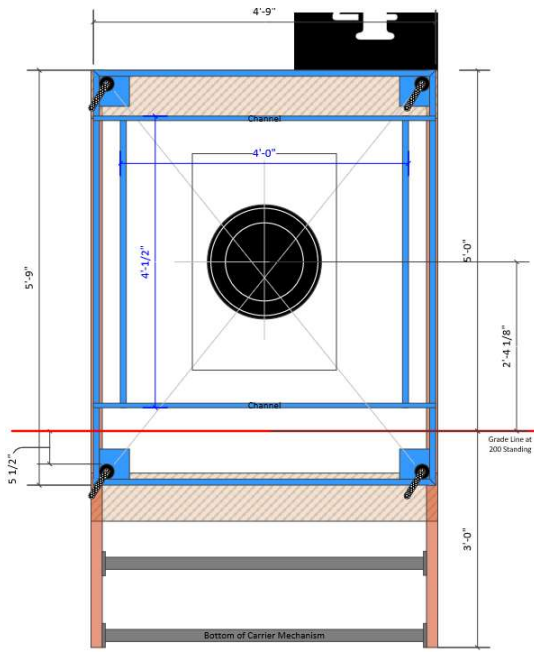
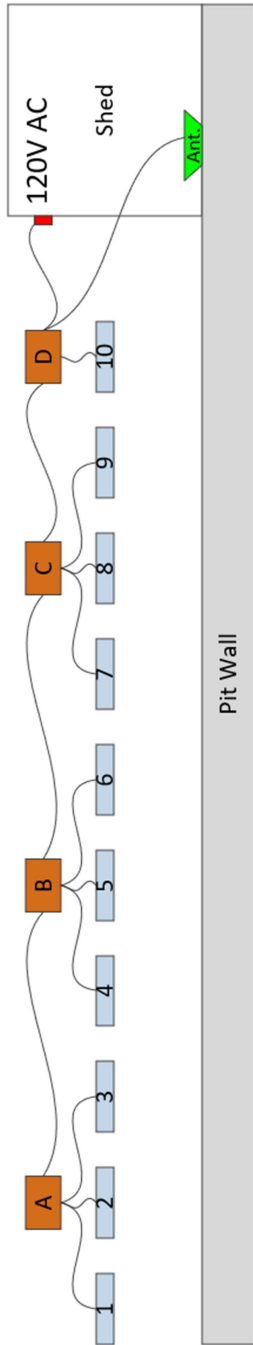




RANGE DESIGN & INSTALLATION GUIDE



SYSTEM DESIGN

Silver Mountain Targets, Inc.
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PURPOSE OF THIS MANUAL

This manual is designed for the range that has decided a Silver Mountain Targets E-Target system is right for them, and want to proceed with planning, funds approval for purchase, and installation.

There are detailed sections broken down into a time line of events. Some tasks may be contained in more than one section. These sections cover investigation, planning, Business Case creation, infrastructure changes, and installation.

INVESTIGATION

The first step in this process, now that you've decided a Silver Mountain Targets E-Target system is right for you, is to investigate several factors. If you have not shot a match on an E-Target system, it's advisable to try one, and learn from others' experiences.

1.1 Demonstration

At this time, you can contact your Silver Mountain Targets dealer, and schedule a demonstration of the system. It might be advisable to have this demo witnessed by anyone that will play a role in approving the funds to purchase the system.

1.2 Quantity of Targets

First consideration is just how many targets do you need. If your range will support 10 targets currently, you could buy 3, 5, 7, or a full deployment of 10 E-Targets. There are pros and cons to each. Fewer targets means fewer capital dollars to justify, and after all, matches will run so much faster, we may not need a full deployment. However, as discussed in the Silver Mountain Planning Guide, if you are planning on increasing the number of shooters then you may need all 10 targets. They are so flexible, and so enjoyable to shoot on, you won't have any trouble filling up however many you purchase.

1.3 Revenue Needs

Next consideration is do we need to plan on a revenue increase to offset the capital expenditure. If so, some pre-planning should be done on the number and types of matches you will run, and attendance expectations. Most clubs do not have capital expenditure pay back rules, so calculating a payback (typically 3-5 years) will just go further towards gaining approval to spend these funds.

Contact your local Silver Mountain dealer, found on www.SilverMountainTargets.com, and discuss your thoughts and needs. The authorized dealers are a wealth of information, and can give you budgetary pricing on some alternatives.

