P03

The process begins

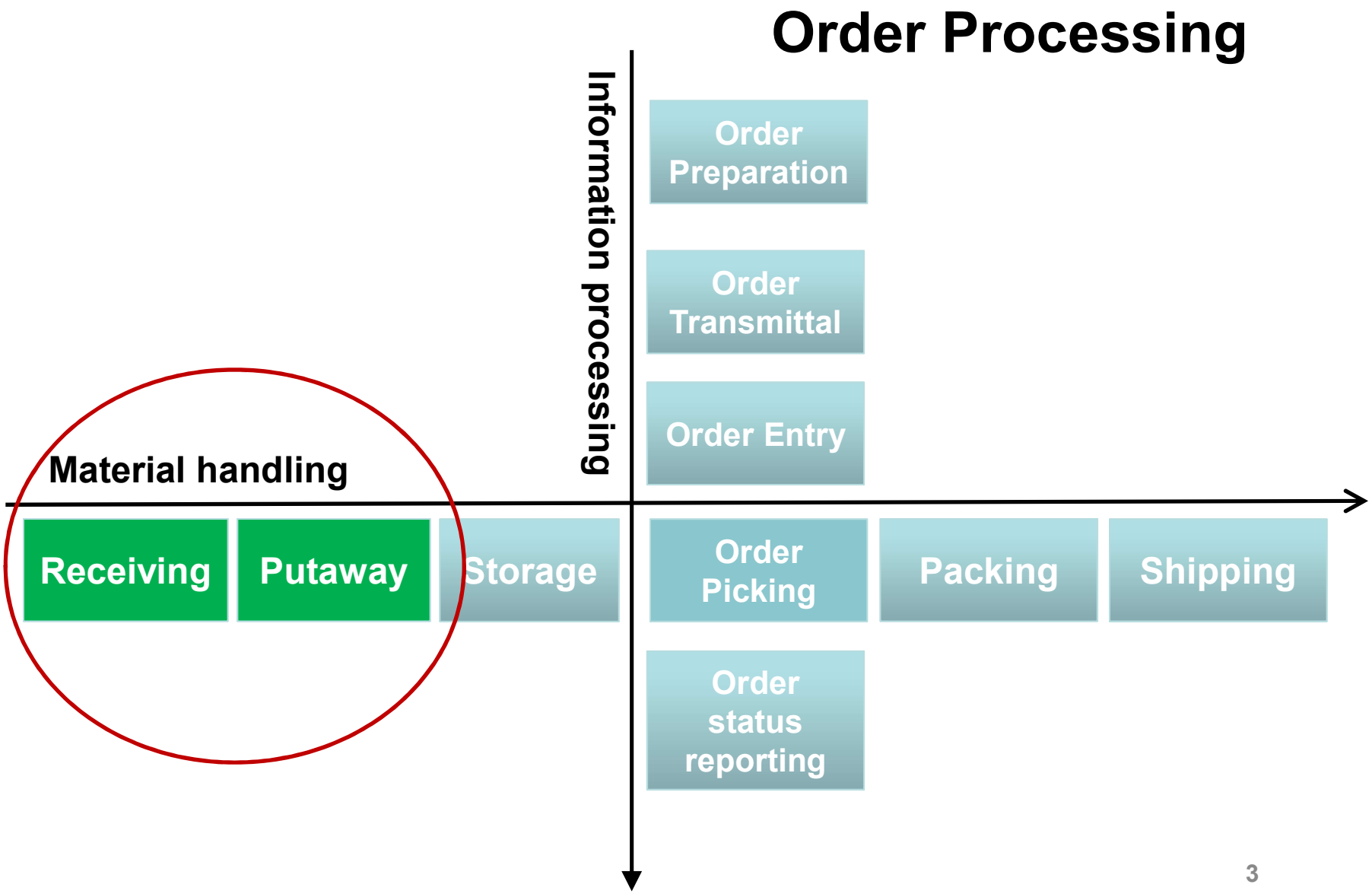
E215 – Warehouse and Storage

SCHOOL OF ENGINEERING

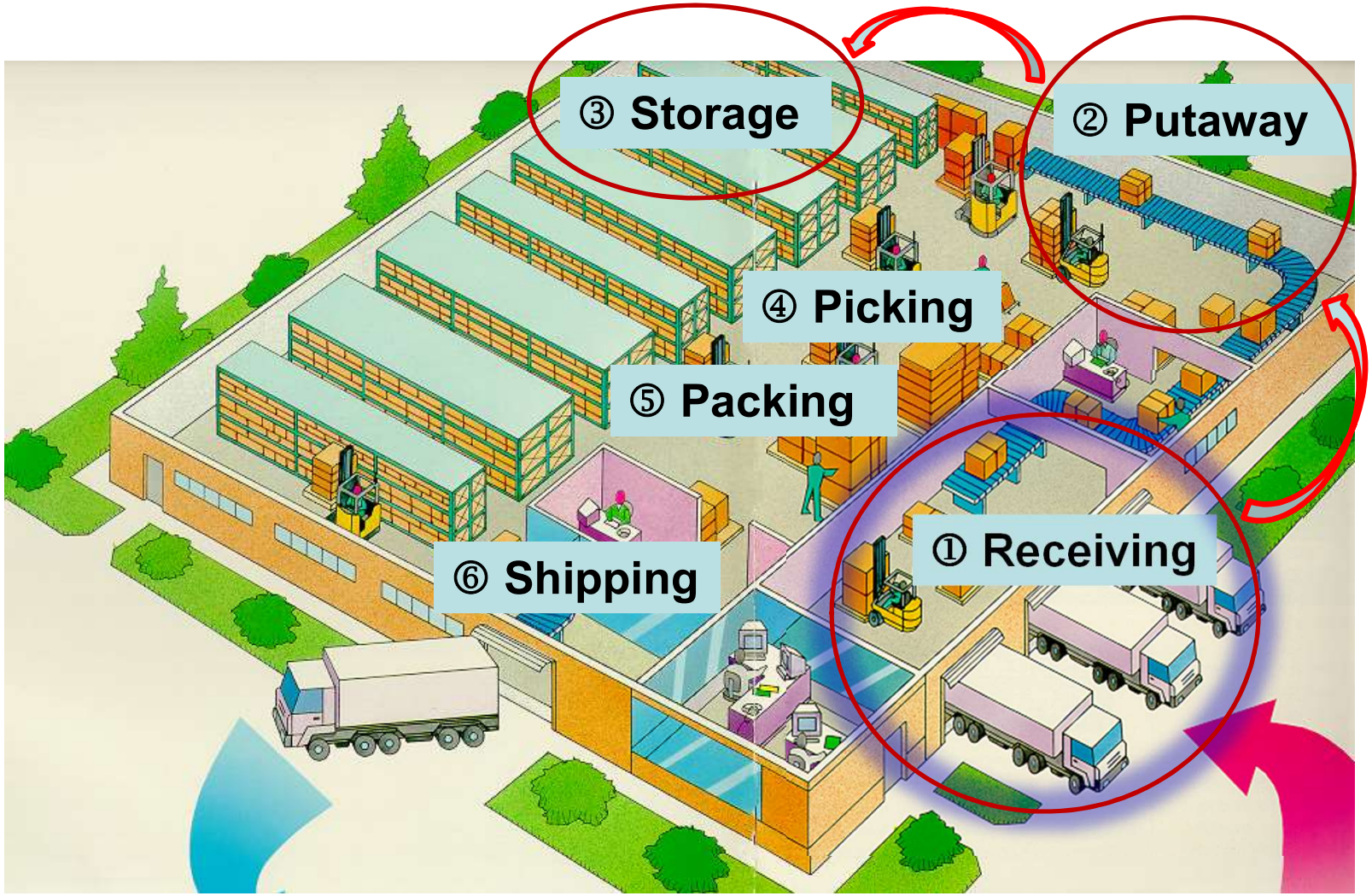
Learning Objectives

- Describe the main processes in a general warehouse.
- Describe in detail the typical inbound process in a warehouse.
- Learn the good receiving practices and documentations.
- Define several common putaway methods and location numbering systems.
- Identify various warehouse location management systems.

