

ACEC Tennessee

American Council of Engineering Companies of Tennessee

THE GREAT PYRAMID OF MEMPHIS



By: Tom Marshall, AIA, LEED, AP
President, Principal and Owner
O T Marshall Architects, PC

Even the pharaoh's architects in ancient Egypt didn't face the challenges confronted by O.T. Marshall Architects when asked to imagine a different use for the iconic Pyramid on the riverfront in Memphis.

After all, the Egyptian pyramids were never repurposed, and that was the main objective in Memphis: to transform a former arena seating 20,142 and closed in 2007 into a use that was equal parts retail, tourism, conservation exhibits, and recreation.

Today, the reality of The Pyramid far outstrips all expectations for its future. Its reinvention, which cost more than \$100 million in a public-private partnership, is an economic engine for Memphis, creating more than 600 new jobs and attracting millions of new visitors to support the tourism industry of Tennessee's largest city.

The Pyramid today has become what USA Today described as a "Vegas-style architectural fantasy that combines a huge Bass Pro retail store, the Ducks Unlimited Water Fowling Heritage Center museum, a 32-story high outdoor observation deck, the 120-room Big Cypress Lodge hotel, and the Cypress Swamp Waterfowl Habitat. An ode to the nearby Mississippi River delta, the 'swamp' occupies much of the ground floor, with ponds, streams, tanks and aquariums, spanned by footbridges and showcasing a floating selection of fishing boats. The waters are full of live ducks, catfish, sturgeon and even alligators. It didn't even include the Beretta Fine Gun Center, custom-made duck call center, 13 lanes of "underwater" bowling, boat launch ramp, pistol range, archery range, and 1,800 fish of 36 varieties. Meanwhile, Huffington Post wrote that Bass Pro Shops at The Pyramid was nothing short of "mind-boggling."

It's hard today to imagine the building that Tom Marshall and his architectural team at O.T. Marshall Architects saw when they stepped into the moribund, dismal former arena and heard Bass Pro Shops founder Johnny Morris – justifiably called the Walt Disney of retail – describe what he envisioned

for the building. Yet, working with engineering firms Kimley Horn and Associates Inc., Chad Stewart and Associates Inc., and DePouw Engineering LLC, the 26,410,000 of enclosed volume and 520,000 square feet in The Pyramid have been transformed into a retail and tourist magnet that attracted one million people in its first two months.

Along the way, the Memphis architects headed by principal Tom Marshall and project manager Alan Barner, and the engineering firms encountered and solved construction challenges that were distinctive to The Pyramid, ranging from above ground and below ground seismic, the tallest free-standing elevator in the U.S., outdoor cantilevered observation decks, five ecologically distinct pools and three aquariums (including one weighing 620,000 pounds), a 23,000-pound sign, and an independent hotel structure. "It produced so many interesting engineering solutions," said Marshall. "It was amazing to hear the creative engineering rather the kind that we architects are used to dealing with."

Q – This is clearly a once-in-a-lifetime project. What responsibilities did each of the engineering firms have?

A – Kimley Horn had the challenges of the grading and drainage for a site at the south terminus of the Memphis flood wall and the design of the entrance on the south side of the Pyramid that was a previously ramp that entered The Pyramid 18 feet above the arena floor and that needed to be moved to ground level. Chad Stewart designed America's tallest free-standing elevator without lateral support. The clear span is 254 feet, and it was unique in access to the top, engaging the compression ring at the top where all four sides leaned into it for greater seismic stability, and supporting a 10,000 gallon aquarium at the apex that weighed 310 tons. DePouw created the extraordinary color kinetic lighting for both the exterior and specialty features, including the elevator tower, and it's been key to creating the visual interest that we wanted outside and inside the building.

Q – What was the most exciting part of the project?

A – It was the unique opportunity to take a building designed for basketball and retrofit and reimagine it as a Bass Pro Shops store. It was an unimaginable idea that only Johnny Morris could have conceived, and the more we talked with him, the more we grasped and responded to his creative vision.

