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MIL-STD-265A
14 September 1960

SUPERSEDING
MIL-STD-265
28 September 1956

# MILITARY STANDARD

# TEST AND INSPECTION

# OF

# TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

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## ARMED FORCES SUPPLY SUPPORT CENTER
## WASHINGTON 25, D. C.

# TEST AND INSPECTION OF TRUCK, FIXED PLATFORM, POWERED GASOLINE, PNEUMATIC RUBBER TIRED

MIL-STD-265A

1. This standard has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force, effective 14 September 1960.

2. Recommended corrections, additions, or deletions should be addressed to the Standardization Division, Armed Forces Supply Support Center, Washington 25, D. C.

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# TEST AND INSPECTION OF TRUCK, FIXED PLATFORM, POWERED, GASOLINE PNEUMATIC RUBBER TIRED

## 1. SCOPE

1.1 **Scope.** This standard covers the testing and inspection of equipment listed in Specification MIL-T-3977.

## 2. REFERENCED DOCUMENTS

2.1 The following specification and publication, of the issue in effect on date of invitation for bids, form a part of this standard. When conflicts exist between this standard and any referenced document, the end item specification shall govern.

SPECIFICATIONS

MILITARY

MIL-T-3977 — Truck, Fixed 60 inches by 108 inches Platform, Powered, Gasoline, Pneumatic Rubber Tired.

PUBLICATIONS

MILITARY

NAVSANDA Publication 284 — Storage and Materials Handling.

(Copies of specifications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

## 3. DEFINITIONS. Not applicable.

## 4. GENERAL REQUIREMENTS.

4.1 **Requirements for approval.** Items of equipment tested and inspected under this standard shall pass the following tests and inspections outlined herein:

A. Pre-Test.

B. Performance Test.

C. Post-Test.

Examination and testing, whenever practicable, shall be conducted at the contractor's plant. If the contractor does not have an approved test course, the performance tests and post-tests will be conducted at a Government test course. All pre-inspection and pre-tests will be conducted at the contractor's plant and a copy of the pre-inspection and pre-test results will be forwarded by the cognizant Government inspector with the truck to the designated testing facility. When tests are conducted at a Government test facility, equipment operators shall be furnished by the Government to assist in conducting the test and inspections as outlined in this standard.

4.2 **Operator qualification.** Government operators assigned for testing a type and model of equipment under the provisions of this standard shall have satisfactorily completed the applicable portions of the course entitled "On-the-Job Training Course for Operators of Materials Handling Equipment", NAVSANDA Publication 284. He shall have available, and show to the contractor's representatives if requested, his "Standard Operator's Permit" (DD Form 313), or its equivalent for the type of equipment under test.

4.2.1 *Operator indoctrination.* Operators provided for testing any machine under provisions of this standard shall be required to drive that machine through the appropriate test course until he has achieved sufficient proficiency in operating the machine. This warmup period shall last for no more than 2 hours per driver. The contractor's representatives will be permitted to inform each driver of the proper technique to be used in operating the machine to achieve maximum performance.

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4.3 **Test location.** The test location shall be as designated by the contracting officer.

4.4 **Test officer.** The test officer shall be appointed by the Department of Defense and shall exercise full authority in directing the test.

4.5 **Ambient temperature.** Temperature of the surrounding atmosphere may range from 40° F. to 104° F., inclusive. If the temperature drops below or rises above this range, the test may be discontinued at the discretion of the test officer or the manufacturer until the temperature returns to this range. When tests are conducted outside this range the Government assumes no responsibility for adverse temperature effects that may occur.

4.6 **Contractor's representatives.** Any contractor whose machine is being tested in accordance with the provisions of this standard will be permitted to have representatives witness the test and inspection and assist the test officer (upon request).

4.7 Official test report. An official report of the test and inspection will be prepared. It will include records of the pre-test, performance test, post-test and such other tests as were deemed necessary together with a statement from the test officer indicating whether the machine has passed or failed. The test officer will prepare as many copies as directed by the contracting officer.

## 5. DETAILED REQUIREMENTS

5.1 Pre-test. The pre-test shall consist of 3 principal parts, each of which is described below.

A. Maintenance Service and Inspection.

B. Inspection Check List.

C. Inspection Tests.

5.1.1 *Maintenance Service and Inspection.* Maintenance Service and Inspection shall be conducted in accordance with Maintenance Service and Inspection Sheet.

5.1.2 *Inspection check list.* All inspections and other procedures needed to mark the questions contained in the check list shall be performed in conjunction with, or immediately subsequent to, the initial maintenance service and inspection referred to in paragraph 5.1.3. Each of the questions contained in the Pre-Test check list shall be answered by placing an "X" in the column "Yes" or "No" as appropriate. After completion of the check list, any "X" in the "No" column shall be cause for rejection of the machine under test.

5.1.3 *Inspection tests.* Inspection tests shall be given in accordance with procedures outlined in the test forms to indicate fulfillment of contractual requirements.

5.1.4 *Standard procedures.* Inspections and tests under the provisions of this standard requiring standard loads shall utilize rated load for the required capacity of the machine under test. Loads may be of any desired material, but they shall be uniformly distributed over the load carrying platform of the machine under test. A tolerance of —1% +0% of the specified test loads will be permitted. All portions of the pre-test shall be completed satisfactorily prior to the performance test.

5.2 Performance test.

5.2.1 *Layout of course.* The test course shall be set up in accordance with the provisions of Drawing A. Course length shall be the same as specified. The length of each leg and number of curves in each leg may be varied, so long as the total length of the course and its general proportions are maintained. Aisle or road widths shall be 12 feet. The perimeter of the course shall be encompassed with suitable barriers or indicators. Rubber pylons, or other suitable marking devices, shall be

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placed at all corners and other critical points to assist in keeping the machine under test within the course aisle.

5.2.1.1 *Ramp inclusion.* The course should be laid out to include natural grades of the slope and approximate length specified. Only if it is impossible to do this shall a ramp be constructed. When constructed, it shall be in accordance with drawing C.

