

# GREENBERRY MATERIAL HANDLING IMPROVEMENT

Corvallis, Oregon Facility

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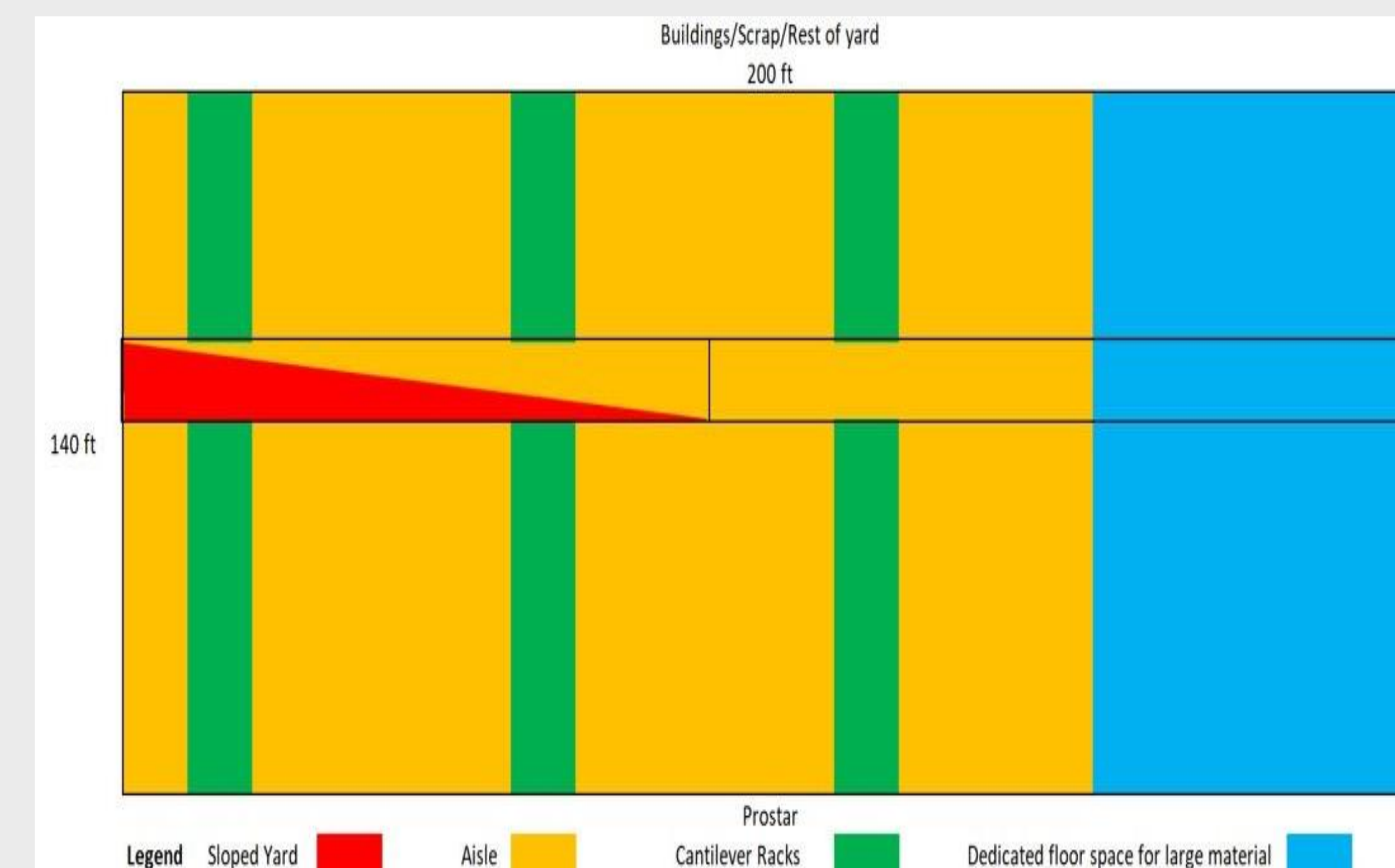
## THE PROBLEM

- Materials stored wherever there is available space. No dedicated storage.
- Wasted time spent searching for materials due to lack of organization.
- Limited vertical storage. Cantilever racks store scrap instead of processed or WIP material.
- Significant non-value-added time in which Prostar operator handles material with overhead crane.



