
Study on the Optimum Construction Method and Advanced Quality Control for a High Quality Fill

Hiroyuki NAGAI, Isamu SANDANBATA, Masahiro KURODAI, Satoshi NAKAJIMA and Makoto KIMURA

An experiment that simulated a fill construction site (sandy soil) at an indoor concrete pit was conducted for the purpose of proposing a construction technique that satisfies the required performance, the selection method of the most suitable compacting equipment and the quality control technique for fill compaction. The latest large compacting equipment that is typical used was used in the experiment, and the density of the foundation, the coefficient of ground reaction and the acceleration response system indication value all depended on the number of times the compaction was measured. The results of the experiment showed that the most suitable number of times of compaction was eight times, and that the material suitable for compaction was sand with a fine fraction content rate F_c of 10% to 15% and the material whose moisture weight percentage was about 1% from optimum weight percentage toward the dry side was clarified as the foundation material used this time. When the degree of saturation was less than 95%, it was possible to manage the degree of compaction (the density) by subgrade reaction K30. It was possible to estimate the compaction degree and the foundation stiff value by using an acceleration response system in the case that the degree of saturation rate is less than 80% and the moisture weight percentage of the construction material is about 1% from the optimum moisture weight percentage toward the dry side. Furthermore, it was confirmed that a compaction machine with vibration compacts the fill better than a machine without vibration does.