



Minocqua Manufacturing, Inc. Layout Proposal

Team 6

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Executive Summary

- Continue to outsource welding operations
- Savings incurred by bringing welding on-site not substantial enough to fund purchase of new TIGs, MIGs, and surface grinders needed
- Growth rate of 8% used to determine machine requirements over the next 10 years
- New facility will create a welcoming yet productive work environment

Capacity Analysis Summary

- Utilization rate of 90% or greater triggers purchase of a new machine
 - 10% capacity cushion will allow time for machine repair/maintenance
- Found effective capacity of each machine given utilization rate, number of machines currently being used, & projected output/demand for year 1, then used this number to calculate utilization rate for each year after
- Machine requirements to cover growth over the 10 years:

Machine Type	Shear Press	Laser Cutter	Vertical Milling Machine	Horizontal Milling Machine	Press Break	Punch Press	CNC Lathe	Surface Grinder	Drill Press	Pipe Bender	Horizontal Band Saw
Number Required	5	4	6	4	7	4	4	8	6	4	7

Factor Analysis Summary

- Safety (10)
- Flow of Materials (8)
- Space Utilization (4)
- Storage Effectiveness (2)

Plant/Area Minocqua Manufacturing

Project New Facility

Date April 25th, 2018

Description of Alternatives:

A. Machine Shop Candidate #1

B. Machine Shop Candidate #2

C. Overall/Department Candidate #1

D. Overall/Department Candidate #2

Weight set by: Team 6

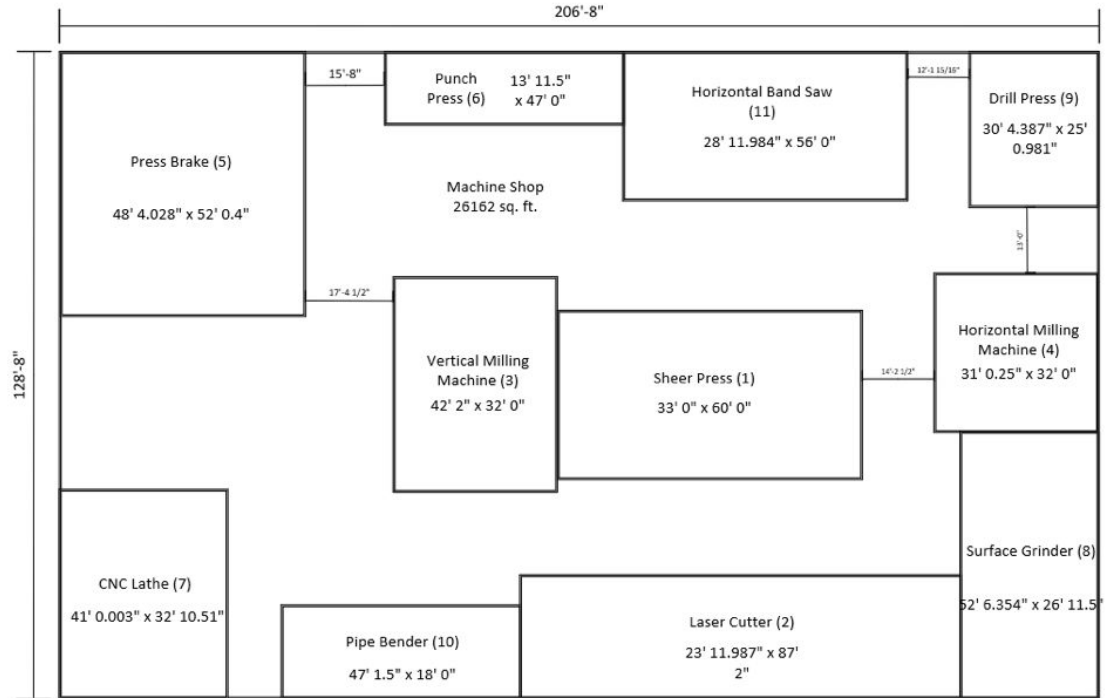
Ratings by: Team 6

Tally by: Team 6

FACTOR/CONSIDERATION	WT	A	B		C	D	COMMENTS
1 Safety	10	E 30	I 20		I 20	E 30	
2 Space Utilization	4	O 4	I 8		A 16	I 8	
3 Flow of Materials	8	I 16	I 16		I 16	E 24	
4 Storage Effectiveness	2	U 0	U 0		E 6	E 6	
TOTALS		50	44		58	68	