There are four main systems, the Personal target system, and three systems designed for multi-lane, match environments. Of these three match systems, the Plug-N-Play

system is the top offering. It utilizes a dedicated server on the firing line, and Target Control boxes that each control multiple targets (typically 3 or 4), consolidating all target data, sending it to an uplink radio that communicates to the Server on the firing line. The other 2 systems are G2 controller-based systems, either in standalone mode, or with a dedicated server on the line. All three match-designed systems support easy expandability, but the Plug-n-Play system is designed for a more permanent installation, leaving most of the equipment out 24/7/365.

1.4 Work Load

Consider the number of active people to help with the everyday tasks of an E-Target system. On many Highpower ranges the work is done by just a couple of dedicated shooters. If the setup, tear down, and between match work requirements are more than they can (or wish to) take on, the new system implementation will struggle. Some ranges have been very successful in enlisting active participation of shooters in a Committee environment, spreading the workload significantly.

Also consider that there may be a significant amount of time in match setup, match tear down, and between match activities. When a match is over, someone must ensure batteries are charged, and if there is no on-site storage, they must haul some of the equipment home for storage between matches. Most of these tasks can be streamlined, and will be discussed in more detail later, but now is the time to consider them.

1.5 Club Member Access

The next consideration is will these targets be used for sanctioned matches and scheduled events only, or will you be offering that any club member can access E-Targets at any time for personal use. Again, there are pros and cons to both ways, and it may depend a bit on the number of E-Targets vs. the number of firing points. If some points will remain paper targets, that may suffice for general member access. However, finding a way to allow general member access to at least one E-Target may go a long way towards getting funds approved for purchase of the system.

CONSIDERATIONS, ALTERNATIVES

Now is the time to thoughtfully analyze alternatives to several aspects of the deployment.

2.1 Number of E-Target Lanes

This was covered briefly in the previous section, but now's the time to make some decisions. If in doubt, and board or membership approval is going to be required, it is the suggestion of Silver Mountain that you ask for a full deployment first, and back down to a partial deployment if funds don't support full. Every club is different, with different financial positions, and your Silver Mountain dealer can be very helpful with what has worked at other ranges. A full deployment has the benefits of supporting your goal of

increasing the number of shooters, and also allows you to keep a target in reserve in case of a failure during a match.

2.2 Target Frames

The Silver Mountain System can easily be mounted directly on existing target frames, but that may not be the best solution for your range. An attribute that has a direct correlation to accuracy, is stability of sensor geometry. If your existing frames are warped, change in the weather conditions, or are excessively wobbly, they may negatively impact accuracy. Most frames in use today will be fine. If you wish to explore alternatives, several installations have had success with building aluminum tube frames that easily install on the existing carriers. The Silver Mountain sensors mount on these aluminum frames. This makes setup and tear down easy, and ensures the sensors are geometrically stable at all times. Feel free to contact your Silver Mountain Targets dealer for suggestions and options.

2.3 Range Alignment

Most ranges have fairly good alignment of targets to firing lines, in both the horizontal and vertical planes. The advanced software in the Silver Mountain systems, coupled with the newer 8-mic sensors, automatically measure and compensate for any minor misalignment, removing this as a concern.

2.4 Power Requirements

Now is the time to plan for power supply needs. The G2-based pit devices and all line Servers are battery powered, and able to run continuously for over 10 hours. The Plug-n-Play pit devices are powered off 120vAC power, but can be configured for battery power or even solar cells. The Silver Mountain system is quite versatile. G2 units will require charging of their batteries each time they are used, and line Servers can simply be plugged in after a match to recharge.

2.5 Cabling

Some consideration should be given at this time to target wiring. In a G2 system the G2 controller is typically mounted to each target frame, and cabling is not a concern. However, in the Plug-n-Play system where each Target Control box feeds several targets, cables can get tangled in the frame and carrier mechanism. In a match on movable frames, targets will need to be raised and lowered to change target faces for various firing lines. In the world of paper targets, no thought was ever given to catching cables on moving parts and damaging an expensive target.

BUSINESS CASE, BOARD PRESENTATION

3.1 Business Case

If you desire, you can create a business case for the capital expenditure. Contact your Silver Mountain Targets dealer for assistance and various factors unique to your range. He can also provide you with a formal quote that can be used for the approval process.

Even though most ranges do not require a payback analysis for capital funds, it will make gaining approval easier if you can show that this sizable expenditure will pay for itself in a reasonable amount of time.

Typical factors to build into a payback model are

- Expected profit from matches with a reasonable increase in shooters from having the added attraction of a new E-Target system
- Expected increase from running new match formats such as prone, mid-range, or long-range.

