



## Vehicle & Powertrain Laboratories

**CELL 4**

PSL Laboratory

**CELL 5**

PSL Laboratory

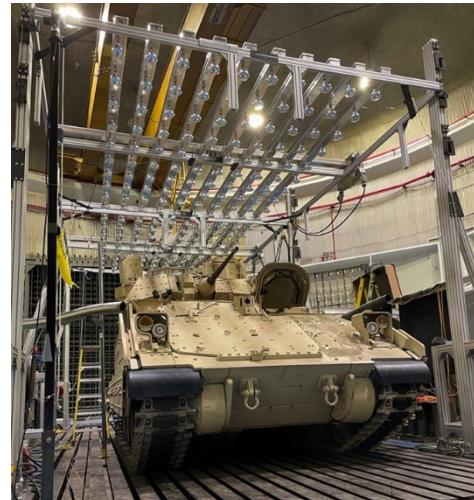
**CELL 9**

PSL Laboratory

GVSC's Propulsion Systems Laboratory (PSL) Team operates the vehicle and powertrain laboratories. Test Cells 4, 5, and 9 comprise a comprehensive vehicle and powertrain testing complex designed for detailed performance and emissions analysis. Cells 4 & 5 are cross-drive transmission dynamometers capable of simulating a variety of road load conditions and supporting vehicle and powertrain testing from M113 to Abrams class gross tracked vehicle weights, while Cell 9 is dedicated to vehicle testing with a dedicated eddy current dynamometer setup. All three cells feature synchronized data acquisition systems utilizing sensors for pressure, temperatures, fluid flow, load, speed and electrical measurements. A critical capability is the environmental control system, providing precise temperature regulation of both ambient air and fuel within each cell. This allows for repeatable and reliable testing under simulated environmental conditions, supporting research into powertrain optimization and vehicle performance characteristics across a broad operating envelope.

## Testing Capabilities

- Transient Road-Load Profiles
- Vehicle Acceleration (TOP 02-2-602A)
- Fuel Economy (TOP 02-2-603A)
- Full-Load Cooling (TOP 02-2-607)
- Speed on Grade (TOP 02-2-610A)
- HVAC Validation (TOP 02-2-816)
- Alternator Load Testing (TOP 02-2-601)



*PEVEL - Test Cell Interior*



*Tracked Vehicle Performance Testing*



*Wheeled Vehicle Performance Testing*

## Test Chamber Overview

### Powertrain Specifications

- Cell 4 Load: 27,000 lb-ft Per Side
- Cell 5 Load: 140,000 lb-ft Per Side
- Cell 9 Load: 88,000 lb-ft Per Side



### Environmental Control

- Temperature: Ambient to 160°F
- Airflow Velocity Cell 4/5: 0 - 5 mph
- Airflow Velocity Cell 9: 0 - 20 mph
- Solar: 0 - 1,200 W/m<sup>2</sup>



### General Information

- Water Flow: 900 GPM @ Pressure 50 Psig
- Electrical Service: 440VAC @ 60/100 amps, 100 @ 20 amps, 24VDC @ 200 amps
- Exhaust capacity commensurate with turbine air flow performance requirements
- Room Size Cell 4/5: Width 25ft X Length 50ft X Height 20ft
- Room Size Cell 9: Diameter 80ft, height 35ft
- Door Size Cell 4/5: 14ftx20ft
- Door Size Cell 9: 20ftx20ft
- Crane: 15 Ton

