

Plastic Housewares Manufacturer

Leominster, Massachusetts

Facility Planning & Analysis Services

- Facility Layout Optimization
- Project Management
- Master Planning
- Warehouse Sizing

A manufacturer of plastic household goods, required assistance in conceptual planning to consolidate three interacting facilities (a manufacturing facility, an assembly facility, and a warehouse) into an integrated facility. The project team's focus for this project was to:

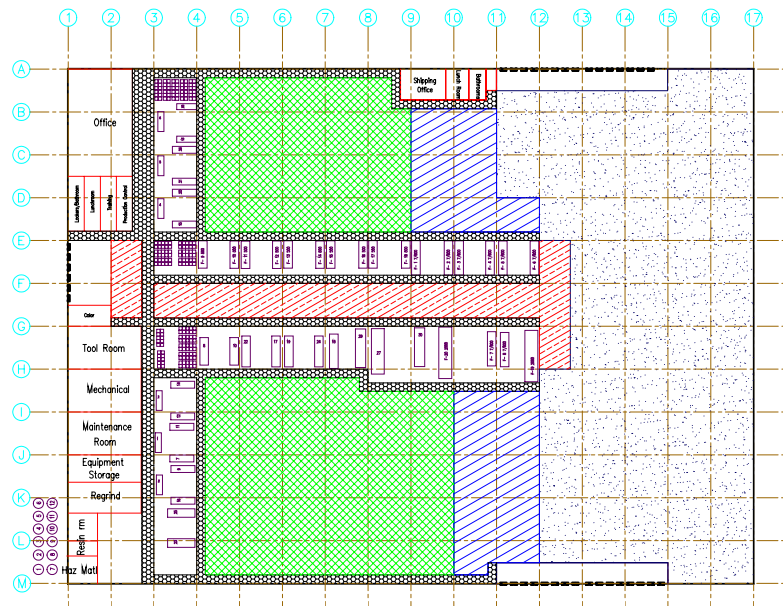
- perform the overall management of the master planning
- develop the square footage requirement of the entire facility
- optimize the layout of all departments within this facility
- determine equipment utility requirements
- work with other teams, including cost estimating, architectural, and site analysis.

Over 50 layout concepts were generated incorporating the demands of different project teams. Using an automated layout analysis method, the performance of each layout was quantified by assigning a unitless score based on the relationships between workcenters. The layouts were then ranked by their score. Top ranking conceptual layouts were then evaluated by the entire project team and the client's senior management until a consensus on a single layout was achieved.

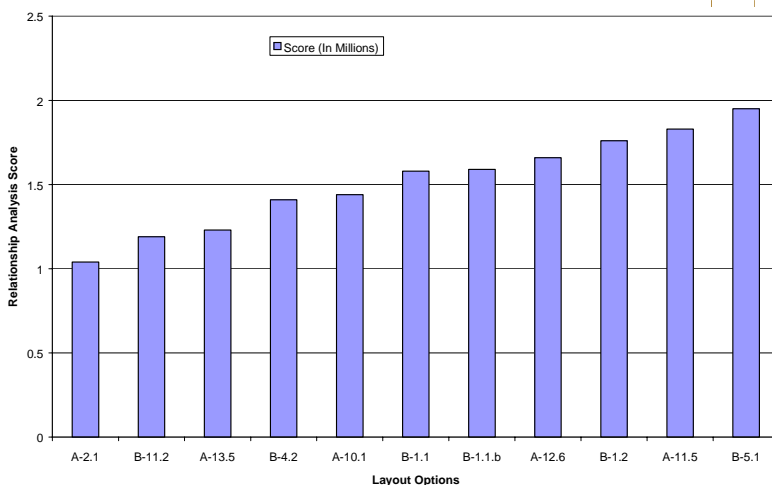
Results of the facility analysis and layout optimization included:

- ✓ Estimated Construction costs savings of **\$4.83 Million**
- ✓ Reduced facility square footage by **23%** utilizing an improved methodology to determine warehouse size.
- ✓ Developed optimized layout that enabled the client to re-engineer their manufacturing process while not compromising their commitments to their customers

This drawing represents the final layout concept; the black hatched areas represent main aiseways. The remaining hatched areas represent the raw material storage, assembly, WIP storage, and finished goods warehouse. The purple blocks depict the plastic injection molding machines. The layout was developed considering future expansion possibility (blue speckled area on the right side). The workcenters were placed to facilitate a cross-dock production where the receiving docks are along the left side and the shipping docks are along the right side of the upper and lower ends of the facility. Also note that the facility was divided into two halves to accommodate the separate product types that required different manufacturing processes.



Comparison of Relationship Analysis Scores for Each Layout Option



This chart illustrates the ranking of each layout option. The best eleven (11) layout options of the over fifty developed are shown. The lower the score the better the layout optimizes the spatial relationships.