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Railroad Quiet Zone Safety

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Since 2005 communities in the United States have been able to request and establish Quiet Zones, or designated sections of railroads where the routine sounding of the train horn is not required when a train approaches a public road crossing. According to the U.S. Department of Transportation Federal Railroad Administration (FRA) Office of Safety Analysis, as of 10/14/2022 there were 181 railroad Quiet zones in Texas. Again, when in a designated quiet zone railroads have been directed to cease the routine sounding of the train horn when approaching public roadway-rail grade crossings.

A quiet zone may be convenient for those living near a railroad and who can't get accustomed to the train horns, but does it create a safety issue? Is a quiet zone possibly unsafe considering how easily we are distracted or fail to pay attention when crossing a railroad while driving?

Texas has almost 10,400 miles of railroads (both freight lines and passenger lines), the largest number of rail miles in the nation. Illinois is second with almost 6,770 miles. According to the Operation Lifesaver© Highway-Rail Grade Crossing Collisions – Top 25 States chart (updated 3/1/23), annually Texas is ranked at number 1 in collisions at 239; number 2 in deaths at 30; and number 1 in injuries at 71. On the national level, approximately 85% of all highway-rail grade crossings collisions in the U.S. occurred in the 25 states listed.

Driver disregard for the possibility of a train being on the track was apparently the cause of a majority of these crashes and deaths listed. At least one crash and death in Texas resulted when the driver disregarded the lowered crossing gates blocking the roadway and drove around them and into the path of an oncoming train.

At grade railroad crossings, which require the driver and vehicle to drive over the railroad tracks, utilize several ways of alerting drivers of the tracks and when a train is approaching. State highway officials for state roads (in Texas- FM, RM, SH, US, or IH roadways) or local entities (county or city) responsible for roads or streets, work with railroads to determine the appropriate signals that are installed, especially those crossings which are high traffic locations. But it still is the driver's responsibility to adhere to warnings of signs and signals when a train is approaching.

The typical ways an at grade railroad crossing is marked by signage or signals, from the least to the most are:

- Crossbuck signs (passive signs). This relies on the driver seeing the train and/or hearing the train horn to alert them of the oncoming train.
- Crossbuck signs with flashing red lights (active warning systems) and possibly bells, that activate when a train is within the sensor zone of a roadway.
- Crossbuck signs, flashing red lights, and gates/crossarms. Red, flashing lights activate and crossarms/gates lower to block the crossing. It is illegal to go around the lowered gates (even in the event of a malfunction) unless flagged by a law enforcement officer or a railroad employee.
- Crossbuck signs, with red flashing lights on a cantilever frame over all lanes of the roadway. May also have gates that lower. Typically used on multi lane roadways with higher speed limits and more traffic volumes.

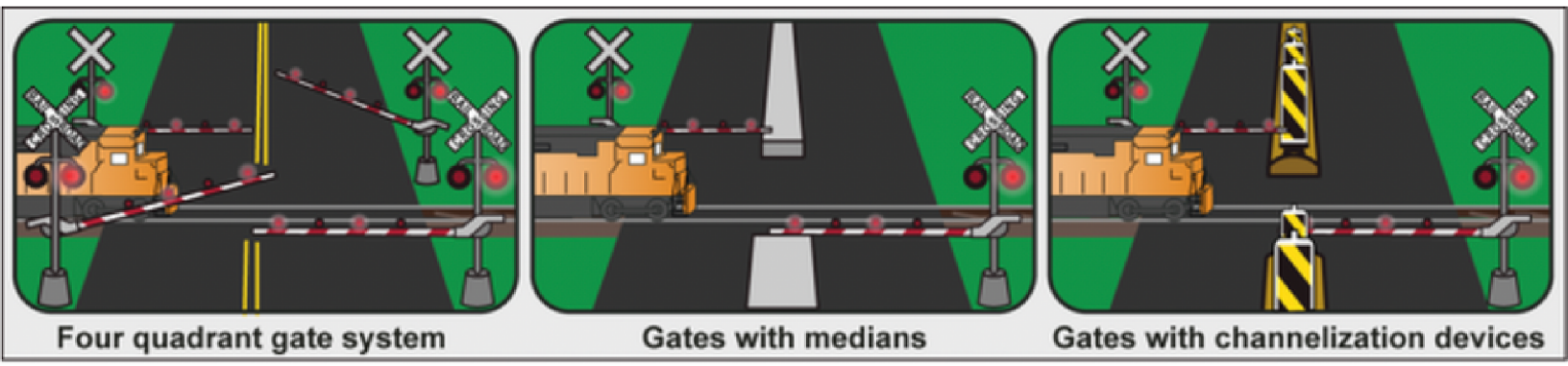
Some crossings don't have active warning systems- flashing lights or gates that lower due to low vehicle traffic volume and/or a low volume of train traffic. Surprisingly though, statistics show that most highway-rail crossing collisions occur at crossings where active warning devices are present. Go figure.

