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Railroad Controls Limited
Comprehensive Signal & Communication Sew-ices

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36

Subject: Docket No. FRA-1999-6439, Notice No.1

Our company, Railroad Controls Limited, is in the grade crossing safety business. We install and maintain grade crossing safety devices for regional, short line, commuter and some Class I railroads throughout the United States and Canada. We also design and manufacture new and innovative products that enhance grade crossing safety. One of those products is AHS, the Automated Horn System.

Since we are in the business of improving grade crossing safety, we personally know many of FRA's Regional Grade Crossing Managers and respect their commitment to making our country's grade crossings safer. We know FRA's mission is to enhance safety and, as a result, would not intentionally propose a rule that could negatively impact safety at grade crossings. We also believe that audible warning of an approaching train provides significant safety benefits for the motorist approaching a grade crossing. Our philosophy with AHS is to provide an alternative method of sounding a horn at the grade crossing which focuses the sound level on the roadway approach where it needs to be rather than disturbing the entire community adjacent to the tracks.

We are pleased that the Notice of Proposed Rulemaking (NPRM) acknowledges that the use of wayside horns reduced net community noise impacts; however, we were extremely disappointed that the NPRM refused to acknowledge the safety enhancements wayside horns have provided. The Volpe Center's study, dated June 1998, entitled "Field Evaluation of a Wayside Horn at a Highway-Railroad Grade Crossing" clearly suggests that the wayside horn will not result in behavior that puts the driver at increased risk compared to the use of a train horn. Table 14, on page 40 of the report, indicates a reduction of 52.63% in gate violation frequency per 1000 trains. Wayside horns have been in-service at this location for over five years. Even with traffic levels of over 10,000 vehicles per day and over 45 trains per day, there has not been a single grade crossing accident since the wayside horns have been in place.

The' NPRM also failed to acknowledge Iowa DOT's report, dated May 1999, entitled "Evaluation of an Automated Horn Warning System at Three Highway-Railroad Grade Crossings in Ames, Iowa". One of the objectives of this report was to determine the overall safety at the crossings with the automated horn warning system. The study concluded that 78% of the motorists preferred the automated horn system and 92% of

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the train engineers rated the overall safety of the automated horn system about the same or safer than train horns. We believe exclusion of the wayside horn as one of the approved supplemental safety measures eliminates a cost-effective means of mitigating community noise impacts without compromising grade crossing safety.

Our wayside horn system, AHS, delivers a louder, more consistent audible warning to the motorist when it is needed to affect driver behavior. Our initial product was designed to provide a decibel level that would exceed the train horn's minimum decibel level at a point where the motorist was 200' from the crossing and the train was 400' from the crossing. This is the critical decision point for the motorist in a typical urban setting. Assuming the train horn minimum of 96 dBA at 100 feet in front of the locomotive, the train horn decibel level on the roadway approach at the critical decision point would be approximately 80 dBA. AHS delivers 83.9 dBA. The latest version of our product has been designed in such a manner that the horn volume can be calibrated to deliver 96 dBA, to a location 100 feet from the crossing on the roadway approach, if necessary. As a result, AHS could deliver 88.5 dBA to a location 200 feet from the crossing on the roadway approach. Although we can deliver a higher decibel level, the effectiveness determined by the Volpe report indicates that the lower decibel level still provides improved audible warning over the train horn. AHS delivers a longer, louder, more consistent audible warning for the motorist's approach to the crossing.

The reduction of 52.63% in gate violation frequency per 1000 trains is also an indication that directionality was not a significant factor in determining whether the driver would violate the gate or not. Grade crossing warning systems, by design, are bi-directional systems. While it is technically feasible to install unidirectional systems, it would significantly increase the cost of a standard crossing warning system. Since this concern is purely speculative, with no scientific basis, and the current activation method has proven to be effective, the additional cost for a unidirectional system does not appear to be warranted. The NPRM also expresses concern that the driver may become complacent and ignore the wayside horn over time. The communities that have had experience with our automated horn system have not noticed an increase in unsafe driver behavior as the drivers get used to the system. A national study relating gate violations and warning times indicates that gate violations increase significantly with longer warning times. Since AHS is installed with constant warning time systems, the motorist is presented with a consistent warning from both a sound level and warning time perspective. Visual and audible warning of an approaching train on a credible basis has been proven to be effective in reducing gate violations.

Wayside horns have been in Gering, NE for over 5 years; Parsons, KS for over 3 years; and Ames, IA for over 1 year without a single grade crossing accident occurring. Wayside horns in Wichita and Marysville, KS have been placed in service within the last four months with similar results. This equates to more than 44 million vehicles and 384,000 trains having used crossings equipped with wayside horns representing a total potential exposure of over 1.7 trillion vehicles and trains without a single grade crossing accident occurring. We believe the wayside horn should be approved as a supplementary safety measure based on this combination of real world experience and studies that have been completed illustrating the effectiveness. Since credibility of the crossing signal system is vitally important to the effectiveness of the wayside horn in lieu of train horns, we recommend that the wayside horn only be used at locations with automatic flashing light signals,

gates and constant warning time circuitry. We also think it is a good idea to have a sign on the roadway approach to advise the driver that the train does not sound it's horn. This approach is also consistent with recommendations for other supplemental safety measures. If train speed is consistent and gate activation is kept to a minimum, we believe the wayside horn can be effective with other means of train activation as well.

