

PENROD

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Why document my facility?

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Who We Are

- **Randi J Handshoe, Managing Partner**
- **Penrod Services**
- **Mauldin, South Carolina**
- **Over 20 years of CAD experience**
- **Drive Automotive Industries, Cosma International, AIM Systems, TBMC**

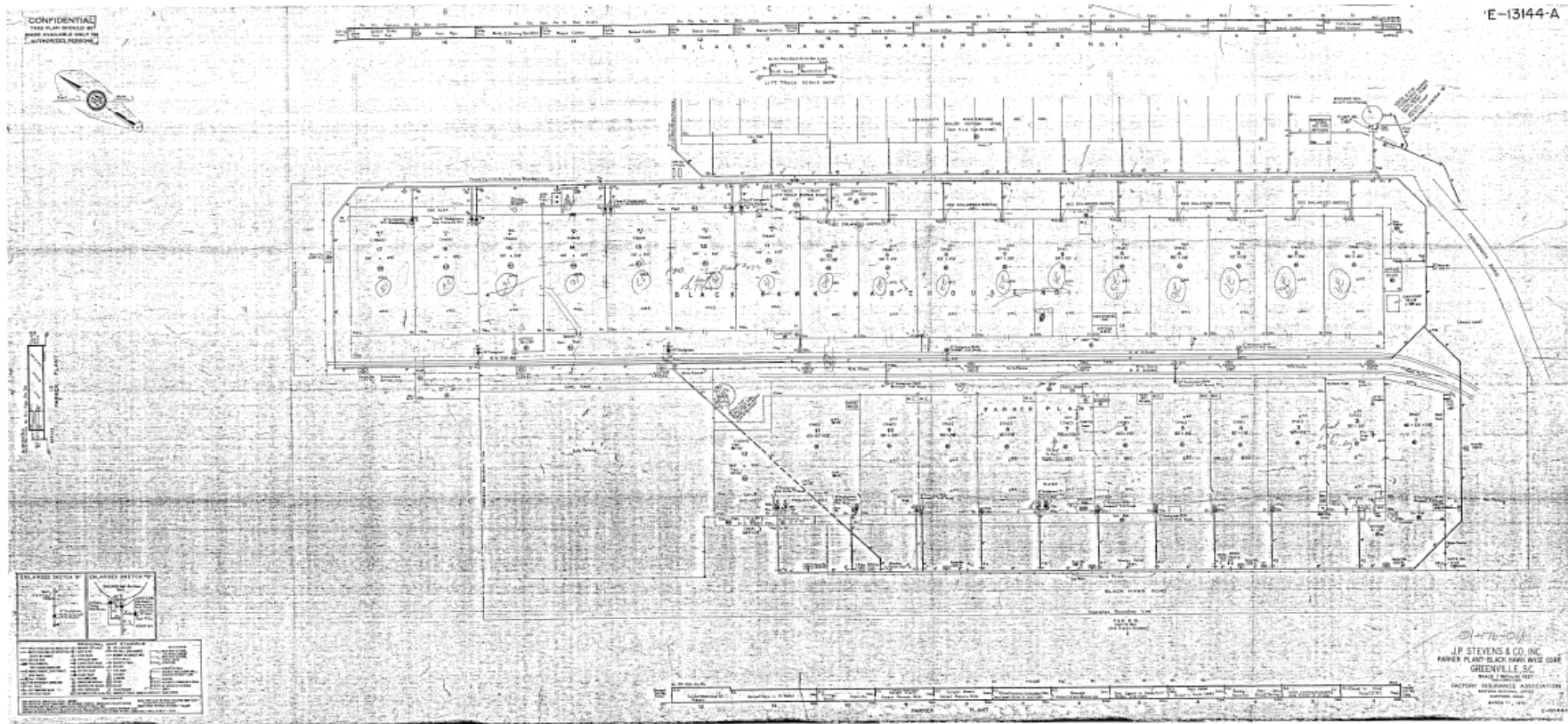
Facility Layout

- Road Map
- Facility & Property
- Trip Planning
- Facility Expansion or Change

Manual Facility Drawings

- Manual Drawing
- Blue Line Copy of Manual Drawing
- B&W Copy of Manual Drawing
- Maintainability
- Copies
- Project Use for RFP's
- Daily Usage

