PURPOSE

Remodel of the Hawthorne Police Department's range, to include: update and replace existing equipment; fortify unsafe areas in the bullet trap and associated range areas; and, reduce downtime created by maintenance and repair issues. Install a moving wall system which will allow new training opportunities on topics such as active shooter scenarios, building clearing, and interactive situational based programs which enforce de-escalation, decision making, and appropriate levels of force.

BACKGROUND

The Hawthorne Police Department's range is located in the basement of the police station. It is a six-lane range which has access doors wide enough to allow vehicles to be brought into the range and create a realistic training environment for the officers. The range was updated approximately 10 years ago with new flooring, paint, and a range control system (computer). At that time, the armory was re-organized with a rack system and an armorer's workshop was developed, allowing our certified range officers the ability to work on minor repairs and maintenance with HPD firearms.

The range is currently equipped with a target retrieval system. A target retrieval system allows the officer to stand at one end of the range and the targets can move closer or further away from the officer while traveling along a rail system. This feature allows the officer to stand in one place and shoot at a target at varying distances. These types of systems are used in private and public ranges where no one is moving (walking/ running) toward the target, shooting from a vehicle, or moving from or to cover/ concealment. Although there are some advantages to our current system, the discussion later in this report will be to remove this style of targeting system and replace it with a lower maintenance fixed target turning system.

When an officer shoots their firearm in the range, the bullet travels down range (away from the shooter) and the bullet is collected into an area called a "bullet trap". Our current bullet trap consists of an angled metal structure that has a rubberized material (granulated rubber) covering the construction. This rubberized material captures the expended bullets after they are fired and prevents the bullet fragments from penetrating into the metal structure. Periodic maintenance is required throughout the year to remove the lead that is collected from the trap. HPD contracts with a company that retains hazmat certified procedures to collect the debris and lead fragments that are in the bullet trap; essentially restoring it to a functional status. Failure to do this on a regular basis could cause the failure of the structure and potential fires from flammable sources that are deposited by target paper pieces and the wadding from shotgun ammunition. There are several other types of traps that are available which reduce maintenance costs, but the size and cost to refurbish a new bullet trap design is not cost effective or necessary at this time, so we are not exploring that option. Our bullet trap needs some additional granulated material as well as some upgrades, which will be discussed later in this report.

DISCUSSION

Targeting System

HPD's range is in good condition as far as the overall structure of the facility, but the mechanical parts, even though they have had continual servicing and maintenance over the past 20 years, are wearing out and need to be replaced. As mentioned above, we currently have a target retrieval system that remotely brings the target from the bullet trap to the shooter. Although this is convenient when it works, it frequently fails due to shooters striking the mechanical portions of the system and disabling it or just due to general product failure conditions. When disabled, the target retriever portion no longer works, but it also disables the ability to turn the target away from the shooter, which is essential in most of our training and qualification drills. The plan is to replace the target retrieval system and move to a fixed turning targeting system.

A fixed targeting system would be mounted directly in front of the bullet trap and would be stationary. There are fewer moving parts, so the maintenance and opportunities for damage are reduced. This system would still allow for remote turning of the targets so the essential functionality components of the system would still be in place. The target turners would continue to be remotely controlled from the range office or through a remote platform inside the range that would allow range instructors to create dynamic training and qualification scenarios. The turning of the target is essential because it helps train the officer on target acquisition and precision targeted shot placement. Target turning capabilities challenge officers in "Shoot" / "Don't Shoot" situations to train and re-enforce quick and appropriate split-second judgement calls.

The consequences of removing a target retrieval system and replacing it with a fixed system present only a few disadvantages. An officer will have to walk to the other end of the range to score and retrieve their target, which is clearly inconsequential. The most significant drawback is that we will not be able to present scenarios where the target is advancing on the officer. Although this does have some practical training applications, we currently do not use this feature during any of our training exercises. In most training and qualifying scenarios, our officers actually move toward or retreat away from the target. We also move side to side in order to simulate cover and concealment strategies. During training scenarios where we utilize barriers or vehicles, we are unable to utilize the capabilities of the target retrievers except in stationary positions.

The movement of the targets forward from the bullet trap on the retriever system also creates shooting angles within the range (when engaging multiple targets) that are inconsistent with the current ballistic design of our bullet trap. When shooting angles are created, bullet strikes against the sidewalls of the range can occur more frequently. There is ballistic protection along these walls, but they are intended to catch the errant round and not take repeated direct hits.

Our current range has a Running Man targeting system. A Running Man target is a feature that allows a target to travel across all six lanes of the range (sideways). This feature is not used in our training/ qualification exercises due to the lack of access to the equipment. In order to hang a target on the rail system, staff would have to crawl into the granulated rubber in the bullet trap, which is unsafe and could be a health hazard.

