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Active Devices for Barrier Safety

Barrier systems are installed with various levels of safety devices to help prevent barriers from closing on vehicles and/or pedestrians. These safety devices vary based on location, barrier type, vehicular type, traffic pattern, security levels, theory of operation, and security personnel. Safety devices can be active devices (will cause some action by the barrier) or passive devices (will not cause action by the barrier).

> ***NOTE:*** Barrier systems are NOT designed to handle pedestrian traffic. Pedestrians should be routed through the proper pedestrian gates or walk areas, and not through vehicle barrier areas.

> ***NOTE:*** Various devices, based on the barrier manufacturer's system, can be connected in several configurtions to help stop, reverse, or prevent the barrier from activating.

In general, the following types of active safety devices are used:

- Safety Loops - protect vehicles
- IR Beams - protect vehicles and pedestrians
- Edge Sensors - project vehicles and to an extent, pedestrians
- Automatic Sensing Reversing - protect vehicles and to an extent, pedestrians

For passive safety devices, please see the corresponding brief, *Passive Devices for Barrier Safety*.

Safety Loops

Safety loops consist of inductance wires in the roadway tied to loop detector modules; and are used to help prevent the barrier from raising (or lowering) on a vehicle. Typically, if a vehicle is detected over a loop, the control system will be programmed not to allow the barrier to operate. However, some systems have EFO (Emergency Fast Operation) which will activate the barrier regardless of a safety loop's activation if programmed to do such. Other systems are configured to keep the barrier from moving while a loop is active, but once clear, the barrier will move.

IR Beams

IR beams, sometimes called photo eye beams, can detect vehicles, personnel, and even animals crossing its beam's path. IR beams are typically used with drop arm gates to prevent the gate from dropping on vehicles. IR beams are also used with sliding gates to prevent an entrapment or crushing event. IR beams use infrared light to transmit a constant beam from a transmitter to a receiver or reflector. The beam is positioned across the path or road in front of, behind, or underneath the barrier. If the beam is broken, the IR system sends a contact signal to the barrier system control for appropriate action. Positioning of IR beams is critical as they should be as close to the barrier as possible to provide the maximum safety yet not be activated by the barrier's action. IR beams have range limitations and should be configured per the manufacturer's instructions for proper functionality.

Edge Sensors

Edge sensors are installed on the lower edge of drop arms and the leading/trailing edge of a sliding gate. When a vehicle or other object comes in contact with the edge strip, a signal is sent to the barrier system for appropriate action. The edge sensor sends a wireless command, usually via an RF signal transmitter, to a receiver in the gate operator. The appropriate action is to reverse the closing action by the gate or arm thus protecting whatever was contacted by the sensor.

Automatic Sensing

Automatic sensing is available on some systems and triggered when the current draw for the driving motor is drawing too much current in order to operate. When the system recognizes this, it is assumed that there is an obstruction to the operation of the gate and the operation is reversed. These systems are incorporated as a permanent and integral part of the operator.

Automated vehicular gate and barrier systems must be installed in accordance with UL 325 Safety Standards and ASTM F2200 Construction Standards. The UL 325 Classification will determine which combination of the above identified devices must be installed. If an automated vehicular gate or barrier system is not properly designed, installed and maintained, serious injury could result.

In summary, every security barrier configuration is different depending on barrier type, traffic patterns, UL requirements, and security level. Each application must be analyzed for the most effective safety device(s) to be installed. Safety devices must also be maintained and tested on a regular basis to ensure proper operation. It is good practice to maintain and test safety devices as part of the regular maintenance and testing of your barrier system.

A traffic pattern theory of operation should be developed and fully understood before the barrier system and its safety devices are installed.

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