Chapter 12 Rock Cut Design

12.1 Overview

This chapter addresses the assessment of stable slopes for rock cuts, including planning for excavation (e.g., blasting plan development), and rock mass improvement techniques such as bolting, dowelling, shotcreting, etc., to produce a stable slope.

12.2 Development of Design Parameters and Other Input Data for Rock Cut Stability Analysis

In addition to the site reconnaissance and geotechnical investigation requirements described in Chapter 2, rock slope design heavily relies upon surface mapping and discontinuity logging in boreholes of rock structure to assess discontinuities (fracture/joint) patterns and conditions, as discontinuities strongly control rock slope stability. In some cases, test hole data should also obtained, especially if surface mapping is not feasible due to the presence of overburden soil or for other reasons. Assessment of ground water present in the rock discontinuities, as is true of any slope, is critical to the assessment of stability. The detailed requirements for site investigation and analysis of rock cuts provided in FHWA HI-99-007 "Rock Slopes Reference Manual" (Munfakh, et al., 1998) shall be used. In addition to the requirements provided in the FHWA manual, design parameters shall be developed in accordance with Chapter 5.

12.3 Design Requirements

The detailed requirements for design of rock cuts provided in FHWA HI-99-007 "Rock Slopes Reference Manual" (Munfakh, et al., 1998) shall be used. In addition, for the development of blasting plans for rock cut excavation, the FHWA manual entitled "Rock Blasting and Overbreak Control,"FHWA-HI-92-001 (Konya and Walter, 1991) shall be used.

12.4 References

Konya, C. J., and Walter, E. J., 1991, *Rock Blasting and Overbreak Control*, Federal Highway Administration, FHWA-HI-92-001.

Munfakh, G., Wyllie, D., and Mah, C. W., 1998, *Rock Slopes Reference Manual*, Federal Highway Administration, FHWA HI-99-007.