Drawing diagram shows the following:

- The Solution as the Sodium Hypochlorite (12%) feeder or the X-2 on the smaller bodies of water
- The Solution X- 2 as the hydrochloric acid (15-31%) feeder.
- CO-2 feeder 30 – 200 scfh capacity
- Aux Venturi / eductor feed for carbon dioxide feed.
- Interlocks with chemical and backwash controllers (and any other safety interlocks, such as flood protection, phase monitors, etc.).
- Pentair Whisperflo pump.
- Labcock and hose connections for easy access and cleaning of chemical lines and water usage for cleaning.
- Chemical Level indicator
- All components are corrosion proof, NSF approved, UL Listed and approved by the Health Department.

Benefits of The System: Study from City of Henderson NV.

Usage per week	Bicarb $0.26/lb	HCl 15% $2.87/gal	T-Chlor 12% $1.41/gal	CO_2 liquid $0.26/lb	Cost per week	Annual Cost
Prior 09/2009 – 12/2009	**$91.00** for 350 #	**$487.90** for 170 gal	**$451.20** for 320 gal	0	**$1,030.10**	**$53,565.20**
Now 01/2010 – 04/2010	0	**$100.45** for 35 gal	**$282.00** for 200 gal	**$156.00** for 600 #	**$538.45**	**$27,999.40** **$600.00**
Difference in cost	**- $91.00**	**- $387.45**	**- $169.20**	**+ $156.00**	**- $491.65**	
Chemical Cost for 765,000 gallon outdoor pool and Annual Savings From $70.02 per 1,000 gallons, per year, to $37.38 per 1,000 gallons, per year **46.60% Savings of $32.64 per 1,000 gallons of pool water, per year**						**$24,965.80 in Savings**

- The Annual Cost is based on three months of winter usage, open season and the same bather load average, in order to create a base for minimum savings.
- The actual savings factor will be much higher, considering the increasing cost of bulk chemicals, as well as the increased chlorine and related chemical usage in the summer, with an increased demand for acid or CO_2 usage (for lowering the pH).
- CO_2 raises Total Alkalinity, while lowering pH. The Acid feed rate for the pool used in the Study was lowered from 8 GPH to 3 GPH. The goal was to maintain TA closer to 90 – 100 ppm (instead of 80 ppm) and pH at 7.4 or lower (instead of 7.5 or higher), based on constant water temperature of 81 deg F, Calcium Hardness of 200 – 400 ppm, TDS of 2,000 – 6,000 ppm and no Cyanuric Acid (stabilizer).
- Chlorine savings are accounted for in the increased percentage of chlorine effectiveness from lowering the pH setpoint. The amount of Hypochlorous Acid produced by the Sodium Hypochlorite chlorine is increased from 50.25% at a pH of 7.5, to 55.5% at a pH of 7.4 (7.2 pH = 66% and 7.6 = 45%), an overall increase of over 10%, making it possible to achieve the same ORP (HRR or mV) reading and disinfection potential with less chlorine, statistically shown to be with about one third less Sodium Hypochlorite.
- There is no change in the Saturation index (LSI), as the increase in alkalinity is offset by lowering the pH.

- The TDS level is maintained lower, with the decrease in chlorine usage and the elimination of Sodium Bicarbonate usage for Total Alkalinity. Less water dilution or pool draining, downtime for draining, cost of initial chemical treatment and re-heating the pool, etc.
- CO_2 usage will prevent accidental pH lowering, as Carbonic Acid cannot drop the pH of the pool below 6.5.
- pH of water at the point of contact with the pool plaster is mild when using CO_2, with little or no effect on the plaster finish, as compared to normal acid feed concentrations that damage the pool plaster around return inlet fittings, extending the life of the pool plaster by at least two years or more.
- The Aux feeder and chemical shot feeder enable chemical feed while the pool is in use, independent of pool activities, making it possible to distribute chemicals proportionally into the pool, through the return inlet fittings.