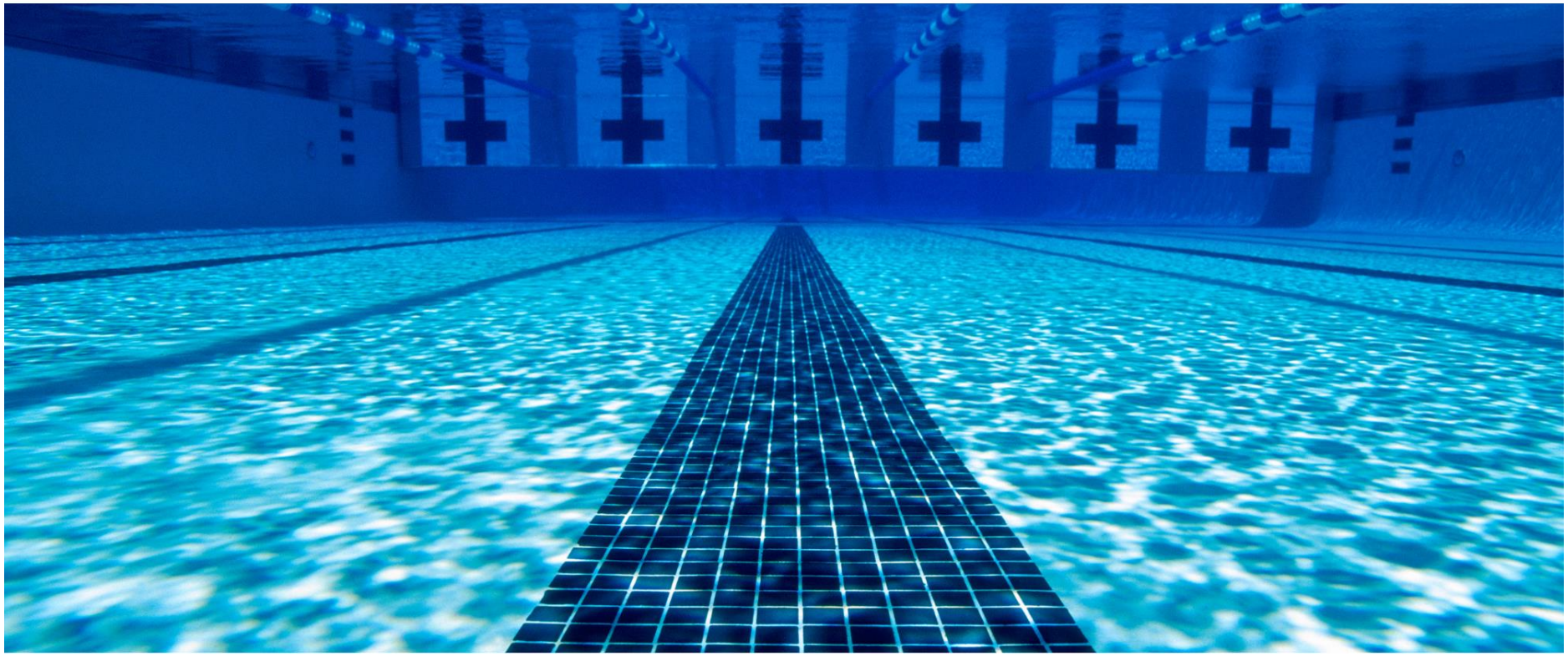
WICHITA FALLS-WICHITA COUNTY PUBLIC HEALTH DISTRICT

Aquatic Facility Manager Rules Review 2025



Public Health
Prevent. Promote. Protect.

Wichita Falls
TEXAS
Blue Skies. Golden Opportunities.

Requirements for Permitting

- This course with passed test OR a valid certificate for any of the following courses: Certified Pool-Spa Operator (CPO), Pool Operator on Location (POOL), Professional Pool and Spa Operator (PPSO), Licensed Aquatic Facility Technician (LAFT), or Aquatic Facility Operator (AFO)
- Application Page and Payments made, Data Sheet (for new build or extensive remodel), Passed Electrical Inspection (Iowa Park exempt from Electrical Inspection, but it is highly recommended!)
- Passed Permit Inspection

Electrical Inspection

- As of 2020, Wichita Falls & Surrounding Cities must have an annual electrical inspection

- Forms are found online: http://www.wichitafallstx.gov/2342/Aquatic-Facility-Fees-Forms

Not required for the city limits of Iowa Park, but it is highly recommended for the safety of the swimmers and personnel.

The Health District does NOT inspect electrical items!

Water Samples

Checks for Total Coliforms and *E. coli*

- First Failure: close and shock, then re-open once chlorine is **1.0-8.0 ppm** (a second water sample will be taken)

- Two Failures in a Row: closed until a passing water sample is achieved

Renovations/Replacing Equipment

- Plan Review:
  Certain items must be brought up to Code.
  Call 940-761-7820 before renovating!

- Permits:
  Plumbing and Electrical Changes require a permit through Building Inspections.
  Call 940-761-7461 before making these changes!

Updates

Skimmer equalizers are prohibited. Must be capped at the wall and inside the skimmer.

"PERSONS UNDER THE AGE OF 14 MUST NOT BE IN THE POOL WITHOUT ADULT SUPERVISION"

Sign no longer required for establishments with lifeguards as of May 2024. You may still post it if you want.

Rules

2021 International Swimming Pool & Spa Code:
https://codes.iccsafe.org/content/ISPSC2021P3/preface

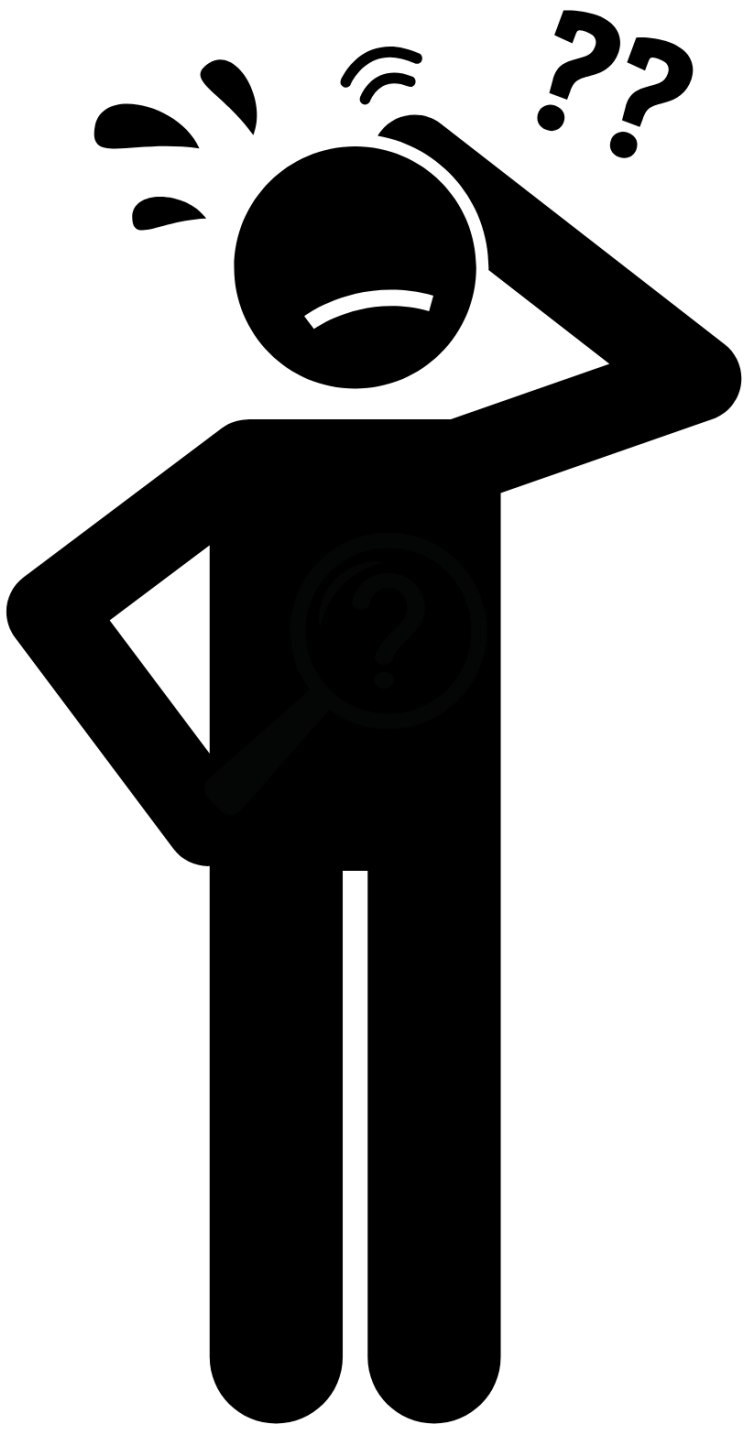
Texas Public Swimming Pools and Spas 2023:
https://www.dshs.texas.gov/sites/default/files/poolspa/pdf/25%20TAC%20Chapter%20265%20Subchapter%20L.pdf

Texas Public Interactive Water Features and Fountains 2010:
https://dshs.texas.gov/poolspa/pdf/Rules5_2010.pdf

Texas Health and Safety Code & Occupation Codes: Section 341.064 - Swimming Pools and Bathhouses; Section 341.0645 - Pool Safety; Section 341.0695 - Interactive Water Features and Fountains; Section 1.005 – Definitions; Chapter 757 - Pool Yard Enclosures; Title 13 Sports, Amusements, and Entertainment

Federal Regulations: Part 1207 – Safety Standard for Swimming Pool Slides; 28 CFR § 36.104 Definitions (Service Animal); 28 CFR §36.302(c) Service animals

Wichita Falls (& Cities that have adopted) Local Ordinance: Chapter 58 Article IV. Aquatic Facilities

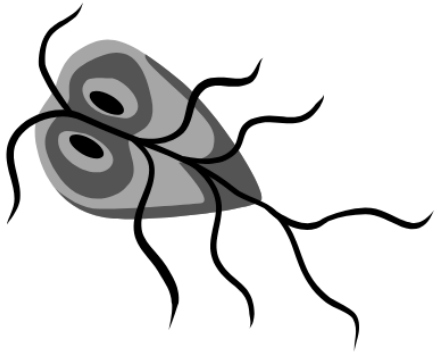
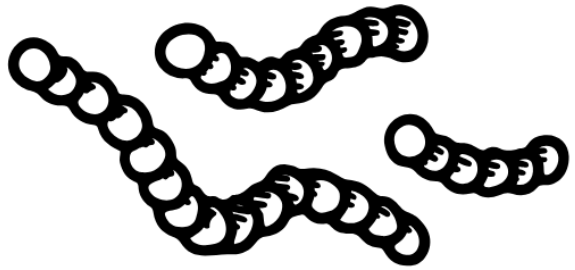
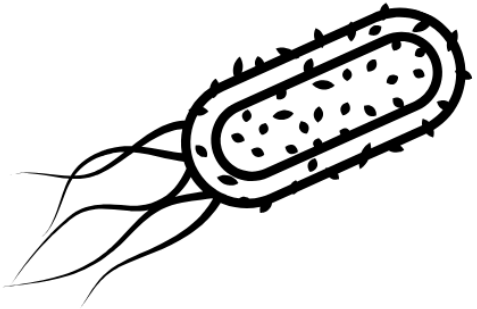
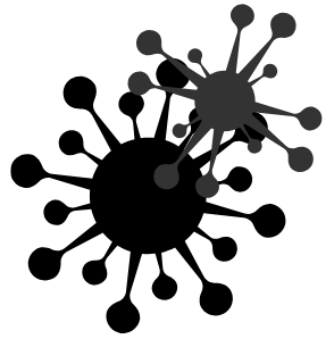


Why do we have rules?

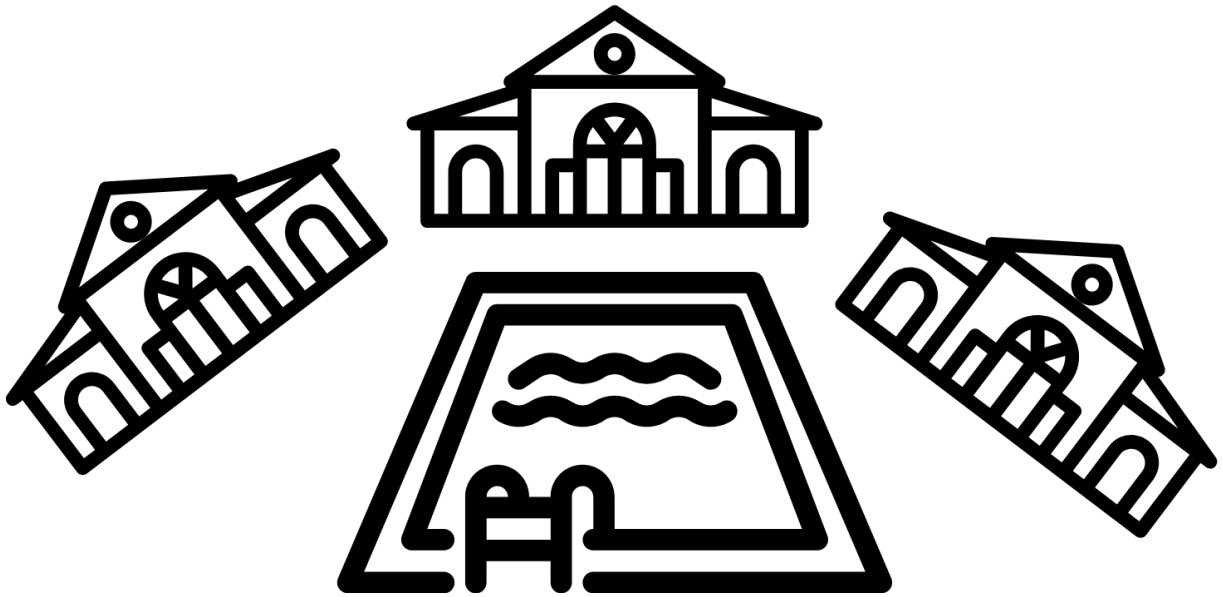
The Health Aspect

Recreational Water Illness (RWI)

- What Causes it: parasites (*Giardia*, *Cryptosporidium*), bacteria (*Salmonella*, *Campylobacter*, *E. coli*, *Shigella*, *Legionella*) , viruses (*Hepatitis A*, *Norovirus*), and fungi
- Caused by: swallowing, breathing in, or having contact with contaminated water
- Can cause: diarrhea, vomiting, various infections (including skin, liver, and lung) and rashes

Types of Aquatic Facilities & Required Management



Classes of Aquatic Facilities

- Class A- used for accredited competitive events
- Class B- used for public recreation & open to the general public (such as for parties and events)
- Class C- used for: lodging (hotels, motels, apartments, condos, or mobile home parks), youth camps, property owner associations, private organizations, or clubs; or schools, colleges, or universities academic or continuing ed. classes. Open to members and guests, but not to the general public

Operation & Management

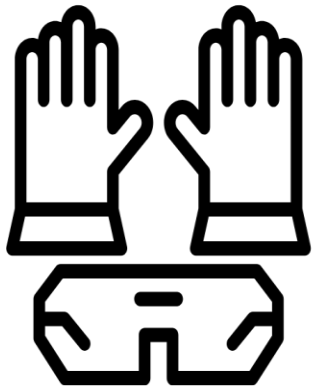
- All classes of Aquatic Facilities must have a properly trained and certified operator
- Responsible for training anyone that checks or puts chemicals into the water
- May be responsible for multiple Aquatic Facilities
- Not required to be on-site

Operation & Management
Wichita Falls & Surrounding Cities

- A manager of operations shall obtain certification from the regulatory authority. **No person will be allowed to act as the manager of operations without first having obtaining a certification each year**
- A person showing a current certificate as a certified aquatic facility operator (AFO), certified pool-spa operator (CPO), a pool operator on location (POOL), or any other training approved by the regulatory authority, could be exempt from the Health District's test

Chemicals

(Chemical Storage Areas Must be Lockable!)



Storing Chemical Test Kits

- Test kits/reagents stored according to the manufacturer's instructions and protected from extreme heat/cold and from exposure to water, chemicals, and petroleum products

- Testing reagents must not be expired!

Storing Chemicals

- Dry chemicals stored off floor or in waterproof containers in dry room
- Chemicals and feed equipment stored so that Aquatic Facility users do not have access (locked)
- Chlorine compounds not stored in same area as petroleum products
- Chlorine gas is prohibited

Storing Chemicals Post-Jan 1, 2023

- Dedicated space to storing chemicals
- Plumbed in eyewash station required
- Outdoor storage must have barrier at least 6 ft high with self-closing/self-latching entry with permanent locking device
- Single doors equipped with emergency egress device
- Door opens inside building: spill containment must be provided; see ISPSC 324.8.1.1 & 324.8.2

Chemical Use

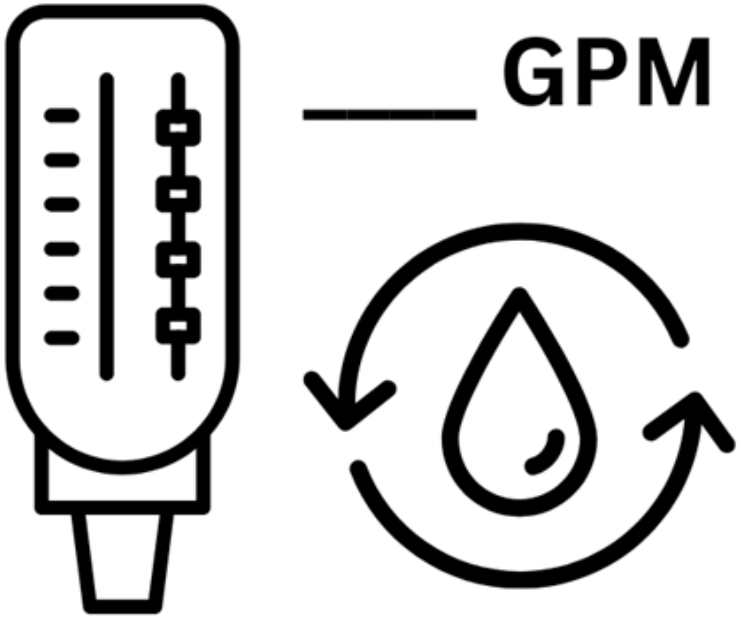
- Chemicals must be used according to the chemical manufacturer’s directions
- Personnel must be provided with appropriate protective equipment and clothing according to the safety data sheets
- The operator is responsible for training anyone that checks or puts chemicals into the water

Chemicals by Hand

- Do NOT put chemicals in the skimmers
- Do NOT put chemicals in the water while users are in the water and/or while personnel are in the water (this includes floating dispensers)
- Before users reenter the water, the pH and Disinfectant must be at the required ranges (must wait at least 30 minutes before retesting)

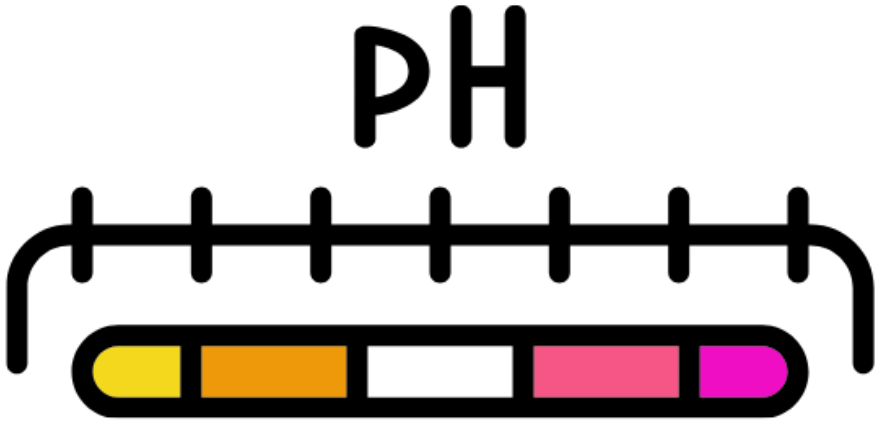
Water Quality & Testing

(Arm must go in water to your elbow!)