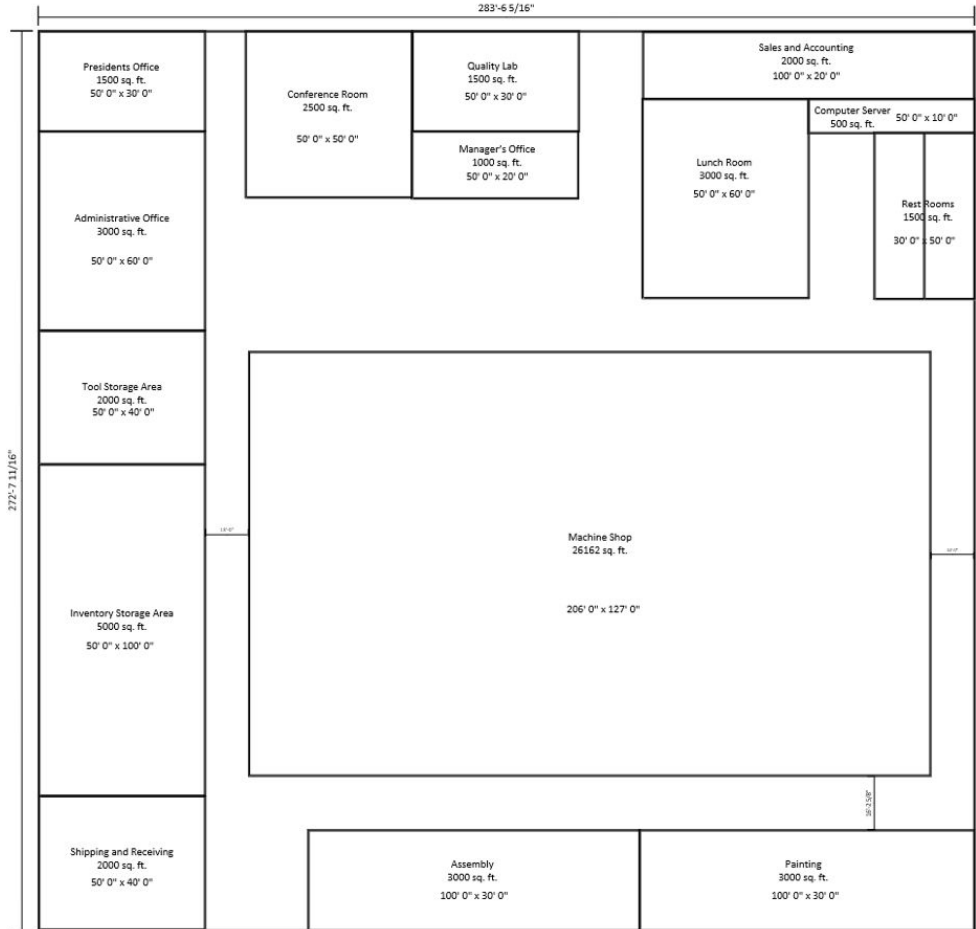
Block Diagram: Machine Shop

- Combined flow and non-flow considerations
- Each machine section accommodates future growth



Block Diagram: Overall Layout

- Separation between offices and manufacturing departments
- Maximize material flow



