

# Carson City Health Department

900 East Long Street

Carson City, Nevada 89706 (775) 887-2190

## APPLICATION FOR PERMIT TO CONSTRUCT PUBLIC BATHING PLACE

**DRAWINGS REQUIRED:** 1] Plot plan showing layout of pool enclosure, equipment room, piping, fresh water line, waste water lines, streets, and structures on adjoining property. 2] Elevations showing section through pool, equipment room and pool enclosure.

Date: \_\_\_\_\_

Owner: \_\_\_\_\_ Pool Address: \_\_\_\_\_

Contractor: \_\_\_\_\_ Address: \_\_\_\_\_

This application is for: [ ] New Construction [ ] Modification [ ] Additions

Source of pool water supply: \_\_\_\_\_ Drinking water supply: \_\_\_\_\_

Pool will be: [ ] Re-circulating [ ] Flow-through [ ] Fill-draw

Size of Pool: Length: \_\_\_\_\_ feet. Width: \_\_\_\_\_ feet. Depth: Min. \_\_\_\_\_ feet Max. \_\_\_\_\_ feet

Water surface area: \_\_\_\_\_ square feet Capacity: \_\_\_\_\_ gallons

Pool to serve \_\_\_\_\_ people or \_\_\_\_\_ units. Supervised by [ ] Lifeguard [ ] Owner

Safety equipment: # \_\_\_\_\_ of \_\_\_\_\_ inch ring buoys # \_\_\_\_\_ body hooks \_\_\_\_\_ inch diameter lifeline (floats at 5' intervals)

### **CONSTRUCTION**

[ ] Reinforced Concrete [ ] Gunit [ ] Steel [ ] Other \_\_\_\_\_

Scum gutters on [ ] 4 sides [ ] 2 sides [ ] Surface skimmers [ ] Other \_\_\_\_\_

Number of recess steps \_\_\_\_\_ or stairway \_\_\_\_\_ fitted with handrails

Number of ladders at deep end \_\_\_\_\_ Number of ladders on sides of deep end \_\_\_\_\_

Walkways made of \_\_\_\_\_ material with width of \_\_\_\_\_ feet and a slope of \_\_\_\_\_ inch per foot

Walkways will drain to \_\_\_\_\_

Pool enclosed from it's surroundings: [ ] rope [ ] chain [ ] hedge [ ] low fence [ ] high fence [ ] wall.

If fence or wall, it will be made of what material? \_\_\_\_\_

What provisions have been made for spectators? \_\_\_\_\_

How will spectators be kept from bathing area? \_\_\_\_\_

Will there be a lounging or sunbathing area within the pool enclosure? [ ] Yes [ ] No

In relation to the pool, where will the lounging area be? \_\_\_\_\_

Will dressing rooms and toilet facilities be provided? [ ] Yes [ ] No

Describe the method of venting and heating these rooms. \_\_\_\_\_

### **EQUIPMENT**

Pool heater type: \_\_\_\_\_ rated BTU \_\_\_\_\_ Manufacturer \_\_\_\_\_

Underwater lamp type: \_\_\_\_\_ # of units \_\_\_\_\_ watts \_\_\_\_\_ Manufacturer \_\_\_\_\_

Spring board length: \_\_\_\_\_ feet # of units \_\_\_\_\_ Manufacturer \_\_\_\_\_

