

Problem Statement

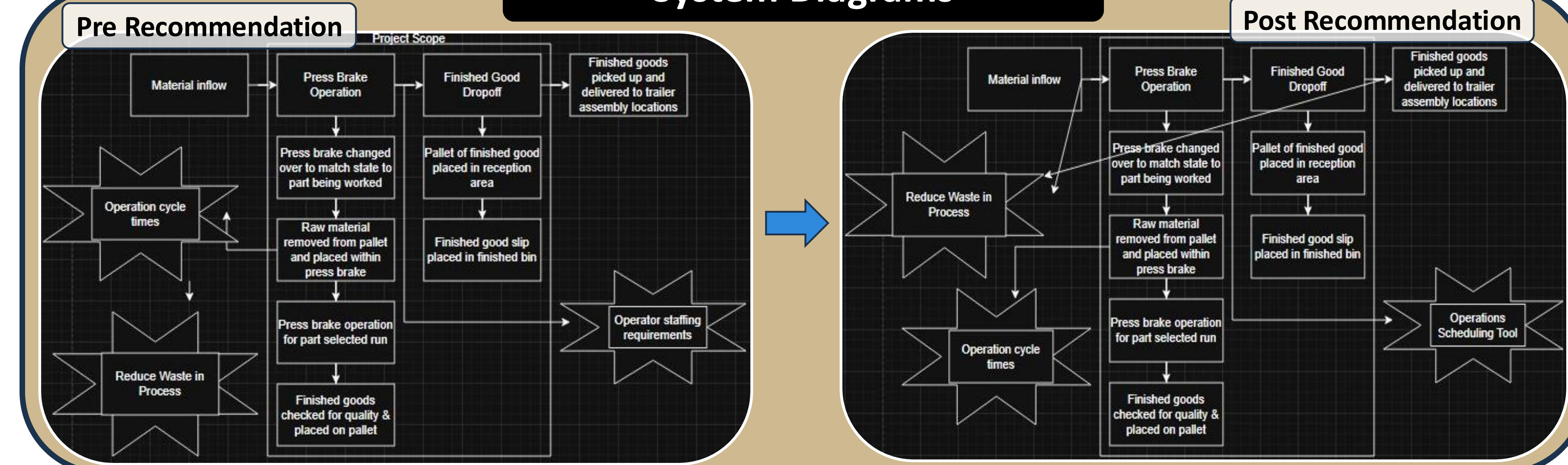
Wabash (1) lacks production time data across five press brake machines in its Components Plant. Following recent process changes, workload balance has been disrupted, and labor utilization has declined. Without standardized and comprehensive time data, (2) visibility into operational performance and efficiency is limited, making it (3) difficult to accurately assess productivity or pinpoint sources of waste.

Client Background

Semi-truck trailer manufacturer founded in 1985 in Lafayette, IN

Products: dry-vans, refrigerated, tank, etc. With use of advanced materials (DuraPlate®, EcoNex™)

Press-Brake operations focus on metal fabrication of trailer components with bend geometry