Material Handling Systems

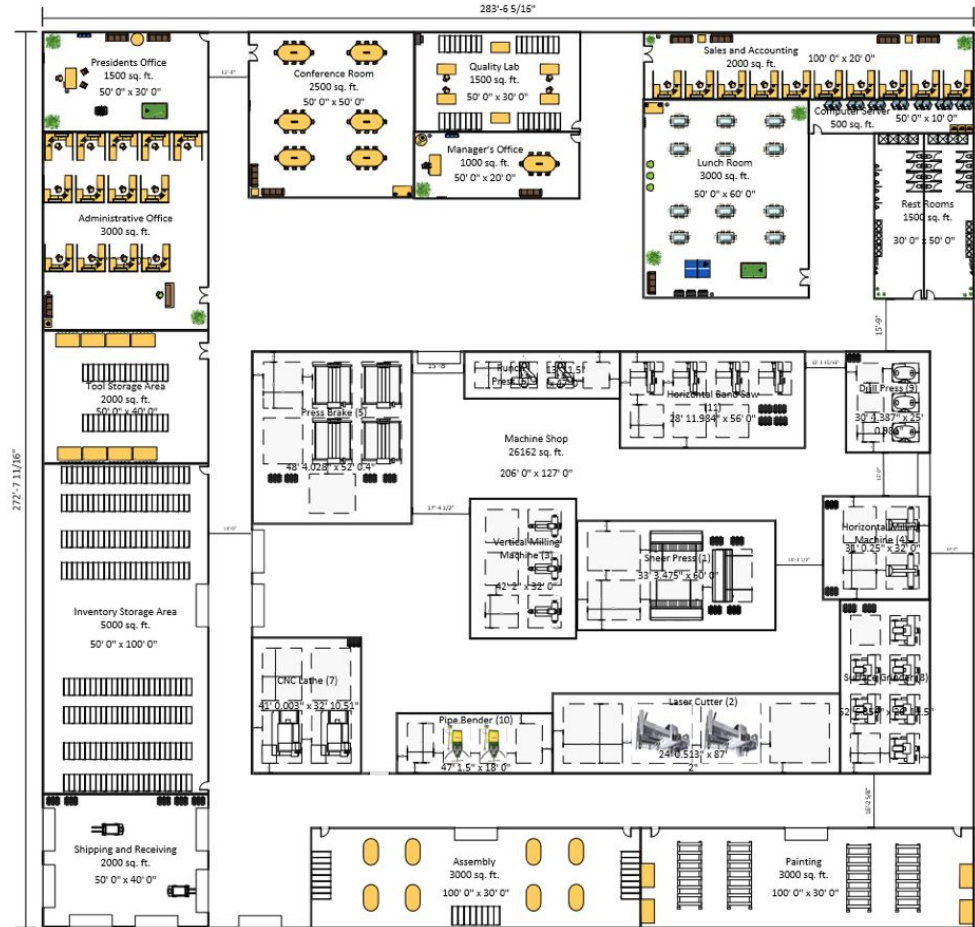
- Focus on efficiency as well as employee safety and satisfaction
- To transport parts between shipping-and-receiving, painting, assembly, and the machine shop:
 - Sit-down forklifts
 - 13-foot aisles
- Inside the machine shop:
 - Forklifts can be used
 - Pallet or platform trucks are recommended.
 - Lift tables
 - Reduce the amount of heavy lifting employees need to do.

Sustainability Considerations

- Skylights and Windows throughout the building.
 - Helps to save energy
 - has been proven to boost employee morale
- LED Bulbs
 - Up to 75% more energy efficient than incandescent bulbs
- Recycle scrap or send it back to the manufacturer.
 - Reduces waste

Key Features

- Large aisles to accommodate forklift use within the plant
- Spacious machine shop allows forklift travel
- Many overhead doors for ease of material transportation between departments
- Machine cells have the slabs for future machines



Key Features Continued

- Shipping and receiving is in the corner of the building to allow for greater truck accessibility (two external walls to backup to instead of one)
- Painting department located in the corner to avoid spread of fumes or paint spray
- Large lunchroom with vending machines, ping pong, and pool table for employee satisfaction and relaxation

