



Transport  
Canada

Transports  
Canada



# Rail Safety

Oversight and Expertise



## Guideline for Engineering Work Relating to Railway Works Section 11 *Railway Safety Act*

A GUIDE

For:

Railway companies, utility companies, road authorities, professional engineers, consulting engineering companies, contractors, governments, public authorities, railway safety regulators and provincial and territorial regulators

Last Revised November 2018

## Table of Contents

Engineering Work Relating to Railway Works Section 11 <i>Railway Safety Act</i> .....	1
SECTION 1.0 - INTRODUCTION.....	3
SECTION 1.1 - DEFFINITIONS.....	3
SECTION 1.2 - ROLES AND REPONSIBILITIES OF THE PARTIES .....	4
SECTION 1.2.1 - Professional Engineers.....	5
SECTION 2.0 - DESCRIPTION OF APPLICABLE RAILWAY WORK AND ENGINEERING WORKS.....	5
SECTION 2.1 - RAILWAY WORKS .....	5
SECTION 2.1.1 - TRACK AND ROADWAY WORKS .....	5
SECTION 2.1.2 - BRIDGES, OTHER STRUCTURES AND UTILITY CROSSINGS.....	6
SECTION 2.1.3 - GRADE CROSSINGS, GRADE CROSSING WARNING SYSTEMS AND SIGNALS WORKS..	6
SECTION 2.2 - ENGINEERING WORK .....	7

## ***SECTION 1.0 - INTRODUCTION***

The intent of this Guide is to provide clarification on the requirements of section 11 of the *Railway Safety Act (RSA)*. The Guide clarifies what types of work could relate to railway works and what could be considered as engineering work in the context of the *RSA*.

The involvement of licensed Professional Engineers plays an important role in the design, construction, evaluation, maintenance and alteration of railway works. Professional Engineers serve in the protection of train operations, employees, the public, and the environment, wherever engineering work is involved.

As of May 2013, section 11 of the *RSA* reads:

### **Sound Engineering Principles**

**11. (1)** *All work relating to railway works - including, but not limited to, design, construction, evaluation, maintenance and alteration - must be done in accordance with sound engineering principles.*

### **Engineering work**

**11. (2)** *All engineering work relating to railway works must be approved by a professional engineer.*

## ***SECTION 1.1 - DEFINITIONS***

For convenience, below are definitions from the *RSA*:

### **“Crossing work”**

Means a road crossing or a utility crossing;

### **“Line work”**

Means,

- (a) A line of railway, including any structure supporting or protecting that line of railway or providing for drainage thereof,
- (b) A system of switches, signals or other like devices that facilitates railway operations, or
- (c) Any other structure built across, beside, under or over a line of railway, that facilitates railway operations,

but does not include a crossing work;

**“Railway work”**

Means a line work or any part thereof, a crossing work or any part thereof, or any combination of the forgoing;

**“Road crossing”**

Means that part of a road that passes across, over or, under a line of railway, and includes any structure supporting or protecting that part of that road or facilitating the crossing;

**“Road”**

Means any way or course, whether public or not, available for vehicular or pedestrian use;

**“Road authority”**

Means a public authority having legal authority to open and maintain roads;

**“Utility crossing”**

Means that part of a utility line that passes over or under a line of railway, and includes any structure supporting or protecting that part of that utility line or facilitating the crossing;

**“Utility line”**

Means any wire, cable, pipeline or other like means of enabling the transmission of goods or energy or the provision of services.

**“Railway Company”**

Means a person that constructs, operates or maintains a railway.

***SECTION 1.2 - ROLES AND REPONSIBILITIES OF THE PARTIES***

Section 11 of the *RSA* introduces what activities can be considered as engineering work, in the context of railway work. These activities must be approved by a professional engineer.

While the section 11 requirements apply to work and engineering work, as they relate to railway works, there are various parties that may be involved in satisfying this requirement, and this Guide aims to help clarify who may be expected to play a role regarding engineering work.

The parties responsible for constructing, maintaining or altering railway works must ensure that proper steps are taken so that all work is done in accordance with sound engineering principles and that all engineering work is approved by a professional engineer. These parties may be road authorities,

railway companies, private authorities, companies maintaining or constructing utility line or utility crossings, public authorities, or owners of private land adjacent to railway lines.

