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Reasons of Extraordinarily Higher Damage in 1990 Manjil Earthquake, Iran.

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In 1990 (June, 20 at 21.00 GMT, 30 minutes after midnight, local time) a ruinous earthquake of magnitude 7.3 occurred in the Manjil area, about 100 kilometers southwest of the Caspian Sea in the north of Iran. During this event the towns of Manjil, Rudbar and Lushan, as well as about 700 villages totally destroyed, and at least 300 more villages partly to slightly damaged resulting in forty thousand fatalities, sixty thousand injured and five hundred thousand homeless. The results of field studies carried out immediately after the event in different parts of the earthquake area revealed that in addition to the higher magnitude of the earthquake and its inappropriate occurrence time, several other reasons such as the presence of very bad weather condition during and after the earthquake, the presence of dense population settled in several cities and numerous villages, the lack of good-quality access roads to the scattered villages in a mountainous area, the presence of numerous weak buildings, mostly constructed in the areas of unstable soil and rock condition or constructed by using of inappropriate design, low-quality construction techniques, low-quality construction materials and low-quality workmanship, as well as the occurrence of liquefaction phenomena in parts of the earthquake area, the lack of preparedness for a rapid, efficient and well-organized rescue operation, and the lack of public awareness about what they should do before, during and after the earthquake event were the main reasons of extraordinarily higher damage of Manjil earthquake. The study of this earthquake once again emphasized that a large amount of earthquake related damages originate partly from the unawareness of ordinary people about the sources and reasons of earthquake damages and partly from the lack of any serious and comprehensive program for the earthquake vulnerability reduction in some of the earthquake prone countries. Earthquakes usually give us very important lessons about the sources and reasons of the earthquake damages. Therefore, if we study the lessons of past earthquakes and use the experiences of these events in the earthquake vulnerability reduction programs, we will be able to minimize the amount of future earthquakes even to zero, and consequently the earthquake events will not considered as a deadly, destructive and dangerous events any more.

Keywords: Manjil; Earthquake; Damage; Building; Construction.