

## **GUIDELINES | FC DESIGN**

UNDERSTANDING OPERATIONAL WORKFLOWS AND ASSET REQUIREMENTS

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#### 1. Introduction to fulfilment center

- 1.1. Operational departments
- 1.2. Types of fulfilment centers
- 1.3. Types of layout and flows
- 1.4. Throughput calculations based on carpet area

#### 2. Understanding operational workflows

2.1. Detailed workflow of a fulfilment center

3.

#### 4. Furniture designs and references

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1. INTRODUCTION	

### 1.1 Operational Departments

**TATA IMG** fulfilment center has **4 operational departments** to manage all the goods movement, from receiving to dispatch. They are as mentioned below:

**Note:** 08% to 10% remaining area is utilised for miscellaneous usage,i.e. Office, pantry, toilets, server and electrical room, etc.

Zone 1	Inwarding	<b>10 %</b> Area Contribution			
	Goods procured from different vendors, are received in this zone. The goods go through a physical check for faultiness and quality, before moving further into the warehouse.				
Zone 2	Inventory	<b>60 %</b> Area Contribution			
	The physically verified goods are then kept in the sinventory. Certain goods which requires low tempare kept separately in cold room	erature for storage,			
Zone 3	Quality Check and Packaging	<b>10 %</b> Area Contribution			
	Once order is received, the good are picked from brought to the quality check are for a final 'ch	•			
Zone 4	Logistics and Dispatch	<b>10 %</b> Area Contribution			
	The final packed acode are then handed ever	to the logistics			

The final packed goods are then handed over to the logistics department for dispatch. From here, the goods are delivered to their respective locations.

## 1.3 Layout Types and Flows (Typology A)

## Rectangular Layout with the ratio of L:B at approx. 3:4

		RECTANGLE TY	POLOGY IN THE RATIO	O 3:4 (Length : Width)	
	Property Shape	Square or Rectangle with length:width ratio of 3:4	Square or Rectangle with length:width ratio of 3:4	Square or Rectangle with length:width ratio of 3:4	Square or Rectangle with length:width ratio of 3:4
.OGY	Dock Location	Same face, difference > 30'	Adjacent face, close ends	Adjacent face, extreme ends	Opposite ends
SITE TYPOLOGY	Representation		-	_	ı
	Possible Flow Expected	U- Flow layout	U- Flow layout	L- Flow layout	Through Flow
		,	,	,	ű
	Inwarding	15.39%	19.61%	16.22%	18.43%
N FACTOR	Inventory	48.19%	47.21%	57.99%	42.62%
EXPECTED AREA CONTRIBUTION FACTOR	Quality Check and Packaging	11.79%	16.74%	8.54%	15.86%
D AREA CO	Logistics	7.75%	9.35%	7.32%	9.51%
EXPECTE	Extra for electrical, server, pantry, office, toilets, etc.	16.89%	7.09%	9.94%	13.59%
	Total efficiency	100.00%	100.00%	100.00%	100.00%

## 1.3 Layout Types and Flows (Typology B)

## Linear Layout with the ratio of L:B at approx. 1:3 or higher

		LINEAR TYPOL	OGY IN THE RA	TIO 1:3 (Length : W	/idth) OR HIGHER	
	Property Shape	Linear with length:width ratio of 1:3 or higher	Linear with length:width ratio of 1:3 or higher	Linear with length:width ratio of 1:3 or higher	Linear with length:width ratio of 1:3 or higher	Linear with length:width ratio of 1:3 or higher
	Dock Location	Same face, longer face, difference > 30'	Same face, longer face, difference < 10'	Same face, shorter face, difference < 10'	Adjacent face, close ends	Opposite ends
SITE TYPOLOGY	Representation				1	
SITE TY	Possible Flow Expected	U- Flow layout	U- Flow layout	U- Flow layout	U- Flow layout	Through Flow
	Inwarding	17.26%	15.05%	21.85%	16.46%	18.43%
TION FACTOR	Inventory	41.97%	51.05%	49.30%	47.08%	42.62%
NTRIBUTION	Quality Check and Packaging	12.55%	10.10%	8.40%	11.46%	15.86%
EXPECTED AREA CONTRIBU	Logistics	8.24%	9.21%	9.24%	9.58%	9.51%
EXPECT	Extra for electrical, server, pantry, office, toilets, etc.	19.99%	14.60%	11.20%	15.42%	13.59%
	Total efficiency	100.00%	100.00%	100.00%	100.00%	100.00%

## 1.4 Throughput Calculations (under process\*\*)

Order processing and furniture requirements.\*\*

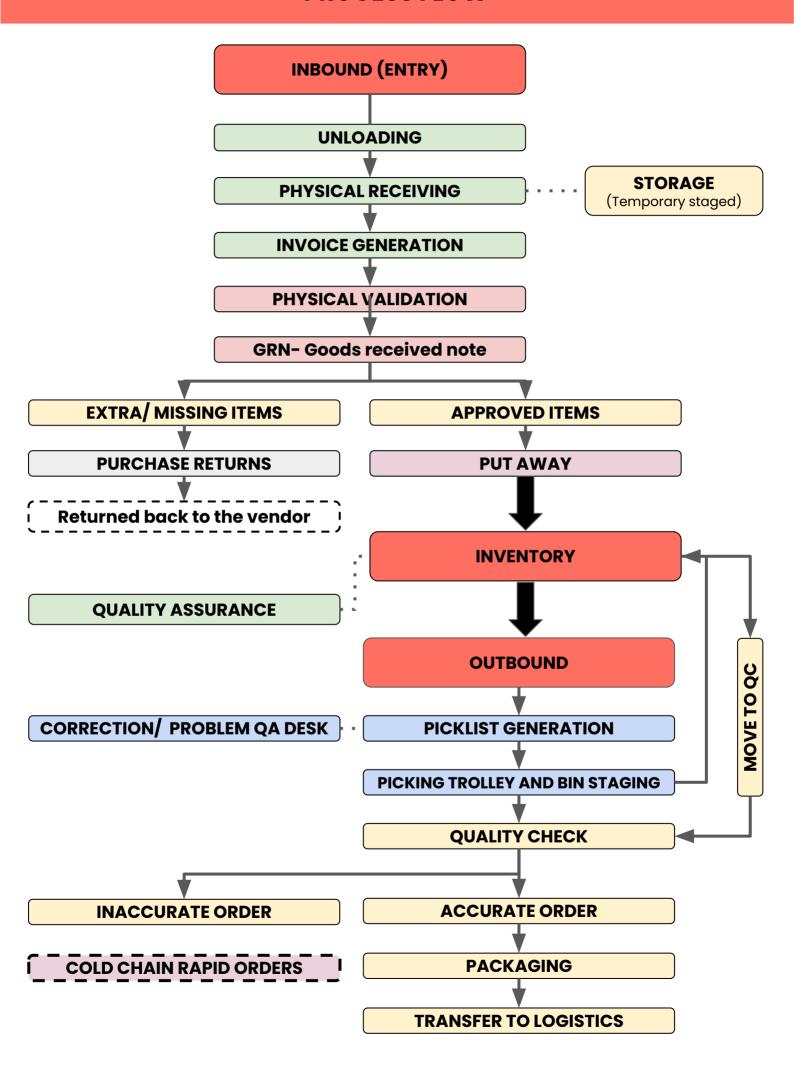
Order processing value (per shift/ day)of different departments					
Processing	PV Table	GRN Table	Put-Away Table	QC Table	Packing Table
Orders per shift	320	360	320	280	296
Orders per day (2 shifts)	640	720	640	560	592

