

Chapter Seventeen:

WHAT IS USED TO PROVIDE SAFE OPERATION

Safety controls Safety controls are devices and equipment that stop or prevent the system from closing/opening or both, when they detect an obstruction. They often compromise the security of a system (the safer a system is, the less secure it normally becomes) Security should not take preference over safety, unless it has justifiable reason. The ultimate decision must lie with the owner/agent, after clear consideration and review of reasonable consequences (every effort should be made by the designer/installer to educate customers to the likely consequences or level of risk taken by the choice made on the safety cover provided).



Guidelines from the DHF and HSE suggest safety is paramount. In general, any safety issue that can be reasonably foreseen must be dealt with or accepted by the owner as a negligible risk which is their responsibility.

The choice and design of adequate safety for a system should be undertaken with a full consideration of risk to all users, whether pedestrian, vehicular or otherwise. The review or assessment of risk should include all likely circumstances that may occur throughout the life of the system with seasonal variations considered.

The active response of a safety device is to be clearly understood, as well as its consequence on the performance of the system, throughout its operational cycle. For example: a device designed to stop a gate could do so when not required to, or a control could re-open a system during closing when not required, if it is not designed or implemented correctly (a dog/child could trigger photo-switches and present an alternative risk, etc.)

The physical design, level of use and type of users all have a real bearing on the safety features recommended. Also, the layout of the system and its location may influence the items required, along with the bigger picture (overall requirement of the system, in relation to security/reliable operation etc.).

The type of motor will have an effect on design. A reversible operator may allow for escape if something or somebody is trapped, where as a non-reversible or locking unit could entrap causing additional stress/injury (possible mechanical nut cracker action). Therefore the level

of protection against the risk of entrapment is far greater with locking operators and additional steps need to be taken to mitigate this.

The operational logic of a system may have a bearing on the perceived level of protection needed, but a consideration to logic change should be investigated and additional cover offered accordingly. Temporary or permanent logic variation has been a requirement of some customers/users for numerous reasons.

There are many ways of providing system safety, and they are not just electrical, some are physical products that can be used to aid the safety or safe use of a system. Such items include fencing, meshing, barriers, etc. to prevent access to areas of risk of personal injury or alike. These should be evaluated within the original design as well as re-visited throughout the life of the system and any changes that may increase the risk to safe use/operation should be advised to the owner/agent with action recommended.

The main objective of good safety cover for any system is to prevent injury as well as impact with traffic and the obvious implications to passengers etc. Experience has proven that it is more often the moving vehicle that causes most damage, not the moving gate or barrier and most vehicular accidents happen because the vehicle has driven into a moving system. Therefore vehicular devices should be chosen and located to give the best combination of safety cover for each individual site and likely movement of traffic.

Speed of traffic movement is an important aspect that safety devices should accommodate for. Traffic slowing right down or coming to a stop (for highway reasons), may need a smaller protective area, than sites that have longer drives, allowing traffic to motor through at greater speeds. The reaction time of a driver slowing to avoid a closing system, may be too slow to avoid impact and the faster the vehicle travels the more likely impact should be considered and allowed for within the installation design.

S1 Photo-switch *Photo-switch safety was/is the most common safety device and is usually positioned across the opening, in front of the system. Normally installed about 400/600mm above ground level, with obstruction detection limited to a small area their safety benefit is minimal and pedestrian protection questionable.*

Ideal for protecting vehicles delayed in passing through the opening, a single set will not pick up obstructions moving into the path of the system, until they are already within the area of concern. Therefore, photo-switches alone, provide inadequate protection for high use systems or systems requiring a greater area of protection.



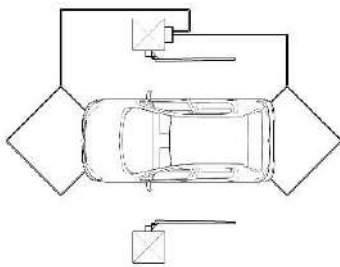
S1-M13 rear *Entrapment behind a gate, against a return wall, could be avoided using photo-switches on posts or similar, with a compliant reactive controller*



S2 Induction loop *Induction loop safety is the ideal vehicular safety device and can be positioned to protect large areas. More than one loop can be used to extend the safe area, including approach areas.*

Ideal on all high use sites and systems with vehicles travelling at reasonable speeds (the higher the speed the greater the area for reaction time is needed). However the greater the area of safety, the longer the system will react to it. Where security is required, safety will be a compromise that needs to be agreed and designed into the system.

The position and installation quality of all loops has a direct effect on their reliability and life expectancy. Also, the drive condition and its maintenance, as well as movement, or the effects of interfering items need to be accounted for accordingly.



S2s Special loop *Under-gate or system affected loop protection may only become activated during stand-by or non-operation and therefore could be ideal under conditions that require a larger safe area, but remain restricted in build/available space.*



S3 Stop button *Stop or 'dead-man's' buttons are more often used in commercial or industrial applications. Their location and position should be agreed, along with the operational effect they have, during the design stage of a system.*



S4 Signalling Light *Operational, or flashing lights are common place in Europe, but less requested in the UK. A light that comes on during the operation of the system is a good safety feature and essential with systems that are otherwise unseen (bollards, rising kerbs, etc.)*

Often vandalized, they can also raise light pollution issues with neighbors and attract unwanted attention.



