

Dimension of Stable Retaining Walls and the Construction Cost

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Abstract

A rectangular section is applied to simplify the section of the gravity type, cantilever type and counterfort type retaining walls. The resulting stability analysis of the simplified section presents the stable dimension of the wall in terms of the ratio of the width of base slab B to the wall height H , B/H . Actual construction costs of these retaining walls are accumulated for thirteen years and the costs are expressed by a function of the wall height. Thus, price index can be obtained for each year.

Introbuccion

Retaining walls are popular structures which are resisting the slope instability. When we construct, for example, highway or residential land, retaining walls contribute greatly for the total construction cost. Thus the retaining walls become very important structure particularly in Japan where flat land is limited.

As everyone knows, many types of retaining wall have been built up. Typical retaining walls are classified as gravity type, cantilever type and counterfort type. When we design these retaining walls, we must first estimate the width of base slab B and the wall height H together with the costruction cost.

In a practical civil engineering work, a rough estimation often becomes more important than an exact and complex calculation. This is true for a design of structures. An approximate guess is more requested than performing a detailed analysis, particularly at a first stage of project.

In this contribution, the author focuses the dimension ratio B/H and the construction cost C in a simplified way.

Dimension of stable retaining wall

In a real construction of retaining wall, it is required to secure the bearing capacity of base slab, to set up reliable drainage works and to choose excellent backfill materials. In this contribution, we do not discuss this kind of practical requirements but try to examine a basic feature of the wall dimension.

As design loads, we have

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