

NONSTRUCTURAL EARTHQUAKE DAMAGE AND DESIGN GUIDE AS COUNTERMEASURES IN JAPAN

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Abstract

This paper is the review of the history of the nonstructural earthquake damage and the design guides as the countermeasures for the nonstructural components in Japan. The history covers the earthquake from February 20, 1978 up to now. The nonstructural damage takes a lot of attention in the case that the structural damage is less. The specific nonstructural damage such as window glass, precast concrete curtain wall, suspended ceiling system, escalator etc. was found in some of them. The design guides cover the building standard law of Japan, Architectural Institute of Japan design guide, the government office design guides, the design guide for each nonstructural component published by industrial associations concerning the autoclaved lightweight aerated concrete, the curtain wall etc. The paper also covers ISO 13033:2013 Bases for design of structures -- Loads, forces and other actions -- Seismic actions on nonstructural components for building applications, which will undergo a periodical review this year. The countermeasures for nonstructural damage has two types; The first is the overall comprehensive design guide including design story drift angle, inertial force and the verification. The second is the prescriptive design guides of the specific nonstructural components for seismic safety.