5.2.1.2 *Obstacle inclusion.* Obstacles shall be included in the course layout located as indicated on drawing A. Iron, wood or steel blocks constructed in accordance with drawing B may be used. A guide line 15 feet long shall be provided to the left of the center line of the course and parallel to it. This line shall be at a distance from the course center line equal to one-half the distance between wheel centers. This spacing and arrangement will allow the left wheels of the machine under test to pass over the first pair of blocks and then the right wheels to pass over the second pair of blocks while the machine is moving forward in a straight line with the left front wheel tracking on the guide line.

5.2.1.3 *Course surface.* The test course shall be covered with hard packed earth or gravel, with a surface permitting tire impressions ¼ inch deep when the carrier is transporting a capacity load, or any other surface or paving which meets this requirement. The test course shall be free of snow, ice, any non-planned obstacles or foreign materials during the course of the test.

5.2.1.4 *Minimum lighting requirements.* Minimum general illumination of the course shall be 5 foot-candles on the operating level.

5.2.2 *Speed of negotiating course.* Each machine undergoing test should traverse each part of the performance test course at the maximum safe practical speed.

5.2.2.1 *Laps per hour.* Each machine undergoing test shall complete 20 complete circuits of the test course during each individual operating hour of the performance test.

5.2.2.2 *Laps per 8-hour day.* Each machine undergoing test shall complete 160 complete circuits of the test course during each individual operating 8-hour day of the performance test without requiring more than 1 refueling.

5.2.3 *Duration of performance test.* The performance test shall be conducted 8 hours per day, 5 days per week, for a period of 8 operating 8-hour days, or equivalent thereof. By means of the accelerated wear features built into the performance test, this period is intended to be the equivalent of approximately 3.7 months of normal truck operation.

5.2.4 *Periodic maintenance.* On the fourth operating day of the performance test the "Maintenance Service and Inspection" shall be given according to the provisions of "Maintenance, Service and Inspection Sheet". This procedure shall be carried out after the machine under test has completed performance test requirements. However, no repairs or replacement of parts shall be permitted.

5.2.5 *Method of negotiating course.* The machine under test shall begin each lap at the point labeled "START" on Drawing A. It shall have been loaded with the specified test load prior to commencement of the test. As the operator starts the machine he shall operate the horn for approximately 1 second; turn on headlights, turn off and turn on. The headlights shall be illuminated during the entire test. It shall proceed in a forward direction along the portion of the course marked "A" until it reaches the first turn area marked "B". Here the machine under test shall make the 360° turn in a clockwise direction and then proceed to the stopping point at the next turn. After stopping, the machine shall make a 90° turn onto the natural slope or ramp, marked "C". The machine shall proceed up the slope or ramp to the position labeled "Stopping Point" on the

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drawing. Here the driver shall stop the machine under test, and then resume mounting the slope or ramp. After the top of the slope or ramp is reached, the machine shall descend ramp and proceed along the main aisle in the portion of the course marked "E" and "F" until it reaches the portion of the course marked "G" which contains the obstacle test.

The obstacle test shall be traversed by driving through this area in a straight line, with the left front wheel on the guide line, so that the left wheels will pass over the first pair of blocks and the right wheels will pass over the second pair of blocks. This part of the test may be conducted at low speed. However, the machine shall not be stopped prior to going over the blocks. After the obstacle test has been traversed the machine shall proceed along the main aisle in the portion of the course marked "H" until it reaches the final turn.

Here the machine shall stop prior to the turn, then start and make a tight 360° turn, in a counterclockwise direction at maximum acceleration for the first 90° of the turn, and then stop upon completion of the turn.

The driver shall continue to maneuver the machine around the course, in the manner described above, in accordance with paragraph 5.2.2.

On alternate days, the course shall be traversed in the opposite (or clockwise) direction. On these days the test procedure shall be reversed.

The "Hourly Time Record Sheet" (BUSANDA Form 2522) shall be filled out for each operating hour of the performance test.

5.2.6 *Operating limitations.* The truck under test shall not be permitted to leave the bounds circumscribed in drawing A nor shall the procedure requirements specified herein be altered.

5.2.7 *Failures during testing.* During the performance testing, minor adjustments or repairs will be permitted at the discretion of the test officer, provided they are not repetitive in nature. Minor break downs which are repetitive and major break downs shall be cause for rejection of the truck. A major break down is defined as a failure in a major component of the truck or one requiring more than one hour to repair using conventional shop tools and practices.

5.3 Post-test. The post-test shall be conducted after the machine has completed the performance test or, if it fails the performance test, the inspection portion of this procedure shall be conducted after such a failure. The post-test consists of two parts:

A. Post-Test Inspection Test.

B. Post-Test Inspection Form.

5.3.1 *Post-test inspection tests.* These tests shall be performed in accordance with the applicable procedures outlined in the test forms. The truck shall be given routine service and inspection in accordance with the Maintenance Service and Inspection Sheet prior to conducting post-testing. The Post-Test Inspection Test Check Sheet shall be marked by placing an "X" in the column headed "Yes" or "No" as appropriate.

5.3.1.1 *How evaluated.* After completing the post-test inspection test check sheet, any "X" in the "No" column shall be cause for rejection of the machine under test.

5.3.2 *Post-Test Inspection Form.* The truck shall be examined thoroughly and appropriate notation shall be made in the Post-Test Inspection Form. Defects discovered during post-test inspection shall be corrected as recommended by the inspection officer.

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# PRE-TEST INSPECTION CHECK LIST

## TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

1. Are all certificates of compliance furnished? YES_____NO_____

2. Refer to the Underwriters' Laboratories Publication "Standards for Safety for Power Operated Industrial Trucks" (UL 583)

   a. Does the truck comply with the applicable safety requirements? YES_____NO_____

   NOTE: Where there is conflict between the Underwriters' Laboratories safety requirements and the specification requirements referenced in the contract, the specification requirements shall govern. Presence of the UL label attached to the truck will be considered as self-evidence of compliance with the UL standards.

