



# Architects, Shooting Range Designers & Developers Seminar 2022



10 AIA HSW (Health Safety and Welfare) Continuing Education Units

Health and Safety—Air Handling, Fire Code, Acoustical Compliance, Noise Ordinance,  
Indoor /Outdoor Shooting Range Solutions, OSHA Compliance NIOSH, UFC, UL  
\$100 fee includes four plated meals

## JOIN US

April 6-7, 2022

Doubletree Hotel  
2101 Dixie Clipper Dr.  
Jacksonville, FL

Sponsored by **TROY ACOUSTICS CORPORATION**  
and







Tuesday: Check-in April 5, 2022: Doubletree at JAX Jacksonville, FL

Wednesday	April 6, 2020
7:00 a.m. — 7:30	Full Breakfast                      Doubletree, JAX
7:30 a.m.— 8:00	Range Vendors presentations
8:00 a.m.	Introductions by Bill Bergiadis,    Location: Ballroom CEO, Troy Acoustics Corporation
8:15 a.m.—9:15 a.m.	Speaker: Bobby Cummings, PE, DBIA /Mike Stillwell Topic:    Shooting Range Architecture and Engineering
9:15 a.m.—9:30 a.m.	Break
9:30 a.m.—10:30 a.m.	Speaker: Capt. William Murphy (Ret.), PhD Topic: Assessments of Firearms Noise Exposures and Hearing Loss Prevention
10:30 a.m.—10:45 a.m.	Break
10:45 a.m.—11:45 a.m.	Speaker: Ning Xiang, PhD Topic:    Architectural Acoustic Fundamentals and Challenges for Shooting Ranges
11:45 a.m.—12:15 p.m.	lunch
12:15 p.m.— 12:45	Range Vendors presentations
12:45 p.m.—1:45 p.m.	Speaker: Jeffrey Nielsen Topic:    DoD Small Arms Range Design Criteria UFC 4-179-02
1:45 p.m.— 2:00 p.m..	Break
2:00p.m.—3:00 p.m.	Speaker: Dwayne Sloan, UL LLC Topic: Importance of Third Party Testing and Certification for Shooting Range Buildings
3:00 p.m.—3:10 p.m.	Break
3:10 p.m.—4:10 p.m.	Speaker: Miles Hall Topic:    Expecting and Inspecting the Unexpected
4:10 p.m.-4:20 p.m.	Break
4:20 p.m.—5:20 p.m.	Speaker: Dale Krupinski Topic Environmental, Health, & Safety Design Considerations for Firing Ranges
Dinner at 6:00 p.m.—	Doubletree, JAX

### Speakers (in alphabetical order)

- BILL BERGIADIS
- BOBBY CUMMINGS, PE, DBIA
- MILES HALL
- DALE KRUPINSKI
- CAPTAIN WILLIAM J. MURPHY, Ph.D.
- GARY SIEBEIN, PROFESSOR EMERITUS
- JEFFREY NIELSEN
- DWAYNE SLOAN, UL LLC
- BRIAN WRIGHT
- NING XIANG, PHD RPI



## Agenda

Thursday April 7, 2022  
 7:00 a.m. — 7:30 Full Breakfast Location: TBD

7:30 a.m.—8:15 Range Vendors presentations

8:15—9:15 a.m. Speaker: Gary Siebein, FASA, FAIA Professor Emeritus  
 Topic: State-of-the-Art Design Methods for Indoor and Outdoor Firing Range Acoustics

9:15 a.m.—9:30 a.m. Break

9:30 a.m. —10:30 a.m. Speaker: Brian Wright,  
 Topic: Indoor Firing Range Ventilation Systems

10:30 a.m.—10:45 a.m. Break

10:45 a.m.—11:45 a.m. Speaker: Bill Bergiadis, Troy Acoustics  
 Topics: The Criticality of Shooting Range Sound Attenuation

12:00 NOON Depart End of session

Thank you for joining us.

