



State President’s Message

Andy DiLeo, PE, SE
SEAOA State President



Hello SEAOA,

With the coming of the new year, 2020 is behind us and I’m sure not many are sad to see it go. But the ongoing pandemic and the associated uncertainty is still making some aspects of life challenging. Now that SEAOA has a Microsoft Teams account we have been holding monthly chapter meetings and board meetings virtually. If you were not able to participate in either of the two virtual meetings we’ve held, I hope you can tune into the next one. If you did attend a virtual meeting, what did you think? We are currently considering recording meetings and posting them on

our website so that as a member you can access them at your convenience. What other ways can we make the most out of this technology to serve our organization and our members? If you have any comments or ideas, please reach out to me or any of our board members.

Please know that we have not forgotten about our State Convention. We continue our planning efforts and are gathering information on the possibility of a virtual event in the short term and getting back to a live, in-person event as before once the time is right in the longer term. Our State Board will be discussing possibilities at their next meeting in late January. We will let you know more as we sort through possible options.

Thank You and Happy New Year!

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JOINT CENTRAL
AND TUCSON
CHAPTER VIRTUAL
LUNCH MEETING
January 19, 2021
12pm-1:30pm
[Register Here](#)



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12pm-1:30pm
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Central Chapter Chairperson's Message

David Grapsas, P.E., S.E.
Central Chapter Chair



2020 has been a year we will never forget. I hope you and your family have remained and continue to stay safe and healthy. My sincere condolences go out to those who have been negatively affected by this year/pandemic. I hope

everyone has a great 2021!

Sandy Herd and Daniel Van Cuyk did a great virtual presentation in November for Student's Night shared with the Tucson Chapter. Several students from the universities joined in to learn about the structural challenges of designing and constructing the OdySea Aquarium. Our next virtual event is a joint meeting with Central Chapter and Tucson Chapter on January 19th. New Millennium will be presenting on Multi-story Systems and Selection Criteria. Please be sure to register as it is free for all SEAOA members.

Our meetings will continue virtually for the foreseeable future, please check the SEAOA website for updates, changes, and the calendar of events.

I hope everyone has a great 2021!

Tucson Chapter President's Message

Jennifer McMahon Patronski, PE, SE
Tucson Chapter President



With a big sigh of relief, we bid "Adieu" to 2020.

The Central and Tucson Chapters will continue to host virtual monthly meetings. More information regarding upcoming meetings and potential future plans are discussed elsewhere in

this newsletter. We look forward to your comments, ideas, and participation!

I am sad to share the Egg Drop Competition will not be possible this year. Egg Drop Chair Sarah Kay Twine will be proposing alternate fundraising options. Proceeds from fundraising will be used for sponsorship of student activities and/or to expand

the student scholarship fund. Ideas and assistance are welcome! If you are interested in getting involved in the Egg Drop Competition or fundraising efforts, please reach out to the myself or another Board member for contact information.

As a practicing engineer and a business owner, this past year has provided the added challenge of finding alternate ways of meeting our continuing education requirements. The engineering community has many existing, new, and developing options for meeting those requirements online. Our small office has found the NCSEA to be a trusted resource at a reasonable cost. What resources have you found? If you have ideas or advice on virtual continuing education that you would like to share with the membership, please reach out to me or another Board member.

Happy New Year everyone!

YMG President's Message

John Heck, PE, SE
YMG President



The Young Members Group is planning to start in-person meetings back up again early this summer assuming Maricopa County's vaccine schedule does not change. More than likely, it will be a small happy hour but I also

would love to get our group out to an active construction site, similar to our tour at Mirabella at ASU last January. Please email me for any suggestions or ideas for a site visit. These types of YMG meetings are my favorite as it exposes our young engineers to large projects that they might not have the opportunity to consistently design. I hope everyone is staying safe and healthy and look forward to seeing everyone this summer at our first YMG meeting.