General Processes in a Warehouse



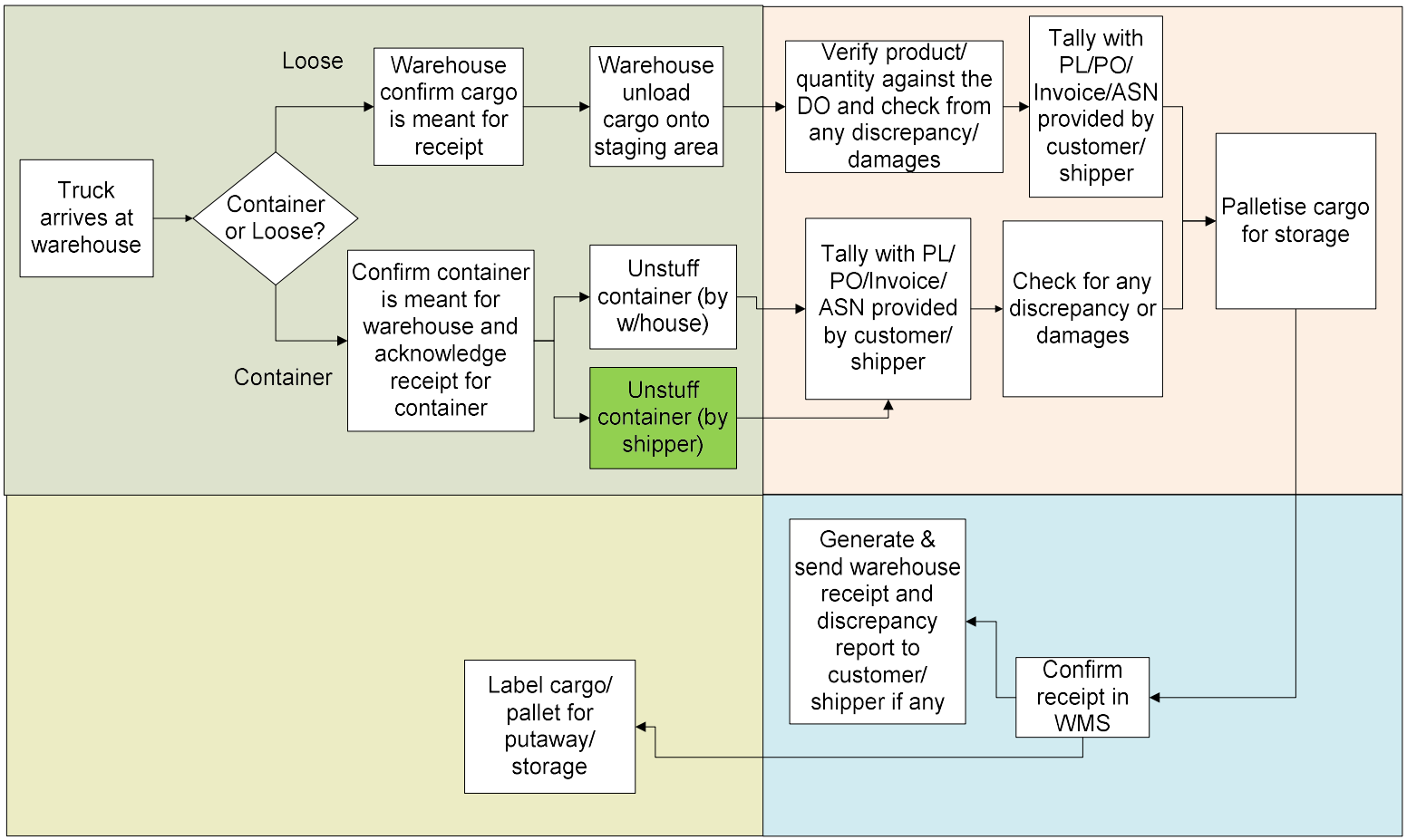
Material Flow in a Warehouse



Typical Receiving Process

1. Check the email or Electronic Data Interchange (EDI) from suppliers about the incoming goods (e.g. product code, date, seal number, Airway Bill (AWB) number, etc). This information is usually called ASN (Advance Ship Notice or Advance Shipping Notice).
2. Compare ASN with the Delivery Order, Purchase Order (if any), or incoming goods data in the Warehouse Management System (WMS). Check if they are the same.
3. Physically check the product in term of identity, quantity, and quality.
4. Document information on the received cargo (i.e. incoming tally sheet)
5. When all conditions are found satisfactory, sign the Delivery Order.
6. Prepare the goods for putaway and storage.

