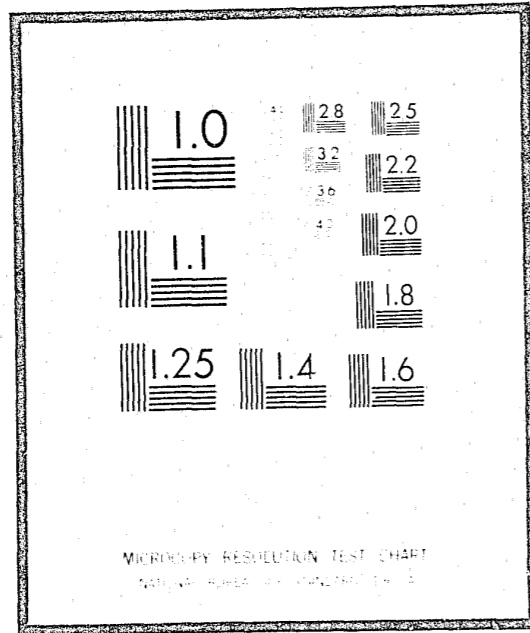


NCJRS

This microfiche was produced from documents received for inclusion in the NCJRS data base. Since NCJRS cannot exercise control over the physical condition of the documents submitted, the individual frame quality will vary. The resolution chart on this frame may be used to evaluate the document quality.

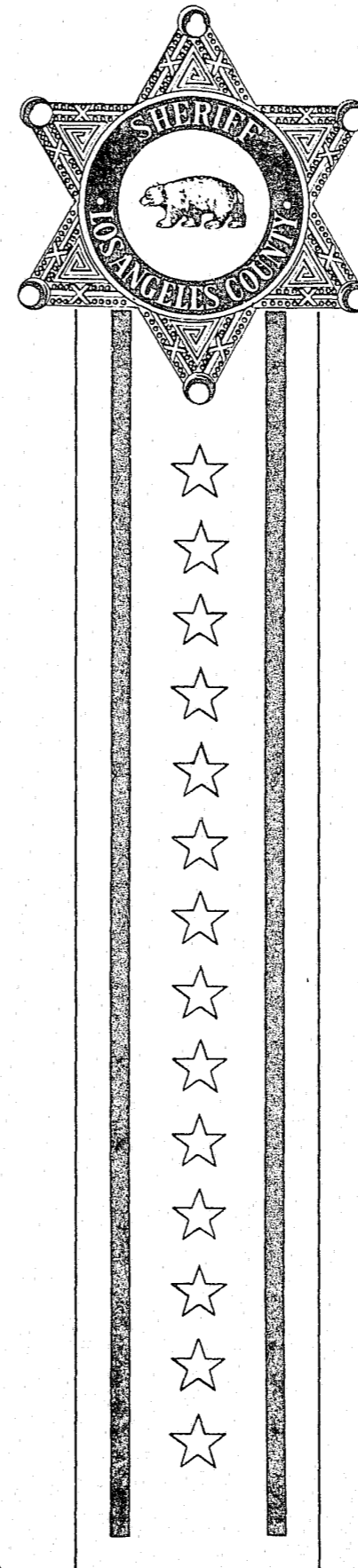


Microfilming procedures used to create this fiche comply with the standards set forth in 41CFR 101-11.504

Points of view or opinions stated in this document are those of the author(s) and do not represent the official position or policies of the U.S. Department of Justice.

U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL CRIMINAL JUSTICE REFERENCE SERVICE
WASHINGTON, D.C. 20531

Date filmed 7/23/76



VEHICLE TESTING AND EVALUTION PROGRAM

28200

Los Angeles County
SHERIFF'S DEPARTMENT
PETER J. PITCHESS, Sheriff



County of Los Angeles
Office of the Sheriff
PETER J. PITCHESS, SHERIFF
Los Angeles, California 90012

1973/74 VEHICLE TESTING AND EVALUATION PROGRAM

In past years the Sheriff's Department, in cooperation with the Los Angeles Police Department, has used a testing procedure to select new law enforcement vehicles that has become obsolescent in terms of the present state of the art of automotive testing procedures.

As a result of this situation and in view of the urgency of the current national energy situation, a program of modernization of the procedure is now in progress. The Sheriff's Department, with the cooperation of Executive Editor John Christy of Motor Trend Magazine, a Specialist Reserve Deputy, has developed a more thorough, electronically measured Testing and Evaluation Program to select vehicles to fit Departmental needs.

The previous procedure, consisting of simply driving the submitted vehicles around the Driver Training Facility track at Pomona to determine subjectively the handling, acceleration and braking characteristics, is now used only as a first preliminary phase of the new Testing and Evaluation Program. This evaluation gives an indication of the time effectiveness value of further testing (Enclosure # 2). If the vehicle is judged "unacceptable" in this review it is rejected and not subjected to the more exhaustive Testing and

Evaluation Program. It is carried on the comparative evaluation score sheet but remaining factors are listed as "not applicable". If the vehicle is considered acceptable it is then submitted to the full test program and the results are listed in their categories on the comparative data display sheet (Page 6).

The second phase of the program consists of a human factors evaluation, done individually by several patrol deputies, to determine the comparative ergonomic factors (liveability, ease of operation, habit-forming characteristics, visibility, comfort, space usage, etc.) of the vehicle. The individual ratings are then given weighted scores and the total scores are averaged to eliminate any prejudices toward or against an individual car. The object of this test is to determine comparatively and rate the vehicle for its overall suitability and efficiency either for general patrol use or a specific Departmental function (Enclosure # 3).