Four-quadrant gates, once all the details regarding vehicle detection and timing of the exit gates have been resolved, should prove to be a very effective means of reducing gate violations. However, this is the highest cost alternative suggested in the NPRM. Only grade separating a crossing is likely to have a higher cost. In addition to concerns over the possibility of trapping vehicles on the crossing, the fourquadrant gate system must be continually monitored to ensure gates are not broken. A broken gate could significantly compromise the effectiveness of the system. The approaching train has no means of confirmation whether all the gates are horizontal or not. The relatively high life-cycle cost, operational concerns and physical constraints as to their use will significantly limit the application of this technology in the development of quiet zones. Temporary closure of crossings and establishing one-way streets with gates will also have limited applications in the development of quiet zones.

Gates with medians or channelization devices can be relatively low-cost quiet zone treatments, if the roadway is wide enough to accommodate the barriers. However, if the roadway needs to be widened, the crossing surface will have to be extended and the existing gates will probably need to be relocated. The additional construction required could easily triple the project cost. We do agree that it is important that the crossing warning devices are equipped with constant warning time circuitry to minimize the gate activation time, but we also believe the installation of wayside horns will enhance the effectiveness and provide better audible warning for cyclists and pedestrians.

One of the primary design considerations for the construction of median barriers is the length of barrier required to effectively minimize the possibility of a motorist driving around the gate. The Florida DOT has recommended 200' median barriers. Other studies have shown that 100' median barriers have significantly reduced the number of gate violations. The NPRM is inconsistent in its recommendation of 100' medians. If a nearby intersection will not accommodate a 100' median, the NPRM recommends a minimum of 60' median barriers. From a practical standpoint, a driver at a nearby intersection is probably more likely to make a left turn, bypass a short median and drive around the gates. If it is important to have a minimum length of 100' that should be the requirement at all locations. This technology will be difficult to apply at locations with adjacent highway intersections or driveways within 100' of the crossing. Additional supplemental safety measures, such as wayside horns, should be mandatory if the median barrier is less than 100'. Another consideration is that, in rural areas, median barriers could limit the movement of farm implement equipment.

Photo enforcement can be an effective deterrent, but it does not provide additional warning or a physical barrier to prevent gate violations. The life-cycle costs including installation, maintenance and moving of cameras makes this one of the more expensive alternatives. Also, the concern over individual's rights may limit the applications. If photo enforcement is utilized, there have not been sufficient studies to determine the effectiveness of employing shells and moving cameras from location to location.

We believe the wayside horn provides an economical solution that is suited for a variety of applications that other treatments cannot address. The NPRM recognizes the limitations of many of the proposed supplemental safety measures and tries to address those limitations through the use of alternative safety measures. The proposed alternative safety measures do not in any way provide additional audible warning or a physical barrier to mitigate the elimination of train horns. By taking a corridor approach to the reduction of grade crossing crashes, individual untreated crossings within the corridor pose a significant safety hazard to unsuspecting motorists. We are confident the FRA will reconsider the safety implications and either eliminate the alternate safety measures or modify the requirements for alternative safety measures to include additional audible warning, such as the wayside horn, for those crossings where other supplemental safety measures can not be installed. FRA's Florida Whistle Ban Study indicated that the major contributor to increased accidents was the lack of audible warning. The wayside horn effectively addresses this concern and should be mandatory at locations within the proposed quiet zone where other supplemental safety measures are not practical.

Another area of inconsistency in the NPRM is the minimum audible warning time requirements. The NPRM recommends a minimum of 20 seconds of audible warning unless the train speed does not allow for the 20 seconds to be provided within ¼ mile of the crossing. The logic is that the train's horn is not effective beyond that point anyway. Although train horns cannot provide effective audible warning from distances greater than ¼ mile, our wayside horn delivers audible warning to the motorist for a minimum of 20 seconds regardless of the train's speed. In applications outside a quiet zone, the wayside horn could be used in conjunction with the train horn to provide the required minimum audible warning.

The wayside horn has support within the railroad industry and individual State DOTs as a practical, economic and effective solution to improve safety at grade crossings while mitigating community noise impacts. Discussion with some of the FRA's field staff indicates support within the FRA for inclusion of the wayside horn as an acceptable alternative to sounding train horns. The technology is being considered for inclusion in both the Manual on Uniform Traffic Control Devices as well as the AAR Signal Manual. The communities with wayside horn installations or that have witnessed demonstrations of the wayside horn system are convinced that the wayside horn delivers the audible warning the driver needs while minimizing the impacts on surrounding neighborhoods. We highly recommend the inclusion of the wayside horn as an approved supplemental safety measure.

Sincerely,

Richard Campbell

Richard Campbell, President
Railroad Controls Limited