NOTE: To those of you who are requesting AIA credit please make sure that you sign up on sign up sheet in the rear of the classroom for each class.

### Speakers (in alphabetical order)

- BILL BERGIADIS
- BOBBY CUMMINGS, PE, DBIA
- MILES HALL
- DALE KRUPINSKI
- CAPT. WILLIAM J.MURPHY, PHD (Ret)
- GARY SIEBEIN, PROFESSOR EMERITUS
- JEFFREY NIELSEN
- DWAYNE SLOAN, UL Labs
- BRIAN WRIGHT,
- NING XIANG, PHD, RPI

Also

#### RANGE VENDORS:

- INVERIS
- LASERSHOT
- ACTION TARGET
- RANGE SYSTEMS
- SPIRE
- SAVAGE RANGE SYSTEMS
- SRI
- RUSHING AIR/RANGES





*“ The problem with range noise for police departments are two-fold. First, as neighborhoods grow closer and closer to ranges, the ranges are increasingly perceived as nuisances. Second, officers are realizing that repeated exposure to gunfire on a range leads to stress and possible disability “*

**Bill Bergiadis**

**Troy Acoustics Corporation**

**TOPIC: ACOUSTIC AND DESIGN SOLUTIONS AS IT RELATES TO SHOOTING RANGE NOISE**

**Architects' and Range Designers' Seminar 2022**

- *President/CEO Troy Acoustics Corporation has extensive experience in shooting range acoustics design for multiple ranges worldwide including all 14 of the USAF ETL (Engineering Technical Letter) 11-18 compliant ranges; four (4) USACE (United States Army Corps of Engineers Special Operations RT60 of 1.25 seconds reverb time across all octaves from 125 Hz to 8000 Hz compliant ranges as well as the FBI range at Quantico. Bergiadis co-developed the industry accepted acoustic standard for multiple military shooting range facilities as well as sound testing procedures specifically geared to shooting range RT60 testing. Bergiadis is also a renowned speaker at NRA Range Development Conferences as well as at SHOT Show. He is often called upon as an expert witness for court cases involving shooting range noise attenuation. Bergiadis developed acoustic designs for multiple indoor and outdoor shooting ranges as well as major broadcast installation including the Weather Channel, Fox News and Accuweather to meet OSHA, ETL 11-18, UFC, military specifications as well as local noise ordinances.*

*PARTIAL LISTING of related projects:*

*Firearms & Ammunition firms Beretta; FN Mfg.; Hornady, IWI; Sig Sauer  
Indoor Shooting Ranges: Ankeny Police;;Chandler Police;;Council Bluffs PD,  
FBI Quantico, Georgia Gun Club Atlanta; Triangle Shooting Academy, NC.  
USACE –United States Army Corp of Engineers: Aberdeen; Fort AP Hill; Fort Bragg; Fort Campbell; Fort Carson; Fort Drum; Fort Lewis; Camp Lejeune  
MARSOC;; Parris Island  
USAF– United States Air Force Range: Andrews AFB, Barksdale AFB; Kadena AB, Japan; Keesler AFB; Maxwell AFB; Misawa AFB, Japan; Patrick AFB; Vance AFB; Whiteman AFB; Wright Patterson AFB  
US Marine Corps Miramar, Pu’uloa  
Offutt AFB  
Tyndall AFB*

## **Contact information:**

**Title:** President/CEO  
**Company:** Troy Acoustics Corporation  
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Brunswick, GA 31525  
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**Phone:** 818-376-8491 direct or 800-987-3306 X802  
**Website:** [www.troyacoustics.com](http://www.troyacoustics.com)



*“ His professional focus is fueled by personal passion. As a reserve deputy sheriff in Bedford County, his firsthand experience informs and enhances his public safety .”*