The third evaluation is a scored evaluation by two or more mechanics from the County Mechanical Department which actually owns and maintains the Sheriff's Department vehicles. This evaluation covers and scores ease and time of both normal maintenance factors such as accessibility of electrical components, fuel system repairs, oil changes, and other field maintenance functions. It also rates and scores major repairs to engine, driveline, rear end and other major components. These are evaluated for difficulty in repair or excessive time needed for repairs. The object of this section is to evaluate and project future down-time, a crucial factor in both the efficiency and cost of maintaining the Departmental fleet.

In view of the present era of energy shortage and the universal emphasis on conservation of fossil fuel, we have included a controlled fuel mileage test of each vehicle. This test over a 73.125 mile loop, devised by Motor Trend, runs from West Hollywood to the Palos Verdes peninsula and return. It includes much of the terrain covered by the Department in normal duty and varies through a selection of urban, suburban, freeway and mountain operation. Each vehicle is topped off at the beginning and then refilled at the end. The fuel used in terms of miles per gallon is then computed to the corrected (not odometer) mileage and carried out to three decimals for accuracy. It should be noted that the mileage is the normal expected mileage in continuous transportation use. Patrol use economy, with its high incidence of idle time (25+ percent) and stop-start operation can be expected to be from 30 to 40 percent less than the figure shown. However, this portion of the procedure is of immense concern in projecting future fuel use of any given vehicle that is a prospective addition to the fleet. There is a secondary value in enhancing community relations by demonstrating that an agency is aware of and facing the problems of energy consumption that concerns the community at large.

The most sophisticated portion of the testing procedure is that which concerns itself with the roadability performance of the submitted test vehicle. As a direct result of Mr. Christy's involvement with the Department, an electronic measuring system that includes a permanent strip chart record has been incorporated. The basic instrument is a Hewlett-Packard 7100-B dual channel

strip chart recorder. Information concerning speed, time, and acceleration both longitudinal and lateral (g-force), is fed into the instrument from a series of generators and transducers and recorded permanently for scoring and future reference. The vehicle is put through a scheduled series of acceleration runs, braking runs, lane changes and a steady-state cornering situation.

The results are scored from the resulting graph. These are then tabulated on the comparative data display (Enclosure # 4). The test is designed to duplicate and measure accurately the usual performance situations that a police vehicle can be expected to encounter in both patrol and other uses. Due to the fact that the information is computed to three decimals, it forms a valid part of the comparative data that cannot be gathered more accurately. From this data, a number of projections can be made which, combined with other scores and evaluations, can give an accurate picture of how that vehicle will fit Department use criteria in the future, as well as provide accurate data from which certain expected malfunction can be predicted.

The final test was developed through a joint investigation by this Department and the County Mechanical Department into the high incidence of transmission and engine failures at inordinately low mileage figures in late model vehicles. It was discovered through this investigation that the life expectancy of these major components was seriously affected by increasing engine oil and transmission fluid temperatures that often exceed the breakdown point of the fluids. These extreme temperatures can be lowered to a more

reasonable level through the use of the proper coolers and the object of this test is two-fold: to see if the manufacturer is aware of and taking care of the problem, and also to be able to project accurately the probable life of the vehicle before a major breakdown occurs or a major service procedure becomes necessary. The project is also of value in setting proper preventive maintenance schedules.

The above procedures being completed, the scores of the various categories are then averaged for an overall rating of each vehicle as free of subjectivity and human error or prejudice as possible. In each case, every effort has been made to keep the laboratory procedures in as close a relationship to the real-world use of the vehicles as possible so that these tests are not only of use in choosing and acquiring suitable vehicles, but in projecting as far as is feasible the future life expectancy and performance of that vehicle during its period of Departmental use.

Each segment of the procedure in its own right presents a valid method of selection and together they combine to give an unparalleled set of criteria for use in such selection and use projection.

