



## State President's Message

Andy DiLeo, PE, SE  
SEAOA State President



Hello SEAOA,

I'm sure by now you've seen the announcements about this year's convention. I'm excited that we are back live and in-person this year. Thanks to Arpan and the convention planning committee, we have another excellent lineup of presentations. All day Thursday will be a post-tension design workshop presented by the internationally renowned Bijan Alamani, Ph.D., P.E., S.E. of PT-Structures Inc. We will enjoy a trade show during the breaks and a reception on Thursday evening with appetizers and

drinks.

Friday presentations include significant changes to the 2021 IBC in the morning and split tracks in the afternoon. Other highlights on Friday include our Excellence Award presentation at lunch and raffle prizes before the final presentations.

I hope you've already registered to join us or you're considering it now. There are still rooms available at a great rate. Come join your fellow members, earn PDHs, and continue to improve your structural engineering knowledge!

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### TUCSON CHAPTER MEETING

April 20, 2022  
11AM

[Structural Changes in the Masonry Code](#)



### CONTACT US

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### CENTRAL CHAPTER MEETING

April 19, 2022  
5:30PM

[Structural Changes in the Masonry Code](#)

## Central Chapter Chairperson's Message

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



I hope everyone is having a great 2022 so far.

The Central Chapter has resumed in-person monthly dinner meetings. Please join us at our next meeting on April 19<sup>th</sup>. The presentation will be on

masonry design by Paul Scott, the current Chair of the Technical Activities Committee of the Masonry Society. We are very honored to have Mr. Scott discuss the structural changes in the 2022 TMS 402 Masonry Code, including the new lintel design revisions.

The SEAoA 56<sup>th</sup> Anniversary Convention will be held at the El Conquistador in Tucson, AZ, May 12<sup>th</sup>-14<sup>th</sup>. Please visit the SEAoA website for more information and to sign up.

## YMG Nominations

The Younger Member Group is looking for nominations for the next YMG Chair, Treasurer, ASU Rep/Student Liaison and the Social/Networking positions. A YMG promotes an energetic environment that encourages professional advancement and information exchange within the structural industry. YMG assists Young Engineers as they build their careers in the Structural Engineering Profession, offering training, networking, and community outreach opportunities to its members. The YMG Past-Chair, John Heck, will be available to mentor the new YMG leadership team as they build the Younger Member Group community. Each position is a one-year term, limited to those 35 years old and younger, and responsibilities include:

- YMG Chair
  - Lead quarterly YMG meetings
  - Coordinate and attend main chapter meetings
  - Recruit and retain members
  - Help plan construction site visits or vendor demonstrations
  - Assist all other positions
- Treasurer
  - Manage YMG budget and keep track of attendance, keep up to date contact information
  - Recruit and retain members
- ASU Rep/Student Liaison
  - Reach out to ASU student groups to encourage participation in the YMG
  - Recruit and retain members
- Social/Networking
  - Plan and coordinate quarterly social events.
  - Coordinate combined social with AIA
  - Setup other events besides HH
  - Help out with Engineering Days at the AZ Science Center
  - Recruit and retain members

Please email [info@seaoa.org](mailto:info@seaoa.org) to nominate a young member or to volunteer for these positions. For further questions about the positions, contact John Heck: [jwheck246@gmail.com](mailto:jwheck246@gmail.com)

## Tucson Chapter President's Message

Jennifer Patronski, PE, S.E.  
Tucson Chapter President



Greetings, SEAOA  
Membership!

The Tucson Chapter is ramping back into an active schedule. Monthly lunch meetings have resumed. Thank you to Adam Boucher from Hilti (and the Central Chapter) for his presentation on *Post-Installed Rebar*

*Design Using Anchor or Reinforcement Provisions* in March and Michael Puhmann of ASE for his February presentation on *Case Study for the Innovative Use of Advanced Carbon Fiber Strengthening at the ASU HFC Canopy*. Please join us in April when Paul Scott from CTS presents on *Structural Changes in the 2022 Masonry Code ( TMS 402 ) and Lintels/Beams per the 2022 TMS 402*.

