

USAF INDOOR SHOOTING RANGE GENERIC SPECIFICATION

STATEMENT OF WORK FOR ACOUSTICS

US Air Force BAFFLED SHOOTING RANGE ACOUSTICS (SRA) CONTRACTOR

The project requires a contractor that specializes in acoustics for INDOOR BAFFLED shooting ranges. This contractor must be experienced with a past proven history of successful installations. The contractor shall be hereinafter referred to as "SRA". The SRA must manufacture and design a compliant acoustic system complete with site specific shop drawings. The SRA can install the system, or oversee the installation of the system utilizing a qualified installation crew, who must install the system in accordance to site-specific SRA-engineered drawings. The SRA must be capable of performing pre and post testing per the requirement that meet the ETL specification of 1.5 second reverberation time with live gunfire from all points in the shooting range, to assure compliance.

SRA EXPERIENCE CLAUSE

The SRA shall have at least 5-years of experience in manufacture, design and installation and pre and post sound testing of shooting range acoustics and at least 5-years of experience in the design of MILITARY shooting range acoustics systems that meet OSHA and the ETL standard of 1.5 seconds reverb time.

The SRA shall provide an acoustic design which meets the following minimum requirements:

- **Treated Range Reverberation time** shall be **1.5 seconds or less as referenced in the ETL 11-18**. Testing shall verify this via the ASTM RT60 method for the 1.5 second time.
- **An APPROVED Acoustical Test course of fire procedure** for MILITARY ranges with a similar requirement must be presented to the USAF contracting officer.
- **Meets the USAF Occupational Safety and Health Standard 48-20 mandatory compliance dated May 10, 2013** re: meet or exceed the requirements of OSHA Title 29, CFR, 1910.95 noise exposure limits.
- **Acoustical testing upon completion** as a minimum to be completed by an **acoustical engineer with experience in measuring shooting ranges**. The US Air Force shall supply the shooters and ammunition.
- **Digital recording equipment** is to be used with a **sampling rate of at least 192k at 24 bits. All microphones** used for testing to be an **instrumentation type rated at 174 dB peak SPL or greater**. All microphones to be calibrated on site. The intent is to use the proper recording equipment to capture the gunfire event that would accurately sample the peak levels and Reverberation Time of live gunfire.
- **Completed acoustical reports** submitted to end user. The intent is to provide a written record of the pre and post acoustical treatment gunfire peak level and Reverberation Time.
- **NRC rating** for the acoustical materials to be used for the completed facility shall be a minimum **NRC value of .89 or better** as confirmed by a National Institute of Standards and Technology (NIST) and a National Voluntary Laboratory Accreditation Program (NVLAP) certified acoustical laboratory. The intent to validate the acoustical laboratory results of the acoustical materials used.
- **Acoustical Sound Board** that is to be used for the range acoustic treatment is to be manufactured with **Portland Cement and Wood fibers, ASTM C 612, Type IA or Types IA and IB**; density of not less than 4.5 lb/square foot with an one inch section, unfaced, dimensionally stable 2" thick x 24" wide x 102" long, saw cut rigid board, paintable, impact resistant, bullet absorptive, with maximum flame-spread and smoke-developed indexes of 0 and 0, respectively. The intent is to make sure that the sound board used possesses the certifications required.

- **UL:** Fire-Test-Response Characteristics of Acoustical Sound Board material to be used: Provide acoustical wall/ceiling system with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

Flame-Spread Index: 0 or less.

Smoke-Developed Index: 0 or less.

The intent is to provide the safest training environment possible against fire.

- **Mineral Wool Insulation** that is to be used for the shooting range acoustical treatment is to be: 2.5 lbs. density, 2" thick x 24" wide x 48" high, **maximum flame-spread and smoke-developed indexes of 5 and 0, respectively**
- **Water Proof:** The acoustical materials used for the shooting range acoustical treatment shall maintain acoustical performance requirements for interior and/or exterior applications in adverse weather conditions, rain, humidity, snow, or extreme heat, without degradation or visual damage to the surface of acoustical board material. The intent is to make sure that the sound board used does not fail due to water exposure.
- **Bullet Absorption anti-ricochet and anti-splatter capabilities:** The acoustical materials that are to be used in the shooting range for the acoustical treatment shall be approved by the US Air Force for protection of the user of the range against ricochet and splatter. In acute (90°) or near-acute angle (45°) strikes, system shall allow errant bullets (**9mm, 5.56mm, 7.62mm**) to penetrate or pass without ricochet or splash back to the shooters or instructors, and without noticeable deformation of system. Or approved by a branch of the US military of similar test. The intent is to provide an acoustical system that does not require the use of plywood for splatter and ricochet to protect the shooters and instructors in the range.
- **Special Warranty:** Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical wall system that fails in performance or materials within specified warranty period. Failure in performance includes, but is not limited to, acoustical performance. Failures in materials include, but are not limited to, distorting or releasing from panel edge; or warping of core.

Warranty Period: Five (5) years from shipment date.

SRA shall submit with the bid a list of at least five (5) ranges in operation within the continental United States, of similar size of this project that meets these requirements. Copies of post sound testing (available upon request) must meet the minimum requirements defined in this proposal. The following information must be provided:

- Name and Address of the owners
- Short statement of work, i.e. manufacture, design and installation, required to meet or does meet 1.5 seconds reverb time or less, must be shown.
- Availability of post testing

The owner has the option of evaluating these documents. **If the range installations** referenced in the proposal do **not meet the minimum requirements shown in this document**, then the **SRA will be deemed UNSUITABLE**.

The SRA shall guarantee that the performance of the shooting range meets the performance criteria outlined in this proposal and that the SRA will make all the necessary modifications to bring the system into compliance.

OWNER VERIFICATION OF SRA EXPERIENCE

The owner may elect to visit the site of a project that the SRA has completed. SRA shall be responsible for contacting the completed installation sites to verify whether or not the federal or military site is accessible.