

PART 1 - CONSTRUCTION TECHNIQUES OF GROUND LEVELING Methodological content

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Abstract

The ground leveling construction method is an important preparation step for works at the early stage when starting construction. In the construction industry, leveling is the first thing that needs to be done to ensure everything is perfect for the project. Ground leveling is a work in construction, the purpose is to level the ground for construction work or create a planning ground from a piece of land with the different high and low natural topography. The work of leveling at this time is to use the soil in the higher areas to fill in the lower areas. Any project no matter how big or small, from the foundation of a household to an industrial park, also requires leveling. Soil and rock leveling must also be constructed according to design standards. The overall content of this study is organized into two parts. Part 1: Methodological content; Part 2: Comparison results.

Keywords: *Leveling, Construction, Excavation works.*

1. INTRODUCTION

Most of Thai Nguyen territory has a history of formation from the Mesozoic era (starting to form 240 million years ago, ending 67 million years ago, lasting 173 million years). After the terrain was formed 67 million years ago, Thai Nguyen territory existed under a continuous continental regime for 50 million years. With that time, the terrain is leveled to become plains. Due to the creation of the Himalayas 25 million years ago, the topography was raised violently, so the topography of Thai Nguyen was also raised. Depending on the location, the terrain can rise from 200 to 500m, making the terrain younger. The uplifted areas have dissected topography and young sedimentary materials. They were eroded by external forces, so ancient mountains made of older,

harder lava were exposed again. The terrain is restored to its original form (late Mesozoic).

2. PROPOSED METHOD

From the existing data of 500 boreholes and geological maps, combined with the field drilling of 500 new boreholes, the author analyzed the data to study the regional stratigraphy. At the same time, divide the land structure in Thai Nguyen city. The collected documents are guaranteed to be complete, accurate, and clear. The collected documents include all documents related to geotechnical conditions in the study area, specifically:

Construction standards for leveling ground:

The construction process and supervision of ground leveling works will be based on the following legal provisions:

According to Decree No. 209/2004/ND-CP dated December 16, 2004 on quality management of construction works.

Standard No. TCVN 4447:87 on soil work and construction regulations, acceptance test.

Standard No. TCVN 4453:1995 on construction regulations and acceptance test of reinforced concrete structures.

Prepare design documents for construction works.

Construction survey

Topography, location of works to be constructed, field survey.

Making design drawings for leveling the whole area and terrain model.

Criteria for making design drawings:

- Area of excavated land: m^2
- Covered land area: m^2
- Total volume of excavated soil: m^3
- Total volume of backfill soil: m^3

Preparation before construction

Leveling the ground to build the auxiliary area for construction.

Prepare human resources, water sources, electricity during construction and daily life.

Contact with local authorities: Ensure security at construction sites.

Surveying the route, building auxiliary hook system. Construction of the road to the work to be leveled.

Prepare equipment for ground leveling.



Figure 1 Excavator

Ground leveling measures

Using electronic measuring machines in combination with steel rulers to locate the construction site in the field.

Excavating the organic soil layer by mechanical equipment.

Acceptance of construction soil layer by factors: elevation, size, area.

Transporting materials for leveling.

Leveling at high positions.

Use roller to increase compaction.

3. CONCLUSIONS

In fact, in the leveling work, first of all, construction land is mainly taken right inside the construction site. Excess

or shortage of land must be contacted outside the construction site. Is it just a supplement or just a small volume? Usually, there are two main types of leveling. That is:

Leveling according to the control condition before the leveling of the ground after leveling: the operator will not need to pay much attention to the excess or lack of soil volume.

Leveling according to the requirements of the volume of soil when leveling: Including cases such as: Leveling and balancing the amount of digging with the amount of filling. Leveling with the condition that the owner intends to leave a volume of soil after leveling (excavated soil is more than backfill). Deliberately add an extra amount of soil before leveling (filling more soil than digging).

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