COMPARATIVE DATA

VEHICLE SPECIFICATION	PLYMOUTH SATELLITE	DODGE CORONET	AMC MATADOR	AMC MATADOR	MERCURY MONTEGO	MERCURY MONTEGO	MERCURY MARAUDER
Engine Cubic Inches	440	440	460	401	460	460	460
Carburetor Size	4 BBL	4 BBL	2 BBL	4 BBL	2 BBL	4 BBL	4 BBL
Horsepower @ RPM	275 @ 4400	275 @ 4400	175 @ 3600	255 @ 4600	245 @ 4800	270 @ 4800	270 @ 4800
Torque: lbs. @ RPM	375 @ 3200	375 @ 3200	320 @ 3000	345 @ 3300	300 @ 3400	360 @ 3600	360 @ 3600
Compression Ratio	8.9:1	8.9:1	8.5:1	8.5:1	8.9:1	8.9:1	8.9:1
Transmission	Auto	Auto	Auto	Auto	Auto	Auto	Auto
Axel Ratio	3.23	3.23	3.54	3.54	3.54	3.54	3.54
Steering	Standard	Power	Power	Standard	Power	Power	Power
Tire Size	G78x15	G78x15	E78x14	E78x14	G78x15	G78x15	G78x15
Suspension - front	Torsion bar	Torsion bar	Coil	Coil	Coil	Coil	Coil
Suspension - rear	Leaf spring	Leaf spring	Leaf spring	Leaf spring	Leaf spring	Leaf spring	Leaf spring
Wheelbase	117	117	118	118	118	118	121
Length	212.4	212.4	214	214	215.4	215.4	224.5
Height	53.6	53.6	53.8	53.8	52.8	52.8	54.9
Width	78.6	78.6	78.2	78.2	79.3	79.3	79.7
Weight (less police emergency equip.)	3625	3625	3340	3385	3720	3720	4457
<u>PRELIMINARY HANDLING AND PERFORMANCE TEST</u> (Acceptance/Unacceptable)	Acceptable	Acceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable	Unacceptable
<u>ECONOMY ROAD TEST</u> (73.125 mi - MPG)	9.38	10.00	N/A	12.93	N/A	N/A	N/A
<u>HUMAN FACTORS EVALUATION</u> (Ergonomics; space usage)	63.175	64.762	N/A	62.633	N/A	N/A	N/A
<u>MECHANICAL EVALUATION</u> (Access & repairability)	85.00	82.00	N/A	71.50	N/A	N/A	N/A
<u>INSTRUMENTED PERFORMANCE</u> (Performance scores)							
<u>Acceleration</u>							
0 - 30 (Seconds)	3.1	3.3	N/A	3.8	N/A	N/A	N/A
0 - 45 "	4.7	5.5	N/A	6.2	N/A	N/A	N/A
0 - 60 "	7.7	8.5	N/A	9.8	N/A	N/A	N/A
Standing start 1/4 mile	96.0 mph	87.2 mph	N/A	82.0 mph	N/A	N/A	N/A
Maximum g's:	.50 g	.62 g	N/A	.52 g	N/A	N/A	N/A
30 - 50 (Seconds)	3.2	3.0	N/A	2.9	N/A	N/A	N/A
30 - 65 "	5.6	6.8	N/A	9.2	N/A	N/A	N/A
60 - 80 "	4.8	6.8	N/A	8.0	N/A	N/A	N/A
60 - 95 "	6.3	9.2	N/A	9.8	N/A	N/A	N/A
<u>Braking</u>							
30 - 0	.80 g	.75 g	N/A	.82 g	N/A	N/A	N/A
60 - 0	.78 g	.80 g	N/A	.80 g	N/A	N/A	N/A
<u>Handling & Recovery</u>							
One lane change	.40 g	.45 g	N/A	.30 g	N/A	N/A	N/A
Two lane changes	.70 g	.75 g	N/A	.62 g	N/A	N/A	N/A
Three lane changes	.70 g	.70 g	N/A	.72 g	N/A	N/A	N/A
Recovery	.60 g	.62 g	N/A	.50 g	N/A	N/A	N/A
Left circle (200' dia)	.75 g	.72 g	N/A	.68 g	N/A	N/A	N/A
Right circle (200' dia)	.69 g	.70 g	N/A	.60 g	N/A	N/A	N/A
<u>HEAT TEST</u> (Cigarettes/score)							
Radiator	200/32	203/30	N/A	204/39	N/A	N/A	N/A
Engine Oil	238/73	258/73	N/A	277/74	N/A	N/A	N/A
Transmission Oil	231/84	218/73	N/A	200/92	N/A	N/A	N/A
Under the hood	122/100	128/100	N/A	132/96	N/A	N/A	N/A
<u>COMMUNICATIONS/BIOGRAPHICAL EVALUATION</u> (COP's)	70.0	70.0	N/A	65.0	N/A	N/A	N/A
<u>AVERAGE SCORE OR RATING</u>	81.470	81.561	N/A	77.991	N/A	N/A	N/A

CONCLUSIONS

From the attached display comparison data, a number of conclusions can be drawn concerning the vehicles thus far run through the test program.

1. In terms of pure performance, the Plymouth Satellite is the clear superior of the other two.
2. In terms of mechanical repairability and maintenance, the Plymouth also scores above the others. This could be highly significant in terms of predicted down-time and component life expectancy.
3. The Dodge Coronet scores second in the above areas but marginally higher in the Human Factors category. This last might be due to the fact that it had power steering and was therefore more pleasant to drive than was the Plymouth which was not so equipped.
4. The sole outstanding feature of the Matador was its superiority in the mileage test where it achieved nearly three miles per gallon over the Dodge and three and one half miles per gallon over the Plymouth. In all other respects, it scores significantly lower than do the others.
5. The handling scores of both the Dodge and Plymouth indicate that they would be less tiring to drive, safer in an emergency situation, and would be likely to have fewer incidents of suspension failure. Also, due to their increased stability it is probable, though not positive, that tire life, at least front tire life would

be higher although their high performance capability could negate this.

6. In aggregate scoring the order of preference, not including fuel economy is: Plymouth, Dodge, Matador for black & white patrol duty. For other uses, this clear cut preference becomes less clear cut. Most certainly for regular transportation services and most "solid" sedan use in areas where superior performance is not a factor, the Matador would be more than adequate especially since the added weight of a patrol use vehicle is not a factor. If, for the 73/74 Program, uniformity is still a requirement, the Dodge Coronet represents a good compromise, sharing as it does the mechanical features of the Plymouth and thus much of the repairability and maintenance superiority as well as the handling and safety factors. Another factor to consider is that either the Dodge or the Plymouth share a number of mechanical parts with in-service vehicles. The Matador has this feature also, but to a lesser degree since there are fewer Matadors in service than there are Chrysler Corporation products.

LIST OF ENCLOSURES

- Enclosure # 1
1973-1974 Specifications of Sheriff's Patrol Cars
- Enclosure # 2
Test Driver's Subjective Evaluation Form
- Enclosure # 3
Human Factors Evaluation Form
- Enclosure # 4
Hewlett-Packard Strip Chart Readout and Performance Test Data Sheet
- Enclosure # 5
Automotive Mechanics' Maintenance and Repair Evaluation Form
- Enclosure # 6
Heat Test Recording Form

DEPARTMENT Sheriff BUDGET PERIOD 1973-74 DATE 11-7-73

SPECIFICATION FOR Sheriff Patrol Cars

It is the intent of these specifications to obtain a unit suitable for the service demands of the department involved. All installations shall be made in a neat and workmanlike manner and all equipment furnished shall be subject to the approval of the Purchasing Agent, Chief of the Shops and Garages Division, and the using department.