System Diagrams

Methodologies
(1) Time Studies

Task durations and accurate cycle time

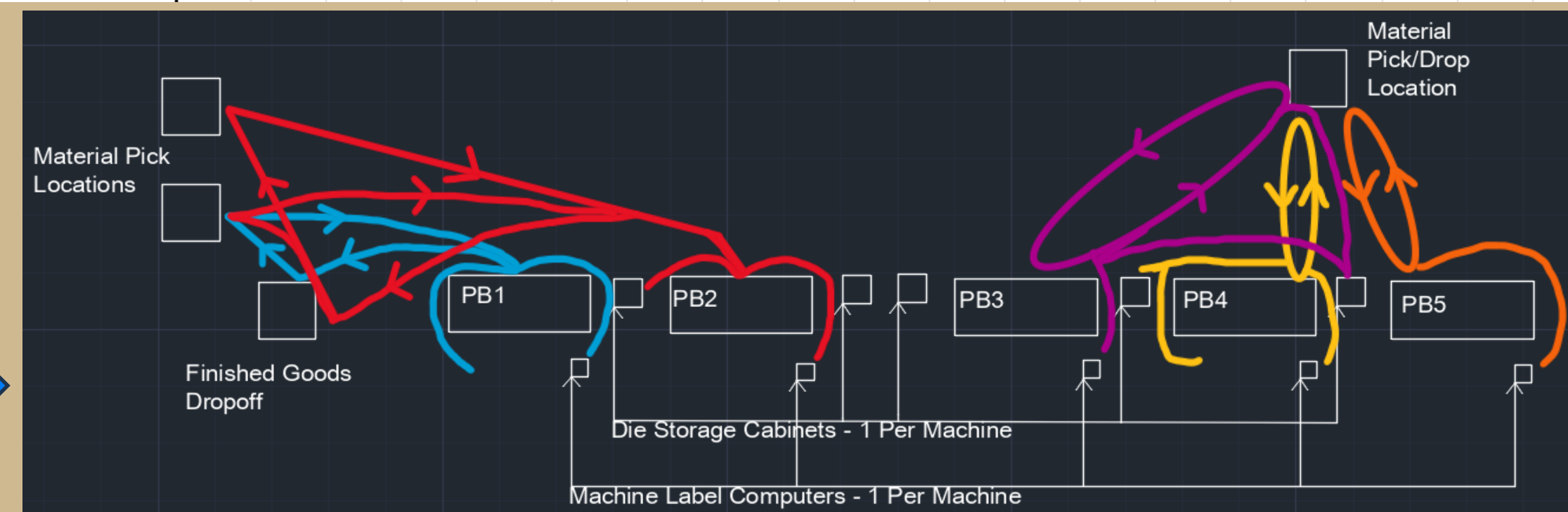
(2) Operator Shadowing

Identifies bottlenecks, delays, and wastes

(3) Process Mapping

Workflow steps and wastes

Part Number:	Cycles																				Time Component
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Pick part and place in machine	3	4	4	4	5	5	5	4	4	4	3	4	4	6	5	5	5	4	5	4	4.35
Machine time	31	29	29	28	29	29	27	29	29	29	28	27	29	29	29	28	28	28	28	28	28.55
Quality Check										10											1
Remove Part and Place on Pallet	2	2	2	2	3	2	3	2	2	2	2	2	1	1	1	1	1	2	2	2	1.9


Findings
(1) Time Studies

- Found minimal bending time waste & variation
- Material movement had greatest variation in times
- Decided to track both bending & material movements as one process

(2) Operator Shadowing

- Measured consistent operating speeds
- Discovered delays in material pickup & machine calibration
- Took note of cart capacities & number of operators

(3) Process Mapping

- Found variation in operator movements during die-changes
- Discovered cluttering of material in pickup/drop-off zones for press breaks 3-5

Recommendations
(1) Production Time Database

Inputs					
Part Size	Part Number	TruBend Press #	Finished Good Cart Limit	Raw Material Cart Limit	
Medium	03	3	150	150	
Large	08	1	10	10	
Small	9	3	200	500	
Large	03	2	100	100	
Small	16	3	500	500	
Medium	04	5	200	200	
Large	03	1	32	50	