3. Do the following components of the truck comply with all requirements of the specifications referenced in the contract?

| | Yes | No | Remarks |
|---|---|---|---|
| A — Engine | | | |
| A-1 Engine Accessories | | | |
| Choke Control | | | |
| Ignition system | | | |
| Cables and wires | | | |
| Distributor | | | |
| Ignition coil | | | |
| Generator | | | |
| Generator regulator | | | |
| Starting system | | | |
| Fuel system | | | |
| Fuel tank | | | |
| Fuel lines | | | |
| Fuel pump | | | |
| Carburetor | | | |
| Air cleaner | | | |
| Cooling system | | | |
| Drains and drain cocks | | | |
| Fan | | | |
| Water pump | | | |
| Thermostat | | | |
| Radiator | | | |
| Gaskets, seals, and packing | | | |
| Governor | | | |
| Exhaust system | | | |
| Spark arresting device (when required) | | | |

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| | Yes | No | Remarks |
|---|---|---|---|
| B — Transmission and Drive Assembly | | | |
| Drive gears | | | |
| Axles | | | |
| Shafts | | | |
| Torque convertor | | | |
| Fluid coupling (when furnished) | | | |
| Differential | | | |
| Lubrication fittings and plugs | | | |
| C — Structure | | | |
| Chassis and frame | | | |
| Bracings | | | |
| Joints | | | |
| Bumper plate | | | |
| Deck | | | |
| Stake pockets | | | |
| Side racks (when required) | | | |
| Wheels | | | |
| Drive | | | |
| Steer | | | |
| Tires | | | |
| Tubes | | | |
| Steering | | | |
| Rotation of hand wheel | | | |
| Adjustment | | | |
| Steer axle | | | |
| Service Brakes | | | |
| Wheel cylinders | | | |
| Brake lining | | | |
| Adjustment | | | |
| Master cylinder and pedal linkages | | | |
| Parking brake | | | |
| Hand lever (when used) | | | |
| Linkages | | | |
| Truck body | | | |
| Seat | | | |
| Engine cover | | | |
| Instrument panel | | | |
| Fenders and running boards | | | |
| Lifting eyes | | | |
| Cab and cab heater (when required) | | | |
| D — Controls and instrumentation | | | |
| Protection against moisture and weather | | | |
| Position markings | | | |
| Light switch | | | |
| Ignition switch | | | |
| Starting motor switch | | | |
| Brake pedal | | | |
| Accelerator control | | | |
| Directional speed control | | | |

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| | Yes | No | Remarks |
|---|---|---|---|
| D — Controls and instrumentation—*Continued* | | | |
| Instruments | | | |
| Ammeter | | | |
| Oil pressure gage | | | |
| Temperature gage | | | |
| Hour meter | | | |
| Fuel gage | | | |
| Over temperature signal (for torque convertor) | | | |
| E — Accessories | | | |
| Headlights | | | |
| Dimmer switch | | | |
| Focus | | | |
| Damage protection | | | |
| Stoplight | | | |
| Operation | | | |
| Damage protection | | | |
| Battery | | | |
| Type | | | |
| Amperes | | | |
| Volts | | | |
| Mounting | | | |
| Cable terminals | | | |
| Horn | | | |
| Fire extinguisher (when required) | | | |
| F — Bearings | | | |
| G — Lubrication | | | |
| Accessibility | | | |
| Drain plugs | | | |
| Grease fittings | | | |
| H — Workmanship | | | |
| Finish and appearance | | | |
| Rivet connections | | | |
| Welds | | | |
| Bolt connections | | | |
| Castings | | | |
| Interchangeability | | | |
| I — Treatment and painting | | | |
| J — Radio-Interference suppression (when required) | | | |
| Nameplate | | | |
| K — Registration data | | | |
| L — Repair and maintenance | | | |
| Adjustment, servicing and replacement of parts | | | |
| Access openings | | | |
| M — Technical manuals | | | |

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# TEST FORM No. 1

## STEERING WHEEL

TRUCK, FIXED PLATFORM, POWERED, GASOLINE,
PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether the force required to turn the hand steering wheel meets specifications and whether steering gear can withstand the maximum specified force with steerable wheels blocked.

**Test Description:** Place the truck with rated load on a level brushed concrete surface. Using a tension dynamometer, measure the force required to move the steering wheel.

**Test Procedure:**

1. Place a truck with rated load on dry, level, brushed concrete with steer wheels in a straight-ahead position.

2. Assemble an adapter pulley having a root diameter equal to the steering wheel diameter and means for attachment to the wheel spokes, of the hand steering wheel.

3. Attach a tension dynamometer to the adapter pulley.

4. Grasp the dynamometer lead and apply a steady force, in a counterclockwise direction and in the wheel plane, until the wheel turns.

5. Observe the maximum gage reading within the first half of the inner steer wheel angle.

6. Observe the maximum gage reading at extreme ends of the steer.

7. Perform 4, 5 and 6 in a clockwise direction. After completing test requirements above conduct the following:

8. Raise front of truck and block in raised position.

9. Lock one steerable wheel in a straight ahead position.

10. Apply through the tension dynamometer, in clockwise direction, the maximum specified force.

11. Repeat in counterclockwise direction.

12. Perform operations 10 and 11 four times.

13. Release the locked steerable wheel and lock the other steerable wheel in the straight ahead position.

14. Repeat operations 10, 11, and 12.

15. Complete data form.

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Data Form:

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| | Counter-Clockwise Direction | Clockwise Direction |
|---|---|---|
| Maximum gage reading first half of inner steer angle | | |
| Maximum gage reading at extreme ends of steer | | |

| Question | Yes | No |
|---|---|---|
| Does force required to turn the hand steering wheel comply with the specified requirements? | | |
| Is there no evidence of permanent deformation to steering wheel, related steering mechanism when applying the maximum specified force with steerable wheels blocked? | | |

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# TEST FORM No. 2

## WEAR OF STEERING MECHANISM

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine cumulative wear in the steering mechanism of the truck due to carrying out requirements of the performance test.

**Test Description:** With the truck stationary and without load, the amount of free play in the steering wheel is measured. This procedure is followed before and after the performance test. If an abnormal increase in free play is noted after the performance test is run, it is an indication of excessive wear in the steering mechanism.

**Test Procedure:**

1. Place unloaded truck on a dry, level, concrete surface with its front wheels parallel to the longitudinal axis of the truck.

2. Attach to the steering column, immediately below the steering wheel and parallel to it, a piece of stiff fiber board or similar material which is semi-circular in shape and which has a radius at least one inch greater than the radius of the steering wheel.

3. Mark a reference point on the upper portion of the outer edge of the steering wheel; mark a corresponding point on the fiber board templet.

