

TABLE 5

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W	35000	20983.21	0	35000
X	42000	25179.86	0	42000
Y	33500	20083.93	0	33500
Z	7500	8576.33	0	7500
	RIWH 18705.83			QZRI 29500

The public authority elects to install four-quadrant gates without vehicle presence

detection at X Street. As shown in Table 6, this reduces the Quiet Zone Risk Index to

20,890. This risk reduction is not sufficient to qualify as quiet zone under the rule.

TABLE 6

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W	35000	20983.21	0	35000
X	42000	25179.86	0.82	7560
Y	33500	20083.93	0	33500
Z	7500	8576.33	0	7500
	RIWH 18705.83			QZRI 20890

The public authority next decides to use traffic channelization devices at W Street. Table 7 shows that the Quiet Zone Risk Index

is now reduced to 14,327.5. This risk reduction fully compensates for the loss of the train horn as it is less than the Risk Index

with Horns. The quiet zone is qualified under the rule.

TABLE 7

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W	35000	20983.21	0.75	8750
X	42000	25179.86	0.82	7560
Y	33500	20083.93	0	33500
Z	7500	8576.33	0	7500
	RIWH 18705.83			QZRI 14327.5

Appendix D to Part 222—Determining Risk Levels

Introduction

The Nationwide Significant Risk Threshold, the Crossing Corridor Risk Index, and the Quiet Zone Risk Index are all measures of collision risk at public highway-rail grade crossings that are weighted by the severity of the associated casualties. Each crossing can be assigned a risk index.

The Nationwide Significant Risk Threshold represents the average severity weighted collision risk for all public highway-rail grade crossings equipped with lights and gates nationwide where train horns are routinely sounded. FRA developed this index to serve as a threshold of

permissible risk for quiet zones established under this rule.

The Crossing Corridor Risk Index represents the average severity weighted collision risk for all public highway-rail grade crossings along a defined rail corridor.

The Quiet Zone Risk Index represents the average severity weighted collision risk for all public highway-rail grade crossings that are part of a quiet zone.

The Prediction Formulas

The Prediction Formulas were developed by DOT as a guide for allocating scarce traffic safety budgets at the State level. They allow users to rank candidate crossings for safety improvements by collision probability. There are three formulas, one for each warning device category: (1) automatic

gates with flashing lights, (2) flashing lights with no gates, and (3) passive warning devices.

The prediction formulas can be used to derive the following for each crossing:

1. PC which is the predicted collisions.
2. P(FC|C) which is the probability of a fatal collision given that a collision occurs.
3. P(CC|C) which is the probability of a casualty collision given that a collision occurs.

The following factors are the determinants of the number of predicted collisions per year:

- Average annual daily traffic;
- Total number of trains per day;
- Number of highway lanes;
- Number of main tracks;