Note: Order processing of a FC happens in 2 shifts, for all locations.

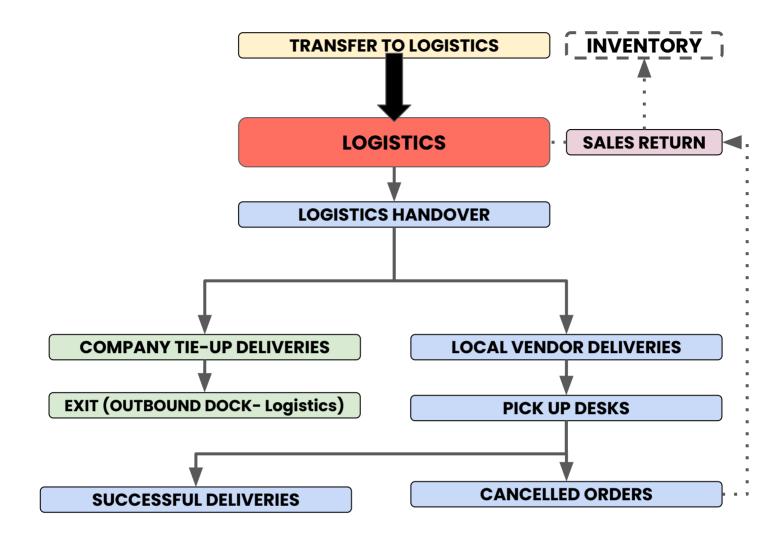
Furniture requirements based on carpet areas					
Carpet Area	Assumed Order	PV table	GRN table	QCP table	
< 5,000	< 2000				
> 5,000	< 2000				
> 10,000	< 2000				
> 15,000	< 2000				
>20,000	< 2000				

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#### **PROCESS FLOW**



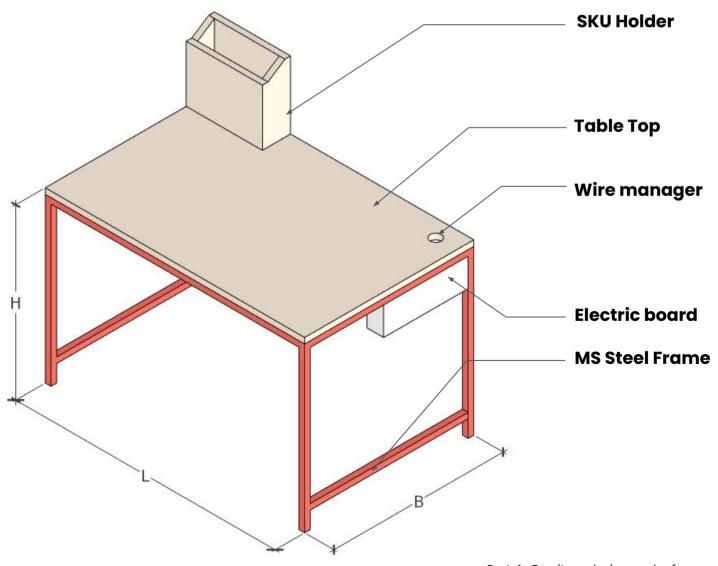
#### **PROCESS FLOW**



# 4. Furniture Designs (under process\*\*)

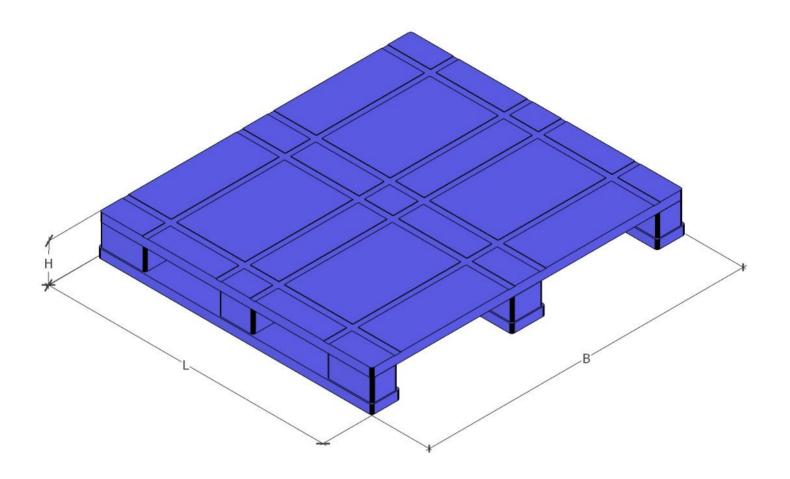
## 4.2 Furniture Design and Details

1. Physical Receiving Table				
Location		Zone 1 : Inwarding		
<b>Size</b> (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
	SKU holder	NA	NA	
Electrical points	6A Raw	6A UPS	LAN	
	01	01	NA	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	

