

July 7, 1941.

Superseding:

USA-LP-91-997

June 19, 1941.

TRUCK, 1/4-TON
MOTOR, GASOLINE
(FOUR WHEELS---FOUR WHEEL DRIVE)

A. APPLICABLE SPECIFICATIONS.

A-1. The following current specifications and drawings in effect on date of Invitation for Bids, shall form a part of this specification:

- Federal Specification KKK-T-706, Trucks, Motor; Gasoline (Four Wheels-Four Wheel Drive).
- Federal Specification ZZ-T-381, Tires; Automobile and Motorcycle, Pneumatic.
- Federal Specification ZZ-T-721, Tubes; Automobile and Motorcycle, Inner.
- Federal Specification CCC-D-746, Cotton Duck; Fire Resistant.
- Q.M. Specification ES-No. 422, Tool Sets - Motor Vehicles.
- Q.M. Specification ES-No. 459, General Requirements for Truck, Motor, Gasoline.
- Q.M. Specification ES-No. 474, Enamel, Synthetic, Olive Drab, Lusterless.
- Q.M. Specification ES-No. 495, Oil and Fuel Tubing, Metallic and Non-Metallic Type.
- Q.M. Specification ES-No. 565, Oil Filter.
- Q.M. Specification ES-No. 510, Enamel, Synthetic, Stenciling, Lusterless, Various Colors.
- Q.M. Specification ES-No. 512, Storage Battery.
- Q.M. Specification ES-No. 603, Ignition Suppression.
- Rock Island Arsenal Specification RLKS-114, Tubes, Inner, Bullet Seal.
- Q.M. Drawing 08366-W, Auxiliary Fuel Filter.
- Q.M. Drawing 08480-W, Strap Safety Belt.
- Q.M. Drawing 08592-V, Fuel Tank Filler and Cap.
- Q.M. Drawing 08593-W, Radiator Filler, Neck, and Cap.
- Q.M. Drawing 08634-X, Rear View Mirrors.
- Q.M. Drawing 08636-V, Oil Pan Drain Plug and Gasket.
- Q.M. Drawing 08641-W, Standard 6-Volt Horn.
- Q.M. Drawing 08642-W, Reflex Reflector.
- Q.M. Drawing 08660-X, Instrument Board Controls.
- Q.M. Drawing 08674-W, Ignition Switch.
- Q.M. Drawing 08675-X, Wiring and Lighting System Diagram.
- Q.M. Drawing 08677-Y, Panel Instruments.
- Q.M. Drawing 08773-V, Stop Light Switch.
- Q.M. Drawing 08783-X, Pintle.
- Q.M. Drawing 08795-Y, Wheel Assembly, Mounting Studs and Cap Nuts.
- Q.M. Drawing 08825-Z, Chassis Outline Assembly and Body.

A-2. Responsibility for obtaining copies of the latest revisions of specifications and drawings listed under A-1. rests with prospective bidders.

B. GENERAL.

B-1. Q.M. Specification ES-No. 459 applies.

C. SERVICE REQUIREMENTS.

C-1. General. The trucks described in this specification are intended

for use as tactical trucks by the United States Army. They will be required to transport the rated payload, which consists of military supplies, equipment and personnel, at relatively high rates of speed over all types of roads, trails, open and rolling cross country, under all conditions of weather and terrain, while at times towing a trailed load, such as a 37mm anti-tank gun, and all units and assemblies in the truck must be suitable for such use. Any design which renders servicing, adjustment and replacement unduly difficult under field conditions, is not acceptable.

C-2. Abilities. The truck, fully equipped and loaded, shall demonstrate the following abilities on smooth concrete roadway:

a. Speeds.

(1) A level road maximum speed of not less than fifty-five (55) miles per hour, at an engine speed that does not exceed the peak horsepower speed.

(2) A level road minimum speed of not more than three (3) miles per hour, at engine full torque.

b. An ability to ford (hard bottom) water crossings of at least eighteen (18) inches (water) depth, at a truck speed of at least three (3) miles per hour, without water objectionably entering any chassis unit or seriously affecting engine operation, this with cooling fan operating.

C-3. Traction Devices.

a. Tire chains are required for use on driving wheel tires, and frequently will be used when traversing hazardous terrain. The truck construction shall permit the satisfactory installation and use of the tire chains.

D. SPECIFICATIONS.

D-1. Chassis.

a. Weights and Loads.