**Bobby Cummings**  
**Clark Nexsen**



## TOPIC: SHOOTING RANGE ARCHITECTURE AND ENGINEERING Architects' and Range Designers' Seminar 2022

- Principal, Clark Nexsen
- Member of the Society of American Military Engineers (SAME)
- Served on the board for the Tidewater Chapter of the Virginia Society of Professional Engineers.
- Clark Nexsen ranked as a top 10 military design firm by Building Design + Construction
- Enjoys outdoor activities such as hunting and camping.
- Reserve Deputy Bedford County Sheriff's Office

“We also understand that firearms and police training is a hot-button issue, putting safety at the forefront of our shooting range design effort. With design leaders who have personally served in law enforcement, our public safety team understands the challenges facing law enforcement, military, and commercial agencies today. We partner with our clients to determine which trends are generating the most impact in their situation, from increasing training needs, to budget constraints, to community interest, and develop solutions that enable them to train more effectively in safe range environments.” Clark Nexsen

### COURSE OUTLINE:

1. Historical Change in Range Design Requirements over 20 years
  - a. You will be able to select design criteria appropriate for modern ranges that provide both a better training environment and a safer space to occupy.
2. Design for Noise Control
  - a. The course participant will be able to choose appropriate materials and techniques for noise control based on range configuration and noise level requirements.
3. Prevention of Environmental Contamination
  - a. You will be able to choose appropriate design features to prevent environmental contamination.
4. Ballistic Containment
  - a. The course participant will be able to choose appropriate design features to provide ballistic containment for various range configurations.

## Contact information:

**Title:** Principal  
**Company:** Clark Nexsen  
**Location:** 213 South Jefferson Suite 1011  
Roanoke, VA24011  
**Email:** [bcummings@clarknexsen.com](mailto:bcummings@clarknexsen.com)  
**Phone:** 540.613.6686



*“ Helping range/retailers around the country improve their operation in a safe manner and keep growing and building the shooting sports. “*

**Miles Hall**  
**Hall-N-Hall LLC**

**TOPIC:** Inspecting and Expecting the Unexpected (co-presenter)  
**Architects’ and Range Designers’ Seminar 2022**

*Miles Hall*

**SENIOR ADVISOR**

- Along with his wife Jayne, were the Founders of H & H Shooting Sports Complex in Oklahoma City. After 35 years of success; sold business in 2016
- Ranked as a top “10 dealer” by most major manufacturers in the shooting sports.
- H&H sold over \$20 million a year and sold 16,000 + firearms a year
- Honored as founding member and past president of the Association of Shooting Ranges, a founding member of the Association of Firearm Retailers, and a past board member of the National Shooting Sports Foundation.
- Named “2004 Retailer of the Year” by Shot Business Magazine and were co-founders of the first P-20 peer review groups in the shooting sports industry.
- In 2004, they were selected for the first Shooting Industry Academy of Excellence “Citizenship Award.”
- H&H received the first “Range of the Year” honor in 2006.
- H&H was the first facility to receive a “5 Star” rating from the National Shooting Sports Foundation.
- Inc. Magazine had selected H&H as one of the fastest growing privately held business in the United States for nine years and is the only gun dealer ever in that list for four of those years.
- They were one of the nation’s largest indoor range and retail center for the shooting sports.

*This course will provide guidance for range/retail facilities structure that impacts the health, safety, reliability and longevity of not only the building but the occupants ;and are important in the engineering and development process.*

## **Contact information:**

**Company:** Hall-N-Hall, LLC  
**Location:** Edmond OK 73013  
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**Phone:** 405-774-9014 cell 405-850-0334  
**Web page:** [www.HallNHall.com](http://www.HallNHall.com)





**TOPIC: ENVIRONMENTAL, HEALTH, AND SAFETY DESIGN  
CONSIDERATIONS FOR FIRING RANGES**

**Architects' and Range Designers' Seminar April 2022**

Mr. Krupinski has over 20 years of safety and health management experience including for lead/metals remediation and firing range environmental services such as: lead recovery/recycling, lead contamination remediation, range maintenance/improvements, hazardous waste stabilization, sampling, lead dust remediation, lead impacted soil treatment, and compliant site closure. Areas of expertise include OSHA compliance assessments, training, and program development in areas, such as but not limited to, recordkeeping, ventilation, occupational noise, personal protective equipment, respiratory protection, confined spaces, lockout/tagout, powered industrial trucks, machine guarding, electrical safety, and toxic/hazardous substances exposure monitoring.