S4s Traffic lights *Traffic flow light systems are ideal with bollard type installations that drop down below the bonnet of a vehicle. Without them the user may not know when it was clear to pass.*

The location and viewing angle is of importance as well as on-going maintenance and

product reliability/support. It is very important to consider all types of users, authorised and otherwise, the direction of traffic and the likely speed of vehicles using the entrance.



*A green light can encourage complacency and may be misinterpreted as a 'go' command for users! Human nature could take over and a vehicle could drive into the path of a closing system, without adequate delay or warning! This may be highlighted when two way traffic flow is required through the same entrance? **Additional safety should be installed to allow for any such condition.***

S5

Position Indication *Quite rare in use, position indication is required when the physical/electronic position of a system is important to the customer/agent. This may arise from both security and safety needs and is more often used in commercial or industrial locations.*



S6 Safety Edge *Safety edges/strips are devices that react from the detection of a physical presence and are most often used as a pedestrian safety product. The movement of a vehicle at impact would little doubt cause damage regardless.*

Most common on sliding gates, they are a highly regarded form of safety that protects Against overlapping or shearing forces, as well as dragging, crushing and entrapment all subject to the set-up and design of activation on the system (stop, stop and reverse, reopen, etc.)

Vulnerable to vandalism and abuse, their position, protection, use and deployment

should be carefully considered within the whole system design.



S7 Mirrors

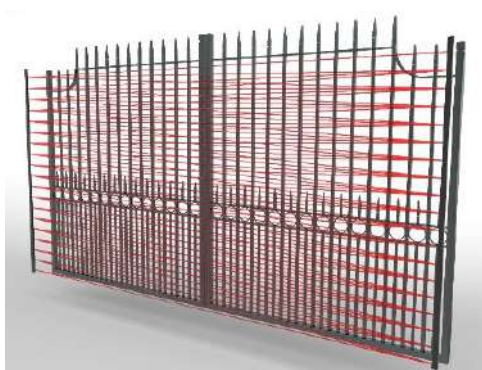
Strategically placed mirrors can provide improved visibility around systems.



Used as a cautious aid in locations with restrictive view, on some sites they can provide a better solution than a traffic light system.

S8 Safety curtain

Safety curtains are invisible fences of detection that provide a field of protection across two given points. This makes them a far better pedestrian safety device than photo-switch cover. Their limitations are otherwise similar to photo-switches and a greater area of protection would require additional devices.

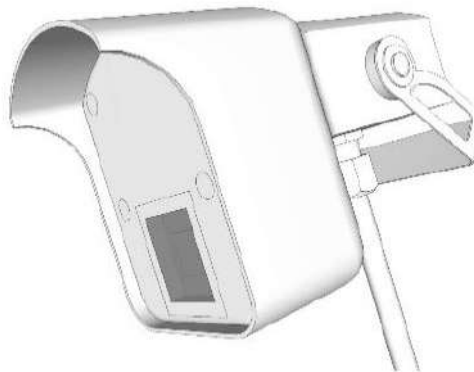


S9 Physical Mesh and Finger guards can be fitted to physically protect areas of the installation and restrict access accordingly. More common as cages around open sliding gates they are often removable to allow access for servicing by authorized persons only.

The size and shape of mesh will need to adhere to the latest requirements and be fitted to the product to suit best performance and use.



S10 IMD Intelligent Microwave or Radar Detectors can be used to detect objects and act accordingly. Used as a safety device they can be set up to react to the presence of an obstruction and act as required. More than one may be required to protect either side of the opening (subject to need)



Granite sets etc.

Traffic calming and speed control are very important when designing suitable safety cover. Rows of granite, or similar, under the gate can aid the performance of safety and improve under-gate tolerances particularly in poor weather conditions and snow

Fast traffic slowing down, takes longer and some have been known to hit the gate, before the gate has had chance to stop and reopen!



Manned

Manned control would usually indicate safety devices were not needed.

However human error being what it is, safety control back-up is always a worthy consideration and should be recommended and designed into the system accordingly. Using this system it is important to advise TRAINED users that they are responsible for the safety of the gates when they are operating them. Manned control is therefore useful in some circumstances when other safety devices are not possible, and is normally used with 'hold to run' operation.



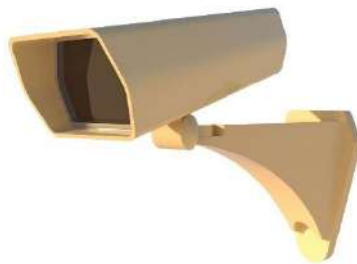
Surveillance

Remote surveillance may be a requirement of the system and it could affect user behaviour, but the design and implementation of adequate safety cover should remain unaffected by its presence.

Remote control of the system by CCTV should be agreed under a suitable risk review and back-up safety devices installed just-in-case.

Safety controls protect a specific area, so a combination of devices is good practice. All systems should have appropriate safety cover, the higher the usage of the system the more likely the chance of accidents. All products used should fail safe, so that their failure restricts, or stops operation accordingly. The need for reliability and effectiveness of devices is a very high requirement of all customers/agents and their removal in light of the customers overriding need for a working system should be avoided

Educating users to the correct methods of use, both automatic and manual, are to be encouraged at all times, with back-up instructions readily available. Signage and other visible notices should be displayed around the installation accordingly.



Systems can now be interfaced with the internet offering web access to pictures across the net and down loadable to many devices

This can allow many occupants to view or police areas of an estate as are required. Gates, play areas, ponds and other such hazards may be covered within a local plan or simply viewing wild life or natural events, as well as offering a deterrent

