



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 proprietary Time of Flight (TOF) cameras and Piper TrackSight™ LiDAR to continually scan the grade crossing area to detect obstacles and intrusions. 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.



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

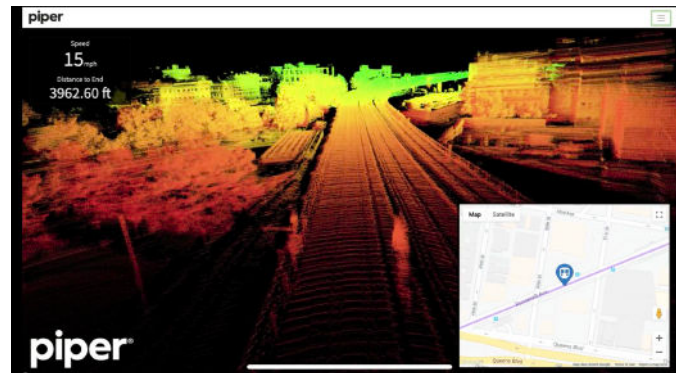
Piper Networks is an innovative rail engineering solutions provider and systems integrator specializing in the development of transportation technologies. Founded in 2011, Piper has four primary product lines that serve the industry, including: Vital Train Positioning, Maintenance of Way (MOW) Protection, Automatic Train Protection (ATP), and Passenger Information Display Systems (PIDS). Piper's proprietary Ultra Wideband (UWB), GPS-RTK, and patent-pending TrackSight™ LiDAR image positioning technology are designed to operate in some of the most challenging transportation environments while maintaining pinpoint accuracy that improves performance for train operators and train control suppliers.

Benefits of SAFEGRADE

- 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 also utilizes Piper's advanced patent pending 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.



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.

