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Development Bureau Technical Circular (Works) No. 2/2018

Registration and Updating of the Catalogue of Slopes

Scope

This Circular outlines the principal requirements for registration of man-made slopes, retaining walls and natural terrain hazard mitigation measures (collectively referred to as 'feature(s)'), updating of the Catalogue of Slopes and display of feature registration numbers. It applies to all departments responsible for site formation works, public works and slope inspection, maintenance, repair, upgrading works and studies. The Director of Agriculture, Fisheries and Conservation, Director of Housing and Director of Highways have agreed to the contents of this Circular.

Effective Date

2. This Circular takes immediate effect.

Effect on Existing Circulars

3. This Circular supersedes Works Bureau Technical Circular (WBTC) Nos. 9/2000 and 10/2000, which are hereby cancelled.

Related Circulars

4. This Circular should be read in conjunction with Development Bureau Technical Circular (Works) No. 6/2011 on Maintenance of Man-made Slopes and Emergency Works to deal with Landslides.

Background

5. The Geotechnical Engineering Office (GEO) of the Civil Engineering and Development Department (CEDD) maintains a Catalogue of Slopes which contains pertinent information on all registered features in Hong Kong. The definitions of different feature types and their registration criteria are given in **Appendix A**, whereas a list of feature types which are considered as non-registrable is given in **Appendix B**.

6. The GEO has set up and maintains a computerised Slope Information System (SIS) to facilitate storage and updating of information on registered features. The SIS is accessible on the Internet at the Hong Kong Slope Safety (HKSS) Website <http://hkss.cedd.gov.hk>.

Policy

7. The Catalogue of Slopes in the SIS provide pertinent and useful information on registered features for maintenance departments, works departments and the public to implement various slope safety measures, including slope maintenance and upgrading works. It is therefore important for the SIS to encompass all registrable features and for the information in the SIS be kept up-to-date regularly through joint efforts of all departments concerned.

8. For public works projects, the project departments shall provide the GEO with information on all permanent features which are formed, modified or removed in association with the works. Maintenance departments shall, in the course of slope maintenance inspections and works, inform the GEO of any updated information on registered features if there are any outdated or incorrect data in the SIS. To ensure the completeness of the SIS, all departments shall report to the GEO if any registrable feature which has not yet been registered is identified during their works, inspections or any other activities.

Information to be Provided for Requesting Feature Registration and Updating of the Catalogue of Slopes

9. The detailed requirements for submissions of information for feature registration and updating of SIS, including data formats and standard forms, are available for downloading from the HKSS Website http://hkss.cedd.gov.hk/hkss/eng/update_sis.aspx. Enquires on feature registration and the SIS should be addressed to the Chief Geotechnical Engineer/Slope Safety (CGE/SS) of GEO, CEDD.

10. Following registration of newly-formed features or updating of boundary/information of registered features, CGE/SS will advise the Lands Department to determine, update or confirm the maintenance responsibility as appropriate.

Display of Feature Registration Number on Site

11. Display of the feature registration number and the name of the maintenance department on a feature enables it to be identified quickly and accurately, and is particularly useful for parties responsible for handling landslide incidents and complaints, and for carrying out slope maintenance, upgrading and emergency works.

12. A sign plate for each registered feature should normally be erected by the department responsible for its construction or maintenance. An indicative design and installation of sign plates are available for downloading from the HKSS Website <http://hkss.cedd.gov.hk/hkss/eng/slope-info/Plate.pdf>. However, the relevant departments shall make every effort to ensure that the installed sign plates blend with the surroundings and will not form an eyesore or cause inconvenience or hazard to the public. Installation of sign plates on posts should be avoided unless there is no alternative. Depending on the actual site conditions, the location and size of the sign plates may be varied to avoid significant visual impact. For features adjoining each other, grouping of their registration numbers into one sign plate should be considered. For features in scenic spots or sensitive areas, such as country parks and cemeteries, the departments may consider omitting such sign plates.

Enquiry

13. For enquiries, technical advice and assistance on issues relating to registration and updating of the Catalogue of Slopes, please contact CGE/SS of GEO, CEDD.

