Archerfish Camera Placement Guide

Introduction

Where you place your cameras can dramatically improve the results you get from Archerfish. While the *Archerfish Installation Guide* describes how to physically connect cameras, this booklet provides guidelines on where to place your cameras and includes tips for handling common scenarios such as monitoring doorways and building exteriors. The more guidelines you are able to follow, the better the results you'll get from your Archerfish system.

For a quick overview, use the **Summary Checklist** on page 2. You can also view short, how-to videos about camera placement at www.myarcherfish.com/support.

Topics

NOTE: The term "camera" refers to both the mini Archerfish Quattro™ cameras as well as Archerfish Solo™ which is a thinking camera™.

Summary Checklist

Simply go down the checklist to make sure you've covered all the guidelines for optimal camera placement. The best time to do this is right before you install your cameras.

	Camera Mounting	✓
1	**Camera Position:** Camera is mounted 8 to 20 feet above the ground and tilts downward at an angle between 15° and 45°. It is positioned 10 to 40 feet from people or 20 to 60 feet from vehicles.	
2	**Direction of Motion:** People and vehicles (i.e., "targets") should move from left-to-right or right-to-left across the camera view, not directly toward or away from the camera.	
3	**Image Sharpness:** Camera provides a sharp image. It is not pointing through a window pane or screen, and it is not placed in conditions that would cause the camera lens to fog up or accumulate moisture.	
4	**Camera Upright:** Objects in the camera view appear upright. In other words, the camera body is not rotated clockwise or counter-clockwise.	
5	**Secure Mounting:** Camera is securely mounted.	
6	**Physical Obstructions and Distractions:** Physical obstructions or sources of constant motion (e.g., moving doors, flags waving in the wind, etc.) are not in the camera view.	
	Lighting	✓
7	**Adequate, Even Lighting:** Lighting is constant and sufficient to read a newspaper in the part of the camera view where targets appear.	
8	**Reflections, Glare, and other Extreme Lighting**: Reflective surfaces (e.g., mirrors, window panes, water, or polished floors) or bright lights (e.g., headlight glare, direct sunlight) are not directed at the camera.	
	Cabling (Quattro, not Solo)	✓
9	**Cable Length:** For cable run lengths over 300 feet, use a video amplifier or equalizing amplifier.	
10	**Cabling Issues and Effects:** Live video doesn't show any video effects (like colored bars across the screen), which can be caused by cable damage, crimping, or extreme length.	

Camera Placement

1 Camera Position

The most important factors in camera setup are camera angle, camera height, and distance from the camera to the "target" (i.e., the person, vehicle, or other moving object you want to detect). These three factors together are referred to as camera position.

Camera angle: Aim for a camera angle between 15° and 45°. Camera angle is the degree at which the camera tilts down toward the ground. For example, a 0° camera angle means the camera is pointed parallel to the ground and a 90° camera angle means the camera is pointed straight down.

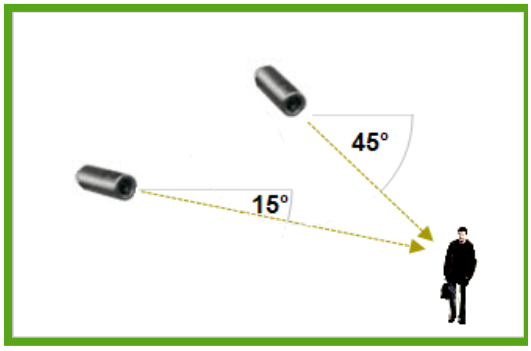

Figure 1. MORE EFFECTIVE – Cameras are at a 15° to 45° downward tilt.