Typical Receiving Process



Good Receiving Practices

1. **Check for any discrepancies before signing the DO. Any discrepancies found must be clearly reflected on the DO and feedback to customer immediately**
2. **For container receipt, verify the seal number on the container and check for any discrepancy. If discrepancy is found, suspend the receiving process and feedback to customer immediately**

Good Receiving Practices

3. **Clear policy on the inspection process:**
   - **Visual**
     - **Further inspection may be postponed. However customers/shippers must agree to avoid future disputes.**
   - **Batch/sampling**
   - **100%**
   - **Laboratory test**
4. **Provide specific time window for shippers to deliver.**

Good Receiving Practices

5. **Established target cycle time (e.g. from receiving until putaway).**
6. **Schedule the docks, people and equipment. Close coordination with the transporters is important.**

Receiving Checklist

Receiving Checklist

(Must be completed before signing Carrier Delivery Receipt)

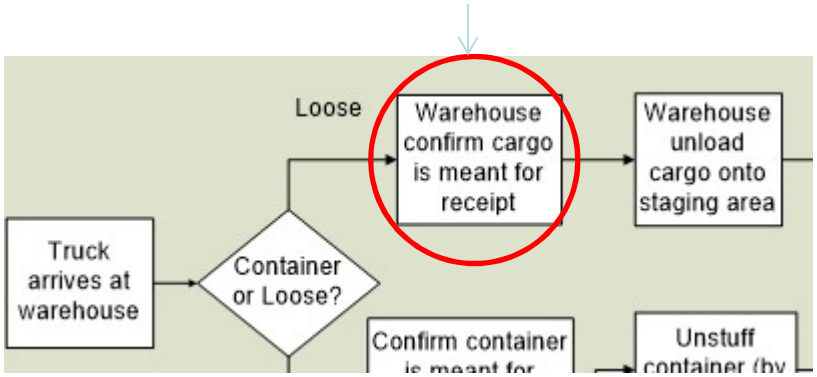
Item	*Action Status*		*Initials*
Advance notice	Received	Yes ☐ No ☐	[ ]
Delivery	Driver On time ☐ _____ minutes late		[ ]
Consignee	Verified as correct		[ ]
Delivery receipt	Verified against P.O./advance notice		[ ]
Vehicle number	Verified against delivery receipt		[ ]
Labels/placards	Were applied to vehicle and goods		[ ]
Seal numbers	Verified against delivery receipt		[ ]
Seals	Intact Removed by:	Yes ☐ No ☐	[ ]
C.O.D. check	Given to and signed for by driver		[ ]
SDS	Accompanied by	Yes ☐ No ☐	[ ]
C. of A.	Shipping papers	Yes ☐ No ☐	[ ]
Samples	Received from driver	Yes ☐ No ☐	[ ]
Vehicle opened	Photographs taken by		[ ]
Condition of load	Acceptable	Yes ☐ No ☐	[ ]
Unloading	Driver assisted	Yes ☐ No ☐	[ ]
Count/weight	Agrees with del'y receipt	Yes ☐ No ☐	[ ]
OS&D	Noted on shipping papers by Describe damage:		[ ]
Inspection	Requested by		[ ]
L&D claim	Initiated by		[ ]
Returns	Approved by		[ ]
Delivery receipt signed by:		**Date:**	

C.O.D.: **Check On delivery**
SDS: **Safety Data Sheet**
C. of A.: **Certificate of Analysis**
OS&D: **Over, Short & Damage**
L&D: **Loss and Damage**

Assist the receiving staff to remember all the necessary details to check

Activity 1 : Questionnaires

A. Refer to the receiving process flow as shown, how does a warehouse confirm cargo is meant for receive?



Ans: Check on the DO against PO/ASN provided by customer or shipper

B. After the cargo is placed at the staging area, what would be the next step for the warehouse staff to carry out?

Ans: Verify products/quantity against the DO and check for any discrepancy/damages.