The body, finish, and fittings shall be the latest model, shall not have been used in demonstrator or other service, and shall be factory standard in all respects not in conflict with the following specific requirements:

The design of the vehicle must be such that it does not hamper or restrict subsequent installation and use of emergency equipment, red/amber lights and siren, to the satisfaction of the Los Angeles County Sheriff's Department.

Where specifications for specific items are not included, manufacturer's standards are satisfactory or they are not applicable to this vehicle.

Manufacturer's Standard Equipment and all devices necessary to comply with the State of California Administrative Code, and the Federal Motor Vehicle Safety Standards will be included. Vehicle must comply with all California Motor Vehicle Pollution Control Board requirements on both crankcase and exhaust emissions.

Bid Number _____
 Specification # 070686 1
 Make _____
 Model _____
 Firm Name _____
 Address _____

Bidder's specifications must be filled in completely by bidder and returned to Purchasing Agent.

ja

(cont.) All standard equipment is to appear on the vehicle as listed in the 1974 brochure.

The vehicles delivered to the County of Los Angeles by the successful bidder will be identical in every respect with the test vehicle furnished including all accessories, such as map lights, etc., even though they may not be called for specifically in the specifications.

Warranty work will be performed at a dealer-ship in the area in which the vehicle is working. Warranty period will start on the first day of the month that the vehicle is put into service. Use of other than Original Equipment parts will not void warranty.

Cars will have the "make ready" service work normally performed by the dealer completed before delivery. Cars, upon delivery will be ready for service. (Exception: Paint protective coating need not be removed).

Vehicles will be delivered to the County of Los Angeles Garage, 1055 N. Alameda, Los Angeles, California 90012, between the hours of 7:30 a.m. and 3:00 p.m. only, in accordance with the following schedule:

1. Within 60 calendar days after receipt of Purchase Order, 50 Black and white vehicles will be delivered.
2. During the successive 30 day period, an additional 100 Black and White vehicles will be delivered.
3. During the next successive 30 day period, the balance of the vehicles will be delivered.

(cont.)

(cont.)

4. Failure to accept these warranty and delivery conditions may be sufficient cause for rejection of the bid.

NOTE: The above delivery schedules are minimum. The successful bidder may, if he so desires, deliver the vehicles at a faster rate.

ROADABILITY TEST:

Vehicles will be tested for cornering, steering, and other road handling characteristics at the Pomona Fair Grounds Sports Car Track or other suitable place designated by the Sheriff's Department. Vehicles will be evaluated by the driver and passengers conducting the test and the opinions will be considered in rating the vehicles for over-all suitability. The actual test shall be conducted by two or more separate Los Angeles County drivers who will take four practice laps of the designated course to familiarize themselves with the vehicle. Following this, four additional laps will then be completed and the roadability of the vehicle noted by the driver. An additional two laps will be driven in opposing direction for further roadability evaluation. The drivers will evaluate the vehicle for ease of handling in corners and turns, for ease of control at high speed and ease of steering at slow speeds. Vehicle must accelerate from 0 to 60 mph in not more than 9 seconds, and have a top speed of not less than 115 MPH.

BRAKE TEST:

The brake test shall consist of two parts as follows:

1. Four stops of impending skid type from a speed of 90 miles per hour at two minute intervals followed by a panic stop from 60 miles per hour will be made, at which the ability of the vehicle to stop in a straight line will be evaluated. (cont.)

BRAKE TEST: (cont.)

2. Five minutes after the panic stop has been completed, four more stops at 90 miles per hour of the impending skid type at two minute intervals followed by a 60 mile per hour panic stop will again be performed, and the ability of the vehicle to stop in a straight line will be evaluated.
3. Cars equipped with a self-adjusting brake feature will be subjected to the following test immediately following conclusion of the above brake test:

There will be four (4) successive brake applications made on the vehicle with the car being driven in reverse. If it is found that the self-adjusting brake feature adjusts the brakes to the extent that the wheels drag when the rear drums cool down the vehicle will not be acceptable.

-Vehicle deceleration rates will be recorded by the use of a decelerometer and pressometer to determine the brake fade characteristics of the vehicles submitted for testing. Vehicles failing to pass this test will not be considered qualified for this bid.

-At the completion of the roadability and brake test, it may be required that the vehicle tested will remain in the custody and possession of the Sheriff's Department, where it will be returned to the County Shops and the brake shoes and shock absorbers removed and impounded as a control and check against the brakes and shock absorbers supplied on the vehicles in this requisition. Manufacturer shall be prepared to furnish a complete set of brake shoes and shock absorbers which will be installed, and the vehicles returned to the owner.

After closing of bids, upon request by the County of Los Angeles, the successful bidder will within three (3) days provide a test vehicle which should be identical as per specifications for inspection and specification compliance tests, other than performance requirements. (cont.)

If the vehicle is accepted, it will be used by the County of Los Angeles Shops to make up radio, siren and special equipment brackets as necessary. No holes will be drilled in the vehicles and it will be returned in the same condition that it was received. It will be necessary for this vehicle to be in possession of the County shops for approximately three (3) weeks.

All parts furnished on the vehicle (except special items for radio and other special equipment requested by the County) must be listed in the Parts Book or a supplemental Heavy Duty Parts Book.

Twenty (20) Parts Books and twenty (20) Maintenance Manuals will be furnished by the successful bidder within 45 days or receipt of the Purchase Order.

Successful bidders must furnish a list of all items that are special on cars that they propose to furnish.