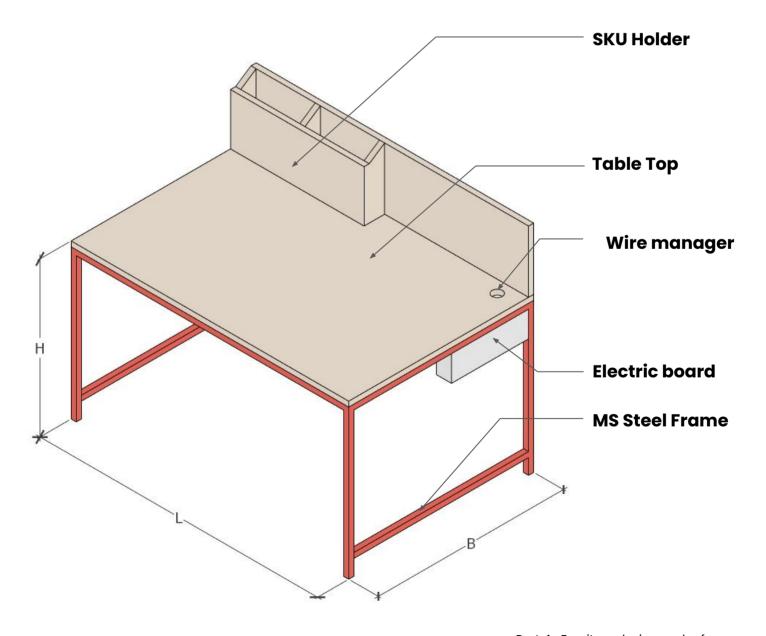


Part 4: Furniture design and references

2. Pallets			
Location	Zone 1 : Inwarding		
<b>Size</b> (Length x Breadth x Height)	3′ 6″ x 4′ 0″ x 0′ 6″		

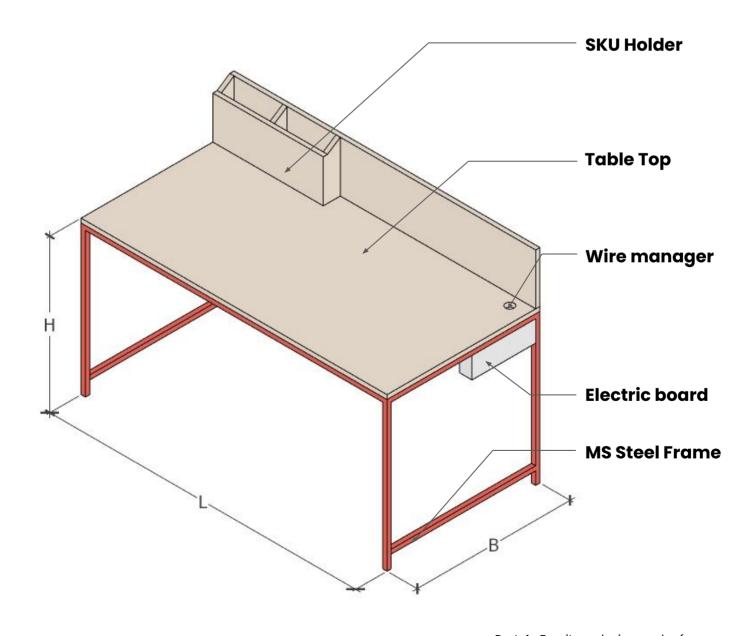


2. Physical Validation Table (B2C)					
Location		Zone 1 : Inwarding			
Size (Length x Breadth x Height)	4′ 6″ x 3′ 0″ x 2′ 6″				
	Storage	Printer	Desktop		
Additional requirements	SKU holder	NA	NA		
Electrical points	6A Raw	6A UPS	LAN		
Licotifical politic	01	02	01		
	MS sections	Table top	Beading		
Finishes	Powder coat	Laminate	PVC		
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory		



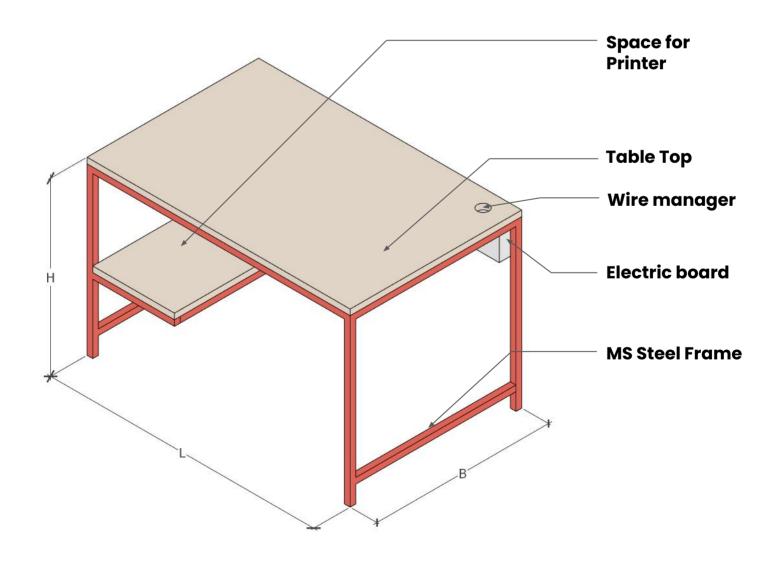
Part 4: Furniture design and references

3.1 Physical Validation Table (B2B)					
Location		Zone 1 : Inwarding			
Size (Length x Breadth x Height)	6′ 0″ x 3′ 0″ x 3′ 0″				
	Storage	Printer	Desktop		
Additional requirements	SKU holder	NA	NA		
Electrical points	6A Raw	6A UPS	LAN		
Lioutiloui pointo	01	02	01		
	MS sections	Table top	Beading		
Finishes	Powder coat	Laminate	PVC		
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory		



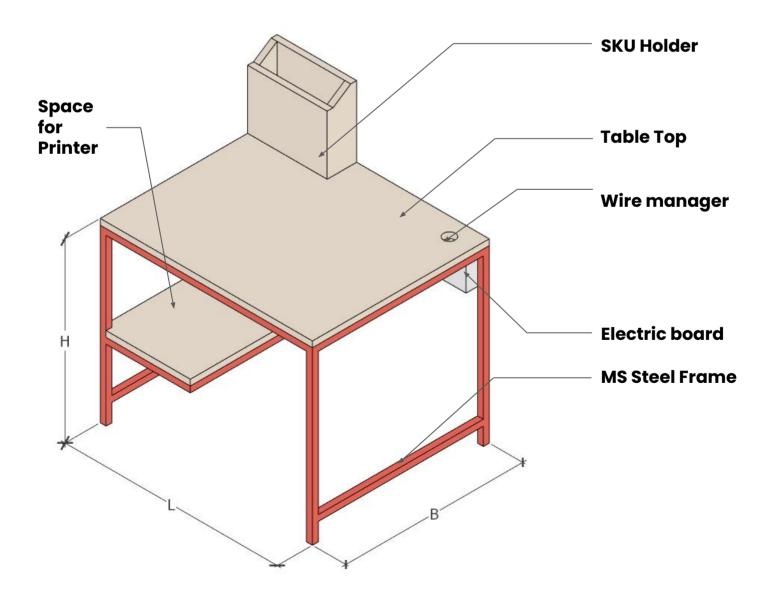
Part 4: Furniture design and references

4. Purchase Returns Table (B2B)				
Location		Zone 1 : Inwarding		
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
	Storage	Printer	Desktop	
Additional requirements	NA	Yes	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Electrical politics	01	02	01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