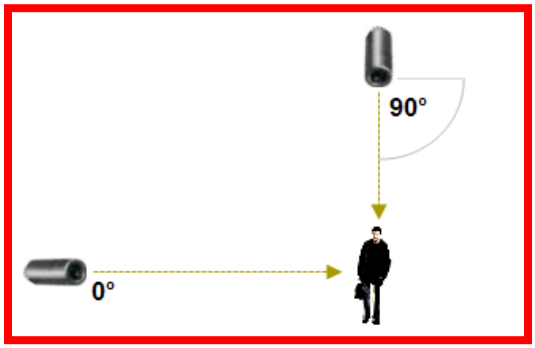

Figure 2. LESS EFFECTIVE – Cameras are directly overhead (90°) or parallel to (0°) the target.

Camera height: The optimum camera height range is 8 to 20 feet.

Camera distance: Place your camera 10 to 40 feet from where you want to monitor people and 20 to 60 feet from where you want to monitor vehicles.

Keeping in mind the guidelines for camera angle, height, and distance from, your targets should take up between 0.5% and 20% of the camera view for Archerfish to perform at its best.

Figure 3. **MORE EFFECTIVE** – Two targets within the detection range taking up 0.5% and 20% of camera view

2 Direction of Motion

You'll get the best results if the camera is mounted so that targets move across (left-to-right or right-to-left) the camera view, not directly toward or away from it.

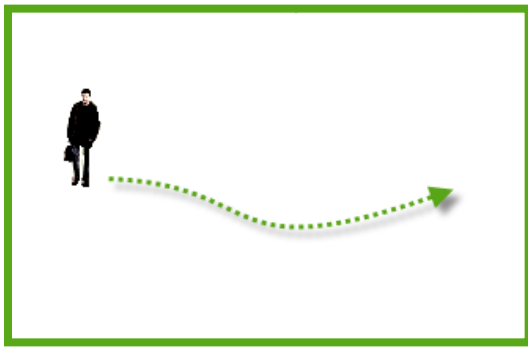

Figure 4. **MORE EFFECTIVE** – A target moving left to right spends more time in the camera view.

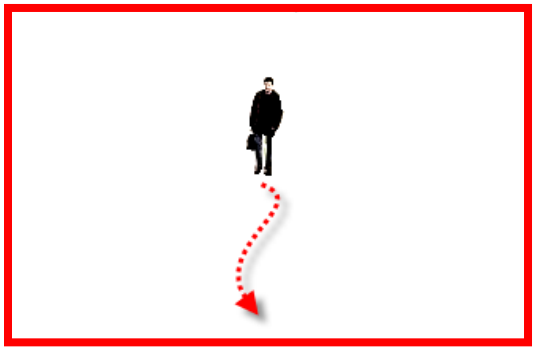

Figure 5. **LESS EFFECTIVE** – A target moving directly toward the camera spends less time in the camera view.

NOTE: When you tell Archerfish what to watch on the Event Configuration page of the Archerfish SmartPortal, you can set a Duration (e.g. 10 seconds) that an event has to occur before Archerfish sends a notification. If you choose this option, make sure the entire target is in full view of the camera for at least the Duration you chose.

3 Image Sharpness

To get the sharpest image possible, avoid pointing the camera through a window pane or screen. It's also best to steer clear of direct exposure to sun or water that can dirty or fog up the camera lens.

NOTE: Archerfish Solo has built-in weather protection, but if you are placing the Quattro mini camera outdoors, be sure to use the included weather shield.

Figure 6. MORE EFFECTIVE – Adequate image sharpness.

Figure 7. LESS EFFECTIVE – A blurry camera lens affects image sharpness.

4 Camera Orientation

The camera body should be upright, not rotated or tilted. While Archerfish can accommodate some degree of tilt, any tilt more than 5° may affect performance.

Figure 8. MORE EFFECTIVE – An acceptable level of tilt (3° clockwise).

Figure 9. LESS EFFECTIVE – Too much tilt (15° clockwise).

5 Secure Mounting

Ensure that the camera is firmly fixed in place. Loosely-mounted cameras can shift over time due to wind, tampering, structural vibrations, or other factors.

