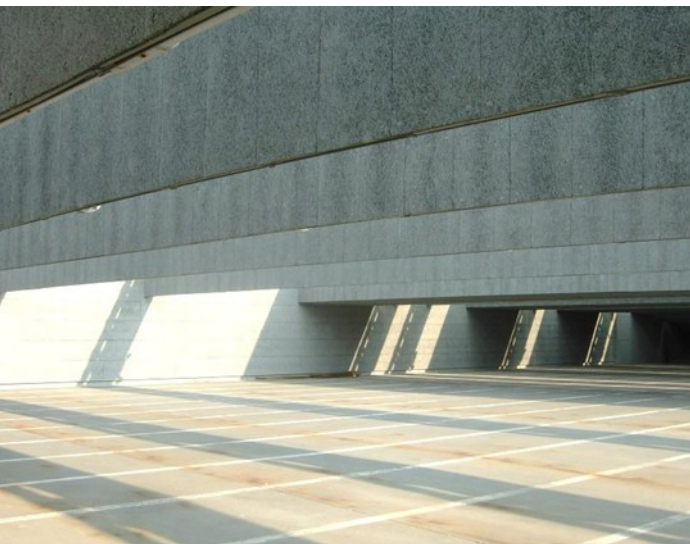
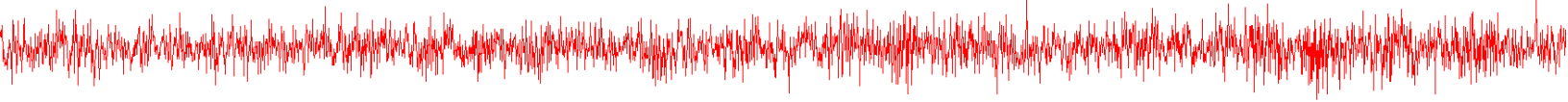




**Troy Acoustics Corporation**

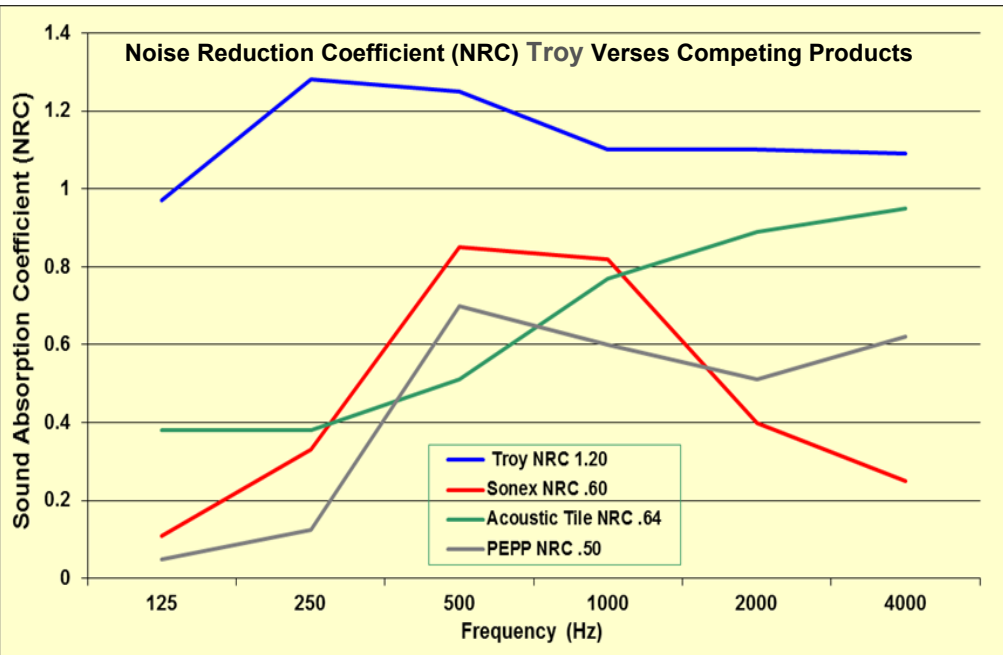
# **Army Corps of Engineers Shooting Range Acoustics Specifications**