(1) The weight of the truck, fully equipped (including lubricants and water), but less fuel, tire chains and payload, shall not exceed twenty-one hundred (2100) pounds for two (2) wheel steer trucks, and twenty-one hundred and seventy-five (2175) pounds for four (4) wheel steer trucks, and every effort, consistent with best recognized engineering practices, shall be made to minimize the weight.

(2) The payload allowance shall be eight hundred (800) pounds, for operating personnel (including the driver) and military supplies.

(3) The truck maximum gross weight shall be the minimum consistent with the sturdiness required by the service conditions and, where a requirement in this specification stipulates that the truck shall be fully equipped and loaded, it shall include the weight of the truck completely equipped, including fuel, lubricants, water, and payload. Gross weight distribution shall minimize tire overloading. tire chains,

(4) The towed load will be one thousand (1,000) pounds gross weight, and will be mounted on two (2) pneumatic tire equipped wheels.

b. Dimensions. The angle of approach shall be at least forty-five (45) degrees; angle of departure at least thirty-five (35) degrees, with the truck fully equipped, loaded and in a level position. Ground clearance under all portions of the chassis below the frame shall be sufficient to permit operation over unimproved roads, trails and open, rolling and hilly cross country without interference with the terrain, not less than nine and one-half (9-1/2) inches other than under the axles, and not less than eight (8) inches under the axles, each with truck fully loaded. If the ground clearance offered, other than under the axles, is less than deemed necessary, the right is reserved to require that it shall be properly increased, without additional cost to the Government. The wheelbase shall be not more than eighty (80) inches. The design of the cowl, engine hood and radiator shall provide for the driver the maximum visibility practicable. The height of silhouette (body proper, cowl and hood) shall be the minimum practicable, not more than forty (40) inches with truck fully equipped and loaded. Overall height and body floor height above ground, minimum practicable

Flexibility. With the truck fully equipped and loaded, tire chains installed on front and rear wheels, and the front wheels cramped at any angle (rear wheels also cramped on four wheel steer truck), the truck construction shall permit eight (8) inch high blocks being placed under two (2) diagonally opposite wheels without part failure or interferences occurring.

D-2. Frame. The chassis frame shall be of such design and construction as to support adequately the maximum gross loads and maintain necessary chassis alignment and stability under the most severe operating conditions. The frame shall be properly braced for pintle mounting.

D-3. Power Unit. The power unit shall consist of an engine, clutch and transmission embodied in a unit power plant. The engine mounting shall be guaranteed to be effective in eliminating strains resulting from frame distortion. The transfer case may be a unit with the transmission, or may be a separate unit independently mounted, provided that the unit is properly mounted. Transfer case mounting bolts on separate unit mounting, shall include cotter pins, or the heads shall be effectively locked.

D-4. Engine. The engine shall be of the internal-combustion, four-stroke cycle type, having not less than four (4) cylinders. Piston displacement shall be not less than one hundred and ten (110) cubic inches and, less only fan and generator operating, the engine shall develop not less than eighty (80) pounds-foot torque, with a compression ratio suitable for use with fuel having a knock rating of not more than seventy-two (72) octane number. The peak horsepower speed shall be sufficient to enable the truck, fully equipped and loaded, to demonstrate definitely by actual test, compliance with the ability factors specified in Paragraph C-2.a. herein. The crankshaft shall be statically and dynamically balanced and supported by not less than three (3) main bearings. Cylinder heads shall not be made of aluminum. Manifold manual hot-spot mechanism, if provided, shall have its operating positions clearly inscribed. Automatic hot-spot heat control may be furnished when approved by the Purchasing and Contracting Officer. The engine shall be tapped for 14mm or for 10mm spark plugs. Oil pan drain plug shall conform to Q.M. Drawing 08636-V. Oil pressure gauge connection, preferably, shall be standard one-eighth (1/8) inch pipe tap. Carburetor fuel inlet connection shall be standard one-eighth (1/8) inch pipe tap. Water jacket drain shall be standard one-quarter (1/4) inch or three-eighths (3/8) inch pipe tap size, with Weather-head #145 or #270 (or equal) drain cock. Water temperature gauge connection in engine shall be standard one-half (1/2) inch pipe tap. Oil filler tube cap and crankcase breather tube cap, if removable for engine servicing purposes, shall be

fastened to the engine by a chain or other suitable means. To prevent stones damaging the engine oil pan, a metal plate shall be provided under the oil pan, the plate stock thickness to be at least #12-U.S.S. Gauge.