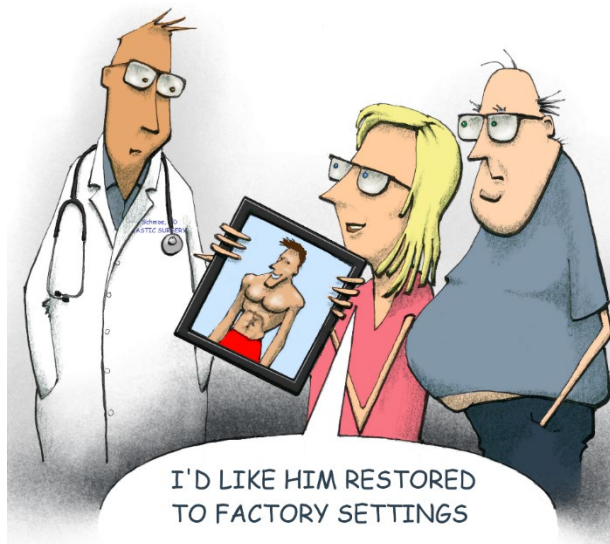
In April, the Tucson Chapter will be holding a Tucson Chapter Board Meeting; the agenda includes a discussion of nominations, voting, and transition of the new Board. More to come

following our meeting; however, we expect at least two openings on the Board will be open or in transition. I will be stepping into the Past-President position, and our interim Vice Presidents (Steven Hess and Brent Woods) will be stepping down. Keep your eyes open for nomination and voting announcements in the near future. If you are interested in being an active part of SEAOA Tucson, please contact me at [jmpatronski@scice.com](mailto:jmpatronski@scice.com) and/or Steven Hess at [hessse@msn.com](mailto:hessse@msn.com).

The Tucson Board will also be discussing how to increase membership participation. Both the Tucson and Central Chapters have had very low turnout at meetings and events. Transitioning from our COVID caves can be hard, and our market is extremely busy. Still, networking and continuing education are valuable to us as individuals, companies, and associations. Please, come join us! If you have ideas on meeting presentations or activities, we are all ears!

Tucson is also excited to host the SEAOA State Convention. We look forward to seeing you May 12-14; for more information, please reach out to me ([jmpatronski@scice.com](mailto:jmpatronski@scice.com)), or email [info@seaoa.org](mailto:info@seaoa.org).

**THE RIGHT BRAIN**  
© Brent Wright rightbrainwrightengineers.com



Talk about recharging your batteries! Wouldn't this be nice: put on a few pounds...notice some wrinkles...lose a little hair...catch a virus. No problem. Just restore to factory settings. No longer will youth have to be wasted just on the young.

*This Right Brain cartoon is a contribution from Brent Wright of Wright Engineers, an SEAOA supporting firm. If you would like to contribute an original cartoon, please email it to [info@seaoa.org](mailto:info@seaoa.org)*

## SEAOA's 2022 E-Week at the Mall

Sarah Kay Twine, EIT

Engineers Week is a fun-filled week celebrated each year in February, where engineers are commended for their amazing achievements. This weeklong celebration is held closely in conjunction with George Washington's birthday, because many consider him our nation's "first engineer." E-Week provides engineers with an opportunity to boost awareness regarding the need for engineers, technicians, and technologists and also piques the interests of young, curious minds to pursue engineering and related fields.



This year the Structural Engineering Association of Arizona hosted its annual E-Week Spaghetti Tower Event at Park Place Mall in Tucson. The goal of this event was to use angel hair spaghetti sticks and mini marshmallows to construct the tallest spaghetti tower. Several children's towers measured over 24" tall, with the tallest tower measuring 34" not including its antenna! There were also creative souls that stepped outside of the box to design masterpieces with differing criteria, such as balancing a wide structure with a small spaghetti/marshmallow base. Even parents could not resist getting involved in the spaghetti tower event! There were quite a few playful battles between parent and child that engaged crowds.



This fun-filled challenge was not only special because it was fun, but it allowed structural engineers to share their experiences and enjoyment of structural engineering with children and their parents. Many parents confessed their lack of knowledge and were amazed by structural engineers' role in society. So many smiles and laughs filled the air. This event was a huge success because everyone had a blast and had the chance to learn about structural engineering!

Special thanks to all the SEAOA volunteers who participated in this E-Week event:

Allan Ortega (M3 Engineering)  
 Mike Lu (M3 Engineering)  
 Sarah Kay Twine (Martin, White & Griffis)  
 Nicolas Twine



## Future Cities Competition

Richard Dahlmann, PE, SE

The Future City Competition Arizona regional finals were held at the beginning of February. This competition is for 6<sup>th</sup> through 8<sup>th</sup>-grade students and is a great introduction to engineering. Teams from all across Arizona competed in this year's regional finals. Due to the current Covid situation, this was a virtual competition again this year.