In addition to removing the target retrieval system and installing a fixed target turning system, we would like to add some portable targets. The portable targets allow pop-up targets to be placed in different positions in the range which will require the officer to make quick decisions on target identification at unexpected locations within the range. The pop-up targets will be utilized in conjunction with non-metallic rounds (Simmunition®), so we will avoid the shooting angles and wall impacts that this redesign is trying to avoid.

Bullet Trap

The bullet trap requires modification and repair. As previously mentioned, the trap consists of a steel structure covered by a rubberized material that essentially catches the bullets. However, as bullets strike the rubberized material, the rubber disperses and spreads onto the floor of the range, travels over the top of the range, and can also disintegrate over time. This reduces the effectiveness of the trap since there is less material. A retention system will need to be added to keep the granulated rubber in place. This can be accomplished with ballistic blocks (knee wall) that can be stacked at the base of the range and will keep the majority of the material in a useful location. These ballistic blocks will wear down over time as errant rounds strike the knee wall, so repair/ replacement of these blocks will be required eventually.

There are two additional observed issues with the current bullet trap design. The top of the bullet trap should be designed to keep the granulated rubber in the trap. Our current design allows some of the rubber to exits out of the bullet trap and into the back of the range. Since less material is present, bullets are also able to exit the top of the range and into the back-access area. These rounds cut through the ventilation system. This is an issue and requires some modification to our bullet trap design, but it is not a primary concern at this time.

We need to add more granulated rubber to replace the materials that have dispersed or disintegrated over time. This is not a new process and has been done several times over the past 20 years and is a part of our current maintenance.

Operating System

The operating system (computer system that controls the targeting system) will need to be upgraded to accommodate the new targeting control system. Much like all technology, revisions and upgrades have been improved over the time frame of our existing operating system.

Portable Walls/ Barriers

The range is designed to provide our officers with training to promote the skill set to shoot from a variety of different firearm platforms with accuracy and precision. Our training exercises include shooting from a distance, up-close contact shooting, shooting during darkness, shooting from a vehicle, and “shoot”/ “no shoot” scenarios, and more. Adding portable walls/barriers to our range to create small rooms, hallways, windows, and doors, would allow our officers to train on proper search techniques while engaging potential suspects. The installation of temporary walls would also allow our officers to train on moving to cover/ concealment, covert entries into a room, dynamic entries (such as during a hostage rescue or active shooter incident), and de-escalation exercises. These portable walls can be temporarily moved into position and then removed and stored out of the way when not in use.

Periodically, we train in these types of exercises, but training is infrequent due to logistical and manpower issues created by trying to secure insurance contracts, coordinate with private entity personnel, and clean up procedures when utilizing private or public facilities. These portable walls will allow for greater frequency of training and will be used to enforce good tactics, decision making, and re-enforce perishable skills for patrol officers and special teams, such as SWAT.

The topics mentioned above directly impact the overall usage of the range and the training of our officers. Some of our current range systems can be temporarily repaired to an operational status, but historically they fail within a few weeks after the repair, creating more expense and more downtime of the range. We recognize that even with upgraded products we will still need to budget for repairs and preventative maintenance, but with new and higher quality equipment coupled with an overall better range design more appropriate to our needs, repairs should be less frequent and easier to manage.

Design

Pictured below is our current range target system, with the rails traversing the length of the range. These tracks would all be removed in exchange for the fixed targeting system. The photo reveals the lack of a knee wall to hold our granulated rubber into the bullet trap, which diminishes the capability of the design.

The picture below is a stock photograph of what our range would look like with the knee wall (blocks at the base of the bullet trap) and the fixed target turning solution.

FINANCIAL IMPACT

InVeris Training Solutions

InVeris Training Solutions, formerly Meggitt Training Systems, is a Georgia based company that originally designed our range. Due to our prior working relationship with their company and product line, we expected to lean toward them for this retrofit. Inveris provided a quote that included (6) fixed 360 degree turning targets, (1) running man target, and a new operating system. Their quote also provided for the addition of some ballistic plates for the bullet trap and some Pop-Up targets that can be positioned in various locations inside the range.

This company would not travel to our range to view the current status and recommend retrofit solutions. This is a large investment into our facility and program, so it was a paramount concern to ensure that we received the right products, features, and operating system that would meet our needs. Due to their lack of interest in helping us find the best solutions, I felt this would be a direct reflection on their services throughout the build and maintenance. This company does not offer a moving wall system, so we did not receive a quote from them for this type of product.

