

ABSTRACT

PT. Pusaka Putra Perkasa is a Second Party Logistics (2PL) company that provides liquid transportation services using tank trucks. The success of its distribution operations highly depends on fleet readiness, which is supported by the availability of spare parts. The company's spare parts warehouse currently faces several issues, such as limited storage facilities, unstructured item arrangement, improperly stacked goods that do not follow standard operating procedures, and limited accessibility due to suboptimal layout design. This study aims to determine the required number of storage facilities and to design a warehouse layout that improves operational efficiency and accessibility. The method used in this research includes dedicated storage with grouping based on similarity of function and item size. Space requirement analysis and layout design were conducted using AutoCAD software. The analysis results show that a dedicated storage system based on function similarity and size optimizes warehouse storage. The storage facility requirements consist of 13 shelves, 7 pallets, and 3 containers to ensure optimal storage of all goods, and the use of stairs to facilitate the retrieval and storage of spare parts. The layout design resulted in two alternative layouts, with the second alternative layout being considered the most optimal with a total travel distance of 20,834.13 meters per month, lower than the existing layout. The proposed layout implementation also provides a wider road area, thus supporting smooth workflow and facilitating access to spare parts. Overall, this design can improve the efficiency, accessibility, and tidiness of spare part storage in supporting fleet readiness at PT. Pusaka Putra Perkasa.

Keywords: Dedicated Storage, Racking System, Warehouse Layout