

Warehouse Order Picking Route Optimization And Batching

1.0 Objective & Scope

The objective of this procedure is to minimize travel time and maximize pick density by grouping orders into efficient batches and assigning optimized pick routes. This SOP applies to all order pickers, warehouse leads, and inventory clerks responsible for outbound fulfillment. The goal is to reduce non-value-added walking time by at least 30% while maintaining a pick accuracy rate of 99.5% or higher.

Scope includes all stock-keeping units (SKUs) stored in bin locations within the active pick face. This procedure does not cover bulk or reserve storage retrieval, which follows a separate replenishment SOP.

2.0 Required Systems, Tools & Materials

- SupplyGrid WMS dashboard with wave picking and route optimization module
- Mobile barcode scanner (Zebra TC21 or equivalent) with WMS application
- Warehouse layout map with designated pick zones (A, B, C, etc.)
- Picking cart or pallet jack (depending on order volume)
- Shipping labels and packing slips
- Clipboard and pen for manual backup (if system is offline)

3.0 Safety & Handling Precautions

- High-visibility vest required in all active forklift aisles and pick zones.
- Steel-toed safety boots must be worn at all times in the warehouse.
- Use proper ergonomic lifting techniques for boxes over 15kg; request assistance or use a lift aid for items over 25kg.
- Keep pick paths clear of debris, shrink wrap, and empty pallets to prevent trips and falls.
- Do not block fire exits, emergency equipment, or sprinkler access with picking carts or pallets.

4.0 Step-by-Step Procedure

1. Log into the SupplyGrid WMS dashboard and navigate to the 'Wave Picking' module. Select the current shift and confirm the batch size parameter (e.g., 10 orders per wave).
2. Review the order queue and group orders by common SKU, zone proximity, or delivery route. The WMS will automatically suggest batches; manually override only if a priority order requires immediate dispatch.
3. Generate the optimized pick route by clicking 'Optimize Route'. The system will sequence bin locations in a serpentine path that minimizes backtracking. Confirm the route on the mobile scanner screen.
4. Assign the batch to a picker by scanning their employee badge barcode. The WMS will lock the batch to that picker until completion.

5. Proceed to the first bin location indicated on the scanner. Scan the bin location barcode to confirm you are at the correct pick face.
6. Scan the SKU barcode of the item to be picked. Verify the quantity displayed on the scanner matches the physical quantity required. If the quantity is incorrect, scan the actual quantity and proceed.
7. Place the picked item into the appropriate tote or shelf on the picking cart, ensuring it is segregated by order number. Use color-coded totes if available (e.g., red for priority, blue for standard).
8. Repeat steps 5 through 7 for each bin location in the optimized route sequence. Do not skip locations; if a bin is empty, scan it as 'empty' and flag for replenishment.
9. Once all picks in the batch are complete, scan the 'Batch Complete' barcode on the scanner. The WMS will generate a consolidated packing slip for each order in the batch.
10. Transport the picking cart to the packing station. Hand off each order's tote to the packer, ensuring the packing slip is placed inside or attached to the tote.
11. If the batch includes a 'short pick' (item not found), immediately notify the inventory clerk via the WMS chat or radio. Do not substitute items without authorization.
12. After handoff, return the picking cart to the staging area and log out of the scanner. Proceed to the next assigned batch or report to the warehouse lead for reassignment.

5.0 Verification & Discrepancy Reporting

1. At the packing station, the packer must scan each item's barcode and compare it to the packing slip. If any item is missing or incorrect, the packer flags the order and sends it back to the picker for correction.
2. If the physical pick quantity differs from the system quantity by more than 2 units or 5% (whichever is greater), the picker must stop and escalate to the inventory clerk for a cycle count of that bin location.
3. Any damaged items discovered during picking must be placed in a red 'Quarantine' bin and logged in the WMS under 'Damaged Stock'. Do not ship damaged goods.
4. At the end of each shift, the warehouse lead runs a 'Batch Accuracy Report' in SupplyGrid. Any batch with an accuracy rate below 98% triggers a root cause analysis and retraining for the assigned picker.
5. If a picker consistently deviates from the optimized route (e.g., takes a different path), the warehouse lead reviews the route history and provides coaching to ensure compliance with the SOP.

Regulatory Disclaimer: This document is a generic operational template provided for educational purposes. The end-user assumes all liability for reviewing, adapting, and validating all step sequences and material handling protocols against local shop capabilities.