6 Physical Obstructions and Distractions

Watch out for items in the camera view that block what you want to monitor. Indoors, this might include furniture, poles, columns, or fixtures. Outdoors, obstructions might include trees, vehicles, walls, buildings, signs, cobwebs or boulders. Ideally, the targets you wish to detect should remain in full view the entire time they pass through the camera view.

Figure 10. LESS EFFECTIVE – Multiple obstructions blocking the camera view.

Figure 11. LESS EFFECTIVE – Spider appearing in the camera view.

While Archerfish can filter out random motion, it's best to avoid things in the camera view that frequently move (e.g., swinging doors, ceiling fans, water fountains, flags, and foliage). Try to position the camera so they don't appear in the area you are monitoring.

NOTE: If you can't avoid things in the camera view that don't interest you, you can use the Zone feature on the Archerfish SmartPortal to select only part of the camera view to monitor. For example, if the camera view must include a road in the background where passing cars and pedestrians might trigger unwanted events, you can draw a zone on the camera view that includes everything but that road. For more information on zones, refer to the *Archerfish Installation Guide* or *Online Help* on www.myarcherfish.com/support.

If you're monitoring a scene outdoors, keep in mind how changes in the environment or surrounding structures can affect your system's performance. It's best to keep foliage out of the scene, but if you can't, keep in mind that the amount of foliage changes with the seasons. In extreme cases, you may need to change the position of the camera.

Figure 12. MORE EFFECTIVE – Though trees appear in the scene, none obstruct the camera's view.

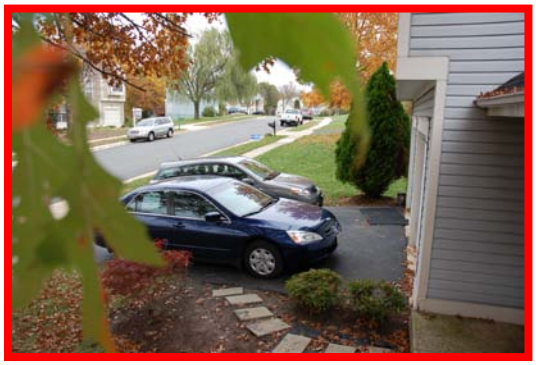

Figure 13. LESS EFFECTIVE – Leaves partially obstruct the view.

Illumination

7 Adequate, Even Lighting

If you can't see something, then Archerfish can't either. Cameras must be placed in an area with enough lighting so that Archerfish can watch what's going on in the camera view. As a rule, there should be enough light so that someone in the scene could comfortably read. If there isn't enough light, or an area becomes dark at nighttime, add lighting as needed.

Figure 14. MORE EFFECTIVE – A well-lit scene.

Figure 15. LESS EFFECTIVE – A poorly lit scene; someone sitting in this room would have difficulty reading a newspaper.

Avoid scenes that go from brightly lit areas to dark areas. This can occur with cameras close to open entrances or windows.

Figure 16. LESS EFFECTIVE – This scene includes too much contrast between the darkened hallway and the glare of light from the outside.

8 Reflections, Glare, and Other Extreme Lighting

Extremely bright lights can obstruct the view of the targets you wish to detect. Bright lights may include headlight glare, lights mounted in the foreground, or direct sunlight (more a factor if your camera is pointing East or West). You should also be aware of moving lights (e.g., lights on cars). To avoid these issues, place the camera so that the majority of lighting is behind it, shining in the same direction that the camera is pointing.

Figure 17. LESS EFFECTIVE – Example of light adversely affecting the camera view.

Figure 18. LESS EFFECTIVE – Light completely obstructing the camera view.

In addition to direct light, indirect or reflected light can reduce the effectiveness of your Archerfish system. Try to point the camera away from reflective surfaces such as mirrors, window panes, water, and polished floors. . Even when they are not present in the camera view, reflective surfaces can impact system performance. For example, a mirror outside of the scene can still reflect light from passing headlights onto a wall in the camera view.

Figure 19. LESS EFFECTIVE – Windows and polished floors provide abundant reflections.

