ABSTRACT

This Technical report describes a new design of manhole and hand-hole cap lifter structure. The structure of the cap lifter comprises of a base structure, a scissors linkage, and a hydraulic jack. Both the scissors linkage and hydraulic jack are installed on the base structure. By pumping the hydraulic jack the wires which bolted on scissors linkage can raise the mid span of the cross bars of the cap hooker at the bottom ends of the wires. Also, the base structure is adjustable in length. Therefore, it may fit the cap with different dimensions. With the hydraulic jack and the scissors linkage the lifter can fit and operate in most situations easily and efficiently. The operator can manipulate the lifter by the side of the lifter that is a safer position during lifting. Therefore, the possibility of accident can be reduced to a minimum. In this study, a stress and deformation analysis is performed on the lifter using computer-aided analysis software — ANSYS. The result verifies the strength of the design structure and its associated efficiency.

Keywords : Manhole; Hand-hole; Lifter; Computer-Aided Analysis