BODY STYLE:

Four-door sedan. To be painted black and white or stock colors as specified. Paint layout will be provided to the successful bidder.

WHEELBASE:

116 inch minimum.

ENGINE:

V-8 not less than 400 cubic inches displacement police special engine developing the maximum horse power available. Engine must be operable on a low lead fuel of a 93.5 octane number, without detonation. (cont.)

ENGINE: (cont.)

The pulley sizes, belt arrangements and all accessories on all cars will be identical.

Filtronic paper-type air cleaner.

Manufacturer's standard oil filter with a replaceable element.

Heavy duty radiator and heaviest duty thermostatically controlled viscous drive fan required. Fiber glass fan acceptable however fan noise level not to be excessive. Drive belt to be high performance type. Cooling system must be capable of keeping the engine at not greater than 220° F when required to idle at standard idle speed in an ambient temperature at 100° for 30 minutes with the air conditioning unit operating. Manufacturer's feeling they can not meet this requirement will submit, with their bid, a letter of intent stating: "If it is determined during summer months that the cooling system is not adequate any changes made by the manufacturer to comply will be made on all vehicles even though they are out of warranty at the manufacturer's expense (Labor and Materials)." To be equipped with a factory installed coolant recovery system.

BRAKES:

Will be power disc brakes on front wheels of all vehicles.

Heaviest duty type lining will be furnished (specify square inches of lining area of rear brakes and rear drum diameter).

Brakes must be of sufficient capacity and effectiveness to meet the test requirements as outlined in these specifications.
(cont.)

ja

BRAKES: (cont.)

Brakes with self-adjusting features will not be acceptable unless they successfully pass the tests for the self-adjusting brakes, as outlined on Page 4, #3, under Brake Test.

Brakes without self-adjusting feature will be provided with a slot in the backing plate for adjustment.

Parking brake to hold on a not less than thirty-two percent grade forward and reverse at not to exceed 175# pedal pressure.

TRANSMISSION:

To be three speed, fully automatic, heaviest duty available. All transmissions to be of the same make and model. The cooling system must be capable of maintaining the oil temperature below 285° F under all operating conditions. Each transmission to be equipped with a suitable device to prevent the transmission from being manually shifted into low range from the driver's compartment.

REAR AXLE:

Heavy duty. Ratio approximately 3.3 to 1. Specify ratios available. Ratio to be compatible with speed requirements.

ELECTRICAL:

Not less than 70 amp. hour battery.

Alternator to have not less than 60 amp. output and not less than 15 amp. output at 700 engine RPM, dual belt drive preferable. If a single belt drive furnished, a high performance type belt will be used.

ja

UPHOLSTERY: Black and White Sedans.

Heavy duty front seats with heavy duty foam rubber required. Seats to be installed in the chassis in the rearmost position.

Heavy duty rear seats--no foam rubber required.

Solid vinyl headliner and side panels.
Solid vinyl covered arm rests.
Solid vinyl covered rear seat and lazy back.

Front seat and lazy back to be vinyl (or breathable vinyl) and vinyl trim, color of front seat and lazy back to be selected by the Los Angeles County Sheriff's Department, and will be the same color in all cars.

UPHOLSTERY: Plain colored sedans.

All single tone plain colored cars to have cloth (or breathable vinyl) and vinyl trim. Exterior and interior colors selected will be standard with successful bidder.

Single tone colored cars that are equipped with a standard broadcast radio will have not less than three interior color selections (Approximately 12)

INTERIOR:

Heavy duty rubber floor mats--front and rear.

Floor mat--trunk.

Single key locking system for all cars, including trunk and glove compartment. All cars to be keyed alike and each car to have four keys.

(cont.)

ja

INTERIOR: (cont.)

Hood to be controlled by an inside release located on the driver's side.

Deck lid to be controlled through a remote control switch. Location of control switch to be approved by the Los Angeles County Sheriff's Department. Control switch to be of push button type and inoperative at all times when ignition key is removed. Deck lid control mechanism to be electric.

Deck lid, when opened remotely, will not open up completely so as to prevent damage to the hinges. Deck lid must remain in the full open position, when opened manually. Trunk light to be furnished and connected so that it goes on automatically when deck lid is opened.

Ash trays--front and rear.

Cigarette lighter (front only).

Shall be equipped with a dome light (dome light not to operate with opening and closing of doors).

Rear door handles to be furnished and installed but to be inoperative from inside on black and white vehicles only.

CHASSIS:

To be equipped with:

Power steering to also include a cooler if necessary to keep oil temperature below 285° F.

Heavy duty front suspension.

Heavy duty rear suspension.

Heavy duty stabilizer bars, front and rear where available, giving the best combination to reduce body roll and provide flat cornering. Stabilizer bars not to extend below lowest point of vehicle chassis. (cont.)

ja

CHASSIS: (cont.)

Heavy duty shock absorbers, front and rear.

TIRES--Highway Patrol Type tires - Nylon - tubeless, black sidewall, minimum 4-ply construction.

Tires to be Fireston, Goodrich, Goodyear, or U.S. Royal. NOTE: The same make, size and class of tire that is used on the test will be furnished on all cars.

STATE BRAND YOU OFFER.

5 each, not smaller than G78 x 15. Specify tire size.

Tires offered must be marked to designate "Patrol Type" - AND be constructed to withstand high torque and heavy service of police work. If tires offered are not so marked, bidders representation must be confirmed in writing by tire manufacturer and signed by responsible tire manufacturer's representative. Wheels: Five wheels (police special) not less than 6 inch rim width.

SPECIAL EQUIPMENT AND ACCESSORIES:

Speedometer to be accurate within + or - three (3) per cent. Speedometer calibration certificate to be furnished.

Tinted glass throughout.