## SECTION 1.2.1 - Professional Engineers

In order to qualify as a professional engineer, for the purpose of section 11 of the *RSA*, a person must be authorized by a Canadian provincial or territorial licensing body to engage in the practice of professional engineering. In Canada, their designation is Professional Engineer (P.Eng) with the exception of Quebec, where the designation can either be Professional Engineer (P.Eng) or ingénieur(e) (ing.).

The professional engineer approves all engineering work related to railway works - including, but not limited to, design, construction, evaluation, maintenance and alteration, and in doing so, ensures that the work is done in accordance with sound engineering principles.

In fulfilling their responsibilities, professional engineers ensure that all work relating to railway works is carried out using sound engineering principles, thereby following engineering best practices and standards. This includes ensuring that the appropriate systems are applied for the prudent and reasonable conduct of the engineering work including, but not limited to, design, evaluation, construction, alteration, maintenance.

The professional engineer approving the engineering works pursuant to section 11 of the *RSA* may be employed or contracted by the party who performed the work.

## *SECTION 2.0 - DESCRIPTION OF APPLICABLE RAILWAY WORK AND ENGINEERING WORK*

### *SECTION 2.1 - RAILWAY WORKS*

This section describes what work could relate to railway works for the purpose of the *RSA*.

#### SECTION 2.1.1 - TRACK AND ROADWAY WORKS

The type of work relating to railway works, included in track and roadway works, includes, but is not limited to, the following:

- Roadway – includes, in addition to the roadbed, the slope of the cuts, ditches and other drainage structures, access roads etc.;
- Roadbed – includes the foundation on which the rails and ties are placed, other drainage systems, slopes and rock/earth stability systems, erosion control systems, and natural hazard monitoring systems (slide fencing, etc.); and
- Environmental installations such as holding ponds, septic and sewage systems etc.

## SECTION 2.1.2 - BRIDGES, OTHER STRUCTURES AND UTILITY CROSSINGS

The type of work relating to railway works included in bridge works, other structures and utility crossings within the railway right-of-way includes, but is not limited to, the following:

### **Line structures directly supporting track**

- Retaining structures (supporting roadbed embankments) and
- Buried structures (i.e. weigh scales, unloading pits, etc.);

### **Line structures adjacent or under the track**

- Culverts and drainage structures,
- Tunnels under the tracks, and
- Utility crossings (gas, water signal, communication, etc.);

### **Line structures crossing over track**

- Overhead bridges,
- Railway tunnels, rock sheds, snow sheds, and
- Utility crossings (gas, water, signal, communications, etc.);

### **Adjacent structures within right-of-way**

- Retaining structures (supporting adjacent property),
- Storage tanks – above, at, or below ground,
- Sign and signal support structures, and
- Buildings.

## SECTION 2.1.3 - GRADE CROSSINGS, GRADE CROSSING WARNING SYSTEMS AND SIGNALS WORKS

The type of work relating to railway works included in grade crossing works includes, but is not limited to, the following:

- Grade crossing warning systems and grade crossing elements (e.g. road and rail approaches, including crossing surface, sightlines, and signage);
- Train control signal systems;
- Railway wayside inspection and defect detection systems, including but not limited to:
  - Dragging equipment detectors;

- Hot box detectors and acoustic bearing detectors;
- Hot wheel detectors and cold wheel detectors;
- Wheel impact load detectors and overload and imbalanced load detectors;
- Truck hunting detectors and truck performance detectors;
- Systems to detect track obstruction and roadbed stability.

## ***SECTION 2.2 - ENGINEERING WORK***

This section describes what engineering work could relate to railway works for the purpose of the *RSA*.

Engineering work, which is related to any railway work includes, but is not limited to, the following:

- Establishing (adopting or developing) and maintaining appropriate codes, engineering standards/directives/bulletins and specifications, engineering standard designs, standard practice circulars/directives and recommended methods in design, construction, evaluation, alteration, performance, supervision, inspection, testing and maintenance;
- Implementing and applying standard engineering designs, standard practice circulars/directives and recommended methods to specific railway works;
- Oversight approval of the construction or the alteration of railway works;
- Conducting safety evaluations and assessments related to railway works;
- Preparing design and specifications;
- Determining load capacities;
- Developing construction, repair and modification procedures;
- Developing inspection and evaluation procedures;
- Undertaking hydrological and hydraulics analysis;
- Undertaking geotechnical analysis; and
- Evaluating proposed maintenance deferrals.