



Building and Housing Research Center

Iran Strong Motion Network (ISMN)

Catalogue of Earthquake Strong Ground Motion Records (2009)

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and Karimi Ghasr, P.

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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). 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, targeting 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 three 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 2009. 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. S.M. Fatemi Aghda

Preface

In order to reduce the earthquake hazard, a better understanding of seismic phenomenon and its impacts on the buildings and structures is necessary. This has led to increasing research activities in geophysics, engineering seismology and earthquake engineering along with development of the 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 year 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 installing of new instruments in the seismically active area regarding the past recorded events,
- To continue installing the borehole strong-motion arrays for site effect investigations,
- To continue installation of accelerographs in most of the tall buildings for structure monitoring,
- To continue installation 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. The other 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 web site for quick and rapid information of recorded data

At the time of publication of this catalogue, ISMN runs more than 1150 accelerographs which are installed in the country and are ready to be triggered upon occurrence of earthquakes. More than 7800 three-component accelerograms have been recorded, providing the most valuable database for researchers in the fields of engineering seismology, earthquake engineering, geology, seismotectonics and other related fields.

Publishing the information of this databank in English could be useful guidance for researchers, engineers and college students. In this report, the main recorded accelerograms in Iran along with few strong motion parameters are presented as a comprehensive reference. As a turning point, we had started publishing a series of catalogue which includes yearly main data since 2001 and this is the ninth one edited for 2009. God willing, we are determined to continue publishing the next series of yearly issues in future. I hope it can be useful for researchers and communities interested worldwide.

Ph.D. F. Sinaeian
Manager of ISMN

Contents

1. Iran Strong Motion Network (ISMN)	1
2. The Catalogue of Accelerograms Recorded By ISMN in 2009	2
2.1 Qadrooni Dam Site Earthquake of February 15 th , 2009	4
2.2 Fin Earthquake of February 23 rd , 2009	6
2.3 Hotkan Earthquake of March 7 th , 2009	8
2.4 Sepid Dasht Earthquake of April 25 th , 2009	10
2.5 Sabz Gaz Earthquake of April 30 th , 2009	12
2.6 Sirch Earthquake of May 11 th , 2009	14
2.7 Tooshk-e-Ab-e-Sard Earthquake of May 26 th , 2009	16
2.8 Tomban Earthquake of July 22 nd , 2009	18
2.9 Reiskola Earthquake of August 14 th , 2009	20
2.10 Abbaspoor Dam Area Earthquake of October 4 th , 2009	22
2.11 Kamyaran Earthquake of October 13 th , 2009	24
2.12 Shahr-e-Rey Earthquake of October 17 th , 2009	26
2.13 Bandar-e-Abbas Earthquake of November 3 rd , 2009	28
2.14 Bandar-e-Abbas Earthquake of November 6 th , 2009	30
2.15 Tooshk-e-Ab-e-Sard Earthquake of December 24 th , 2009	32
Appendix : Recorded Accelerograms During 2009	34