

MINIMIZING THE INCOMPATIBILITY BETWEEN RAILWAY OPERATIONS AND NEW RESIDENTIAL DEVELOPMENT

Karen Fraser

Canadian National Railway, 8th Floor, 277 Front Street West, Toronto, Ontario, M5V 2X7

ABSTRACT

Rail noise and vibration becomes an environmental concern when residential development is approved by Municipalities adjacent to railways without regard for the impacts of existing and future railway operations. Canadian National Railway and Canadian Pacific Railway have developed a set of guidelines which includes standards to reduce the incompatibility between new residential developments and existing railway corridors and yard facilities. Adherence to the guidelines ensures that appropriate measures are implemented to mitigate the impacts of rail noise and vibration, as well as minimizing the potential effects of a derailment, collision or spillage. This paper will discuss the objectives of the railway's guidelines, CN's experience with adjacent development issues and the potential impact of new complaints in older neighbourhoods.

1.0 INTRODUCTION

As development continued to be approved adjacent to railway rights-of-way without regard for the impacts of rail operations, and as complaints about noise and vibration and concerns with regards to safety and security continued to increase, the Railways took action. CN and CP, with the aid of planning and engineering consultants, developed a guideline that established a set of criteria to address these concerns and reduce the incompatibility between new residential developments and the existing railway corridors.

The Railways' guideline was first introduced in February 1983. The document outlines measures to be incorporated into residential developments that are designed to mitigate the impact of rail noise and vibration and to enhance public safety. The guideline has subsequently been revised over the years to include measures to address non-residential development adjacent to the railway corridors and all proposed development in the vicinity of railway yard facilities.

2.0 ADJACENT DEVELOPMENT GUIDELINES

The guidelines set out standard procedures to be observed by the developer and municipalities in determining appropriate measures to mitigate the impact of rail noise, vibration and to minimize the effects of a derailment, collision or spill. The requirements were developed as a practical means of addressing rail noise, vibration and safety concerns and resulted from a review of railway operations, derailment

records, groundborne vibration data and existing noise guidelines. The purpose of the guideline is to provide land use decision makers with the measures necessary to ensure that new residential development is approved with provisions to: provide a suitable noise environment; minimize effects of vibration; provide appropriate protective buffers, berms, setbacks; prevent pedestrian trespass on active railway lines; and, ensure alterations to existing drainage patterns do not adversely affect Railway property. Noise sensitive areas generally include lands lying within 300 metres of a rail corridor and 1000 metres of a rail yard.

TABLE 1: Standards to be Met

Noise	Day*	Night*
sleeping quarters	35 Leq (dBA)	35 Leq (dBA)
living room	40 Leq (dBA)	40 Leq (dBA)
outdoor	55 Leq (dBA)	50 Leq (dBA)
Vibration	0.14mm/sec	
Safety	Restrain derailed train clear of occupied buildings Contain spillage Prevent trespassing	

*Day 0700 to 2300, Night 2300 to 0700

Vibration sensitive areas generally include lands lying within 75 metres. For residential development near a rail corridor, mitigation measures are required to achieve the minimum standards listed in Table 1. The measures to achieve these standards include building setbacks, earthen berms, acoustical barriers, vibration isolation, and security fencing. These measures are mutually supportive and all the measures must be provided to achieve the minimum required protection.

Canadian National Railway has been involved in reviewing and commenting on proposed adjacent development applications in Ontario since the early 1980's. When the guideline was developed, the Railways had hoped the provincial and municipal governments would ensure enforcement of the standards without Railway involvement however it was quickly determined that the Railways had to take an active role in the land use planning process to ensure the standards were being met. Through extensive commenting and many

appeals and successful Ontario Municipal Board hearings, CN's policies have become accepted by municipalities and developers in Ontario as standard constraints and conditions of development. CN is now involved in the planning process of municipalities across Canada by reviewing and commenting on submitted planning applications.

Within the last few years CN has experienced some extreme pressure from developers and municipalities to allow residential uses in traditionally heavy industrial areas, which includes railway yards. CN has responded to the pressure to locate new residential uses adjacent to rail yards through the use of objections and face an uphill battle in convincing developers and municipalities that railway yards and their operations are not compatible with residential or other sensitive land uses. The viability of a railway yard will be compromised if new residential development is permitted adjacent to such facility.

The nature of rail operations and the impulse noise generated from a rail yard make it impossible to permit residential development near a yard. As a result, CN has taken the position that no new residential development should be permitted within a minimum of 300 metres of a railway yard.

3.0 COMPLAINTS

Complaints from residents along a rail corridor or next to a rail yard generally arise as a result of the level of train activity and the noise at night. Many residents are not aware that railways operate 24 hours a day, 7 days a week and in some cases are not aware, prior to purchase, of the existence of the corridor or yard or are misinformed as to its use. In addition, fluctuation in rail activity is largely unpredictable as it is

determined by the requirements of an existing or new rail customer and the economy. An increase in gasoline prices, as an example, could change the focus on transportation choices and could increase the demand on rail transportation.

CN has received complaints from residents unhappy with their living environment where residential development has been approved next to rail operations without appropriate mitigation measures. Unfortunately, CN is forced to fight municipalities and developers to prevent new residential uses from being developed next to rail yards and to prevent new residential uses from being developed next to rail corridors without measures to address noise, vibration and safety. In some cases, complaints have been in the form of petitions signed by the residential community and formal complaint filed with the Canadian Transportation Agency.

Municipalities, however, continue to disregard the concerns expressed by CN and approve new development adjacent to railway corridors and yards while sending letters to the Railway and passing Council resolutions on behalf of existing residents next to rail corridors and yards attempting to restrict operations. In some cases, municipalities have provided funding to help the residents groups fight against the Railway.

CN has rationalized most of its surplus facilities, those remaining will be optimized for use by CN. Rail service is a desirable and often essential option to many industries. The economic significance of rail transportation in the movement of goods is important to local, national and international economies. Municipalities and developers should ensure that an acceptable environment is created when developing communities near rail facilities.