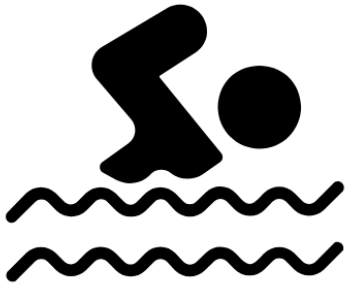
___ GPM

pH



Max Capacity

__ People



Cl

Chlorine

Maximum User Capacity

Shallow (Less than 5 feet; not including Wading Pools)

Pools with Minimum Deck Area (4ft wide or less): 15 ft^2 per user
(Surface Area ÷ 15)

Example: Surface area of pool is 240 ft^2 240 ÷ 15 = 16 people

Pools with Deck Area Equal to Water Surface Area: 12 ft^2 per user
(Surface Area ÷ 12)

Example: Surface area of pool is 310 ft^2 310 ÷ 12 = 25.8 = 25 people

Pools with Deck Area 2x Water Surface Area: 8 ft^2 per user
(Surface Area ÷ 8)

Example: Surface area of pool is 180 ft^2 180 ÷ 8 = 22.5 = 22 people

Maximum User Capacity

Deep Area (Not Including the Diving Area)

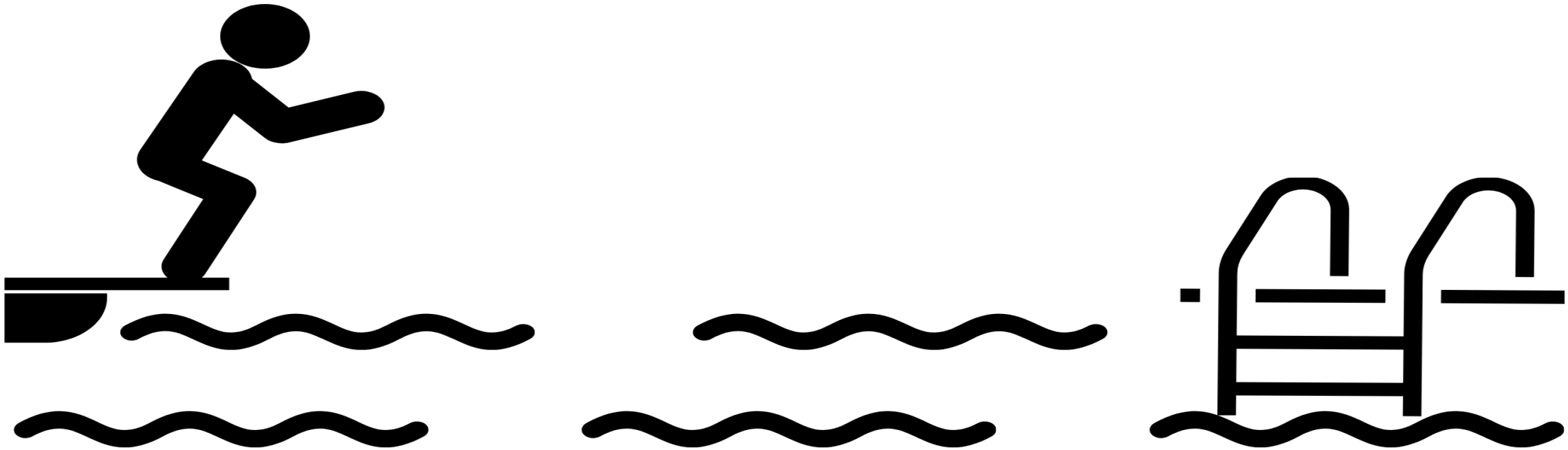
Pools with Minimum Deck Area (4ft wide or less): Example: Surface area of pool is 240 ft^2 240 ÷ 20 = <u>12 people</u>	20 ft^2 per user (Surface Area ÷ 20)
Pools with Deck Area Equal to Water Surface Area: Example: Surface area of pool is 310 ft^2 310 ÷ 15 = 20.7 = <u>20 people</u>	15 ft^2 per user (Surface Area ÷ 15)
Pools with Deck Area 2x Water Surface Area: Example: Surface area of pool is 180 ft^2 180 ÷ 10 = <u>18 people</u>	10 ft^2 per user (Surface Area ÷ 10)

Maximum User Capacity

Diving Area (Per Each Diving Board)

Pools with Any Deck Area: 300 ft^2 per user

Example: Diving are surface area of pool is 600 ft^2 600 ÷ 300 = <u>2 people</u> (Surface Area ÷ 300)



Required Turnover Rates

Pre-October 1, 1999	Maximum Time
Pools	8 hours
Post-October 1, 1999	**Maximum Time**
Pools avg. depth ≥4ft	6 hours
Pools avg. depth <4ft	avg. depth x 1.5 (not to exceed 6 hours)
Pools avg. depth ≤3ft	4.5 hours
Therapy Pools	same as pools
Post-January 1, 2021 Pools	**Maximum Time**
Class A, B, & C Pools	avg. depth x 1.5 (not to exceed 6 hours)
Therapy Pools	same as pools

Water Level

- Water level must be maintained within the design operating water level range of the rim, gutter, or skimmer system
- When the water level is below the operating water level range of the rim, gutter, or skimmer system, the Aquatic Facility shall be closed

Water Clarity

- **<u>Open Season Requirements</u>-** 8” black/Secchi disk visible at deepest area; never green in color; recommend closing if the water is cloudy and/or green; MUST CLOSE if 8” black/Secchi disk is NOT visible at deepest area (*Cloudy and/or green water can be a sign of unbalanced water, which means more chance of recreational water illness!*)

WARNING SHORT DOCUMENTARY ON A WOMAN THAT DROWNED IN A POOL FULL OF PEOPLE, INCLUDES REENACTMENT

https://www.youtube.com/watch?v=Eo6ZBGIJ4Xo&t=1s

- **<u>Off Season/Closed Requirements</u>-** 8” black/Secchi disk visible at deepest area; never green in color

Required Chemical Levels

Level	Minimum	Ideal	Maximum
Pool Chlorine	1.0 ppm	2.0 – 3.0 ppm	8.0 ppm
Pool Bromine	3.0 ppm	4.0 – 6.0 ppm	10.0 ppm
Combined Chlorine	None	None	0.4 ppm
pH	7.0	7.2 – 7.6	7.8

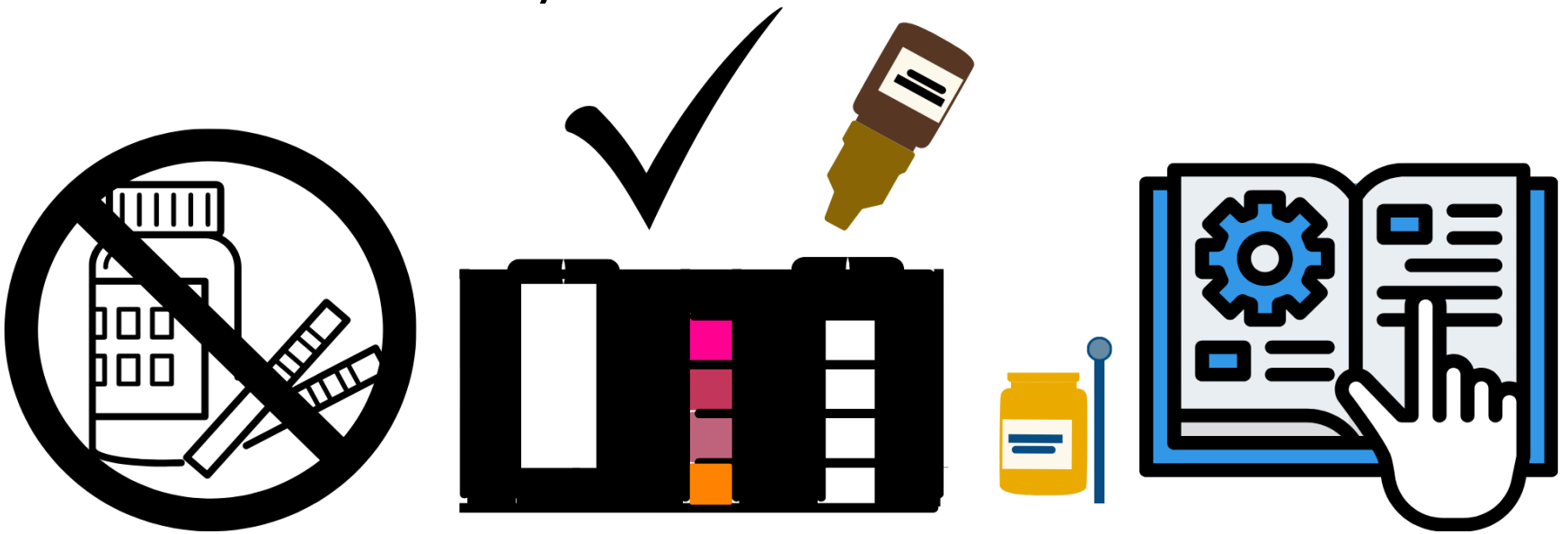
Required Chemical Levels

Level	Minimum	Ideal	Maximum
Cyanuric Acid/CYA (Outdoor only)	None	30 – 50 ppm	100 ppm (50 ppm for PIWFs)
Oxidation-Reduction Potential/ORP	600 mV	650 – 750 mV	900 mV
Alkalinity	60 ppm	60 ppm – 180 ppm	>180 ppm
Pool Calcium Hardness	150 ppm	>150 – 400 ppm	1000 ppm

Pools must also be treated to eliminate algae

Chemical Testing

- A reliable means of testing for pH, chlorine/bromine, cyanuric acid, alkalinity, and calcium hardness must be available (no test strips)
- DPD chemical test required for chlorine/bromine
- Your chemical test kit manual is your new best friend! It will teach you how to keep your chemicals balanced, how to shock the water, and much more (must still follow Texas Rules)



pH & Disinfectant (Chlorine/Bromine) Test Frequency

Class A & B: every 2 hours that the Aquatic Facility is in use or 3x a day with automatic systems

Class C with Aquatic Facility specific personnel: 3x a day

Class C with NO Aquatic Facility specific personnel: 1x a day or as often as necessary to ensure proper levels

MUST BE RECORDED IN YOUR LOG BOOK

Logs must be kept for 3 years & be available within 5 days

ORP Test Frequency

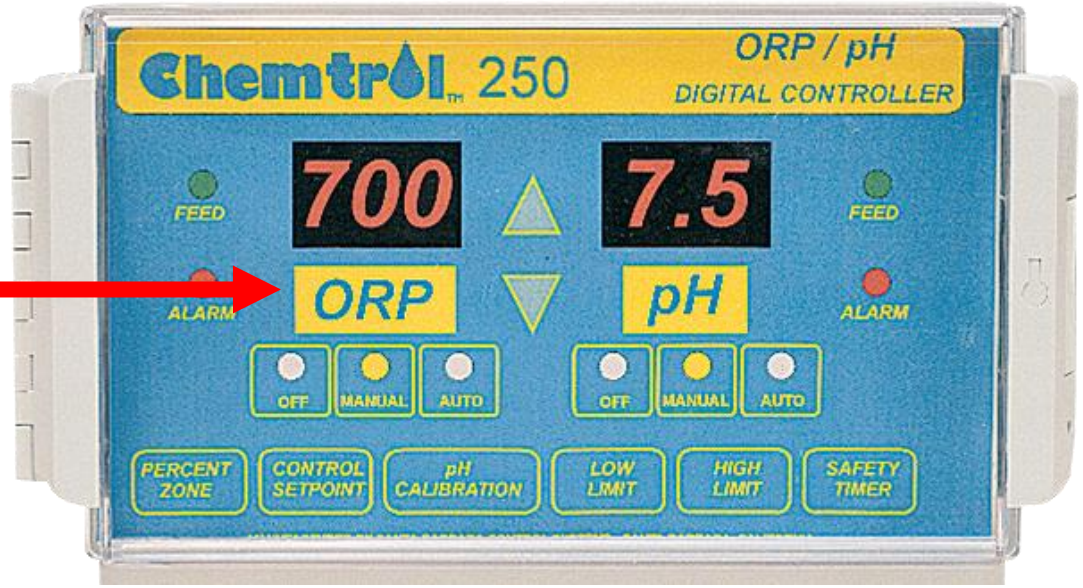
ONLY IF YOU HAVE A METER:

Recorded at the same time as your pH

MUST BE RECORDED IN YOUR LOG BOOK

Logs must be kept for 3 years & be available within 5 days

Example



CYA & Testing Frequency

Class A, B, & C: 1x a week

CYA exceeds **100 ppm:** Close Aquatic Facility; 1x a day with sanitizer at or above **2.0 ppm** until CYA level drops below **100 ppm**; Aquatic Facility must remain closed until CYA level drops below **80 ppm** (Wichita Falls and surrounding cities)

CYA is detected in a Therapy Pool or any Indoor Aquatic Facility: Close Aquatic Facility until CYA is no longer detectable

MUST BE RECORDED IN YOUR LOG BOOK

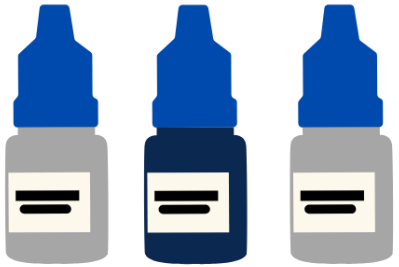
Logs must be kept for 3 years & be available within 5 days

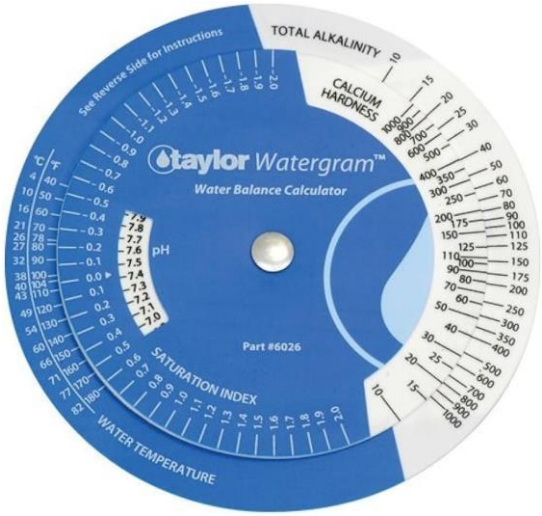
Alkalinity, Calcium Hardness, & Water Balance (Saturation Index)

Class A, B, & C: at least once every 10 days; may do 1x a week

MUST BE RECORDED IN YOUR LOG BOOK

Logs must be kept for 3 years & be available within 5 days





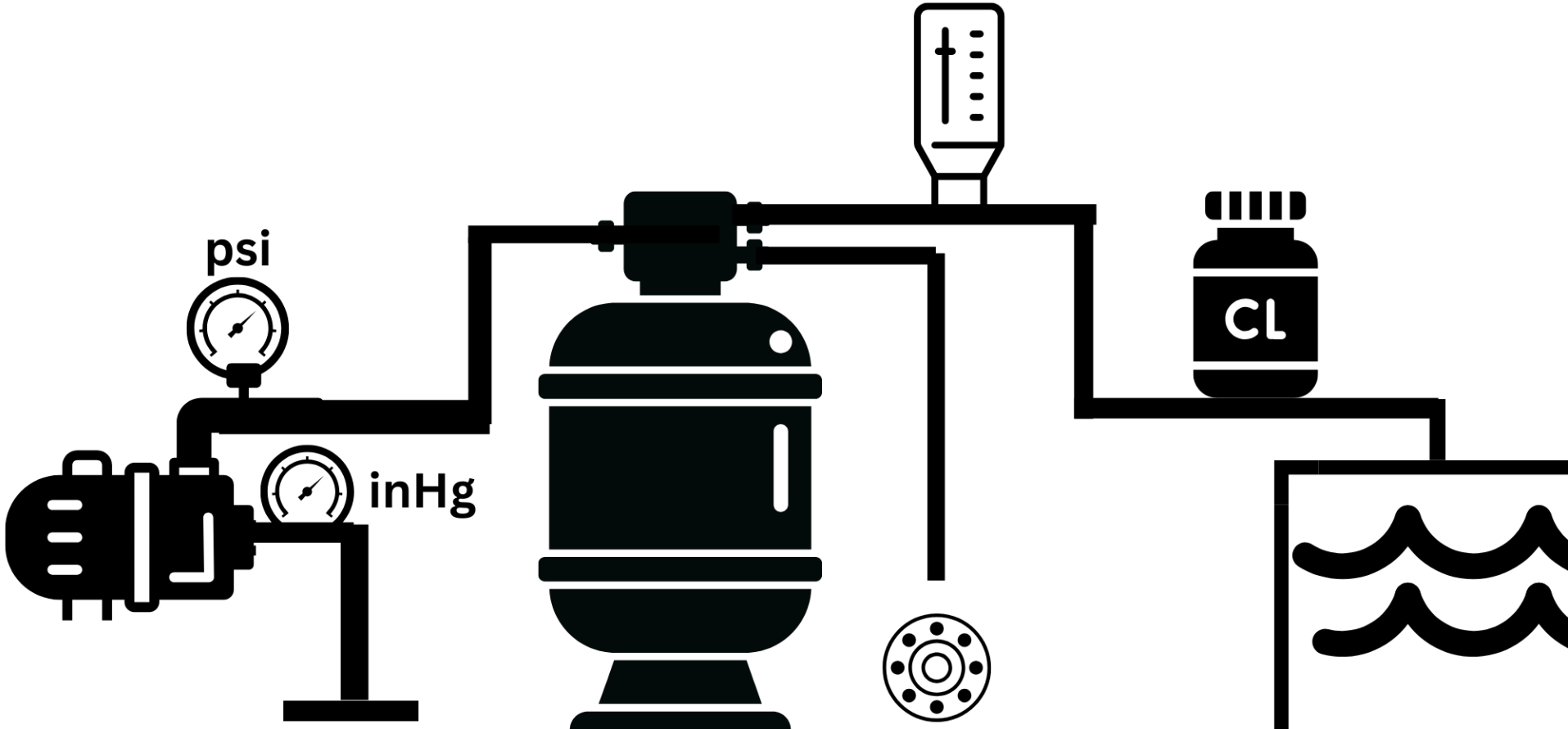
SAMPLE LOG

DATE	TIME	CHLORINE	pH	ORP (mV)	FLOW (GPM)	CHEMICALS ADDED - Quantity and Type	MAINTENANCE & NOTES

WEEKLY TEST = CYA (if less 100ppm)		***If CYA is over 100ppm, then it must be tested daily until it falls below 100ppm***
EVERY 10 DAYS TEST:	DATES: ____ ____ ____	ALKALINITY (ppm) = ____ ____ ____
CALCIUM HARDNESS (ppm) = ____ ____ ____		CHEMICAL BALANCE = ____ ____ ____

Equipment

(Equipment Areas, including heater controls, Must be Lockable!)