All cars will be equipped with air conditioning, factory built-in, with the heater as an integral unit. Unit tested at the track will be equipped with air conditioning, power steering and any other item included in these specifications that would affect the handling of the vehicle.

SAFETY ITEMS:

Padded dash, as dark as possible to eliminate glare in the windshield.

Dual electric windshield wipers (two or more speeds).

Inside rear view mirror--Day and Night.

Outside rear view mirrors, non-glare--door mounted left and right sides. Mirrors to be so designed that they do not change adjustment when doors are closed.

During the tests, the vehicles will also be evaluated on their visibility to the rear. The vehicles must provide adequate rear visibility.

Parking brake indicator light.

Dual horns.

Horn ring (half ring or bar type acceptable).

Gasoline tank will not form bottom of trunk.

All vehicles shall be equipped with all of the items necessary to meet the 1974 Federal Motor Vehicle Safety Standards.

COMMUNICATIONS:

A flexible, waterproof conduit with a not less than 1-1/4 inch inside diameter will be installed. It will descend from the floor of the trunk, running into the motor area and terminating in the upper area of the firewall into the interior of the vehicle. This end to be secured by U-clamp or other suitable clamping devices.

Maximum length of the conduit will not exceed 10 feet, 9 inches. It will be at least 2 inches away from the engine exhaust system. Flexible conduit shall be adequately supported by U-clamps or other suitable type clamping device. Conduit emergency control units mounted on tunnel between front seat and dash.

NOTE: If conduit runs on the inside of the vehicle, it will be necessary to run it through the firewall and clamped as previously as specified. Installation will not interfere with positioning of rear seat cushion, rear doors or any other portion of the vehicle chassis. Entire installation must be approved by the Los Angeles County Communications Department.

A one and one-half inch hole through the upper quadrant of the firewall to be insulated with a rubber grommet adjacent to the flexible conduit installation. Exact location of hole to be determined by Communications Department.

Vehicle shall incorporate certain radio frequency interference suppression measures and devices so that radio interference generated as the result of its operation does not exceed the limits established in S.A.E. Standard J 551 entitled "Measurement of Vehicle Radio Interference (30 to 400 megacycles)". Manufacturer shall supply certification of compliance with S.A.E. Standard J 551 at time of delivery of the test car.

ja

LIQUIDATED DAMAGES:

All time limits stated in the Purchase Order are of the essence and should the delivery not be completed on or before the time stipulated, it is mutually agreed by and between the successful bidder and the County of Los Angeles that:

A delay would seriously affect the public and the operation of the Los Angeles County; that a reduction in the unit price of five dollars (\$5) per calendar day for each and every day for each unit which exceeds the delivery time set forth in the Purchase Order is the nearest measure of damages for each delay that can be fixed at this time; therefore, the County and the successful bidder hereby establish said reduction in the unit price of five dollars (\$5) per calendar day for each and every day of delay for each unit as liquidated damages and not as a penalty or forfeiture for the breach of agreement to complete delivery by the successful bidder on or before the time specified in the Purchase Order.

Liquidated damages shall not apply to time elapsing between date of delivery and date of notification to the successful bidder or rejection of sub-specification material.

The above conditions may be invoked if deliveries exceed the specified time or if replacement of material not meeting specifications exceeds the specified time.

Should the successful bidder be obstructed or delayed in the work required to be done herewith by changes in the work or by any default, act, or omission of the County, or by strikes, fires, act of God, or by the inability to obtain materials, equipment or labor due to Federal Government restrictions arising out of the defense or war (cont.)

ja

LIQUIDATED DAMAGES (cont.)

program, then the time of completion shall be extended for such periods as may be agreed upon by the County and the successful bidder. Shall there be insufficient time to grant such extensions prior to completion date of the contract, the County may at the time of acceptance of the work waive liquidated damages which may have accrued for failure to complete on time, due to any of the above, after hearing evidence as to the reasons for such delay and making a finding as to the cause of same.

In event that the successful (low) bidder is on strike at the time of the award of the bid, the County reserves the option to accept the first acceptable low bid from a manufacturer that is not on strike.

Prior to close of the bid, a car dealer, manufacturer, or his representative will be required to furnish a vehicle for test purposes. This vehicle will be equipped with the engine, brakes, springs, shock absorbers, steering gear, tires, wheels, stabilizer bars, spotlights, and all other special equipment as called for as part of the specifications required on all black and white vehicles in this requisition.

Vehicle must also be equipped with an air pollution exhaust control device that is approved by the State of California for use on 1974 model cars sold in California.

These demonstrator vehicles will be subjected to a brake and roadability test. The County of Los Angeles will not be responsible for any damage during the test or the condition of the vehicle when returned to the submitter after testing. Furthermore, all cars tested will be at the owner's risk for any damage occurring to the vehicles for any reason.

ja

Companies selling the test vehicle to Los Angeles County will not be required to furnish the additional vehicle above. The company, however, will furnish the tires and wheels used for testing at the track.

Vehicles will be tested and driven under the supervision of the Los Angeles County Sheriff's Department and will be tested and driven by employees of the department or personnel designated by the department.

ja

Specification No. 070686 1

Page 16

Dealer to furnish Dealer's Bill of Sale in the name of Los Angeles County, 1100 North Eastern Avenue, Los Angeles, California 90063, and two copies of Smog Certificate for each vehicle.

In compliance with the Los Angeles County Board Order #126, every 1974 model vehicle with a 6,000# GVW or less shall be tested for exhaust emissions by the manufacturer before delivery. The results of this test will be furnished, showing the concentration of hydro-carbons (HC), carbon monoxide (CO), and nitrous oxide (NOX) at the time of delivery to Los Angeles County. These vehicles not meeting the State of California Assembly Line Emission Standards will not be accepted.