Targeting system	$93,335.08
Pop-Up Targets	$14,234.61
Ballistic Plates	$10,898.98

Armored Target

The owner of the company responded to our range to make his presentation and recommended products. Armored Target contracts with Action Target and most of their business is out of the country, setting up ranges in the Middle East. He was very attentive to our needs and provided several options for a variety of new bullet traps, target turning solutions, ballistic panel installation, and a moving wall system.

Prior to preparing this report, we learned that Armored Target is only allowed to distribute Action Target products out of country and is not permitted to install their product line in the United States. This causes some concern in regard to future warranty and repair issues. Although he provided us with some quotes, he never responded to me with a quote for the targeting system. This was expected, since we learned he was not allowed to install it here.

Targeting System	$ TBD
Bullet Trap (New Design)	$99,500.00
Bullet Trap (improved)	$29,500.00
Bullet Trap (New)	$56,250.00
Moving Wall System	$30,900.00

Action Target

Action Target responded to our range and recommended solutions for the retrofit. Action Target's proposal includes a total of (8) targets, instead of the (6) target stations we currently have. The additional targets can allow up to (8) shooters at a time, but with a thumbscrew tightening system, the targets can be slid next to each other to create multiple target scenarios in one single lane. This is a feature we currently do not have but will enhance our training courses. Their quote is separated into three different quotes to allow us to choose which products we would like now and which ones we would like to postpone. Action Target's quote includes the knee wall, the fixed targeting system, and the operational controls. The wall baffles are a product that will allow officers to shoot directly into the walls of the range and offers additional protection to the walls and bullet trap.

Targeting System	$98,765.00
Moving Wall System	$56,750.00
Wall baffles	$64,940.00

TMC Shooting Range Specialist

TMC is vendor who has been servicing our range for well over 20 years. They provided two different options for us in regard to the target turning systems. They too broke their products into several different quotes so that we could choose the options that are best for us at this time.

The first option is to remove our complete range retrieval system and relocate the turning target portions of our existing system to the bullet trap. They would utilize are current operating system and target turning system to make a fixed system. This has immediate appeal because we would be using a

system that we are familiar with and it would be considerably less expensive. However, we would be using old equipment that has had a history of failing us. This option requires TMC to fabricate some parts rather than use supplied vendor equipment.

The second option that TMC provided was to install a new Inveris (6 lane) fixed target turning system and operating controls. We would have all new equipment from Inveris, but installed by a trusted contractor.

TMC officers the installation of a knee wall, a retrofit to the bullet trap, and a maintenance plan for the bullet trap that includes adding additional granulated rubber.

Targeting System (Inveris)	$118,875.00
Targeting System (Existing Equipment	$42,940.00
Clean and add granulated rubber to trap	$7,500.00
Knee Wall	$5,000.00
Bullet Trap (Retrofit)	$9,785.00

CONCLUSION

When it comes to firearm training, there are an endless number of upgrades, both technological and mechanical, that can be brought into our facility; each of them bringing additional opportunities to train and become more effective marksman and tacticians. Our current range system would immediately benefit by having an updated targeting system that would require less maintenance and more reliability. After reviewing all of the quotes and considering the different proposals, I do not think it would be prudent to utilize our current system and attempt to modify it to a fixed system. There is an initial gain by the discounted costs, but the maintenance, downtime due to failing components, and the fabrication that would be required to make the system operational does not project well for longevity or accomplish the goals of this remodel.

I was not convinced that Inveris was the correct installation company for this project. Their attention to detail and interest into providing a comprehensive quote that met our needs was not what I would expect for a project with this budget.

Armored Target was very attentive and addressed most of our concerns; however, the vendor that they use for their products (Action Target) informed us that they were not permitted to install their products

in the United States and he never provided me a quote to even consider cost. Based on this information, I do not feel they were the prudent choice for this project.

It is my opinion that Action Target has the best solution for our range. The have been extremely attentive during this process and have revised their quotes multiple times to ensure that I was receiving a quote for the right products for our range design. Action Target will update our range with new equipment, including an (8) target system, as opposed to or current (6) targets, provide us with a new computer and remote tablet control system, as well as place a knee wall at the base of the trap for aesthetics, safety, functionality of the bullet trap, and allow better access to the target turning equipment.

Action Target also have additional upgrades that we can add to our system that will be compatible, such as Pop-Up targets, a moving wall system (Tac House), and a bullet trap cleaning and granulated rubber replenishing option. Although some of these items were quoted during this report by several different vendors, they have been tabled for future discussion after the initial build of the fixed target turning system.

The bullet trap will need some upgrades and modification at varying levels of immediacy, but this will require more research into what the actual issues are with the trap and the correct remedy for them to keep bullets from leaving the trap and exiting the back of the range.