**Education**

- B.S. Environmental Health; Bowling Green State University
- M.S. Environmental and Occupational Health Sciences University of Illinois at Chicago

**Professional Certifications**

- Certified Industrial Hygienist (ABIH #8578)
- Certified Safety Professional (BCSP #18214)

**Employment History**

- 2011 – Present: MT2 Senior Consultant providing overall project Safety and Health Management
- 2007 – 2011: Environmental and Occupational Health Services Manager, Federal Prison Industries (UNICOR)
- 2000 – 2007: Industrial Hygienist, US DOL-OSHA: Toledo, Chicago, and Englewood Area Offices, Directorate of Cooperative and State Programs, Office of Outreach Services & Alliances, and Directorate of Construction, Office of Construction Services 1999 – 2000: Industrial Hygienist, Abbott Laboratories: Pharmaceutical Products Division

**Contact information:**

**Title:** Certified Industrial Hygienist (ABIH)  
**Firm:** MT2 Firing Range Services  
**Location:** 14045 W. 66th Avenue  
Arvada, CO 80004  
**Email:** [dkrupinski@mt2.com](mailto:dkrupinski@mt2.com)

*“Safety, health, and welfare must be addressed in the project planning and design phase. Hazards identified during the design of a firing range can be eliminated or controlled through thoughtful design and engineering. Using a safety by design approach will reduce hazardous exposure and liability. Anticipating, identifying and controlling hazards in the design phase is easier and more effective than redesigning after a range becomes operational.*

*In this seminar, you'll review and apply the hierarchy of control system to minimize and/or eliminate common range hazards. “*

**Dale Krupinski**  
**MT2**





*“A major proponent of proactive hearing loss prevention programs that reduce workplace noise, shifting the focus from documentation of an injury to the prevention of occupation hearing loss”*

NIOSH (National Institute for Occupational Safety and Health)  
Division of Applied Research and Technology, Hearing Loss Prevention Team (Retired).

**TOPIC:** Measurements of Firearm Noise Exposures and Evaluation of Acoustic Treatments for Indoor and Outdoor Firing Ranges

Architects' and Range Designers' Seminar April 2022

Captain Murphy has been involved with research for the causative factors for occupational hearing loss for more than 25 years. He is a subject matter expert on noise exposure due to firearm noise and methods to prevent noise-induced hearing loss. He has served as the chair of the American National Standards Institute, Subcommittee 12 on Noise and he is the chair of the Acoustical Society of America's Technical Committee on Noise Recipient of the National Hearing Conservation Association's Outstanding Hearing Conservationist Award in 2015.

- Keynote speaker for the 2017 National Hearing Conservation Association conference.
- Authored more than 100 peer-reviewed papers, articles and reports on topics related to hearing loss prevention, noise exposure assessments, and hearing protection devices.
- Co-inventor of the NIOSH HPD Well-Fit™ hearing protector fit-testing system.
- Developer of software for testing hearing protector attenuation.
- Co-designer of the GRAS 67SB blast probe for measuring high level impulse noises.
- Recipient of the USPHS Meritorious Service Medal for his research in impulse noise.
- Recipient of the USPHS Outstanding Service Medal for his work on developing acoustic standards for hearing protection devices.

