

SAFEGRADE

by piper

GRADE CROSSING SAFETY SOLUTION

Piper's SAFEGRADE system provides remote monitoring of grade crossings to detect occupancy and alert rail system operators to potential hazards. Using Piper's patented LiDAR technology, the integrated system is designed to capture the presence of vehicles, pedestrians, cyclists, and objects within the crossing quadrant with high resolution.

How Piper's SAFEGRADE Works

The system integrates Piper's patented TrackSight™ LiDAR and proprietary Time of Flight (TOF) cameras to continually scan the grade crossing area to detect obstacles and intrusions. The high definition TOF cameras and LiDAR are installed at the corners of the grade crossing. Using a database image as reference, they can detect any changes to the fouling area in real-time – and reliably discern animate from inanimate objects. The system interfaces with gates and signals to provide advanced warnings to approaching trains as well as triggering warning strobes and alarms in the area. Piper's public address system can play voice commands to intruders and the system is capable of storing all video and telematic data for training and forensic analysis.

SAFEGRADE is the smart solution for transit and freight rail operators seeking to protect their grade crossing and enhance public safety.

SAFEGRADE has multiple options for wayside-to-train communications for alerting approaching rolling stock including: LTE/5G, WiFi, 220MHZ, and UWB. Using a model of the track territory, Piper's SAFEGRADE expands the distances for alerting to ensure safe stopping even at high speeds. The system is also expandable to integrate with train control operations to make calculations based on train speed and braking curves.

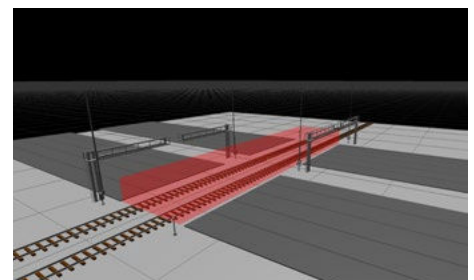
A systems administration control management platform monitors the health and safe operations of all components. SAFEGRADE can operate as a standalone solution or be integrated into other controlled systems.



Piper LiDAR & Time of Flight Camera



Protective zone at grade crossings

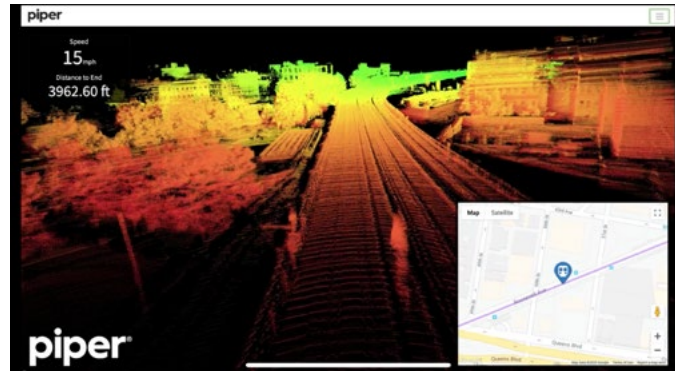


Benefits of SAFEGRADE Grade Crossing Solution

- Detects the presence of pedestrians, cyclists, vehicles, and objects within grade crossing quadrants that represent a hazard to both the public and the rail operator.
- Secure communications with control centers and train operators ensure that approaching trains are alerted instantly to any hazards.
- Using a variety of alerts including audible/visible from the SAFEGRADE installation, pedestrians receive urgent warnings of the impending danger.
- Piper's multi-sensor design ensures that the system works in all lighting and weather conditions.
- Meets stringent standards incl: CENELEC, AREMA, IEEE etc.
- Meets the highest regulatory standards for cybersecurity with ongoing threat assessment and updates.
- Piper is an experienced systems integrator and can integrate into existing systems.
- OTA remote management software available for system health monitoring and maintenance.



Opposite & Below: SAFEGRADE utilizes Piper's advanced patented LiDAR system called TrackSight™ for additional object detection capability. High definition cameras installed at the crossings provide rail operators with remote visual accessibility to their network. And Piper's public address system can play voice commands to intruders. The system is capable of storing all video and telematic data for training and forensic analysis.



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