Retail Chain Distribution

• E.g., Wal-Mart, K-Mart, etc.
• all products except clothes and tobacco
• batteries, CDs, brooms, screws, TP, cosmetics, etc.
• retail stores place order with DC each day
• pick in waves, zones, and sort to store
• WMS to control system
• everything is bar-coded and RF technology used
Retail Distribution Center

- Semi-automated facility
- 40 acre complex
- Facility:
  - 148,000 sq. ft. (~100 yds by 100 yds)
  - Max # of SKUs 24,000
  - Max Tput 98,600 units picked/shift
Process Flow

R/C → Staging → Surge R/C Storage → Bulk Storage

Staging → Long Term Storage

Replenishment → Picking Areas:
1. Flow Rack
2. Carousels
3. Slow Units
4. High Value

Picking Areas → Merge Area → Sortation → Shipping
Estimate System Costs

1. Building Units (DC, offices, land, etc.)
2. Pallet Jacks
3. Walkie Stackers
4. CB Lift Trucks
5. NA Trucks
6. Rider OP Trucks
7. Picking Carts
8. Conveyors
9. Pallet Rack
10. Picking Racks & Carousels
Retail Distribution Center

• **Manual facility**
• 40 acre complex
• Facility:
  – 135,000 sq. ft.
  – Max # of SKUs 18,000
  – Max Tput 50,000 units picked/shift
Design Comparison

• The cost estimated by the designer of the manual system was: $3.2M (excluding land, building).

• The designer estimated the number of employees at 92 (76 R/C & picking; 16 loading & shipping).

• The designer estimated the order accuracy at 87%.
Side-by-Side Comparison

• Manual:
  – 135,000 square feet
  – $3.2M installed MH
  – 18,000 max SKUs
  – 50,000 picked/shift
  – 92 employees
  – 87% order accuracy

• Semi-Automated:
  – 148,000 square feet
  – $5.8M installed MH
  – 24,000 max SKUs
  – 98,600 picked/shift
  – 134 employees
  – 96% order accuracy