Prioritization of Factors Affecting Landslide in Abbad Village, Kamfiruz

Fatemeh zare [1]: ***Master of Science at Yazd University***
Ali Talibi: ***Associate professor at Yazd University***
Maryam Mokhtari: ***Assistant professor at Yazd University***

Article History (Received: 2017/12/31 Accepted: 2019/01/26)

1- Introduction

Landslide refers to geomorphologic processes and downward movements of the materials of the slopes, including rock, dirt, or a mixture of them (Moradi et al, 2012).Landslides are affected by various factors, including rainstorms, earthquake shocks, changes in the level of underwater, storms, rapid erosion and a series of factors reducing the strength of materials (Dai et al,2002) . Because of geological, geomorphological, and topographical variations resulted from the active seismic belt of the country, many areas are susceptible to landslides. Therefore, it is very important to detect and anticipate this phenomenon to prevent its occurrence. Due to mountainous conditions, the climate of the study area is prone to the domain instability. The road range is also possible to suffer from the same deficiency. Existence of large joints in masses of rocks and several landslides in the boundaries of the road double the importance of examining the stability of the slopes and the dangers of volatility (Khajevand,2017). Due to the high volume of damage and the direct and indirect costs of destruction that mass movement imposes on human societies and the environment, planning to carry out a systematic investigation of the effective factors of mass movements and providing appropriate management solutions in these sensitive areas seem crucial. Our country, Iran, mostly has a mountainous topography with tectonic activities, and is the subject of high seismicity of various climatic and geological conditions. These major natural conditions have the potential to create a wide range of landslides.

2- Methodology

The study area is located in Fars Province, Marvdasht, Kamfiroz Division. In the UTM coordinate system,it is placed in X=619240 and Y=3347600. This area is situated one kilometer southwest of the village of Abbad. Access to the area is possible through the asphalt road to Sefid village. Abbad village is located in the outlet of the basin. Landslides are considered to be mass fractures. The mass fractures include those fractures in which a mass of crushed soil or crushed stone is disrupted on a curved slip surface.There are various methods for analyzing the stability of these types of ruptures: the equilibrium, the numerical, and the physical simulation methods. Due to the ease of applications and the relatively good results, these methods tend to be more widely used than other methods of slope stability analysis.

3- Results

In general, in order to study of landslides, an attempt was made to use a process-oriented (center-based) model. It can be concluded that the slope stability analysis model can be used to determine the instability of the slopes affected by natural conditions due to the morphology, hydrology, soil physics, and vegetation cover. However, artificial factors affecting landslides such as road constructions and distance from the river have no place in this model. One of the regions with high frequency of landslide in Fars province is the village of Abbad. The susceptible geological structure of this region, its climate, and the manipulation of its natural system (road construction and digging irrigation channels) have exposed it to slippage. In order to find critical slip surfaces in the range having various geometric characteristics, the Bishop circle method was combined with 2008 Taliban method. In this method, the Fs were calculated to find the rupture level at a circular surface using different depths of the soil, taking into account the domain geometry.

[1] **Corresponding Author: fzare076@gmail.com**

4- Discussion & Conclusions

To implement the 2008 Talebi and Bishop combined model, the reliability coefficient was calculated using MATLAB software. All formulas and the information layers required for the model were codified in appropriate codes in the MATLAB environment, and the confidence coefficients (FS) were eventually calculated for the scope under investigation. According to the results of the model, the range before the slip (1.08) was in a critical state at the threshold of the slip and was unstable. In the second part of the modelling, when the slippery range was implemented, the results of the model indicated that the slip mass (2.19) had already reached sustainability. Sensitivity analysis was identified as the most important factor leading to slippage occurrence. Among the factors causing slopes, the effect of the sensitivity analysis is the most important; however, the effect of moisture cannot be ignored. The moisture formed during the road and canal construction was another reason for instability in the region**.**

Key Words: Prioritization, Taliban Model, Bishop Model, Sequential Coefficient