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**ISYE-560 Facilities Planning and Design Project 2**

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# Executive Summary

# Introduction

In this project we are designing a new production facility, and the location of this facility is in North Carolina based on the assessment of the company’s supply chain. Here, most of the raw materials and production parts are imported through the port from New Jersey/New York and Virginia. The company has opted to acquire a building located outside Charlotte, North Carolina, with the goal of designing the facility to sustain stability over a three-year period.

Forecasts for the following year have been made by the sales department, which anticipates growth. However, demand predictions will be re-evaluated on a quarterly basis to ensure continuous improvement. Figure below depicts the facility, which measures 350 feet by 450 feet and is adjustable for remodeling to meet our specific needs. Currently, the main entrance is on the southwest corner, with doors facing south. The goal is to place the front desk/check-in location in this section.

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Fig. 1 Outline of the Facility

**Data Description**

The data file includes the information of Facility layout with departments and their required floor space in sqft.

The layout grid size is 18 x 14, which results in a total of 252 boxes. one grid size is 25 x 25 and total grid size is 625 sqft. When dividing all required floor space by 625, we get value which needs to be round off.

|  |  |
| --- | --- |
| **Minimum Required Departments/Areas** | **Minimum Capacity/Floor Space (sq ft)** |
| Raw Materials Storage | 10,000 |
| Finished Goods Storage | 15,000 |
| Shipping | Unknown |
| Receiving | Unknown |
| Production | Unknown |
| Packaging | 10,000 |
| Front Desk | 1,500 |
| Restrooms | 500 for each |
| Office Space | 5,000 |
| Storage for forklift equipment | Unknown |
| Cafeteria | Unknown |
| Aisles for personnel movement | Unknown |
| Aisles for forklift movement | Unknown |

**Table 1 Information of Facility Layout with Departments and Floor Space**

Methodology

Explain the methodologies you used. What objective function measure are you going to use to compare the layouts? Did you make any assumptions before applying any of the algorithms?

|  |  |  |
| --- | --- | --- |
| **Minimum Required Departments/Areas** | **Minimum Capacity/Floor Space (sq ft)** | For each |
| Raw Materials Storage | 10,000 | 16 |
| Finished Goods Storage | 15,000 | 24 |
| Shipping | 10,000 | 24 |
| Receiving | 15,000 | 16 |
| Production | 31,875 | 51 |
| Packaging | 10,000 | 16 |
| Front Desk | 1,875 | 3 |
| Restroom 1 | 625 | 1 |
| Restroom 2 | 625 | 1 |
| Restroom 3 | 625 | 1 |
| Restroom 4 | 625 | 1 |
| Restroom 5 | 625 | 1 |
| Restroom 6 | 625 | 1 |
| Restroom 7 | 625 | 1 |
| Office Space | 5,000 | 8 |
| Storage for forklift equipment | 10,000 | 4 |
| Cafeteria | 5000 | 6 |

# Results/Conclusions

Present the results and discuss. What do you conclude or interpret from these layouts? What are the advantages and disadvantages?

# Other Impacts (10 points)

# Identify factors (i.e. economical, environmental, political, etc) that you were unable to quantify or consider in your analysis. Discuss the potential impact these factors have on your recommendation.Recommendations\Next Steps (15 points)

What do you recommend for an alternative layout and why? What are the advantages or disadvantages, and what additional analysis do you recommend being performed?