The students have been working diligently on their cities since September. Their deliverables included:

- A Sim City computer model of their city
- An essay describing their city
- A physical scale model
- and a video presentation about their city

Many engineering societies give out awards to teams that emphasize their discipline. If my memory is correct, this is the SEAOA's twelfth year participating in Future Cities.

A special Thank You to Mark Sipes (Maricopa County), Pam Singleton (Pangolin), Kelly Robertson (Caruso Turley Scott), and Ben Hagos (OMCO Solar) for being SEAOA judges for this year's competition.

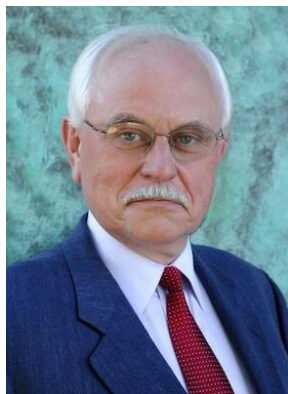
This year, the SEAOA award recipient was: **Los Alquitran: A Beautiful City Rising from the Tar.** The students who created this city attend S'More Learning.

This city was built in the ruins of Los Angeles after a devastating earthquake. Their concepts included methods to build with recycled/waste products. They proposed using carrots and beets to strengthen concrete (Google it- this is a real concept!). They also proposed adding orange peels to insulation and algae-powered panels to create a carbon-neutral energy supply.

Congratulations Los Alquitran!

## In Memoriam, Dr. Reidar Bjorhovde

Sal Caccavale, PE, SE



Steel research engineer Reidar Bjorhovde, P.E., Ph.D., and a friend of SEAOA passed away last November 2021 at the age of 80.

He was a professor for many years at the University of Arizona and the University of Alberta in Canada, and he was professor and chair of the Department of Civil

Engineering at the University of Pittsburgh. Reidar was born on November 6, 1941, in Harstad, Norway. He earned a Doctor of Engineering from the Norwegian Institute of Technology and received a PhD in Civil Engineering from Lehigh University (Pennsylvania) in 1972.

Dr. Bjorhovde's research and dissertation on the strength of steel columns became the basis for both national and international design codes. He founded the Bjorhovde Group in 1998, was a Fellow of the Structural Engineering Institute, and was named a Distinguished Member of the American Society of Civil Engineers (ASCE) in 2014. Reidar gave technical presentations to the SEAOA chapters over the years and will be well remembered by many in our organization.

Additional information on Reidar and his illustrious career can be found using the links below.

- <https://www.aisc.org/pressreleases/press-releases/in-memoriam-reidar-bjorhovde/?msclkid=a25fc78cb19711ec989881c4e84ab1cf>
- <https://www.legacy.com/us/obituaries/tucson/name/reidar-bjorhovde-obituary?id=31829612&msclkid=a26000c3b19711eca7b2ce583e1b80fb>

## NCSEA Younger Member Scholarship Recipients

The SEAOA would like to recognize and congratulate two of our younger members, Cesar Castro and Chase Carpenter Young, on recently being awarded NCSEA Young Member Scholarships for the upcoming NCSEA National Summit in New York City! A link to all award winners and Cesar and Chase's applications can be found at the bottom of the post.

Each year NCSEA awards Young Member Scholarships for the [NCSEA Structural Engineering Summit](#). The scholarship competition is open to any current member of an NCSEA Member Organization who is under the age of 36.

First-time scholarship recipients will receive complimentary registration to the Summit, which includes all educational sessions, access to the trade show, an invitation to the NCSEA Awards Event, and a travel stipend of \$1000 to use toward transportation and hotel costs. Previous recipients will be awarded a returning scholarship that will cover Summit registration only.

### [NCSEA Young Member Summit Scholarships](#)

Congratulations to Cesar and Chase!



