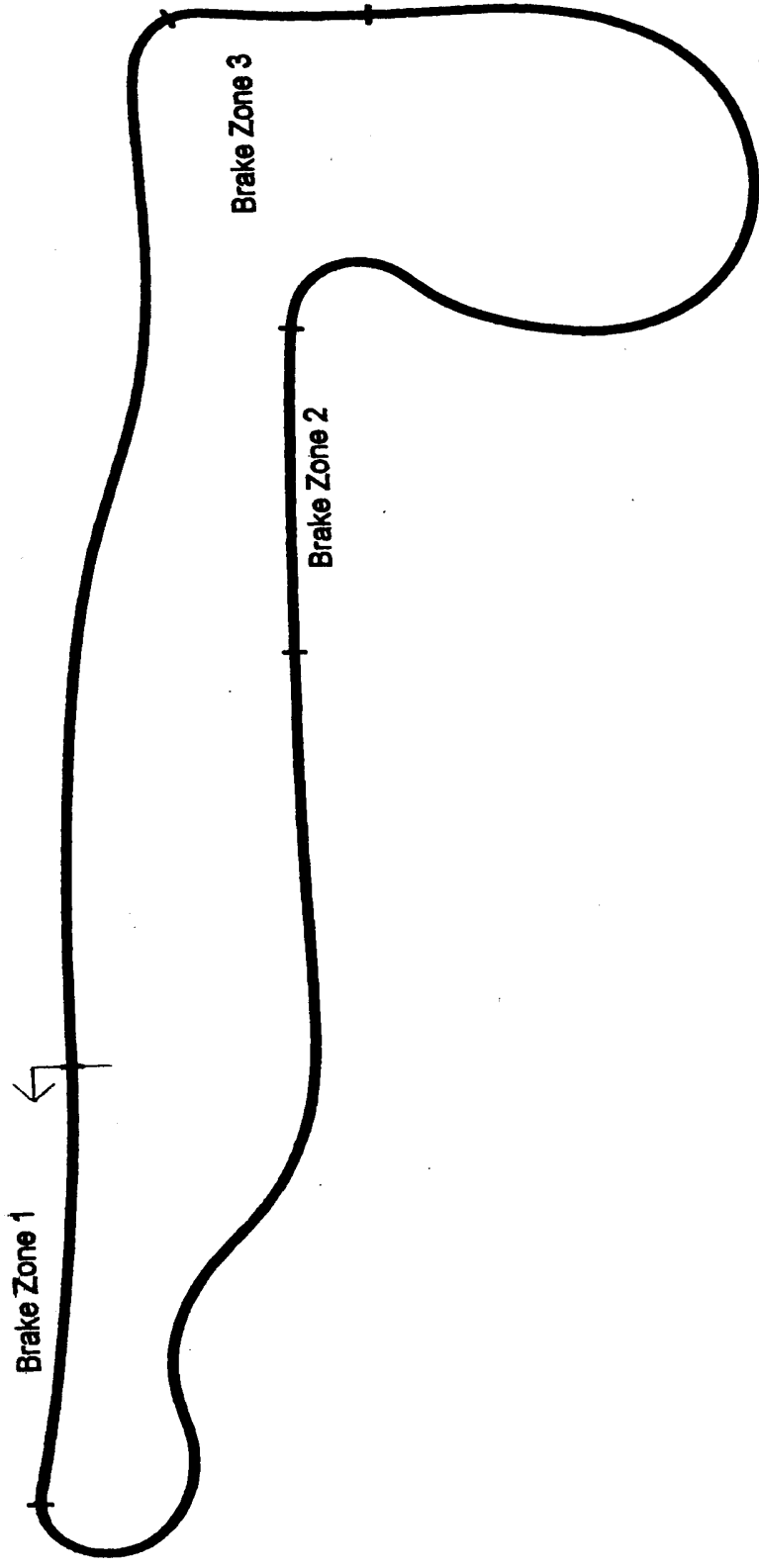


# **TRACK DESCRIPTION**

**HIGH SPEED  
DRIVING COURSE**

**TRACK LENGTH  
ONE LAP = 1.57 MILES**



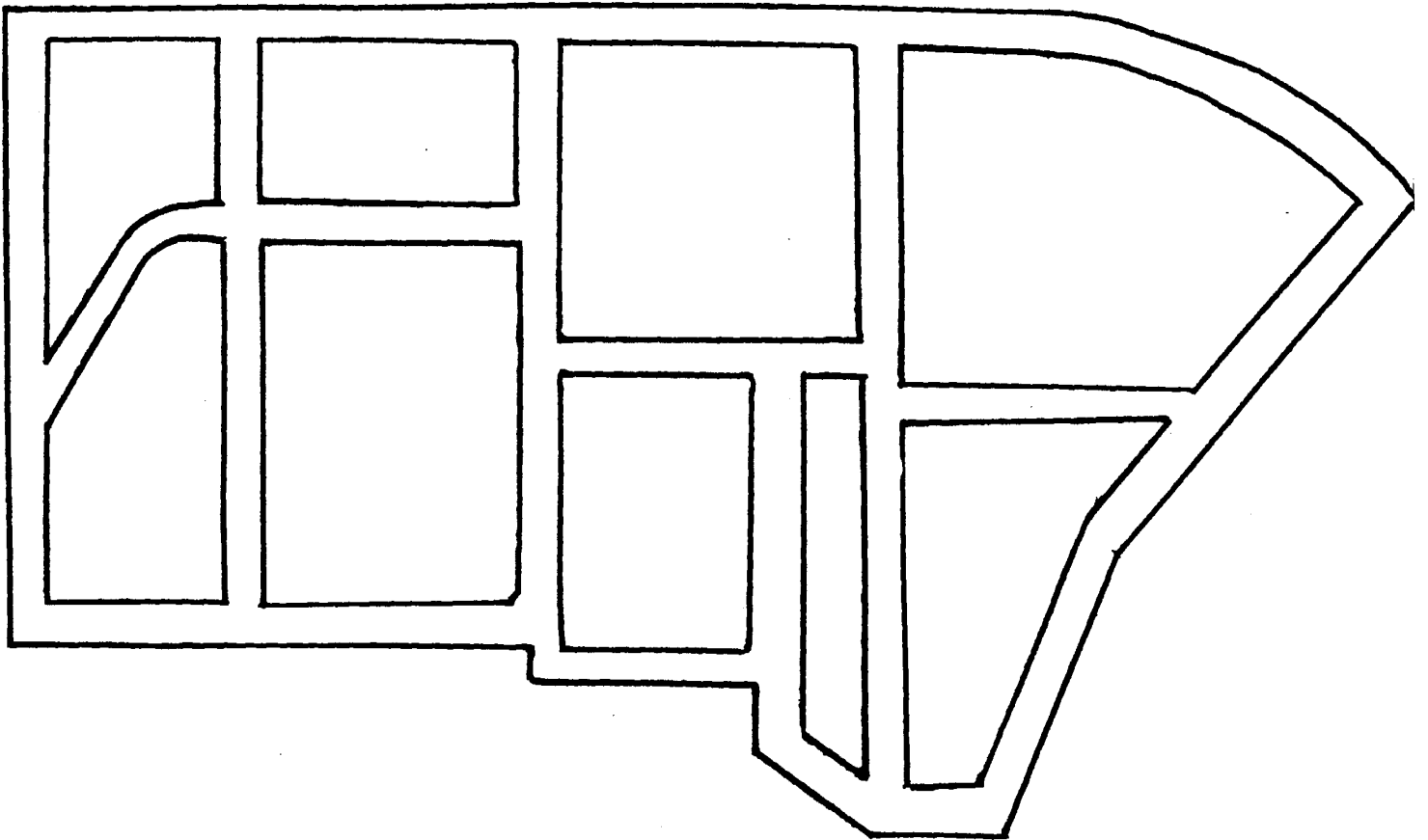
**HIGH SPEED DRIVING COURSE (1) LAP = 1.57 MILES**

**CITY STREET  
PURSUIT COURSE**

**TWO LAPS = 2.45 MILES**

**POLICE PACKAGE EQUIPPED  
VEHICLES ONLY**

*N*



***CITY STREET PURSUIT COURSE (2) LAPS = 2.45 MILES***

# **TEST PROTOCOL**

**PRELIMINARY HANDLING AND TEST**

# **DRIVER'S SUBJECTIVE EVALUATION**

**This test is conducted on a high speed driving course. It is designed to evaluate, identify and eliminate the obvious unacceptable vehicles (i.e., those vehicles that are demonstrably unstable or otherwise exhibit unsafe characteristics).**