Continued on Page 2.

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SEPTEMBER

16

ACEC of TN Board Meeting, 5 pm, Embassy Suites Murfreesboro, TN

SEPTEMBER

17

Tennessee Engineering Foundation Luncheon, Embassy Suites Murfreesboro, TN.

SEPTEMBER

17 - 18

Tennessee Engineers' Conference, Embassy Suites Murfreesboro, TN

OCTOBER

14 - 17

ACEC Fall Conference Boston, MA

NOVEMBER

6

2016 Engineering Excellence Awards Entry Deadline

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MEMPHIS PYRAMID (CONTINUED FROM PAGE 1)

Q – What has been the key to the new Bass Pro Shops' widespread positive reaction?

A – We were intentional about not creating a central point where it's possible to grasp all of it in one glimpse. It was architecturally challenging, because we wanted to provoke a feeling of exploration and discovery that seemed to fit symbolically into a pyramid. For example, we wanted to create an awesome impact at the main entrance, but like the Egyptian pyramids which had multiple chambers, there are five different ways to explore Bass Pro Shops from the high impact view that welcomes the visitor.

Q – What was the approach for the glass observation balconies at the top of The Pyramid?

A – We had to find the correct shape for the cantilevered balconies. We didn't want to disturb the platonic shape of The Pyramid. We wanted something light, airy, and unobtrusive and engaged the building well. The radial balconies wrapped around to remain in sympathy with the iconic pyramid shape. The balconies were added to the original project the unfulfilled promise to the public that they could go to the top that has existed since the building opened in 1991.

Q – What were the top challenges that required problem-solving by your firm and the engineering firms working with you?

A – There's of course the elevator and the fact that it was unique. The Pyramid sways five inches in the wind so the new elevator had to have the same ductility and deal with seismic and structural issues. Then there was the 23,000-pound sign on the south side of the building. We had to reinforce all structural members while 400 pipe penetrations had to be made through the exterior envelope while allowing for thermal expansions. Also, there were the seismic improvements. Although the building was built nine months before the enactment of the

new seismic code, City of Memphis and Bass Pro Shops agreed that the seismic retrofit should meet or exceed the code for a new building. Because of the location in the bend in the river and potential for lateral displacement of 144 inches on the river side of the building while the Front Street side stayed the same, we had to have a combiwall 600 feet long, 85 feet deep, and 30 inches wide in order to protect the building from displacement in the event of a significant seismic event. The Pyramid now has the same level of protection as a hospital or nuclear power plant and only two other buildings in Memphis are protected at the same level. Finally, we had to isolate the hotel structure from the existing structure with an independent system to meet code. In other words, this project required creativity with all disciplines of engineering and a highly productive, problem-solving relationship between architects and engineers.

Q – Was there any relevance for you at the Memphis Pyramid from the Egyptian pyramids?

A – We did actually look at the Cheops pyramid for design inspiration, and it led us to the emphasis on exploration and discovery. As we said, we created opportunities for people to explore The Pyramid in ways that allowed them to define their own individual experiences. We realized that no Egyptian architect ever repurposed a pyramid since their original purpose as a tomb was pretty clear. That said, in Egypt, the architects were buried in the pyramids so they couldn't give away the building's secrets, so we're glad that we didn't honor that tradition here.

MEMBER NEWS

Chris Provost, PE, Executive Vice President and the Barge, Waggoner, Sumner & Cannon's (Nashville) Chief Strategies Officer, was recently selected for the Leadership Franklin Class of 2015 – 2016.

Steve Lane, PE, has been promoted to President and Chief Operating Officer (COO) at Smith Seckman Reid, Inc., Nashville.

Sidney Hamby, Jr. named Senior Electrical Engineer to Industrial Market by Gresham, Smith and Partners (Nashville)

TTL, Inc. (Nashville) named David Perry, PE, as project engineer.