Equipment Area

- Circulation equipment, mechanical spaces, and chemical storage spaces must be lockable
- A warning sign against unauthorized entry must be posted on the entry door or gate to the Aquatic Facility equipment room, building, or area

Equipment Area

Post-January 1, 2023:

- Separate from Chemical Storage Spaces
- Floor concrete or other suitable material: smooth, slip-resistant and positive drainage, including sump pump if necessary with a slope to floor drain
- Hose bib in room or within area to service room
- Lit to 30 foot-candles from floor level
- Adequate ventilation ISPSC 324.5
- Doors/openings/access ISPSC 324.7.1&2

Circulation Systems

- Must have Operation and Maintenance Instructions on-site
- Must run for 24 hours a day even during off season to maintain clarity
- Circulation rate may be reduced during off season

Emergency Pool Shut-off Switch

Post-January 1, 2023:

- Emergency shutoff switch provided to disconnect power to recirculation and jet system pumps and air blowers in a pool
- Emergency switches shall be accessible to users, located within sight of the pool not less than 5 ft horizontally from the inside walls of the pool
- Sign required; see table

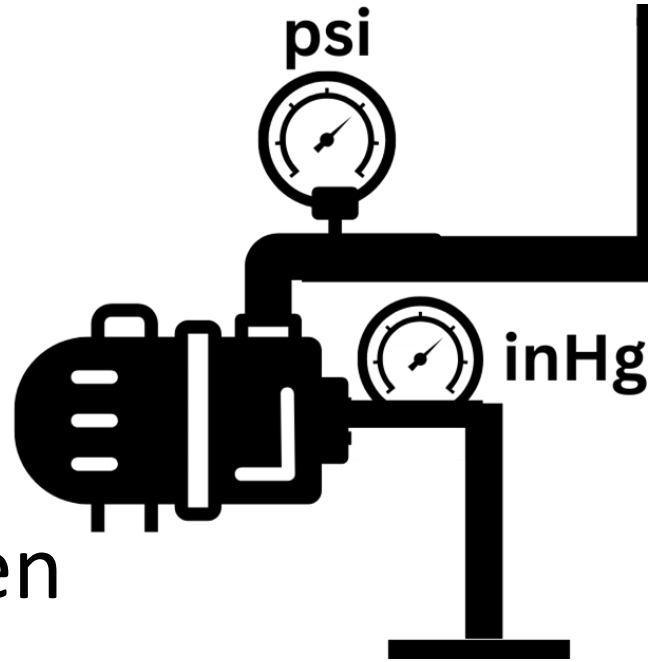
Piping

- Rated for pool/spa use
- Labeled to identify function and direction of flow

NSF Standard 50

- NSF 50 is a certification for Aquatic Facility equipment to ensure that it meets the safety standards in a commercial setting
- Equipment for Aquatic Facilities such as pumps, filters, valves, chemical feeders, and any other equipment must meet NSF 50
- Exception: Suction Outlets and Return Inlets (See Suction Outlet and Return Inlet Slide)

Pumps

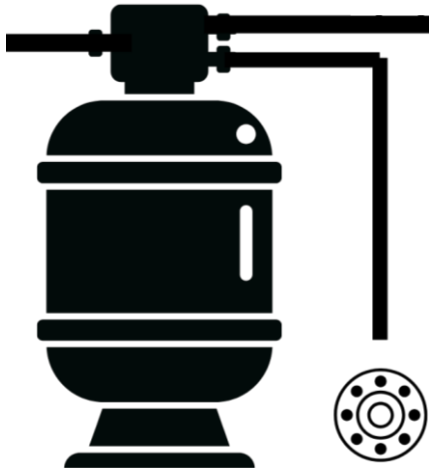


- NSF 50
- Installed to manufacturer's instructions
- Capable of providing required flow rate
- Cleanable strainer, skimmer basket, or screen

A pump shall not be operated if the owner/operator of the Aquatic Facility knows or should know in the exercise of ordinary care that the drain grate, suction outlet, or any suction outlet cover is missing, broken or loose.

Aquatic Facility must be closed!

Filters



- NSF 50
- Installed to manufacturer’s instructions
- Capable of providing required flow rate
- Observable free fall or sight glass on the waste discharge line (Sight glasses must be readily removable for cleaning)

Pressure Filters & Separation Tanks: One or more lids that provide slow/safe release of pressure and a manual air release in addition to an automatic release with a posted sign (See Sign Table)

Chemical Feeders

- NSF 50
- Required to be installed (after filter)
- Installed and operated to manufacturer’s instructions

If system has chemical feed pumps, be wired so they cannot operate unless there is adequate return flow to properly disburse chemical in the water and be regulated to ensure constant feed with varying supply/back pressure

Chemical Feeder Controllers

Automated controllers that adjust chemical feed based on demand or manually, or remotely managed controllers for pool/spa automatic disinfection equipment/ chlorinators are required

pH controller required if there is an automated pH system
(Automated system not required for pH at this time)

Heaters

Post-January 1, 2021 and pre-existing pools/spas replacing heaters:

- Must follow 2021 International Swimming Pool and Spa Code Sec.316
- Heaters and hot water storage tanks shall be listed and labeled in accordance with:

Table 316.2(1) Water Heaters

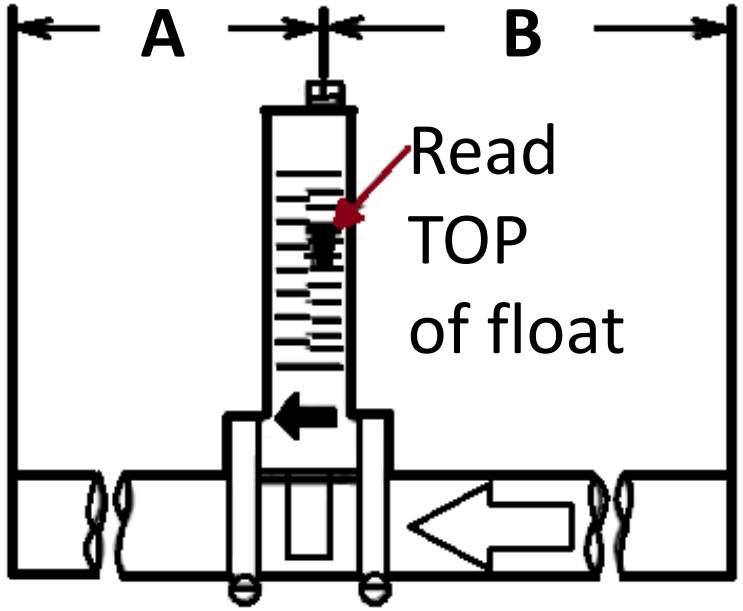
DEVICE	STANDARD
Electric Water Heater	UL 1261, UL 1563 or CSA C22.2 No.218.1
Gas-fired Water Heater	ANSI Z21.56/CSA 4.7a
Heat Exchanger	AHRI 400
Heat Pump Water Heater	AHRI 1160 and one of the following: CSA 22.2 No. 236, UL 1995, or UL/CSA 60335-2-40

Table 316.2(2) Water Heating Systems and Components

DEVICE	STANDARD
Solar Water Heater	ICC/APSP 902/SRCC 400

Flow Meters

- Must be NSF 50, NSF 60, or NSF 61
- Used to calculate Turnover Rate only (see Math Slides)
- Indicate GPM and accurate within ±10% of actual flow
- Located after the filter and installed for clearance up stream and downstream per manufacturer instructions

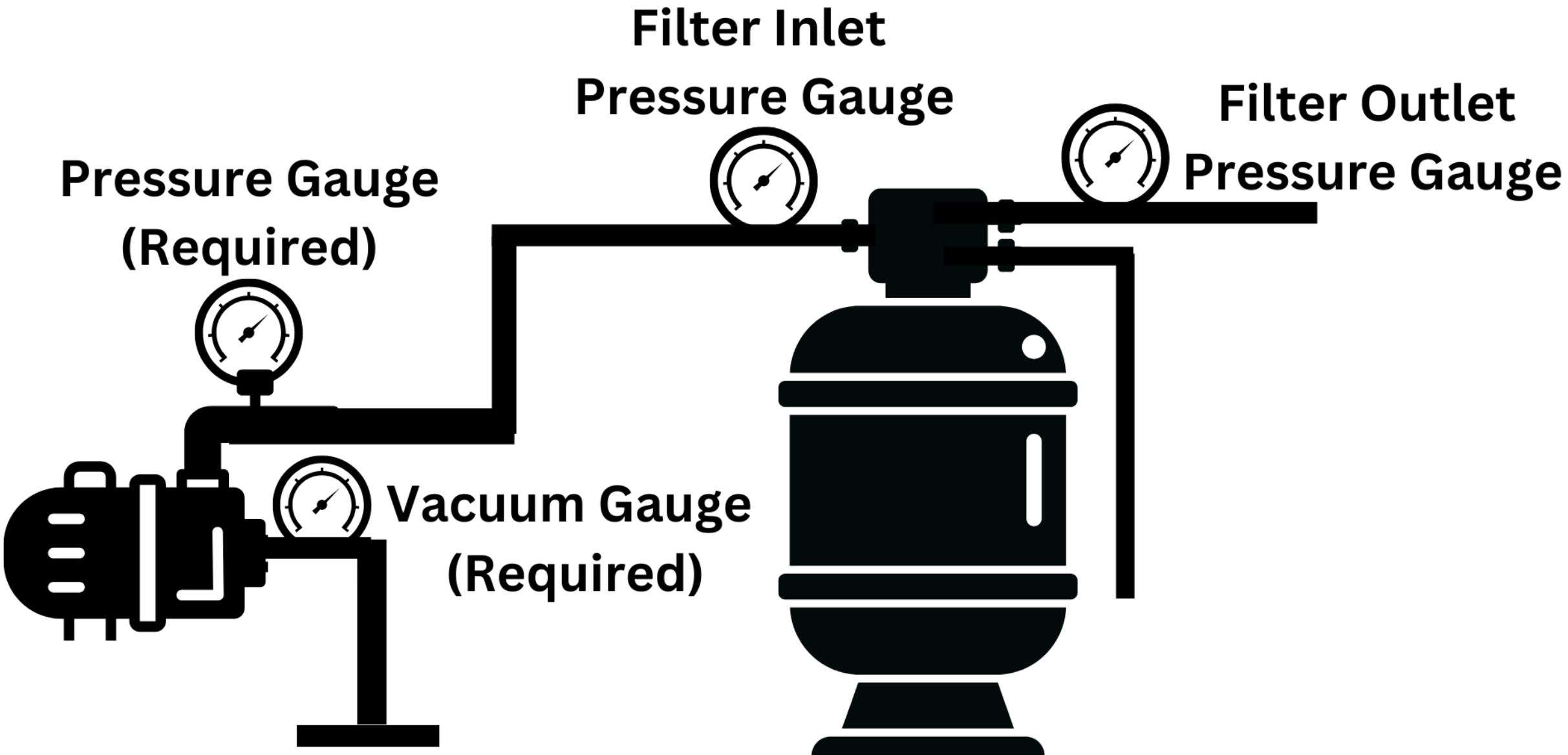


F-300 Flowmeter Installation Instructions

Dimension	Accuracy
A	Outlet Pipe Length = 2 x Pipe ID
B	Inlet Pipe Length = 5 x Pipe ID

Must be on horizontal straight pipe

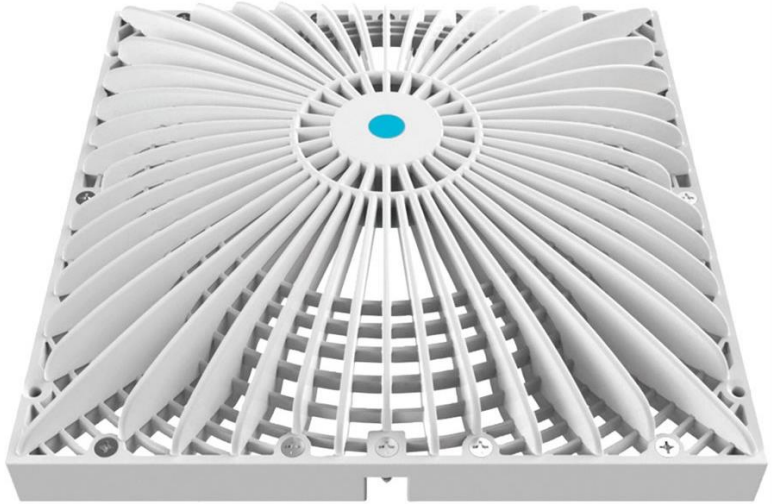
Gauges


Filter Inlet
Pressure Gauge
Filter Outlet
Pressure Gauge
Pressure Gauge
(Required)
Vacuum Gauge
(Required)

Gauges & Main Drains

<u>Look on spare main drain cover or required documentation</u>:

- If drain covers are on the floor, then look at GPM “floor”
- If drain covers are on the wall, then look at GPM “wall”
- Must be 10% more than required pump gauges calculated GPM (see Math Slides)

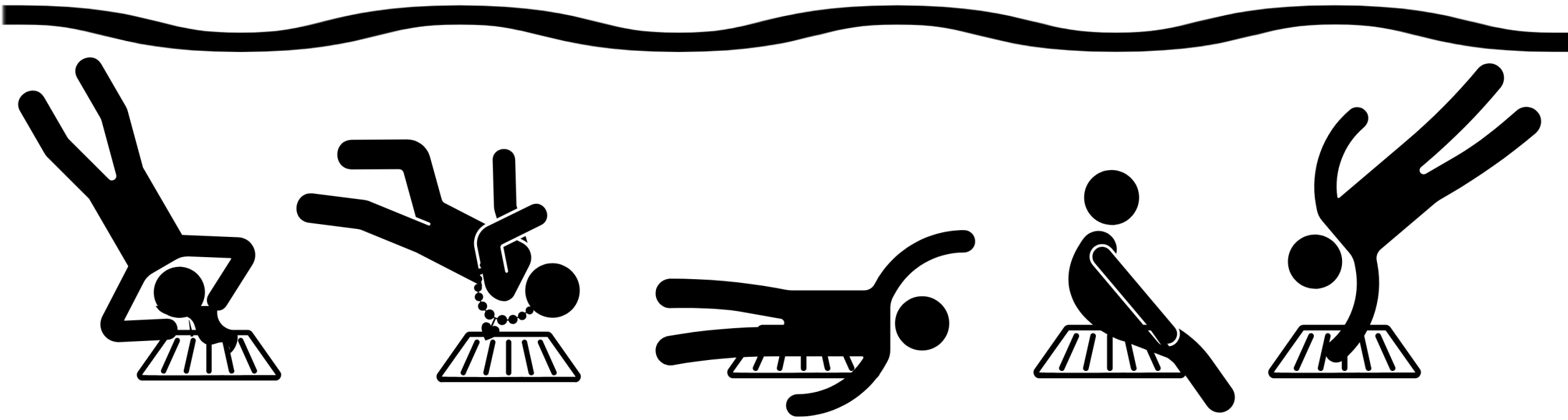


Gauges & Backwashing

- If the difference between the filter inlet and outlet gauges are 10-20 psi, then it is time to backwash!
- If you have a pressure gauge only on top of the filter then put a mark or turn the arrow where the needle is after you backwash (this is your clean mark). When the needle moves 8-10 psi from the clean mark, then it is time to backwash!
- Backwash water shall be discharged through an **air gap (no direct connect to sewer)** formed by positioning the discharge pipe opening **at least two pipe diameters above the overflow level** of any barriers that could cause flooding (splash screening barriers are permitted as long as the barriers do not destroy air gap effectiveness)

Suction Outlets & Return Inlets

(Another great reason why we have rules!)



Entrapment Hazards

- Hair Entrapment- the most common and most deadly
- Limb Entrapment- occurs when the cover is missing or broken and a limb is held within the plumbing due to suction
- Body Entrapment- occurs when the body is held against the suction outlet and forms a seal over the drain
- Evisceration/disembowelment- occurs when a persons buttock area seals the suction outlet causing the rectum to burst and internal organs to be withdrawn from the body
- Mechanical Entrapment- occurs when something attached to the bather tangles with structures below the water

Virginia Graeme Baker Act
Federal Law For Main Drain Covers

- Effective December 19, 2008: requires drain covers sold or manufactured in the US to comply with entrapment standards
- Requires Aquatic Facilities, regardless of age, to install safety equipment, including ASME/ANSI A112.19.8 certified suction outlets and covers, designed to prevent entrapment

https://www.dshs.texas.gov/public-swimming-pools-spas/laws-rules-public-swimming-pools-spas/virginia-graeme-baker-pool

Suction Outlet Systems

If the cover or grate on a suction outlet including a vacuum outlet, is missing, broken, or loose, the Aquatic Facility must be closed immediately and shall remain closed until a proper repair is made or a replacement is installed!

Large openings should have a cover regardless of function!

