



# FACILITIES & SUPPORT

## 40 Years of Proving Ground and Engineering Support Facility Development

### Engineering Services

- Structural Analysis
- CAE/CAD
- Model Validation
- Finite Element Analysis
- Shaker Drive File Development
- Prototype Design and Fabrication
- Virtual Proving Ground Environment
- On and Off Site Instrumentation
- Vehicle Dynamics Simulation
- Engineering Design Center
  - NATC has the resources to support Mechanical, Electrical, Civil, and Chemical engineering services
  - Video Teleconference System
  - Reference Library Support
    - Satellite Imagery
    - Test Plan Library
    - Domestic and International Duty Cycle Information
    - Profiling Library

### Facility Assets

- Environmental Chambers
  - Vehicle-sized (to 88-foot length) and component-sized.
  - Heat, cold, humidity, salt fog, blowing rain, blowing dust, blowing sand, solar load, thermal shock.
- Fungus Chamber
  - 8x8x19 feet; temperature range from ambient to 165°F at 100 percent humidity.
- EMC/EMI Chamber
  - 13x20x40 feet; Hewlett Packard 8572A system, MIL-STD-461/462
- Tilt Table
  - 9x89 foot surface, tilt angles to 60 degrees.
- Skid Pads
  - Surfaces from SN 25 to SN 85, suitable for split-coefficient and high-speed operations, traction, braking, handling, stability; driverless vehicle capability. J-turn areas, high-speed lanes, split-coefficient lanes, tether operation areas, floodable brushed concrete wet traction lanes.
- Engineering Center
  - Design, dynamic modeling (ADAMS), finite element analysis, CAD, full engineering library including CD-ROM recording equipment
- Instrumentation and Data Acquisition
  - Full instrumentation lab, traceable on-site calibration for most equipment, on-board data acquisition, 256 channels, 100,000 samples per second, on-site data analysis. (See instrumentation and computer simulation information)

- Rail Impact And Transport Test Facility
  - Rail impact tests to MIL-STD 810E and commercial specifications; ISO container testing and certification; transit drop tests.
- Test Courses
  - NATC has more than 3,000 miles of paved and unpaved test courses suitable for high performance, end limit, shock and vibration, and durability tests for all types of wheeled and tracked vehicle systems. 1.8 mile oval with smooth and rough test lanes.
- Repair and Fabrication Shops
  - Maintenance and repair of light and heavy vehicles; machining and welding capability for prototype fabrication, parts fabrication, vehicle modification.
- Photo and Video Labs
  - On-site facilities for test documentation photography, video editing; on-site processing for x-ray film.

### Powertrain Development

- 500 hp chassis dynamometer
- eddy current motorcycle dynamometer

### Structural Test Fixtures

- Static and dynamic load fixtures

Dedicated ride quality test courses for all applications from passenger car and heavy truck, agricultural and military equipment.

RMS and 1/2 round courses for measurement of absorbed power and 2.5 G input.

Natural and reinforced grades and slopes to 60%.

Side slope test facilities to allow slalom stability events.

Traction hop and accelerated powertrain test facilities.

Trailer tow and stability test areas.

### Winter Tire Test and Tire Dynamics

- NATC dedicated winter test facility at West Yellowstone, MT.
- 97-acre complex
  - 160,000-square-foot vehicle dynamics area
  - 500,000-square-foot area for evaluation of tire traction, braking, and cornering on a variety of snow and ice surfaces.
  - Snow surface conditions range from virgin to hard pack.
  - Security for prototypes.

### Instrumentation Center

Specialty sensor development  
Thermocouples, load transducers, pressure, velocity, acceleration, flow, sound intensity, impulse pressure

### Support Capacity

- On site cranes 10 to 30 ton capacity
- 220 ton capacity on 24 hour notice
- Fabrication facility including certified welders
- Machine shop
- Support transport Class 8 trucks and trailers

- Wheeled and tracked vehicle recovery equipment
- Mobile generators from 15 kW to 350 kW
- Mobile contact maintenance vehicles
- Heavy construction equipment including loaders, graders, gravel plant, tracked dozers, water trucks, vibratory rollers, dump trucks,
- Full test course maintenance and development capability
- Agricultural support equipment including four wheel drive tractors, discs, harrow
- Mobile refueling equipment
- In house ground survey capability (theodolite, laser, GPS)

### Customer Support

- Briefing rooms
- Office areas
- Telephone, fax, video teleconference, Computer

### Fabrication and Machining Support

- Three fabrication facilities
  - NATC Proving Ground Facilities
  - NATC Detroit Facility
  - NFAST Fabrication Facility
    - Machine Shop
    - Welders

### Storage Facilities and Support Services

- 20' and 40' conex's for dedicated customer component storage
- Various storage areas and sizes
- Secure test parts storage and inventory capabilities
- Shipping and Receiving Services

### Test Vehicle Maintenance Facilities

- Passenger Car and Light Truck maintenance facilities
- Heavy Truck, Bus and construction equipment maintenance facilities
- Track Vehicle Facilities (up to 100 Ton)

### Test Fixture Support Facilities

- Tilt-table Facility (300,000 lbs. to 60 Degrees)
- Rail Impact Facility
- Seat Belt Test Fixture
- Under Ride Fixture
- Tire frequency Fixture
- Tire Pressure Measurement Fixture
- Out Rigger Fixtures for end limit evaluations (passenger car to heavy truck)
- Various component cycling fixtures

### Payload Support

- Payloads from 1 to 100 Tons
- Human Simulators (water dummies)
- Live Stock Simulators
- Rubber Mats
- Concrete Blocks
- Steel Plates
- Lead Ingots
- Steel Shot
- Conex and Conex Simulators
- Custom Designed Payloads
- Custom Payloads