LDA Engineering (Knoxville) has announced the hiring of Mark Harrison, PE, PG, as client service manager to provide engineering project management and client services to the Chattanooga metro area.

Memphis Business Journal names ACEC of TN firms in top five – Smith Seckman Reid (#1); Allen & Hoshall, Inc. (#2); A2H, Inc. (#3); Fisher & Arnold, Inc. (#4); and Pickering Firm, Inc. (#5)

Terracon Consultants, Inc. is a finalist in the Nashville Business Journal's Healthiest Employers of Nashville.

FROM THE PRESIDENT

ENGINEERS...IT'S TIME TO SPEAK A LITTLE LOUDER



By: John Kenny, PE
President of ACEC of Tennessee

Many of you have seen the latest news articles regarding outsourcing of state building maintenance. Specific references are made to the potential inclusion of planning, project management and facility assessments. When asked about how it might affect state jobs, a spokesman for the Governor's office indicated their responsibility was to the taxpayers, not to

their employees.

While state government is busy moving toward outsourcing state building maintenance, they are equally aggressive working on their insourcing plan in the Department of Transportation. This too, despite the opposite philosophy, is tabbed as savings to the taxpayers.

When it comes to benefiting the taxpayers, why are we not hearing more about improving the quality of the state's buildings? State highways? Or enhancing the safety of the public? Why are two of the state's largest asset management groups planning to make substantial investments of taxpayer funds moving in opposite directions with the same exact justification?

Government has a responsibility to its taxpayers, employees and even its guests. It should certainly put the Health, Safety, and Welfare of the public as a top priority. While it should be predominantly conservative, it should support innovation and the business environment. The Government by and large shouldn't provide much that the private sector can offer. While that statement might point towards outsourcing, the Government

must maintain a level of competency amongst its employees to be able to effectively and efficiently manage the outsourced services.

It would be a responsible approach to add the minimum level of competent positions to TDOT staff, if required to manage the outsourced services, no more. Further, it would be much more practical for the State to work with the competency that exists in facility maintenance personnel and invest toward efficiencies and planning in lieu of the divesting themselves of the management structure and placing a substantial investment in a huge subcontract relationship. Those costs would be extremely challenging to have a positive return on investment.

Speaking of investing in planning, another concern at the state level has been the inconsistency in their targeted savings through better planning of buildings. How can you do a better job planning when removing fees from designer contracts for special consultants? This is particularly troubling when the State of Tennessee's fee schedule is already near the bottom amongst surrounding states for most any type of facility. So yes... our surrounding States are planning their facilities better than Tennessee!

As an organization we represent more than 100 firms and nearly 4,000 employees...A significant industry group and volume of taxpayers. We also happen to be among the experts in the areas of transportation and facility planning and maintenance. Please be prepared to answer the call from our volunteer committees, Executive Director and PAC chairman as we continue to carry the voice of the engineering community!

TN ENGINEERS' CONFERENCE

Make plans to attend the Tennessee Engineers' Conference September 17-18 at Embassy Suites (1200 Conference Center Drive) in Murfreesboro, Tennessee. The Honorable Beth Harwell, Tennessee Speaker of the House, will be the keynote speaker at the Tennessee Engineering Foundation Luncheon on September 17.

The TEF Luncheon Benefits the Tennessee MATHCOUNTS competition, K-12 STEM activities and engineering scholarships.

Other speakers include Paul Degges, PE, TDOT Deputy Commissioner; Tisha Calabrese Benton, TDEC Director Water Resources; Mike Gallik, Nissan North America; and Hal Balthrop, PE, and Laura Reinbold, PE, Tennessee Board of Architectural and Engineering Examiners.

Early Registration will continue until September 5. For more information, visit www.ACECTN.org to find registration and sponsorship information on the home page or call Judy Logue at (615) 242-2486.