SEAOA HONORARY MEMBERSHIP NOMINATIONS

An Honorary Membership may be awarded by the Board of Directors to any person who is a person of acknowledged eminence in some branch of engineering or the science related thereto or a person who has been a member in good standing of this Association for 20 years or more and who, in the opinion of the Board of Directors has contributed outstanding service to the Association. Nomination of individuals for consideration may be by individual members or upon nomination by a Chapter. (SEAOA Bylaws (2012), III.7) The candidate must be nominated by SEAOA full members (active, retired, honorary) in good standing with the organization.

Please use the following links for more information on the Honorary Membership Award and how to submit a nomination. Please take a few minutes to review and if you know of a deserving member, submit a nomination:

[Overview of the Requirements](#)

[Fillable Form for a Nomination](#)

[Example of a Completed Form](#)

Nominations may be submitted to info@seaoa.org by January 31, 2021

SEAOA Awards Committee

2020 SEAOA Excellence in Structural Engineering Award Winner: Martin, White & Griffis Structural Engineers, Inc.

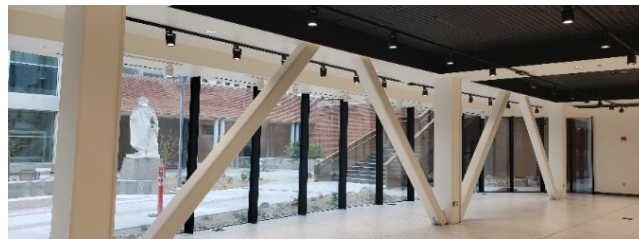
Forensic/Renovation/Retrofit/Rehabilitation: University of Arizona College of Pharmacy Skaggs Building Addition and Renovation

The Skaggs Building Addition and Renovation at the University of Arizona's College of Pharmacy included a 10,800 square foot renovation of existing classroom labs and administrative space in the Health Sciences area of campus, and a new 2-story, 20,500 square foot laboratory addition built around and above the existing component.



Skaggs North elevation looking west

Most challenging of all of the site criteria was to design the new structure in a way that would support new laboratories but not structurally add additional lateral loads to the existing structures surrounding the addition on all sides. Doing so required supporting the new building above the 2nd level on a steel truss that bears on new steel columns and drilled pier foundations. To achieve an acceptable lateral load system, the first level lateral bracing is provided by new steel braced frames which match the relative stiffnesses of the existing first level's reinforced masonry shear walls. Above the 2nd level steel moment frames were used. A building joint occurs above the 2nd level between the new and existing construction. The story height steel trusses spanning the transverse direction of the building width have diagonal members strategically placed to allow corridors between the adjacent lab spaces.



New braced frames pass through the space created when the 2nd level was extended to accommodate column free labs

While construction over and around existing buildings is a common occurrence, constructing vibration sensitive laboratories that require clear spans over continuously functioning facilities is not. In the Skaggs building, a first level mechanical equipment area and a small laboratory area remained fully occupied throughout construction. That required a host of creative structural design moves to ensure operation while fulfilling programmatic requirements.



New steel braced frames at the first level and moment frames at levels 2 to 3 and 3 to roof.

A portion of the new building was constructed over an existing tunnel. To disperse loads across the addition, a cast-in-place slab was added over the tunnel to support the new 2nd level lab loading. The existing post-tensioned plaza slab at the first level was strengthened to gain stiffness. A new cast-in-place concrete slab was reinforced and doweled into the existing post-tension concrete. Together the new combined slab with dowels created a composite that could provide the strength required for laboratory and equipment loads.

2020 SEAOA Excellence in Structural Engineering Award Winner: **PK Associates - New Buildings, Over \$10M: The Watermark** **Tempe**

The Watermark Tempe development towers 16 stories above the north bank of Tempe Town Lake. The project offers 250,000 square feet of Class A office space. The building composition from bottom to top offers nine levels of parking, two below grade, one level of public space, eight stories of office space, and a unique long-span steel pedestrian bridge that connects the office building to a free-standing parking garage. Additionally, the project offers 44,000 square feet of retail space with dramatic ceiling heights ranging from 16'-9" to 24'-6", a generously sized splash pad with filtered water to attract family fun in the water, oversized pedestrian friendly sidewalks provide immediate access to Tempe Town Lake and Papago Park.