WARNING NEWS STORY ON DROWNING OF A CHILD

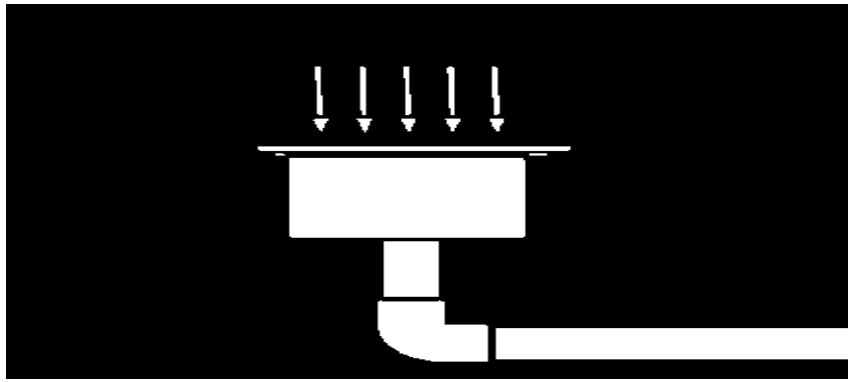
https://abc13.com/northwest-houston-double-tree-hotel-pool-malfunction-drowning-investigation/14566601/

Dual/Multi Main Drains

- Distance measured center to center must be GREATER THAN or equal to 3ft apart
- No means of isolating suction outlets is permitted that could allow one suction outlet to serve as the sole source of water to a pump
- Dual main drains that are LESS THAN than 3 feet apart are considered a single main drain (see next slide)

Single Main Drain
& Dual/Multi Main Drains that are LESS THAN 3ft Apart

- Must have a SVRS or APSS installed by a Licensed Engineer or Certified Installer
- SVRS or APSS devices certified to ASME/ANSI A112.19.17, ASTM F 2387
- SVRS and APSS devices shall be operated, tested, and maintained according to manufacturer's instructions
- OR be considered unblockable



Skimmers

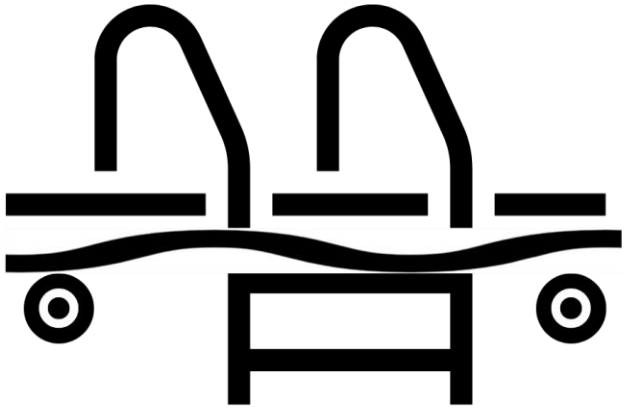
Surface skimming system required:

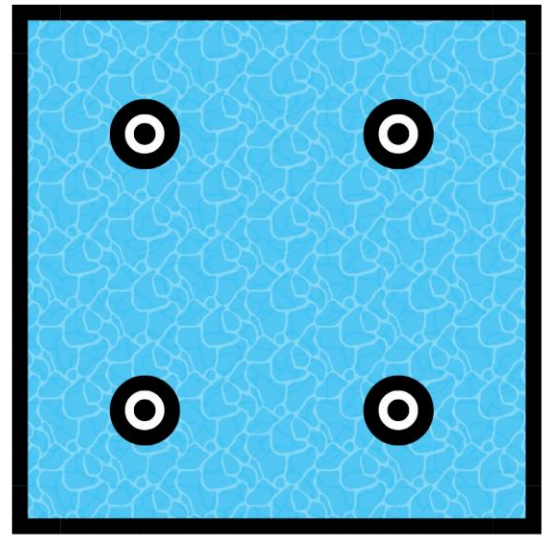
- Must be listed/labeled in accordance with NSF 50
- Designed to handle 100% of water flow
- Maintained in good condition (baskets intact if required)
- Skimmer covers installed/secured to manufacture instructions

Do NOT put chemicals in skimmers or floating devices

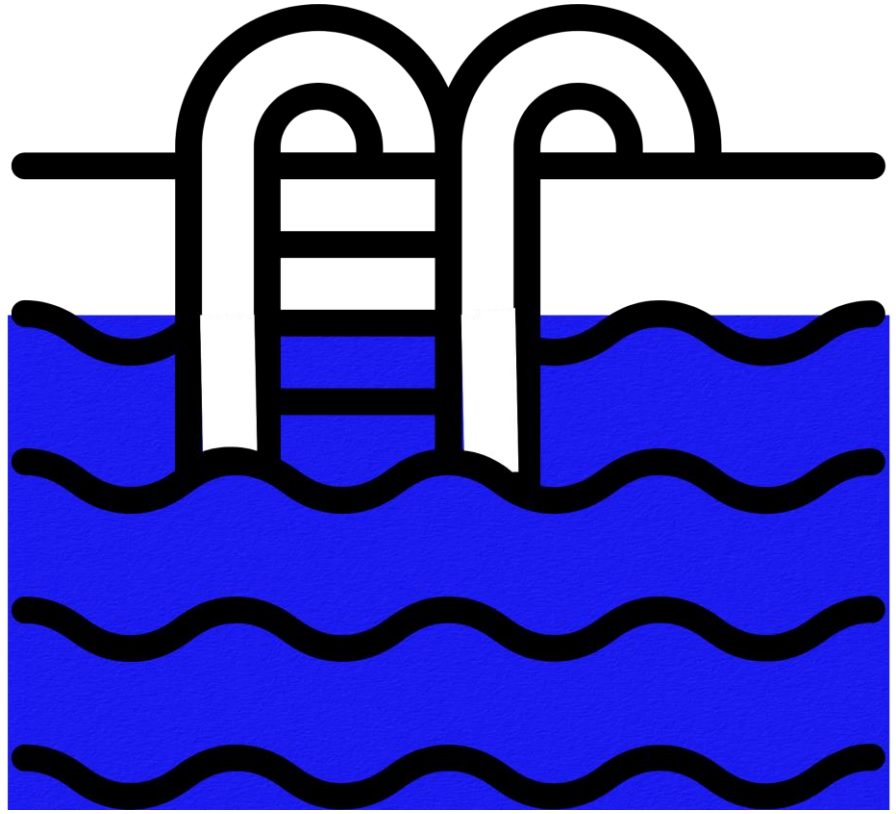
Return Inlets

- Return inlets are where the treated water goes back into the aquatic facility
- Located on the walls and/or the floor
- Designed to not constitute a hazard to swimmers
  - Appropriate caps in place
  - Not broken





Pool/Spa Interior
(Inside the Water)



Interior Colors/Finishes & Hazards

Colors, patterns, finishes shall not obscure objects or surfaces.
Surfaces must be smooth/easily cleanable and remain slip-resistant

Colors/Finishes:

- Pools/spas interior surfaces and finishes shall be at least 6.5 on the Munsell color value scale (existing pools must be this when refinished/repainted)

Hazards:

- Materials that come in contact with swimmers must not pose a cutting, pinching, or other means to cause injury
- Must be free of entrapment and entanglement hazards at all times
- Food, beverages, glass, and **animals** are prohibited in water

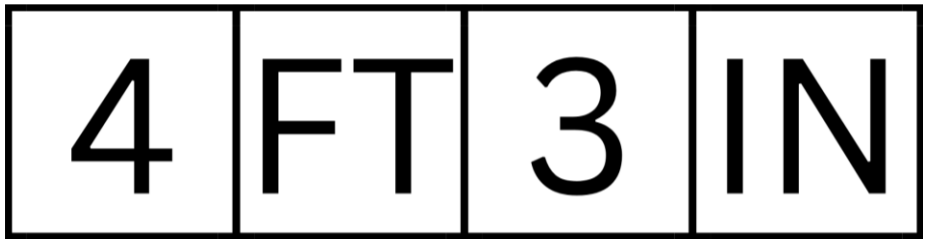
Interior Depth Markers

Located on the vertical wall of the pool in the top 4-1/2 inches of the pool wall just under the coping (within 25 ft of each other) at:

- Min and Max water depths
- Both sides and at each end of the pool
- At all points of slope change (transition line) & 2ft depth increments

Must be:

- Within ±3 inches accurate
- Color Contrasting
- Permanent such as tile (not regular pool paint)
- Numbers and letters must be **at least 4-inches tall**



Entries & Exits into Water

A minimum of 2 slip-resistant entries/exits are required for pools where water depths are greater than 24-inches at:

- Each end of pool
- Either end of deep end if it is greater than 30 ft wide

(Pool lifts, transfer walls and transfer systems that provide for pool entry and exit by persons with physical disabilities shall not be counted as the means of entry or exit)

Ladders

- Two handrails: one on each side of the ladder between 17-24 inches across (same for recessed treads)
- Ladder treads: uniform horizontal depth at least 1.5 inches (Post-21 = at least 2 inches); slip-resistant
  - Distance between ladder treads uniform 7-12 inches
  - Top tread of a ladder not greater than 12 inches below the top of the deck or coping
- **Wall clearance between wall and ladder shall not allow a 4-inch sphere to pass through it**

Underwater Steps

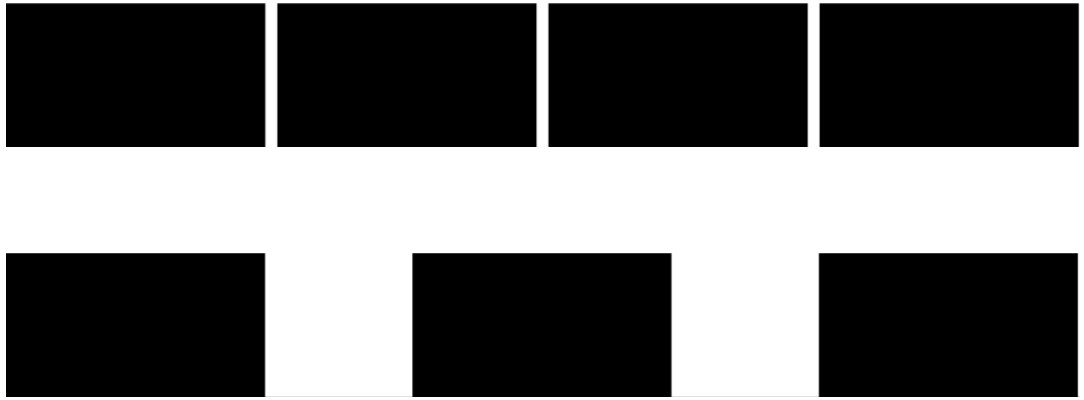
Handrails Post-99/where provided/remodeled:

- Installed so they cannot be removed without use of tools
- Top of gripping surface 34-38 inches above ramp or step surface as measured at nosing of step or finished surface of slope
- Leading edge of handrails located not greater than 18 inches from vertical face of bottom riser
- Outside diameter 1-1/4 to 2 inches

Each step requires 1-inch solid or broken stripe (see next slide)

Solid/Broken 1-inch Stripe

A horizontal solid or broken stripe on the top surface along the front leading edge shall be visually set apart with a 1-inch row of floor tile or other permanent method (not regular pool paint) that is color contrasting is required for:

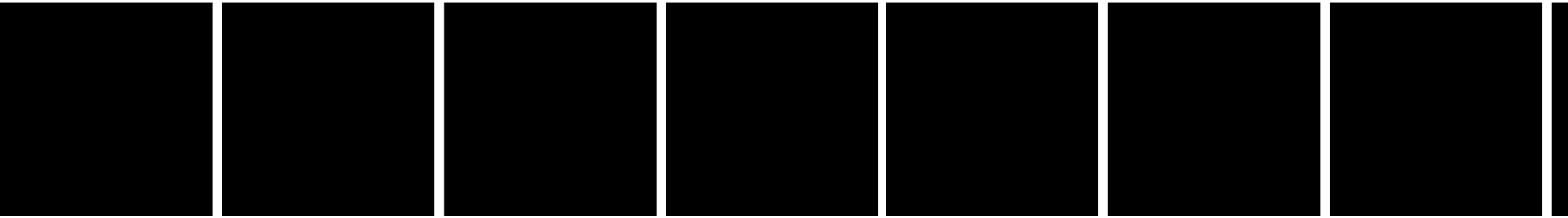


- Underwater Steps
- Underwater Seats or Benches
- Water Lounges
- Underwater Toe Ledges
- Swimouts
- Or any other protrusion the Health District deems necessary for the safety of swimmers

Transition Line

The transition point of the pool where the depth reaches greater than 5 ft shall be visually set apart with a total of 4-inch row of floor tiles or other permanent method (not regular pool paint) that is color contrasting.

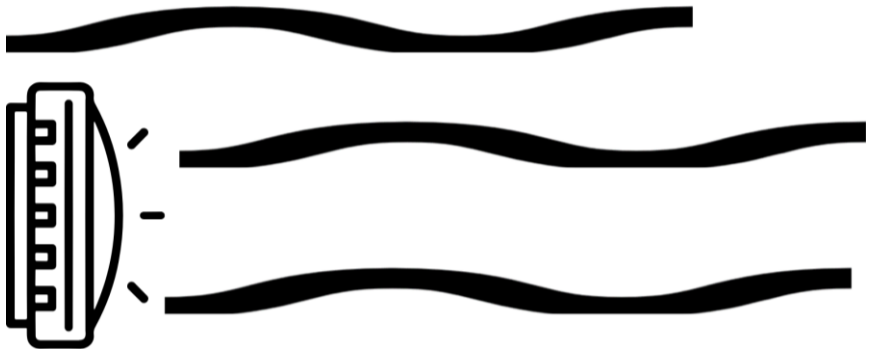
(Class B Pools must also have a rope with floats line)

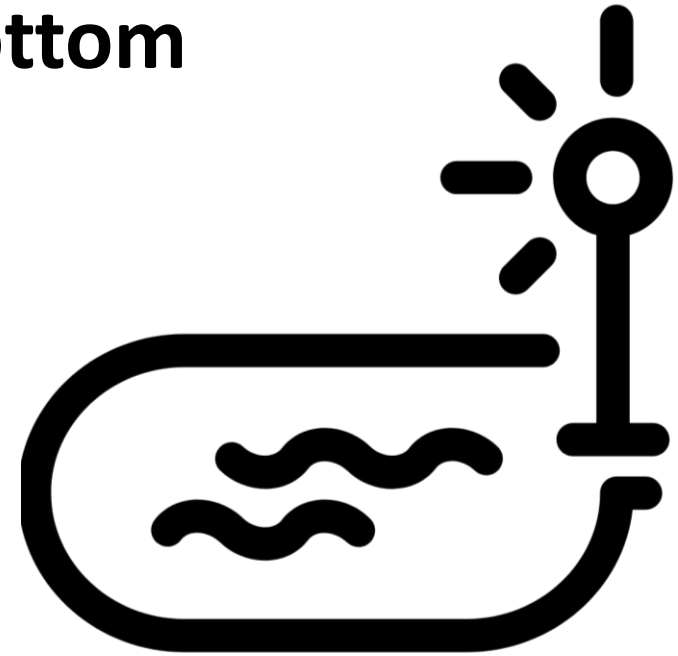


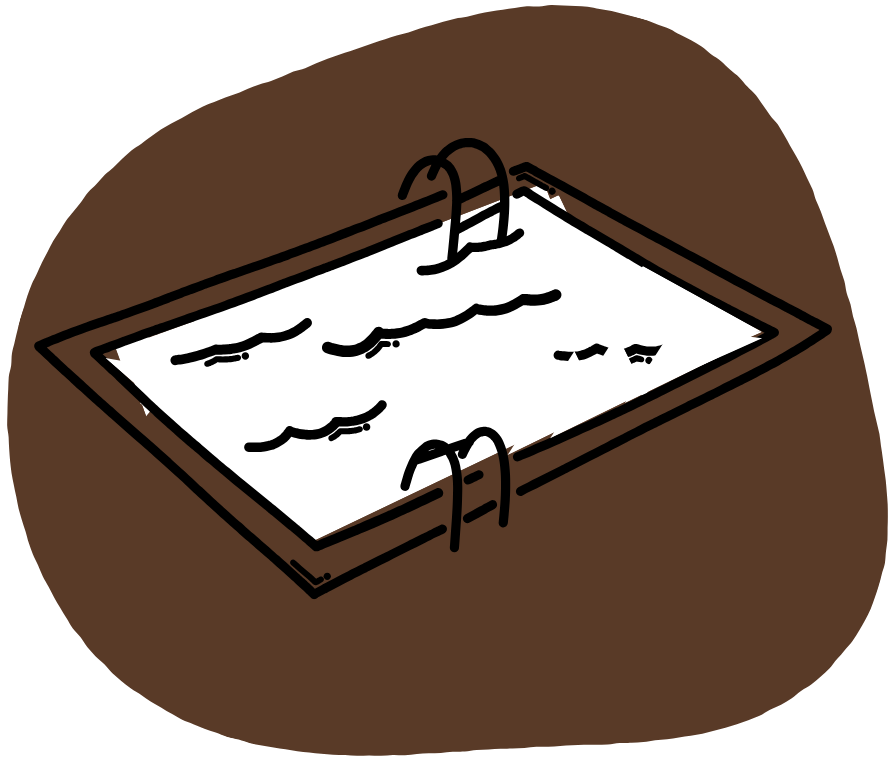
Interior Lighting

Aquatic Facilities must provide lighting 30 minutes prior to sunset, during the night, and until close or 30 minutes after sunrise if open during said times

Lighting must illuminate all areas inside the water, including all suction outlets (main drains) on the bottom







Pool/Spa Exterior
(Outside of the Water)

Exterior Hazards & Requirements

Hazards:

- Materials that come in contact with users must not pose a cutting, pinching, or other means to cause injury including tripping
- Glass shall not be allowed on a deck or anywhere within the pool/spa yard (including tables)

Requirements:

- Food and beverages shall be served only in non-breakable containers out of the water
- Covered trash containers shall be provided where food and beverages are allowed/served

Service Animals

Animals permitted under 28 CFR §36.302(c) and 24 CFR §100.204 shall be allowed on the deck and within the pool/spa yard, but **NOT IN** the water!
(unless they are rescuing you from drowning)

Service animal means any **dog** or **miniature horse** that is trained to do work or perform tasks for the benefit of an individual with a disability.

Decks

- Decks, ramps, coping, steps, markers, and brand insignias shall be slip-resistant
- Glass is prohibited (including furniture)
- No standing water (deck drains must remain clean)
- Post Jan 1, 2023: the structural design and installation in accordance with the International Building Code

Additional information can be found at:
https://codes.iccsafe.org/content/ISPSC2021P3/chapter-3-general-compliance#ISPSC2021P3_Ch03_Sec306

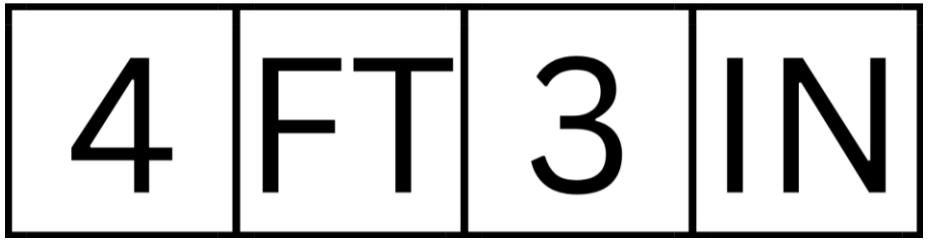
Deck Depth Markers

Located within 18-inches (24-inches pre-99) of water's edge (within 25 ft of each other and not located directly above an entry/exit) at:

- Min and Max water depths
- Both sides and at each end of the pool
- At all points of slope change (transition line) & 2ft depth increments

Must be:

- Slip-resistant
- Within ±3 inches accurate
- Color Contrasting
- Permanent such as tile (not regular pool paint)
- Numbers and letters must be **at least 4-inches tall**



Deck No Diving Markers

Located within 18-inches (24-inches pre-99) of water's edge (within 25 ft of each other and not located directly above an entry/exit) where the depth is less than 5 ft (may put them at deeper depths if desired).

Must be:

- Slip-resistant
- Permanent such as tile (not regular pool paint)
- Letters and symbol must be at least 4-inches in height
- Clearly marked in a color contrasting to the background
- Permanently affixed to permanent structures above the pool deck within 5 ft of water's edge (not required on diving boards or diving platforms, ADA-compliant chair lifts, slide flumes, lifeguard stands, or bridges)

Deck Lighting

Post-January 1, 2021:

- Required for Deck Area
- **Emergency Lighting Requirements-** will automatically turn on to permit evacuation of pool and securing of area in event of power failure
  - Illumination not less than 0.1 foot-candle measure at any point on water surface and at any point on walking surface of deck, and not less than an average of 1 foot-candle
  - At the end of the emergency lighting time duration, illumination level shall be not less than 0.06 foot-candle measured at any point on the water surface and at any point on the walking surface of the deck, and not less than an average of 0.6 foot-candle
  - A max-to-min illumination uniformity ratio of 40:1 shall not be exceeded

Diving Boards

Diving boards must follow the 2021 International Swimming Pool and Spa Code Section 402. Manufactured diving equipment shall be installed in accordance with the manufacturer's instructions. The manufacturer's instructions shall refer to the water envelope type by dimensionally relating their products to Point A on the water envelopes shown in Table 402.12. The diving board manufacturer shall specify which boards fit on the design pool geometry types as indicated in Table 402.12.

