



Quiet Zones

Revised White Paper No. 15

Hank Williams and Bob Dylan may have romanticized the “lonesome whistle” of a train in song, but for many of those living within shouting distance of a railroad track a train horn is anything but musical. Recognizing that, the Federal Railroad Administration (FRA) has created an exception to its rule that generally requires trains to sound their horns as a warning to motorists, pedestrians and others when trains approach road intersections, which are commonly called “grade crossings.” This exception is called a “quiet zone.”

A quiet zone is a stretch of track with road crossings where train horns are not required to sound. The minimum length for these zones is a half mile, and there is no maximum length. Quiet zones can be for 24-hour periods, or can be limited to shorter periods such as overnight. If quiet zones are established for SMART trains, freight trains using SMART’s tracks would also be exempted from sounding their horns at each crossing.

Establishing Quiet Zones

A “quiet zone” can include one single crossing, several crossings, or even a whole corridor. For example, the Utah Transit Authority, which runs a new commuter train service called the “FrontRunner” from Salt Lake City to Ogden, aided in the establishment of *one* single quiet zone for the length of its 38-mile corridor, which includes 14 jurisdictions and 41 crossings.



Photo Courtesy of Railroad Control Limited (RCL)

Intersection with 4-quadrant gates

Grade crossings can be automatically included in a quiet zone when either one of two Supplemental Safety Measures (SSMs) is present: curb medians or quad gates. Each measure is designed to prevent cars from driving around lowered gates at crossings, one of the most common causes of grade crossing incidents.

New quiet zones can be established without any special treatments at grade crossings if the safety risk in a quiet zone when the train does not blow its horn is below one of two

thresholds. Using a calculator provided by the FRA and available online, each crossing can be assigned a risk score. The average of these scores for all the crossings in a proposed quiet zone is known as the Quiet Zone Risk Index (QZRI).

If the QZRI is equal to or lower than the National Significant Risk Threshold (NSRT), then no further supplemental safety measures are required anywhere in the quiet zone. Likewise, if the QZRI is equal to or below the Risk Index with Horns (RIWH), then no further supplemental safety measures are required. The RIWH is the average risk level for a particular quiet zone that would exist if a train was blowing its horn. In both cases, it is required that crossings have gates and flashers and at least one of the crossings in the quiet zone is a qualifying SSM.

About one in five new quiet zones established since new FRA train horn rules took effect in 2005 were established with no new improvements at any crossings. About one in three of the new quiet zones involved supplemental safety measures at some crossings, but not at others. SMART's preference and recommendation is for quiet zones to include SSMs at all key public crossings to maximize safety.

A less common alternative to the establishment of SSMs are Alternative Safety Measures (ASMs). These include non-engineering elements such as public awareness campaigns or photo enforcement technology to increase driver and pedestrian awareness at grade crossings. If the use of ASMs is being pursued, then the city or county making the request for the quiet zone must get permission from the FRA.

In some other cases, no improvements need to be made to a crossing to include it in the proposed quiet zone. One-way streets, for example, need no supplemental safety measures as long as gates are present. In addition, typical residential private crossings need only a stop sign and rail crossing sign to be included in the quiet zone.

Treatments for private crossings that involve public access, industrial activity or commercial activities are determined on a case-by-case basis through a diagnostic review involving the California Public Utilities Commission (PUC), applicable railroads (SMART and the North Coast Railroad Authority) and Caltrans. This is also the case for pedestrian and bicycle crossing safety measures. It is possible that safety measures already planned in the SMART project may suffice for these types of crossings.

The Process

Only local public authorities with control over streets and roads (such as cities or counties) may establish quiet zones. Consequently, while SMART can make suggestions, it cannot "designate" certain intersections as being part of a future quiet zone. Local jurisdictions can work together to create longer, multi-jurisdictional quiet zones, and to simplify the process.

The establishment of a quiet zone does not require the submission of an application to the FRA and thus there is no need for a local jurisdiction to wait to see if its quiet zone has been "accepted." Rather, the process begins when a local jurisdiction files a Notice of

Intent to establish a quiet zone to the PUC, Caltrans and applicable railroads (in this case SMART and the NCRA). While the FRA is not required to be part of the notice of intent process, it is prudent to keep them involved in the process.

The issuance of this notice is typically preceded by a formal diagnostic review of crossings in the proposed quiet zone. The PUC, railroads and Caltrans must be invited to the diagnostic review. This diagnostic review is necessary to determine treatments for pedestrian crossings and private crossings that involve public access, industrial activity or commercial activity. The review is also intended to assist the local public authority in devising the best plan for quiet zone implementation.

Once any necessary supplemental safety measures have been installed, and the PUC has verified Quiet Zone Calculator data, the local public authority issues a Notice of Establishment. This is sent to the FRA, all applicable railroads, Caltrans, any local governments affected and any private property owners affected by private crossings. Railroads must cease blowing the train horns after the 21-day waiting period. However, a railroad engineer always retains the right to use the horn if there is any potential danger on the track (a car or pedestrian encroaching on the track, for example).

In the case of the SMART corridor, quiet zones could be established and improvements incorporated into SMART's construction prior to service start-up.

Cost of Implementation

SMART included the cost of replacing signals and gates at crossings in both its 2006 and recent 2008 Expenditure Plans. The average cost is roughly \$250,000 per grade crossing in current dollars. These costs are already built into the SMART budget.



Photo Courtesy of Railroad Control Limited (RCL)

Mountable curb median at crossing

SMART has conservatively estimated the cost of upgrading crossings to 4-quadrant gates at \$150,000. Where curb channelization is a sufficient SSM, mountable curbs can be installed directly onto the street for about \$10,000 to \$15,000 per crossing. Non-mountable curbs that are more permanent and are made from materials like concrete and brick cost about \$75,000 per intersection.

Fortunately, there are a number of places along the SMART corridor where curb medians already exist at intersections. Some of these may be able to serve as qualifying SSMs. In other cases, SMART is planning in its existing proposed work on crossings (and its existing budget) to add curbs and additional gates at some crossings for added safety. Some of these

supplemental improvements may also qualify crossings for inclusion in quiet zones, meaning that they may not require further upgrades.

SMART has included \$4.5 million in its 2008 Project Funding Plan for further inclusion of SSMs at crossings to help local governments establish quiet zones.

Liability

Some cities have wondered if quiet zones will increase their liability. According to the FRA's Staff Director of the Highway Rail Crossing and Trespasser Division, the failure of a train to sound its horn should not be a cause of action against a local jurisdiction that implemented the quiet zone. The same official has publicly stated that if a suit is ever brought against a local jurisdiction for preventing horns at a crossing, the FRA would likely file an amicus brief on behalf of the locality.

The FRA does not want local jurisdictions to be punished for creating quiet zones, since adherence to FRA requirements should translate to an overall reduction in safety risks. Unlike some older quiet zones established with whistle bans before the 2005 Train Horn Rule, new quiet zones can only have been implemented if overall safety risks were reduced to the a level at or below that with trains sounding their horns; or if risk were negligible with or without the horn.

Ultimately courts determine liability and culpability based on the particular circumstances of individual cases. At present, however, no local jurisdiction has been sued for removing train horns in the three years since the 2005 Train Horn Rule was established.

For more information about SMART, go to www.sonomamarintrain.org or call SMART's information lines in Marin, 415-419-3510, or Sonoma, 707-583-2323.