NOTE: Bear in mind that reflective surfaces can cause problems even if they are not in the scene. For example, a mirror that doesn't appear in the scene could still reflect light from passing headlights onto a wall that appears in the scene.

Cabling for Quattro Cameras

9 Cable Length

For cable run lengths over 300 feet, use a video amplifier or equalizing amplifier to maintain video quality.

10 Cabling Issues

Make sure there aren't any video splits, horizontal bars, or other interference displayed in the video coming from the camera. To check this, look at the live video display shown on the Archerfish SmartPortal™ or connect a video monitor directly to the camera cable. If the video shows interference, check for cable damage, crimping, or try shortening the length of the cable run between the camera and the Quattro device.

Figure 20. LESS EFFECTIVE - Video display showing horizontal lines.

NOTE: For information on how to physically connect cables between the Archerfish Quattro device and cameras, refer to the *Archerfish Quattro Installation Guide*.

Examples

To give you an idea of proper camera placement in typically monitored areas, this section includes examples of effective and ineffective camera views for the following locations:

Doorways

For areas near a doorway or entrance where people are coming and going, keep in mind these guidelines:

- Do not point the camera directly at the door, since targets will move directly toward or away from the camera (see page 4).
- Try to capture the approach to or exit from the doorway, not the actual door.
- Minimize the view of the swinging door.

Figure 21. MORE EFFECTIVE – The camera is facing the interior of a home, mounted above the front door. The height and angle of the camera are optimal for event detection. Note that the camera must be high enough to not show the swinging door below.

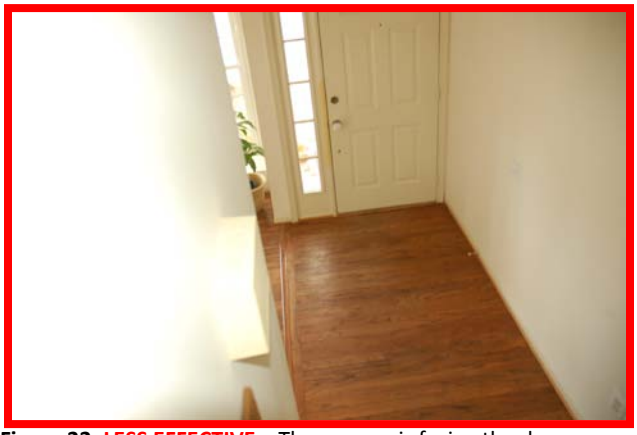

Figure 22. LESS EFFECTIVE – The camera is facing the door and covers a narrow view, so targets may not be in the scene for enough time (see page 4).

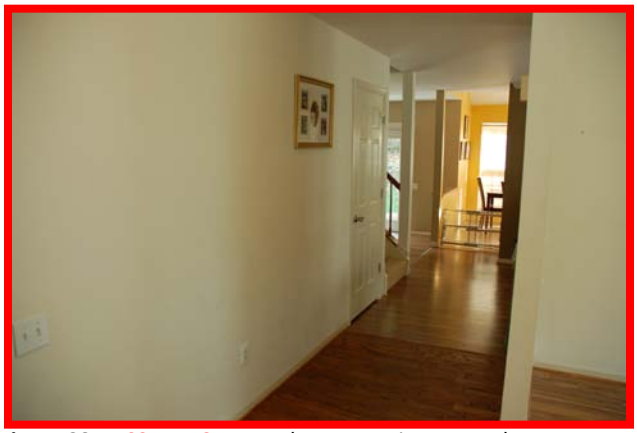

Figure 23. LESS EFFECTIVE – The camera is mounted too low, providing a 0° angle (see page 3).

Figure 24. LESS EFFECTIVE – The camera is still too low, and it includes a light in the foreground (see page 7).

Storage Areas and Closets

Monitoring a storage area or equipment closet presents unique challenges. Often, you face space constraints due to the size of the room or the abundance of boxes, racks, or other potential obstructions. As a result, keep in mind the following:

- Place the camera to exclude doorways, moving objects, or flashing lights.
- Make sure that people appear vertically and in full view in at least one area of the scene.
- Avoid focusing on one area of interest; get as wide a view as possible.