## Contact information:

**Title:** Captain, Commissioned Corps of the United States Public Health Service  
Centers for Disease Control and Prevention (Retired)

**Agency:** National Institute for Occupational Safety and Health

**Location:** 1090 Tusculum Ave. MS C-27  
Cincinnati OH 45226-1998

**Email:** [wjm4@cdc.gov](mailto:wjm4@cdc.gov)

**Phone:** (513) 533-8125 (Voice)  
(513) 533-8139 Fax (preferred)

**Website:** <https://www.cdc.gov/niosh/>



SHOOTING RANGE ARCHITECTURE AND ENGINEERING  
Architects' and Range Designers' Seminar 2022

TOPIC: DoD Small Arms Range Design Criteria UFC 4-179-02  
(Unified Facilities Criteria) Published March 2020

*Jeffrey Nielsen,  
author of ETL 11-18 and  
coauthor of  
UFC 4-179-02  
Unified Facilities Criteria*

*Mr. Jeffrey Nielsen from the Air Force Civil Engineer Center (AFCEC) is the author of Engineering Technical Letter (ETL) 11-18 which for the past 20 years has been the design criteria for all Air Force small arms ranges. Mr. Nielsen is also the co-author of the new joint small arms range Unified Facility Criteria (UFC) document UFC 4-179-02 which will replace ETL 11-18 and provide the design criteria for all three Services; including the US Air Force, the US Army and the US Navy which includes the US Marine Corps.*

**Jeffrey Nielsen, US Air Force  
DAF; AFCEC/COSC  
Small Arms Range SME**

**COURSE OBJECTIVE**

*The Small Arms Range Design Criteria Course is intended to present an overview of the Department of Defense (DoD ) requirements for designing and constructing new small arms ranges and major renovations to existing ranges. The DoD criteria is comprehensive and covers the unique criteria for all engineering disciplines from architectural to electrical.*

**Contact information:**

<b>Name</b>	Jeffrey Nielsen,
<b>Title:</b>	GS-14, DAF; AFCEC/COSC, Small Arms Range SME
<b>Agency:</b>	US Air Force
<b>Location:</b>	Tyndall AFB
<b>Email:</b>	<a href="mailto:jeffrey.nielsen@us.af.mil">jeffrey.nielsen@us.af.mil</a>
<b>Phone:</b>	DSN 523-6119 Comm (850) 283-6119



*“Siebein implemented a long term research agenda to provide a scientific basis for environmental and building acoustic design issues.”*

Senior Principal and  
Professor Emeritus,  
Architecture and Acoustics  
University of Florida

**TOPIC: STATE-OF-THE-ART DESIGN METHODS FOR INDOOR  
OUTDOOR FIRING RANGE ACOUSTICS**  
Architects' and Range Designers' Seminar 2020

Gary W. Siebein, Senior Principal Consultant, has worked on over 2,175 architectural and environmental acoustics projects around the world and conducted NSF-sponsored research in building acoustics through his Architecture Technology Research Laboratory at the University of Florida during a 41-year career.

His firm has developed unique measurement systems that can be taken in the field to measure firearms sound levels; developed computer modeling and noise assessment methods to address acoustical design issues in both indoor and outdoor ranges; and has developed instrumentation to measure the noise exposure of active shooters on ranges at their ears.

- His firm has worked on a number of ranges including the FBI Academy range in Quantico, Virginia; the Federal Law Enforcement Training Centers in Cheltenham, Charleston and Glynco (Brunswick); Camp Hansen in Okinawa; the Asymmetric Warfare Group range at Fort A.P. Hill; the Special Weapons Assessment Range in Crane, Indiana; police training facilities in Montgomery County, Maryland; Omaha, Nebraska; Dubuque, Iowa; Tampa, Florida; Pinellas County, Florida; and Albemarle, Virginia among others.
- The firm works on the full range of acoustical design and consulting for firing ranges including environmental, architectural, sound isolation, noise and vibration, and occupational.