Tally with PL/PO/invoice/ASN provided by customer/shipper

Activity 1 : Questionnaires

C. **How to ensure all the necessary checking steps are being diligently carried out by the receiving staff?**

Ans: Use receiving check list

D. **In the event there is discrepancy in product/quantity and damages, what is the next step to carry out?**

Ans: Record down the discrepancy, take the picture of the damage cargo, and report to the customer service personal

E. **Once the cargo is confirmed with no discrepancy, what is the next step to carry out?**

Ans: Confirm receipt in WMS, label the cargo for putaway

Activity 2 : Complete the DO Form

Based on the given Purchase Order (PO) from **GoodParts Pte Ltd** to **Brilliance Pte Ltd**, fill up the corresponding Delivery Order (DO).

Purchase Order

Purchase Order (PO)

Delivery Order

Delivery Order (DO)

Microsoft Word Document

Answer

Activity 3 : Complete the Incoming Tally Sheet & Discrepancy Report

The shipment from Activity 2 was delivered to **GoodParts Pte Ltd** in loose today by a truck with plate no. PA1234Y.

Based on what you have just learned on the good receiving processes and practices, the incoming team at the warehouse checked on the goods and recorded down the actual physical receipt as shown in the table. Fill up the Incoming Tally Sheet and Discrepancy Report as given.

Actual physical received:

S/N	Part No	Product Name	Unit	Qty	Condition Found
1	SBR-010	Single-Band Resistor	Boxes	20	-
2	RT-111	Radio Transistor	Boxes	10	-
3	PS-023	Power Switch	Pcs	20	5 power switch without On/Off button
4	TB-090	Terminal Block	Pcs	35	Short 5 pcs of TB-090 Terminal Block
5	ES-123	Electrical Splices	Boxes	40	-

Tally Sheet

Tally Sheet

Microsoft Word Document

Discrepancy Report

Microsoft Word Document

Answer

Microsoft Word Document

Answer

Activity 4 : Complete the Incoming Tally Sheet & Discrepancy Report

Brilliance Pte Ltd has requested to **GoodParts Pte Ltd** to still receive the goods delivered but they will provide a new DO. **Goodparts Pte Ltd** has agreed to this request.