Bidders shall submit detailed literature of the vehicle they propose to furnish.

Failure to submit this information is sufficient cause for rejection of bid.

These specifications prepared by:

J. F. Beach, Chief, Shops and Garages, and approved by:

ja

Date: _____ Location: _____ Make & Car # _____

Model: _____ C.I.D.: _____ H.P.: _____ Axle Ratio: _____

Stop#	Speed	Decel. Reading	Lbs. Pressure on Pedal	Interval Time	Remarks
1					
2					
3					
4					
Panic					
1					
2					
3					
4					
Panic					

Stops 1 through 4 in both series shall be made from a speed of not less than 90 MPH, if possible. Drivers shall try to obtain 17-21 ft/sec deceleration in each stop.

BRAKE COMMENTS:

Lap #	Driver	ROADIBILITY & PERFORMANCE		
		Driver	Driver	Driver
1				
2				
3				
4				
Aver Time				
Aver Speed				

Date _____ Make & Car # _____ Driver _____

- * 1. UNDERSTEER
 - ___ Excessive
 - ___ No Problem
- ** 2. OVERSTEER
 - ___ Excessive
 - ___ No Problem
- 3. BODY LEAN
 - ___ Excessive
 - ___ Moderate
 - ___ Satisfactory
- 4. BOUNCE
 - ___ Excessive (bottoms out)
 - ___ Stiff
 - ___ Satisfactory
- 5. STEERING RATIO
 - ___ Slow
 - ___ Fast
 - ___ Satisfactory
- 6. STEERING WHEEL SIZE
 - ___ Too Small
 - ___ Too Large
 - ___ Satisfactory
- 7. TRANSMISSION SELECTOR
 - ___ Location
 - ___ Satisfactory
 - ___ Unsatisfactory
 - ___ Operated Properly
 - ___ Yes
 - ___ No
- 8. BRAKES
 - ___ Fade
 - ___ Pull (left or right)
 - ___ Wheel lockup (which one)
 - ___ Satisfactory
- 9. TOP SPEED OBTAINED
 - _____ M.P.H.

* Ploughing; rear end won't come out, tends to go off corner nose first
 ** Slides out; rear end slides out and is uncontrollable

Date _____ Location _____

Make & Car # _____ Model _____ Driver _____

GENERAL INFORMATION:

- Entering and Exiting - (Front)----- Good () Fair ()
- Entering and Exiting - (Rear)----- Good () Fair ()
- Leg Room----- Good () Fair ()
- Head Room - (Front)----- Good () Fair ()
- Head Room - (Rear)----- Good () Fair ()
- General Visibility----- Good () Fair ()
- Location of Mirrors----- Good () Fair ()
- Location of Door Handles----- Good () Fair ()
- Location of Speedometer----- Good () Fair ()
- Location of Instruments----- Good () Fair ()
- Protruding Knobs or Sharp Edges----- No () Yes ()
- Windshield Distortion----- No () Yes ()

Remarks:

MAKE _____

LOS ANGELES COUNTY SHERIFF'S DEPARTMENT

Automotive Test Unit

ERGONOMICS EVALUATION FORM

Grade each factor on a 1 to 10 scale with 1 representing "totally unacceptable", 5 representing "average" and 10 representing "superior".

1. SEAT (FRONT)

Construction

Springs _____

Padding _____

Cover material _____

Configuration

Depth of bench _____

Angle of back _____

Adjustability _____

General body support _____

2. WHEEL-PEDAL-SEAT RELATIONSHIP

Adjustment capability

Seat _____

Backrest _____

Total distance _____

Ease _____

Control accessibility _____

Wheel adjustability _____

Page Total _____

3. CONTROLS & INSTRUMENTATION

Vehicle controls

Shift position _____

Shift indicator visibility _____

Hood release position (interior only) _____

Handbrake release position _____

Small controls (knobs & switches) _____

Ashtray location _____

Cigarette lighter location _____

Instrumentation

Adequacy _____

Clarity _____

Placement _____

Night legibility _____

Additional available space _____

4. VISIBILITY

Visibility

Front _____

Left Side _____

Left rear quarter _____

Right side _____

Right rear quarter _____

Rear _____

Page Total _____

5. HEATER/A-C/VENTS & CONTROLS

Controls

Control position _____
Control adjustment _____
Vent placement _____
Vent adjustability _____

Efficiency

Blower range _____
Temperature range _____
Noise _____

6. WINDOWS AND DOORS

Controls

Convenience of operation _____
Speed of operation _____
Position _____
Protrusion _____

Dimensions

Height _____
Width _____
Opening angle _____
Area _____

Page Total _____

7. COCKPIT STOWAGE SPACE (B/W ONLY)

Clipboard _____
Shotgun _____
Reports & paperwork _____
Radar unit _____
Additional & miscellaneous _____

8. SPECIAL EQUIPMENT LOCATION & CAPABILITY (B/W ONLY)

Trunk release _____
Shotgun rack & lock _____
Stationary spotlights _____
Radar mounting _____

9. REAR COMPARTMENT

Seats

Springs _____
Padding _____
Cover material _____
Depth of bench _____
Minimum distance to front seat _____
Angle of back _____

Capability

Floor covering _____
Door locks (security) _____
Security screen space (B/W only) _____