4. Turn the steering wheel counterclockwise until the front wheels of the truck begin to turn. Mark a point in the fiber board templet corresponding to the reference point on the outer edge of the steering wheel.

5. Turn the steering wheel clockwise until the front wheels of the truck begin to turn. Mark a point on the fiber board templet corresponding to the reference point on the outer edge of the steering wheel.

6. Remove the fiber board templet from the truck.

7. Place the fiber board templet on a flat surface. Measure the distance between the two points made in accordance with procedures 4 and 5 above. This distance, in inches, is the free play of the steering wheel.

8. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

Free Play of Steering Wheel:

Before Performance Test.....inches

After Performance Test.....inches

| Question | Yes | No |
|---|---|---|
| Is the free play of the steering wheel before the performance test not more than 8 inches? | | |
| Is the free play of the steering wheel after the performance test not more than 1.5 times the free play of the steering wheel before the performance test? | | |

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# TEST FORM No. 3

## SPEED

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether truck, with rated load, on a level surface is capable of attaining the specified forward speed.

**Test Description:** Truck, with rated load, is accelerated through at least a 50 foot approach, timed through an 88 foot test length, and then brought to a stop. (This 88 foot length is used to simplify calculations as 88 feet/minute is 1 m.p.h.) Three runs are made forward in high gear. The data is recorded and average speed determined.

Course Layout: A ← 50′ or more → B ← 88′ → C ← 50′ or more → D

Test Procedure:

1. Warm up truck for 15 minutes prior to test.
2. Locate truck, carrying rated load, for forward run with front wheels on line A.
3. Start forward test run and have truck in high gear and at top speed by the time it reaches line B.
4. Using a fractional second timing device, determine seconds elapsed in travelling from line B to line C and record on data form.
5. Perform operations 3 and 4 a second and third time.
6. Complete data form.

Data Form:

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| | Forward |
|---|---|
| Time in seconds, No. 1 test | |
| Time in seconds, No. 2 test | |
| Time in seconds, No. 3 test | |
| Total time | |
| Average time (⅓ of total time) | |
| Average speed in m.p.h. $\frac{60}{\text{average time}}$ | |

| Question | Yes | No |
|---|---|---|
| Does average forward speed meet the specified requirements? | | |

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# TEST FORM No. 4

## SLOPE ASCENSION, PARKING BRAKE

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether truck, without load and when carrying rated load, can accelerate from a dead stop on a 15 percent grade and has sufficient underclearance to operate from a 15 percent slope to a horizontal surface. To determine whether the parking brake can hold truck with rated load on a 15 percent slope in both forward and reverse direction.

**Test Description:** Truck ascends a 15 percent grade in a forward direction on a dry concrete surface. Truck stops and starts up slope again. Horizontal approaches should be provided for the ramp.

**Test Procedure:**

1. Place rated load on platform.
2. Drive truck along horizontal approach to the 15 percent ramp.
3. Drive truck up the 15 percent ramp and bring to a complete stop on the ramp.
4. Put on parking brakes, release service brakes and observe whether truck remains stationary.
5. Release parking brake, and start truck from dead start and proceed up ramp and onto a horizontal surface.
6. Descend ramp. Stop on ramp and put on parking brakes, release service brakes, and observe whether truck remains stationary.
7. Proceed on to the horizontal surface.
8. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| Question | Yes | No |
|---|---|---|
| Can truck when carrying rated load, stop on 15 percent grade and start up again? | | |
| Does truck have sufficient underclearance to permit operation up and down a 15 percent slope to a horizontal surface? | | |
| Does the parking brake hold the loaded truck on the 15 percent grade in both forward and reverse direction? | | |

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# TEST FORM No. 5

## SERVICE BRAKE PRESSURE

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

Purpose: To determine whether brake pedal and brake system have the strength required by the specification.

**Test Description:** Using a Bennett Feragen Corp. "Press-O-Meter", Model PM-35 or the equivalent, equipped with suitable clamps, apply a pressure of 250 pounds to the brake pedal 10 times.

**Test Procedure:**

1. Attach the pressure gage to the brake pedal by a clamp to permit application of full foot pressure to one side of the pressure gage.
2. Apply foot pressure to the gage until it registers 250 pounds and hold for 1 minute.
3. Repeat procedure number two, 10 times.
4. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| Question | Yes | No |
|---|---|---|
| In 10 trials, can the brake system withstand a pedal pressure of 250 pounds without failure of any component? | | |

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# TEST FORM No. 6

## SERVICE BRAKE PRESSURE SENSITIVITY

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine (1) whether a brake pedal pressure within the range of 75 to 125 pounds will develop a drawbar pull equal to approximately 30 percent of the gross weight of the truck (with rated load) while truck is being pulled and (2) whether towing hook(s) has sufficient strength.

**Test Description:** Pull fully loaded truck over dry, brushed concrete, having a coefficient of friction not less than 0.50 with engine disengaged and parking brake released. Use a Bennett Feragen Corporation "Press-O-Meter" Model PM-35 or the equivalent, equipped with suitable clamps, and a tension dynamometer fixed to towing hook(s) of truck. If the concrete surface does not have sufficient coefficient of friction, the surface may be brushed with Minnesota Mining compound or other material to provide suitable coefficient of friction to prevent wheels from sliding while applying the required drawbar pull.

**Test Procedure:**

1. Record total weight of truck with rated load.

2. Attach pressure gage to brake pedal, by means of clamps, in a manner which will allow the operator to apply foot pressure to face of the gage.

3. Attach a tension dynamometer to the front of the truck.

4. Attach one end of a block and tackle, or similar device for securing mechanical advantage, to the tension dynamometer, and the other end to an anchoring device.

5. With transmission in neutral, apply sufficient brake pedal pressure to prevent wheels from turning.

6. Apply tension to the dynamometer until force is approximately equal to 30 percent of the total weight of truck plus rated load.

7. Gradually reduce brake pedal pressure until wheels just begin to turn while maintaining the dynamometer tension. This pedal pressure shall not be less than 75 pounds nor more than 125 pounds.

8. Record brake pedal pressure and dynamometer readings.

9. Complete data form.

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Data Form:

Description of Truck.....Weight of Truck.....

Truck Mfr.....Weight of Load.....

Model.....Date.....

Serial No.....Test Location.....