Label required to be permanently affixed to the diving board in a readily visible location with the following: minimum diving water envelope, manufacturer's name and address, manufacturer's identification and date of manufacture, and the maximum allowable weight of user

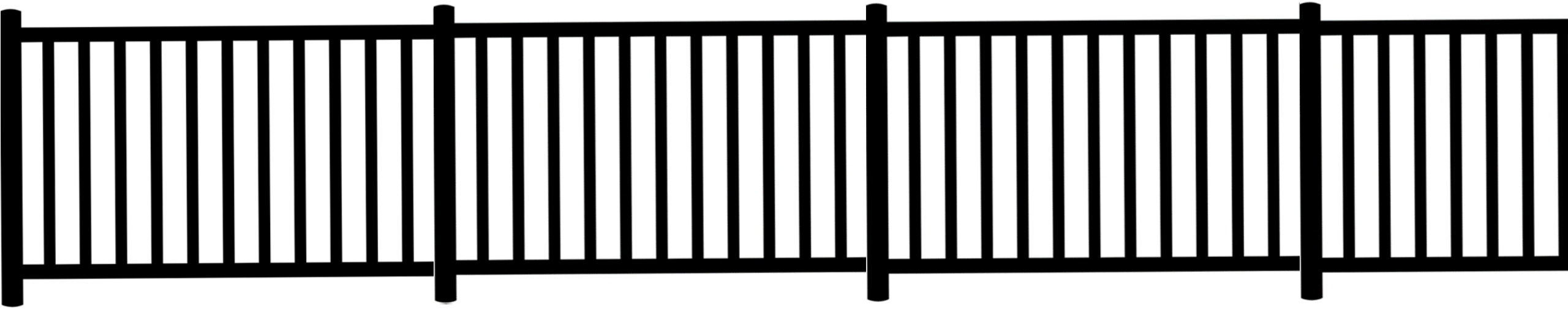
Slides & Aquatic Play Features

Any feature that meets the definition of a “slide” in the Consumer Product Safety Commission’s Safety Standard for Swimming Pool Slides as published in Title 16 Code of Federal Regulations, Part 1207, shall comply with those standards in addition to Texas’ rules. Examples include, but not limited to:

- Slide must be in good condition and be able to handle anticipated load
- Slide steps must be slip-resistant
- Handrails must be provided for slide ladders

Aquatic play features must be in good condition

Enclosures



All Classes

- Gates/doors capable of being locked and locked when not open for use, under repair, hazards exist, certain weather conditions, hand distribution of chemicals, or any other condition that warrants closure of pool/spa
- Service gates/doors used only by service personnel not required to be self-closing/self-latching; must be kept closed/locked when not in use
- Propping open gates/doors prohibited

<u>Doors or gates can open INTO the pool/spa yard if:</u>

- Door/gate is to a storage room, restroom, shower room, dressing room, or mechanical room and the room does not have an additional door/gate to outside of pool/spa yard, or
- deemed an Emergency Exit by the Fire Marshal's Office

All Classes Continued

- Elevator doors prohibited as entry/exit into pool/spa yard when pool/spa is inside building or accessed from interior of building
- Windows capable of being opened not allowed as part of enclosure unless windows are above required enclosure height measured from ground level
- Planters/light poles/site furnishings not permitted within 36-inches from outside of enclosure or located inside enclosure so that enclosure can be climbed from outside
- Trees trimmed to prevent being used to climb enclosure
- Cannot be readily climbable & no horizontal mid-rail

Resident Youth Camps & Class B

- Minimum 6 feet high
- No openings/gaps greater than 4-inches
- Chain link max opening of 1-3/4 inch
- All doors/gates/windows directly/continuously supervised by staff during hours of operation or locked

Multiunit Rental (aka Apartment) Complex & Homeowner/Property Owner Associations

Fence

Post-94:

- Minimum 48 inches high and no openings/gaps greater than 4-inches
- Horizontal and vertical members distance between the tops of horizontal members at least 45 inches, openings must be no more than 4-inches
- Horizontal and vertical members distance between the tops of horizontal members less than 45 inches, openings must be no more than 1-3/4 inches
- Chain link fence prohibited and decorative designs/cutouts may not contain any openings greater than 1-3/4 inches

Pre-94 same as above except that:

- Chain link openings no more than 2-1/4 inches (prohibited when fence replaced)
- Horizontal and vertical members distance between tops of horizontal members is at least 36 inches; openings no more than 4-inches

Gates

- Self-closing/self-latching
- Gate latch at least 60-inches above ground, *installed lower if*:
  - Latch on pool side and at least 3 inches below top of gate; and gate or enclosure no openings greater than 1/2 inch within 18 inches from latch
  - Gate latch may be located 42 inches or higher above ground if gate cannot be opened except by key, card, or combination on both sides of gate
  - ADA requires it (check with Fire Marshal's Office)

Doors Post-Sept 1993

Post-94:

- Door, sliding glass door, or French door may not open directly into pool/spa yard (unless deemed an Emergency Exit by the Fire Marshal's Office)

Post-Sept 1993:

- Keyed deadbolt/keyless deadbolt with throw of not less than 1-inch

Doors Pre-94

Pre-94: If door opens into pool/spa yard, must have: latch automatically engages when door is closed; spring-loaded door-hinge pin, automatic door closer, or similar device to close automatically; keyless bolting device 36-inches to 48-inches above floor

French Doors (one door must comply with latch above) and:

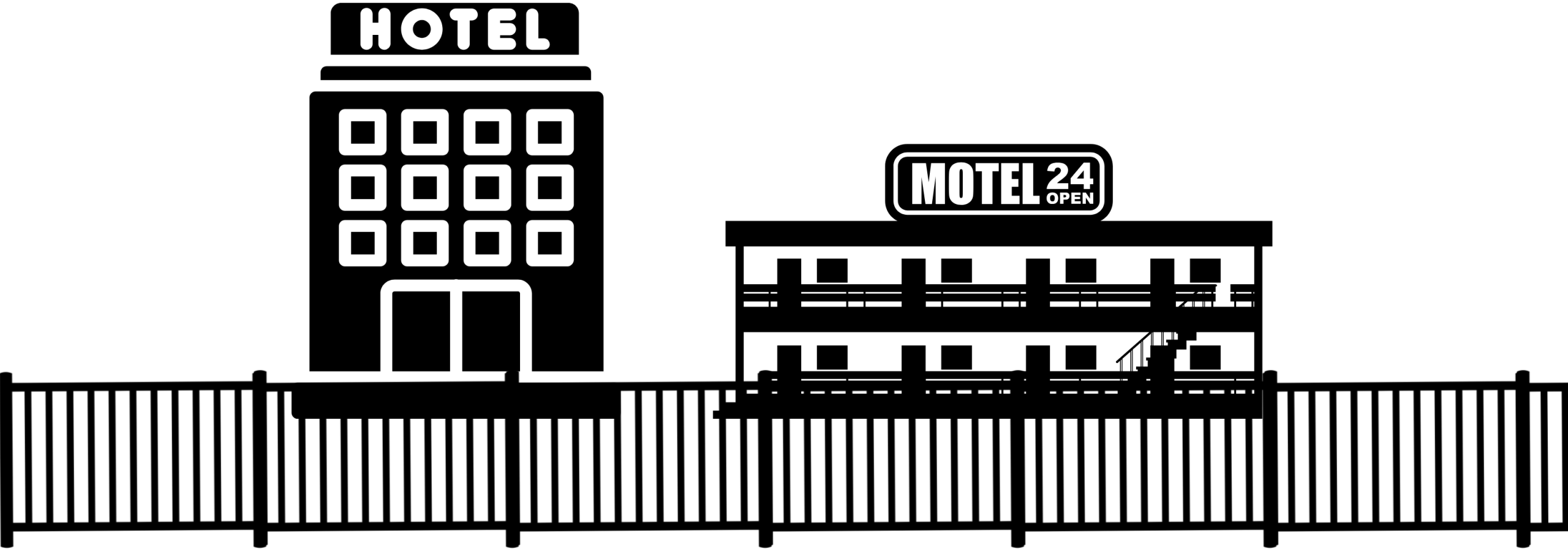
- Keyed deadbolt/keyless bolting device with insertion into doorjamb above door, and keyless bolting device with insertion into floor or threshold; or
- Bolt at least 3/4-in throw installed in door and operated from edge of door that has insertion into doorjamb above door and another bolt at least 3/4-in throw inside door and operated from edge of door with insertion into floor or threshold

Sliding Glass Door must have:

- Handle latch or security bar not more than 48-inches above floor
- Sliding door pin lock not more than 48-inches above floor

Pre-Sept 1993: Keyed dead bolt, keyless bolting device, sliding door pin lock, or sliding door security bar not more than 54-in from floor

Hotels/Motels & Other Class C



Fence

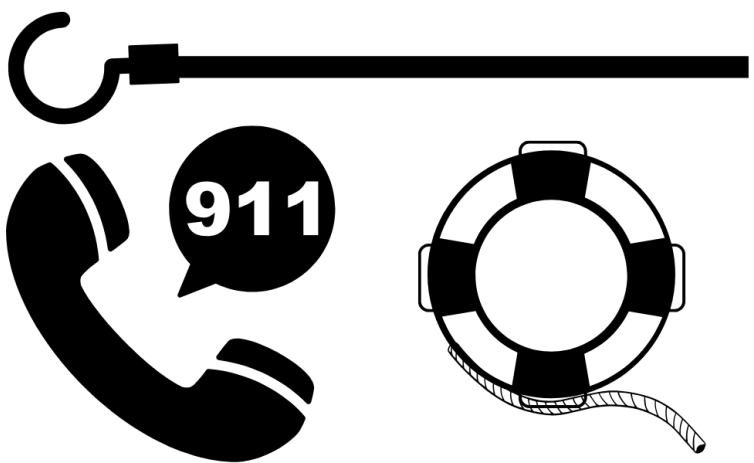
- Minimum 48 inches high
- No openings/gaps greater than 4-inches
- Distance between horizontal members of fence that is 48-inches in height shall be no less than 45 inches apart
- Post-99: chain link fencing prohibited for pools/spas
- Pre-99: replaced fencing prohibited from using chain link

Doors & Gates

- Self-closing/self-latching
- Hand-activated door/gate opening hardware at least 3 1/2 ft above deck/walkway; or
- Hand-activated door/gate opening hardware on pool side at least 3-inches below top of gate;
- No opening greater than 1/2 inch within 18-inches from latch; and
- Gate latch that may be located 42-inches or higher above ground if gate cannot be opened except by key, card, or combination on both sides of gate
- Must follow ADA laws (check with Fire Marshal's Office)

Safety & Life Guards

(All Pools need a First Aid Kit)



Drinking Water

At least one drinking water fountain or other source of drinking water, such as bottled water, shall be provided and available for pool and spa users at all pools and spas constructed on or after October 1, 1999 (and recommended for Pre-99), **and shall be available at all times the Aquatic Facility is open for use**

A faucet, spigot or sink does not satisfy the requirements for providing drinking water and NO GLASS

The drinking water is <u>not</u> required to be chilled!

The drinking water is not required to be located in the pool/spa yard
(when the drinking water is not located in the pool/spa yard, a sign is required)

Emergency Summoning Device

Aquatic Facilities shall have a minimum of one emergency summoning device that is readily accessible within 200 ft of water's edge and functions 24 hours a day while Aquatic Facility is open for use. Can be:

- Telephone capable of making calls to 911 dispatch or to an emergency service
- An emergency monitoring contact device: when activated, shall directly connect to a 24-hour monitoring service, or directly to 911 dispatch or to emergency medical services (a telephone or emergency monitoring device shall not be answered by an on-site office)
- Cell phone dedicated for use at Aquatic Facility, mounted in pool/spa yard for public use and labeled as the emergency phone, may be used if the cell phone is activated by a service provider and provided with permanent power supply

Ring Buoy with Throwing Rope

A **pool** shall have at least one ring buoy with a throwing rope attached that is visible/readily accessible in the pool yard for every 2000 sq. ft. of pool surface area up to 6000 sq. ft. If the pool has over 6000 sq. ft. of surface area an additional ring buoy with throw rope shall be provided for each additional 4000 sq. ft.:

Ring buoy:

- USCG-approved
- No more than 24-inches inside diameter

Rope:

- 1/4-inch to 3/8-inch thick
- At least 2/3 max width of pool

Reaching Pole with Body Hook

A **pool** shall have at least one reaching pole with a body hook attached that is visible/readily accessible in the pool yard for every 2000 sq. ft. of pool surface area up to 6000 sq. ft. If the pool has over 6000 sq. ft. of surface area an additional reaching pole with body hook shall be provided for each additional 4000 sq. ft.:

Reaching Pole:

- Light, strong
- Non-telescoping & Non-conductive
- At least 12 ft long

Body Hook:

- Or Shepherd's crook
- Blunted ends

Lifeguards

A minimum of two lifeguards shall be provided at:

- Class A pools during competitive events
- Class B pools whenever the Class B pool is open
- Class C pools operating as a Class B pool
- Any pool where a user enters the water from any height above the deck or wall
- Any wave or surf pool
- Any pool while being used for recreation of youth groups, including youth camps, visiting childcare groups, or visiting school groups

Additional requirements can be found in the next section of your book. See Table of Contents for which page Lifeguard Requirements are on

Signs, Signs, and More Signs

The next slides have tables with the required signs for all pools (Class A,B,C).

Signs that are illegible must be replaced prior to permitting with the correct requirements. All signs are required to be INSIDE the pool enclosure unless noted otherwise!

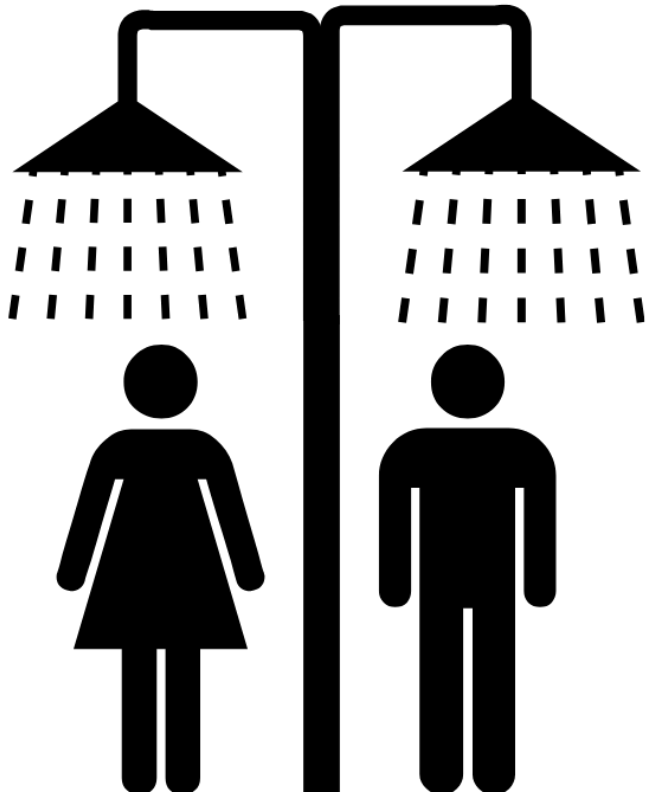
Pool Signs with Distinctive Border	Letter/Size
"WARNING-NO LIFEGUARD ON DUTY" (Where no lifeguard required or provided.)	4 inches
"NO DIVING" and International No Diving Symbol (Where no lifeguard required or provided.)	4 inches
Post-Jan 2023 & Pools already with switch: “EMERGENCY POOL SHUTOFF” and location of the switch if not clearly visible. (Border not required)	“Clearly identify”
Maximum User Load Limit	At least 2 inches
Hours of Operation	At least 1 inch
When Closed: “Pool Closed” or “Closed” on gates/entries	Not specified

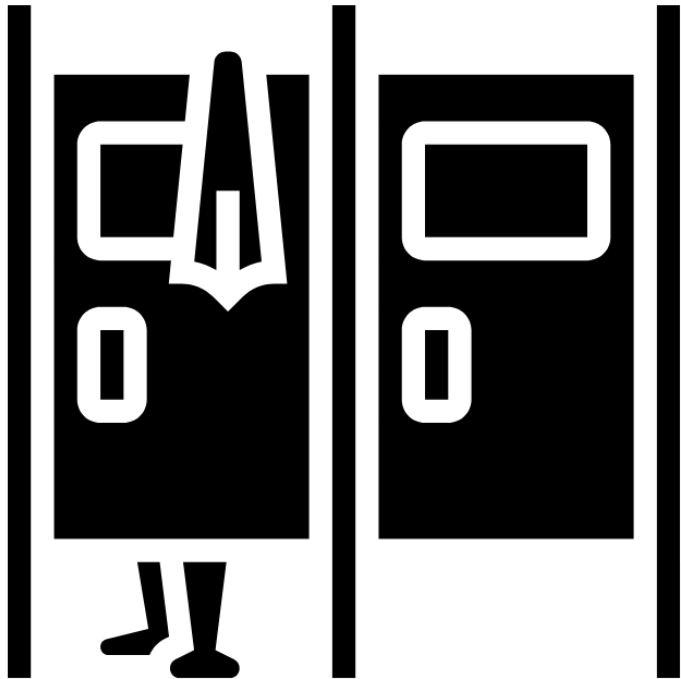
Pool Signs with Distinctive Border	Letter/Size
IN CASE OF EMERGENCY, DIAL 911	4 inches
Directions to and Location of Emergency Phone if Phone Not Visible in Pool Yard	At least 2 inches
Precise Location of the Pool on or with the Emergency Phone (address, directions, GPS location, or building number, as appropriate)	At least 1 inch
Clear operating instructions for emergency summoning device must be provided. (Border not required)	Not specified
Post-99: When the drinking water is not located in the pool yard, a sign that informs the users of the location of the drinking water is required. (Border not required)	At least 1 inch

Pool Signs with Distinctive Border	Letter/Size
PETS IN THE POOL ARE PROHIBITED	At least 2 inches
DO NOT SWIM IF YOU HAVE BEEN ILL WITH DIARRHEA WITHIN THE PAST 2 WEEKS	At least 2 inches
GLASS ITEMS NOT ALLOWED IN THE POOL YARD	At least 2 inches
PERSONS UNDER THE AGE OF 14 MUST NOT BE IN THE POOL WITHOUT ADULT SUPERVISION (Where no lifeguard required or provided.)	At least 2 inches
EXTENDED BREATH HOLDING ACTIVITIES ARE DANGEROUS AND PROHIBITED	At least 2 inches

Other Signs	Letter/Size
A warning sign against unauthorized entry must be posted on the entry door or gate to the pool and/or spa equipment room, building, or area	Not specified
All doors opening into chemical storage spaces shall be equipped with permanent signage with the following: a warning against unauthorized entry, statement of expected hazards, statement of location of the associated safety data sheets, product chemical hazard NFPA chart	Not specified
Ozone Rooms: “DANGER GASEOUS OXIDIZER – OZONE”	At least 4 inches
“DO NOT START THE SYSTEM AFTER MAINTENANCE WITHOUT FIRST PROPERLY REASSEMBLING THE FILTER AND SEPARATION TANK AND OPENING ALL AIR RELEASE VALVES” in a conspicuous location within the areas of air release	Not specified (previously 1 inch)

Toilet, Dressing, and Sanitary Facilities





Toilet Facilities
Class A, B, and Wherever Provided

Must have liquid or powder soap in metal or plastic dispensers, toilet paper on a holder, and (where provided) shatter-resistant mirrors