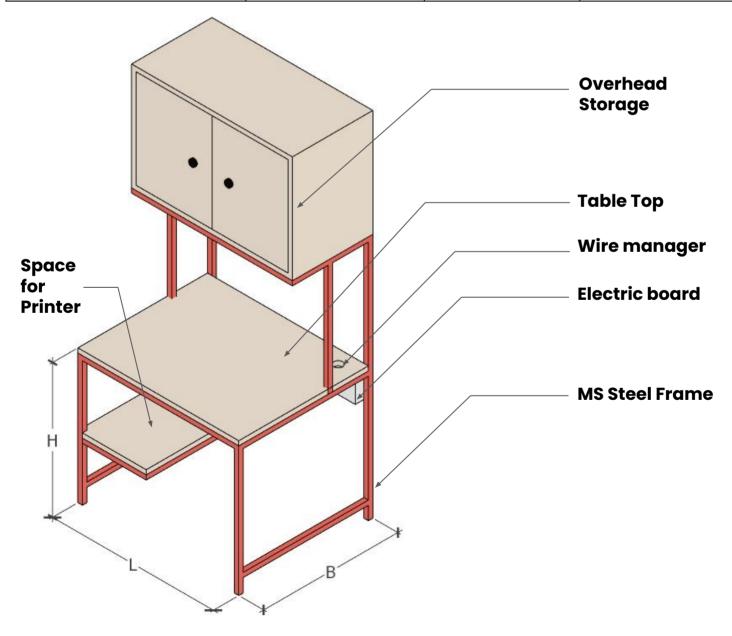
Part 4: Furniture design and references

5. GRN Table				
Location		Zone 1 : Inwarding		
Size (Length x Breadth x Height)	3′ 0″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
Additional requirements	SKU holder	Yes	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Lioutiloui pointe	01	01		
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral Royal Ivory (3515 SUD) - New Mika		Ivory	



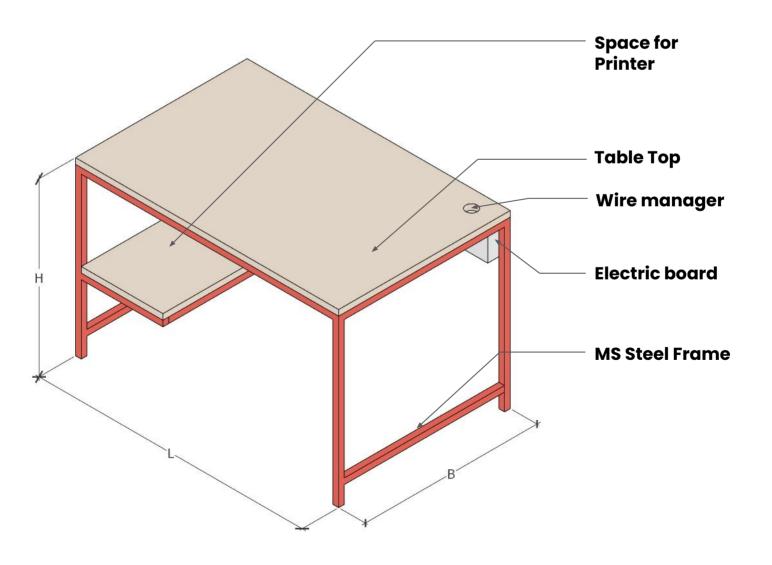
Part 4: Furniture design and references

6. QA Table				
Location	Z	Zone 1: Inwarding		
Size (Length x Breadth x Height)	3′ 0″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
Additional requirements	Overhead Close Shelf	Yes	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Licotrical points	01	02	01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



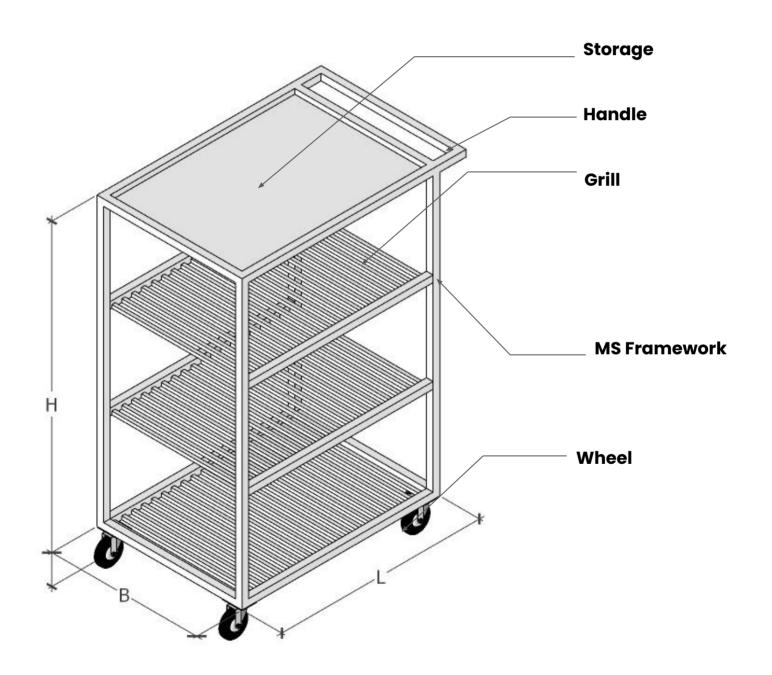
Part 4: Furniture design and references

7. Put-away Table				
Location		Zone 1 : Inwarding		
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
Additional requirements	NA	Yes	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Licotriodi politto	01 02		01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	

