 12. Equipment Rooms.

- (a) Pool equipment rooms shall:
  - (i) Be large enough to permit access to all equipment for both operation and maintenance;
  - (ii) Be adequately ventilated;
  - (iii) Have a floor sloped to a floor drain; and
  - (iv) Protect pool equipment from the weather and be locked, permitting access only to authorized personnel.

Section 13 . Electrical Requirements; Lighting.

(a) All new installations of electrical equipment at pools, spas, and similar installations, and other facilities serving the pool, spa or similar installation shall comply with the applicable provisions set forth in the National Electrical Code, or state or local electrical codes.

(b) Electrical equipment shall be listed by an ANSI-accredited, independent, third-party conformity assessment organization.

- (c) All electrical components shall:
  - (i) Be installed to meet manufacturer's specifications;
  - (ii) Meet applicable federal, state or local codes and regulations;
  - (iii) Be in compliance with UL 1241, Junction Boxes for Swimming Pool Fixtures; and
  - (iv) Be in compliance with UL 1081, Swimming Pool Pumps, Filters and Chlorinators.

(d) Light fixtures shall be shielded or safety coated to prevent broken glass from falling onto the deck area or into the pool.

Section 14. Electrical Equipment, Ground Fault Interrupters.

(a) Equipment such as duplex plugs, lighting and other electrical equipment serving pool, spa or similar installation facilities shall be protected with ground fault interrupted circuits which comply with the National Electrical Code.

Section 15. Bonding and Grounding.

(a) Electrical equipment serving pools, spas and similar installations shall be grounded as described in ANSI/UL 1563-1995, Standard for Electric Hot Tubs, Spas and Associated Equipment, and the National Electrical Code.

(b) Pool, spa and similar installation pumps shall be both internally and externally grounded.

Section 16. Overhead Wires.

(a) No overhead electrical wiring shall pass within twenty (20) feet of the pool, spa or similar installation enclosure.

Section 17. Electrical Disconnecting Means.

(a) Electrical disconnecting means for pools, spas and similar installations shall:

(i) Be accessible;

(ii) Be located within sight of the pool, spa or similar installation; and

(iii) Be located at a distance from the inside wall of the pool or spa as required by the National Electrical Code, chapter 6, article 680-12-Disconnecting Means.

Section 18. Other Electrical Equipment, Location.

(a) Electrical switches, outlets, deck lights and other such electrical equipment shall be located at a distance from the inside wall of a pool, spa or similar installation unless separated from the pool, spa or similar installation by a solid fence, wall or other permanent barrier as required by the National Electrical Code, chapter 6, article 680 – Swimming Pools, Fountains, and Similar Installations.

Section 19. Pool Heaters, Types.

(a) A fuel-burning swimming pool heater shall:

(i) Be situated so the pilot light, if present, is readily accessible; and

(ii) Have an adequate supply of combustion air.

(b) Electrical heaters shall be installed in accordance with the Wyoming State Electrical Code.

(c) Temperature and pressure relief devices shall be installed according to the Uniform Building Code and Uniform Plumbing Code standards on all heaters.

Section 20. Heaters and Boilers, Certification.

(a) Pool, spa and similar installation heaters and boilers shall:

(i) Be designed, constructed and operated to comply with applicable federal, state or local codes and standards; and

(ii) Be designed to comply with the manufacturer's specifications.

Section 21. Heaters and Boilers, Installation and Testing.

(a) All heating equipment using either fossil fuels such as natural gas, liquid petroleum gas, No. 2 fuel oil, or electric heating equipment for heating pool water for pools and spas shall:

(i) Comply with ANSI Z21.56, Standards for Gas-Fired Heaters; or

(ii) Comply with UL 1261, Standard for Electric Heaters or UL 559, Standards for Heat Pumps.

(iii) Be installed on a surface with sufficient structural strength to support the heater when it is full of water and operating;

(iv) Be level and stationary after plumbing, gas and/or electrical connections are completed.

(A) Heaters requiring a non-combustible surface per the manufacturer shall be placed on a concrete or other acceptable surface in accordance with ANSI Z21.56, Standards for Gas-Fired Heaters.