Recorded by.....

| | | | | | | |
|---|---|---|---|---|---|---|
| Brake Pedal Pressure | | | | | | |
| Tension Dynamometer Reading | | | | | | |
| 30 Percent of Truck with Load | | | | | | |

| Question | Forward | | Reverse | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| Was a drawbar pull of 30 percent of weight of truck with rated load developed by a brake pedal pressure between 75 to 125 pounds? | | | | |
| Can truck be pulled without towing hook failing and with no visual evidence of permanent distortion of the towing hook? | | | | |

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# TEST FORM No. 7

## CLUTCH PEDAL

TRUCK, FIXED PLATFORM, POWERED, GASOLINE,
PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether the force required to depress the clutch pedal meets specifications.

**Test Description:** Using a Bennett Feragen Corp. "Press-O-Meter", Model PM-35 or the equivalent, measure the pressure required to depress the clutch pedal.

**Test Procedure:**

1. Depress clutch pedal several times to insure proper lubrication.
2. Attach gage to clutch pedal and apply pressure slowly and evenly until clutch pedal is depressed to 1 inch from the floor of the vehicle. Observe maximum gage reading and record on data form.
3. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

Maximum Gage Reading.....

| Question | Yes | No |
|---|---|---|
| Is the pressure required to depress the clutch pedal within specified limit? | | |

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# TEST FORM No. 8

## LIFTING EYES

TRUCK, FIXED PLATFORM, POWERED, GASOLINE,
PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether the lifting eyes (two forward and two rear) comply with the specified requirements.

**Test Description:** The test shall be conducted in accordance with the procedure outlined below using a tension dynamometer, cables, and such other available devices so as to exert the required force in a vertical direction upon the eyes.

**Test Procedure:**

1. Weigh truck (without rated load) with all four wheels on the scales. Record this weight as "W".

2. Weigh truck with rear wheels only on the scale. Record this weight as "P".

3. Measure in inches the horizontal perpendicular distance from the center of the rear lifting eye to the vertical plane passing through the center of the front lifting eye. Record this distance as "L" (use front and rear lifting eyes on same side of truck).

4. Measure in inches the horizontal perpendicular distance from center of the front lifting eye to the vertical plane passing through the axis of the front drive wheels. Record this distance as positive (+) "Y", when lifting eyes are forward, and as negative (—) "Y" when lifting eyes are rearward, of the drive wheels.

5. Measure the horizontal perpendicular distance from the vertical plane passing through the axis of the drive wheels to the vertical plane passing through the axis of the rear steer wheels. Record this distance as "B".

6. Compute the horizontal perpendicular distance in inches of the center of mass of truck to the vertical plane passing through the center of the front lifting eyes as equal to $\frac{PB}{W} + Y$. Record this distance as "D".

7. Determine by computation the normal vertical force on each rear lifting eye as equal to $\frac{WD}{2L}$. Record this force as "$F_1$".

8. Determine by computation the normal vertical force on each front lifting eye as equal to $\left(\frac{W}{2} - F_1\right)$. Record this force as "$F_2$".

9. Multiply "$F_1$" and "$F_2$" each by 4 and compare this result with the weight "W" of truck.

10. Apply to each rear lifting eye in a vertical direction the force "$4F_1$" or "W" whichever is the greater. The truck shall be on a level surface and the truck secured to the floor to withstand the force applied to the eyes. The force should be applied through a tension dynamometer with the cable attached to the eye so that force is applied in a true vertical direction and using whatever devices are available to obtain the desired mechanical advantage.

11. Apply to each front lifting eye in the same manner described in step 10 the force "$4F_2$" or "W", whichever is the greater.

12. Examine lifting eyes and at points they are attached to truck for permanent deformation, fratures or other evidence of failure.

13. Complete the data form.

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## Data Form:

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

W (See step 1) .....pounds

P (See step 2) .....pounds

L (See step 3) .....inches

Y (See step 4) .....inches

B (See step 5) .....inches

$D = \frac{PB}{W} + Y$ (See step 6) .....inches

$F_1 = \frac{WD}{2L}$ (See step 7) .....pounds

$F_2 = \frac{W}{2} - F_1$ (See step 8).....pounds

$4F_1$ (See step 9) .....pounds

$4F_2$ (See step 9) .....pounds

| Question | Yes | No |
|---|---|---|
| Is there no evidence of permanent deformation, fracture or other evidence of failure? | | |

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# TEST FORM No. 9

## OVERLOAD TEST

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether the truck structure can withstand 300 percent of rated load without permanent visible deflection or deformation.

**Test Description:** With truck on a level surface, a test load of 300 percent of rated load shall be placed on the truck platform. There shall be no permanent deformation or failures of related structures.

**Test Procedure:**

1. Place truck on level surface.

2. With crane or fork truck, the truck shall be uniformly loaded with 300 percent rated load. When placing the overload on trucks, personnel should stand clear and loads should be removed if there is evidence of immediate collapse or breakage in truck structure.

3. If truck accepts loads without immediate failure, let overloads stand for 10 minutes on truck.

4. Remove loads.

5. Inspect truck structure and frame for evidence of deformation, fractures, broken welds, etc.

6. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Registration No.....

Recorded by.....

| Question | Yes | No |
|---|---|---|
| Is there no evidence of failure or deformation in truck structure? | | |

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# TEST FORM No. 10

## POWER TRAIN STATIC TORQUE TEST *

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether the drive line of the truck is designed to withstand 150 percent of the maximum bare engine torque.

**Test Description:** With drive wheels locked, the required force is applied to a torque arm attached to a tension dynamometer. The torque arm shall be attached to the input shaft of the transmission or in case of power operated, to the output shaft of the torque converter. This test may be performed as a bench test prior to assembly or with complete assembled truck at option of contractor.

**Test Procedure:**

1. Transmission shall be placed in lowest gear range.

2. Lock both drive wheels to prevent turning.

3. If transmission is the hydraulic power-operated type, increase hydraulic pressure or lock clutch by external means to prevent slippage.

4. Clamp a torque arm of "L" feet to the input shaft of the transmission or in case of power-operated, to the output shaft of torque converter.

5. Obtain from manufacturer's published data, the bare engine torque "T" foot pounds of the engine. If drive includes hydraulic torque converter, obtain also the stalled torque converter ratio "R".

