PROJECT ANALYSIS

Functions Analysis:-

Components analysis:-

![Project's Components Diagram]

- Human
- Activity
- Spatial
Activities table:
Space study:
Main spaces:
Production halls:
Spinning hall:
Blow room:

Uni floc A11
Carding:

C 70 card with RSB module
Administration spaces:

- **Some areas required for employees in administrative buildings:**
  - The average employee needs an area of 2.30m².
  - The employee dealing with the public needs an area of 2.50m².
  - Secretarial room not less than 10 m².
  - One employee in a private office needs an area of 9 m².
  - Employee in a shared room with another employee 5 m².
  - Employee in a staff room 3.8-4 m².
  - The individual needs an area of 2.5 m² in the meeting room.

- **Administrative office types are divided into two types:**
  1. **Open offices:**
     - It is an open area that includes a number of employees in which offices are separated by the use of glass partitions.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective and efficient vacuum user</td>
<td>The initial cost is high</td>
</tr>
<tr>
<td>Allows optimal exploitation of space available</td>
<td>Insulation is very poor</td>
</tr>
<tr>
<td>Featuring high flexibility and possibility of configuration</td>
<td>The difficulty of distributing mechanical equipment</td>
</tr>
<tr>
<td>Easy supervision and control</td>
<td></td>
</tr>
<tr>
<td>Easy communication between employees</td>
<td></td>
</tr>
</tbody>
</table>

*Table (3-): Advantages and Disadvantages of Open Offices*

- **Open office distribution modes:**

  (3-) Standard dimensions for office furniture
  (Open office distribution positions)
- **Dimensions and corridors:**
  - Due to the high number of workers, the width of the large and the middle corridor is designed to allow the passage of 3 to 4 people and to design the width of the side corridor for the passage of one to two persons.

2. **Closed Office:**
- Offices that are insulated with fixed walls so that the employee who works in it is independent and is usually used for managers and senior staff.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide the required confidentiality</td>
<td>Difficulty supervising and monitoring employees</td>
</tr>
<tr>
<td>Allows focus on work</td>
<td>It occupies a large area</td>
</tr>
<tr>
<td>Achieve independence and privacy</td>
<td>Lacking flexibility</td>
</tr>
<tr>
<td>Easy to distribute mechanical equipment</td>
<td></td>
</tr>
<tr>
<td>Provide the required confidentiality</td>
<td></td>
</tr>
</tbody>
</table>

**Table (3-): Advantages and Disadvantages of closed Offices**

1. **Executive Director office:**
   - Activity: factory Management.
   - Furniture required: Desk - Meeting table - Seating set - Wardrobe - Bathroom - Small room.
   - Space area: 58.00 m².
2. Executive Director deputy office:
Activity: Office activity.
Furniture Required: -
Office - Seating Set - Wardrobe.
Area of the space: 45 m².

3. General manager's office:
Furniture required: Office - Seating - Wardrobe
Area of the space: 25 m².
4. Office of Directors: -  
Activity: Office activity.  
Required Furniture: Office - Seating Set - Wardrobe.  
Area of the space: 33 m².

(Office of Directors)

Meeting Room:  
• Furniture used: Social table - Bearings.  
• The area of the individual in the space: 2.5 m².  
• Number of users: 12 individuals.  
• Area of the apartment: 30 m²

Seminars hall:  
• The hall is used to give lectures and receive information

(3- ) Different forms of halls

• The area of the individual in the space 0.8m².  
• Number of users: 100 individuals.  
• Area of the space: 80 m².
Service spaces:-

praying area:--
The area of the individual in the space 0.86m².
Number of users: 500 individuals.
Area of the space: 430 m².

Parking area :-
The area of the car in the space: 12.5 m².

