

# Morrison & Associates

Environmental Design and Management, Inc.

501 Alpine Circle • Norman, OK 73072 • 405/360-5625

## For Immediate Release

*Norman, Oklahoma...*

### Local Architect Completes “Personal Natatorium”

Construction has been completed on a residential Natatorium, implementing a unique approach for integrating a quality exercise and recreation facility into the single family residence. The Natatorium - an indoor swimming pool - was designed and built by architect John W. Morrison of Morrison & Associates/EDM, Inc. of Norman. “Natatorium” is Latin, literally translated as “a place to swim.” The “Personal” concept refers to the small scale of the facility and it’s use as an amenity to the residential setting.

An indoor swimming pool, especially one connected to a residential structure, presents a myriad of design and construction challenges, including space efficiency, humidity and moisture control, indoor air quality, energy efficiency and economical construction. Morrison’s *Personal Natatorium* has met those challenges through extensive research and adoption of specific technologies that work well with commonly available, more affordable construction methods.

The *Personal Natatorium* takes advantage of a state-of-the-art humidity removal and heat recovery system for water and space heating. Traditionally, most residential indoor swimming pools have relied on wasteful energy consumption for water and space heating. Typically, gas fired heaters and exhaust fans have been used to continually heat the air and remove humidity, requiring massive amounts of energy to maintain an acceptable indoor environment. These systems are becoming increasingly cost prohibitive to operate and often fail to effectively remove humidity, causing a myriad of problems such as structural degradation and mold proliferation.

According to Morrison, successful natatorium design is all about humidity control. “Humidity in a pool room is a given,” indicated Morrison. “The last thing you want is that humidity penetrating the walls and ceiling. By effectively sealing the perimeter, we can channel that humidity to a dehumidifier and capture the resultant heat gain to use where and when we need it.”

After extensive research, Morrison specified the proper mechanical equipment for heating and cooling the natatorium, allowing for perfect climate control regardless of the season. The system is all-electric and consists of a small refrigeration compressor, a heating coil, a cooling coil, air handling fan and a heat exchanger to inject heat into the pool water. All major metal components are made of stainless steel to resist corrosion and provide an extremely long service life.

To contain the humidity within the confines of the pool room, Morrison chose a “zero-permeable” moisture barrier to line the inside of the walls and ceiling. “Most of the construction materials we chose are common, traditional residential methods,” said Morrison. “But we also added a plasticized aluminum membrane under the interior wall board to prevent the warm moist air from condensating inside the outer wall assembly,” he added. The isolation of the pool room prevents humidity migration into the rest of the residence.

Indoor air quality and sanitation are also primary concerns when operating an indoor swimming pool. Because of the warm, wet conditions, mold and bacteria growth can easily get out of hand. And, unlike a commercial or public facility, the “industrial” approach to cleaning and disinfecting is not compatible with the residential environment. Maintaining proper water chemistry is key to preventing odors, corrosion and microbial growth, while good temperature and relative humidity control will keep mold from growing on surfaces and in air ducts. The Morrison facility incorporates easy-to-clean surfaces and water drainage in the pool room to meet those needs. To prevent mold growth in the heating air system, Morrison specified fabric air ducts and ultra violet “C” lamps in the air handler. The fabric air ducts are exposed in the pool room and provide

concise air distribution. The ducts can be taken down and laundered when necessary. Additionally, the ultraviolet “C” spectrum lamps destroy mold spores and bacteria passing through the heat and air system.

Space limitations and site orientation at the Morrison residence also presented design and construction challenges. Because of the limited site area, the size of the pool and the surrounding deck were held to a minimum. Even so, access for equipment and machinery during construction was extremely limited. “We had very little space between the pool excavation and the surrounding foundation for the building and were concerned with the proximity of the foundation to the hole for the pool. Basically, we had to take a different approach to sequencing the work to prevent structural failure during construction,” Morrison said. “For larger sites and larger building enclosures, those kind of considerations would not be a concern,” he added.

