



# Automotive Test Tracks

Our decades of expertise are critical to the success of every test track we engineer.



## CLIENTS

FCA US, LLC  
General Motors  
Honda  
Nissan  
Teledyne Corporation  
Toyota  
Transportation Research  
Center of Ohio  
Volkswagen

SSOE has a test track resume that is unparalleled. Our veteran's perspective of test track design allows us to develop solutions that are unique to your facility's location, criteria, and performance objectives.

When it comes to enhanced performance, SSOE is dedicated to the ongoing development of the 3D surface and utility modeling software programs that you need to run successful test track projects. These programs accelerate the process of going from concept to finished product while optimizing construction costs.

That dedication distinguishes SSOE from other firms. Our decades of industry expertise are critical to the success of every assembly plant and test track we engineer. Our expert understanding of track surfaces and the techniques to develop simulations of real-world surfaces make SSOE the "go-to" resource for manufacturers who want to provide safer, durable, and more refined components, and vehicles.

## PROJECT TYPES

- Basalt tile pads
- Belgium block
- Brake slope facilities
- Brake soak pool
- Chip and splash test roads
- Clutch slope
- Durability test areas
- Dynamic handling courses
- Frame twister
- Grade climb tracks
- High speed, super-elevated test tracks
- Hot-mix asphalt test tracks
- ISO pad Track TypesT
- Low coefficient test facility
- Noise, Vibration, and Harshness (NVH)
- Off-road durability courses
- Paved rough road courses
- Rough off-road courses
- "Shakedown" tracks
- Skid pads
- Special profile roads
- Squeak and rattle tracks
- SUV test areas
- Vehicle dynamics area
- Winding road test tracks



## PROJECT EXPERIENCE

### **Volkswagen Assembly Plant Test Track, Chattanooga, Tennessee**

Designed post-production test tracks including multiple event surfaces and highway speed loop.

### **FCA Chelsea Proving Grounds, Chelsea, Michigan**

SSOE is providing architectural and engineering services for a crash barrier upgrade at the Chelsea proving grounds. The project includes the construction of a new crash hall south of the current tunnel, demolition, new construction on a crash hall building, power upgrades, exterior running track and barrier, and various utilities.

### **General Motors Corporation, Various Sites**

SSOE was selected to design several Squeak & Rattle “shakedown” test tracks for most of GM’s assembly plants in North America. This program was a revamp of their post-production tracks to a global standard. Construction inspections, including evaluation and measurement of pavement tolerances, and concrete finishing observations were included in our scope of work.

### **Nissan VES Test Tracks, Multiple Locations**

Completed the design of a two-mile, multi-event test track at Nissan’s Canton, Mississippi and Smyrna, Tennessee assembly plants on a fast-track schedule to maintain new model deadlines. Design of the tracks was concurrent and completed in four weeks, showcasing our ability to meet tight deadlines, provide the client with multiple concepts, and implement the final design quickly. Track events included belgium block, frame twister, high speed, and concrete and asphalt rough roads.

### **Transportation Research Center of Ohio, Inc., East Liberty, Ohio**

- **Smart Mobility Advanced Research Test (SMART) Center Program Development.** SSOE was hired as a sub-consultant to provide site grading assistance, stormwater management design, and preparation of design documentation for required Ohio EPA permitting, for the proposed SMART Center Program. The program consisted of construction of three Buildable Units including a High Speed Intersection Roadway, Urban Infrastructure Roadway system, and a 450’x2000’ Vehicle Dynamics Area.
- **Low Coefficient Test Facility.** Designed a multi-surface low coefficient test facility for use in vehicle wet braking and handling analysis. The original facility consisted of manufactured ceramic and basalt tiles on several paths, which would allow for differential frictional coefficients on the same facility. The pad was originally designed to accommodate 100 meters of both tile types, but future expansion allowed for an additional 200 meters of basalt tile surface, which was constructed in an extra two phases over a three-year period. Automated pumping and spray systems for surface pre-wetting and continual surface water depth were also designed and installed over the same three-year construction period.
- **Winding Road Test Track.** Provided the design for a 1.5 mile long winding road test course. The track consists of various curvatures, cross slopes, and grades designed to test the handling of vehicles in a severe driving environment. A 3D model made it possible to produce several options for the client’s review in a short amount of time.
- **Dynamic Handling Course.** Completed design on the “sister” course to the above Winding Road Track. With a top design speed of 180 mph, the dynamic handling course allows the client to push their vehicles to the maximum. The two-mile course contains 26 turns of various degrees, including a negative camber turn that simulates extreme conditions. Designed with polymer pavement and Formula One-type shoulders and safety barriers, the track allows for testing of many types of vehicles, including motorcycles. By utilizing the natural topography, we were able to minimize engineering and construction costs.
- **High Speed Track Resurfacing.** Provided design and construction administration services for the resurfacing of the 4 lane, 7.5-mile high-speed track. The project involved a detailed sequence of construction plans to maintain track functionality during construction.

### **Confidential Client, Mexico**

Performed master planning, layout, rough grading, and stormwater design of approximately 1,100 acres for a proposed hot weather facility in Mexico. The facility consisted of a 3.5-mile high-speed circle, vehicle dynamics area, various off-road durability courses, and a campus area. Project challenges included an aggressive design schedule and earthquake balances.