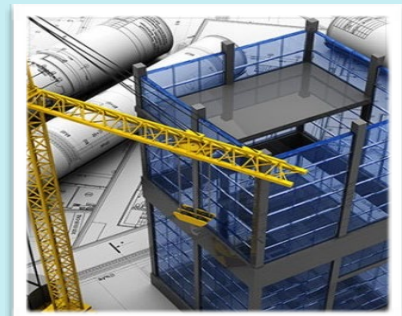
[Cesar Castro's NCSEA Summit Application Essay](#)



[Chase Carpenter Young's NCSEA Summit Application Essay](#)

## REQUEST FOR NEWSLETTER ARTICLES

The SEAOA Newsletter committee always appreciates input from the membership about articles and information that you'd like to see in upcoming newsletters. The newsletter is an excellent place for the SEAOA membership to share opinions, ideas and information with the rest of the association. Also, anyone who could volunteer a little time every quarter to help publish the newsletter is most welcome. One easy way to help would be to "proof" the newsletter before it's published. Please contact Sal Caccavale ([seccbc@cox.net](mailto:seccbc@cox.net)) or Mark Sipes ([mark\\_sipes@tempe.gov](mailto:mark_sipes@tempe.gov)) if you have any articles that you'd like to submit, if there are any topics you'd like to see in future SEAOA Newsletters or if you'd like to help with publishing the newsletter.



## 2021 SEAOA Excellence in Engineering Winner: P.K. Associates

### *New Buildings, Over \$10 Million: Mirabella Arizona State University, Tempe, AZ*

Mirabella ASU is located in the heart of downtown Tempe, providing numerous social, educational, and recreational activities to the residents. The project features a 454,205 square foot L-shaped senior living building with 20 story and 13 story wings, over two levels of below-grade parking. The facility provides 252 independent living units and 52 assisted living/skilled nursing/memory care units. The ground level accommodates Dining/Restaurant, Auditorium, Convention Center, Library, Loading Dock, Child Care, Fitness/Pool, Lobby, and a Bistro. This facility encourages seniors to be engaged—to learn, discover, and grow in a community environment while supporting their healthcare needs.

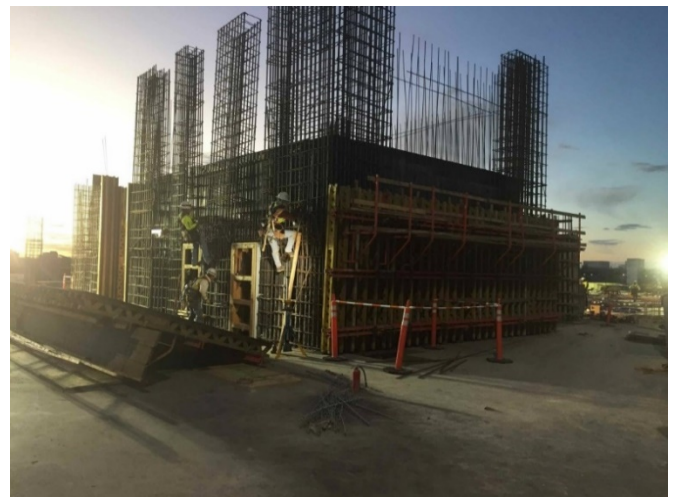


This cast-in-place structure includes unbonded post-tensioned flat plate elevated slabs and a mild reinforced podium slab supported by concrete columns, shear walls, and basement walls. The level one slab transitions from the larger footprint of the below-grade garage to the building above while accommodating features such as a pool and spa, landscaping, and truck loading. In collaboration with the contractor, the slab was designed with the top sloping for drainage while the bottom of the slab remained flat. All other elevated slabs were designed as P.T. flat plates, minimizing structure depth resulting in lower overall building height and cost savings on the

exterior skin system while reducing costs of both reinforcing and concrete. The first level below grade, level P1, was also P.T. flat plate and was carefully detailed to prevent restraint from the surrounding basement walls.



Minimal concrete shear walls—a central core and two single, straight walls at opposite stair shafts—kept the lateral support structure compact. Structural efficiency is apparent at the mat foundation. Elevator pits were detailed as block-outs in the shear wall mat foundation resulting in savings on required excavation, reduced shear wall height, and savings on both concrete and rebar.



## 2021 SEAOA Excellence in Engineering Winner: P.K. Associates

### *New Buildings, Over \$10 Million: Creighton University Health Sciences Campus, Tempe, AZ*

Omaha, Nebraska-based Creighton University has expanded its Phoenix medical school campus on the revitalized Park Central Mall property. The project consists of a 7-story, 183,000 SF health sciences building with classrooms, a 6,000 SF CEC (Community Education Center), and a 30-seat non-denominational chapel on the first two floors. The campus is home to a full, four-year medical school, a nursing program, pharmacy, occupational therapy, physical therapy, and physician assistant programs. More than 900 students will eventually be enrolled in these programs. The cast-in-place structure includes unbonded post-tensioned slabs supported by concrete walls and columns.