D-5. Cooling System. Paragraph D-5, Federal Specification KKK-T-706 applies. The system shall be capable of maintaining a differential in temperature, between the radiator inlet (engine outlet) water temperature and air temperature, of not to exceed one hundred thirty (130) degrees Fahrenheit as measured on a vehicle dynamometer at full engine torque speed. A thermostat shall be provided in the cooling system. The radiator core shall be of the tubular type and so mounted that it will not be damaged by frame distortion. Counterflow of heated air to the front of the radiator from the engine compartment shall be effectively prevented. Radiator drain shall be standard one-quarter (1/4) inch or three-eighths (3/8) inch pipe tap size, with Weatherhead #145 or #270 (or equal) drain cock so positioned that it will not be opened or damaged by contacting brush. The radiator filler shall conform to Q.M. Drawing 08593-W, equipped with pressure type cap. The fan design, mounting and drive shall be consistent with the sturdiness, efficiency and quietness required by the service conditions. It shall be possible to quickly remove, install and adjust the fan belt, this to facilitate the fording of water crossings of a depth greater than eighteen (18) inches. A substantial metal shield shall be provided under the fan driving pulley and belt, arranged to effectively prevent brush and stones damaging the pulley and belt.

D-6. Lubrication System.

a. The engine lubrication system shall be in accordance with best commercial practice, and the system shall function satisfactorily on side slopes up to forty (40) per cent, and on longitudinal slopes to sixty (60) per cent.

b. An oil filter conforming to Q.M. Specification ES-No. 565 shall be provided.

c. A flexible line conforming to Q.M. Specification ES-No. 495 shall be provided from the engine to the oil pressure gauge. The crank case oil filler shall be so constructed that oil can be poured from a one (1) gallon approved container into the filler opening without requiring the use of a funnel and with only the hood raised. The crank case oil bayonet gauge finger loop shall be properly accessible.

d. The chassis lubricating system shall be of the high pressure type, with hydraulic type fittings located in accordance with best commercial practice. The fittings shall be of a design that will permit proper attachment of the grease gun.

D-7. Ignition System. The engine shall be equipped with a complete battery-generator ignition system. Spark advance mechanism shall be of the semi-automatic (with manual advance mechanism) or effective automatic type. Manual advance mechanism, when provided, shall be so constructed and mounted that it is readily operatable from the driver's seat. The ignition switch shall conform to Q.M. Drawing 08674-W. The distributor and coil shall be types to be approved by the Purchasing and Contracting Officer. Ignition suppression shall be provided conforming to Q.M. Specification ES-No. 603.

D-8. Fuel System. The fuel system shall consist of: One (1) gasoline tank, having a capacity of not less than fifteen (15) gallons, including baffles properly secured in place, the tank to be mounted under the driver's seat cushion. Tank filler to be located approximately at the center of the top of the tank, to conform to Q.M. Drawing 08592-V, and equipped with pressure cap and chain. The

tank drain plug to be standard one-quarter ($1/4$) inch or three-eighths ($3/8$) inch pipe tap size. Mechanically operated fuel pump including strainer, metal sediment bowl and hand primer, pump to be AC Model #1537714 (except as to rocker arm), hand primer to be accessible. Auxiliary fuel filter conforming to Q.M. Drawing 08366-W, imposed in the fuel line between the fuel tank and fuel pump, so located on the chassis that it can be serviced readily by one (1) man without requiring the removal of surrounding material and, unless mounted at a point higher than the fuel tank, to include a suitable shut-off valve in the inlet line to the filter. Air cleaner of the oil bath type, having sufficient oil capacity and volume to deposit one (1) pound of dirt and maintain an efficiency of at least ninety-seven (97) per cent, designed for high angle operation, and so mounted that mud and water will not enter the air inlet opening. Solid wall fuel lines shall be five-sixteenths ($5/16$) inch size tubing equipped with inverted flared type fittings. The fuel line connection to the tank shall be so located that it will not be readily damaged. A flexible fuel line shall be provided from the fuel line on the frame to the fuel pump; in addition, flexible lines shall be provided at every point where vibration might cause tubing failure. Flexible tubing shall conform to Q.M. Specification ES-No. 495. The fuel pump and lines shall be so arranged that vapor lock is effectively prevented. Fuel lines shall be located in a protected position, properly clipped to the chassis, and metal protective loom must be provided on the fuel lines at all points where the lines pass through metal members. The fuel system shall function satisfactorily on side slopes up to forty (40) per cent and on longitudinal slopes to sixty (60) per cent.