PK Associates Consulting Structural Engineers worked closely with Fenix Development, Nelsen Partners, Okland Construction, Suntec Concrete, and the City of Tempe to deliver this structurally complex project, on time and within budget.

Challenge:

After construction began, the foundation slab was poured and the contractor was working on Level 1 (B1), the developer requested a change in project scope - hoping to add an additional level of parking to the parking structure.

Ingenuity:

PK Associates put our problem-solving capabilities to work by investigating the conditions of the foundation to evaluate if it would be able to support an additional elevated floor. By working closely with the general contractor to determine the EXACT concrete strength of the existing column and foundation elements, and by relying on the depth of our structural engineering expertise, we were able to verify that the foundation was sufficient to support the additional loading conditions. After approval from the City of Tempe, the construction could continue with the new scope.

Results: The Watermark Tempe has become a premier space in Tempe for work and gathering. Well-known retail and restaurant tenants already call this Class A Office building home.



The Watermark Tempe Aerial view



The Watermark Tempe South Elevation



The Watermark Tempe East Elevation



The Watermark Tempe Pedestrian Bridge between the Parking Garage and the Office building 8th Floor Lobby

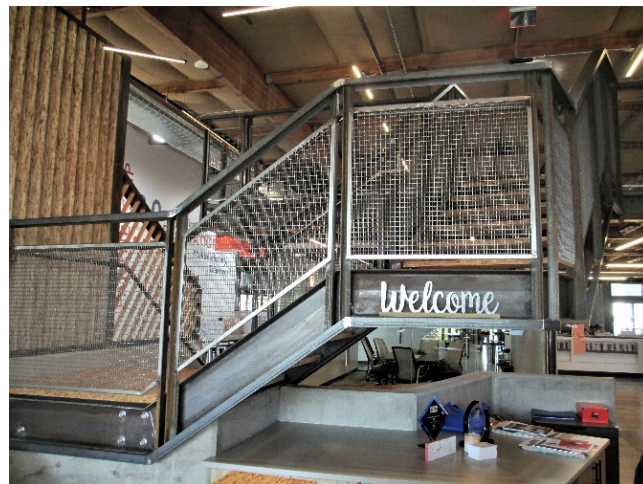
2020 SEAOA Merit Award in Structural Engineering: Wright Engineers Forensic/Renovation/Retrofit/Rehabilitation: CHASSE Building Team Headquarters, Tempe AZ

Local construction company CHASSE Building Team envisioned transforming a 1980's industrial warehouse with few windows and connections to outdoors into a modern, energy efficient office building that would become their new company headquarters. As the project contractor as well as the owner, they desired a final product that would also showcase their expertise in utilizing a variety of construction methods and materials, to include a stairway that would serve as a showpiece visible upon entering the building.



In collaboration with Aline Architecture Concepts, Wright Engineers helped implement CHASSE's vision in several ways. For the new stairway, Wright designed a steel channel structure that appears to float over the building's reception area, employing a huge block of concrete for the base and unsymmetrical dimensions for the staircase structure, which was cantilevered to an intermediate landing and then continued to the mezzanine above. The 4-foot by 5-foot concrete base landing serves as the counterweight to a second 'floating' landing above it. Structural steel stair stringers were used to support see-through mesh side guards, which contribute to the floating appearance, and solid wood treads were used to add warmth as balance the cold concrete and steel. The result is an impressive focal point that serves as an impressive artistic centerpiece while showcasing different construction methods and materials.

