Ministry of Roads and Urban Development

Road, Housing and Urban Development Research Center

Iran Strong Motion Network (ISMN)

Catalogue of Earthquake Strong Ground Motion Records

(2012 - PART 1)

Editor in Chief: Ph. D. Shekarchizadeh, M. , President of BHRC

Associate Editor: Farzanegan, E. Manager of ISMN

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Foreword

Since 1973, Building and Housing Research Center (BHRC) with its advanced laboratories and equipments and personnel has the responsibility of performing various applied research projects on various aspects of building and housing. Its research departments are as follows:

- Acoustics
- Architecture of Housing and Building Systems
- Economical and Social Researches of Building and Housing
- Iran Strong Motion Network (ISMN)
- Engineering Seismology
- Environmental Design and Energy
- Fire and Building
- Geotechnical Engineering
- Concrete Technology
- Structural Engineering
- Polymer
- Engineering and Laboratory Services
- Building Materials and Products
- Iran Construction Information Center

The idea of establishing BHRC was formed in 1970 within the framework of United Nations Development Program (UNDP). In 2012,canducting the researches in the fields of rood and transportation are added to Building and Housing Research Center duities, therefore it is renamed to Road, Housing and Urban Development. The major objectives for establishment of BHRC are:

- Centralized provision and execution of research programs on building and housing by innovation of new methods and techniques,
- Provision and publication of codes of practice and their application instructions,
- Issuance of technical certificate for building products and systems,
- Provision of technical guideline in construction and housing in compliance with national requirements, climatic and local considerations
- Considerations needed for industrialized construction within the country.

The Islamic Republic of Iran is among the most seismically active countries. Destructive earthquakes shake the ground and whatever is on it, taking human lives and buildings. It dictated the need for researches to prevent or at least reduce the casualties. Therefore, in 1981, the duties of the earthquake engineering division of the previous Budget and Planning Organization were transferred to BHRC. The main responsibility of this newly established department in BHRC was managing, controlling and maintenance of National Accelerographic Network. This network started with 270 analog instruments in the beginning, and recorded innumerable valuable data of the occurred earthquakes. Due to the importance of gaining more information about the nature of this destructive phenomenon, concurrently, the other divisions of BHRC also started their researches in the relevant fields. The most important outcome was development of the Iranian Codes of Practice for Seismic Resistant Design of Buildings known as Standard 2800 published in 1987 for the first time. So far, BHRC has issued four new editions of these Codes of Practice and a large number of the other codes and regulations.

This report deals with the records of the earthquakes that occurred in 2012. We are highly determined to continue presenting similar reports in the coming years. It is hoped that it would be a valuable source of knowledge and scientific work for all interested parties across the world.

President of BHRC

Ph.D. M. Shekarchizadeh

Preface

A better understanding of seismic phenomenon and its impacts on the buildings and structures is crucial in earthquake hazard reduction. This has led to increasing research activities in geophysics, engineering seismology and earthquake engineering along with development of Iran Strong Motion Network (ISMN). Meanwhile, the occurrence of Manjil-Roudbar earthquake on June 20th, 1990, boosted the development of ISMN to 1200 digital accelerographs all over the country within a five years period. This network improvement enabled ISMN to record many weak to strong local earthquakes and provide a comprehensive and valuable strong motion database for the applied studies.

The valuable records gathered via this network, were the main database used by many researches in the field of earthquake engineering and engineering seismology. Therefore, we in BHRC are keen to pursue more improvement and development of ISMN including:

- To continue establishing new strong motion stations in the seismically active regions regarding the past recorded events,
- To continue establishing the borehole strong-motion arrays for site effect investigations,
- To continue installing of accelerographs in tall buildings for structure monitoring
- To continue installing of accelerographs in special structures including dams and other infrastructural constructions to study their performance during an earthquake.

These items were to be considered as the main goals in a successful improvement that was started since 2001. Besides the formal duties, other activities including presentation of this network among the scientific and engineering communities in the country were undertaken. These activities are as follows:

- Publishing and distributing the monthly newsletter of ISMN in Farsi as the only source of Strong Motion Data announcements
- Producing a comprehensive accelerographic data bank
- Establishing of ISMN web page on BHRC (www.bhrc.ac.ir) web site for quick and rapid information of recorded data. At the time of publication of this catalogue, ISMN runs 1145 accelerographs which are installed in the country and ready to be triggered upon occurance of earthquakes .More than 10080 three-component accelerograms have been recorded, providing the most valuable database for researchers in the fields of engineering seismology, earthquake engineering, seismotectonics and other related fields.

As a turning point, we had started publishing a series of catalogue which includes yearly main data since 2001 and this is the tenth one edited for 2012.

These series of publications, includ general information about the main recorded accelerograms in Iran along with the main strong motion parameters as samples of the comprehensive data bank of ISMN. It could be a useful reference for researchers, engineers and college students in earthquake related fields in the world. God willing, we are determined to continue publishing the next series of yearly issues in future.

Farzanegan E.
Manager of ISMN

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