

## GENERAL MOTORS COMPANY – SUPPLY CHAIN

### MATERIAL LAYOUT AND FLOW REDESIGN AT TOLEDO TRANSMISSION

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General Motors, a \$50B automotive company, designs, builds, and sells cars, trucks, crossovers, and automotive parts worldwide. As regulators in the U.S. and abroad continue to demand higher fuel economy standards for new vehicles, transmissions are becoming an important source of increased efficiency. Toledo Transmission Operations (TTO) will produce a new product that will contribute to improving efficiency. Production requires approximately 91,000 square feet of additional floor space that currently serves as material storage for existing products. These materials must be downsized into a smaller square foot allotment elsewhere in the plant.

The Tauber team created an efficient future-state material storage layout for this transition. The team aimed to minimize the total enterprise cost of the adjustment, while maintaining key metrics for production risk and labor utilization and adhering to layout, storage, safety, and material flow constraints. The main deliverables were to set optimal inventory levels, design a future-state plant layout, and create an optimal material flow strategy.

To accomplish the project goals and deliverables, the team used a three-phase methodology. First, the team calculated new minimum and maximum inventory levels for each part based on production volume, supplier schedules, and production risk tolerance. Next, the team designed and arranged material storage lanes within the new space in order to house all material requirements, while avoiding building obstructions, and factoring in potential safety issues. Finally, the team determined where to allocate parts in the layout to minimize the volume-weighted travel distance of daily operations and the corresponding headcount required to execute this material flow.

The team's recommendations led to a three-person headcount reduction. By converting to this new layout, the team projects a \$315K yearly operating cost reduction. Coupled with an estimated opportunity cost for the newly freed floor space, the team estimates the value of this project to be \$965K per year with a payback period on the cost of adjustment of under one year.