**The World's Highest Acoustical Rating  
Engineering Noise Control...Guaranteed!**

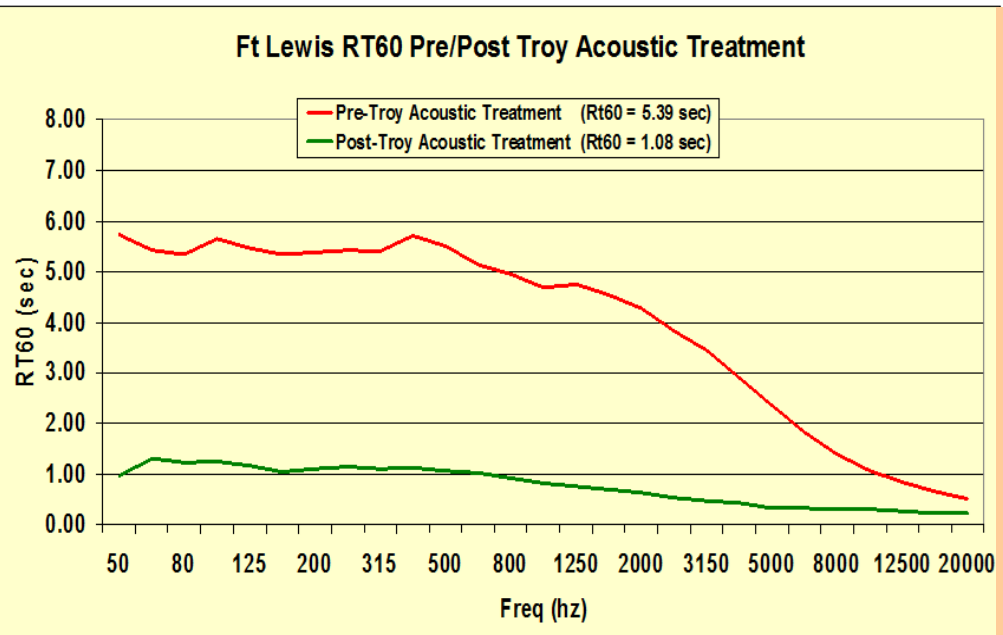
# The Troy System™ – Stop The Noise

In 2010 the Army Corps of Engineers issued a Scope of Work for SOUND ATTENUATION SYSTEMS for Indoor Shooting Ranges. These Performance Specifications were applied at SOCOM Ranges at Eglin AFB, FL; Ft Lewis, WA; Ft Carson, CO; Ft Campbell, KY; and Ft Bragg, NC. In all instances the Troy System™ met and/or exceeded their specifications.



2.4.2 The installed system shall provide a Noise Reduction Coefficient (NRC) of 0.85 or better throughout the range area. Reducing shooting range noise takes materials with high sound absorption and noise abatement properties. The Troy System™ has a Noise Reduction Coefficient (NRC) of up to 1.20 at all frequencies from 125 Hz to 8000 Hz. Sound that is not absorbed is reflected back in the form of reverberation; elevating the overall noise level. The chart on the left compares the Troy System™ with competitive products. High sound absorption takes materials with high-density and maximum porosity. No one offers better performance than Troy

The Troy System™ reduces Reverberation Time (RT60) to 1.3 seconds or less, meeting all military and civilian reverberation criteria...Guaranteed.

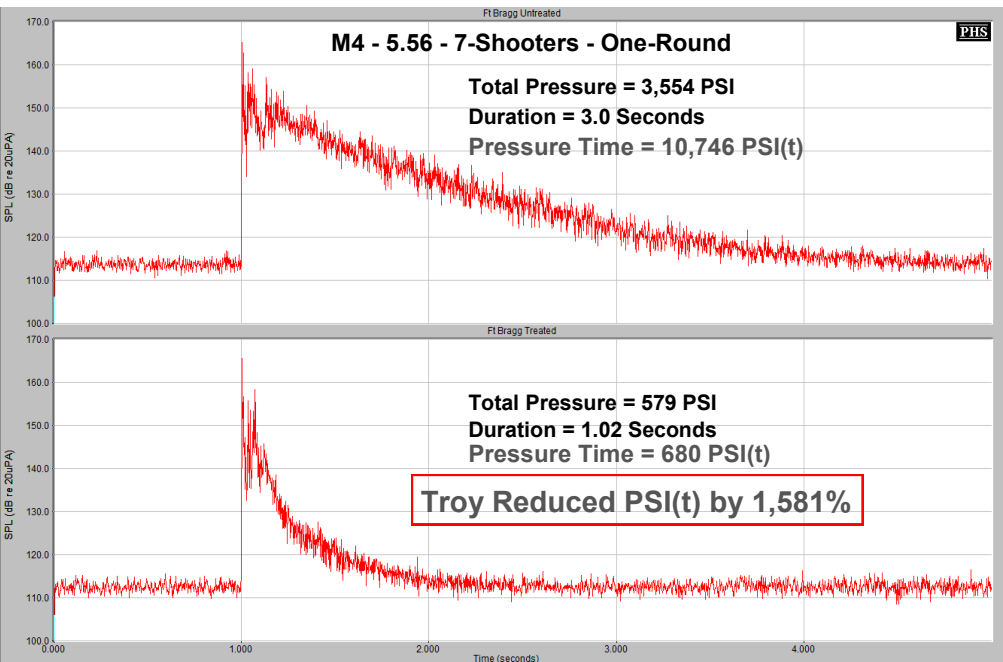


2.4.3. The installed system shall provide an RT60 of 1.3 seconds or less at all firing positions in the range, in all octave bands from 125 to 8000 Hz. Reverberation is nature's amplifier. Reducing the reverberation time in a shooting range is critical to abate the noise and protect the health and wellbeing of the personnel that train and work there. The chart on the left shows the indoor shooting range at Ft Lewis, WA with an RT60 of 5.39 seconds before treatment with the Troy System™ and 1.08 seconds after Troy's patented treatment. The reduction in reverberation time greatly reduces the impulse overblast energy on the range.

