

# Steel Manufacturer Simulation Reveals True Constraint of Truck Weighing Process

Global Steel Manufacturer  
Success Story  
Metals Manufacturing  
ProModel



## CHALLENGES

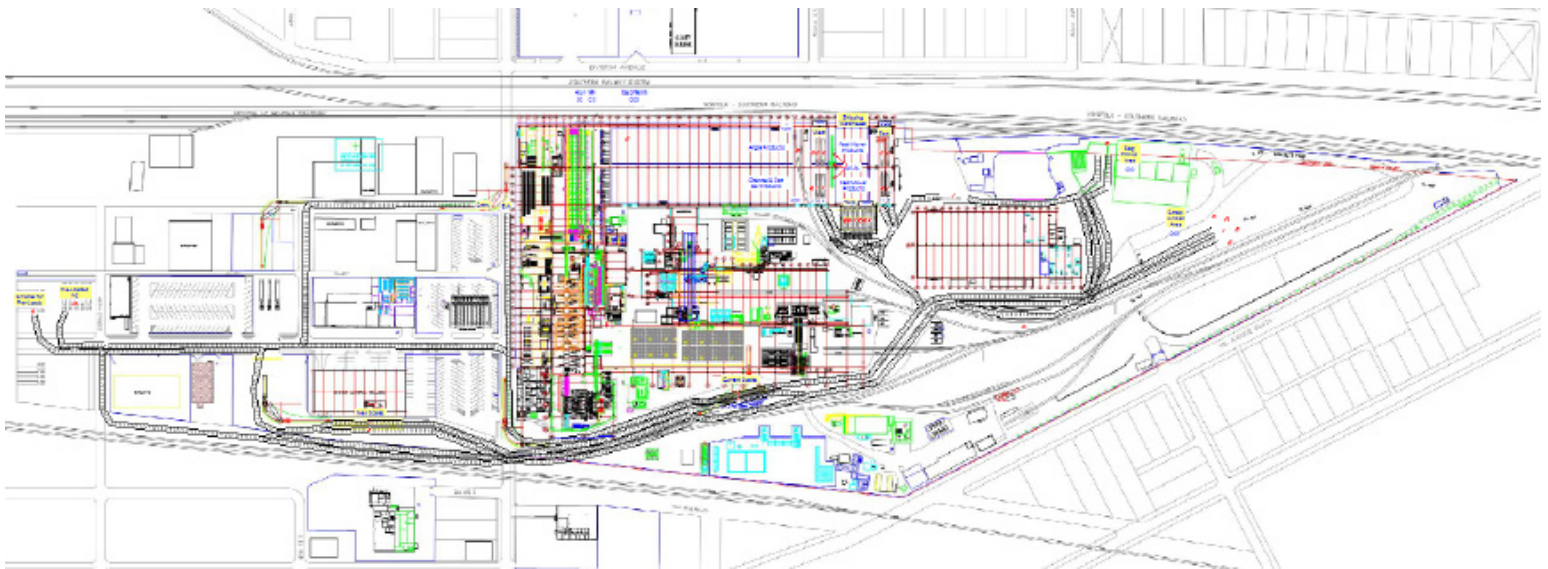
A 100 year old global recycler, manufacturer, fabricator, and distributor of steel and related metal products, has corporate headquarters in the USA. One of their growing facilities in the south, was uncertain that current truck weighing processes could easily handle future volume projections. They were pretty sure the infrastructure and/or business practices needed to change to meet growing demand.

They asked ProModel Corporation to evaluate flow constraints associated with the current truck weigh-in and weigh-out infrastructure and procedures. This would help them better analyze the proposed addition of a new entry weigh-in location.

## OBJECTIVES

A simulation model that helps them answer a variety of predictive questions around their truck weighing processes:

- Identify the congestion/constraints of both the current-state and future-state processes
- Verify that the proposed capital plan will adequately address key constraints and/or improve the process
- Identify the true capacity of the current-state truck processing system



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## SOLUTION

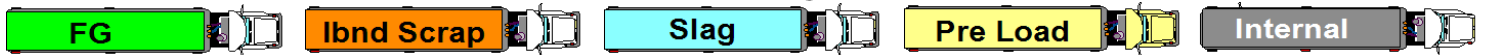
ProModel consultant, Dave Tucker, worked with them to construct an initial current state truck flow model. Scale report data from October 2015 was examined and company subject matter experts (SMEs) were interviewed to fill in data gaps. The model was populated with typical activity times and capacity constraints for scales, scrap unload, slag pick-up, finished goods loading and tarping areas. A working model utilizing all of these inputs was tested and refined during validation and verification efforts. Next, some future state scenarios with an additional inbound scale (also changed the use of current inbound/outbound scales) were developed with additional scenarios experimenting with increases to finished goods trucks.

Some general assumptions about truck flow were made:

- Future truck flow volumes will be equal to or greater than those of the past
- Loading and unload points are “black boxed” using associated capacities and processing times.
- Personnel are available as needed in process Locations
- 90% of all finished goods trucks need tarping; however, no pre-load trucks are tarped
- Truck lengths are approximately 60'
- Truck speed limit on site is 10 mph
- The plant is open 24 hour / 7 days a week.

There are five types of truck loads:

1 = Finished Goods, 2 = Scrap, 3 = Slag, 4 = Pre-Loads, & 5 = Internal



## VALUE PROVIDED

A reusable modeling and simulation tool that allows them to measure and validate current weighing processes as well as test future scenarios. For example, 11 scenarios were tested and run for 30 unique one month replications and compared to the baseline.

- Use new scales
- Baseline with finished goods trucks increased by ~20%
- New scales with finished goods trucks increased by ~20%
- Baseline with finished goods trucks increased by ~40%
- New scales with finished goods trucks increased by ~40%
- Baseline with finished goods trucks increased by ~60%
- New scales with finished goods trucks increased by ~60%
- Baseline with finished goods trucks increased by ~80%
- New scales with finished good trucks increased by ~80%
- Baseline with finished good trucks increased by ~100%
- New scales with finished good trucks increased by ~100%

The model determined that adding another inbound scale would not reduce the typical total truck flow cycle time significantly. So the organization delayed this capital improvement indefinitely. Furthermore, the model also showed that the bottleneck area was really in finished goods loading. ProModel is now working on a 2nd project to look for ways to improve that process area and reduce truck flow cycle time more significantly.