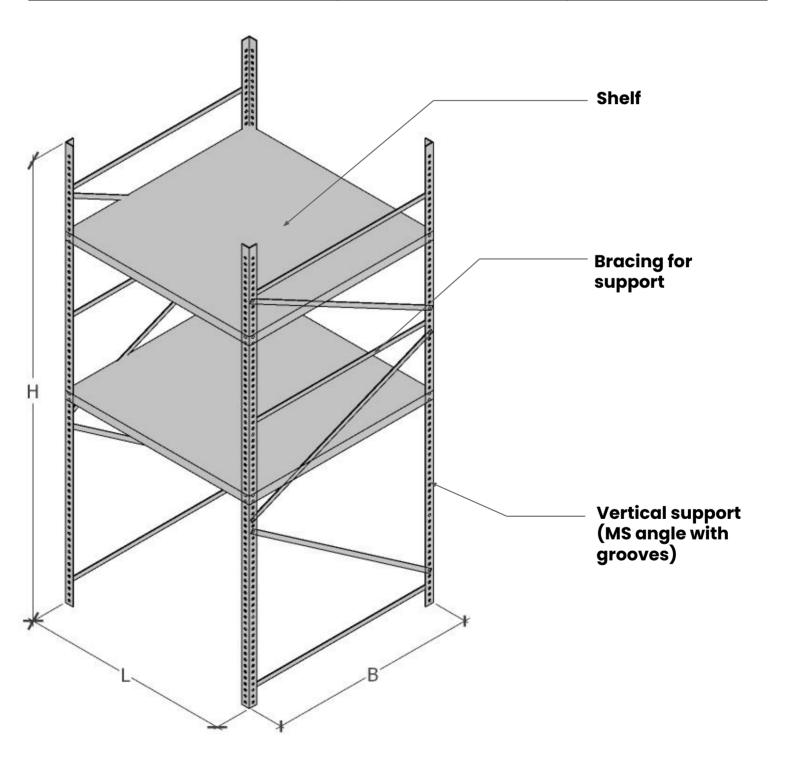


Part 4: Furniture design and references

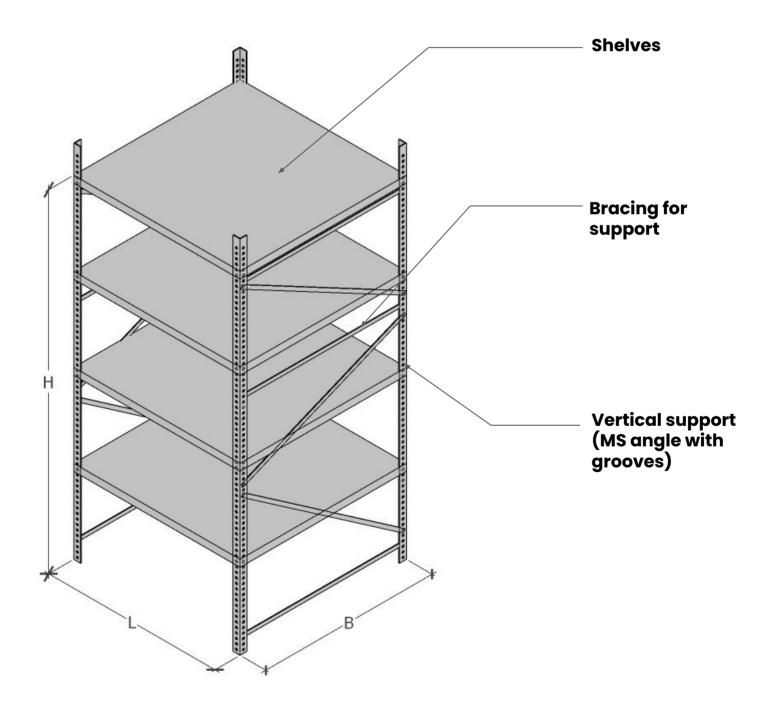
8. Put-away Trolley				
Location	Zone 1 : Inwarding			
<b>Size</b> (Length x Breadth x Height)	2′ 6″ x 1′ 10″ x 4′ 0″			
	MS Framework Trolley top Powder coat MS Sheet			
Finishes				
	-			



1. Large Span Shelving (LSS)				
Location	Zone 2 : Inventory			
<b>Size</b> (Length x Breadth x Height)	4′ 0″ x 4′ 0″ x 8′ 0″			
	MS Vertical Support & Bracing	Shelves (MS Sheet)		
Finishes	Powder coat	MS Sheet		
	Grey			

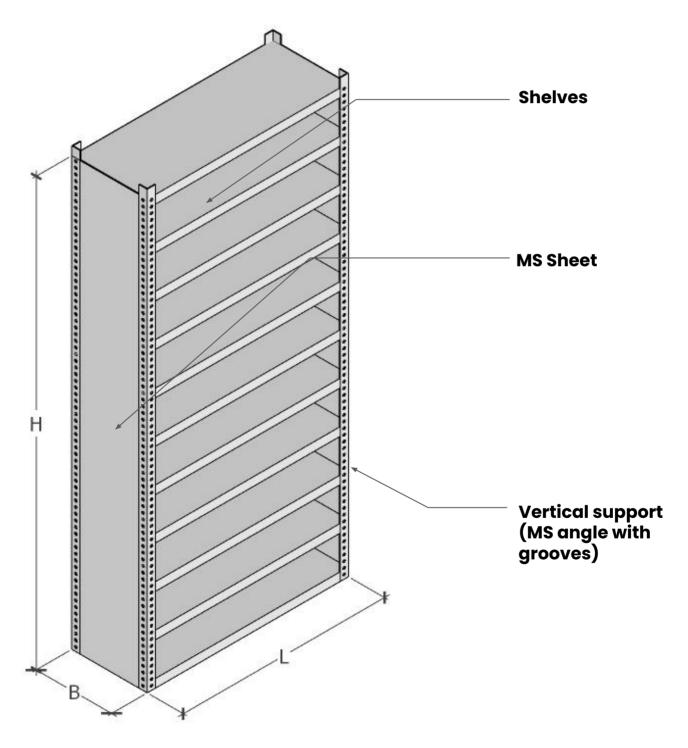


2. Medium Span Shelving (MSS)				
Location	Zone 2 : Inventory			
<b>Size</b> (Length x Breadth x Height)	4′ 0″ x 4′ 0″ x 8′ 0″			
	MS vertical Support	Shelves (MS Sheet)		
Finishes	Powder coat	Powder Coat		
	Living coral	Royal Ivory (3515 SUD) - New Mika		