<u>Post-January 1, 2023 must provide:</u>

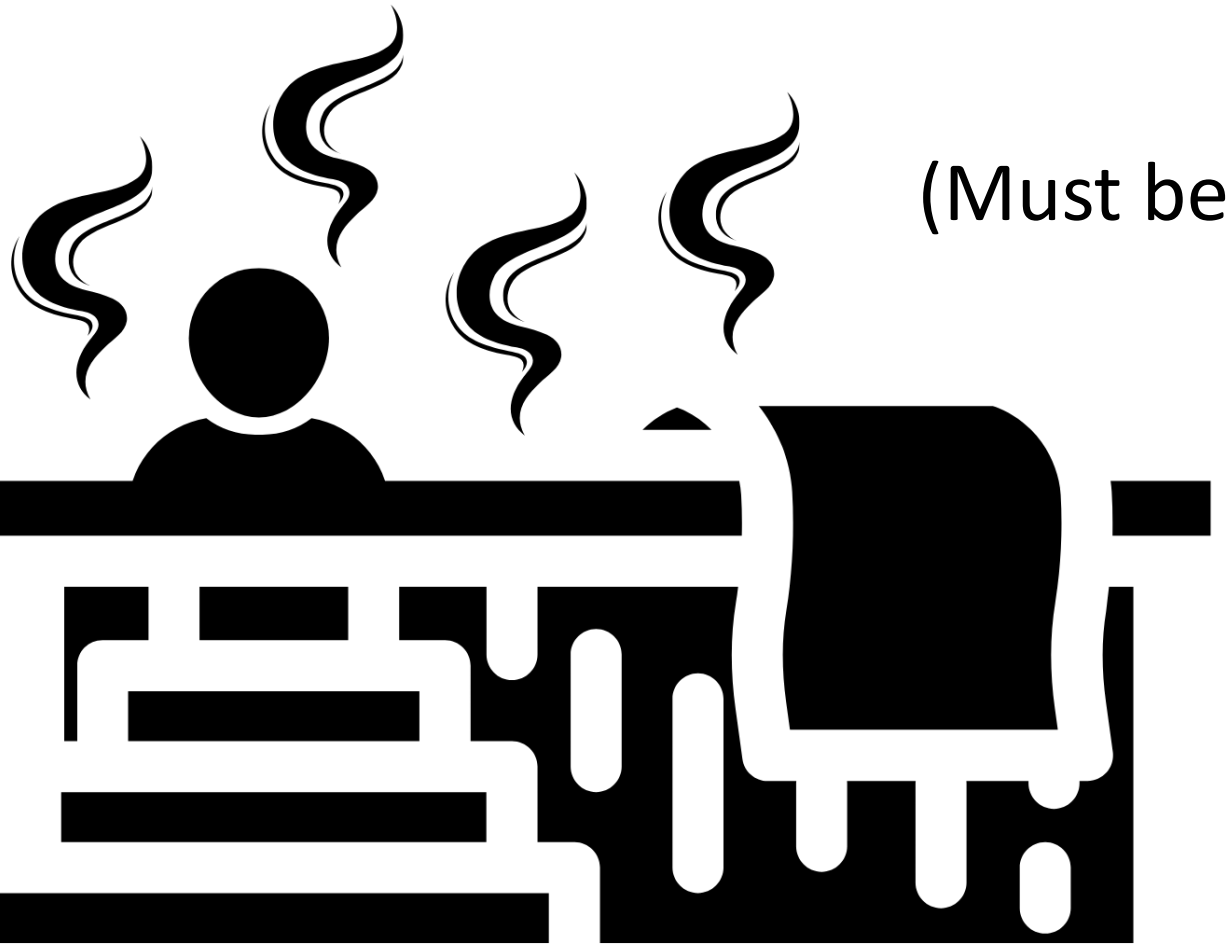
- Sanitary napkin receptacle in each stall for females
- Sanitary napkin dispenser in toilet facility for females
- Baby-changing tables in toilet facilities with 2 or more stalls (regardless of gender)

Dressing and Sanitary Facilities Class A, B, and Wherever Provided

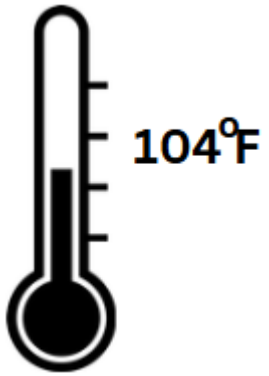
When mirrors are provided, they must be shatter-resistant mirrors

Post-January 1, 2023 must provide:

- At least one cleansing shower for each males and females per 7500 sq. ft. with 90°F-120°F water (controls prohibited to bathers), liquid or powder soap in metal or plastic dispensers, and sanitary napkin receptacle for females
- At least one rinsing shower (not required to be heated) on the deck of or at the entrance of each pool



Spa Specific



(Must be on a separate system from pool)

Spa Maximum User Capacity

Shallow (Less than 5 feet) or Wading Areas		
Maximum Number of Users in Spas		8 ft^2 per user
Example: Surface area of spa is 25 ft^2	25 ÷ 8 = 3.125 = <u>3 people</u>	(Surface Area ÷ 8)

Spa Required Turnover Rate

Any Year	Maximum Time
Spas	30 minutes

Spa Required Chemical Levels

Level	Minimum	Ideal	Maximum
Spa Chlorine	2.0 ppm	3.0 ppm	8.0 ppm
Spa Bromine	4.0 ppm	5.0 ppm	10.0 ppm
Combined Chlorine	None	None	0.4 ppm
Spa Calcium Hardness	100 ppm	150 – 400 ppm	800 ppm
pH, CYA (outdoor only), ORP, and Alkalinity	Same as pools	Same as pools	Same as pools

Spas must also be treated to eliminate algae

Spa Pumps & Emergency Shut-off Switch

Spa pumps and motors shall be labeled for use in spas

Emergency shut-off switch:

- Provided for circulation, jet system pumps, and air blowers with sign (see sign table)
- Shall be accessible to users, located within sight of the spa not less than 5 ft horizontally from the inside walls of the spa
- Post-January 1, 2023: provided with audible alarm at least 80 decibels, light, and sign (see sign table)

Spa Timer

Pre-January 1, 2023 Timer:

- Timer operates blower and booster pump
- Shuts off automatically after 15 minutes or manually when turned to the off position

Post-January 1, 2023 and Replaced Timers:

- Timer must be 10 minutes

(A Clock must also be provided that is visible to spa users)

Spa Temperature

A means shall be provided to indicate the water temperature in the spa.

Glass Thermometers are Prohibited

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The maximum water temperature of a spa shall not exceed 104^{o}F
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Spa Interior & Exterior

Depth Markers:

- Must have a minimum of 2 interior depth markers
- Must have a minimum of 2 deck depth markers

Deck No Diving Markers:

- "NO DIVING" and International No Diving Symbol are not required
- May be added if desired

Entries/Exits:

- A minimum of 1, slip-resistant, entry/exit is required

Spa Signs

The following slide has signs for spas!

Illegible signs must be replaced prior to permitting with the correct requirements. All signs are required to be INSIDE the spa enclosure unless noted otherwise!

Spa Specific Required Signs with Distinctive Border	Letter/Size
DO NOT USE THE SPA IF THE WATER TEMPERATURE IS ABOVE 104 DEGREES FAHRENHEIT	At least 1 inch
Post-Jan 2023 & Spas already with alarm: “ALARM INDICATES SPA PUMPS OFF. DO NOT USE SPA WHEN ALARM SOUNDS AND LIGHT IS ILLUMINATED UNTIL ADVISED OTHERWISE”	“Visible”
Additional signs may be required at a later time due to 2023 International Swimming Pool and Spa Code when the city updates local ordinance.	

Spa Signs with Distinctive Border	Letter/Size
"WARNING-NO LIFEGUARD ON DUTY" (Where no lifeguard required or provided.)	4 inches
"NO DIVING" and International No Diving Symbol	4 inches
EMERGENCY SPA SHUTOFF	At least 2 inches
Maximum User Load Limit	At least 2 inches
Hours of Operation	At least 1 inch
When Closed: “Spa Closed” or “Closed” on gates/entries	Not specified

Spa Signs with Distinctive Border	Letter/Size
IN CASE OF EMERGENCY, DIAL 911 (Recommended, not required)	4 inches
Directions to and Location of Emergency Phone if Phone Not Visible in Pool Yard	At least 2 inches
Precise Location of the Pool on or with the Emergency Phone (address, directions, GPS location, or building number, as appropriate)	At least 1 inch
Clear operating instructions for emergency summoning device must be provided. (Border not required)	Not specified
Post-99: When the drinking water is not located in the pool yard, a sign that informs the users of the location of the drinking water is required. (Border not required)	At least 1 inch

Spa Signs with Distinctive Border	Letter/Size
PETS IN THE SPA ARE PROHIBITED	At least 2 inches
DO NOT SWIM IF YOU HAVE BEEN ILL WITH DIARRHEA WITHIN THE PAST 2 WEEKS	At least 2 inches
GLASS ITEMS NOT ALLOWED IN THE SPA YARD	At least 2 inches
PERSONS UNDER THE AGE OF 14 MUST NOT BE IN THE SPA WITHOUT ADULT SUPERVISION (Where no lifeguard required or provided.)	At least 2 inches
EXTENDED BREATH HOLDING ACTIVITIES ARE DANGEROUS AND PROHIBITED (Recommended, not required)	At least 2 inches

Other Signs	Letter/Size
A warning sign against unauthorized entry must be posted on the entry door or gate to the pool and/or spa equipment room, building, or area	Not specified
All doors opening into chemical storage spaces shall be equipped with permanent signage with the following: a warning against unauthorized entry, statement of expected hazards, statement of location of the associated safety data sheets, product chemical hazard NFPA chart	Not specified
Ozone Rooms: “DANGER GASEOUS OXIDIZER – OZONE”	At least 4 inches
“DO NOT START THE SYSTEM AFTER MAINTENANCE WITHOUT FIRST PROPERLY REASSEMBLING THE FILTER AND SEPARATION TANK AND OPENING ALL AIR RELEASE VALVES” in a conspicuous location within the areas of air release	Not specified (previously 1 inch)

Wading Pool Specific

(Post-99 must be on a separate system from pools)

Wading Pools

Post-99:

- Definition- max water depth 24 inches
- Be physically set apart from shallow water areas by at least 15 ft (maintain clear visibility through the barrier)
- Be physically set apart from deep water areas by at least 35 ft (maintain clear visibility through the barrier)

Post-January 1, 2021:

- Definition- max water depth 18 inches
- Must not have submerged suction outlets. Skimmers or overflow gutters must accommodate 100% of the circulation system flow rate

Post-January 1, 2023:

- Physically separated from main pool (decking required to be 6 ft)

Wading Pool Maximum User Capacity

Shallow (Less than 5 feet) or Wading Areas	
Maximum Number of Users in Wade Pools and Wade Pools with Public Interactive Water Features Example: Surface area of wading pool is 100 ft^2 100 ÷ 8 = 12.5 = <u>12 people</u>	8 ft^2 per user (Surface Area ÷ 8)

Wading Pool Required Turnover Rates

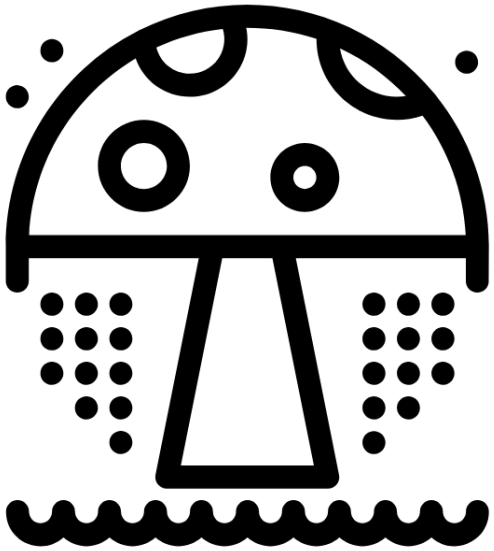
Pre-99 Wading Pools with or without Public interactive Water Features	Maximum Time
Wading Pools (gravity to main pool)	Same as pools
Wading Pools (stand-alone)	1 hour
Post-99/Post-21 Wading Pools with or without Public Interactive Water Features	**Maximum Time**
Wading Pools	1 hour

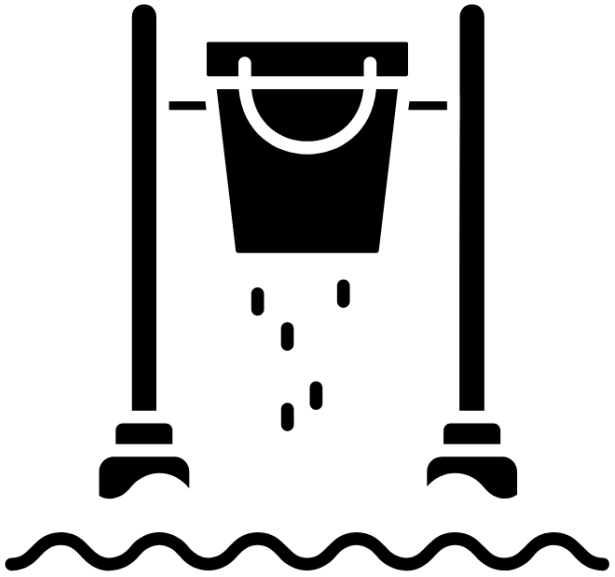
Wading Pool Suction Outlet Systems

A wading pool constructed or heavily renovated on or after January 1, 2021 SHALL NOT have fully submerged suction outlets. Skimmers or overflow gutters shall be installed and shall accommodate 100% of the circulation system flow rate!

******Wading Pools and Activity Pools are two different types of pools. Activity Pools are becoming increasingly popular in bigger cities******

Public Interactive Water Feature (PIWF) Specific





Public Interactive Water Features

Definition: includes water sprays, dancing water jets, waterfalls, dumping buckets, or shooting water cannons in various arrays for purpose of wetting persons playing in spray streams. Other examples: mushrooms, water curtains, ground sprays

Applies: rules apply to all PIWFs whether the PIWF shares or does not share a water supply, disinfection system, filtration system, circulation system, or any other treatment system that allows water to co-mingle with any other water feature or a pool

Does NOT Apply: a PIWF that is supplied entirely by drinking water that is not recirculated is not subject to: signs (other than contact number in the event of a problem requiring correction), record keeping, circulation and disinfection, and water quality such as chlorination, etc.

Post-January 1, 2023: direct suction outlets from PIWFs prohibited

PIWF Operation and Management

PIWFs shall be operated and maintained under supervision and direction of properly trained and certified operator who is responsible for sanitation and proper maintenance of PIWF, and who is responsible for maintaining all physical and mechanical equipment and records

Certified Pool Manager required and must have one of the following:

- NRPA, "Aquatic Facility Operator" (A.F.O.)
- NSPF, "Certified Pool Operator" (C.P.O.)
- ASPSA, "Licensed Aquatic Facility Technician" (L.A.F.T.)
- AquaTech Pool and Aquatic Facility Operator

PIWF Records

Records must be kept for 2 years & be available within 5 days:

- Chemical Log Book
- Routine and preventative maintenance schedule/activities
- Documentation of any *Cryptosporidium* testing if required
- Documentation of supplemental water treatment conducted

PIWF Stand-Alone Maximum Bather Load

Stand-Alone Public interactive Water Feature (not in a pool)	
Maximum Number of Users on PIWF Example: Surface area of PIWF is 300 ft^2 300 ÷ 15 = <u>20 people</u>	15 ft^2 per user (Surface Area ÷ 15)

PIWF Turnover Rates

Pre-May 1, 2010	Maximum Time
Public Interactive Water Feature	As designed
Public Interactive Water Feature in a Wading Pool (Unless Pre-99 Gravity Fed)	1 hour (As designed)
Post-May 1, 2010 and extensively remodeled	**Maximum Time**
Public Interactive Water Feature	1 hour

PIWF Required Chemical Levels

Level	Minimum	Ideal	Maximum
Chlorine	1.0 ppm	3.0 – 5.0 ppm	8.0 ppm
Bromine	2.5 ppm	5.5 – 7.5 ppm	12.0 ppm
Combined Chlorine (outdoors)	None	None	1.5 ppm
Combined Chlorine (indoors)	None	None	0.5 ppm
pH	7.0	7.4 – 7.6	7.8
Cyanuric Acid	None	20 ppm	50 ppm

PIWF Automatic Chemical Controls

Post-May 1, 2010 Requirements:

- Automatic disinfectant and pH feed equipment
- Capable of automatically adjusting chemical feed on demand
- Installed and operated in accordance to manufacturer's instructions
- Make-up water supply air gap/other acceptable cross-connection control
- Prevent siphoning from recirculation system to solution container and prevent siphoning of chemical into PIWF
- Failure-proof features so chemical cannot feed into PIWF, piping system, or water supply system if equipment or power fails, or if there is not adequate return flow to properly disperse chemical

PIWF Treatment Tank & Filtration Pump

Treatment Tank:

- Be designed to provide ready access for cleaning/inspections and capable of draining
- Have automatic water level controller
- Have any makeup water introduced into treatment tank through an air gap or by another method which will prevent back flow and back-siphonage
- Post-January 1, 2023: access hatch/lid locked or require tool

Filtration Pump Post-January 1, 2023: sized to turn over surge basin in 30 minutes or less

PIWF Supplemental Disinfectant

PIWFs shall be equipped with a supplemental water treatment system that will protect the public against infection by *Cryptosporidium* such as:

- UV light disinfection
- Ozone
- NSF/ANSI-50 product, combination of products, or process to control *Cryptosporidium*
- Weekly hyperchlorination following the Center for Disease Control's Recommendations for Aquatics Operators of Treated Venues "Hyperchlorination to Kill *Cryptosporidium*"
- Equivalent product, process, or system approved by the Texas Department of State Health Services

PIWF UV Light Treatment

- Installed after filter, but before chemical feeders
- NSF/ANSI-50 Standard AND Provide a 3-log kill of *Cryptosporidium*
- Provide validated dosage = to 40mJ/cm^2 or greater at end of lamp life
- Automatic audible alarm to warn of UV light disinfection unit malfunction or impending shutdown
- Automatic mechanism for shutting off power to UV light source whenever protective UV unit cover is removed
- Be installed in enclosure designed to protect the operator against electrical shock or excessive radiation and that provides protection from UV exposure

PIWF Ozone Treatment

If using Ozone as the Supplemental Treatment, then it must meet standards in EPA Guidance Manual for Alternative Disinfectants and Oxidants Guidance Manual, EPA Publication 815-R-99-014

AND

Have the required sign for Ozone Rooms: “DANGER GASEOUS OXIDIZER – OZONE” in 4-inch high letters

PIWF Pre-May 1, 2010 Alternative

Pre-May 1, 2010 Stand-alone PIWFs may have a system OR test water every 14 days for *Cryptosporidium*

Pre-May 1, 2010 Co-mingled PIWFs may have a system OR test water every 30 days for *Cryptosporidium*

Public interactive Water Feature (PIWF) Signs posted at the entrance of the PIWF	Letter/Size
"Non-Service Animals Prohibited"	At least 2 inches
"Changing Diapers Within 6 Feet Of The Water Feature is Prohibited"	At least 2 inches
"Use Of The Water Feature If Ill With A Contagious Disease is Prohibited"	At least 2 inches
"Do Not Drink Water From The Water Feature"	At least 2 inches
"Use Of The Water Feature When Ill With Diarrhea is Prohibited"	At least 2 inches
At PIWFs without an on-site owner or operator a sign shall be posted that provides a contact number to be used in the event of a malfunction, unsanitary condition, or any other non-emergency problem requiring correction at the PIWF.	At least 2 inches
Closed notice posted on the entrance when it is closed	Not specified

Aquatic Recreation Facility (Class B) Specific

Aquatic Recreation Maximum User Capacity

	Shallow or Wading Areas	Deep Area (not including Diving)	Diving Area per diving board	Deck Area
Vessel water surface area	8 ft^2 per user (Surface Area ÷ 8)	10 ft^2 per user (Surface Area ÷ 10)	300 ft^2 per user (Surface Area ÷ 300)	-
Deck area	-	-	-	15 ft^2 per user (Surface Area ÷ 15)

The occupant load shall be the combined total of the number of users based on the pool or spa water surface area and the deck surrounding the pool or spa. The deck area occupant load shall be based on the occupant load calculated where a deck is provided or based on an assumed 4-foot-wide deck surrounding the entire perimeter of the pool or spa, whichever is greater.

