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Problem Statement

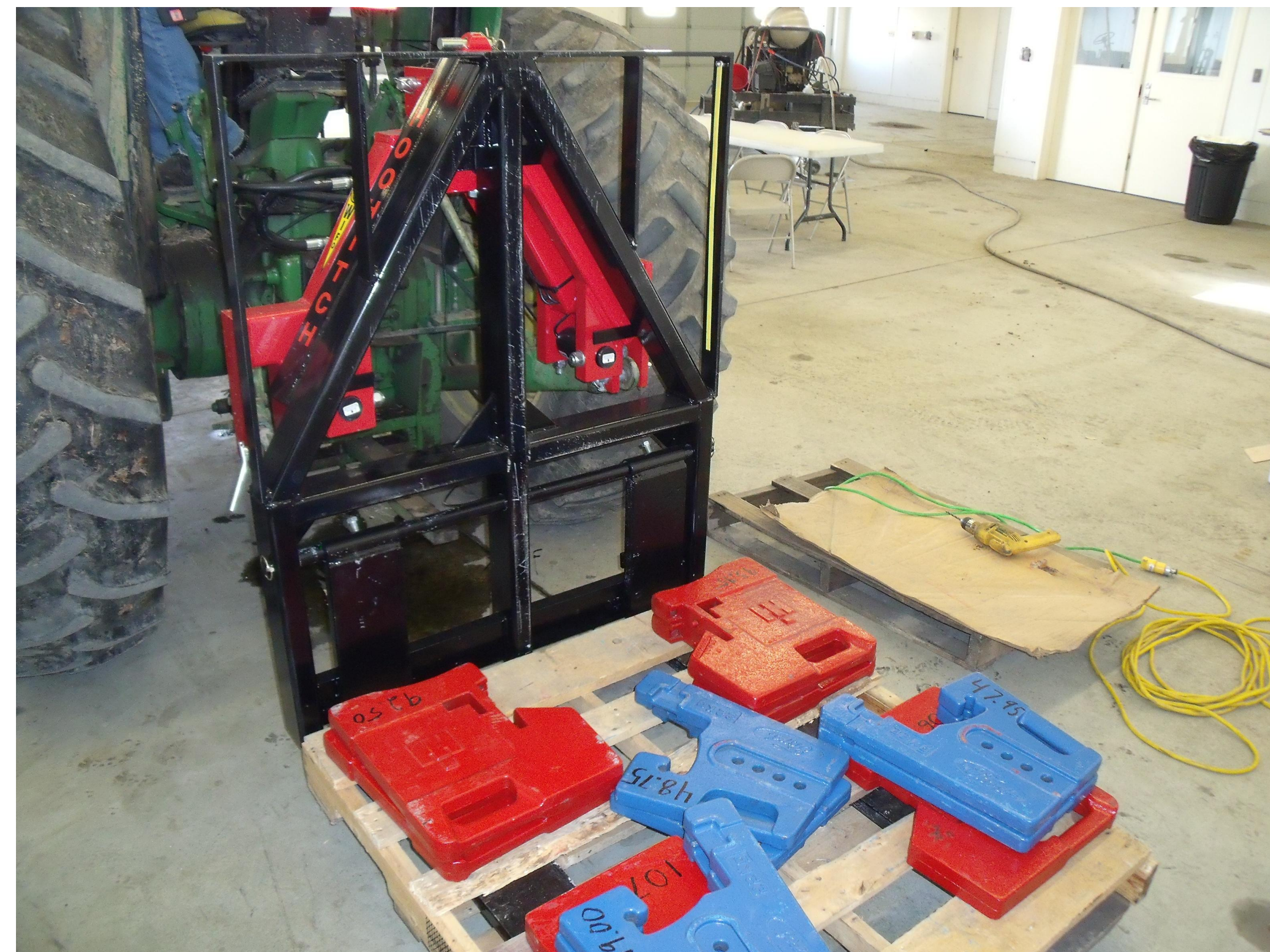
The Throckmorton-Purdue Agricultural Center needs to utilize bins to move produce. Each bin represents an area or group of trees where data is collected. The group needed to adapt an existing weighing system to pallet forks that are suitable to use with the bins.

