

Determination of subsurface structure in the building damage area of Tohoku earthquake (March, 2011), Tsukuba City using

aiko kawamuki^{1*}, Tatsuya Noguchi², Takao Kagawa², Daichi Fukuda², Ikuo Cho³, Shigeki Senna⁴, Shinsuke Okada⁵

¹Kyowa sekkei Co.,Ltd., ²Tottori Univ., ³AIST, ⁴NIED, ⁵Tohoku Univ.

Seismic intensity was recorded lower 6 at Tsukuba City, Ibaragi Prefecture when Tohoku earthquake (March, 2011) occurred.

A distribution map of tiled-roof damage ratio in the target area was made by Okada et. al. (2012).

Microtremor array observation at 20-sites and single-site 3-componets observation at 89-points were carried out in the area.

As the result, predominant periods of H/V at single observation points and subsurface structures at array sites were determined. Site amplifications were calculated using subsurface structure models at the array observation points. It is possible that site amplification factor was large and also resonance of house was occurred in the high area of damage ratio.

Therefore, it was considered that such seismic response is a cause of the high tiled-roof damage ratio.

Keywords: microtremor, Determination of subsurface structure, tiled-roof damage, Tsukuba City