# of units \_\_\_\_\_ Automatic Surface Skimmer # of units \_\_\_\_\_ Leaf Skimmer and handle

# of units \_\_\_\_\_ Vacuum Cleaner and accessories # of units \_\_\_\_\_ Wall Brush

# of filter units \_\_\_\_\_ Type: \_\_\_\_\_ Size: \_\_\_\_\_ Area: \_\_\_\_\_ sq. feet Capacity: \_\_\_\_\_ gpm

Backwash rate: \_\_\_\_\_ gpm Manufacturer: \_\_\_\_\_

Chlorinator feed type: \_\_\_\_\_

Daily capacity: \_\_\_\_\_ lbs

Model #: \_\_\_\_\_ Manufacturer: \_\_\_\_\_

<b><u>PIPING:</u></b>	<b><u>DIAMETER</u></b>	<b><u>LENGTH</u></b>	<b><u>MATERIAL</u></b>
Fresh Water	_____	_____	_____
Main Suction	_____	_____	_____
Skimmer Suction	_____	_____	_____
Inlet Return # _____	_____	_____	_____
Vacuum Line	_____	_____	_____
Backwash Discharge	_____	_____	_____
Backwash Sump to Sewer	_____	_____	_____
Backwash Sight gauge # of units: _____			Loss of Head Gauge # of units: _____

### **POOL CONSTRUCTION**

The following items (as required by NAC on Bathing Places/Spas) at the \_\_\_\_\_ pool, located at \_\_\_\_\_ will be provided by the owner, contractors, sub-contractors, as signed below.

\_\_\_\_\_ Deck (min. 4' wide, slope  $\frac{1}{4}$ " per foot)

\_\_\_\_\_ Deck Drains

\_\_\_\_\_ Fence (min. 4' height)

\_\_\_\_\_ Hose Bibbs

\_\_\_\_\_ Test Kits (for pH, Chlorine residual, total alkalinity and cyanuric acid, if used)

\_\_\_\_\_ Sand Trap

\_\_\_\_\_ First Aid Kit

\_\_\_\_\_ Blankets (2 or more)

\_\_\_\_\_ Lifeguard (reference NAC 444.270, Public Bathing Places)

\_\_\_\_\_ Protective enclosure for equipment (which complies with all the requirements of ventilation, drainage, access opening, equipment clearance storage space, etc. as listed in NAC 444.188 and NAC 444.190, Public Bathing Places)

\_\_\_\_\_ Pool located where it can be seen by persons employed at the facility. (if not, attendant must be present at pool side).

\_\_\_\_\_ Other items \_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_

Title \_\_\_\_\_

**INFORMATION REQUIRED FOR SWIMMING POOL/SPA PLAN REVIEW**

1. Pool surface area \_\_\_\_\_ sq ft
2. Pool volume \_\_\_\_\_ gallons Pool perimeter \_\_\_\_\_ feet
3. Pump performance curve
4. Pump capacity:      Filtration cycle \_\_\_\_\_ gpm      \_\_\_\_\_ tdh  
                            Backwash cycle \_\_\_\_\_ gpm      \_\_\_\_\_ tdh
5. Manufacturer's rated filter losses during:      Filtration cycle \_\_\_\_\_ psi or      \_\_\_\_\_ feet  
                            Backwash cycle \_\_\_\_\_ psi or      \_\_\_\_\_ feet
6. Vertical distance from center line of pump to water level in pool \_\_\_\_\_ feet.
7. Vertical distance from center line of pump to level of backwash discharge piping \_\_\_\_\_ feet.
8. Plot plan layout of pool enclosure, equipment room, piping, fresh water line, waste water line, street and structures on adjoining property.
9. Elevations showing section through pool (longitudinal and at D-5), equipment room and pool enclosure. (diving boards, ladder, and related appurtenances)
10. Plans shall contain a north arrow, be to scale and be signed.
11. Steel schedule.
12. Four copies each of: plans, pool construction application, and pool construction supplement.
13. One copy of pool hydraulic calculations and detailed piping diagram showing all fittings, valves, equipment, and elevations.
14. Type of pipe to be used in plumbing and pipe rating. (only National Sanitation Foundation coded pipe approved)