**For this test, four drivers are utilized for each vehicle. Each driver completes eight laps around our 1.57 mile test track at the Los Angeles County Fairplex in Pomona, for a total of 32 timed laps. Lap timing is via a "HOT LAP," digital-infrared timing device, mounted in the vehicle. The fastest and the slowest lap times are eliminated, the remaining 6 lap times are averaged. The average time and speed are recorded next to the drivers name.**

**Four Emergency Vehicle Operations Center driver training instructors, two each from the Los Angeles County Sheriff's Department and Los Angeles Police Department share the driving and evaluation of these vehicles.**

**At the conclusion of the preliminary handling portion of the test, each driver completes a "Drivers Subjective Evaluation" form. If the test vehicle is judged unacceptable in this preliminary review, it is rejected and not subject to further testing and evaluation.**

# **ACCELERATION PERFORMANCE TEST**

**This test is designed to measure vehicle performance in terms of acceleration, including speed and time elapsed at the quarter mile. Although the top speed is not recorded, a minimum of 100 MPH is generally obtained to satisfy the requirements for high speed law enforcement patrol.**

**All of the information gathered during the acceleration and subsequent brake test is gathered using a "DATRON SPEED SENSOR." This electronic device measures distance, time and speed. The Datron Speed Sensor is lap top computer driven and is the same type used by most major automobile manufacturers in conducting their vehicle evaluations.**

# **BRAKE TEST**

**This test procedure measures the braking response and efficiency of the vehicle.**

**The test is conducted immediately following the preliminary handling test (32 laps). This ensures that the brakes are tested after being driven at high speeds, thus simulating the actual operating conditions experienced by the officer in the field.**

**The test is conducted by first accelerating the vehicle to 80 MPH, then decelerating to a stop, maintaining an average deceleration rate of 22 feet per second. This procedure is repeated three additional times. At this point, a five minute stationary cool down period occurs. The vehicle is then accelerated to a speed of 60 MPH and decelerated at the maximum deceleration rate attainable before the onset of ABS. After a two minute delay, the 60 MPH procedure is repeated again. As soon as the vehicle has stopped, it is immediately accelerated to 60 MPH and then stopped as quickly as possible, simulating a panic stop. That stopping distance is measured and recorded. If a brake malfunction is experienced (i.e., severe fading or inability to stop in a straight line,) an effort is made to detect the cause of the brake failure. If it is decided that the failure is inherent in the engineering of the brake system of the vehicle, the test is discontinued and the vehicle is disqualified from further testing. If the failure is associated with a correctable situation, it is corrected and the test is rerun. The defect and any remedial action taken are noted in the test results.**

# **PURSUIT COURSE**

**This test is for those vehicles equipped with a factory installed “POLICE PACKAGE” and identified by the manufacturer as pursuit vehicles. This test is conducted on a closed 2.45 mile city street course which closely represents the environment most urban law enforcement emergency response vehicles must contend with. The course has virtually no straight-a-ways and consists of right and left hand turns and obstacles in the road way.**

**This is the final test during our “road” certification and the manufacturer’s, if they so choose, are allowed to rebuild the vehicle’s brake system prior to this test.**

**For this test, two drivers are utilized for each vehicle. Each driver completes two laps around the city or “pursuit” course. Lap timing is via a "HOT LAP," digital-infrared timing device, mounted in the car. The combined times of the two laps are recorded next to the driver's name.**

**If the test vehicle is unable to complete the course in under 4 minutes and 45 seconds, it is judged unacceptable for high speed law enforcement use.**

# HEAT TEST

Today's modern exhaust emission and computer monitored automobile is designed to operate at much higher temperatures than vehicles from the 1970's and 1980's. Scientific breakthroughs in metallurgy and lubrication compositions allow the modern engine to operate at temperatures formerly thought to be detrimental. A vehicle from the 1970 era usually exceeded 180 degrees' water temperature under normal driving conditions and generally overheated at 212 degrees. Today, modern engines operate safely between 200 to 260 degrees. Our heat testing is a "PASS-FAIL" scenario and is based on manufacturers allowable operating temperatures.