D-9. Exhaust System. A substantial leak-proof exhaust system, amply proportioned and securely mounted shall be provided. The tailpipe shall discharge into the slip stream of the rear tire, in such a manner as to effectively preclude the entrance of fumes into the body, undue heating of tires and disturbance of road dust.

D-10. Clutch. The clutch shall have a torque capacity at least equal to the maximum (gross) torque developed by the engine. Except where it is the truck manufacturer's practice to furnish the clutch throwout bearing grease packed for the life of the truck, a lubrication fitting shall be provided, for the throwout bearing, at a readily accessible location which does not require the removal of floor or toe boards.

D-11. Transmission. Shall be of the three (3) forward and one (1) reverse speed type, with direct drive in third (3rd) gear. The low gear reduction shall be at least 2.9 to 1.0. Gears shall be heat-treated and properly finished to insure quiet operation. Input torque capacity shall be at least equal to the engine maximum (gross) torque.

D-12. Transfer Case. Shall be of the two (2) speed type having a high range ratio of 1.0 and low range reduction of approximately 2.0 to 1.0. The case shall include front axle drive declutching mechanism. Input torque capacity shall be guaranteed to be ample to transmit the maximum (gross) torque of the engine as developed through the lowest gear reduction provided in the transmission. Gears shall be heat-treated and properly finished to insure quiet operation. Separate control handles shall be provided for shifting the range gearing and declutching mechanism, with simple means provided that will prevent low range gearing being utilized when the front axle drive is disengaged.

a. An S. A. E. power take-off aperture shall be provided on the transfer case at the rear end of the top (main) shaft, so designed that commercially obtainable power take-off mechanism can be properly installed without

requiring machining of transfer case parts or disassembly of the case. The design of the case shall permit power take-off operation both with the truck moving and at a standstill.

b. A substantial metal skid shoe shall be provided under the transmission and transfer case, to prevent stones damaging the unit cases.

D-13. Propeller Shaft. The combined torque capacity of the front and rear propeller shafts shall be at least equal to the maximum (gross) torque of the engine as developed through the lowest intervening gear reductions. If a propeller shaft is provided between the transmission and transfer case, its torque capacity shall be at least equal to the maximum (gross) torque of the engine as developed through the lowest gear reduction provided in the transmission. Universal joints shall be of the same make and type, of latest design and metal construction throughout, and shall be guaranteed to function satisfactorily under continuous operation at the angles that will prevail with the truck in the fully equipped, loaded and level position, and for momentary operation up to the maximum angle that will prevail. Propeller shaft lengths shall conform to unit manufacturer's recommendations.

D-14. Axles. The front and rear axles shall be of the full floating type, of such construction that in the event of an axle shaft failure, at any point, the wheel will not be released. Axle reduction gearing shall be located in the axle housing bowl and ratios shall be perfectly matched between front and rear axles. The axle ratio shall be not less than 4.75 to 1.0. Axle shafts shall be not less than one and one-eighth (1-1/8) inches in diameter over the splines in the differential. The ratio of impact resistance between the horizontal and vertical planes of the axle housing shall be suitable for the use indicated by the service requirements of this specification. If breathers are provided in the axle housings, they shall effectively prevent the entrance of water when the axle is submerged. Gear lubricant shall be positively confined to the differential bowl. Axle shaft flanges all shall be tapped for puller screws, tapped holes all to be the same size; puller screws to be furnished in rear axle flanges. The combined input torque capacity of the two (2) axles shall be at least equal to the maximum (gross) torque of the engine as developed through the lowest intervening gear reductions. The front axle shall be equipped with steering drive ends that include constant velocity universal joints having an outside spherical diameter not less than three and one-quarter (3-1/4) inches. Steering pivots shall be equipped with approved type bearings, with suitable means for adjustment. The off-set between the king-pin center and tire center, at the ground, shall not exceed two (2) inches. Steering end bell packings shall include spring steel expanders. The front wheel cramping angle shall be at least twenty-six (26) degrees at the wheel on the inside of the turning circle. When axle stops have been adjusted to provide a maximum cramping angle of twenty-six (26) degrees (plus zero (0) degrees, minus one (1) degree) they shall be so welded that the angle adjustment can not readily be altered. Axle stops shall be so designed that they positively limit the cramping angle to the maximum angle intended by the stop adjustment. Hubs shall not include provisions for lubricating fittings. The steering tie rod shall be at least one and one-eighth (1-1/8) inches outside diameter steel bar stock, heat-treated, and its ends shall be so threaded that a fine toe-in adjustment is permitted. The rod shall be fully protected from damage. Axle bowl cover plates, when used, shall be bolted to the housing. The strength and stock thickness of the cover shall be equal to that of the housing. It shall be possible to remove all wheel bearings without having to remove snap rings.

a. When the Invitation for Bids requires that the truck shall be

of the four (4) wheel steer type, the rear axle shall be equipped with steering drive ends identical to those furnished on the front axle, this to provide for four (4) wheel steering on the truck.