Background Review

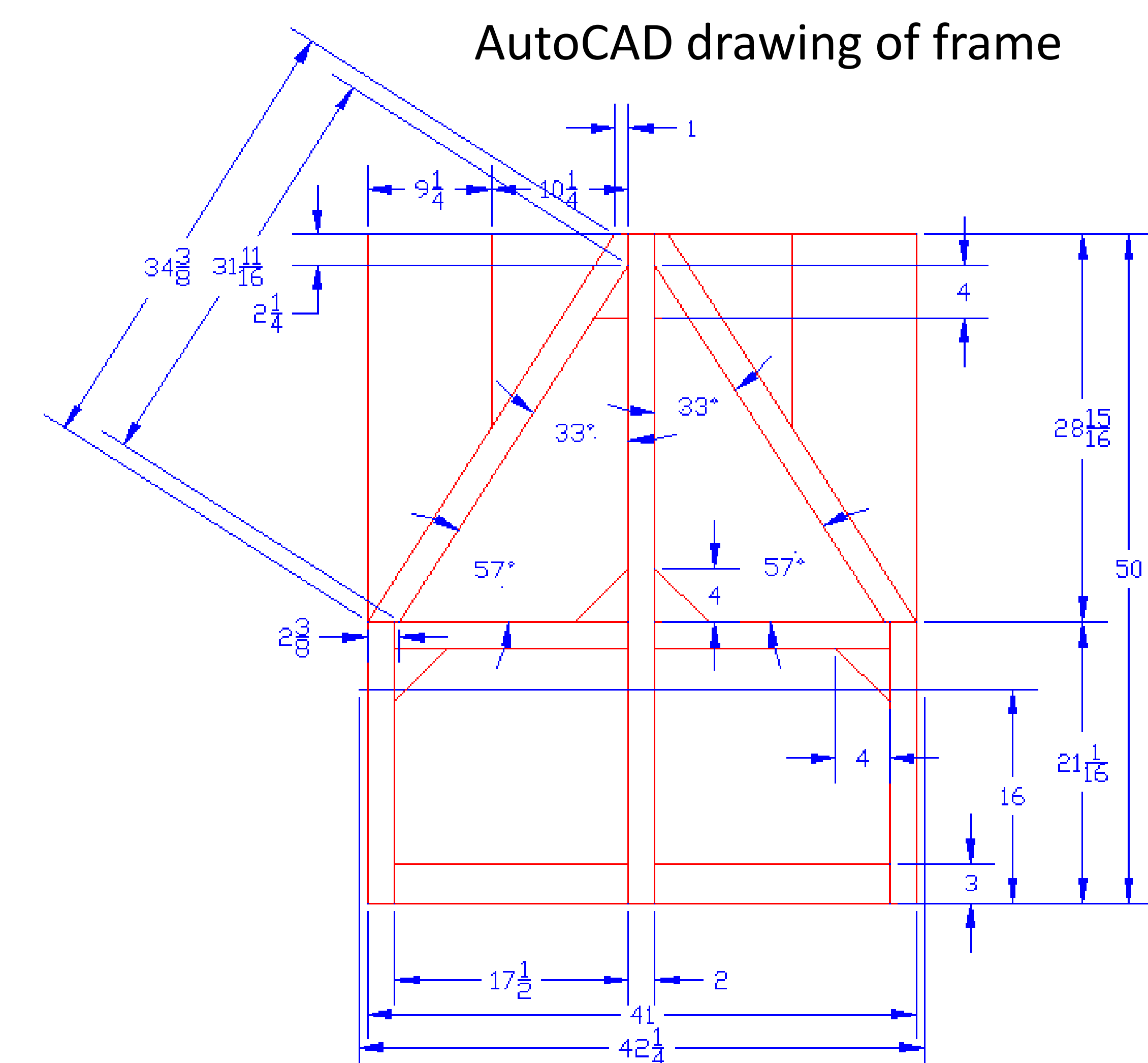
Currently at the Throckmorton farm, the only way to weigh fruit crates is to use truck scales which are slow and not accurate enough for the precise research that occurs at the farm. This is a major hold-up in the research operation and a general annoyance. Pallet forks attached on the 3-point of a tractor with a scale, will speed up production, research, accuracy, and could also be used to prevent trailer overloading.

Alternative Solutions

- Stationary scales on the farm that a tractor could set the crate of fruit on for weighing
- Build custom forks to work better with the design
- Build entirely new bracket to work with existing forks
- Buy new forks that come with their own bracket that we fit to the existing 3-point system



Completed project



Final Results

The design built in AutoCAD and approved by an engineering student was used to purchase the proper amount of steel. When the steel arrived it was cut to the appropriate lengths and welded together. The new frame and the forks were then sandblasted and painted. Installation and testing was performed and the Throckmorton Purdue Agricultural Center. Testing showed the more weight added to the forks, the less percent of error that occurred. Also noted, the load had to be fairly evenly distributed and the weighing system had to be recalibrated before use for best results.

