DXAIR INDOOR POOL DESIGN GUIDELINES

AIR DELIVERY (DUCT WORK) FOR INDOOR POOLS

POOL ROOM AIR FLOW IS CRITICAL!!!
Designing air flow delivery systems for pool dehumidifiers often times fall short of the required air turnovers; therefore; they may not maintain appropriate conditions of temperature and humidity or provide the required air flow once ductwork is installed. Poor performance is often a result of poorly designed air flow systems.

A. GREAT HEART - BAD ARTERIES:

Veri-Dry, LLC equates the air delivery or ductwork system in an indoor pool room to the arteries of your heart. You may have a great heart, but if the arteries are "plugged up" or are "choked down"…the heart is rendered useless. This applies to indoor pool room air delivery systems as well. The dehumidifier is the "heart" – your air delivery system/ductwork are the "arteries". The air delivery system is the most critical part of your dehumidification system installation.

Our approach to dehumidification and air flow is different from other manufacturers. We begin by designing a dehumidification system with 8 air turnovers/hour minimum on standard new construction. Additional air turnovers may be required upon review of building design and operating conditions. ASHRAE Guidelines provides 4-6 for residential and 6-8 for commercial projects. As residential indoor pools in general have become larger than or as large as commercial projects and at varying temperatures, we take these factors in consideration. We will continue to exceed ASHRAE minimum requirements for air turnover rates to ensure a healthy, stable, and dry indoor pool room environment.

The air delivery system is recommended to be installed either overhead (blowing down) or underground (blowing up) in a continuous (peripheral loop). This basically means all the way around the pool room and back to mechanical space. This continuous loop of duct will have properly sized diffusers (registers), each sized for the CFM required to move air across glass or any other surface that can reach Dew Point Temperature and form condensation. Skylights and any other dormer type windows/glass need to be addressed in the design of the ductwork as well; as air flow is required across or into them to prevent condensation.

B. The '*ASHRAE HVAC APPLICATIONS* MANUAL' STATES:

"As with any installation, proper duct design and installation is necessary for proper equipment performance. Poorly installed return duct connections, for example, can significantly reduce the performance of a dehumidifier. Fiberglass duct liner should not be used. Where condensation may occur the insulation must be applied to the exterior of the duct. Duct materials and hardware must be resistant to chemical corrosion from the pool atmosphere. Grilles, registers and diffusers should be constructed from aluminum. Supply air should be directed against interior envelope surfaces prone to condensation (walls, glass, (skylights) & doors)."

Although recommended by other companies, Veri-Dry does not recommend blowing air across an open indoor pool as this causes an increase in evaporation rate of water, a chill affect on bathers and can increase operating costs. Many times moving air across the pool water and putting return air duct at the deck level are recommended to minimize recirculation of chloramines. Unfortunately, neither of these practices work to control the issue of chlorine/chloramines in indoor pools—that is a pool balancing issue, the problem is coming

out of the water, the solution is treating the water properly — it is not a dehumidification or an air flow issue.

Veri-Dry provides a shop drawing for duct and mechanical layout to all mechanical contractors that includes duct sizing, diffuser sizing, negative pressure and outside air requirements as well as assistance in laying out the mechanical space.