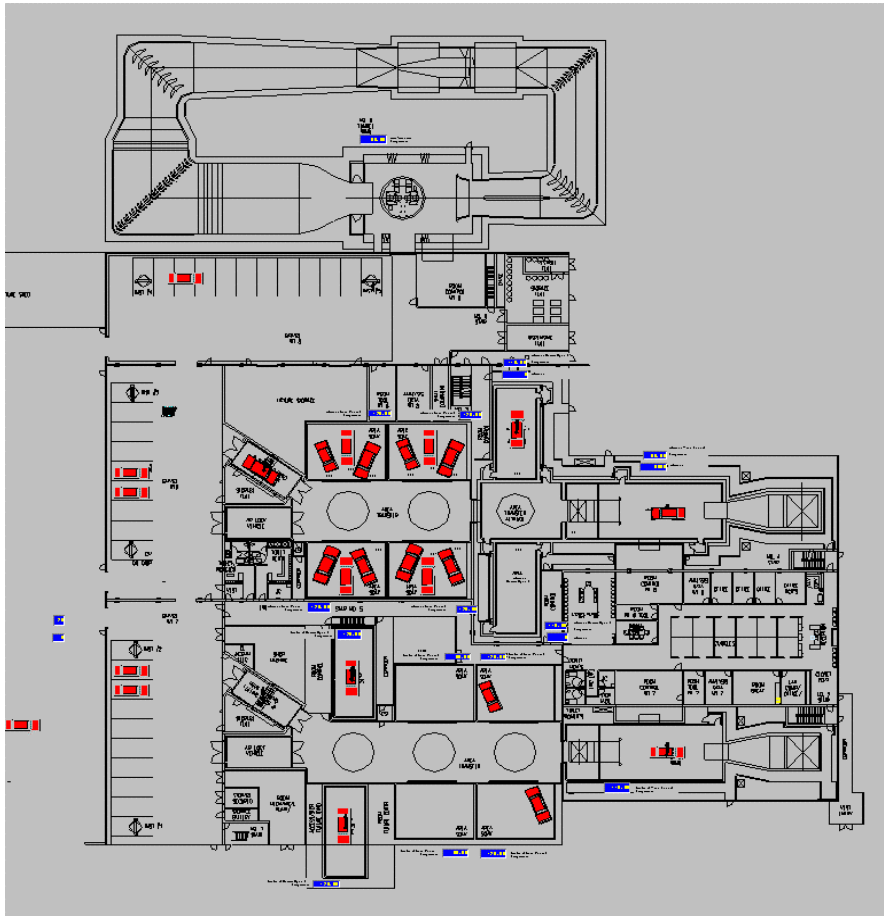


# Automotive Test Facility

Novi, Michigan

- Facility Planning & Analysis Services
  - Facility Layout Design and Optimization
  - Simulation Modeling
  - Scheduling

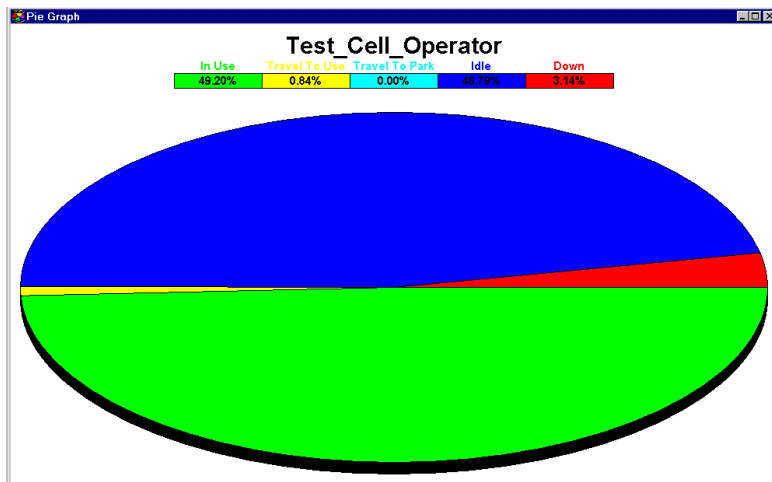


Driveability Test Facility

An automobile manufacturer was interested in consolidating multiple test facilities and sites into a single location, which could be used to conduct driveability testing and calibration development for new program vehicles. This facility would allow all such testing to be completed within a significantly shorter time frame, thereby allowing new programs to be released earlier to the market.

A facility concept was developed by Sverdrup Technologies which employed various vehicle testing technologies including wind tunnels, chassis dynamometers, soak rooms and other engine test cells. Question: Can the actual capacity of the facility concept support the estimated demand from the auto maker and its suppliers? To answer this, Macro Solutions developed a computer simulation model representing the facility concept and incorporating all of the expected operations of the facility. The model was used to perform the following tasks:

- Determination of the actual capacity of the facility
- Identification of operational improvements that will maximize testing throughput
- Identification of layout improvements that will maximize testing throughput
- Planning facility staffing requirements and work-loading schedules



Through the use of the simulation, several performance characteristics of the Automotive Test Facility were evaluated. The pie chart above was used to evaluate the number of test cell operators required in the system. The time series chart to the right highlights the number of tests completed during a year. The slope of the line indicates the rate at which tests are being completed.

Through the use of the simulation model, the design team was also able to specify the number of resources required by the facility and identify several dead-lock positions that could occur while operating the facility. The simulation model was also used to optimize the schedule of vehicle tests. Through this optimization, the Design Team validated that the Automotive Test Facility concept would reduce the auto maker's testing cycle time by approximately 50%, and the facility could execute over 17,000 tests in a year.