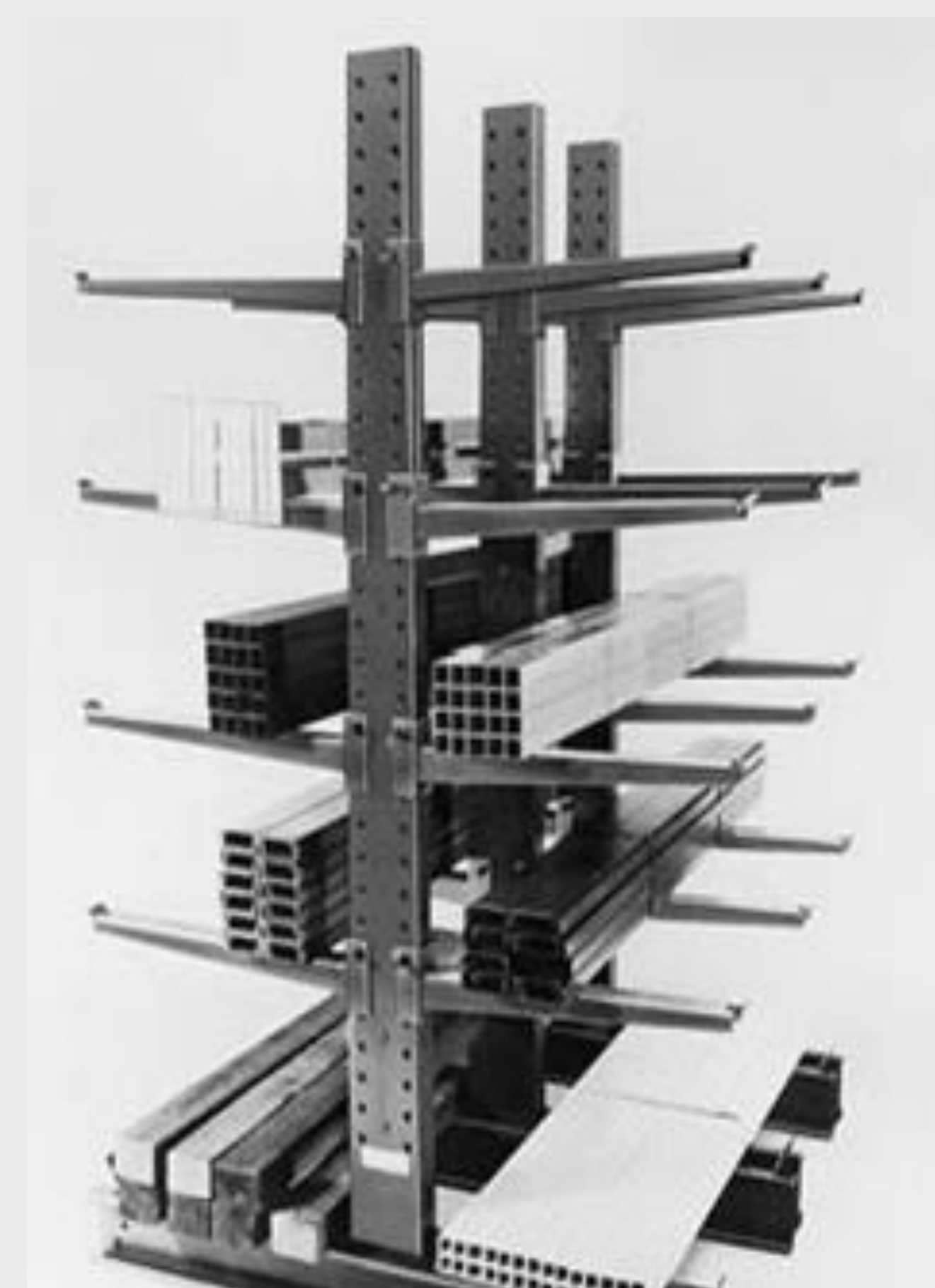
## NORTH YARD DESIGN

- Provide vertical utilization and clear organization to the North Yard Storage area.
- Clear aisles wide enough for a forklift to safely operate in between with largest expected load.
- Designated area for larger material that is free of racks.
- Accounted for the slope of the North yard, utilized area as a travel aisle for the forklift.