D-15. Springs. Clearance between the springs and spring stops shall prevent any frequent objectionable bottoming, and front spring stops shall prevent any possibility of the front axle and front propeller shaft striking the engine oil pan, under all conditions of operation including one where the moving loaded truck front axle encounters an obstacle or drops into a hole while the brakes are simultaneously applied, and operation where the trailed load is being towed with its brakes inoperative. Springs shall have at least two (2) spring leaf clips provided each side of the center bolt, properly spaced to prevent fanning of the leaves. Spring arch shall be minimized; filler blocks between axles and springs shall be limited to the usual spring seats.

D-16. Shock Absorbers. Hydraulic shock absorbers, of adequate capacity, shall be furnished on both axles, mounted at each side of the frame.

D-17. Bogie. Does not apply.

D-18. Wheels and Tires.

a. Wheels, mounting studs and nuts shall conform to Q.M. Drawing 08795-Y.

b. Tires, size 6.00-16, 4-ply, conforming to Federal Specification ZZ-T-381, shall be balloon, mud and snow tread type. Tread design to be submitted for approval by the Purchasing and Contracting Officer. Inner tubes shall be of the heavy duty type, conforming to Federal Specification ZZ-T-721. The tire, tube and flap shall be balanced within forty (40) inch-ounces. Tires shall have a permanent balance mark on the side wall on the valve stem side. The wheels, hubs and drums shall be suitably balanced.

c. One (1) spare wheel, tire and tube assembly shall be furnished with each truck, properly mounted at the rear of the body.

d. The truck, including the wheels and rims, shall be suitable for use with inner tubes of the approved bullet sealing type conforming to Rock Island Arsenal Specification RIXS-114, regardless of whether or not bullet sealing inner tubes are required to be furnished.

D-19. Brakes. The truck shall be equipped with a braking system that will safely control the fully equipped and loaded truck under all operating conditions; the system shall be complete with every necessary piece of equipment and the mechanism shall readily be accessible to external adjustment.

a. Service Brakes. The service brake system shall be of the hydraulic application type. Brakes and drums shall be provided on all wheels. The

drums shall have flanges or ribbing that prevents objectionable distortion when the brake is applied. The system provided shall be of a braking capacity sufficient to control and hold the fully equipped and loaded truck (without towed load) while traveling on a sixty (60) per cent grade, and bring it to a complete stop at a rate of deceleration equivalent to a stop within twenty-five (25) feet from a speed of twenty (20) miles per hour on a dry, hard approximately level road, free from loose material, at a brake pedal pressure not to exceed one hundred and twenty-five (125) pounds. There shall be no evidence of excessive fading. The master cylinder shall be of the compensating type with self-contained fluid reservoir, and wheel cylinders shall be provided at every wheel. Hydraulic line maximum pressures shall not exceed hydraulic brake manufacturer's recommendations. Brake lines must be securely anchored to the chassis, adequately protected from damage and frame to axle brake flexible lines shall be designed and installed in a manner to be approved by the Purchasing and Contracting Officer. Metal protective loom must be provided at all points where the lines pass through metal members. The hydraulic stop light switch shall conform to Q.M. Drawing 08773-V.

b. Parking Brake. The parking brake or brakes, shall be hand lever operated, provided in addition to the service brakes or entirely separate mechanical operating mechanism connected to the service brake shoes. The system shall be capable of controlling and holding the fully equipped and loaded truck (without towed load) while traveling on a sixty (60) per cent grade. When the parking brake is so mounted that it is applied on the propeller shaft, it shall be located in such a position as to be operatable at all times on the rear wheels.