**Shooting Range Noise Is Hazardous To Health, and not just hearing. Loud noise can bring on hypertension, heart disease, anxiety, judgment impairment, sleep disturbance, and other conditions that lead to disability claims and lawsuits.**

# The Troy System™ – Stop The Noise

Troy Acoustics is pioneering measuring Pound-Force per Square Inch (PSI) and PSI-Time (PSI(t)). Pressure measurements give the total energy with single, and multiple shooters, firing multiple rounds, with semiautomatic and automatic weapon fire.



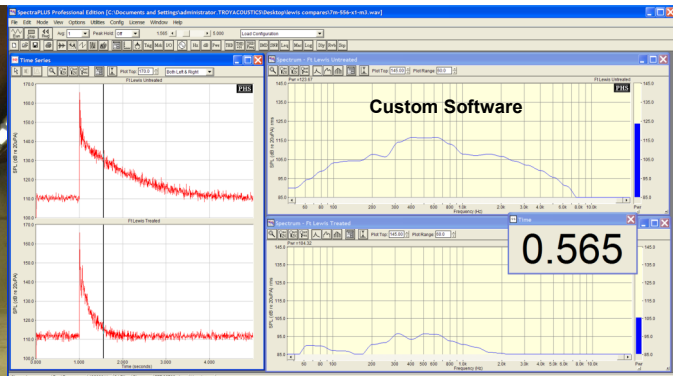
*At Ft Bragg, NC Troy Acoustic Treatment reduced PSI(t) by 1,581%*

The measuring of impulse overblast pressure over time indicates the amount and effectiveness of sound absorption on indoor and outdoor shooting ranges. There are products that may reduce reverberation time, mostly through diffusion, but not one reduces the pressure on the body like Troy.

The chart on the left shows a comparison of seven (7) shooters firing one-round on an M4, 5.56 before and after treatment with the Troy System™. The pressure on the shooters bodies after treatment was reduced by 1,581%.

Troy Acoustics has developed a comprehensive testing, and post analysis package specifically designed and configured for evaluating indoor and outdoor shooting ranges.

Personal Mounted Microphones



High-Speed 16 Ch Recorder



Single and Multiple Shooters



*Troy has developed a standardized course-of-fire, testing procedure, and post-analysis for all military indoor and outdoor shooting ranges and shoot houses*

The photos on the left show Troy's custom 16 channel recorder, the innovative Personnel Mounted Microphone (PMM), and post-analysis software.

Troy's course-of-fire measures all weapons used on a military range including; 9mm, .45cal, 5.56, and 7.62, in single shot, semi-automatic, and full automatic mode. All testing is done with single and multiple shooters.

Up to 16 microphones and pressure sensors are high-speed recorded for post-analysis and archived for further study.

**The Troy Solution: High Noise Reduction Coefficient (NRC) At All Frequencies | High Density To Circumvent Supersaturation | Maximum Porosity to Absorb High Percentage Of All Muzzle Blast Energy | Reduce Reverb Time (RT60) At All Frequencies to  $\leq 1.3$  sec**

# The Troy System™ — Stop The Noise

## The Troy Guarantee

2.5.4. The Supplier shall provide a 5 year replacement warranty for the installed system which shall be approved by the Government prior to acceptance of the proposed system.

✓ **Troy Acoustics** offers the only shooting range acoustics guaranteed solution. To maintain the full performance of the Troy System™ Troy provides, for the first five-years, at no charge, a replacement for any Troy Board™ whose surface is shot up more than 50% by errant rounds.

### 2.5 Material specifications

2.5.1. The installed system shall be waterproof, mold resistant, and durable to allow for maintenance without damaging or hindering the acoustical performance. The installed surface material shall be a mixture of Portland cement and wood fibers, with a density not less than 5lbs/sq. ft.. The supplier shall provide the manufacturer's recommended cleaning method in accordance with the contract documents. ✓ **Troy Acoustics**

2.5.2. The installed system shall be listed by Underwriters Laboratories as Non-Combustible. Flame spread shall not be greater than 5 in accordance with ASTM E 84. Smoke developed shall not be greater than 5 in accordance with ASTM E 84. ✓ **Troy Acoustics**



SPECIAL OPERATIONS CMD  
Ft. Bragg, Ft Carson, Ft Campbell,  
Ft Lewis; sole sourced to meet  
USACE ASTM RT60 1.3 seconds  
reverb time.



JE HOOVER BLDG., DC  
Shooting range renovation  
requirement was a quiet  
environment for the public  
and office personnel



US CUSTOMS HARPERS FERRY  
Requested a guarantee the  
range would comply with  
OSHA noise regulations. All  
criteria exceeded expectations



WRIGHT PATTERSON AFB, OH  
“The sound went from a  
boom to a pop” Lt. Gen., USAF



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