

HUMAN CASUALTY and BUILDING DAMAGE STATISTICS of THE IZMIT EARTHQUAKE of AUGUST 17, 1999

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ABSTRACT

Izmit earthquake occurred at 3.02 (01:39.80 GMT) on local time on August 17, 1999, Tuesday. Earthquake parameters were determined by the National Earthquake Network operated by the Earthquake Research Department (ERD) of the General Directorate of Disaster Affairs as magnitude Mw: 7.4, epicenter 40.70N latitude, 29.91E longitude and 15.9 kilometers depth. Main shock was about 12 kilometers southeast of the center of Izmit in Marmara Region. This earthquake occurred on the western part of the North Anatolian Fault Zone (NAFZ) and caused right-lateral strike-slip movement on the fault. Thousands of building collapsed and died in over 15.000 people. This earthquake affected nine provinces. Much of the building damage and human casualty occurred in the provinces of Kocaeli, Sakarya and Yalova. It is the second largest earthquake in Turkey after 1939 Erzincan earthquake (Ms: 7.9 , 32 962 killed). Ground motion record nearest to the epicenter was obtained at Izmit station belonging to Strong Ground Motion Network of ERD. Peak ground accelerations at Izmit station were 226 mG.

The Ministry of Public Works and Settlement published Seismic Hazard Map of Turkey in 1996. It based on expected a maximum acceleration value that has calculated with probabilistic method. It assumes that a normal construction, which has 50 years of economical life, may not be exposed larger than these expected maximum acceleration values with 90 percent probability. The whole country is divided into the 5 different hazard zones. The earthquake region is located in the first degree zones on this map. It means that 0.4 g or greater maximum acceleration is expected at this region.

In this study, Damage statistics are examined to find out relation of structural damage and human casualty. Seismic Intensity Map has been drawn on the map based on the field observations and preliminary damage evaluation prepared by General Directorate of Disaster Affairs, Ministry of Public and Settlement.