

The embodiment of the consecutive penetration tests in the Liquefaction-Fluidization place

*Hideto Kimura¹

1.Toho Chisui Co.,Ltd.

2011 occurred on March 11, 2011 Tohoku-Pacific Ocean earthquake and liquefaction and liquidity phenomenon of the formation by the largest aftershock (less liquid fluidization), Jinami phenomenon has occurred. Liquid flow of the embankment, man-made strata was observed also in the inland as well as coastal areas by this earthquake. Depending on the structure, because it was observed in many cases it can be used again if the lift or the subsidence part or return horizontally, this study area is located in the man-made strata distribution area that has received the liquid fluidization damage building construction jack-up by the steel pipe pile construction as the restoration method of the object has been selected. While the support layer depth and N values measured for thickness confirmation were required upon installation rather than the usual standard penetration test to implement the N value measured every 1m, continuous penetration test to implement the N value measured every 50cm it was adopted. This is a distribution in the depth direction as viewed from the N value of liquid fluidized layer, by performing as much as possible detailed observation of the sample taken without creating a non-core section, an intermediate survey and the positioning of the standard penetration test and all core boring, as long as is brought close to the no attempt, is considered rare example unparalleled is in that could also be confirmed up to now as the investigation of the time less than after the disaster in one month. Survey method is a continuous penetration test of 10-15m was carried out in 1 point (a total of 6 points) of each building vicinity, previously implemented only up to 20m 1 point corresponding to the on-site center, this each sample detailed sample observation carried out close-up on the spot of the point was carried out in the indoor (on Workstation). Results of the investigation, geological structure based on the 20m hole geological observations were classified as follows. 1st layer (N value of 4/32-9) crushed stone, concrete silt mingled with fine sand at a layer thickness of 0.40-1.25m - estimated non-liquid fluidized layer of fine sand mingled with silt. 2nd layer is sand layer (N value of 0/20-12) many very fine grain sand water at a layer thickness of 2.20-4.95m - N value of 3 or less in the middle part and in particular the entire base portion in a liquid fluidized layer of fine-grained sand (minimum 0/20) the admit. 3rd layer is clay layer (N value 1-5) estimated fluid fluidized layer of fine-grained sand mingled with silt of the lens-shaped distribution at a layer thickness of 0.85m. 4th layer is foreshore after the beach sediment layer (N value of 4/32-50 or more) non-liquid fluidized layer of fine-grained sand to the development of the black beam at a layer thickness of 1.90-7.40m. 5th layer is nearshore sediment layer (N value 14-50 or more) the confirmation layer thickness 13.60m bulk-free layer management in the array or silt contamination of irregular sand particles (biological disturbance) and sand pipes and mud pipes and fine sand - silt mingled with fine-grained non-liquid fluidized layer of sand shells fine piece is mixed, of 5, which is a division. As advantages of the present survey methods, can also be applied in the building bowing because it is a rule, a:N value measurement, there is a possibility that can discover the b:stratum fluidization trace (the discovery of re-liquefaction danger), on the other hand as the points to keep in mind, is a:hydrous very many samples need basket with shoe for fall prevention for easy to fall, focus on a flat break-all sand particles as much as possible the sample surface in the close-up of sample, sure unit investigation capable engineers in charge to things like.

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