Page Total _____

10. TRUNK

Construction

Configuration _____

Location of spare tire _____

Dimensions

Light equip. (first aid, flares, etc.)
storage _____

Accessibility _____

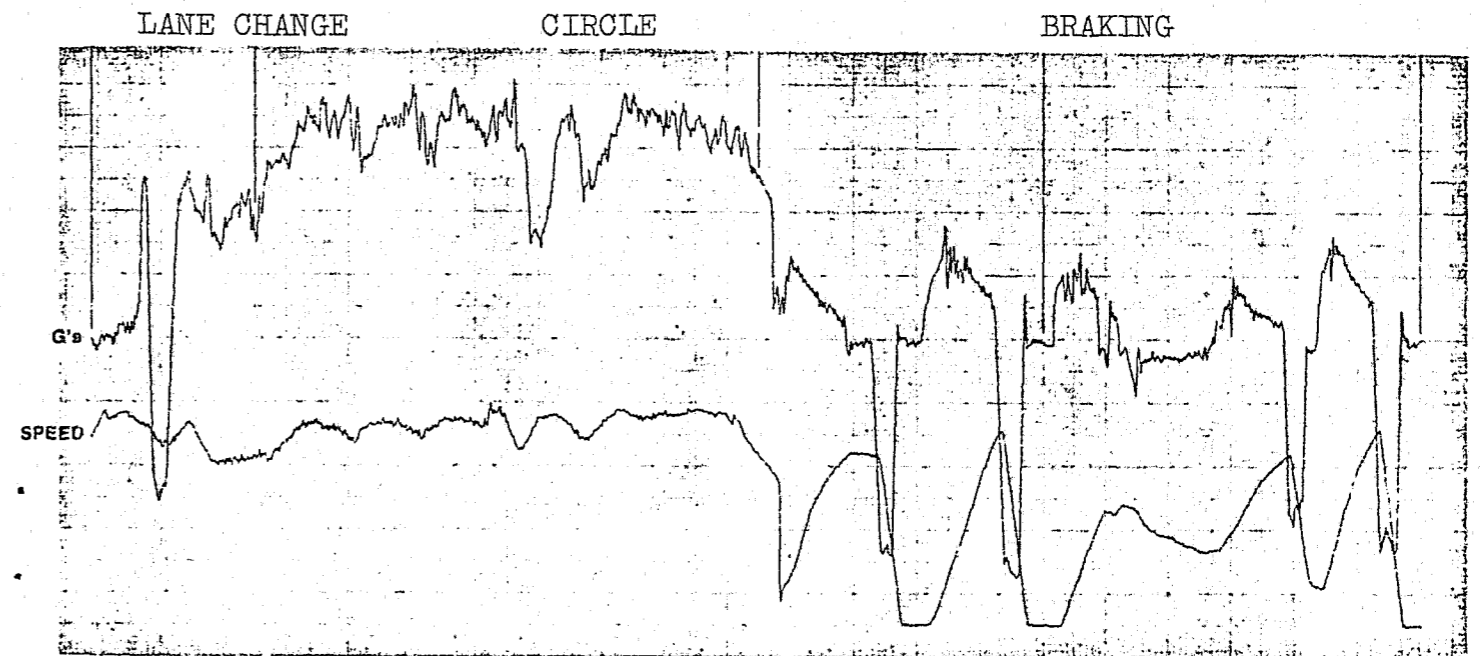
Page Total _____

Signed: _____

Rank: _____ Unit: _____

Please use bottom of this page for any comments you may have regarding
this vehicle.

HEWLETT-PACKARD STRIP CHART READOUT



A partial section of the Hewlett-Packard strip-chart readout showing speeds and G - forces generated by a vehicle during handling, steady-state turning (200 ft. circle) and braking phases of test.

PERFORMANCE
TEST DATA SHEET

CAR: _____

DATE: _____

Acceleration

0 - 30: _____ sec.
 0 - 45: _____ Sec.
 0 - 60: _____ sec.
 SS 1/4 mi.: _____ mph.
 Max g: _____ g.
 30-50: _____ sec.
 30-65: _____ sec.
 60-80: _____ sec.
 60-95: _____ sec.

10 - T: _____
 15 - T: _____
 20 - T: _____
 mph÷10: _____
 g.X 10: _____
 10 - T: _____
 15 - T: _____
 15 - T: _____
 15 - T: _____

Braking

30 - 0: _____ g.
 60 - 0: _____ g.

g.X 10: _____
 g.X 10: _____

Handling & Recovery

1 lane: _____ g.
 2 lane: _____ g.
 3 lane: _____ g.
 recovery: _____ g.
 l. circle: _____ g.
 r. circle: _____ g.

g.X 10: _____
 g.X 10: _____
 g.X 10: _____
 g.X 10: _____
 g.X 10: _____
 g.X 10: _____

TOTAL: _____

TOTAL ÷ 2 = SCORE: _____

Los Angeles County

SHERIFF'S DEPARTMENT

Automotive Unit Vehicle Test Program

STATION MECHANIC EVALUATION FORM

Grade each factor on a 1 to 5 scale with 1 representing "totally unacceptable", 3 representing "average" and 5 representing "superior".

I. MAINTENANCE

A - Access

Normal Maintenance

- a) Plugs _____
- b) Oil fill _____
- c) Oil drainage _____
- d) Oil filter _____
- e) Fuel system _____
 - 1. filters _____
 - 2. lines _____
 - 3. carburetor _____
- f) Distributor & Coil _____
 - 1. position _____
 - 2. type _____
 - 3. R&R points & condenser _____
- g) Electrical _____
 - 1. battery position _____
 - 2. wiring _____
 - 3. alternator position _____
 - 4. light replacement _____
- h) Transmission _____
 - 1. linkage _____
 - 2. drainage _____
 - 3. cooler _____

B - Repairability

Mechanical

- a) Radiator R&R _____
- b) Engine component R&R _____
- c) Engine assembly R&R _____
- d) Transmission R&R _____

END