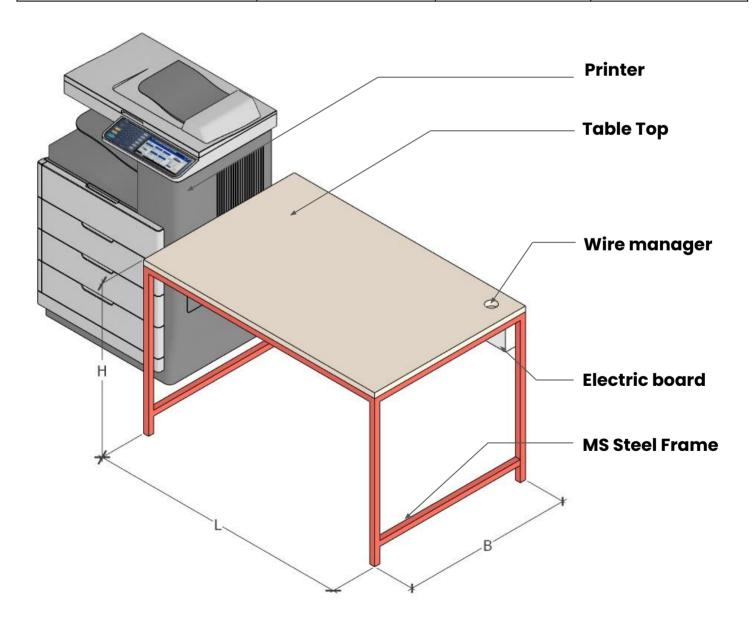


Part 4: Furniture design and references

3. Normal Racks				
Location	Zone 2 : Inventory			
<b>Size</b> (Length x Breadth x Height)	4′ 0″ x 4′ 0″ x 8′ 0″			
	MS vertical Support	Shelves (MS Sheet)		
Finishes	Powder coat	Powder coat		
	Living coral	Royal Ivory (3515 SUD) - New Mika		

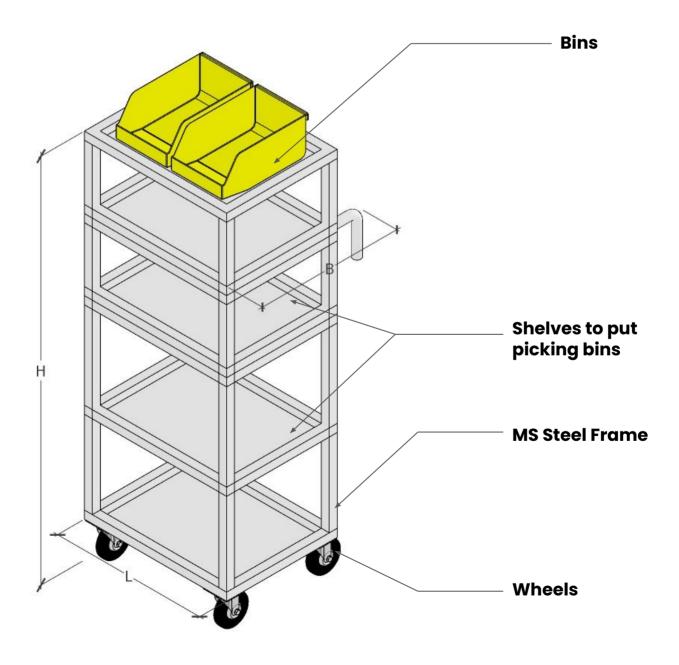


1. Picklist Generation Table					
Location	Zone 3 : Quality Check & Packaging				
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″				
Additional requirements	Storage	Storage Printer Deskto			
Additional requirements	NA	Big Size	Yes		
Electrical points	6A Raw	6A UPS	LAN		
Lioutiou pointo	01	02	01		
	MS sections	Table top	Beading		
Finishes	Powder coat	Laminate	PVC		
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory		

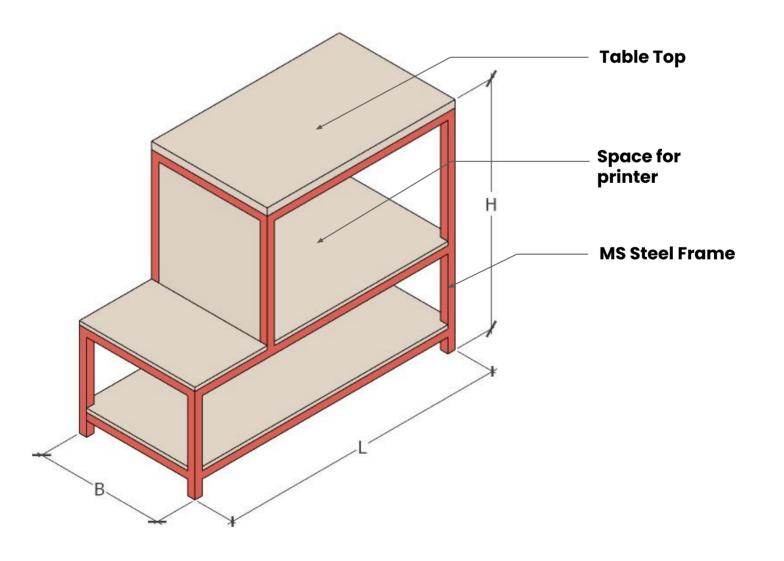


Part 4: Furniture design and references

2. Picking Trolley				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	l' 6" x l' 5" x 4' 0"			
	MS sections	Table top	Beading	
Finishes	Powder coat Laminate PVC			
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	

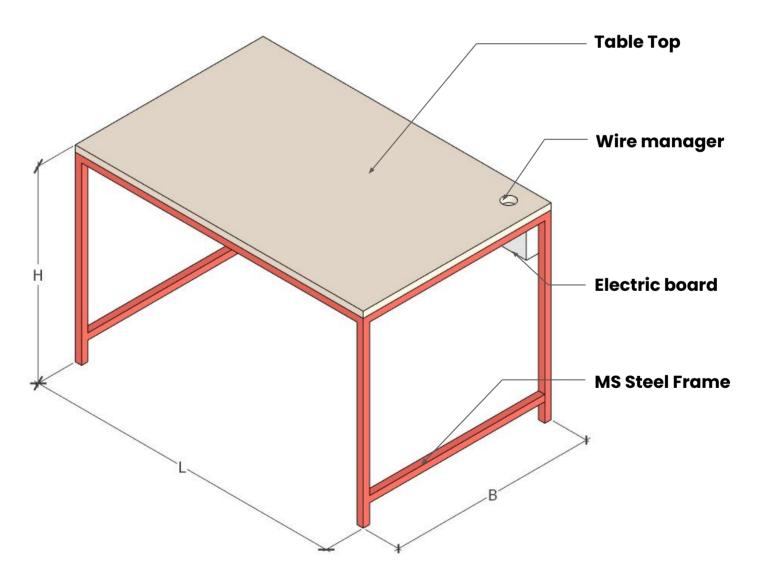


3. QC Staging Table				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	3′ 0″ x 1′ 4″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
Additional requirements	NA	Yes	NA	
Electrical points	6A Raw	6A UPS	LAN	
Lioutiloui pointe	01 02		01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	