Figure 25. MORE EFFECTIVE **–** The camera view includes as wide a view as possible. A person standing in front of the area of most interest (in this case, an equipment rack housing computers), would be in full view.

Figure 26. LESS EFFECTIVE **–** The camera is too close to the area of interest. The camera angle is too sharp and targets would not be in full view (see page 3).

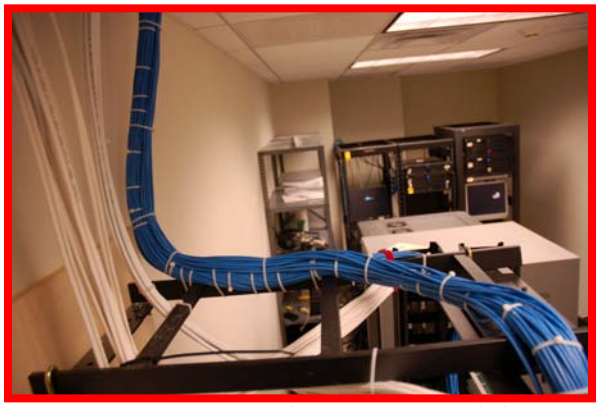

Figure 27. LESS EFFECTIVE **–** The camera view includes too many obstructions (see page **Error! Bookmark not defined.**).

Figure 28. LESS EFFECTIVE **–** The camera view includes the area where the door will swing open.

Building Interiors

If monitoring the interior of a room, remember to:

- Get as wide a view as possible; at least some of the view must display a person walking or standing in full view.
- Minimize obstructions due to furniture, doorways, etc.
- If the room has windows, mount the camera over a window and point toward the scene instead of pointing toward the window.
- Avoid showing any exterior views through windows. Minimize the amount of exterior light coming in.

Figure 29. MORE EFFECTIVE – This camera is mounted at the entrance of an office suite to monitor people who enter the suite after hours. The camera is mounted at an appropriate angle, height, and distance from people who coming into the room. While the scene includes a glass entry door, the fact that the camera is not directly facing it minimizes problematic reflections or motion occurring behind the door.

Figure 30. LESS EFFECTIVE – The camera is directly facing the glass door at the entrance, which can lead to reflections and unwanted event notifications (see page 7).

Figure 31. LESS EFFECTIVE – The camera is mounted too low (see page 3).

Figure 32. LESS EFFECTIVE – The camera view unnecessarily includes a doorway leading to the inside of the suite. Any activity in the walkway behind the doorway could trigger events.

Building Exteriors

If monitoring the exterior of a building, try to do the following:

- If possible, don't mount the camera on the building; mount it on a fence line or pole away from the building.
- If the camera must be mounted on a building, offset it as much as possible from the wall, providing a side view looking down along the wall. Avoid pointing the camera straight down or into the horizon.
- Monitor the entry and approach areas such as a driveway, walkway or loading zone instead of a specific door.
- Don't try to look through trees or foliage.
- Minimize moving foliage and areas of pavement or wall that would typically get headlight reflections from passing vehicles.

Figure 33. MORE EFFECTIVE– In this example, the camera is placed to monitor people approaching the building from the left side of the scene. The camera view covers a wide view of the building exterior while minimizing the wall it is mounted on.