As an environmental architect, sustainable, or “green” design concepts were also important to Morrison when choosing building materials and system components. Sustainability is a concept of growing importance, relating to the the of consumption of resources at a slower rate than can be replenished. Morrison believes that many “green” construction methods can result in superior performance as well as reduced construction costs. In addition to the heat recovery system, Morrison chose a variety of engineered wood products, including prefabricated roof trusses, composite structural decking and fiber-cement siding. “These products not only use post-consumer waste as primary or supplemental ingredients, but also use far less lumber while providing greater strength with less weight. The impact the use of these materials can have on our ecology is tremendous,” said Morrison.

Though the reasons for building an indoor pool are many, there was really only one consideration for the Morrison family. “Throughout the entire project, many of our friends were somewhat amazed that we were undertaking such a project,” said Morrison. “For us the answer is simple: a recreational outlet with tremendous benefits in terms of exercise and personal therapy,” he continued.

It is well recognized that swimming is perhaps the best form of exercise because of the low impact on bones and joints, particularly for older individuals. As the baby boom population ages, Morrison also sees a demand for the *Personal Natatorium* concept. "We started this project with absolutely nothing to go on," said Morrison. "Virtually all of the built examples we were able to find had one or more shortcomings and I was determined to find appropriate solutions for each challenge. Our construction time was only six months, but this project was really years in the making," he added.

Construction work began in earnest last July (2001) and was completed just in time for Christmas. Even after starting construction, several details were worked out in the field. "We took a hands-on approach and worked closely with our trade contractors, often participating in the actual work," said Morrison. "I felt it was important to learn every aspect of the process, to identify what was compatible, what may cause future problems and understand the strengths and limitations of common construction practices. Our project really was the prototype. The knowledge we gained is now available for future applications."

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Morrison & Associates/EDM, Inc. is an environmental architectural firm specializing in construction support services, including facility surveys, sustainable design consulting, indoor air quality and hazardous material management during building renovation.

Attachments:

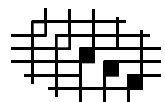
- Project Data and Credits
- Floor Plan Diagram
- Mechanical Plan Diagram
- Interior Photographs

Physical Data

Total Addition Area	1,254 Sq. Ft.
Pool Room	667 Sq. Ft.
Pool Size	12 ft X 30 ft
Pool type	Structural panel and vinyl liner, sand filter Biguanide water chemical system (non-chlorine)
HVAC System (Pool)	Dehumidification/Heat Recovery System Heating, Air Conditioning and Pool Water Heating
General Construction	Wood frame, engineered wood roof trusses, fiber cement siding, composition roof
Doors	Insulated hollow metal and thermal break aluminum
Windows	Thermal break aluminum, 7/8" insulated glass
Skylights	Operable Wood Frame, Insulated Low-E Glazing

