

APPENDIX D

CALCULATION OF TURNOVER

As noted in chapter 10, the recirculation of a swimming pool is based upon turnover, or the rate at which the entire volume of the pool is theoretically recirculated through the equipment station. Initially, pool turnover is the responsibility of the designer who must insure that the mechanical system is of a sufficient capacity to handle the desired flow. As a practical matter, however, it is also desirable for the pool operator to know how the design rate is determined, for he will occasionally be called upon to evaluate the system. Since most swimming pools are required to be operated at a turnover rate of 6 to 8 hours, the operator should understand the arithmetic for computing pool volume and should be able to translate his findings in terms of flow rates.

The approximate volume in gallons of a given pool is calculated by multiplying pool length (in feet) by pool width (in feet) by average pool depth (in feet) by 7.5 as illustrated in Example 1.

EXAMPLE 1

A swimming pool 50 feet long by 20 feet wide sloping uniformly from a 3-foot depth at shallow end to an 8-foot depth at deep end.

—Area of pool (50 x 20) equals 1,000 square feet.

—Average depth $\frac{8 + 3}{2}$ equals 5.5 feet.

—Volume of pool (1,000 x 5.5) equals 5,500 cubic feet.

—Capacity of pool (5,500 cubic feet x 7.5 gallons per cubic foot) equals 41,250 gallons.

—The calculations of Example 1 make it possible to determine the pumping rate required to provide an 8 hour turnover as shown in Example 2.

EXAMPLE 2

Volume of pool in gallons equals 41,240.

—Volume (41,250) divided by turnover time (8) equals 5,156 gallons per hour.

—Gallons per hour (5,156) divided by minutes (60) equals pumping rate of 85.9 gallons per minute.