Aquatic Recreation Required Turnover Rates

Pre-21 Pools	**Maximum Time**
Specialty Pools	As designed
Post-21 Pools	**Maximum Time**
Wave Action Pool	1 hour
Activity Pool <24-inches depth	1 hour
Activity Pool ≥24-inches depth	2 hours
Catch Pool	1 hour
Leisure River	2 hours
Vortex Pool	1 hour

Aquatic Recreation Skimming Systems

Pool Type	Surface Skimming System
Wave Pool	Zero-depth trench located at static water level or other skimming system
Activity Pool	Auto skimmer, zero-depth trench or gutters
Catch Pool	Auto skimmer, zero-depth trench or perimeter device
Leisure River	Single or multiple skimmer devices for skimming flow
Vortex Pool	Skimmers prohibited in side area

Aquatic Recreation Entries & Exits

Pool Type	Entry & Exit Location
Wave Pool	Entry at beach end only; Exit beach end, sides or end wall
Activity Pool	Entry/Exit determined by pool designer
Catch Pool	Entry prohibited deck areas; Exit ladder/ step/ramp determined by pool designer
Leisure River	Entry/Exit determined by pool designer
Vortex Pool	Entry/Exit determined by pool designer

Aquatic Recreation Markings & Separation

Post-January 1, 2023:

- Pools having nonflush propulsion nozzles in the floor must be distinctively marked
- Activity Pools with depth greater than 4 ½ ft shall have distinctive floor marking at 4 ½ ft
- Rope and float line required for separation of activity areas

Aquatic Recreation Safety Float Line

Required for Class A and Class B not being used for competitive events:

- Rope and float line between 1 and 2 ft on shallow water side of 5 ft water depth
- Floats: spaced at max 7 ft intervals and secured so they will not slide or bunch up
- The stretched rope and float line shall be of sufficient size and strength to offer a good handhold and support loads normally imposed by users
- Rope and float lines shall be securely fastened to wall or deck anchors made of corrosion-resisting materials and of type that is recessed or removable and shall have no projection that will constitute a hazard when line is removed

Specialty Slides & Catch Pools

Slide flumes constructed must be easily cleanable, have proper drainage in all valleys and dips, and have safety measures that ensure a rider cannot fall or be ejected from the flume.

Additional slide rules:

- Texas Health and Safety Code Title 13 Sports, Amusements, and Entertainment
- Federal Regulation Part 1207 – Safety Standard for Swimming Pool Slides

Wave Pools

- Must be fitted with a rope and float line located to restrict access to the caisson wall if required by the equipment manufacturer. (Safety rope and float lines at the shallow to deep water transition do not apply)
- Post Jan-2021: must provide a minimum of two emergency shutoff switches readily accessible to lifeguards, one on each side of wave pool, to disable wave action
- Caisson barriers required (unless using forced air to generate waves and not recommended by manufacturer) and must have no openings that would allow passage of a 4-inch sphere

Leisure Rivers

Post-January 1, 2023:

- Obstructions such as landscaping, walls, or bridges are allowed provided they do not impact lifeguarding, sight lines, or rescue operations
- Depth markers at leisure rivers are required on the sidewalls on both sides of all entry and exits, but if the depth is consistent, they are not required in the landscape, where there is no deck, or on the sidewalls in the main channel of the leisure river

Surf Pools

- Must be fitted with a rope and float line located to restrict access to the caisson wall if required by the equipment manufacturer. (Safety rope and float lines at the shallow to deep water transition do not apply)
- Post Jan-2021: must provide a minimum of two emergency shutoff switches readily accessible to lifeguards, one on each side of wave pool, to disable wave action
- Additional Rules Found at §265.195(e) Surf Pools https://www.dshs.texas.gov/sites/default/files/poolspa/pdf/25%20TAC%20Chapter%20265%20Subchapter%20L.pdf

Moveable Floor Pool/Spa

Post-January 1, 2021:

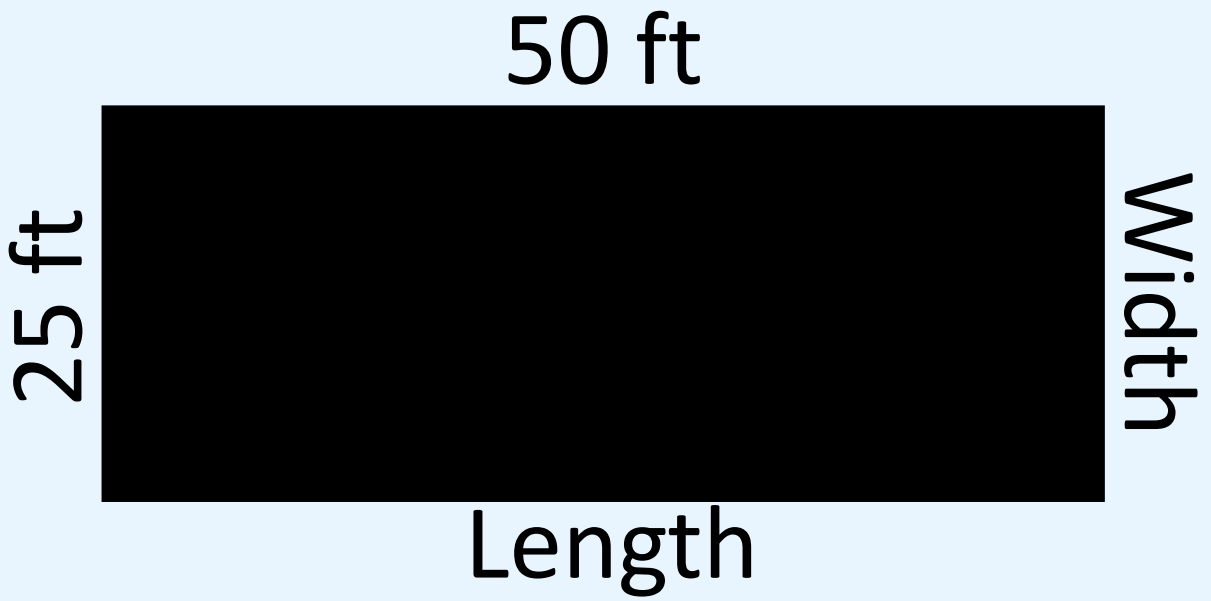
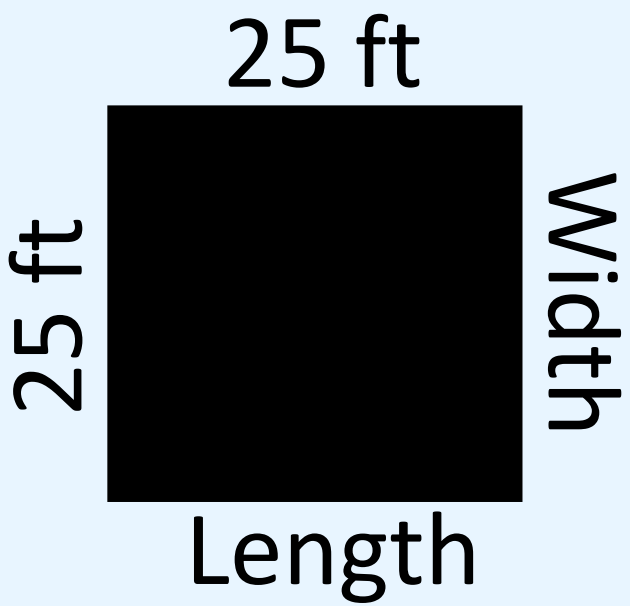
- The use of starting platforms in the area of a movable floor is prohibited when the water depth is shallower than 5 ft
- Use of the moveable floor portion of the pool shall not be open to users when the floor is being raised or lowered
- See sign table for signs

Aquatic Recreation Facilities Signs in Addition to Pool Signs
Placement and letter size: Not mounted on fences or gates of guest walkways/staircases. Squarely face approaching traffic with center line at least 66 inches above walking surface with clear and bold font such as Arial 1 inch for 10 feet of intended viewing distance, but at least 1 inch
Provide: pertinent information of the activity being performed or to be performed, details about the activity, short and concise, direct without humor or embellishments
General information Signs: posted facility-wide (not attraction specific)
Directional Signs: identify location of services and attractions in the park with directional arrows posted at various crossroads
Rules Signs: inform guests of qualifications (weight/height, proper attire, etc.) of the specific ride/attraction posted at the point where the guest make the initial commitment to participate on the ride

Aquatic Recreation Facilities Signs in Addition to Pool Signs
Instructional: instructions for use of ride (posture, prohibited activity, user exit requirements, etc.) posted along queue approaching ride dispatch area
Shallow water warnings
Cold water warning sign posted at point of entry to pool or at attraction using such water where water temperature could fall below 70°F
Varied Depth Pools: must be posted to inform user that pool has varied depth and refer to sign showing current depth (the posted water depth must be water level to floor of pool measured vertically 3 ft from wall of pool)
At least 2-inches letter height: An island not designed or intended for walking on by pool users must have signs stating "No Entry"

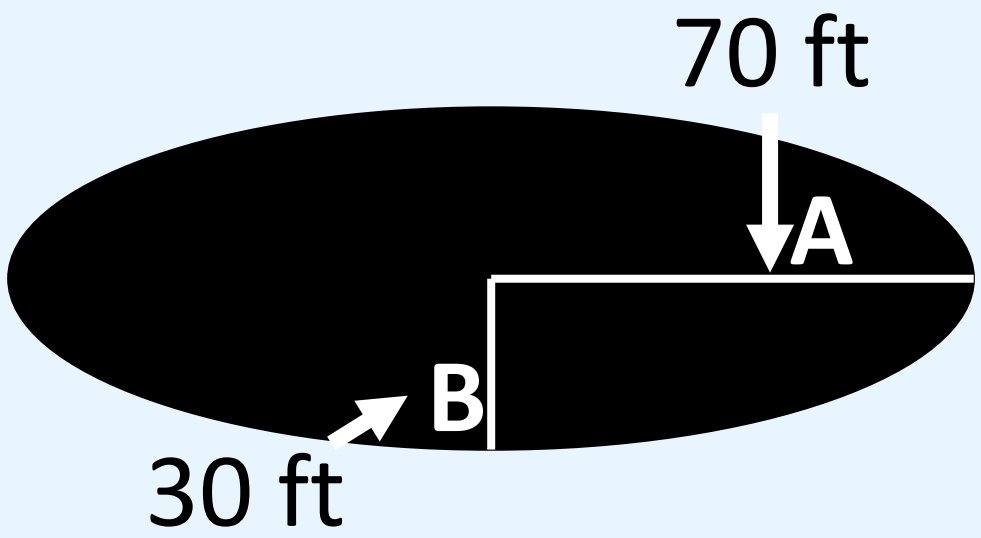
Math Section

Calculating Surface Area (SA)

Rectangle	Square
	
Surface Area = Length x Width = 50 x 25 SA = 1,250 ft^2	Surface Area = Length x Width = 25 x 25 SA = 625 ft^2

Calculating Surface Area (SA)

Oval

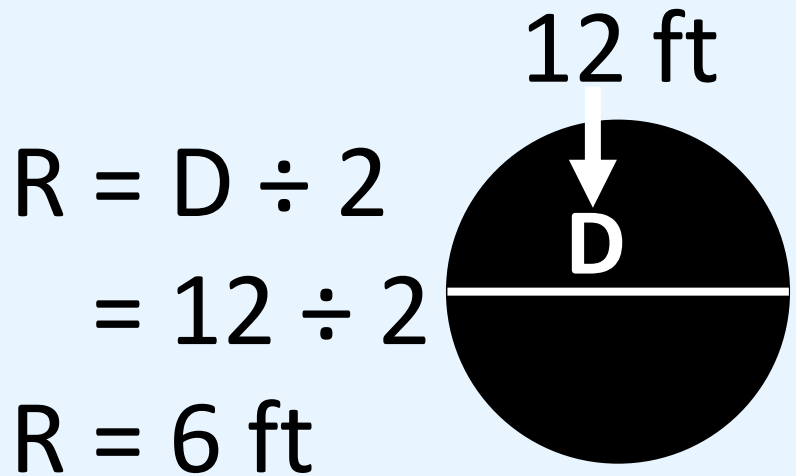


Surface Area = A x B x 3.14

= 70 x 30 x 3.14

SA = 6,594 ft^2

Circle



R = D ÷ 2

= 12 ÷ 2

R = 6 ft

Surface Area = R x R x 3.14

= 6 x 6 x 3.14

SA = 113.04 ft^2

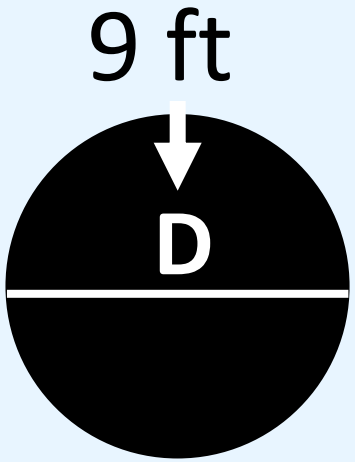
Calculating Surface Area (SA)

Multi-Depth Circle

$R = D \div 2$

$= 9 \div 2$

$R = 4.5$ ft



The surface area formula is the same as the surface area formula for a circle

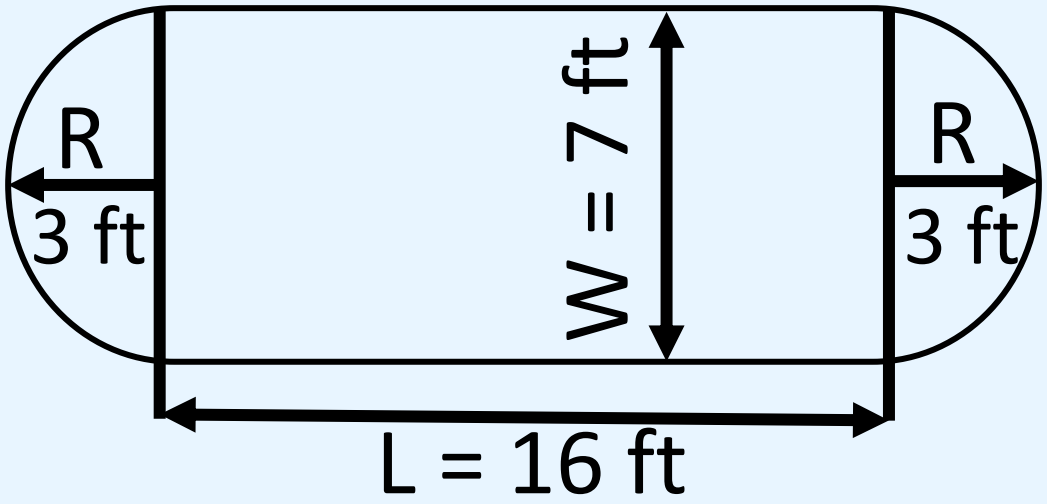
Surface Area Top = R x R x 3.14

= 4.5 x 4.5 x 3.14

SA Top = 63.59 ft^2

Calculating Surface Area (SA)

Oblong



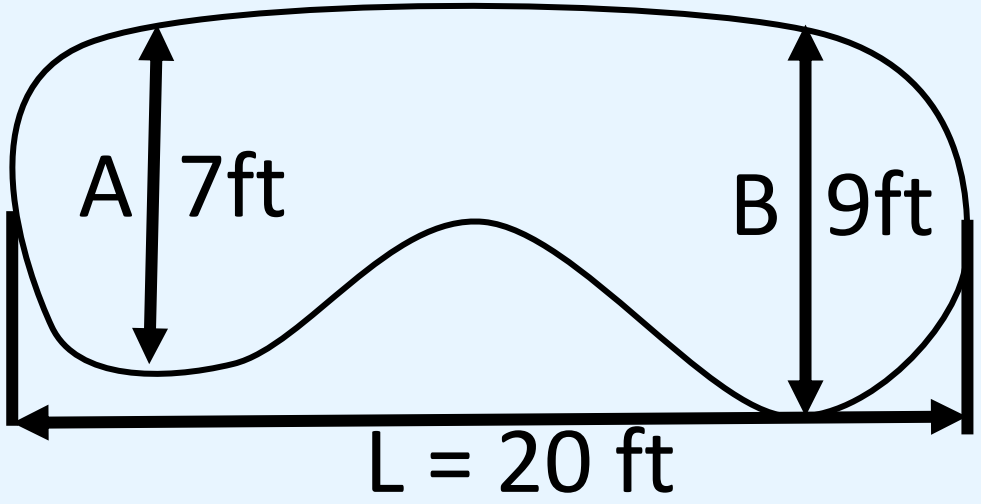
Surface Area = R x R x 3.14 + (L x W)

= 3 x 3 x 3.14 + (16 x 7)

= 28.26 + (112)

SA = 140.26 ft^2

Kidney



Surface Area = (A + B) x L x .45

= (7 + 9) x 20 x .45

= (16) x 9

SA = 144 ft^2

Maximum User Capacity/Bather Load

You have a pool with a constant depth of 4 feet and a surface area of 1,144 ft^2. You have a minimum deck. What is your maximum bather load?

Shallow (Less than 5 feet; not including Wading Pools)	
Pools with Minimum Deck Area (4ft wide or less):	15 ft^2 per user (Surface Area ÷ 15)

Bather Load = Surface Area ÷ Square ft per user from chart

= 1,144 ÷ 15

Max Bather Load = 76 people

Maximum User Capacity/Bather Load

You have a pool with a shallow end of 3 ft and a deep end of 8 ft. The surface area of the shallow end is 200 ft^2. The surface area of the deep end is 400 ft^2. You have a minimum deck. What is your max bather load?

Shallow (Less than 5 feet; not including Wading Pools)	
Pools with Minimum Deck Area (4ft wide or less):	15 ft^2 per user (Surface Area ÷ 15)

Bather Load 1 = Surface Area Shallow ÷ Sq. ft. per user from chart

= 200 ÷ 15

BL 1 = 13 people

Continued on Next Slide!

Maximum User Capacity/Bather Load

You have a pool with a shallow end of 3 ft and a deep end of 8 ft. The surface area of the shallow end is 200 ft^2. The surface area of the deep end is 400 ft^2. You have a minimum deck. What is your max bather load?

Deep Area (Not Including the Diving Area)	
Pools with Minimum Deck Area (4ft wide or less):	20 ft^2 per user (Surface Area ÷ 20)

Bather Load 2 = Surface Area Deep ÷ Sq. ft. per user from chart

= 400 ÷ 20

BL 2 = 20 people

Continued on Next Slide!

Maximum User Capacity/Bather Load

You have a pool with a shallow end of 3 ft and a deep end of 8 ft. The surface area of the shallow end is 200 ft^2. The surface area of the deep end is 400 ft^2. You have a minimum deck. What is your max bather load?