Project Team

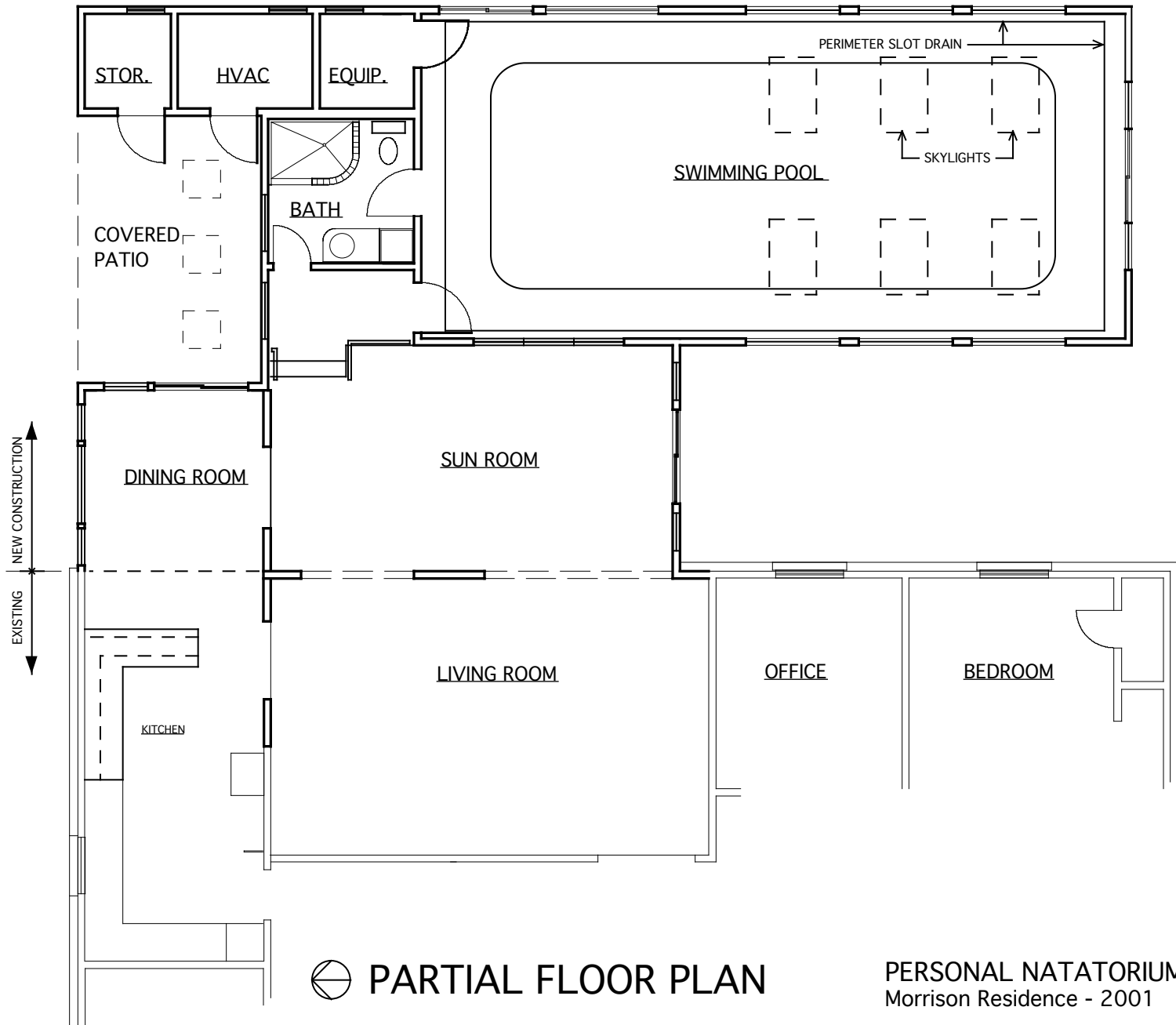
Architect and General Contractor	Morrison & Associates/EDM, Inc. Norman, OK
HVAC Equipment	Dry Air System Environmental Pool Products, Inc. Waterford, MI
Ductwork	DuctSox, Dubuque, IA
Concrete:	Roebuck Construction, Norman, OK
Carpentry and Drywall	Peacock Construction, Norman, OK
Roof Trusses	Mills Enterprises, Oklahoma City, OK
Doors and Windows Supplier	Forest Doors and Windows Norman, OK
Pool Construction	Luau Pools and Spas, Norman, OK
HVAC Systems Installation	Waggoner Heating and air Conditioning Norman, OK
Electrical	Bear Electric, Purcell, OK
Plumbing	Staggs Plumbing, Wayne, OK