( Dimensions of parking)

(Some forms of parking situations)
Spatial component:

Spatial Component

Main
- Manufacture Buildings
  - Spinning Building
  - Weaving Building
  - Mesh Building
  - Dyehouse Building
- Manufacture Service Buildings
  - Operate And Control Rooms
  - Workshops
  - Stores
  - Loading Bays

Supporting
- Management Building
  - G.M. Department
  - Production Department
  - Engineering Department
  - Administration Departments
- General Service
  - Parkings
  - Security Rooms
  - Dinning House
  - Landscapes
# Spaces Table:

<table>
<thead>
<tr>
<th>ZONE</th>
<th>SPACE</th>
<th>AREA m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUFACTURE BUILDINGS</td>
<td>SPINNING BUILDING</td>
<td>28,000</td>
</tr>
<tr>
<td></td>
<td>WEAVING BUILDING</td>
<td>6,300</td>
</tr>
<tr>
<td></td>
<td>MESH BUILDING</td>
<td>448</td>
</tr>
<tr>
<td></td>
<td>DYEHOUSE BUILDING</td>
<td>6,300</td>
</tr>
<tr>
<td>MANUFACTURE SERVICE BUILDINGS</td>
<td>OPERATE AND CONTROL ROOMS</td>
<td>1,100</td>
</tr>
<tr>
<td></td>
<td>WORKSHOPS</td>
<td>420</td>
</tr>
<tr>
<td></td>
<td>WAREHOUSE</td>
<td>13,200</td>
</tr>
<tr>
<td></td>
<td>ROW COTTON STORE</td>
<td>51,000</td>
</tr>
<tr>
<td>GENERAL SERVICE</td>
<td>ADMINISTRATION BUILDING</td>
<td>1,100</td>
</tr>
<tr>
<td></td>
<td>PARKINGS</td>
<td>420</td>
</tr>
<tr>
<td>SUPPORTING SPATIAL</td>
<td>SECURITY ROOMS</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>DINNING HOUSE</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>LANDSCAPES, MOVEMENT</td>
<td>22,700</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL AREA</strong></td>
<td><strong>131,888</strong></td>
</tr>
</tbody>
</table>
Movement charts:-

Movement of workers scheme
Production line
Functional relationships:

(3- ) Main Spaces Bubble Diagram

(3- ) General Bubble Diagram
Site Study:-

Suggested sites:-

- All 3 sites are located in Wad- Madani, Aljazirah state, Sudan.
Site 1:-
  • It’s located in the industrial sector of Wad Madani.

Site 2:-
  • It’s located in Marenjan, Wadd Madani.
Site 3:-

It's located in Marenjan, Wad Madani.

- **Comparison:-**

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>35%</td>
<td>15%</td>
<td>33%</td>
<td>30%</td>
</tr>
<tr>
<td>Accessibility</td>
<td>15%</td>
<td>15%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Neighbors</td>
<td>25%</td>
<td>20%</td>
<td>24%</td>
<td>23%</td>
</tr>
<tr>
<td>Services</td>
<td>15%</td>
<td>9%</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>Shaping and orientation</td>
<td>10%</td>
<td>7%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td><strong>66%</strong></td>
<td><strong>87%</strong></td>
<td><strong>83%</strong></td>
</tr>
</tbody>
</table>

- The table shows that the best site is **SITE 2**.
Location:-

- The site lies in Marinjan industrial area, Wad-Madani Locality, Al Jazirah State.
- The site is surrounded by industrial buildings from all sides.
Reasons for choosing the site:

- Availability of services (electricity and water supply, public transportation by the main road etc)
- Good orientation
- Suitable for industrial building, as to its surroundings
- Close to the area of raw material production.

Services and neighbors:-
Weather analysis:

Solar radiation:
The region's sky is clear most days of the year and the sun's brightness is about 11 hours / day during the year. This rate is relatively low due to the volume of moving clouds during the rainy season, so that the sun's brightness is about 9 hours / day. The angle of the sun's rays is tilted and distributed over a larger surface area, thus increasing the rate of acquisition in the eastern and western elevations.

Temperature:

(4- ) Maximum and Minimum Temperature Degree Chart
Relative humidity:

(4- ) Relative Humidity Percentage Chart

Total rain fall:

(4- ) Total rain fall Chart
**Indicators:**

- Stores should be put in the west side of the site close to the railway; so it will ease the handling of loading and delivery process.
- Production halls orientation should be east-west to reduce air pollution.
- Use sun shades with the production halls' walls to reduce the heat.
- Raw cotton store put in the south-west side of the site to avoid the fire expansion to the neighbors.
- Production line starts from the raw cotton store in the south and ends in the west side at the products stores.
- Green areas around the site to reduce pollution.
- The administration building orientation north-south to get the best natural ventilation possible.
Zoning:-