Prepare the correct DO for **Brilliance Pte Ltd.**

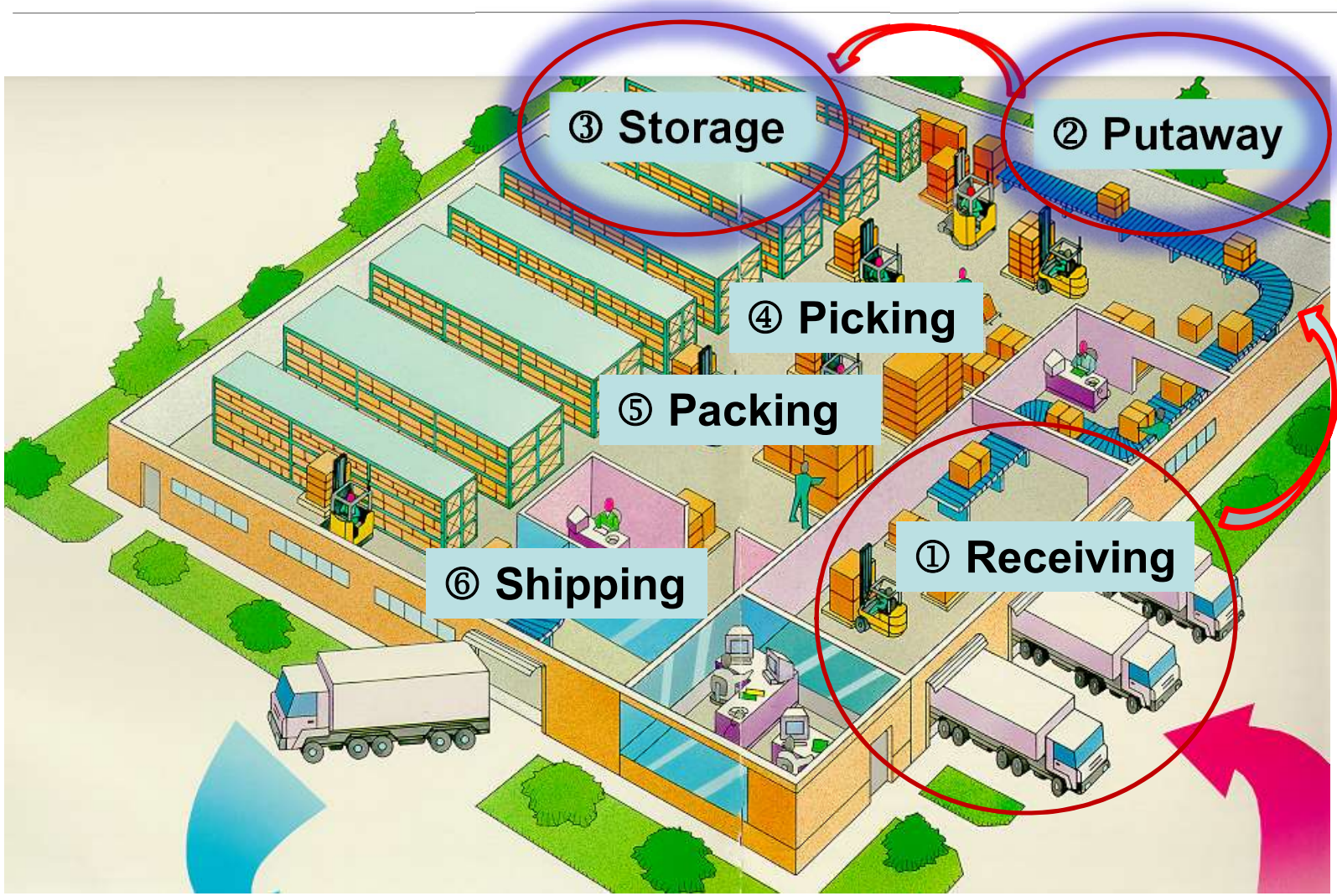
Microsoft Word Document

DO_to_be_amended

Microsoft Word Document

Answer

Material Flow in a Warehouse



Putaway Process

- **Direct putaway**
  - **Putaway directly to primary or reserve locations.**
- **Directed putaway**
  - **WMS directs the putaway operators to place each pallet or case in the location that maximizes location and cube utilization.**
- **Batched and sequenced putaway**
  - **Sort and group inbound materials for efficient putaway.**
  - **Need additional area for processing (Staging Area)**
- **Interleaving**
  - **Combine putaways and retrievals in one trip when possible for time and resource saving.**

Location Numbering Scheme

- **Location numbering is to assign each location with an unique name. However, there is no single fixed scheme**
- **Recommended numbering system:**
  - **Aisles numbering from left to right**
  - **Column numbering from the dock area back to the end of the building**
  - **Level numbering from ground to the top of the racking**

Rack / Bin Location Labels

Location Numbering Scheme

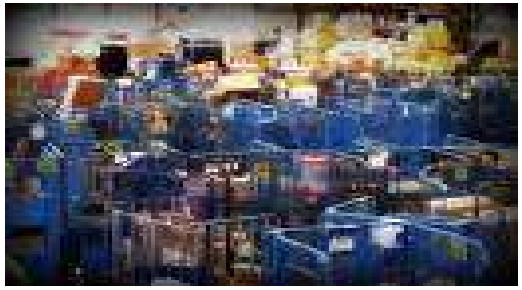
- **Check Digits: random characters printed on each location**
- **Consist of 1 to 3 characters, usually placed at the end of the location number**
- **Used for pick verification (to avoid order picker draws product from wrong location)**

Warehouse Location Management System

1. Informal System
2. Fixed Location System (a.k.a. Dedicated Storage)
3. Part Number System
4. Commodity System
5. Random Location System (a.k.a. Random Storage)
6. Combination System

1. Informal System

- **The product is stored wherever there is space and no record is made**
- **Relies on the warehouse personnel having to remember the location and quantity of each SKU.**
- **Only applicable to a small warehouse with a small number of SKUs, few storage locations, and few employees.**



2. Fixed Location System

- All goods have their locations and every location has its goods.
- Every SKU is assigned an unique and specific location within the warehouse.
- Best suited to a small operation with a small warehouse, small number of SKUs, and small number of employees.
- If formal records are kept and/or a system provides guidance for picking and putaway, this methodology is adaptable for larger size operations.
- However, there must be sufficient storage space and the product offering must be fairly consistent.

