The Range REPORT

Options and Innovations: Rubber or Steel?

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Range owners offer their preferences for a backstop

Courtesy of MT2

One of the absolute, must-have parts of a range is a good backstop. Most outdoor ranges have earthen berms, but all indoor ranges and some outdoor ones have to make a choice: rubber or steel.

Swearing by steel

Steel backstops come in a variety of configurations, from Savage Range Systems' Snail to Action Target's Total Containment Trap. Michael Halverson, president of Shooting Range Industries in North Las Vegas, Nev., said one big advantage of steel over rubber is when it comes to lead recovery, no sifting or sorting is required.

"You can do your own lead collection, and send all the lead to the recycler and collect money for it," Halverson said. "That's pretty much the same for all steel backstops. Steel ranges have the big benefits of less maintenance, no down time for maintenance, doing your own lead collection, revenue from lead collection and a smaller space for the backstop."

At Metro Shooters Supply in Belleville, Ill., Steve King said when he bought his first range, it already had a steel backstop so he kept it.

"When I built my second range, I had the opportunity to purchase either rubber or steel," he said. "I looked at both options, and after being in the business for 10 years, I felt that there was too much down time with rubber traps."

King also has a fear of fire on his range.

"One of my employees had worked on a Texas range that had caught on fire," he said. "The rubber had burned so hot that it literally melted the I-beam in that store. I also looked at what it takes to clean a range with rubber, and I didn't want to have to close my range down to clean it and miss that opportunity for revenue. So I looked at the steel systems on the market and chose Action Target's Total Containment Trap system."

King said that this system is a containment trap that allows the projectile to go in, swirl around a deceleration chamber and drop into a three-gallon bucket behind the trap.

"My care, cleaning and maintenance is virtually nothing," he said. "Before the store opens I go behind the trap, drop the bucket, replace the bucket and I'm ready to open up and go. I change 37 buckets every two weeks, and it takes me about 35 minutes each time."

Another factor in choosing steel, King said, was longevity.

"My range should last 30 years," he said. "I can shoot anything up to .50 BMG on my range."

The only down side to steel, King said, is the upfront cost.

"You have to put more money into the initial investment," he said. "But if you go with a reputable range company and have good, solid equipment, it may be cheaper in the long run when you consider your man hours and your down time."

Relying on rubber

One big advantage of using rubber as a backstop is space. According to Doug Vanderwoude, AcuSport's range program manager, most rubber backstops take less space that does steel.

"Rubber traps are usually at a 32- to 33-degree angle," he said, "and you can butt the trap right up to the back of your building. A steel trap is at a lot less of an angle, so it takes more space, and you have to get behind the trap to remove the lead and do any maintenance."

When it comes to rubber, the two biggest objections people have to them are flammability and difficulty with lead recovery, or mining. Both issues have been addressed in the past couple of years in one way or another, making rubber a serious contender for backstop material.

Lianna Sandy, marketing manager for MT2 in Arvada, Colo., said rubber backstops are a much less expensive alternative to steel.

"They're very economical, especially for ranges that are just getting started," she said.

Fire is not as much an issue with newer rubber ranges as it has been with older ones, Sandy said.

"You can add fire retardant to the rubber," she said. "Rubber ranges are not flammable if you do them correctly. You just mix in the fire retardant when you're doing your lead-recovery maintenance, and you're good."

According to Glenn Welch, president of Welch Group Environmental, the most common fire retardant used on rubber ranges is borate.

"When we clean a range, and we can't see any fire retardant in the rubber, we sprinkle borate into the rubber," he said. "Borate is a very common flame retardant."

Sandy said lead recovery isn't the multi-day process many range owners think it is.

"Obviously you don't want to do lead recovery on a range when people are shooting on it," she said, "but you can do it in a few hours at night according to your training and shooting schedules. You pull it down, use a HEPA vacuum to separate the lead from the rubber and put the rubber backstop back."

The replacement time for rubber, Sandy said, depends on how much shooting takes place on the range.

"We've never had to completely replace a rubber berm," she said. "What we have done is pull down a backstop,

Avoid OSHA Citations

If you're a fan of the barter system here is something you should know. Although some lead-reclamation companies can be very costly when it comes to lead removal, there are others who will do this and provide other range-maintenance services for the reclaimed lead instead of money. As you read this you may be saying to yourself, "That's a lot of money I'm missing out on when it comes to what my range can make from reclaiming lead" This may be true, but you need to take in account what additional liabilities your business may face from an OSHA perspective should the cleanup practices not meet its expectations.