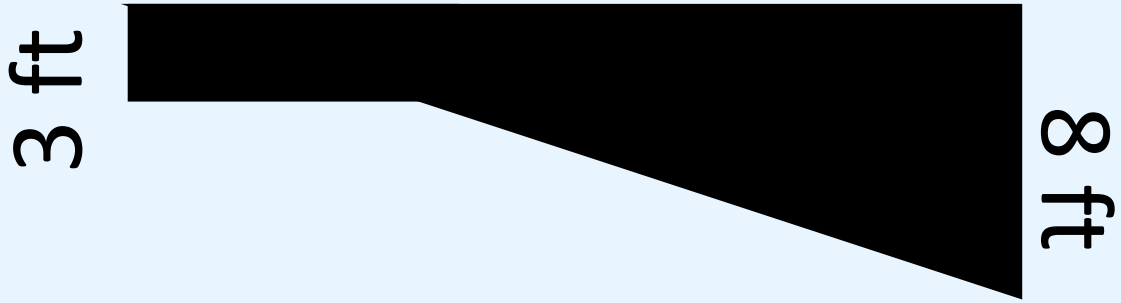
Total Max Bather Load = BL 1 + BL 2

= 13 + 20

Total Max Bather Load = 33 people

Calculating Gallons

Rectangle



Avg Depth = (shallow + deep) ÷ 2

= (3 + 8) ÷ 2

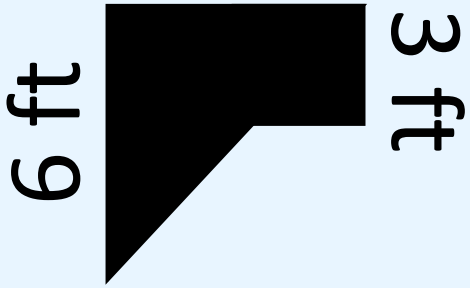
Avg Depth = 5.5

Gallons = SA x Avg Depth x 7.5

= 1,250 x 5.5 x 7.5

Gallons = 51,562.5

Square



Avg Depth = (shallow + deep) ÷ 2

= (6 + 3) ÷ 2

Avg Depth = 4.5

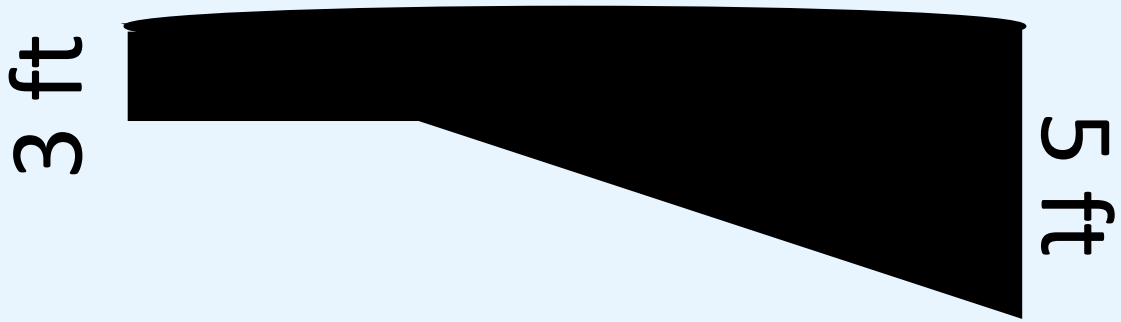
Gallons = SA x Avg Depth x 7.5

= 625 x 4.5 x 7.5

Gallons = 21,093.75

Calculating Gallons

Oval



Avg Depth = (shallow + deep) ÷ 2

= (3 + 5) ÷ 2

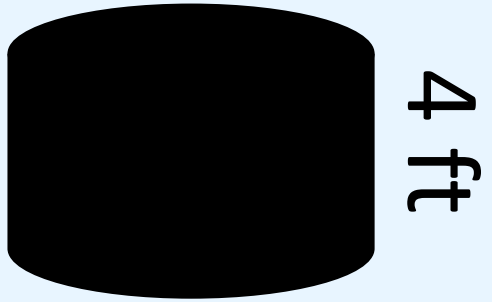
Avg Depth = 4

Gallons = SA x Avg Depth x 7.5

= 6,594 x 4 x 7.5

Gallons = 197,820

Circle



Avg Depth = ~~(shallow + deep) ÷ 2~~

Avg Depth = 4 ft

Gallons = SA x Avg Depth x 7.5

= 113.04 x 4 x 7.5

Gallons = 3,391.2

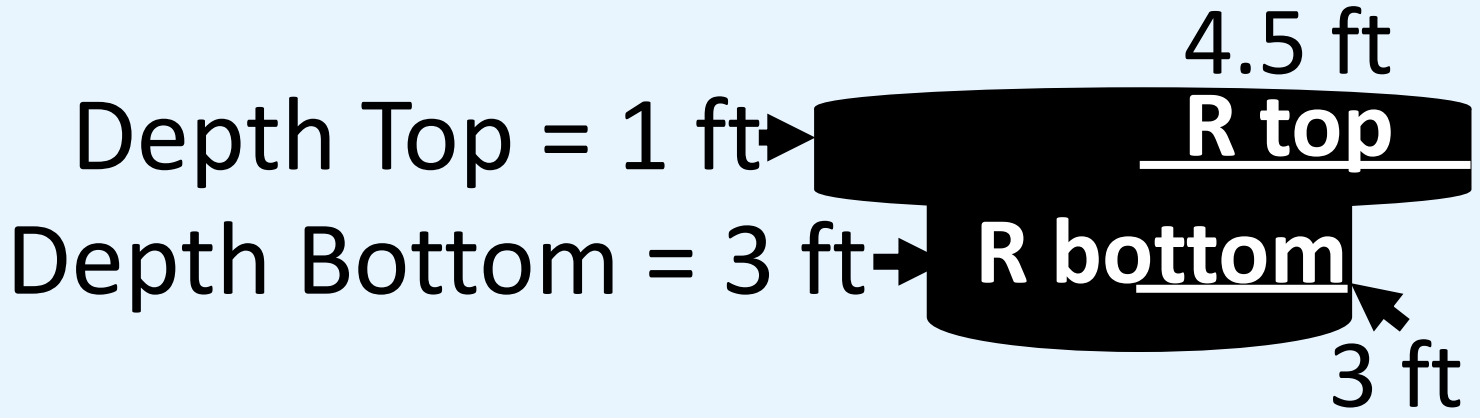
Calculating Gallons

Multi-Depth Circle

SA Top = R x R x 3.14

= 4.5 x 4.5 x 3.14

SA Top = 63.59 ft^2



Gallons Top = SA Top x Depth 1 x 7.5

= 63.59 x 1 x 7.5

GTop = 476.93

Now we have to find the gallons in the bottom!

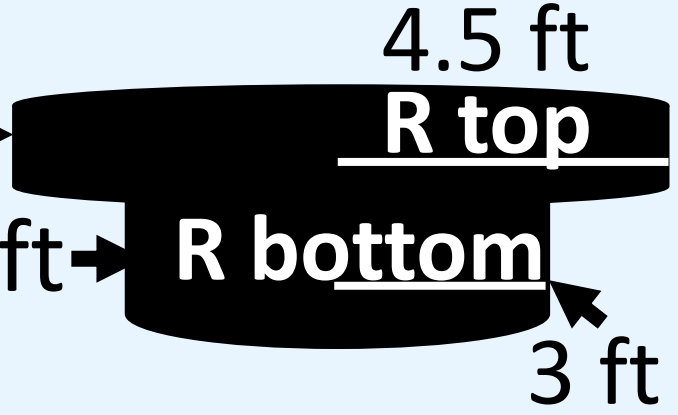
Calculating Gallons

Multi-Depth Circle

SA Bottom = R x R x 3.14

= 3 x 3 x 3.14

SA Bottom = 28.26 ft^2



Gallons Bottom = SA Bottom x Depth 2 x 7.5

= 28.26 x 3 x 7.5

GBottom = 635.85

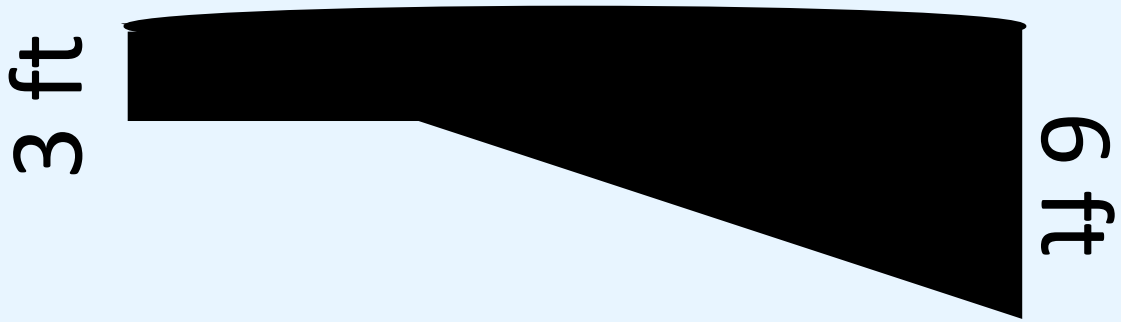
Total Gallons = Gtop + Gbottom

= 476.93 + 635.85

Total Gallons = 1,112.78 or 1,113

Calculating Gallons

Oblong



Avg Depth = (shallow + deep) ÷ 2

= (3 + 6) ÷ 2

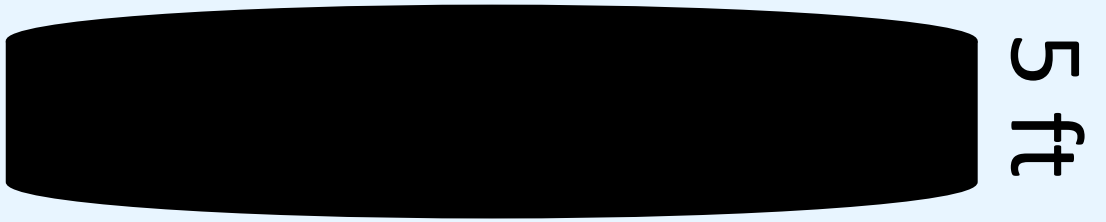
Avg Depth = 4.5

Gallons = SA x Avg Depth x 7.5

= 140.26 x 4.5 x 7.5

Gallons = 4,733.78

Kidney



Avg Depth = ~~(shallow + deep) ÷ 2~~

Avg Depth = 5 ft

Gallons = SA x Avg Depth x 7.5

= 144 x 5 x 7.5

Gallons = 5,400

Turnover Rate

You have a Pre-99 pool with 25,000 gallons. Your flow meter reads 65 GPM. What is your turnover rate and is it adequate?

Turnover Rate = Gallons ÷ Flow Rate (GPM) ÷ 60

= 25,000 ÷ 65 ÷ 60

Turnover Rate = 6.4 hours and it is adequate!

Pre-99 Pools require no more than 8 hours.

Turnover Rate

You have a Post-99 pool with 19,000 gallons. Your flow meter reads 40 GPM. What is your turnover rate and is it adequate?

Turnover Rate = Gallons ÷ Flow Rate (GPM) ÷ 60

= 19,000 ÷ 40 ÷ 60

Turnover Rate = 7.9 hours and it is <u>not</u> adequate!

Post-99 Pools require no more than 6 hours.

Main Drain Cover Calculation

Filter MUST be clean & skimmers turned off prior to calculating

For Pumps located above water line:

TDH Pump Vacuum Gauge (Vacuum Side) = Hg x 1.13

TDH Pump Pressure Gauge (Discharge Side) = psi x 2.31

Total TDH = TDH Vacuum + TDH Pressure

The Total TDH is then taken to the Pump's Performance Curve provided by the manufacturer to convert to the flow rate (GPM) through the pump (go horizontally until you hit the max curve, then go down vertically). This flow rate must be less than your main drain cover rating or you will need new drain covers!

Main Drain Cover Calculation

Filter MUST be clean & skimmers turned off prior to calculating

Your pump's vacuum gauge reads 6 Hg and the pump's pressure gauge reads 21 psi. What is the Total TDH?

TDH Pump = Hg x 1.13	TDH Pump = psi x 2.31
Vacuum Gauge = 6 x 1.13	Pressure Gauge = 21 x 2.31
(Vacuum Side) = 6.78	(Discharge Side) = 48.51

Total TDH = TDH Vacuum Side + TDH Pressure Side

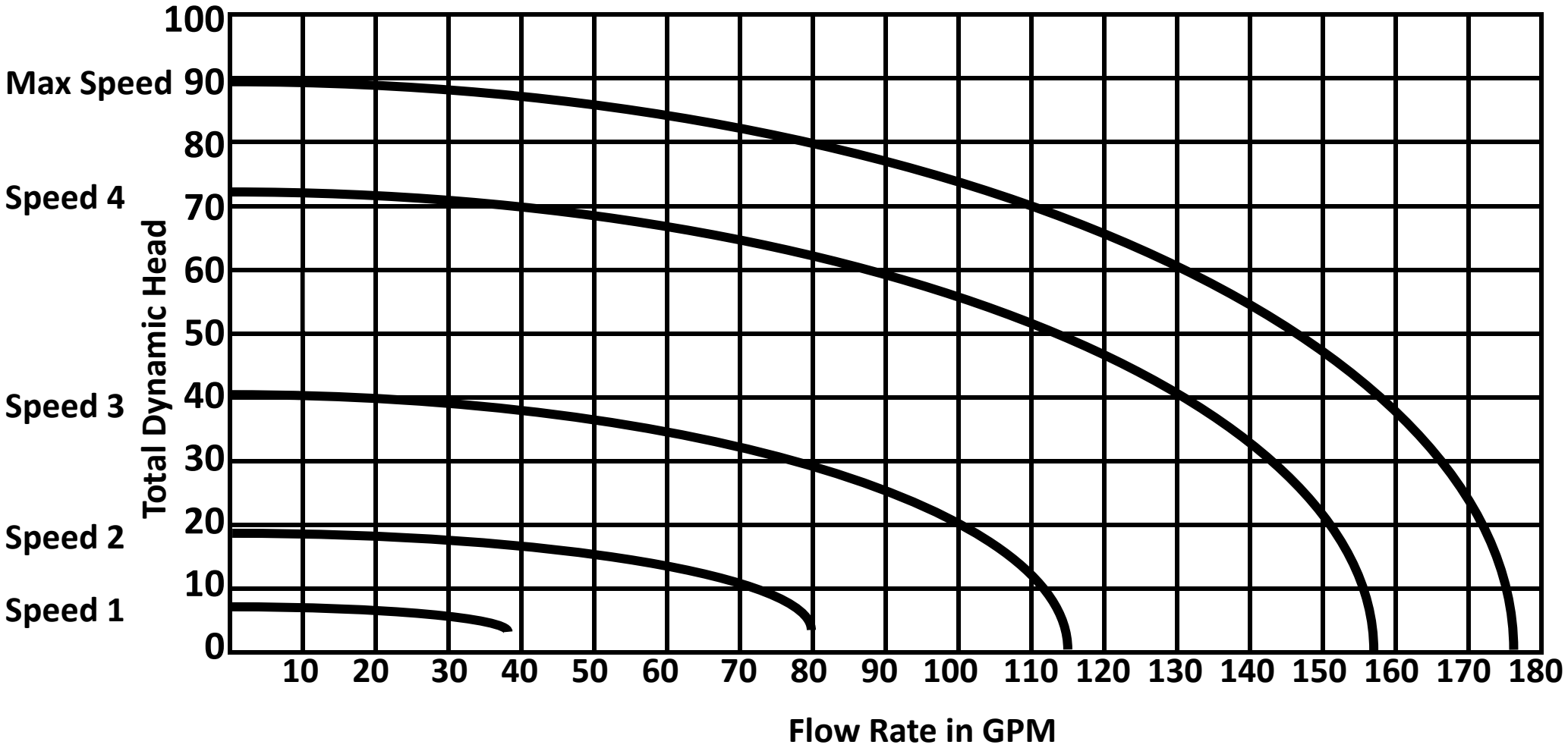
= 6.78 + 48.51

Total TDH = 55.29 or 55

Take the Total TDH and use the example Pump Performance Curve on the next slide to find the Pump's Flow rate.

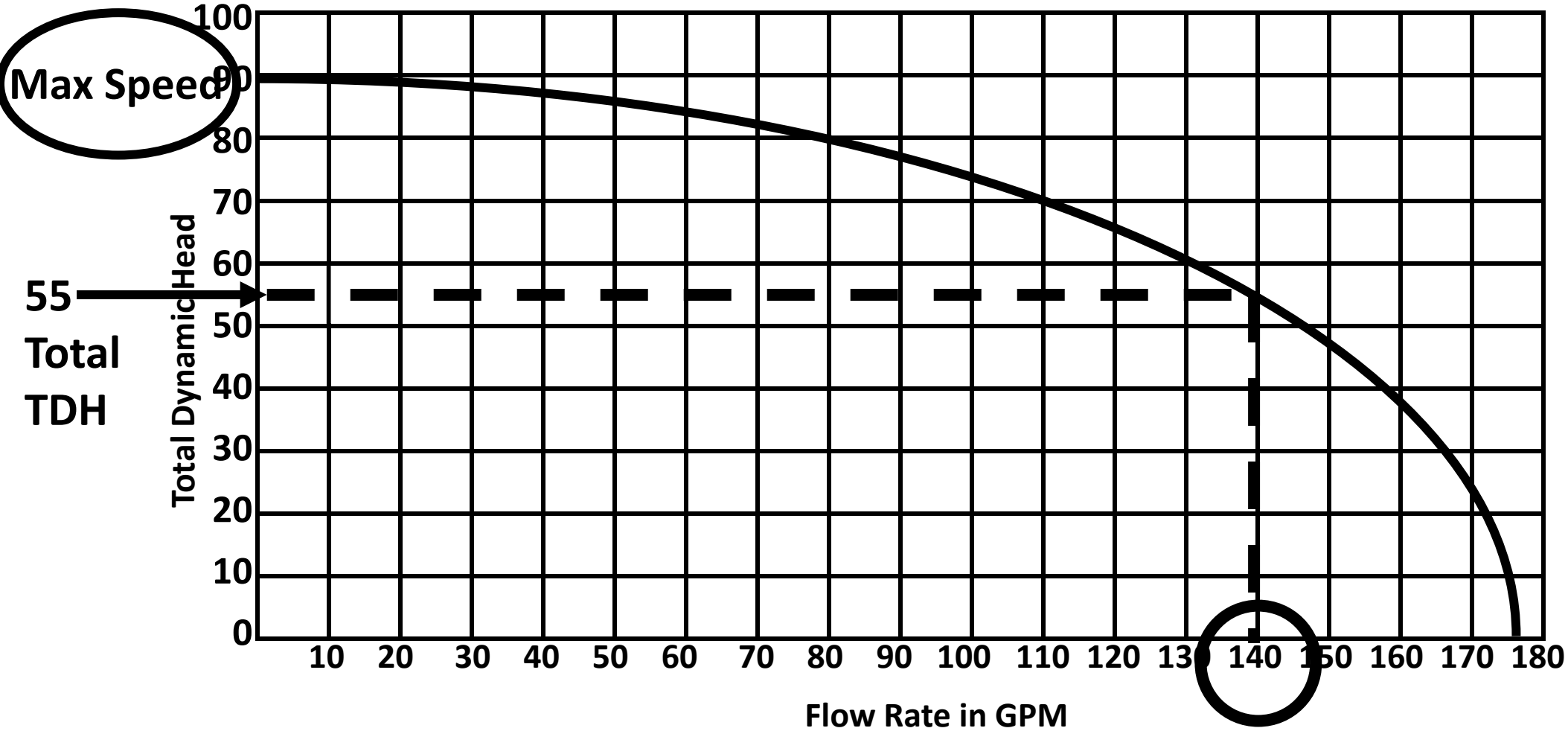
Main Drain Cover Calculation

Example of a Pump Performance Curve



Main Drain Cover Calculation

Example of a Pump Performance Curve



140 GPM through the pump

Main Drain Covers MUST be rated for over 140 GPM