

Retaining Walls
Building (Construction) Regulations 1992 - Part XIII

This aims to clarify the administration by the Building Authority of the above Regulations.

Anchor Plates

2. Anchor plates supporting rock or earth faces will not be treated as retaining walls.

Minor Retaining Walls

3. A minor retaining wall is regarded as a wall where :
- (a) the difference in ground levels between the upper and the lower sides of the wall does not exceed 1.5 m;
 - (b) the average inclination of the ground above the top of the wall does not exceed 15° to the horizontal; and
 - (c) external surcharges from foundations or other structures do not impose any loading on the wall.

Drainage and Filter Material

4. Drainage material and filter material used in conjunction with the retaining walls should consist of clean, sound, durable material free from clay, organic materials and other impurities. Where site conditions are non-aggressive, geotextile filters composed of resistant synthetic polymers are suitable alternatives to granular filters in permanent works.

5. Section 8.5 of the GEOGUIDE 1 (second edition), gives some guidance on the design criteria for granular and geotextile filters. Further guidance on this can be obtained from GEO Publication No. 1/93 "Review of Granular and Geotextile Filters".

Backfill Material behind Retaining Walls

6. Backfill material behind retaining walls should have in situ properties that meet design requirements. It should also meet the requirements in Table 1 at Appendix A attached.

7. Material selected for use as backfill generally must not contain :

- (a) peat, vegetation, timber, organic or other degradable materials;
- (b) dangerous or toxic material;
- (c) material susceptible to combustion;

/(d) metal

- (d) metal, rubber, plastic or synthetic material;
- (e) material susceptible to significant volume change -- eg marine mud, swelling clays and collapsible soils; or
- (f) soluble material.

8. In addition, the backfill should not be chemically aggressive : eg the presence of excessive sulphate in soils can cause accelerated deterioration of concrete and steel.

Rock Faces

9. Rock faces are not considered as "earth" for purposes of earth pressure calculation.

Retaining Wall Design and Stability

10. Please refer to PNAP 166, on GEOGUIDE 1 (second edition), for the design of new permanent earth retaining wall on land.

Remedial or Preventive Work to an Existing Retaining Wall

11. Where remedial or preventive works to an existing wall are proposed, the past performance of the wall during its service life is of considerable assistance to the designer. Guidance on this is given in the "Geotechnical Manual for Slopes". Designs carried out in accordance with the recommendations therein will be acceptable to Building Authority.

Monitoring during Construction of Retaining Walls

12. Monitoring should be carried out so as to measure accurately the behaviour of the retaining wall and the effects of construction on groundwater conditions, the site and any building, structure, land, street or services.

Demolition of Existing Retaining Walls

13. Where it is intended to carry out demolition works to existing retaining walls, demolition plans and supporting documents as prescribed in Building (Administration) Regulation 8(3) and (4) shall be submitted for approval.



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Building Authority

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Table 1
Grading and Plasticity Requirements for Retaining Wall Backfill

Requirement	Backfill Type	
	Crushed Rock Products	Soil
Maximum Size (mm)	200	75 ⁽²⁾
% Passing 63 microns BS Sieve Size	0	0 - 45
Coefficient of Uniformity	≥ 5	≥ 50 ⁽⁴⁾
Liquid Limit (%)	Not applicable	≤ 45 ⁽⁵⁾
Plasticity Index (%)	Not applicable	≤ 20 ⁽⁵⁾
Notes :		
<p>(1) Relevant test methods for grading and plasticity of fill materials are specified in Clauses 5.1 and 5.2 of Geospec 2, Model Specification for Reinforced Fill Structure, prepared by the Geotechnical Engineering Office.</p> <p>(2) The backfill may contain up to 5% of rock fragments not exceeding 200 mm in size, provided that these do not interfere with the compaction requirements or cause any damage to the retaining wall.</p> <p>(3) In addition to the above requirements, the maximum particle size should not exceed two-thirds of the thickness of the compacted layer of backfill in order to ensure good compaction.</p> <p>(4) This applies to soils derived from in situ rock weathering only. For sands and gravels of alluvial origin, the coefficient of uniformity should be not less than 5 and the material should not be gap-graded (i.e. having two or more distinct sections of the grading curve separated by sub-horizontal portions).</p> <p>(5) There is no need to check the liquid limit and plasticity index of the soil if the backfill contains less than 30% by weight of particles less than 63 µm.</p> <p>(6) The determination of the particle size distribution of the backfill should be carried out without using dispersants.</p>		