(v) Be installed and maintained with at least the minimum clearances to combustibles for which the heater has been tested as specified by the manufacturer;

(vi) Have adequate ventilation in order to ensure proper operation; and

(vii) Be grounded and bonded to reduce electrical shock hazard.

(b) Heaters with electronic ignition shall be wired in series with the circulation pump to ensure they will not turn on when the pump is off.

(c) Water flow through the heater, bypass plumbing, cross-connection protection, and heat sinks shall be accordance with the manufacturer's specifications and with the requirements of state and/or local regulatory authorities.

Section 22. Heating Energy Sources.

(a) The heating energy source for pools, spas and similar installations shall:

(i) Be designed, constructed and operated to comply with applicable federal, state, or local codes and standards; and

(ii) Be designed to comply with the manufacturer's specifications.

(b) Natural gas energy supply piping shall:

(i) Comply with the manufacturer's specifications; and

(ii) With ANSI Z223., National Fuel Gas Code.

(c) Gas lines shall:

(i) Have a gas cock, properly sized and readily accessible outside the jacket, to stop the flow of natural gas for heater service or emergency shutdown.

(d) Where liquid petroleum gas appliances are used, they shall be installed in accordance with ANSI/NFPA 58, Storage and Handling of Liquefied Petroleum Gases.

(i) The storage tank, supply piping and regulator shall be adequately sized to ensure operating fuel pressures as specified by the appliance manufacturer.

(ii) Propane appliances located in a pit or enclosed area shall be installed in accordance with ANSI/NFPA 58, Storage and Handling of Liquefied Petroleum Gases.

Section 23. Air Blower and Air Induction Systems; Entry Devices.

(a) This section pertains to all devices and systems which induce or allow air to enter the spa either by means of a power pump or passive design.

(i) Air intake sources shall not:

(A) Induce water external to the spa unit; and

(B) Induce dirt or contaminants into the spa.

(ii) An air blower installed within an enclosure or indoors shall:

- (A) Be provided with adequate ventilation;
- (B) Be installed in accordance with any federal, state or local codes;
- (C) Be installed according to the manufacturer's recommendations; and
- (D) Be accessible for inspection and service.

(b) Integral air passages shall be pressure tested at the time of manufacture to provide structural integrity to a value of one and one-half (1½) times the intended working pressure.

(c) An air induction system shall totally prevent water back-up that could cause electrical shock hazards.

(d) A hydrotherapy pump and air blower in a spa pool shall be connected to a maximum fifteen (15) minute time switch located no closer than ten (10) feet (3m) from the spa water's edge.

#### Section 24. Decks; Size Requirements.

(a) Decks shall be designed, installed and provided at all public swimming pools and similar installations to meet the following minimum continuous unobstructed widths, which may include the coping size requirements:

- (i) General-use pools - eight (8) feet (2.44m);
- (ii) Limited-use pools - four (4) feet (1.22m); or
- (iii) Spa pools with less than one hundred (100) square feet (9.3m<sup>2</sup>) of water

surface area shall have a six (6) foot (1.83m) by eight (8) foot (2.44m) continuous, unobstructed deck on at least one side of the spa.

(A) Spa pools with one hundred (100) square feet (9.3m<sup>2</sup>) of water surface or more shall provide additional deck area at least four (4) feet (1.22m) wide around at least fifty (50) percent of the spa.

(b) A minimum of four (4) feet (1.22m) unobstructed deck shall be provided on all sides of diving equipment.

(c) Decks shall slope no less than one-fourth (1/4) inch (6mm) per foot (30cm).

- (i) Deck water shall not:

- (A) Drain into the pool; or
- (B) Puddle on the deck surface.

Section 25. Decks, Surface Materials.

- (a) Deck surfaces shall be constructed of:
  - (i) Concrete;
  - (ii) Nonslip tile; or
  - (iii) An equally impervious material with a smooth, slip-resistant, cleanable surface.
- (b) Joints between concrete deck slabs shall be water tight.
- (c) All decks:
  - (i) Shall be provided with expansion joints;
  - (ii) The voids between adjoining concrete deck slabs shall be no greater than three-sixteenths (3/16) of an inch (5mm); and
  - (iii) Adjoining deck surface elevations shall vary no more than one-fourth (1/4) inch (6mm).