Heat from each engine component is measured by means of a digital thermometer. A bi-metallic probe from the thermometer is inserted into the component fluids at the conclusion of the 32 high speed laps. This process is accomplished in the following manner:

1. **Transmission Fluid**      The probe is inserted into the transmission via the dip stick hole, or in the case of the Dodge Hemi engines, the measurement is taken from the vehicle's sensors via the ALDL connector.
2. **Engine Oil**              The probe is inserted into the oil pan via the dip stick hole.
3. **Power Steering**          The probe is inserted into the pump reservoir fluid.
4. **Radiator Coolant**        Due to newer vehicles having closed coolant systems, the coolant temperatures are taken from the vehicle's sensors through the ALDL connector.
5. **Outside Air**              Temperature is measured away from the vehicle and in direct sunlight.

# **TIRE TEST**

**Each of our structured high speed test procedures are performed with factory equipped speed rated tires. We recognize the need for an alternative tire for standard patrol duty and for special conditions caused by terrain and weather. During our tire test phase we evaluate the construction, design, road handling abilities, wear patterns and durability of tires submitted for testing by the vehicle manufacturers.**

**For a tire to be certified for high speed law enforcement use it must successfully perform through 32 laps of high speed driving on our 1.57 mile road course, a non-recorded Brake Test and finally 2 laps through our high speed Pursuit Course.**

# **FUEL EFFICIENCY TEST**

**While EPA mileage estimates may be helpful for comparative purposes, they are based on simulated driving conditions. The fuel efficiency evaluation is an attempt to estimate MPG (miles per gallon) based on actual driving conditions.**

**Each vehicle is driven through a 100 mile loop twice, each time by a different driver. The loop is divided equally into urban, suburban, and freeway driving conditions. The vehicle is operated with the air conditioner and headlights "turned on" and with the transmission selector in the "overdrive" position. No attempt is made to "baby" the vehicle through the loop, but hard acceleration starts are avoided.**

**The test results are averaged between the two drivers and recorded.**

# **ERGONOMICS EVALUATION**

**This subjective evaluation is a rating of human factors and space utilization done individually and independently by several Deputy Sheriffs from this Department. The ratings are averaged to minimize personal prejudices that individuals may have for, or against any given vehicle. This evaluation rates each vehicle comparatively for its general suitability and efficiency for patrol operations or other specific functions in a Department's operations.**

# **MECHANICAL EVALUATION**

**The mechanical evaluation (performed by mechanics employed by the Sheriff's Department's fleet maintenance contractor) evaluates the day to day serviceability and maintenance of the vehicle.**

**Major consideration is given toward the accessibility and ease of repair of component parts for the purpose of obtaining a predictive evaluation of the time, ease, and cost of major repairs. The specific factors considered in evaluating each component are enumerated on the Mechanical Evaluation form.**

# COMMUNICATIONS EVALUATION

The communications evaluation of each vehicle is conducted by technicians assigned to the Los Angeles County Sheriff's Department's Communications and Fleet Management Bureau. This evaluation concerns itself with the radio installation, the effect of radio operation on vehicle performance and the effect of the vehicle on radio performance.

The Electromagnetic Interference Susceptibility test is intended for use in the presence of electromagnetic fields resulting from use of public safety two way radios.

Vehicle performance must not be affected in any way by transmissions from a radio and antenna installed in the vehicle and operating in any of the frequency ranges of 30 to 50 MHz, 450 to 512 MHz, and 800 to 900 MHz, and having a radio frequency output no less than 100 watts. Vehicle performance shall not be effected by the presence of another vehicle equipped with the above described radio and operated next to the subject vehicle.

Radiated and conducted electromagnetic interference vehicle systems and accessories shall be designed to reduce interference with the use of public safety radio receivers or electronic sirens or sound amplifiers. The effective sensitivity of a receiver installed in the vehicle shall not be reduced by more than the amount tabulated below for each frequency band:

FREQUENCY BAND	ALLOWABLE DEGRADATION
30 to 50 MHz	15 db
150 to 174 MHz	5 db
450 to 512 MHz	3 db
800 to 900 MHz	3 db

Degradation is the difference in effective receiver sensitivity measured with the vehicle engine and accessories turned off as compared to that measured with the engine and accessories turned on.

Sensitivity is measured in terms of the 12 db Sinad signal as defined in E1A Standard RS-204. To determine effective sensitivity, the receiver is connected to the antenna through an isolating tee connector which allows introduction of the signal generator through the isolated port. Comparative signal strength readings are then taken with and without the interference present.