6. Apply to the torque arm, a force equal to $\frac{1.5T}{L}$ for mechanical transmissions; apply $\frac{1.5TR}{L}$ for trucks equipped with hydraulic converter.

7. Disassemble transmission and examine for failures; fractures, or permanent distortion and deformation.

8. Complete data form.

**Note:* This test is to be performed only when specified either in the invitation for bid or contract.

Data Form:

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| Question | Yes | No |
|---|---|---|
| Is there no evidence of failure, fractures, permanent distortion or deformation? | | |

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# TEST FORM No. 11

## TURNING RADIUS

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine whether truck can turn in 90 degree aisles of specified width.

**Test Description:** 90 degree intersecting aisles of specified width are laid out. The truck must make a right hand turn within the specified aisle widths in one motion, without backing, and with no more than three trials. The test is repeated with the truck making a left hand turn.

**Test Procedure:**

1. Layout on dry, smooth, trowelled or brushed concrete two 90 degree intersecting aisles 144 inches wide.

2. Drive truck at slow speed, in one motion and without backing, around the intersecting aisles to the right. Truck must negotiate the turn within aisle width in not more than three trials.

3. Perform operation 2 with truck turning to the left.

4. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| Question | Yes | No |
|---|---|---|
| Was truck able to make right turn in 90° intersecting aisles of specified width in one motion and without backing, in not more than three trials? | | |
| Was truck able to make left turn in 90° intersecting aisles of specified width in one motion and without backing, in not more than three trials? | | |

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# TEST FORM No. 12

## ACCELERATION

TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

**Purpose:** To determine acceleration of truck with and without load, on a level surface from a standing start.

**Test Description:** Truck is accelerated at maximum rate from a standing start, timed through a distance of 100 feet, and then brought to a stop.

Course Layout:

A — 100′ — B

**Test Procedure:**

1. Locate truck, without load, with front wheels on line A.
2. Warm up truck for 15 minutes prior to test.
3. Station an observer at line B. The observer shall be provided with a fractional second timing device.
4. The test leader shall be stationed at line A.
5. Test leader shall start test by calling "mark". When this signal is given the truck operator starts the truck and the timing device is started.
6. The truck operator will maintain maximum acceleration through the entire 100 foot test run.
7. As the front wheels of the truck pass over line B, the timing device is stopped.
8. Record elapsed time on data form.
9. Perform operations 1 through 8 a second and third time.
10. Perform operations 1 through 9 with rated load.
11. Complete data form.

**Data Form:**

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| | Truck Empty | Truck Loaded |
|---|---|---|
| Time in Seconds for 100 feet, No. 1 Test | | |
| Time in Seconds for 100 feet, No. 2 Test | | |
| Time in Seconds for 100 feet, No. 3 Test | | |
| Total time | | |
| Average time (⅓ of total time) | | |
| Average time x average time ($t^2$) | | |
| Acceleration A ($200 \div t^2$) | | |

| Question | Yes | No |
|---|---|---|
| Does the truck without rated load have an average acceleration such as to comply with the specified requirements? | | |
| Does the truck when carrying the test load have an average acceleration such as to comply with the specified requirements? | | |

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# POST-TEST INSPECTION TEST CHECK SHEET

## TRUCK, FIXED PLATFORM, POWERED, GASOLINE, PNEUMATIC RUBBER TIRED

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Recorded by.....

| Component | Applicable Test Form | Item to be Checked | Yes | No |
|---|---|---|---|---|
| Hand steering wheel | 1 | Does force to turn hand steering wheel comply with the specified requirements? | | |
| Wear of steering | 2 | Is free play of steering wheel not more than 1.5 times the free play before the performance test? | | |
| Speed | 3 | Does average forward speed comply with the specified requirements? | | |
| Slope ascension | 4 | Can truck when carrying rated load, stop on 15 percent slope and start up again? | | |
| Parking brake | 4 | Can parking brake hold the truck unit rated load on a 15 percent slope in the forward and reverse direction? | | |
| Service brake pressure | 5 | Can the brake system, as tested, withstand a pedal thrust of 250 pounds without failure of any component? | | |
| Service brake pressure sensitivity | 6 | Does pedal pressure of 75 to 125 pounds develop the specified drawbar pull? | | |
| Acceleration | 12 | Does the truck have an average acceleration such as to comply with the specified requirements? | | |
| General | | Any evidence of failure, excessive wear, or deformation in any component of the truck, or any defects which might cause failure during normal operation? | | |

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## POST-TEST INSPECTION FORM

Instructions: Examine each item below in sufficient detail to determine any defects or excessive wear which have caused failure in test or might cause failure in normal operation. Place a check mark in column No. 1 or No. 2. If column No. 2 is checked, also check column Nos. 3, 4, or 5.

| Description | (1) OK | (2) Not OK | (3) Adjust | (4) Repair | (5) Replace |
|---|---|---|---|---|---|
| 1. Engine | | | | | |
| a. Ignition system | | | | | |
| b. Generator | | | | | |
| c. Regulator | | | | | |
| d. Starting system | | | | | |
| e. Fuel system | | | | | |
| f. Cooling system | | | | | |
| g. Exhaust system | | | | | |
| 2. Transmission and drive assembly | | | | | |
| a. Differential | | | | | |
| b. Drive axle | | | | | |
| c. Drive shaft and universal | | | | | |
| d. Lubrication fittings | | | | | |
| e. Torque converter | | | | | |
| f. Fluid coupling | | | | | |
| 3. Structure | | | | | |
| a. Chassis and frame | | | | | |
| b. Wheel assembly | | | | | |
| 4. Steering assembly | | | | | |
| 5. Parking brake | | | | | |
| 6. Service brake | | | | | |
| 7. Controls and instrumentation | | | | | |
| 8. Batteries | | | | | |
| 9. Accessories | | | | | |
| 10. Workmanship | | | | | |
| 11. Treatment and painting | | | | | |
| 12. Repair and ease of maintenance | | | | | |
| 13. Technical manual | | | | | |

*Note*: Place remarks opposite the proper number on this form. If more space is required, attach separate sheet. Remarks should include details of adjustments, repairs, or replacements indicated by check marks above.

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Mechanic.....

Registration No.....Payroll No.....