3. Part Number System

- It is a hybrid of the fixed location methodology. The difference is that the products are assigned fixed locations based on the sequence of the part numbers (A123 comes before B123).
- This methodology is suited for companies with consistent part number offerings and consistent demand.
- It is not flexible enough for a growing company that introduces new products and has increased demand for popular SKUs. This system is too rigid for a dynamic company.

4. Commodity System

- A commodity system groups materials by product type.
  - It is easiest to think of this as a grocery store where all of the laundry detergents are grouped together.
- Within each group or commodity, location assignments could be fixed, random, or part number sequenced
  - Example: The laundry detergent would be organized by brand and size
- This methodology fits well to a warehouse where there is significant “shopping” for products
  - Only when shopping is an acceptable mode of picking
- This methodology makes it easy to review a category of products for the creation of replenishment orders, etc.

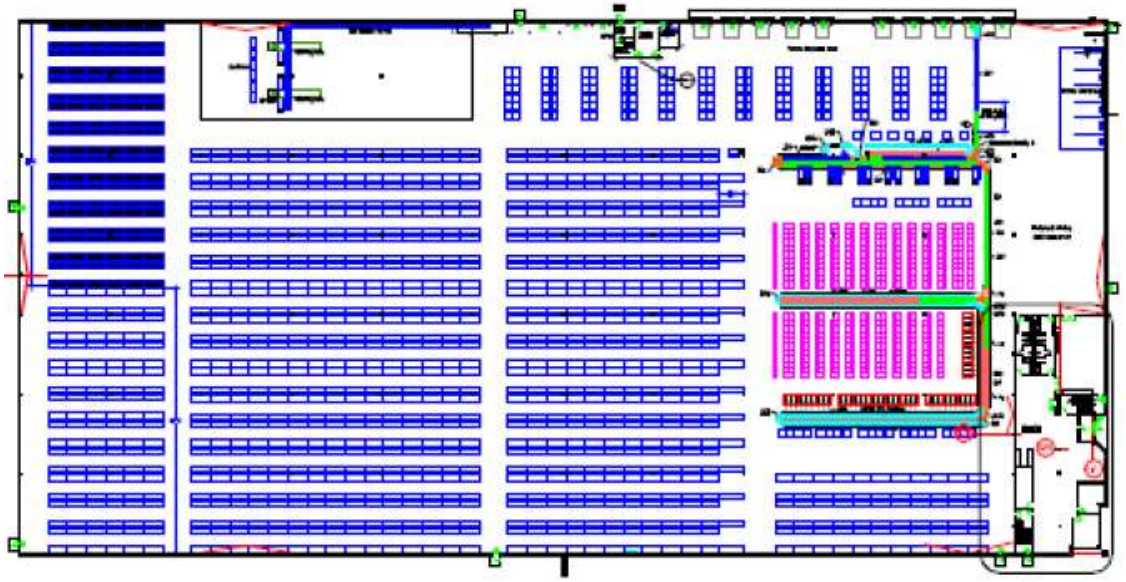
5. Random Location System

- Goods are located in various places throughout the warehouse where there is available storage space
  - location within the warehouse may be limited by physical constraints or the use of storage zones
- Formal records must be maintained to track all locations and quantities.
- This system requires the discipline to update the records in an accurate, timely manner.
- It is the most flexible and universally adaptable as it can be used in small, medium, large, and extremely large operations with low to high volumes

6. Combination System

- **To utilize a combination of the previously mentioned methodologies.**
- **The demands of different areas of the warehouse can dictate different storage systems.**

  Example: The bulk storage area uses random location system, while the forward pick area uses fixed location system.



Learning Outcome

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E215 Warehousing and Storage Topic Flow