Slope Greening and Ecological Enhancement Work

Key Message: **It is the Government policy to make slopes look as natural as possible to create a biodiversified environment in the upgrading of existing slopes and mitigation of natural terrain hazards under the Landslip Prevention and Mitigation Programme (LPMitP). As a general rule, a hard surface cover is used only as emergency repairs to landslide scars and as a last resort on slope stability grounds. The Geotechnical Engineering Office (GEO) has also published guidelines and examples on the recommended good practices for landscape treatments for slopes for reference by the practitioners in the industry and the general public, and welcomes feedback from members of the public on slope appearance.**

Introduction

The GEO has committed to enhancing slope safety in Hong Kong in the past decades. While the primary objective is to maintain the highest standard of slope safety, the GEO has always given priority attention to blend in engineering works with the surrounding environment by making them look as natural as possible. It aims to create a sustainable and biodiversified ecosystem that create habitats for wild lives, reduce susceptibility to pests and diseases, and allow natural plant succession. Every effort is therefore made to establish sustainable slope appearance and ecology and establish suitable vegetation around natural terrain hazard mitigation measures under the LPMitP. As a general rule, a hard surface cover is used only as emergency repairs to landslide scars and as a last resort on slope stability grounds. Where the use of a hard surface cover is unavoidable, landscape measures are taken to minimise its visual impact wherever practicable. The GEO has also published guidelines and examples on the recommended good practices for landscape treatments for slopes for reference by the practitioners in the industry and the general public.

Use of Vegetation Cover and Ecological Enhancement Work

A vegetation cover is generally provided by hydroseeding with planting of small trees, shrubs, groundcovers and climbers on top where appropriate. It is visually pleasing and heat-resistant. It also provides habitats for wild lives.

Under the LPMitP, existing vegetation is preserved wherever possible. Where appropriate, new and suitable vegetation is also planted in the upgrading of existing slopes. The GEO also aims at using native species for restoring vegetation covers on man-made slopes or repairing natural terrain landslide scars wherever practicable, and protect any rare plant species found within or in close proximity to site areas during engineering studies. Ecological surveys are also carried out as and when necessary.

Though a vegetation cover is beneficial to our environment and ecology, it generally takes time to establish and is less effective than hard cover in preventing water infiltration and surface erosion, both of which may have an adverse effect on slope stability. In addition, stable vegetation cover is only practicable on gentle slopes.

Use of Hard Cover

A hard cover is largely in the form of shotcrete, which has replaced the less durable chunam used extensively in the past. Use of hard covers is under stringent control. As a general rule, a hard cover is used only as emergency repairs to landslide scars and as a last resort on slope stability grounds. A Vetting Committee on Slope Appearance has been set up since 2000 to review any proposal on first-time use or renewal of an existing hard surface cover on slopes in each public works project. The Committee critically reviews the need for using hard cover in slope works to ensure compliance with the Government Policy.

In situations where steep slopes are unavoidable and stable vegetation covers are not practicable under the LPMitP, use of hard covers are largely necessary. In such cases, landscape measures are taken to minimise the visual impact of the hard covers, such as applying subdued colour, masonry facing or decorative artwork to the hard surfaces, and providing toe or berm planters and planter holes on the slope surfaces for screen planting. Landscape treatments such as vertical greening, screen planting and toe planters are also provided around natural terrain hazard mitigation measures to minimise their visual impact and blend them with their surrounding environment.

In the case of emergency repairs to landslide scars, public safety always come first. Under such circumstances, shotcrete is generally used as a quick and secure method to remove the immediate danger posed to the public and to avoid prolonged closures of buildings or roads which may cause inconvenience to the public.

Guidelines on Landscape Treatment for Slopes

The GEO has continued to undertake studies and site trials on landscape treatment and ecological enhancement for slopes, with due regard to safety, cost, aesthetic quality, and long-term maintenance. The findings and technical guidelines are documented in the GEO Publication No. 1/2011 "Technical Guidelines on Landscape Treatment on Slopes". The GEO has also published the "Layman's Guide to Landscape Treatment of Slopes", which provides information and general guidance on landscape treatment for slopes and natural terrain hazard mitigation measures with the aim of helping and encouraging private slope owners to provide appropriate landscape treatment to their slopes.

Public Opinion

Since 1998, the GEO has commissioned local universities to undertake annual opinion surveys on various aspects of slope safety. Results of the surveys conducted in recent years have indicated that a vast majority of those interviewed had expressed general satisfaction with slope appearance. The GEO welcomes feedback from members of the public on slope appearance.

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