## ANALYSIS FOR NORTH YARD DESIGN

| Layout                                 | Design Proposal | Current Layout |
|--|-----------------|----------------|
| Number of lot spaces                   | 8               | 8              |
| Time elapsed from a miss (min)         | 5               | 5              |
| Probability of finding material        | 1               | 0.125          |
|  | 0               | 0              |
|  | 0               | 0              |
| Time spent looking for material (min)  | 50000           | 225000         |
| Time spent looking for material (days) | 34.72           | 156.25         |
| Number of trials                       | 10000           |                |



- In our analysis, we used a trial of 10,000 trips to and from the storage space were done and we want to see how long it takes to move material based on the current design and the proposed design.
- For the experiment, we will say there are 8 dedicated areas in the yard with random material stored throughout. Whether the material is in the lot that was checked or not it will take a total of 5 minutes to search/identify/move.
  - There is a 100% chance of finding material with the designed layout.
  - There is a 12.5% chance of finding material with each search attempt.
- 78% reduction in time looking for storage material

## OTHER MATERIAL HANDLING IMPROVEMENTS

### Prostar Roller Plan

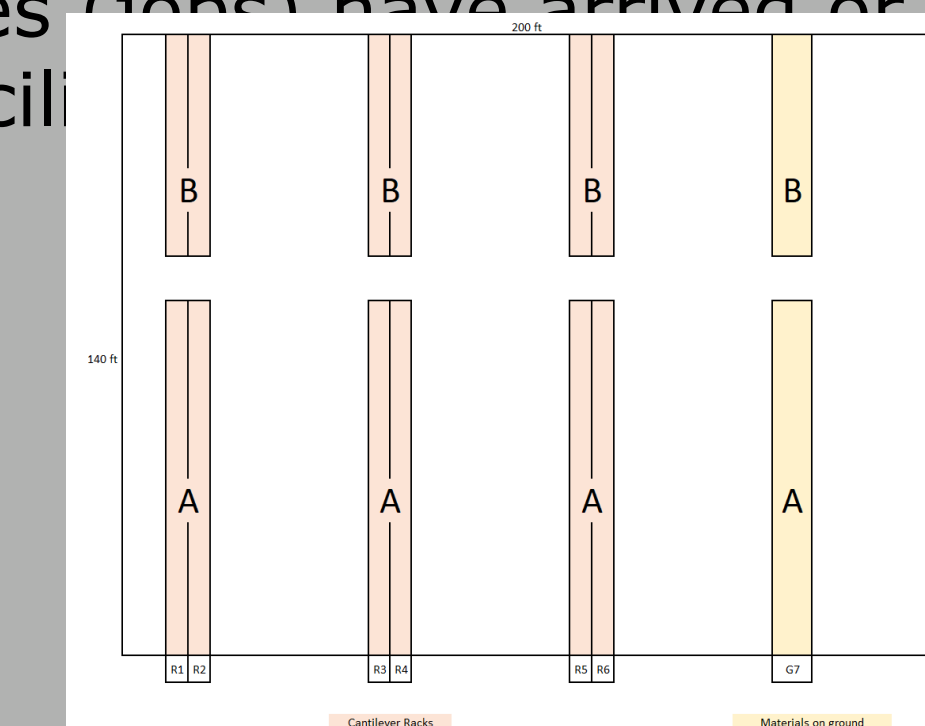
- Rollers are currently being used to unload product off a machine called the "Prostar" where a crane is responsible for moving it so a forklift can transport it away.
- Rollers were proposed to extended all the way outside of the shop building to cut down on time spent handling material.
- A time study was conducted onsite to estimate the cost savings of extending the rollers of the Prostar

| ProStar Operation Material Handling Times (Non-Value Added) | Total Material Handling Time per Shift (Hours) | Total Material Handling Time Per year (Hours) | Estimated Annual Labor Cost (\$) |
|---|--|---|----------------------------------|
| Current State (Overhead Crane)                              | 2.67   | 695.99  | \$17,399.83                      |
| Proposed State (Rollers)                                    | 0.52   | 136.86  | \$3,421.60                       |
| Annual Cost-Savings   |  |   | \$13,978.23*                     |



### Whiteboard Storage Organization

- Currently there is no way to track inventory throughout the factory
- These whiteboards will allow for more visibility on products between the shop employees
- This will be updated by employees once sequences (jobs) have arrived or shipped out of the facility



### High Visual Stickers and Barcodes

- Greenberry's current process of marking raw material can often make it hard to find important information. The project team has identified multiple high visibility marking alternatives.