## Contact information:

**Title:** Senior Principal Consultant in Architectural and Environmental Acoustics and Professor Emeritus, Architecture and Acoustics, Univ. of FL  
**Company:** Siebein Associates  
**Location:** 625 NW 60th Street, Suite C  
Gainesville, Florida 32607  
**Email:** [gsiebein@siebeinacoustic.com](mailto:gsiebein@siebeinacoustic.com)  
**Phone:** 352.331.5111 ext. 25  
**Website:** [www.siebeinacoustic.com](http://www.siebeinacoustic.com)

**SIEBEIN  
ASSOCIATES**





*UL Labs - Dwayne Sloan*  
Technical Director,

Building & Life safety Technologies,  
UL LLC

*“Architects, building owners, contractors and affiliated design professionals for shooting range buildings need to understand the safety and performance code requirements that govern these structures. Understanding this connection between building regulation, test standards, and third party certification will have a positive impact on the installation of compliant products – ultimately achieving a positive impact on the health, safety, and welfare of those in shooting range buildings.”*

Dwayne Sloan

**TOPIC: IMPORTANCE OF THIRD PARTY TESTING AND CERTIFICATION FOR SHOOTING RANGE BUILDINGS**

**Architects’ and Range Designers’ Seminar 2022**

- 32 years in fire testing and certification with UL
- UL Corporate Fellow
- First Vice Chair of ASTM E05 Fire Standards
- Chair of UL’s Fire Council
- Member of National Fire Protection Association and serves on several of their Technical Committees
- Member of International Fire Safety Standards (IFSS) – Standards Setting Committee

Several magazine and journal publications on various fire topics

UL’s Mission – “To promote safe, secure and sustainable living and working environments for people by the application of science, hazard-based safety engineering and data acumen”

**COURSE SYNOPSIS:**

*In this course, participants gain a better understanding of the connection between Building & Safety Codes, test Standards, and the importance of third party testing and certifications. This session will explore various means of demonstrating compliance of shooting range building materials and fire protection products. The course will also equip architects, building owners, contractors and affiliated design professionals with UL compliance systems and tools that can be used to determine whether building materials and fire protection related products comply with applicable standards.*

**Contact information:**

Company: UL LLC  
Email: 'Dwayne.E.Sloan@ul.com'



*“The design, installation, and control of the range ventilation system can be the difference between an unsafe range and a range that meets the IMC 2009, OSHA, EPA and NIOSH standards.”*

**Brian Wright**

**Carey's Small Arms Range Ventilation**



**TOPIC:**

**SHOOTING RANGE HEATING, VENTILATION AND AIR CONDITIONING Architects' and Range Designers' Seminar 2022**

*Brian and his team have collectively:*

- *Designed and installed successful small arms indoor firing range ventilation systems for the past two decades.*
- *Designed and installed over 800 ventilation systems in military, federal, municipal, and commercial indoor firing range projects over the past 25 years.*
- *Specialized their design in the control of contaminants created by indoor ranges and are currently known as an industry leader.*
- *Worked with the United States Navy to develop the current range ventilation standards as described in the Unified Facilities Criteria (UFC).*
- *Written the ventilation standards for the GSA, edited the standards for the United States Air Force as published in the ETL, and have been consultants for the Federal Law Enforcement Training Center (Department of Homeland Security) and FBI.*

**Contact information:**

**Title:** Shooting Range HVAC SME  
**Company:** Carey's Small Arms Range Ventilation  
**Location:** Tinley Park, IL  
**Email:** [bwright@careyscentral.com](mailto:bwright@careyscentral.com)  
**Phone:** (708) 532-2449



*“The need to understand acoustics is more profound than ever. As we have more sound and understand how to control and improve the sound, we are making a real difference in society.”*

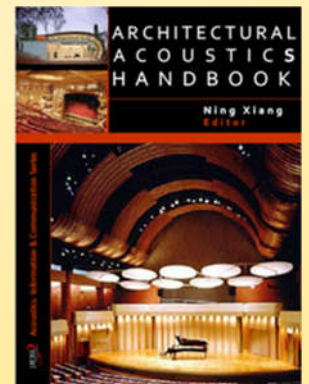
**Dr. Ning Xiang**  
*Director, Architectural Acoustics  
Graduate Program, RPI (Rensselaer  
Polytech Institute), Troy, NY*

