Abstract:

The existence of a road network in any part of the world is a clear indication of progress in urban, social, and economic development. Due to the lack of a highway in Middle Egypt joining the Nile River with the Red Sea coast, a technical economic study was conducted in 1987 for road construction evaluation. An integrated study analyzing several types of data was carried out in an effort to identify the best route for this proposed road. Analyzed data include geological and geographical maps from a period between 1930s into the 1980s. Furthermore, satellite images and photogeological maps were used in this study, along with field trips organized to evaluate and follow the potential routes for the road. A shallow seismic refraction survey was done across different locations of the proposed road to show the nature and structure of the bedrock. Two possible routes (A and B) for this road were defined based on the interpreted geological/geophysical data which include topographic, structural, stratigraphic, surface, nearsurface, type of soil, and geoseismic cross sections. The distance of route A is about 275 km and was excluded due to the existence of high mountains with hard bedrock that the route crosses for a long distance. The length of route B is nearly 300 km, but is less expensive because it does not encounter mountains with hard bedrock. The B route can be divided into four segments, and it includes natural tracks and secondary desert roads. Consequently, the B route was selected as the best course for the road, which saves about 50% of the distance south of Assiut and 70% of the distance north of Assiut. Advanced technology and standard specifications for road design were recommended by this study to secure the road against natural hazards.

Keywords:

Seismic Refraction, Eastern Egyptian Desert, Seismic Interpretation.

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