D-20. Electrical Equipment. Paragraph D-20, Federal Specification KKK-T-706 applies, unless otherwise specified. The system shall be of six (6) volt potential.

a. A storage battery shall be provided conforming to Q.M. Specification ES-No. 512. The battery negative terminal shall be grounded to the chassis.

b. The generator and starting motor shall be of adequate capacity, properly mounted, and effectively protected from exhaust heat. Generator operating speed shall not exceed 5100 r.p.m. at the engine peak horsepower speed. The generator shall be of the shunt type, with integral ventilating fan. Generator regulation shall consist of an apparatus box containing a cut-out relay, voltage regulator unit and current regulator unit. The current regulator unit shall be set to limit the generator output to the maximum output guaranteed by the generator manufacturer. The apparatus box shall be substantially constructed, dust-proof, and suitably mounted. The generator and apparatus box shall be of the same make. The generator, apparatus box and starting motor, including pinion meshing device or over-running clutch, shall be types to be approved by the Purchasing and Contracting Officer. The starting switch shall be suitably located.

c. Wiring shall be properly installed, shall include terminals soldered to the wire ends and junction blocks shall be provided having Bakelite (or equal) bases equipped with brass or properly rust-proofed steel bolts, washers and nuts for the attachment of wire end terminals. Wiring shall include distinctive colored tracers or metal identification tags. Wires in conduits shall be thoroughly insulated from metal conduits. When junction blocks are installed at locations where they probably will be coated with mud or water soaked, the blocks shall be properly covered. A main junction block shall be mounted

on the dash in such a manner that all wiring to the dash can be disconnected from the junction block.

D-21. Chassis Equipment. The chassis equipment shall be complete, including at least the following enumerated articles:

a. Engine hood, brush guard, front fenders, short running boards, sturdy front bumper and rear bumperettes, conforming to Q.M. Drawing 08625-Z. The bumpers to be mounted at such heights that the front bumper will overlap by at least three (3) inches the rear bumperettes on a similar truck, with the trucks loaded and unloaded and on level ground; rear bumperettes not to interfere with the use of the rear pintle; front and rear bumpers to be bolted to the chassis.

b. Instrument Board. Shall include speedometer, ammeter, fuel, temperature, and oil pressure gauges, conforming to Q.M. Drawing 08677-Y. Ignition and light switches, carburetor choke, hand throttle and, when provided, manual spark control, shall be arranged generally as shown on Q.M. Drawing 08660-X.

c. Tool Equipment. The tool equipment shall conform to Motor Vehicle Tool Set Type I as specified in Q.M. Specification ES-No. 422. Chains, four (4) of Type D (extra heavy truck type chains) required. Provisions shall be made for the use of the starting crank.

d. Accessory Equipment. The accessory equipment shall be complete, including at least: One (1) rear view mirror substantially mounted at the left side on the outside of the body, mirror to conform to Q.M. Drawing 08634-X. Two (2) separate windshield wipers of the hand operated type, suitably installed on the windshield. Locks, Code H-700 key operated type, provided in the ignition switch on spare tire carrier, and on tool storage compartment; keys in triplicate with each truck; padlocks (where used) to be one and one-half (1-1/2) inch size, with hardened steel shackles, chained to chassis; during shipment keys furnished with each truck to be inclosed in a substantial cloth bag and wired securely to the chassis steering wheel. Electric horn and mounting, conforming to Q.M. Drawing 08641-W.

e. Lighting Equipment.

(1) The lighting equipment shall all be of the best commercial grade.

(2) Two (2) head lamps shall be furnished of the five (5) inch Sealed Beam type having an upper driving beam and a lower traffic beam. The filaments shall be rated at forty (40) watts (minimum) for the driving beam and thirty (30) watts (minimum) for the traffic beam. Suitably approved means shall be provided for aiming the head lamp beams, and head lamps shall be mounted as low as possible.

(3) The wiring and lighting system shall conform fully to Q.M. Drawing 08675-X. (Trailer lighting socket not required.)

(4) Reflector Equipment. Reflectors complying with Q.M. Drawing 08642-W shall be suitably mounted at protected positions on the body as follows:

Four (4) Red Reflectors shall be mounted on the lower rear corners of the body, two (2) visible from the sides and two (2) visible from the rear.

D-22. Controlling Mechanism. Paragraph D-22, Federal Specification KKK-T-706 applies. The steering wheel diameter shall be not less than fifteen (15) inches. At least two and one-half (2-1/2) inches clearance shall be provided between the outer edge of the steering wheel and nearest projection. The column shall be attached to the instrument board by means of a substantial bracket that includes a rubber insert. The gear housing shall be attached properly to the frame

a. When required by the Invitation for Bids, the truck shall be of the four (4) wheel steer type with suitable delayed steering on the rear wheels. The design of the steering mechanism shall preclude any tendency to over-steer due to too rapid steering action, and there shall be no noticeable weaving of the rear end of the truck. Steering mechanism design shall be approved by the Purchasing and Contracting Officer.