When a train horn is sounded in advance of a highway-rail grade crossing, federal law requires the train horn to begin at least 15 seconds before the train reaches a rail-highway crossing of any public road. The typical horn sequence is 2 long blasts, 1 short blast, and 1 long blast. This may vary if several crossings are close together. The horn must continue to sound until the lead locomotive occupies the crossing. A locomotive horn volume is between 96 decibels (db) up to 110 db. A train engineer may also sound the train horn for other safety reasons like obscured sight distance, animals on the track, or trespassers on the track or in the railroad right of way.

So, what is a quiet zone and how is the driving public supposed to be alerted when a train is approaching a road crossing a railroad? From the federal regulations Title 49 CFR Part 222.9 Definitions, "Quiet Zone" "means a segment of a rail line, within which is situated one or a number of consecutive public highway-rail grade crossings at which State statutes or local ordinances restricted the routine sounding of locomotive horns, or at which locomotive horns are not routinely sounded." A railroad engineer does, under federal regulations, have an obligation to sound the horn to warn railroad maintenance employees or contractors working on the tracks.

Only local governments or public agencies may establish a quiet zone by working in cooperation with the railroad company that owns the tract, and the appropriate state transportation authority to assess the risk of collision at each grade crossing they wish to silence. A quiet zone must be a minimum of ½ mile in length and have at least one public highway-rail grade crossing. Every public grade crossing in a quiet zone must at a minimum have warning devices that include flashing light signals, gates, constant warning time train detection circuitry and power-off indicators visible to the train crew.

Additionally, Supplementary Safety Measures (SSMs) may be called for and installed in the absence of a train horn sounding. SSMs are engineering improvements that are installed at highway-rail grade crossings in a quiet zone to reduce the risk of collision at the crossing. These include four quadrant gates, gates with medians or channelization devices also known as traffic separators, converting two-way streets to one-way streets with gates that fully block the street, temporary closure (nighttime closure) or permanent closure of the crossing, or approved variations.



Non-engineering alternative safety measures (ASMs) are also employed to inform the public of pending quiet zones, which includes public awareness and education of local drivers, residents and pedestrians near the railroad to emphasize the risks associated with public highway-rail grade crossings and requirements of state and local laws that are applicable. The publication education must be maintained and continued, and as part of this the public authority must establish a baseline violation rate and maintain a statistically valid violation rate that indicates the effectiveness of the public education and awareness effort. Records and data must be retained and furnished to the FRA upon request. Signs may also be posted on the roadway approaching the crossing.

Is a quiet zone unsafe? In 2017 the FRA found at-grade crossings in quiet zones were generally as safe as the same grade crossings where train horns were sounded. The U.S. Government Accountability Office (GAO) reviewed the FRA's analysis and found that it had no provision for changes in characteristics of crossings over time, such as changes in vehicle or train traffic. The GAO recommended changes in the analysis. The FRA made the recommended changes accounting for changes in train and vehicle traffic over time, and in 2019 reanalyzed the crossing data in quiet zones. The FRA's finding was that on quiet zone crossings where train and traffic volumes decreased experienced significantly more incidents than similar crossings where the train horn is sounded, while in quiet zone crossings where train and vehicle traffic increased experienced significantly fewer incidents than at crossings where the train horn was sounded. Though somewhat inclusive, future data analysis may give more reliable results on whether a quiet zone is more or less likely to have more vehicle-train collisions at crossings.

Although a quiet zone may be more pleasing to the local community residents, it most certainly puts even more responsibility on drivers to be alert for oncoming trains when a driver approaches a railroad-highway crossing in a quiet zone since no train horn will be sounded. Remember to always be alert when driving, especially when approaching a railroad crossing. Do not go around lowered crossing gates, even in the event of a malfunction and no train is in sight. It is against the law. One may only go around when directed by a law enforcement officer or a railroad employee. Remember the slogan from Operation Lifesaver©- "See Tracks? Think Train", especially in a Quiet Zone.