Manual Drawing of a Facility



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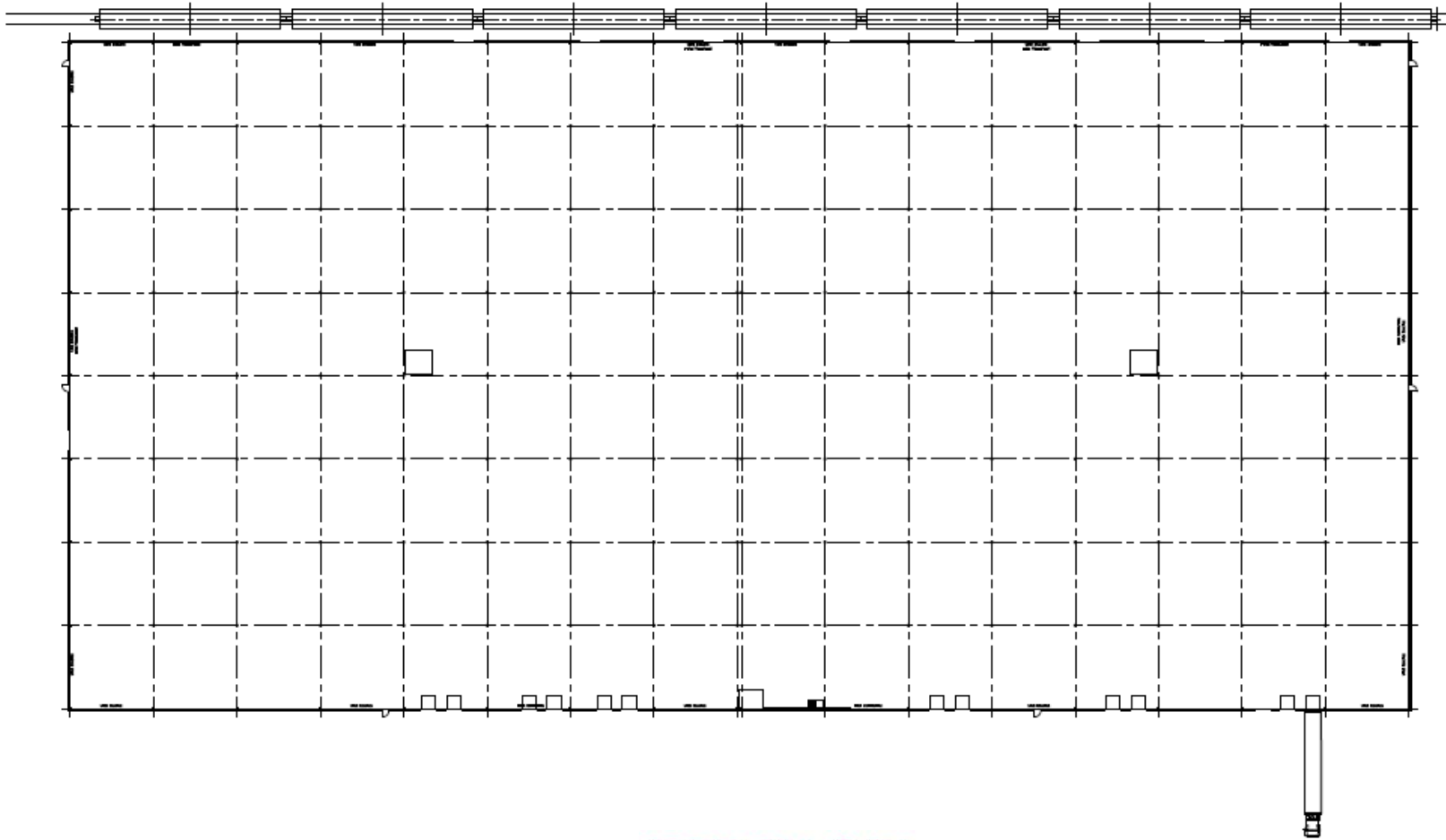
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CAD Facility Drawings

- **Electronic Drawing**
- **B&W or Color Copies**
- **Maintainability**
- **Copies**
- **Project Use for RFP's**
- **Daily Usage**

