

A Review on Stabilization of Landslide Using Soil Nail Walls

Tewodros Getachew Gobeze¹, Dinesh.S², Kirubakaran.K³

Head, Department of Construction Technology and Management, Assosa University, Assosa, Ethiopia¹

Lecturer, Department of Construction Technology and Management, Assosa University, Assosa, Ethiopia²

Assistant Professor, Department of Civil Engineering, Nadar Saraswathi College of Engineering and Technology, Tamilnadu, India³

ABSTRACT: A landslide (landslip) is a geological marvel that includes a wide variety of ground movements, such as deep failure of slopes, rock falls etc. Landslides can happen in coastal, offshore and onshore environment. It can be controlled by the usage of suitable slope stabilization techniques. A landslide stabilization system using soil nail and a mechanically stabilized earth (MSE) wall was monitored and instrumented to assess total performance and simplify comparisons between design expectations and field annotations. This paper reveals the probability of utilizing soil nail walls for stabilization of active landslides, extending the application of soil nailing beyond its traditional scope of stabilization of cut slopes or for potentially unstable slopes. Axial forces in soil nails conditional from strain gauge measurements prove that design methods built on current recommendations are suitable for design of soil nail walls used for slope stabilization. Design aspects, Site conditions and construction of the soil nail defined. Recommendations for put on soil nail walls to slope stabilization are presented.

KEYWORDS: Landslide, Stabilization on Landslide, Soil Nail Walls

I. INTRODUCTION

Soil stabilization is defined that the changes in natural soil in order to meet the engineering purposes by physical, biological, chemical and combined way of either two of them or all three. The performance of the in-situ soil, sand and Weight bearing capacity can be increased by soil stabilization techniques. The term Soil nailing is an advanced technique of slope stabilization among other techniques. Soil nailing is the method used in slope stabilization and excavation with the use of passive inclusions, usually steel bars, called as soil nail. Soil nailing is used to stabilize prevailing slopes or excavations, where top-to-bottom construction is advantageous compared to other retaining wall systems. Soil nails are structural reinforcing elements installed to stabilize steep slopes and vertical faces created during excavations. Usually, soilnails are made of steel bars covered with cement grout. To protect the steel bars from corrosion and also to transfer the load efficiently to adjacent stable ground, the grout is applied. Some form of support, typically wire mesh-reinforced shotcrete, is providing at the construction face to support the face among the nails and also to serve as a bearing surface for the nail plates

Soil nailing technique is a construction remedial measure to treat the uneven natural soil slopes or to allow a safe oversteepening of new or existing soil slopes. This technique includes the insertion of slender reinforcing elements into the slope (often reinforcing bars (rebar) even though branded solid or hollow-system bars are also available. usually Solid bars are installed into pre-drilled holes and grouted into place by means of a separate grout line, while hollow bars may be drilled and grouted concurrently by the sacrificial drill bit and by pumping grout down the hollow bar as drilling progresses.

II. SOIL NAILING TECHNIQUE PROCESS

In this, the soil is reinforced with the slender elements such as reinforcing bars which are called as nails as illustrated in Figure.2.1. These reinforcing bars are then installed into the pre-drilled holes and then they are grouted. Moreover, these nails are installed at an inclination of 10 to 20 degrees with vertical. As the excavation starts, the materials concrete,