Wright Engineers also helped implement CHASSE's vision in several other ways, including



designing a cantilevered balcony structure, which provides an outdoor space for a casual meeting or a work break, while serving as a shade structure for the parking area below. Wright's structural design also included removal of an interior CMU load bearing wall to provide a modern, open conference space, and new openings in the roof to add solar tubes and new large openings in exterior CMU walls to flood the space with natural light.



2020 SEAOA Merit Award in Structural Engineering: PK Associates – New Buildings, Over \$10M: Desert Diamond Casino West Valley

The Desert Diamond Casino West Valley, located in Glendale, Arizona and owned by the Tohono O’odham Nation, is the newest casino in the Phoenix metro area. The 2.3 million square foot (SF) casino features a 75,000 SF gaming floor, poker table room, five restaurant and dining options, bingo floor, two-story bar and parking for 2,235 vehicles.

The casino sits above a walkout basement that includes back of house operations and a valet parking garage. There are two attached 5-level parking structures totaling nearly 800,000 SF. Pimara Paul Koehler (PK Associates engineers) teamed with HBG Design and AECOM/Hunt and Penta Construction to develop collaborative solutions for the many unique challenges.

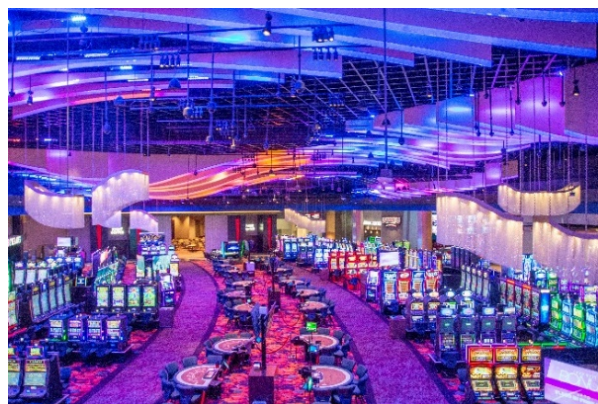
PKA recommended long-span, free formed, curved steel girder trusses to span 130 feet over the casino floor which provided for a column free casino space. The steel roof structure was uniquely designed, curved in three dimensions, and able to support elaborate architectural finishes/features and future loads. Utilizing Revit provided a unified model that coordinated the structural, mechanical and architectural components of the project.

The Casino lower level is partially below grade. The front exterior grade slopes down as it approaches the lower-level parking garage entrances. The result is a two-story structure at the back of house areas. The massive size of the casino required multiple expansion joints.

PKA utilized concrete shearwalls in the lower level to resist the lateral loads and retained earth pressures due to the lower level being open on one side. PKA recommended using a shallow long-span post-tension beam/slab system to minimize columns in the lower level, while accommodating the parking layout. Special slide bearing details blended the steel structure expansion joints with the concrete structure expansion joints.



West Valley Casino Construction – finished entry view



West Valley Casino Construction – finished interior view



West Valley Casino Construction – Long Span Trusses



West Valley Casino Construction – back of house and parking structure

2020 SEAOA Excellence in Structural Engineering Award Winner: DLR Group - Forensic/Renovation/ Retrofit/Rehabilitation: Adaptive Reuse, 225 W. Madison

Transforming Vacant Jail into Class A Office Building: Maricopa County Attorney's Office Formerly Madison Street Jail Maricopa County, Phoenix, AZ

Constructed in 1985, the Madison Street Jail in Phoenix, AZ stood decommissioned for nearly 10 years. Destined to be torn down, DLR Group took a creative approach to the unrealized 278,775 square-foot diamond in the rough – Re-use! The facility owner, Maricopa County, selected to re-use and adapt the cast-in-place concrete structure saving taxpayers approximately \$65.3M. The challenge lay in transforming a secure, fortified structure into an open workspace with daylight and views.



