

EARTHQUAKE ZONING OF LIBYA

by

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SYNOPSIS

Libya has been effected by earthquakes of varying magnitude (4-7.I on Richter scale), mainly along the coastal region lying in the north of the country, during past 75 years. Engineering design practice in the country has made the earthquake resistant design of structures an obligatory. A map dividing the country into four earthquake zones has been prepared and basic seismic co-efficient for each zone recommended.

INTRODUCTION

Based on the available data on the geology and tectonic structure, past earthquake history and economic importance of region, Libya has been divided into four zones as shown in the map of fig.I. In the absence of any actual ground motion record being available in the country, the magnitude of the earthquake on Richter scale has been adopted as the unit of demarcation of various zones. It is assumed that earthquakes of magnitude 5 or greater cause ground motion sufficiently severe to be potentially damaging to structures. For magnitudes less than five, the ground motion is unlikely to be damaging because of very short duration and moderate acceleration. An estimate of the maximum ground acceleration associated with each magnitude of the earthquake, and its spatial distribution in terms of the radius of equivalent circle corresponding to a specified acceleration, in Kms has been made by using Guttenberg and Richter(I) equations.

Basic seismic co-efficient values for each zone, depending upon the seismic intensity and the soil conditions, are specified. In arriving at these seismic co-efficients, extensive reference has been made to the earthquake design practice existing in countries like U.S.A., Japan and India, as no recorded accelerogram data is available in Libya so far. These co-efficients need to be modified depending upon the soil foundation system, importance of the structure and its structural behaviour.

(I) Guttenberg and Richter, C.F., "Earthquake magnitude, Intensity, Energy and Acceleration", Bulletin of Seismol. society, Vol.46, April, 1956.

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