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# MAINTENANCE SERVICE AND INSPECTION SHEET

## MATERIALS HANDLING EQUIPMENT

The following inspections and checks shall be made prior to the performance testing and prior to the post testing. On the 4th and 8th days of the performance testing, items 1 through 16 shall be checked. All deficiencies discovered during performance testings shall be noted.

1. Check all instruments for proper operation, check free play in steering and check horn operation.
2. Test brake pedal travel, fill master cylinder, adjust brakes if necessary, report if fluid is below ½ full, inflate tires to proper pressure (cold) and remove all foreign matter from tires.
3. Tighten clutch pedal play, adjust if necessary.
4. Inspect all lights, windshield wipers and mirror. (When applicable).
5. Fill radiator, check and tighten radiator hose connections, check anti-freeze in season.
6. Inspect fan and belts, adjust if necessary, use ruler or straight edge (½" play).
7. Check engine for water and oil leaks, check filter caps, oil lines, gasket and muffler.
8. Visually check battery, check water level, check for dirty or acid condition, record readings.
9. Check fuel filter and fuel pump screens and bowls, clean as necessary.
10. Check engine oil dipstick, add oil if necessary — disassemble air-cleaner and wash, refill with oil — breather cap, remove and wash.
11. Inspect all safety equipment — fire extinguishers, etc.
12. Lubricate chassis, using manufacturer's reference charts; replace broken fittings, change oil filter if necessary, lubricate: generator, starter, carburetor linkage, distributor shaft.
13. Inspect and tighten hub flange bolts, studs or nuts.
14. Check gear cases and fluid drive and fill all units — report excessive consumption.
15. Check timing, compression, sparkplugs (clean and adjust), ignition points and condenser (clean and adjust), carburetor (clean and adjust). Drain engine oil, flush crankcase, refill with oil filter cartridge — clean filter — replace with fresh cartridge.
16. Check tie rod, drag link, and wheel alignment of steering assembly.
17. Check wheel bearings — repack and adjust.
18. Check springs for broken spring leaves and loose "U" bolts.
19. Check brake linings and drums; check wheel and master cylinders.
20. Inspect all wires and terminals — tighten and replace where necessary.
21. Drain and flush radiator — check all connections and hoses — refill with water and anti-freeze (if in season).
22. Inspect entire exhaust systems for leaks or breaks.

Description of Truck.....

Truck Mfr.....Date.....

Model.....Test Location.....

Serial No.....Type.....

Total hours.....Recorded by.....

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HOURLY TIME RECORD
BUSANDA FORM 2522 (12-58)

| TRUCK MANUFACTURER | MODEL | SERIAL NO. | DATE |
|---|---|---|---|
| | | | |

| TEST LOCATION | RECORDED BY: | CLOCK READINGS: (Start) | (Finish) | REQUIRED LAPS/HOUR |
|---|---|---|---|---|
| | | | | |

| LAPS NUMBER | WATCH READING | ELAPSED TIME | REMARKS |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| TOTAL | | | AVERAGE LAP TIME _____ |

*Instructions for Timing Performance Test*

1. Start decimal minute stop watch at zero at beginning of each operating hour.
2. Record watch reading at end of each lap in "Watch Reading" space.
3. Subtract watch reading at end of preceding lap from reading at end of lap. Record differences in "Elapsed Time" space.
4. If equipment under test completes the required number of laps prior to completion of an operating hour, it shall be stopped until start of next hour, and then resume performance test.

NOTE: This form is for use in conjunction with Military Test and Inspection Standards during materials handling equipment performance test.

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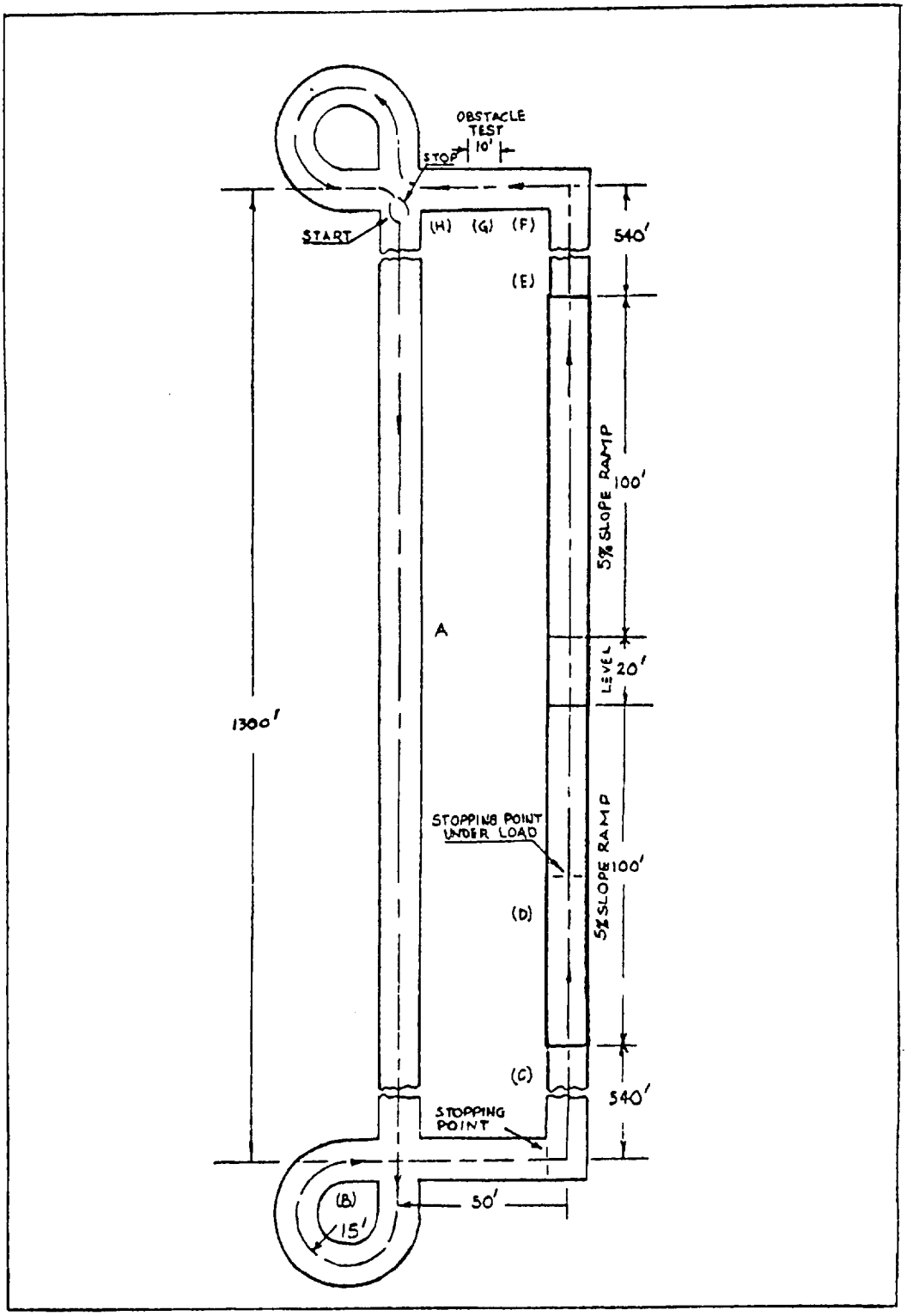
# OUTDOOR TEST COURSE