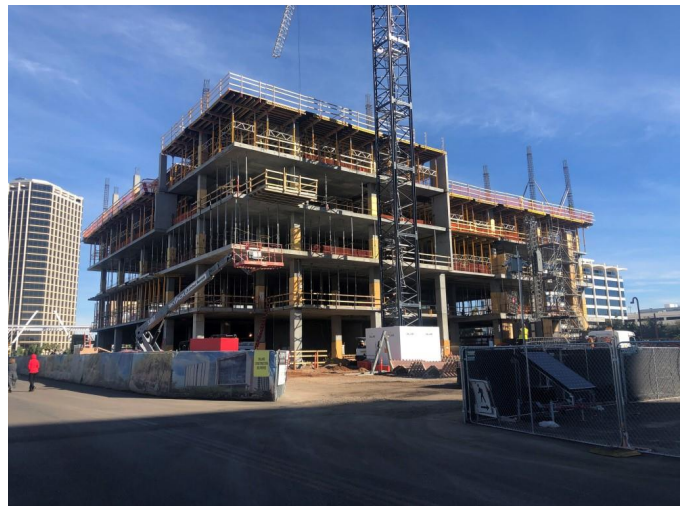


P.T. flat plate slabs are supported by columns at a typical 30' x 30' column grid. The slab was thickened at the southwest corner of the building at levels three and above to accommodate a 28' cantilever in one direction and a 23' cantilever in the opposite direction, avoiding a corner column that would constrict the entry. Select rooms required a 46' clear span, achieved via post-tensioned band beams. These beams were coordinated with mechanical duct routing to maximize ceiling heights.

The second level includes a nearly 6,000 square foot outdoor plaza over first-level event/ballroom spaces. Band beams span 46' to a girder beam, allowing concrete columns to align with ballroom dividers. This girder was thoughtfully detailed behind the exterior wall line with a slab section extending out as an exposed concrete design feature of the building exterior.



The specified floor and roof framing system is efficient, shallow, and takes advantage of the strengths of local concrete contractors, resulting in savings in concrete, rebar, and exterior skin system. In addition, it provides an opportunity to cast architecturally exposed concrete cornices, fins, and eyebrows that serve as an architectural design feature and provide visual interest to the building exterior.







# SEAoA 56th Anniversary Convention and Conference

May 12th - 14th, 2022

Attendee Registration Information

**REGISTER ONLINE at <http://www.seaoa.org>**

**HILTON EL CONQUISTADOR 10000 N. ORACLE RD, TUCSON, AZ PHONE: (520) 544-5000**

- Excellent Variety of Structural Engineering Seminars with 12 PDH Offered
- Exhibitor Trade Show and Welcome Reception
- SEAoA Excellence Awards
- Raffle Prizes for Attendees
- Commemorative Gift
- Relaxing Resort Atmosphere

## SEMINAR TOPICS (12 PROFESSIONAL DEVELOPMENT HOURS)

### **2021 IBC Significant Structural Changes**

John "Buddy" Showalter, PE(International Code Council)

### **Exploring Tall Wood: New Code Provisions for Tall Timber Structures -**

Mike Romanowski (Woodworks)

### **Masonry Tips: Engineering Design and Detailing**

David Biggs, SE, PE (Constructive, LLC/Arizona Masonry Council)

### **FRP Column Retrofit for Mt. Zion Housing -**

Aniket Borwankar and Victor Reyes (Simpson Strong Tie)

### **Restoring a Century Old Building -**

Lauren Feinstein (Simpson, Gumpertz & Heger)

### **Detailed Design Methods for PT Elevated Slabs All-Day Thursday Workshop -**

Bijan Aalami, Ph.D., P.E., S.E. (PT-Structures Inc)

### **Building the Right Framework for Sustainable and Resilient Structures -**

Rex Buchanan, PE, SE (AISC)





