

# Design of Surface Mine Haul Road

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## Abstract

This Bureau for design of surface mine haul road covers such aspects of haul road design as road alignment (both vertical and horizontal), construction materials, cross slope, and drainage provisions. Traffic control and design of proper lane widths to promote safe vehicle movement are included, as are suggested criteria for road and vehicle maintenance and for runaway vehicle safety provisions. The aim of this publication is to provide those involved with the surface mine haul road design with a complete detail of recommended practices that, if implemented, will promote safer, more efficient haulage routes.

**Keywords:** cross-section, switchbacks, manoeuvring, haulage way, berms

## I. INTRODUCTION

During the past 30 years, surface mine haulage equipment has developed from trucks capable of moving 20 tons of material to vehicles that transport as much as 350 tons. Unfortunately, the design of roads this equipment must traverse has not advanced at the same rate. In many areas, road-building technology appropriate to vehicles of three decades past is still being practiced today. As a result, numerous unnecessary haulage road accidents occur every year. A number of these mishaps can be attributed to operator error. However, far too many are caused by road conditions that are beyond the vehicle's ability to negotiate safely. With this history of haulage related problems in mind, the Bureau of Mines undertook a project to produce a design manual that would ultimately guide surface mine road planners toward safer, more efficient haulage systems. Design guidelines for each weight category, including velocity stopping distance curves, vertical curve controls, haulage way widths, curve widening, and spacing of runaway devices, drainage provision, are presented in this report.

## II. FOUR BASIC LAYERS OF HAUL ROAD

- Sub-grade
- Sub-base
- Base course
- Surface course



Fig. 1: Typical haul road cross-section

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