D-23. Operating Mechanism. Paragraph D-23, Federal Specification KKK-T-706 applies. The mechanism shall be so located that it does not detract from the comfort of the occupants. The accelerator pedal shall be a type on which the whole (driver's) shoe rests, shall be so located to the right of the brake pedal that it can be comfortably used for long periods of time, and shall include a foot rest. The transmission and transfer case shift handles and hand brake lever shall be located at the center of the driver's compartment.

D-24. Name, Caution and Shifting Plates.

a. Name Plate. A name plate shall be mounted on the truck, bearing the following data:

Nomenclature:	Truck, 1/4-Ton, 4x4.
Supply Arm or Service	
Maintaining Vehicle:	Quartermaster Corps
Make and Model:	
Serial Number:	(Manufacturer's Number)
Gross Weight:	(Including 800-lbs. Payload, fuel
Maximum Payload:	800 lbs. and tire chains)
Maximum Trailed Load:	1000 lbs.
Date of Delivery:	
Recommended by Manufacturer:	
Octane Rating of Gasoline:	
S.A.E. Grade of Oil for Summer Use:	
S.A.E. Grade of Oil for Winter Use:	

b. Caution Plates. Plates shall be installed on the truck on which shall appear the maximum road speeds permissible in every gear range, and specific data concerning draining of the cooling system.

c. Shifting Plate. A plate shall be mounted on the truck on which shall clearly appear data concerning transmission, transfer case range gear and de-clutching mechanism shift handle operating positions, and the statement: "Disengage Front Axle Drive When Operating On Dry Hard Surfaced Roads."

d. Plates shall be metal with black background; and drawings of the plate and mounting locations shall be approved by the Purchasing and Contracting Officer, before the plates are manufactured and installed.

D-25. Body.

a. The body shall conform to Q.M. Drawing 08825-Z.

D-26. Special Operating Equipment. Shall include: Rear pintle conforming to Q.M. Drawing 03783-X. Towing hooks mounted at the front of the truck, or the front bumper to be so designed and mounted that it can be used for the attachment of a tow rope or tow bar and without sharp edges that will cut a tow rope. Pedestal mount base conforming to Q.M. Drawing 08825-Z. Shovel and axe brackets, mounted on the side of the body. Canvas covers for windshield and headlamps.

D-27. Painting and Marking. Shall conform to Q.M. Specifications ES-No. 474 and ES-No. 510. (Color blue-drab).

E. TEST REQUIREMENTS.

E-1. Tests preliminary to acceptance of the completed trucks furnished in accordance with this specification will be made at the plant of the truck producer or at a location approved by the Purchasing and Contracting Officer. The tests will be conducted by or under the supervision of the authorized Government inspector and shall consist of such tests as are necessary to determine compliance with this specification. or all of the trucks may be tested, and the truck producer shall provide, without expense to the Government, the necessary fuel and other operating supplies required to accomplish them.

E-2. Unless otherwise specified in the Invitation for Bids, two (2) pilot model trucks will be produced and made available for test at the Holabird Quartermaster Depot, in conformity with Paragraph E-7.a. of Q.M. Specification ES-No. 459.

F. QUESTIONNAIRE.

Bids will not receive consideration unless the bidder has furnished with his bid the following Questionnaire fully completed:

F-1. Chassis. Make _____; model _____.
Overall: length _____, width _____ inches. Heights (unloaded):
top raised _____; top lowered, windshield up _____,
windshield down _____ inches.

Shipping weight: 2-wheel steer trucks _____ lbs., 4-wheel
steer trucks _____ lbs.; including all equipment, tools, tire chains,
lubricants and dunnage (less only fuel, water and the payload). Weight of dunnage included in above quoted shipping weights _____ lbs.

Number of trucks that can be loaded in a freight car:

Item No.	Number	Size and Description of Freight Car.
_____	_____	_____
_____	_____	_____
_____	_____	_____

F-1a. Weights:

Item No. _____
Truck (Less only fuel,
tire chains and payload) _____ lbs.

Fuel	_____	_____	_____	lbs.
Tire Chains (All)	_____	_____	_____	lbs.
Payload	_____	_____	_____	lbs.
Gross:				
On front tires	_____	_____	_____	lbs.
On rear tires	_____	_____	_____	lbs.
Total	_____	_____	_____	lbs.

F-1b. Wheelbase _____ inches. Heights, ground clearances, angles of approach and departure, all with truck loaded, and axle tread, shall be portrayed clearly on the chassis assembly drawings. Has this been done _____?