**TOPIC: ARCHITECTURAL ACOUSTICS: FUNDAMENTALS AND CHALLENGES FOR SHOOTING RANGES**  
Architects' and Range Designers' Seminar 2022

- Director, Architectural Acoustics Graduate Program, RPI (Rensselaer Polytech Institute), Troy, NY.
  - Extensive knowledge of ASTM RT 60 advanced computer-based simulations, designed specifically for shooting range conditions.
- A researcher, educator, and inventor, Xiang is one of just 16 individuals world-wide to win the prestigious [Wallace Clement Sabine Medal](#), the architectural acoustics field's top honor.
- Recipient, Wallace Clement Sabine Award, Acoustical Society of America
  - Editor **Architectural Acoustics Handbook**, (504 pages, J. Ross Publishing), which culls the theory and applications from some of the leading minds in architectural acoustics, including his advanced RT methods
  - Presented with the Albert Nelson Marquis Lifetime Achievement Award by Marquis Who's Who
  - Doctorate, Ruhr-Universität Bochum

## Contact information:

**Title:** Professor  
**Company:** Rensselaer Polytechnic Institute  
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## To attendees:

We look forward to meeting you at our 4TH Annual Architects' and Range Designers' Seminar with a focus on acoustics and health, safety and welfare as it relates to shooting range design.

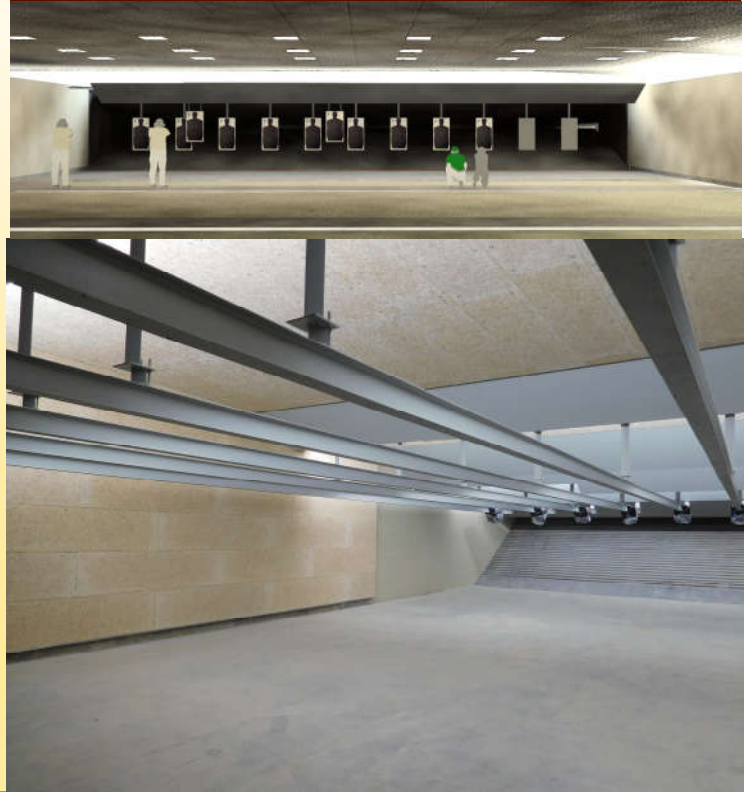
Troy Acoustics is proud to be the sponsor of this one of a kind opportunity, bringing the best of the best in the shooting range industry to share their experiences.

We are here to answer any questions that you might have. Just call us at 800-987-3306 Ext. 806

Best regards.

Bill Bergiadis, CEO

TROY ACOUSTICS CORPORATION



Architects and Range Designers Seminar April 6-7, 2022

## TROY ACOUSTICS CORPORATION

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