

LANDSLIDE HAZARD ZONATION OF THE TEHRAN METROPOLIS

Seyed Majid SEYEDI MORAD

*M.Sc. Student, University of Tehran, Tehran, Iran
majidseyedimorad@gmail.com*

Mohammad Reza MAHDAVIFAR

Assistant Professor, IIEES, Tehran, Iran
mmahdavif@gmail.com
Former Position

Parham MEMARIAN

*PhD Candidate, IIEES, Tehran, Iran
p.memarian@iiees.ac.ir*

Mohammad Ali Miremadi

*M.Sc. Student, University of Tehran, Tehran, Iran
m.miremadi@ut.ac.ir*

Mohamad HOSEIN ZADE

*M.Sc. Student, Shahrood University of Technology, Shahrood, Iran
mhoseinzade66@gmail.com*

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ABSTRACT

Landslide is one the most catastrophic geotechnical phenomena accompanying earthquakes, and is a very abundant geotechnical hazard during earthquakes. Iran locates in a highly seismic area of the world and its capital Tehran is surrounded by several active faults. In this article landslide hazard of Tehran is investigated by three methods of: Comprehensive Aerial Model of Earthquake-induced Landslide (CAMEL), Analytical Hierarchy Process (AHP), and Information Value (IV). AHP and IV use slope angle, ground class, DEM, distance from rivers, mean annual precipitation, landuse, earthquake acceleration, slope aspect, and distance from roads, as input data. CAMEL uses ground class, slope angle, slope height, ground roughness, soil moisture, vegetation, distance from disturbing elements, and earthquake intensity, as input data.

The results reveals that slope angle, ground class, DEM, and distance from rivers have the most effect on AHP model results, respectively, and the most important parameters in CAMEL model are ground class and slope angle. For verifying the results witness landslides map is used, where AHP model with 3.41 and CAMEL model with 3.15 have highest and lowest Quality Summation (QS) index, respectively.

INTRODUCTION

Population increase and development of urban areas, and therefore changing the landuse of natural slopes around cities has resulted in a considerable increase in losses due to landslides. This has introduced Landslide phenomenon as a potential hazard for the community. After Manjil (1990) earthquake, where many villages were destroyed by earthquake-induced landslide, the importance of this destructive