## **CALCULATION OF TOTAL DYNAMIC HEAD IN POOL FILTER INSTALLATIONS**

Facility: \_\_\_\_\_

Person preparing this form: \_\_\_\_\_

**NOTE:**

- ❖ Nevada Administrative Code, Chapter 444, Public Bathing Places, requires a turnover rate of six (6) hours immediately prior to backwashing the filters (NAC 444.152 and NAC 444.162).
- ❖ To comply, the recirculation system must be designed for less than six (6) hour turnover.
- ❖ Turnover rate for therapy pools – one (1) hour or less.
- ❖ Turnover rate for wading pools – three (3) hours maximum.
- ❖ Nevada Administrative Code, Chapter 444, Public Spas, requires a turnover rate of 30 minutes immediately prior to backwashing the filters (NAC 444.496).
- ❖ To comply, the recirculation system must be designed for less than a 30 minute turnover.

1. Head loss data for all system components are required. Use head loss listed herein or submit manufacturer's engineering specifications.
2. Pump performance curve required (Public Bathing, NAC 444.162).
3. Piping (Public Bathing, NAC 444.160; Spas, NAC 444.482) – Non-toxic corrosion resistant, able to withstand operating procedures. NSF approved piping acceptable. Submit specifications for piping.
4. If multiple pumps and filters are to be used, additional calculations will be required, showing workability of the system.

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**HYDRAULIC CALCULATIONS** – Typical Pool Plan – for completing hydraulic calculations:

S= Strainer Basket

P= Pump

F= Filter

V= Multi-port valves

H= Heater

**I. Return Piping – Circuit 1 to 6 (or 1 to 6'):**

*(Schema: Determine the pressure drops in each section of piping in the parallel circuit. Then add up all pressure drops in the circuit with the greater pressure drop.)*

**Linear Feet    Feet of Head Loss**

**A. From point 1 to 2:**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D
3. Fittings:
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_
  - \_\_\_\_\_ Tee \_\_\_\_\_
4. Total equivalent length = \_\_\_\_\_
5. Total pressure drop 1 to 2 = \_\_\_\_\_

**B. From point 2 to 3 (or 2 to 3'):**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D
3. Fittings:
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_

**Linear Feet    Feet of Head Loss**

\_\_\_\_\_ Tee

4. Total equivalent length

= \_\_\_\_\_

5. Total pressure drop 2 to 3

= \_\_\_\_\_

**C. From point 3 to 4 (or 3' to 4'):**

1. Flow rate = \_\_\_\_\_ gpm

2. Piping length \_\_\_\_\_ " D

\_\_\_\_\_

3. Fittings:

\_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D.

\_\_\_\_\_

\_\_\_\_\_ Ell (s)

\_\_\_\_\_

\_\_\_\_\_ Tee

\_\_\_\_\_

4. Total equivalent length

= \_\_\_\_\_

5. Total pressure drop 3 to 4

= \_\_\_\_\_

**D. From point 4 to 5 (or 4' to 5'):**

1. Flow rate = \_\_\_\_\_ gpm

2. Piping length \_\_\_\_\_ " D

\_\_\_\_\_

3. Fittings:

\_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D.

\_\_\_\_\_

\_\_\_\_\_ Ell (s)

\_\_\_\_\_

\_\_\_\_\_ Tee

\_\_\_\_\_

4. Total equivalent length

= \_\_\_\_\_

5. Total pressure drop 4 to 5

= \_\_\_\_\_

**E. From point 5 to 6 (or 5' to 6'):**

1. Flow rate = \_\_\_\_\_ gpm

2. Piping length \_\_\_\_\_ " D

\_\_\_\_\_

3. Fittings:

\_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D.

\_\_\_\_\_

\_\_\_\_\_ Ell (s)

\_\_\_\_\_

\_\_\_\_\_ Tee

\_\_\_\_\_

\_\_\_\_\_ Crifice, pressure drop across

\_\_\_\_\_

4. Total equivalent length

= \_\_\_\_\_

5. Total pressure drop 5 to 6

= \_\_\_\_\_

**F. Return piping pressure drop:**

(A5+B5+C5+D5+E5=)

= \_\_\_\_\_

**II. Suction Piping – Circuit a to e (or a' to e, or b to e):**

(Schema: Determine the pressure drops in each section of piping in the parallel circuit, then add up all pressure drops in the circuit with the greatest pressure drop.)