(C K HON)
Permanent Secretary for Development (Works)

Definitions of Registrable Features

Man-made Features

- C - Cut slope ≥ 3 m high with a surface sloping at $\geq 15^\circ$.
- F - Fill slope ≥ 5 m high, or posing a direct risk to life (i.e. Consequence-to-life Category 1 or 2) and ≥ 3 m high, with a surface sloping at $\geq 15^\circ$ and a minimum fill thickness of 1 m.
- R - Retaining wall ≥ 3 m high.
- CR - Cut slope with a surface sloping at $\geq 15^\circ$ together with associated retaining wall(s) at crest, middle or toe of the slope, and that the total height is ≥ 3 m.
- FR - Fill slope with a surface sloping at $\geq 15^\circ$ and a minimum fill thickness of 1m, together with associated retaining wall(s) at crest, middle or toe of the slope, and that the total height is ≥ 5 m, or the feature is posing a direct risk to life (i.e. Consequence-to-life Category 1 or 2) and its total height is ≥ 3 m.

Note:

- Where a series of retaining walls of less than the registrable height are on an overall slope angle $\geq 45^\circ$, their heights should be combined to judge if they are registrable.

Natural Terrain Hazard Mitigation Measures

- ND - Defence measures that resists and/or contain landslide debris and/or boulders from natural hillsides from reaching buildings and facilities, e.g. check-dams (rigid barriers), flexible barriers, earth bunds and boulder fences.
- NS - Slope stabilisation measures constructed on natural hillsides to prevent failure which require regular maintenance, e.g. designed raking drains and surface drainage, concrete buttresses ≥ 3 m high that are constructed to support large boulders affecting and in close proximity to Consequence-to-life Category 1 facilities.

Notes:

- Although natural hillsides do not require maintenance, natural terrain hazard mitigation measures requiring regular maintenance to ensure their proper functioning should be registered.
- When the geometry of a natural hillside is substantially modified by earthworks, such as regrading, the hillside should be registered as man-made feature(s) as appropriate.
- Soil nails, rock dowels/bolts and concrete buttresses less than 3m high constructed on natural hillsides under the Landslip Prevention and Mitigation Programme and public works projects require little maintenance and therefore are normally not registered unless otherwise specified by the Designer. However, project departments are required to provide information of such works in a similar way as that for feature registration to GEO for record and management purposes.

Marking of Feature Boundary

C, F, R, CR, FR - plan boundary of the feature

ND, NS - boundary of the mitigation measures that require regular maintenance

Note:

- Feature boundaries are generally marked on 1:1000 scale survey sheets to indicate the approximate extents of the features in the SIS. Land survey is normally not carried out for the purpose of marking the feature boundaries. However, if land survey of the feature boundaries has been carried out (e.g. new works projects and slope boundary updating), the survey data should be submitted to GEO.

Non-Registrable Structures/Features

Structure/Feature Type	Definition
1. Seawalls/marine structures	The water-facing side of a coastal structure that retains soil or rock and is constructed of concrete, soil and/or rock.
2. Dams and other water retaining structures	All water retaining structures including dams and service reservoir walls maintained by WSD and private owners (e.g. Discovery Bay reservoir dam). However, fill embankments in front of service reservoirs or other water-retaining structures are registrable.
3. Walls monolithic with a building or structure	Concrete walls that form part of a building and which are in direct contact with soil or rock, with the free air side facing into the building, e.g. basement walls, screen walls etc.
4. Tunnels/shaft linings	Circular or other continuous concrete or steel walls or facings which are in direct contact with soil or rock. However, tunnel portal slopes and free standing retaining walls are registrable.
5. Culverts/covered nullahs	Underground waterways. However, free standing sidewalls of open nullahs/catchwater and river banks are registrable.
6. Bridge abutments	The concrete/steel/masonry structure of a bridge that provides direct support to the span of a bridge deck. However, fill embankments and reinforced fill structures and slopes are registrable.
7. All temporary features	Features under construction, e.g. temporary stock piles, quarry faces and controlled tips. However, abandoned quarry faces and completed controlled tips are registrable.