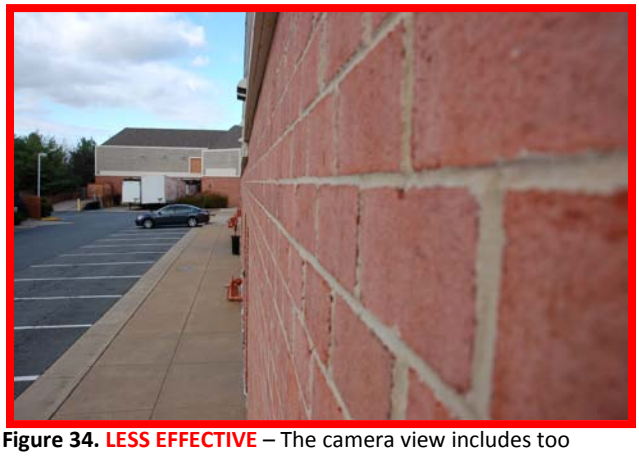

Figure 34. LESS EFFECTIVE – The camera view includes too much of the building wall.

Figure 35. LESS EFFECTIVE – Several parked vehicles obstruct the camera's view of the entire scene, decreasing the amount of time a person would be visible.

Figure 36. LESS EFFECIVE – Foliage obstructs the view.

Driveways and Parking Areas

If monitoring a driveway or parking lot, keep in mind the following:

- Include the area closest to where a vehicle would have to park or would be moving slowly.
- Minimize obstructions from other parked vehicles or structures.
- Don't include sections of a busy street.
- Try to get a view where the side of a vehicle is seen, instead of a head-on view.
- Place the camera far enough away so the vehicle isn't more than 20% of the view.

Figure 37. MORE EFFECTIVE **–** The camera sees the side view of any cars pulling into the driveway.

Figure 38. LESS EFFECTIVE **–** The view is head-on and the vehicles take up too much of the scene.

Figure 39. LESS EFFECTIVE **–** The view of the cars is head-on. Also, the camera is pointed through a window pane, which can lead to reflections that impact system performance.

Figure 40. LESS EFFECTIVE **–** Foliage obstructs the view.

Porches

If monitoring the porch area of a home, pay attention to the following:

- The best location is on the side of the porch, offset from the home, looking at the walkway, lawn, or stoop. This lets the camera see people moving from right-to-left or left-to-right.
- Avoid moving objects such as flags, chimes, or foliage.
- Avoid areas that may be illuminated by passing car headlights.
- Minimize areas that may have shadows of trees or flags.

Figure 41. MORE EFFECTIVE **–** The camera is mounted at a location that displays both the porch and the area leading up to it.

Figure 42. LESS EFFECTIVE **–** This vantage point would be more effective if it included the walkway leading up to the porch so that the camera sees people for a longer time.

Figure 43. LESS EFFECTIVE **–** The camera is mounted too low.

Figure 44. LESS EFFECTIVE **–** The camera body is rotated clockwise (see page 5).

Fence Lines and Perimeters

If monitoring a fence line or perimeter, keep in mind the following:

- Mount cameras along the fence line looking down the fence line, with cameras placed roughly every 40 feet or on corners. Looking down the fence line will provide a view where someone climbing over it would be moving from left-to-right or right-to-left across the camera's view.
- Avoid placing cameras far from the fence line.
- Minimize areas that have constant activity, such as pedestrians or vehicles moving inside or outside the fence line.

Figure 45. MORE EFFECTIVE – The camera is mounted along a fence line. While roads and a parking area appear in the scene, they are not heavily trafficked.

Figure 46. LESS EFFECTIVE – The camera is directly facing the fence, which means that people climbing the fence will be moving directly away from the camera.

Figure 47. LESS EFFECTIVE – In addition to facing the fence, the camera view includes a road in the foreground.

Figure 48. LESS EFFECTIVE – Targets moving toward the fence will be obstructed by signs.

Connecting the Camera

Once you've decided where to place your camera and have mounted it, the next step is to connect it to your Archerfish system. Instruction can be found in the product *Installation Guide* on www.myarcherfish.com/support.

If you have questions or need help, please contact Archerfish Customer Support, Monday – Friday, 8AM – 8PM at **support@myarcherfish.com** or **877-3-THEFISH (877384-3347)**.

While every effort has been made to ensure that the information in these guides are accurate and complete, we would appreciate if any errors or omissions were brought to our attention by emailing us at **support@myarcherfish.com**.

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