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### 2022 REGISTRATION RATES

	Registration Period	Member Rates	Non-Member Rates
<b>Thursday and Friday Sessions</b> (13.25 PDHs)	<b>Early Registration</b> February 28 - April 1	<b>\$275</b>	<b>\$375</b>
	<b>Standard Registration</b> April 2 - May 1	<b>\$325</b>	<b>\$425</b>
	<b>LATE/Walk-In Registration</b> After May 1	<b>\$460</b>	
	<b>Students</b> VALID ID REQUIRED February 28 - May 12	<b>\$25</b> Fee waived if sponsored by Chapter	
	<b>Companion Registration</b> Anytime	<b>\$185</b>	
<b>Saturday Session</b> (4.0 PDHs)	<b>Standard Registration</b>	<b>\$75</b>	<b>\$85</b>
	<b>LATE/Walk-In Registration</b> <i>Separate Registration on Website - After May 1</i>	<b>\$90</b>	<b>\$100</b>

### CONVENTION AND CONFERENCE SCHEDULE

#### Thursday May 12th

**8:15 AM - 9:45 AM**  
PT Design All-Day Workshop

**10:15-11:45AM**  
PT Design All-Day Workshop

**11:45-1:15 - Lunch**  
**1:15 PM** Convention Opening Remarks

**1:30 PM - 3:00 PM**  
PT Design All-Day Workshop

**3:30 - 5:00 PM**  
PT Design All-Day Workshop

#### Friday May 13th

**7:15 AM - 8:30 AM**  
Breakfast and Keynote

**8:45 AM - 10:15 AM**  
2021 IBC Significant Structural Changes

**10:45 AM - 12:15 PM**  
2021 IBC Significant Structural Changes

**12:15 PM - 1:45 PM**  
Lunch Presentation  
SEAoA Excellence Awards

**1:45 PM - 3:15 PM**  
FTP Column Retrofit for Mt. Zion Housing

**OR**  
Exploring Tall Wood: New Code Provisions for Tall Timber Structures

**3:15 - 3:45 PM**  
Attendee Raffle

**3:45 - 5:15 PM**  
Masonry Tips: Engineering Design and Detailing

**OR**  
Building the Right Framework for Sustainable and Resilient Structures

#### Friday Evening

*(Separate registration available)*

**SEAoA 56th Anniversary FRIDAY NIGHT EVENT**  
Event TBD

#### Saturday Ethics Seminar 8 AM - 12 PM

**Risk Management and Ethics for Engineers**  
*Michael Baker & Jason Ebe*

*Separate Registration Required (4.0 PDH)*

**Join SEAoA now for member rates and membership through July 2023**

Email us directly for these offers at [info@seaoa.org](mailto:info@seaoa.org)

**\$125 Hotel Rate** (Single & Double Occupancy)  
(Special Discounted Rate)

Book by phone 800-327-0396 to request SEAoA Group rate or online: [SEAoA 2022 Conference El Conquistador](http://www.seaoa.org) to receive our guaranteed lowest negotiated rate  
BOOK EARLY Rates are only available through April 21

**5:00 PM - 7:30 PM**  
Exhibitor Trade Show and Cocktail Hour

# SEAOA 56th Anniversary Convention and Conference

May 12th-14th, 2022



## DETAILED DESIGN METHODS FOR PT ELEVATED SLABS

### Thursday All-Day Workshop

The 2022 SEAOA Convention and Conference will highlight a special all-day workshop by Dr. Bijan Aalami, international-renowned structural engineer, software developer, educator, and leader in the analysis and design of concrete structures with specialization in post-tensioning. This workshop will be split into four-1.5 hour sessions on Thursday covering:

- Application of Post-Tensions in Building Construction
- Concepts and Procedures for Design of Post-Tensioned Members
- Numerical Example of a Podium Slab
- Shortening and Performance Details.

This special workshop offering will be held on Thursday, May 12th and is included in your registration to the convention. For more information on each session, Dr. Aalami, and to register for the conference:

**REGISTER ONLINE: [HTTP://WWW.SEAORG](http://www.seaoa.org)**

**HILTON EL CONQUISTADOR, 10000 N. ORACLE RD., TUCSON, ARIZONA**

# 56th Anniversary SEAoA Convention and Conference

## SATURDAY ETHICS SEMINAR 4.0 PDH CREDITS 2022

**DATE: MAY 14<sup>TH</sup>  
TIME: 8AM - 12PM  
7:30 AM BREAKFAST**

**HILTON EL  
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**TUCSON AZ**

**REGISTER NOW:  
[HTTP://WWW.SEAOA.ORG/  
EVENT-3759296](http://www.seaoa.org/event-3759296)**



**JOIN US FOR A HALF-DAY  
ETHICS SEMINAR**

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MICHAEL BAKER & JASON EBE  
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