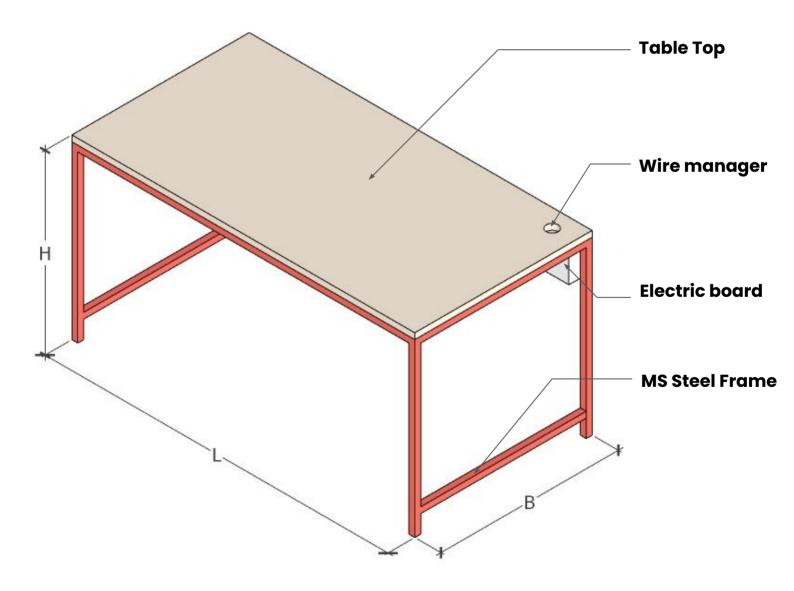
Part 4: Furniture design and references

4. Correction Table				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
Additional requirements	NA	NA	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Lioutiou pointo	01	02	01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	



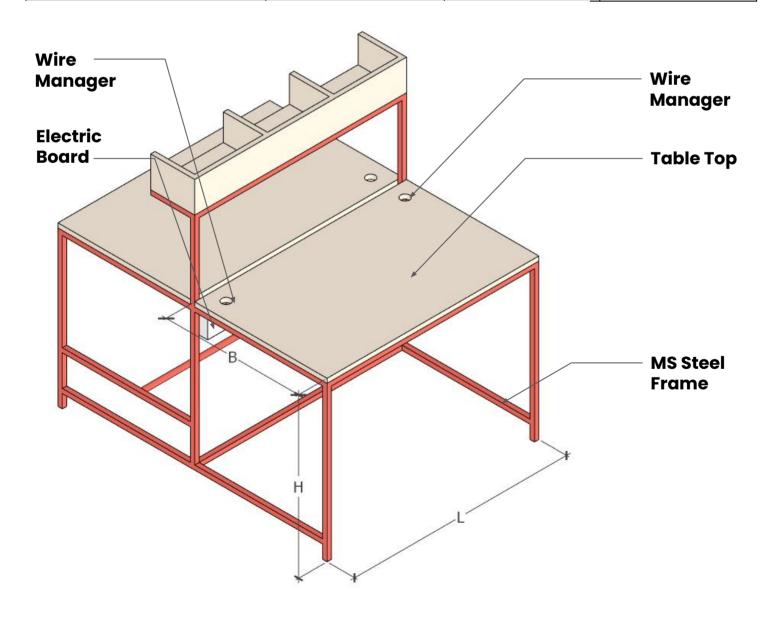
Part 4: Furniture design and references

5. Handover Table (FC side, Logistics Side & Sales Return)				
Location	Zone 3 / Zone 4 : Quality Check & Packaging / Logistics			
Size (Length x Breadth x Height)	4′ 10″ x 2′ 6″ x 2′ 6″			
Additional roquiron onto	Storage	Printer	Desktop	
Additional requirements	NA	Yes	Yes	
Electrical points	6A Raw	6A UPS	LAN	
Lioutiou pointo	01	02	01	
	MS sections	Table top	Beading	
Finishes	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



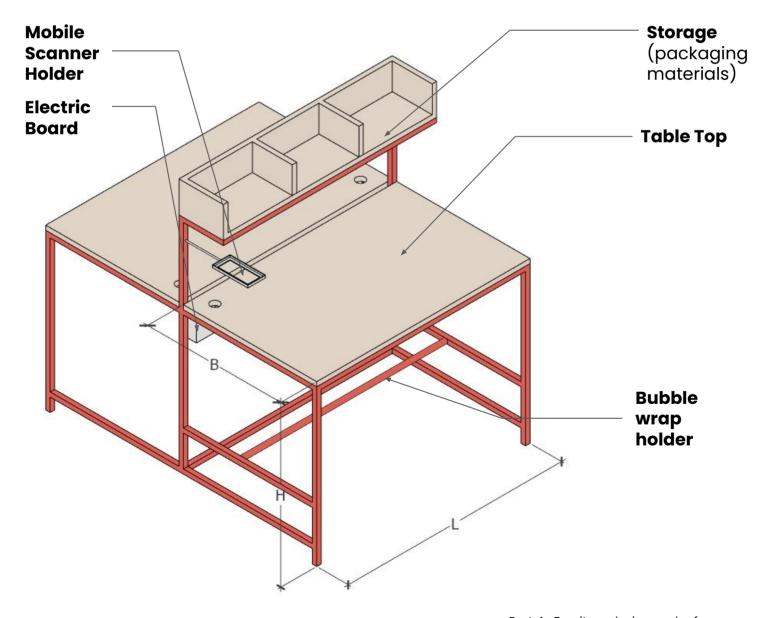
Part 4: Furniture design and references

6. QCP Table (QC Side)				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	4′ 10″ x 2′ 6″ x 2′8″			
Additional requirements	Storage	Printer	Desktop	
	NA	NA	Yes	
Electrical points	6A Raw	6A UPS	LAN	
	01	02	01	
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



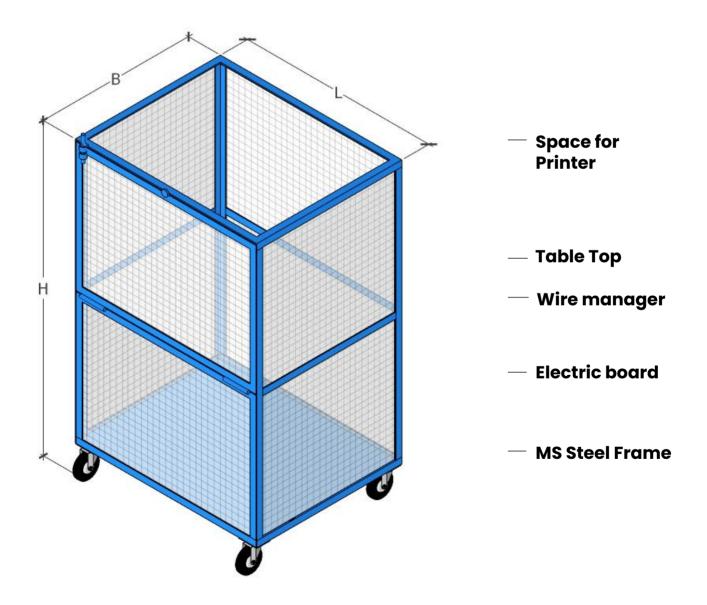
Part 4: Furniture design and references

7. QCP Table (Pack Side)				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	4′ 10″ x 2′ 6″ x 2′8″			
Additional requirements	Storage	Printer	Desktop	
	Bubble Wrap	NA	NA	
Electrical points	6A Raw	6A UPS	LAN	
	01	02	01	
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	