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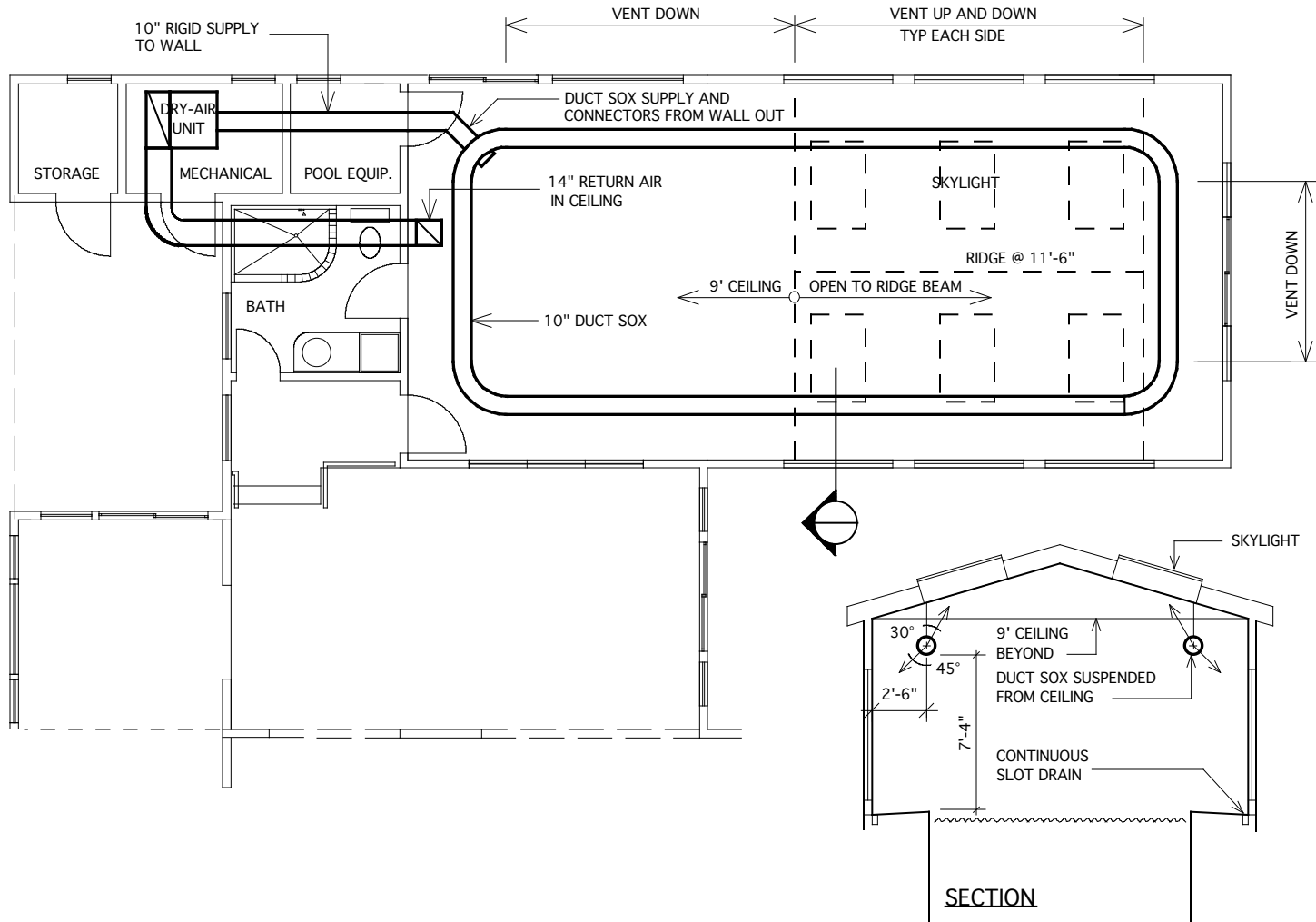
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*Personal Natatorium*  
*Morrison Residence • 2001*



⊕ PARTIAL FLOOR PLAN

PERSONAL NATATORIUM  
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⊕ MECHANICAL PLAN

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