CAD Drawing of a Facility

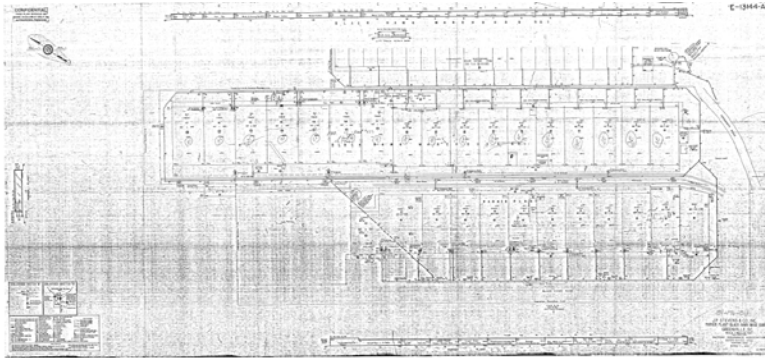


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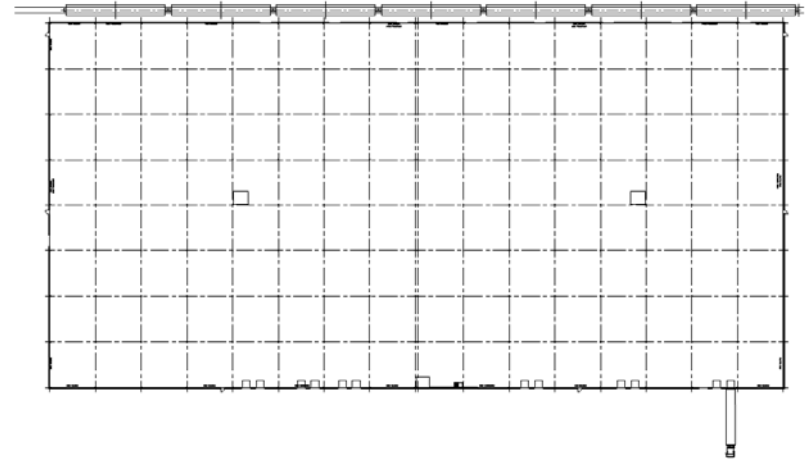
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Comparing Drawings



Manual Layout



CAD Layout

Documentation Cost

Internally Performed

- **Facility Department**
 - Part of daily tasks
 - Facility is priority
 - Budget existing
- **Engineering Department**
 - Non daily tasks, extra hours
 - Department work priority
 - Usually overtime involved
 - Not in department budget

Externally Performed

- **CAD Support Supplier**
 - Specific task from customer
 - Assigned Designer
 - Billed for project hours only
 - Depending on supplier, no overtime hours
 - When completed, designer moves onto next project from other customer

Documentation Cost Payback

- Time Reductions
- Process Improvements
- Maintenance Assistance
- Planning Cost

Facility Layout Types

- **Property Management**
- **Warehousing**
- **Industrial/Manufacturing**

Property Management

- Area Planning
- Construction
- Code Required Drawings
- Marketing

Warehousing

- Area Planning
- Floor Optimization
- Process Planning
- Marketing

Industrial/Manufacturing

- **Process Planning**
- **Floor Optimization**
- **Facility Upgrades**
- **Future Expansion Planning**

Facility Layout Usage

- **Maintenance**
- **Fire Protection**
- **Production**
- **Scheduling/Logistics**

Maintenance

- **Process Mechanical & Electrical**
- **Waste Streams**
- **Process Areas**
- **Maintenance Planning**

Fire Protection

- Fire Alarm Node Point Locations
- Fire Zones/Areas
- Fire Extinguishers
- Evacuation Routes

Production

- **Equipment Locations**
- **New/Upgraded Equipment**
- **Process Planning (LEAN)**

Scheduling/Logistics

- **Raw Material**
- **Purchased Components**
- **Work In Process & Finished Goods**

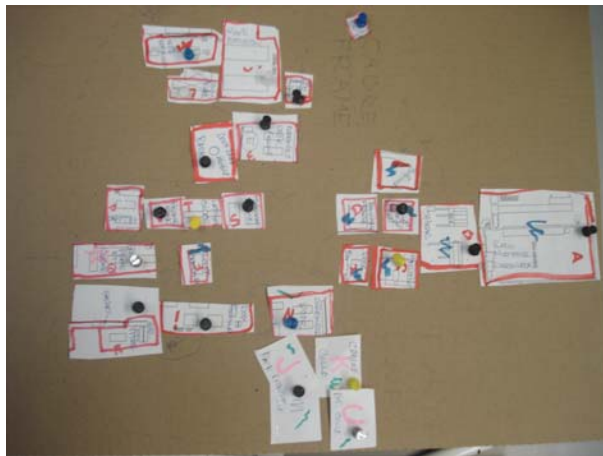
LEAN Processes

The Plant Layout drawing is one of the foundational tools for Lean Transformation and Lean Layout. The significant cost savings are achieved through operating waste reduction. The Layout drawing is an integral part of the analysis phase, as it will be used to calculate: space utilization, material flow distances, transportation waste, motion waste and more.

Patrick Ferguson, Anything Lean (www.anythinglean.com)

LEAN Process Examples

The Plant Layout is used as a tool to make a visual representation of the current process flow.



The layout drawing can be cut into pieces to work on lean layout cell design and plant layout development.