Section 26. Decks, Drainage.

- (a) Decks shall be sloped to drain to perimeter drains.
  - (i) Drainage shall remove the following types of water, without leaving standing water:
    - (A) Pool and spa splash water;
    - (B) Deck cleaning water; and
    - (C) Rainwater.
  - (b) The surface of a deck must not drain into the pool or the overflow gutter and must not be returned to the re-circulation system.

(i) Drainage must be conducted from the deck in a manner which will not create muddy, hazardous or objectionable conditions.

(c) Site drainage shall be provided in order to direct:

(i) All perimeter deck drainage;

(ii) General site drainage; and

(iii) Roof drainage away from the pool.

(A) When required, yard drains shall be installed to prevent the accumulation or puddling of site water in the general area of the deck and related improvements.

#### Section 27. Decks, Equipment.

(a) Valves installed in or under the deck shall be provided with a minimum ten (10) inch diameter access cover and a valve pit to facilitate servicing.

(b) A sufficient number of hose bibs, equipped with vacuum breakers shall be provided for washing down the deck area.

(i) A maximum hose length of fifty (50) feet is allowed.

#### Section 28. Decks, Prohibited Material.

(a) Wood decking around public pools is prohibited; and

(b) Wood decks, carpets and other absorbent materials are prohibited in the wet deck area.

#### Section 29. Pool Enclosures.

(a) All public pools and similar installations shall be protected by an enclosure.

(i) The enclosure shall be:

(A) A fence;

(B) A wall; or

(C) A building without private entrances to the pool area.

- (ii) The enclosure shall form the perimeter of the deck whenever possible.
- (b) Pool enclosures including gates shall be constructed to discourage access to the pool by unsupervised children or domestic animals.
- (c) Enclosures shall not be less than four (4) feet (1.22m) in height measured from the outside ground level at a point one (1) foot (30cm) horizontal from the base of the enclosure.
- (d) There shall not be more than four (4) inches (10cm) of space between the bottom of the enclosure and the ground's surface or pool deck.
- (e) Gates in swimming pool enclosures shall be self-closing and equipped with a lockable, self-latching device attached on the inside of the gate located at least forty-two (42) inches (107cm) above the ground.
- (f) Any building enclosing a swimming pool shall be ventilated to prevent condensation and alleviate odors.

Section 30. Wading Pool, Requirements.

- (a) Wading pools shall:
  - (i) Have a maximum water depth of twenty four (24) inches;
  - (ii) Have a slope which does not exceed one (1) foot in twelve (12) feet;
  - (iii) Have a slip resistant finish;
  - (iv) Have a maximum turnover cycle of two (2) hours;
  - (v) Have a separate re-circulation system; and
  - (vi) Have at least two (2) inlets.
- (b) The standards for water quality, surface skimming and all other details must be equal or superior to those set forth in these regulations.
- (c) Adequate sanitary facilities, as required in chapter 7, must be available in the vicinity of the wading pool.
- (d) A water cooler, water station or sanitary drinking fountain must be provided at one side or end of the area.

(i) A sanitary drinking fountain must have a raised step or set at an acceptable height to enable children of all sizes to drink without assistance.

(e) Wading pools shall:

(i) Be located at the shallow end of the main swimming pool or similar installation; and

(ii) Must be separated from it by a separate barrier or fence meeting the requirements of these regulations.

(f) Underwater lights are prohibited in wading pools.

#### Section 31. Food Service.

(a) Food service operations located and conducted in a public swimming pool, spa or similar installation facility shall comply with the Wyoming Food Safety Rule.

(b) Food or drink shall be permitted only in designated areas away from the pool, spa or similar installation water.

(i) Food may be permitted in a spectator area located near the pool, spa or similar installation provided the deck area remains clean.

#### Section 32. Drinking Fountains; Water Coolers and Stations.

(a) Drinking fountains, water coolers or water stations shall be provided within the pool enclosure for all public pools, spas and similar installations.