Abstract

In the paper, the author presents a case study of instrumentation and monitoring (I&M) program executed by a geotechnical instrumentation specialist organization during construction of twin high rise structures, in a megacity in Middle East. The project’s work site was dissected by an existing busy road bridge. Two multi-storeyed towers with several basement levels each were to be constructed on both sides of the bridge. The towers were to be linked by a sky bridge. Safety of the existing busy road bridge located in the middle of the deep excavations during the construction stage was on top priority for all project stakeholders as well as the assets’ owners.

The paper starts off with a brief overview of the project with salient features of the construction methodology deployed, followed by the description of instrumentation and monitoring scheme implemented for monitoring during construction works. Details of key parameters monitored and type of instruments selected for the purpose have also been included. The instrumentation and monitoring done for bridge monitoring has been described in detail which includes description of
the setup of automated data collection for geotechnical and geodetic instruments, data transmission and its online presentation. Challenges faced during the installation of instruments in the bridge and around the deep excavations and how these were met with practical solutions are mentioned in the subsequent section.

Fast processing of the collected data, its lucid presentation for easy assimilation and its instant access—not restricted by geographical boundaries—is the key feature of a successful I&M programme. This aspect is covered in the paper along with a summary of the observed data. Key conclusions drawn from the instrumentation programme and lessons learned, sum up the paper.

References


Index Terms

Computer Science Information Sciences

Keywords

Online monitoring, existing bridge monitoring, deep excavation monitoring, automatic data collection