

論文要旨

病院建築における 薬品棚等の転倒防止対応に関する検討

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高知県の病院建築において、南海地震の際には多くの被災者が病院へと集中することが予想される。これに対し過去の地震時の機能上の経済分析から薬品棚の転倒を防ぐことが最重要であるという医療機関からの要請を受け、病院建物の典型的なモデルを抽出し、この建物の地震応答解析により、各層の応答周期（振動数）と各層の床応答加速度から棚類の転倒解析を行いその防止対応について検討することを本研究の目的とした。

第1章では、本研究の背景と目的、論文の構成を示す。

第2章では、対象モデル建物について示す。

第3章では、棚の転倒に関する既往の研究について示す。

第4章では、地震応答解析による棚の転倒分析を示す。

第5章では、まとめについて示す。

本論文では、棚の転倒傾向と建物の構造による転倒可能性を求めることが出来た。今後は詳細な転倒防止対応について検討を行う必要があると考える。

An Analytical Study on the Prevention of Shelves for Medicine
in Hospital Buildings Against Large Earthquakes

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ABSTRACT

In the Hyougoken Nanbu Earthquake 1995, Hospital Buildings in Kobe city were also much damaged due to its giant vibrations. At least one month after the earthquake, the function of all of hospitals turned to field hospitals. The authority of Medical Doctors Union suggested that all of hospitals should be the field hospitals and it is very important to prevent the overturning of the shelves for all medicines.

Through the literature survey, the factors of response acceleration and velocity of each floor slab control such shelves overturning.

Series of dynamic response analysis were carried out for five story, ten story and fifteen story reinforced concrete hospital buildings. As case studies, normal frame structures, rigid wall structures and base isolation systems were also analyzed. Such reinforced concrete buildings were designed based on the new seismic design codes.

Following analytical results were showed

- 1) The overturning of shelves controls height-depth ratio (HDR) of shelves. Such HDR should be less than 0.3. If such values exceeds 0.3, some overturning prevention devices should be installed.
- 2) In case of five story building, shelves at the fifth story floor were overturned. Other lower floors showed no overtuning.
- 3) Wall frame buildings showed very small response natural period. In this case, such overturning was controlled by its response velocity of floor slabs. As the results, shelves were easy to be control of overturning.
- 4) In case of base isolation building, of course response acceleration becomes smaller. However in the longer natural period domain, such overturning is controlled by response acceleration of floor. The new device of design should be carefully examined so that response floor acceleration will be enough smaller.