

# ICA 16: Warehouse Space Requirements

ISE 453: Design of PLS Systems

Fall 2018

1. What is the 2-D cube utilization associated with three-deep, four-high dedicated block stacking of  $48 \times 42 \times 36$  in. ( $y \times x \times z$ ) pallet loads of products A, B, and C along a 10-foot-wide down aisle assuming that the maximum inventory levels of the products are 10, 18, and 32, respectively? All of the products are stored on one side of the aisle, and the opposite side of the aisle is used to store other products.
2. A warehouse is being designed that will have a rectangular shape with a single I/O point located along its perimeter. Randomized block stacking will be used to store 5,000 different SKUs along 8-ft-wide down aisles, and the area used for cross aisles, etc., will equal 15% of the storage area. A maximum of 500,000 total units of product are to be stacked six-high on identical  $36 \times 40 \times 48$  in. two-way pallets. (a) What is the minimum total area needed for the warehouse? (b) What is the 2-D cube utilization of the warehouse?