

Structural design of a seismic isolated building in Matsumoto city

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Abstract

This paper reports under construction project of a seismic isolated building designed by Toyo Ito Architects and Associates. In the structural planning, for function maintenance of post-disaster, seismic isolation structure which is capital seismic isolation at basement floor has been adopted. All seismic isolators are on the capital of SRC and RC columns. By adopting capital seismic isolation at basement floor, the depth of the foundation can be made shallow and drilling cost is reduced. And for realization of open space, the upper is planned as steel rigid frame structure which CFT columns and H-section steel beams are utilized. First, this paper describes about the architectural plan. Next, structural planning with respect to mainly seismic isolation structure is explained. After explanation of the structural planning, the detail of the structural design (verification by using time history response analysis) is shown.

Keywords: seismic isolation structure, capital seismic isolation, steel rigid frame structure, response spectrum analysis, time history response analysis

1 Introduction

A new building of a newspaper company which is under construction and designed by TOYO ITO & ASSOCIATES, ARCHITECTS has been planned in Matsumoto- city, Nagano Prefecture, Japan.

The site is on the centre of the city area and there are the commercial buildings and the cultural buildings around the site. On the other hand, there is also rich nature such as rivers flowing around there.

This new building has about 8000 square meter total floor area, and about 24 meter height. It has 5 stories above ground and one below; the commercial complex such as a gallery, a community hall, a restaurant and a shop, are located on the first floor to the third floor. The business area for the newspaper company is located on the fourth and fifth floor. A parking lot is located on the basement floor.



*Figure 1. Image of exterior
(photo by "kuramochi + oguma")*