Courtesy of DLR Group: Madison Street Jail (Before)



Photography by Mark Boisclair: Adaptive Reuse at 225 W. Madison, Formerly Madison Street Jail in Phoenix, AZ

Repurposing the decommissioned jail into the County Attorney's offices presented many structural challenges. The new occupancy loads of the building no longer met the structural requirements of the design code. This required extensive structural analysis of the existing conditions and additional reinforcement to sustain the increased loads. For example, the mezzanine that once supported inmate cells was demolished to open the

space, leaving columns unbraced. All columns, beams and slabs that did not meet the load and bracing requirements were reinforced with carbon fiber and other traditional steel reinforcement methods to increase the load carrying capacity of the members.

Furthermore, the heaviest loading in the new occupancy of the building is a rooftop garden consisting of planter areas, large trees, and built-up soil. Previously a lightly loaded inmate recreational area, this area required steel beam reinforcement to shorten the span of the existing slab as well as carbon fiber reinforcement for the slabs and the columns below the rooftop level.



Courtesy of DLR Group: Madison Street Jail Inmate Recreation Yard (Before)



Photography by Mark Boisclair: Re-purposed 5th Floor Rooftop Garden (After)

The re-designed building offers modern offices with panoramic views, a bridge to connect to the adjacent courthouse, and an outdoor rooftop garden located on the 5th floor. Adaptive reuse salvaged 2.1 million pounds of steel and saved 65 million pounds of concrete from being sent to the dump. The Madison Adaptive Reuse project provides evidence for the benefits of design that advocates for the planet, climate and communities.

Robin E. Park, In Memoriam

By Chuck Mackey

When Robin E. Parke passed away on April 13, 2020 at the age of 85, we lost one of the leaders of the Structural Engineering community.



Robin was born in Wolf Point, Montana in 1934. After a year at the University of Washington he was drafted in 1953 into the U.S. Army serving in Germany for two years. Upon returning he attended the University of North Dakota graduating with a B.S. degree in Civil Engineering in 1958. Following graduation, he moved to California and worked for North American Aviation while attending Graduate School at the University of Southern California. In 1960 he accepted a position with Reynolds Metals in Phoenix. He along with Sam Caruso formed the firm of Park & Caruso Structural Engineers in 1966 and the following year formed Caruso, Parke & Associates. In 1978 the firm of Robin E. Parke Associates, Inc., Consulting Structural Engineers was formed, and he served as President until selling the firm in 1994. Under his leadership his firm designed over 5,000 projects in 30 states and three foreign countries.

Robin was very active in both the structural engineering and the larger community. One of his values was to always give something back to your community. Do not always take. He served as President of the Arizona State University Council for Design Excellence for the College of Architecture and Environmental Design, served on the Board of Directors for John C. Lincoln Hospital, the Arizona Kidney Foundation, and the Arizona State University Foundation. In the engineering community he served on numerous committees of the Structural Engineers Association including terms as President for both the

Central and State Chapters. He was also a member of various professional organizations including serving on the Arizona State Board of Technical Registration.

The policy of Robin E. Parke Associates was to “strive for excellence in everything that is undertaken by the firm.” This was key to the firm’s success and contributed to the excellent reputation and growth. His guiding principles were:

- The responsibility to the public is paramount. We are the last line of defense for their health, safety, and welfare.
- NEVER compromise structural integrity.
- WE must be guided by honesty, integrity, and fairness.
- Encourage ingenuity. Do not be satisfied with a “that’s a way we did it in the past” attitude.
- Encourage people to work hard, but also spend time with family and in other endeavors.
- In Engineering, as I life, there is no absolute one right way to solve a problem. Be understanding of different solutions because this is how we grow.

He was well known for witty but true quotes:

- Don’t let your ego get in front of your BRAINS.
- You cannot pull a rabbit out of a hat unless you put it in.
- The one who is most prepared...wins!

He is survived by his wife Marilyn of 61 years, four children, Dr. Lesley Parke, Julie Parke Jones (Terry), David Robin Parke and Elizabeth Parke (Bret), five grandchildren and three great-grandchildren. A Celebration of Life in remembrance of Robin will be held for family and friends when it is safe for groups to congregate.