DRAWING A

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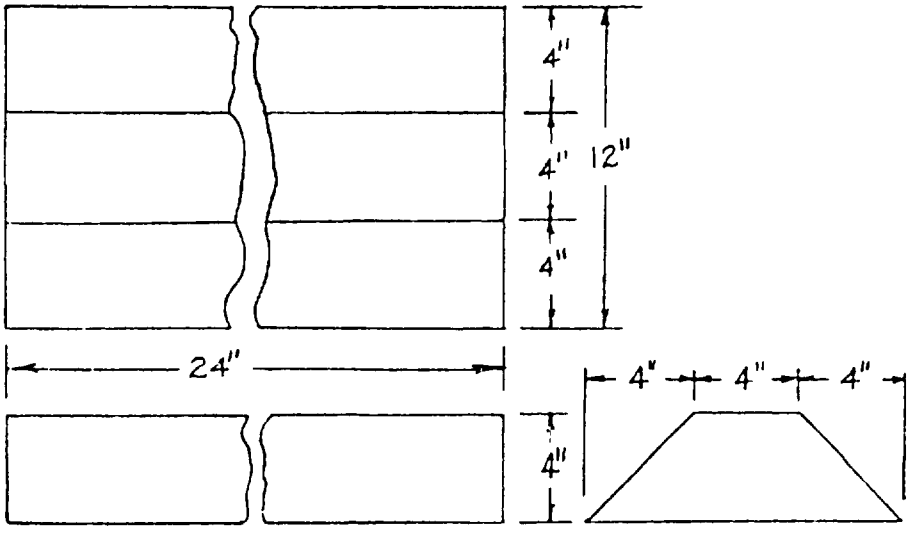
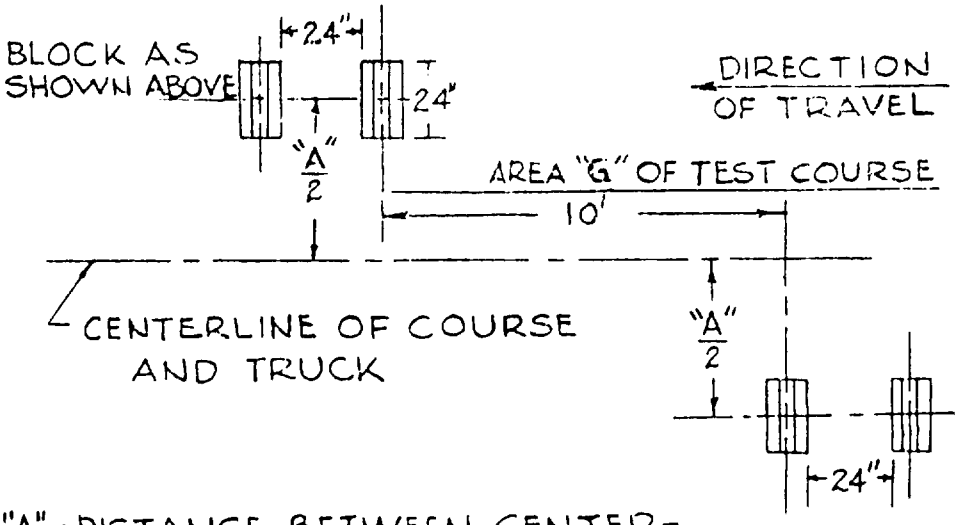
DETAILS OF OBSTACLE BLOCK CONSTRUCTION




LAYOUT OF OBSTACLES




"A" - DISTANCE BETWEEN CENTER-LINES OF DRIVE WHEELS

DRAWING B

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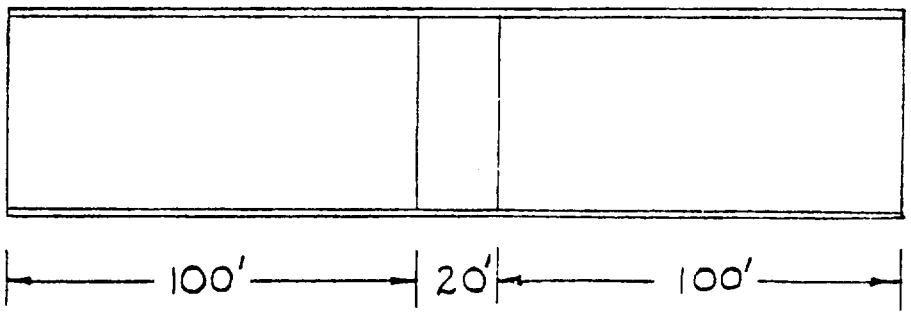
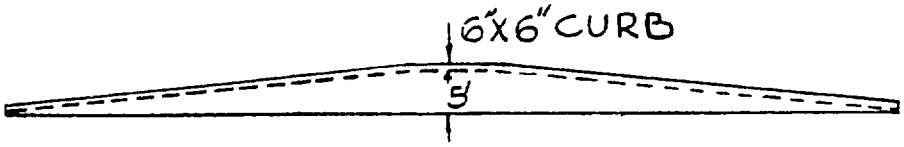
RAMP CONSTRUCTION




DRAWING C