IN MEMORY



ACEC of Tennessee mourns the loss of William H. Johnson, PE, of Chattanooga. Bill, 63, died of cancer on Aug. 15, 2015, at M.D. Anderson Cancer Center in Houston, Texas. He was a current Trustee of the Tennessee Engineering Foundation serving as Secretary. He was a past President of American Council of Engineering Companies of Tennessee holding office in 2006. Bill graduated from McCallie School, Chattanooga and completed his Civil Engineering degree at the University Of Tennessee, Knoxville. He worked with ARCADIS for 36 years before starting his own company in 2013, Swift Creek, Inc. in Chattanooga.

He received numerous national awards and patents over the course of his career. While at ARCADIS, Bill invented and patented bioreactor technologies for solid waste treatment as well as pioneered several new design systems for leachate treatment. He was a member of his much loved Kappa Sigma Fraternity; a Rotary Member and Chamber of Commerce member; as well as the Chattanooga Regional Manufacturing Association to name a few.

He will be missed.

SEPTEMBER
2015
INSIDE

- **The Memphis Pyramid**
- **Member News**
- **Letter from the President**

FROM THE EXECUTIVE DIRECTOR

TOGETHER WE ARE STRONGER



Kasey Anderson, CAE
kanderson@tnec.org

If you have spent enough time with me you have probably heard my mantra dozens of times, but I believe it to be true: Together We Are Stronger. ACEC Tennessee is THE voice for the business of engineering in Tennessee, representing thousands of engineers who are employed by our member firms. As advocates for a business environment that values quality engineering services, protecting the health, safety and welfare of the citizens of Tennessee is paramount to our charge. Working together on those efforts is fundamental to our success.

Ask any tourist visiting our state's capitol what's happening in Tennessee and they will likely tell you that business is booming. The Nashville Business Journal has even published a crane watch to track the flourishing development underway in the Nashville area. But as our members know all too well, there is more to the story than those cranes.

While the Tennessee General Assembly is an essential component of our advocacy efforts, conscientious attention to protecting and advancing the business and regulatory environment of Tennessee's engineering industry demands attention throughout the year. It requires consistent engagement at every level of government. From the chambers of Congress in Washington to the city halls in each of Tennessee's 95 counties, ACEC-TN strives to ensure that the interests and concerns of our members are heard loud and clear.

ACEC-TN is actively addressing a number of issues that affect engineering in our state. Tennessee desperately needs a comprehensive, long-term solution for transportation infrastructure.

With our partners in the Transportation Coalition of Tennessee, we are immersed in efforts to support increased transportation funding at both the state and national level. We continue to be vigilant in educating public entities about Quality Based Selection and the critical role it plays in public procurement. In partnership with AIA Tennessee, our negotiations over the state design contract persist. ACEC and AIA are also working together to actively pursue more specific information about the Governor's proposed outsourcing of the state's facility maintenance and its potential effects on the quality of architectural and engineering services as well as any potential impacts on public health, safety and welfare. On a local level, ACEC-TN has actively voiced opposition to Charter Amendment 3 in Davidson County and a proposed Joint Ordinance to weaken residential codes in the Memphis area, both issues that will likely have unintended consequences that will negatively affect Tennesseans.

Our advocacy efforts rely heavily on quality, trusting relationships at the national, state and local level with governmental agencies, elected officials, and our peer associations in design and construction. ACEC-TN embraces the strong relationships we have with TDOT, TDEC, the Board of Architectural and Engineering Examiners and many others. We work together with these partners to help streamline processes, support legislative efforts, and provide feedback on matters of concern to engineering.

Many of the issues we face today do not have short-term solutions, and we will certainly confront additional developments moving forward. The success of our efforts rests entirely on the strength we find in the collective voice of our members. We rely on your feedback and direction. If there is an advocacy issue we need to be working on, please let me know at kanderson@tnec.org. Indeed, together we are stronger.



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