

## Chapter 21

### INTRODUCTION TO PART II

#### 21.1 BACKGROUND

Problems specific to mountain roads in the *Himalaya* are:

- o marginal stability conditions of slopes,
- o lack of systematic approach in matching roads with natural processes,
- o fund limitations,
- o low traffic volume,
- o rising rate of fatal accidents,
- o remote site conditions,
- o excessive cost variations,
- o unclear planning priorities,
- o inadequate institutional capabilities, and
- o biases of donor/funding agencies.
- o lack of a systematic, maintenance management system, and
- o poor maintenance.

Infrastructures, such as roads, and canals in the mountainous areas are spread over long lengths and thus their location, design, and construction require management of a complex and continuous process of avoidance, mitigation, and control at every stage of the project through techniques that are realistic and appropriate and which can adjust to the inherent limitations and time constraints.

A proper site selection for major investments in infrastructure in the fragile mountains must be based on:

- o long term plans,
- o natural hazards,
- o acceptable risks,
- o standards commensurate with acceptable risk,
- o realistic cost projection,
- o environmental impacts, and
- o realistic maintenance capabilities.

Figure 21.1. illustrates various alternatives possible in aligning a mountain road between the given points.

The chapters in Part II of this handbook are intended to provide a systematic and mountain-specific approach to and guidelines for activities at various stages of a project cycle. However, treatments are focussed more upon the conceptual framework and the most important and common activities of the road components, rather than on activities and details that are either commonly practised or require highly specialized treatment.



Chapters 22 and 23 offer guidelines on alignment selection at the prefeasibility and feasibility stages respectively for different levels of road.

Chapter 24 provides guidelines on the detailed survey and design stages of a mountain road project. The guidelines are followed by problem statements that identify preconditions for use of the guidelines. Chapters 25 and 26 are intended to highlight the key issues involved in the construction and maintenance of a mountain road.

## 21.2 ROAD TYPES

For the sake of convenience mountain roads have been grouped into four categories.

### 21.2.1 *Minor Roads*

Fair weather single-lane roads for 20 year traffic with an AADT (Annual Average Daily Traffic) below 50 for light vehicles only.

- o Single-lane roads passing entirely through the ridges and for 20 year traffic with an AADT of less than 200.
- o Double-lane ridge roads of lengths shorter than 25 km.

### 21.2.2 *Medium Roads*

- o All roads for 20 year traffic with an AADT of from 200-500.
- o Truck roads passing through valleys, gorges, and climb sections for 20 year traffic and with an AADT of up to 200.

### 21.2.3 *Major Roads*

Roads for 20 year traffic with an AADT of from 500 to 2,000.

### 21.2.4 *High Standard Roads*

- o Roads for 20 year traffic with an AADT exceeding 2,000.
- o Freeways and expressways.