

ABSTRACT

The PLN Tower building, located west of Jalan Burangrang IV, in the construction area of Jalan Baru between Jangli and the Diponegoro University campus, has been relocated three times due to soil dynamics events such as ground movement. This study aims to identify subsurface characteristics based on the distribution of contours and profiles of shear wave velocity (\bar{V}_s) values and V_p/V_s values in the area around the PLN Tower building. Additionally, it evaluates the displacement of the PLN Tower based on Ground Shear Strain (GSS) values in the area around the building and identifies the potential for ground movement in the area around the PLN Tower building based on field-acquired microtremor data. The method used in this study is microtremor with the Horizontal to Vertical Spectral Ratio (HVSr) approach, as it is considered more efficient. The study parameters include \bar{V}_s , V_p/V_s , and GSS values. The interpretation results indicate that the study area is dominated by rigid tuff sandstone classified (SNI 1726:2019) as soft bedrock with \bar{V}_s (350–750) m/s and V_p/V_s ranging from (2–3) according to Keceli (2012). The results of Ground Shear Strain (GSS) also show that the location of the PLN Tower (point 12 or point D3) is classified as plastic-elastic soil that is prone to cracking and subsidence according to Ishihara (1982) with a range of values (5.00×10^{-4} to 9.50×10^{-3}). This study recommends several points from the measurement area that can be considered for construction planning.

Keywords: *HVSr, shear wave velocity (\bar{V}_s), velocity ratio (V_p/V_s), soil classification, Ground Shear Strain (GSS), subsidence.*