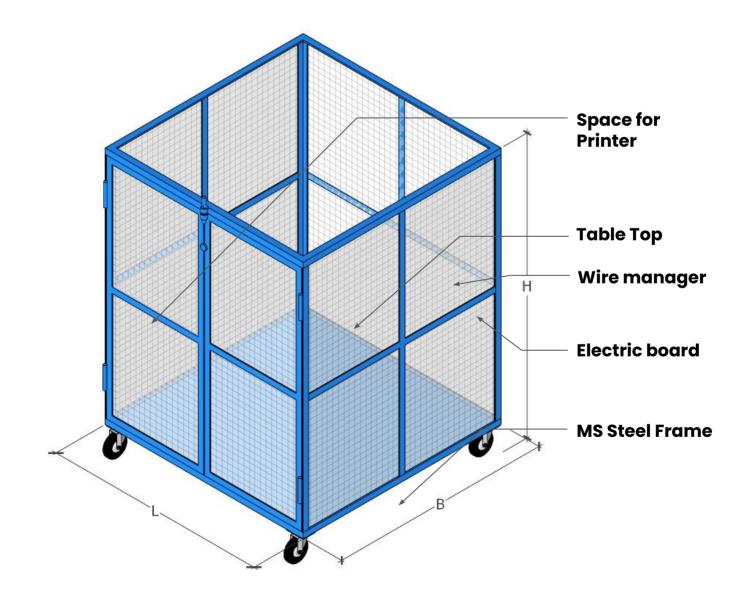


Part 4: Furniture design and references

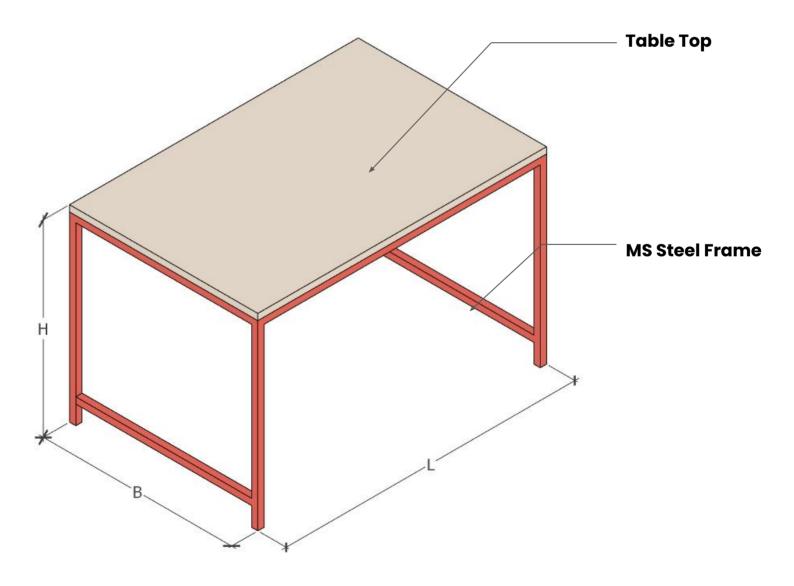
8. Packers Trolley				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	2′ 6″ x 1′ 8″ x 2′ 10″			
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



2. Rolling Cage				
Location	Zone 3 : Quality Check & Packaging			
Size (Length x Breadth x Height)	2′ 6″ x 1′ 8″ x 2′ 10″			
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	

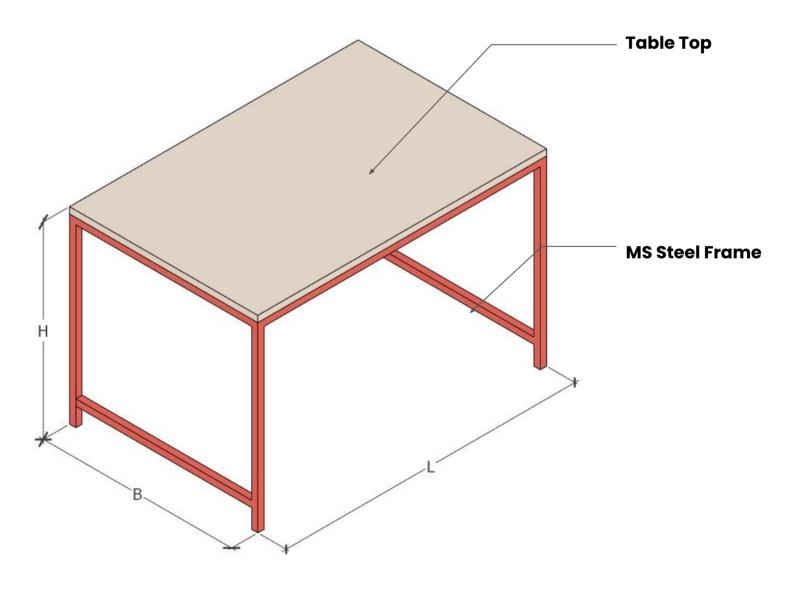


4. Pick-up Desk				
Location	Zone 4 : Logistics			
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
	NA	NA	NA	
Electrical points	6A Raw	6A UPS	LAN	
	NA	NA	NA	
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	Ivory	



Part 4: Furniture design and references

4. Security Desk				
Location	Zone 4 : Logistics/ Employees Entry			
Size (Length x Breadth x Height)	3′ 10″ x 2′ 6″ x 2′ 6″			
Additional requirements	Storage	Printer	Desktop	
	NA	NA	NA	
Electrical points	6A Raw	6A UPS	LAN	
	NA	NA	NA	
Finishes	MS sections	Table top	Beading	
	Powder coat	Laminate	PVC	
	Living coral	Royal Ivory (3515 SUD) - New Mika	lvory	



Part 4: Furniture design and references