Patrick Ferguson, Anything Lean (www.anythinglean.com)

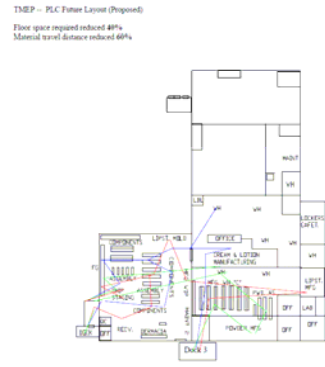
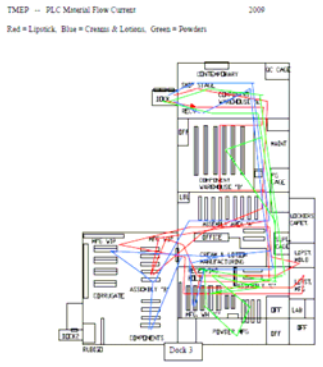
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LEAN Process Examples

For 5S (Visual Factory) sustaining, a difficult part of lean, the plant layout is used in creating the 5S maps and scorecards proven to be most effective.



5S Map & Scoresheet Area: Assembly

Score	Region	Area Name: (comments)
1	Sm Cell Floor	
2	Sm Testers	
3	Sm Cell Parts Shelves	
4	Sm Cell Main Table	
5	Long Workbenches	
6	Shared Equipment	
7	T2 DO	
8	T2 1	
9	T2 Floor	
10	Subs Table	
11	VT DO	
12	VT 3	
13	VT 2	
14	VT 1	
15	T2 Test and Cabinet	
16	VT Test	
17	Test Bench	
18	QC Area	
19	Crating	
20	Shelving	
Total Conforming Areas (marked "O")		
Total Areas Scored		
Daily % 5S Score (Plot on Chart)		

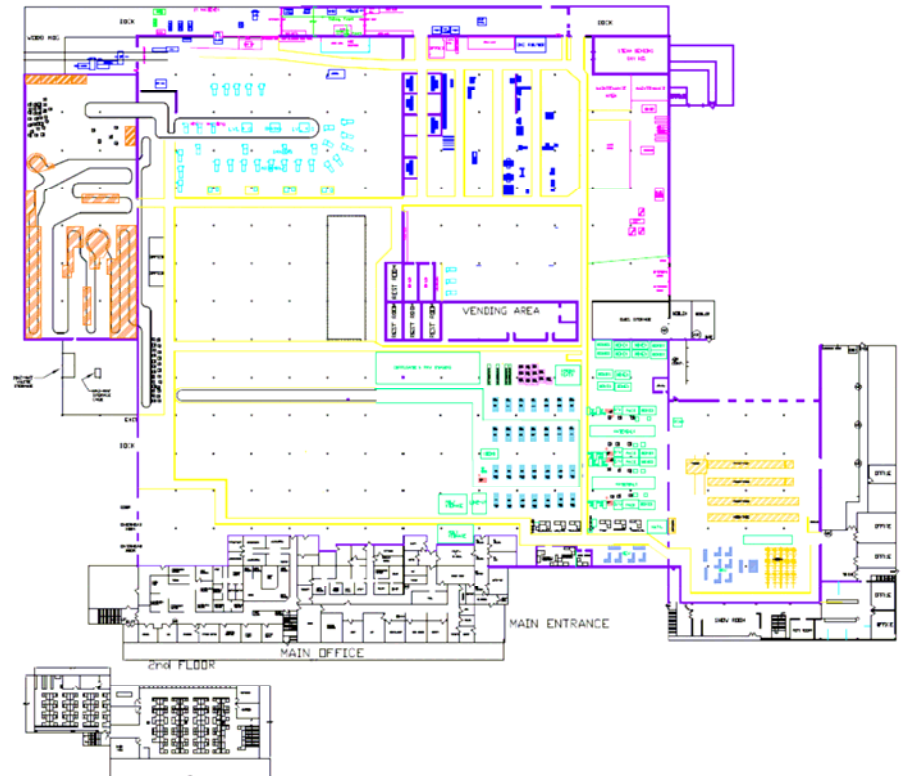
Scoring Criteria: For each defined region specified on the map below, the area must be clean and all items present must be residing in their labeled location. Mark "O" in the SCORE column if the area meets the standard. Mark "X" if improvement is needed and explain in the comments section where applicable.

A basic layout is often used for project proposals to visually represent a transformation concept.

Patrick Ferguson, Anything Lean (www.anythinglean.com)

LEAN Process Examples

This CAD drawing shows the end result of cellular manufacturing implementation and space creation at a furniture manufacturing facility. The plant layout drawing was the primary tool used for the development and implementation of the cell and plant layout improvements in a 12-week rapid implementation program. The space created allowed for the absorption and closure of operations in offsite rental facilities and returned the company to profitability.



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Conclusion

- **Planning**
- **Processes**
- **Cost Savings**

CAD Tips

- **Double CAD XT (Free Download)**
- **Layers**
- **Blocks**
- **Attributes**

Credits

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