



# Military Wheeled Vehicle Testing

## Who is GSE?

GS Engineering, Inc. (GSE) is an agile small business delivering advanced engineering solutions to military and commercial transportation markets through high value research, design, development, and correlated testing services.

## What sets GSE apart?

Our testing services are unmatched in the industry, featuring test teams of highly experienced engineers and analysts capable of on-site interpretation of initial data, quick reaction to adapt test plans in the field to solve our client's most difficult problems, quick-look briefings within one day of testing, and adaptability to dynamic programs. We have a proven history of delivering superior test efficiency, and minimizing clients' field test time and effort. GSE specializes in the planning, conduction, and analysis of complex vehicle tests, performed at military proving grounds, customer facilities, and our corporate test site located in Houghton, MI.



## Test Capabilities

- Vehicle Preparation
- Test Planning / Coordination
- Obstacles (vertical step, ditch, half rounds)
- Safety and HFE
- External Acoustic Signature
- Strain Measurement
- Braking
- Grade Operations (up to 60%) & Side Slope
- Physical Characteristics
- Steering and Handling
- Speed and Acceleration
- Ride Quality (Vibration and Shock)
- Fuel Economy (metered)
- Endurance Testing
- Fording (up to 60" offsite)
- Full load cooling (offsite)
- Thermal Imaging (technical partner)
- Data Analysis per TOP, ISO, MIL, FMVSS
- Reporting per customer / DoD guidelines

## Typical Instrumentation / Measurements

- Speed / Distance (optical, differential GPS, fifth wheel, CANbus, rings)
- Temperature (IR & K-Type)
- Acceleration (wide range of sensors)
- Pressure
- Acoustical Noise (microphone)
- Force (strain gauges, specialty devices)
- Displacement (rotary pots, linear pots, string pots, lasers)
- Fluid Flow (anemometer & turbine flow)
- Motion packs
- Whole Body Vibration (WBV) cushions
- CANbus Link to monitor & record J1939 public channels
- Video / Photography

## GSE Test Course

- 1" & 2" RMS (500' Paved) **NEW!**
- 8" / 10" Half Rounds **NEW!**
- Vertical Steps
- 60% Paved Grade **NEW!**
- 20% & 30% Side Slopes (100' Paved) **NEW!**





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## Typical Data Analysis & Reporting

- ISO 2631 – Human exposure to whole body vibration and shock
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- Absorbed power limit (Pradko and Lee Algorithm)
- Cab interior airborne noise levels
- Vehicle Acoustic Signature
- Driver seat accelerations
- Lane change maneuvers
- Ramp steer
- Sinusoidal steer
- Strain measurement / correlation with FEA
- Overall steering performance
- Braking performance
- Acceleration performance
- Suspension isolation performance
- Side slope performance
- Grade performance
- Transmission calibration performance
- Fuel Economy / range
- Endurance performance
- Thermal Imaging (technical partner)



## Custom Data Analysis & Reporting

- Non-homogeneous sensor co-plots
- Specialty animations

## Test Experience

The GSE test team has performed tests for vehicle OEM's, Prime Contractors and Military clientele over the past 25 years. This experience ensures your data quality and data integrity, and results in answers to your most difficult engineering questions.

*Our team of experienced engineers is poised to work with you to meet your testing needs.*

Contact Chris Coxon  
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