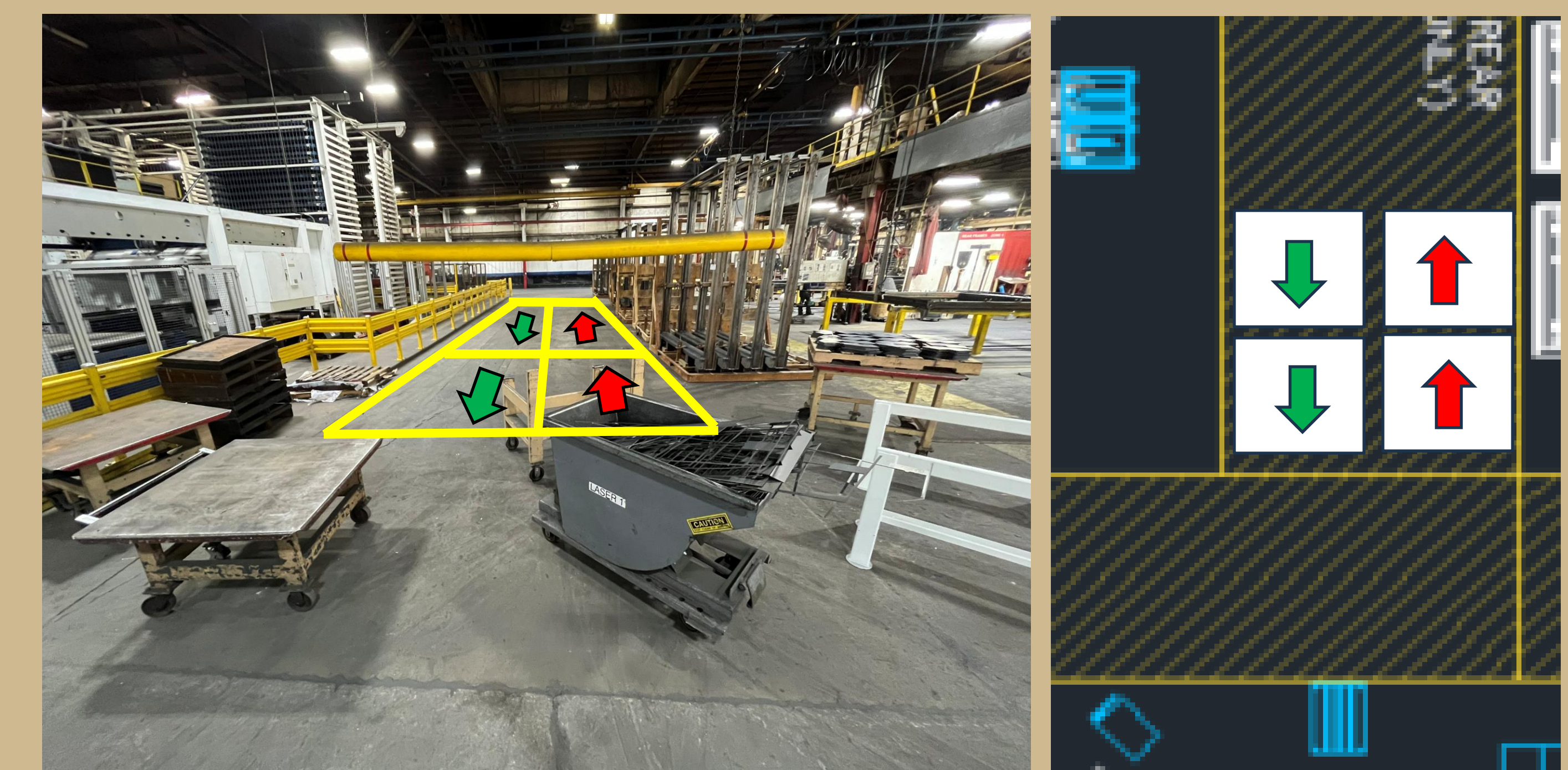
Process Times (seconds)					
Die Change	Material Pickup	Material Setup	Bending	Material Wrap Up	Material Drop Off
113	37	45	16.15	167	38
253	213	15	33.79	96	91
136	35	42	26.61	150	35
262.7	113	607.2	23.75	91	148
160	30	41	7.78	132	32
123	15	112	33.9	178	38
240	196	130	35.8	87	128

Part Description | Press Break | Cart Limits | Time Studies

(2) Standard Production Time Calculator

User Input		Process Times (Seconds)		Outputs (Minutes)	
Part Size	Large	Die Change	252	Total Time	46
Part Number		Material Pickup	409	Total Time (85% Eff.)	54
Number of Parts	50	Material/Machine Setup	251	Required Workers	2
TruBend Press Number	1	Bend Process Time	1536	Carts Required	2
		Material/Machine Close Out	91		
		Material Dropoff	219		

- Generates total required production time, workers, & moving carts
- Creates a standard metrics to assess efficiency and productivity

(3) 5S Material Pickup/Dropoff


- Eliminates potential hazards & waiting waste