With OSHA on the prowl with businesses that have high lead exposures, range owners may want to consider approaching this part of the business a little differently. Instead of looking at the money coming in from the reclaimed lead as an additional revenue stream, you may want to just look at it as a "cost of doing business" that can, in turn, reduce the liability exposures of having you're employees perform this type of job. OSHA citations are no fun for any business, and as a range owner/operator; you must be prepared for that surprise visit. To better prepare and familiarize the range community with the OSHA regulations applicable to indoor range and retail businesses, NSSF launched a series of workshops in 2013 to educate ranges on a variety of different topics that if not dealt with correctly can result in OSHA citations and fines. Due to the workshops' success and the need for ranges to stay on top of the regulatory aspects related to shooting facilities, NSSF plans to hold its next Lead Management & OSHA Compliance Workshop in Dallas in May.

Stay tuned for more details on the workshop such as dates and host hotel information at www.nssf.org/ranges/complianceworkshop, or contact Zach Snow, Manager, Shooting Promotions at zsnow@nssf.org.

and if there's degraded rubber, we have replaced that and then built the berms back up to spec."

Brad Paul opened the Sound of Freedom gun range in Ozark, Mo., three years ago.

“Our background was construction, so we had good experience to build a range,” he said.

Paul said he visited close to 50 ranges before beginning construction, looking at how each of those ranges had handled its backstop.

“One of the things we heard both from other ranges on our visits and from range owners at the 2008 NRA Range Development Conference was that we didn’t want rubber because it’s too difficult to mine it,” Paul said.

Brad Paul chose rubber for the Sound of Freedom

Paul calculated that the price of initially installing a rubber backstop was from 1/10 to 1/20 the price of a steel backstop, and thought that for that much of a price saving he could figure out how to mine the rubber.

“Rubber also reduces the airborne lead contamination to less than 8 parts per million,” he said. “So because of its benefits, we made the decision to put rubber on our range.”

Paul acknowledged that critics of rubber who say that rubber poses a fire hazard have some validity to their position.

“However, the risk of fire is not significant enough to warrant not using it,” he said. “The Marine Corps did a report on rubber for backstops where they tried to light it on fire with incendiary rounds, and they couldn’t get it to do anything but smolder.”

The biggest cause of fire on rubber ranges, Welch said, is the illicit use of tracer rounds.

“I only know of maybe one range where a range fire was caused by a short in the lighting,” he said. “Every other range fire that I’ve heard of has been caused by a tracer round that was fired on the range illegally.”

In order to prevent such fires, Welch said, you need to manage the power that lands on the floor about 10 to 15 feet in front of each shooting station.

“Don’t sweep it into the rubber backstops,” he said.

Another reason to install a rubber backstop, Welch said, is the management of “fugitive” dust.

“That’s what OSHA and EPA have on their radar,” he said. “The fugitive dust is that fine, black dust that floats all over a shooting range, especially one with a steel deceleration chamber. Every time a bullet hits steel, it causes a tiny plume of dust. With a rubber backstop, the bullet goes into the rubber and loses its inertia in that rubber and stays there until it’s time to extract it.”

On a range with a steel backstop, the cost of air filtration to remove this dust may be much higher than on a range with a rubber backstop.”

Not all rubber is appropriate for use as a backstop on a shooting range. Rubber that is used for rubber mulch or for playgrounds, Paul said, generally is not useful for shooting range backstops; nor is rubber made from used conveyor belts.

"Those recycled products have byproducts in them," Welch said, "such as fabric from the sidewalls of automobile tires and steel belts. Once the rubber gets shot up, that fabric becomes like dryer lint. You'll have little clumps of it all through the range."

Most ranges with rubber backstops end up paying someone to come reclaim their lead, which increases the cost of maintaining a range with a rubber backstop. After Paul made the decision to go with rubber, however, he looked at options for mining it himself when the time came.

"At the time we opened, there was a truck that was mining ranges around here," he said. "He was very expensive, and he was almost a year behind. So we figured out how to mine it ourselves. I can mine my range overnight, and I have sixteen lanes. If you can't mine a range in a short time, the range has to shut down, and you lose revenue during that time."

Now that Paul has figured out how to mine his own range, he is helping other ranges learn to mine their own backstops.

Ultimately, whether you choose steel or rubber is a matter of personal preference. Your choice may depend in part on whether you have a small commercial range, a commercial range that also has law enforcement training on it, or strictly a law enforcement range. Choosing is like picking a car: do you want a Ford, a Chevrolet or a Buick? Everyone wants something a little different.

Sources Mentioned in This Article

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