Instructions

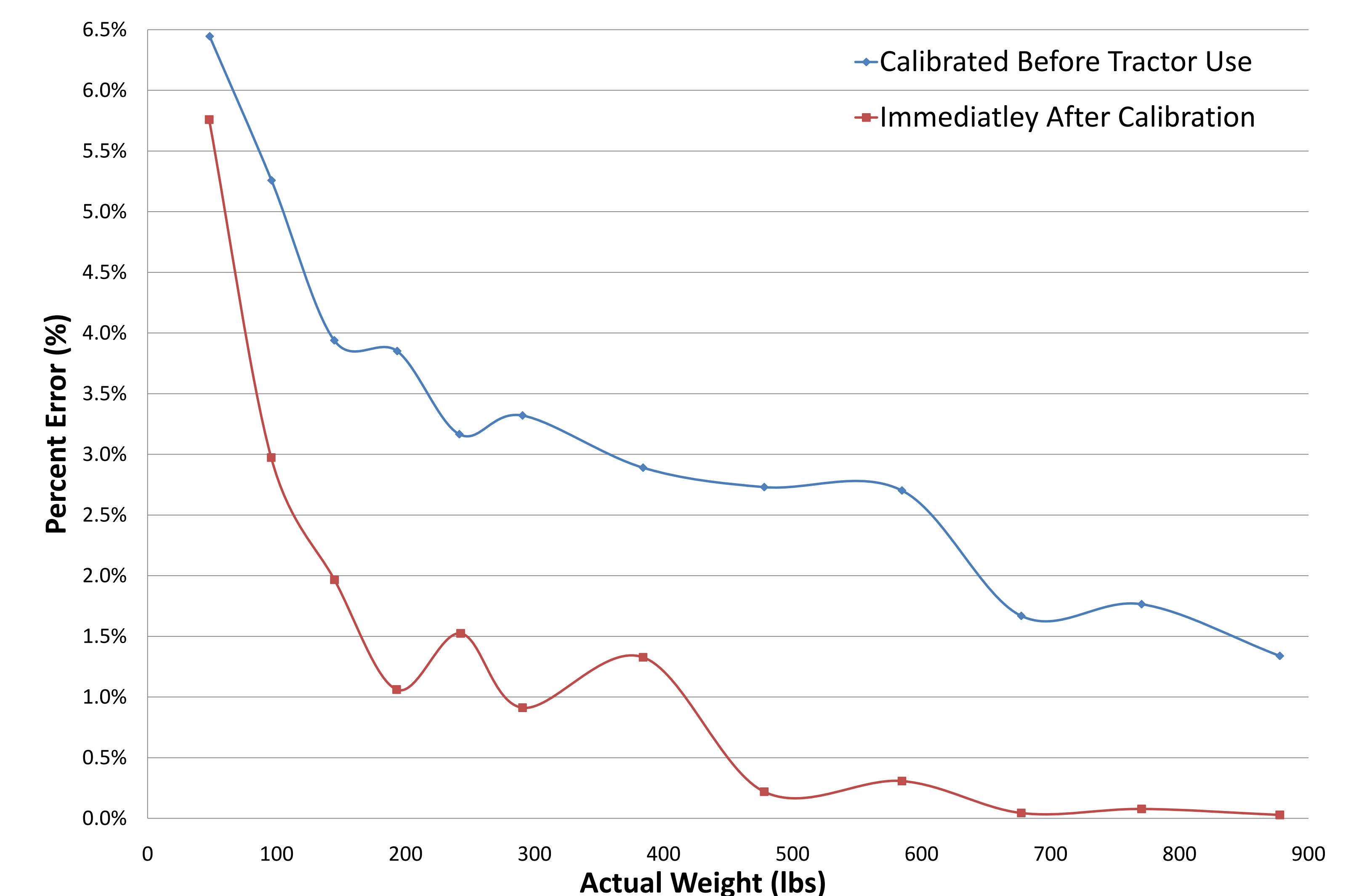
- Have tractor on level surface
- Use level indicator to make sure forks are level (have gauge within the frame for best results)
- Zero scale before use
- Calibrate before use (higher calibration weight lessens error)
 - See pages 10-11 for instructions in owner's manual
- Distribute weight evenly on forks (front to back and side to side)
- Heavier loads have greater weighing accuracy (above 200 pounds)

* These recommendations will yield the most accurate results.

Final budget

ITEM		Price	
Load Cell		\$ 5,525.00	
	Freight	\$ 475.00	
	Bracket	\$ 125.00	
			\$ 6,125.00
Cylinder		\$ 219.95	
	Freight	\$ 16.99	
			\$ 236.94
Hydraulic hoses		\$ 51.34	
Sandblasting & Painting		\$ 150.00	
Steel		\$ 258.39	
TOTAL			\$ 6,821.67

Calibration Data



Beginning materials