**Linear Feet   Feet of Head Loss**

**A. From point a to c: (Skimmer #1)**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D \_\_\_\_\_
3. Fittings:
  - \_\_\_\_\_ Skimmer, pressure drop in \_\_\_\_\_
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_
  - \_\_\_\_\_ Tee \_\_\_\_\_
4. Total equivalent length = \_\_\_\_\_
5. Total pressure drop a to c = \_\_\_\_\_

**B. From point b to c: (Main Drain)**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D \_\_\_\_\_
3. Fittings:
  - \_\_\_\_\_ Main drain grate, pressure drop in \_\_\_\_\_
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_
  - \_\_\_\_\_ Tee \_\_\_\_\_
4. Total equivalent length = \_\_\_\_\_
5. Total pressure drop b to c = \_\_\_\_\_

**C. From point c to d: (Piping)**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D \_\_\_\_\_
3. Fittings:
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_
  - \_\_\_\_\_ Tee \_\_\_\_\_
4. Total equivalent length = \_\_\_\_\_
5. Total pressure drop c to d = \_\_\_\_\_

**D. From point a' to d: (Skimmer #2)**

1. Flow rate = \_\_\_\_\_ gpm
2. Piping length \_\_\_\_\_ " D \_\_\_\_\_
3. Fittings:
  - \_\_\_\_\_ Skimmer, pressure drop in \_\_\_\_\_
  - \_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D. \_\_\_\_\_
  - \_\_\_\_\_ Ell (s) \_\_\_\_\_
  - \_\_\_\_\_ Tee \_\_\_\_\_
4. Total equivalent length = \_\_\_\_\_

Linear Feet Feet of Head Loss

5. Total pressure drop a' to d = \_\_\_\_\_

**E. From point d to e: (Piping)**

1. Flow rate = \_\_\_\_\_ gpm

2. Piping length \_\_\_\_\_ " D

3. Fittings:

\_\_\_\_\_ Reducer (s) \_\_\_\_\_ " D. to \_\_\_\_\_ " D.

\_\_\_\_\_ Ell (s)

\_\_\_\_\_ Tee

4. Total equivalent length = \_\_\_\_\_

5. Total pressure drop d to e = \_\_\_\_\_

**F. Suction piping pressure drop:**

[(A5+C5+E5) or (B5+C5+E5) or (D5+E5)=] = \_\_\_\_\_

**III. Pump Room Piping – Circuit e to i:**

1. Flow rate = \_\_\_\_\_ gpm

2. Piping length \_\_\_\_\_ " D

3. Fittings:

\_\_\_\_\_ Reducer (s) (at suction side of pump)

s \_\_\_\_\_ Strainer

p \_\_\_\_\_ Enlarger (s) (at discharge side of pump)

v \_\_\_\_\_ Multi-port valve (s)

\_\_\_\_\_ Gate valve (s)

\_\_\_\_\_ Reducer (s) (at multi-port or filter)

f&h \_\_\_\_\_ Filter (s) & heater

\_\_\_\_\_ Enlarger (s) (at multi-port or filter)

\_\_\_\_\_ Ell (s)

\_\_\_\_\_ Tee

4. Total equivalent length = \_\_\_\_\_

5. Total pressure drop e to i = \_\_\_\_\_

6. Suction lift (vertical distance from C/L of pump to water level. Use minus if pump is below water level) = \_\_\_\_\_

**IV. Total Dead Load:**

(If+ IIIf +III5+III6 =) = \_\_\_\_\_

**V. Flow rate at above TDH (from pump curve) = \_\_\_\_\_ gpm.**

I, \_\_\_\_\_, certify that the above measurements have been performed and recorded accurately.

(PRINTED NAME)

(SIGNATURE)

(DATE)