F-2. Frame. Will the frame be of such design and construction as to support adequately the maximum gross loads imposed under the most severe operating conditions, and maintain chassis alignment and stability _____. Will the frame rear end be suitably braced for pintle mounting _____.

F-3. Power Unit. Will the requirements of Paragraph D-3. herein be fully complied with _____.

F-4. Engine. Make _____; model _____; number of cylinders _____; displacement _____ cubic inches. Maximum peak horsepower speed, _____ r.p.m. with all accessories (including fan and generator) operating _____ r.p.m. Maximum operating speed recommended by engine manufacturer _____ r.p.m. Gross torque (less only fan and generator) _____ lbs./ft., using fuel of seventy-two (72) maximum octane number and a _____ compression ratio. Horsepower developed at peak H.P. speed _____ (with all accessories operating). Have certified power curves been included with the bid _____. Carburetor: Make _____; model _____; Spark plug top size _____ MM.

F-5. Cooling System. Weight of water contained in entire cooling system _____ lbs.

F-6. Lubrication System. Capacity of engine oil reservoir _____ qts. Oil filter make _____.

F-7. Ignition. Potential _____ volts. Distributor: Make _____; model _____. Coil: Make _____; model _____. Will ignition suppression be the required type _____.

F-8. Fuel System. Gasoline Tank: Capacity _____ gallons. Air Cleaner: Make _____; model _____. Fuel pump: Make _____; model _____. Auxiliary Fuel Filter: Make _____; type _____.

F-9. Exhaust System. Will the requirements of Paragraph D-9. herein be fully complied with _____.

F-10. Clutch. Make _____; model _____; size _____; maximum torque capacity _____ lbs./ft.

F-11. Transmission. Make _____; model _____; Reductions: 1st _____; 2nd _____; 3rd _____; reverse _____ to 1.0. Maximum input torque capacity _____ lbs./ft.

F-12. Transfer Case. Make _____; model _____. High range ratio _____ to 1.0. Low range reduction _____ to 1.0. Guaranteed to transmit a torque of _____ lbs./ft. Is front axle _____.

F-22. Controlling Mechanism.

<u>Steering Gear</u>	<u>2-Wheel Steer</u>	<u>4-Wheel Steer</u>
Make	_____	_____
Model	_____	_____
Load Rating	_____	_____ lbs.
Wheel Diameter	_____	_____ inches

A complete description of the four-wheel steer mechanism shall be submitted with the bid; has this been done _____.

F-23. Operating Mechanism. Will all controls be within convenient reach of the operator _____.

F-24. Name, Shifting and Caution Plates. Will the plates be provided and properly inscribed _____.

F-25. Body. Will the body comply with Q.M. Drawing 08825-Z _____.

F-26. Special Operating Equipment. Rear pintle: Make _____; part number _____. Will front towing hooks be furnished _____; if not, can the front bumper be properly used as required, for towing purposes _____. Will the pedestal mount base be the type shown on QM Drawing 08825-Z _____. Will the shovel and axe brackets be suitably mounted on the body _____.

F-27. Painting and marking. Will the painting and marking requirements be fully complied with _____.

F-28. Will ability requirements of the specification be fully complied with _____.

F-29. Have assembly drawings been included with the bid: Chassis _____; Body _____; Frame Assembly _____.

F-30. Bidders shall signify compliance with the requirements of this specification by supplying herewith the following data required as proof of the fact that compliance is intended:

a. As required by Paragraph E-2. of Q.M. Specification ES-No. 459, has the manufacturer of the truck offered under this bid been engaged in the production of motor trucks for a period of at least two (2) years, and does he possess the facilities and equipment necessary to provide trucks covered by this specification _____.

b. Have the guarantees as required by Paragraph E-3. of QM Specification ES-No. 459, been carefully considered and are they fully agreed upon _____.

c. If any exceptions are contemplated in the specification requirements have they been completely listed below as required by Paragraph E-3. of QM Specification ES-No. 459, and is it clearly understood that in the event exceptions are not listed below, the right is reserved to demand full and complete compliance with the specification requirements _____.

d. Exceptions to specification requirements are listed below:

NOTE: If additional space is required to clearly describe contemplated exceptions the exceptions may be noted on a separate sheet and securely attached hereto. These data shall not be included among other data not pertinent to the subject.

G. EVALUATION. (Does not apply.)

H. NOTES. Section H. Federal Specification KKK-T-706 applies.