Take the capital expenditure and divide it by the total of your expected yearly revenue to get a payback number. Here's an example from a recent range proposal that shows the club will recoup the entire capital expenditure in less than 6 years.

\$40,000	Capital expenditure
\$5,000	Average past annual Highpower revenue
\$1,000	Increase in annual revenue by adding 5 more shooters per match
<u>\$1,500</u>	Increase in annual revenue by adding 4 new prone matches
\$7,500	Expected annual revenue returned to the club

$$\$40,000 / \$7,500 = 5.33 \text{ year payback}$$

Other attributes to wrap into your business case, depending on your specific dynamics

- Access to all club members of at least one E-Target. Particularly attractive to anyone who does load testing or wants to sight in that hunting rifle.
- Access to physically challenged shooters. Many ranges have added handicap access for some ranges, and the E-Target is particularly easy to access and shoot.
- Widely accepted at ranges worldwide, and rapidly expanding in the US.
- Increased utilization of the largest piece of club real estate
- Will be the standard at the National Matches at Camp Perry, and possibly others. Has been used for several years for the F-Class Nationals.

3.2 Governing Board Approval

At most clubs there will be a governing body, or Executive Board, who must approve the investigation and subsequent proposal to purchase, then there may be a presentation to the general membership to approve the funds.

It is advisable to play bit of politics in order to garner acceptance and consensus in your efforts. If a multi-discipline club, get a couple discipline chairs or prominent shooters on board with your proposal. Then depending on the inner workings of your club, gain the approval of the board before approaching the general membership. It always helps if you can say the board has already approved the proposal.

If all else fails, some ranges have had success in getting individual shooters to “invest” in the purchase, with some payback over time.

ORDERING

4.1 Success!

Assuming you were successful in gaining approval to spend the funds, contact your local Silver Mountain dealer and work out the details of an order.

You will need to specify the number of firing points, type of system (G2 or PnP), and any accessories or spare parts.

Now is a good time to begin work on any frame modifications, or construction of aluminum target frames. These may take a while to get completed. Again, your Silver Mountain dealer may have access to reference ranges who have already done this.

Start planning with your committee, things like setup, tear down, and storage of the system when it comes. You'll also want to discuss any Display devices the club may be providing, even though the general principle of the Silver Mountain System is that shooters bring their own laptop, tablet, or smartphone.

INFRASTRUCTURE CHANGES

There may be along list of things to consider for infrastructure changes to your range in preparation for the arrival of the system.

5.1 Frames & Cabling

Once you have a clear understanding of what you want to do with existing target frames, or new aluminum frames, start the design and fabrication so they are ready when the system arrives. Time to also pin down how cables will be managed to prevent any damage when targets are moved on the carriers. This may be as simple as gear ties or duct tape. Your Silver Mountain dealer can also assist with any other power or cable requirements for your final design.

5.2 Power

Make any final decisions on power requirements and any necessary changes that may need to be done to the range or pits. Also look into ways to recharge any batteries in the system.

5.3 Sensor Mounting

There are a couple of options for sensor mounting. If mics are to be mounted on existing wooden frames, you'll want to make use of the swivel bases that come standard, to ensure each mic is perpendicular to the target face, and pointing at the firing line. If mics are to be mounted on new aluminum frames, the concept is that these

frames stabilize mounting geometry, so the swivel base can be removed. This eliminates the need to square each mic.

5.4 Target Faces

It's a good time to give some thought to how you'll ensure target face replacement will be centered up in the same orientation and location in the frame each time. This will reduce the need to calibrate the target on subsequent uses, as target faces are changed for various firing lines, or replaced as they become shot up. Your Silver Mountain dealer can offer suggestions that have been successfully implemented by other ranges.

5.5 Target Access

You may need to also develop a procedure for general member access, if that was a selling point in your proposal.

5.6 Training

You should begin getting familiar with the system software, and begin to identify "Power Users" that will be able to run a match, perform system hardware setup and tear down, and solve any problems that may occur.

TARGETS ARRIVE!

Targets have arrived, and your Silver Mountain dealer has provided some assistance for the installation. Actual installation is fairly simple if the prep work was done ahead of time.

- Install sensors on each target
- Wire sensors to controllers
- Wire uplink radio or individual WIFI antennas, depending on the system
- Power up the targets and server
- Enter target sensor mounting dimensions into the server software
- Test the sensors with a Tap Test
- Fire testing shots on each target
- If targets are fully operational, fire calibration shots on a clean target face on each target
- Enter calibration data for each target

ENJOY YOUR NEW SYSTEM!



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