

NOTICE OF INACTIVATION
FOR NEW DESIGN

NOT MEASUREMENT
SENSITIVE

MIL-T-19233J
NOTICE 1
30 October 1997

MILITARY SPECIFICATION

TRUCK, FIREFIGHTING; BRUSH, GRASS, AND STRUCTURAL,
500 GPM, 4 BY 4, COMMERCIAL CHASSIS

This notice should be filed in front of MIL-T-19233J, dated 4 March 1991.

MIL-T-19233J is inactive for new design and is no longer used, except for replacement purposes.

This specification will be maintained until acquisition of the product is no longer required,
whereupon the specification will be canceled.

Preparing Activity:
Navy - YD1

(Project 4210-0509)

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 * NOT MEASUREMENT *
 * SENSITIVE *

MIL-T-19233J
 04 March 1991

SUPERSEDING
 MIL-T-19233H
 14 December 1984

MILITARY SPECIFICATION

TRUCK, FIREFIGHTING; BRUSH, GRASS, AND STRUCTURAL,
 500 GPM, 4 BY 4, COMMERCIAL CHASSIS

This specification is approved for use by all Departments and
 Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a diesel-engine-driven, four-wheel, four-wheel-drive, 500 gallons per minute (gpm) pumping capacity, fire-fighting truck capable of fighting brush, grass, and structural fires.

* 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

 Beneficial comments (recommendations, additions, deletions) and any pertinent
 *data which may be of use in improving this document should be addressed to: *
 *Commanding Officer (Code 156), Naval Construction Battalion Center, Port *
 *Hueneme, CA 93043-5000, by using the self-addressed Standardization *
 *Document Improvement Proposal (DD Form 1426) appearing at the end of this *
 *document or by letter. *

AMSC N/A

FSC 4210

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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SPECIFICATIONS

FEDERAL

- ZZ-H-451 - Hose, Fire, Woven-Jacketed-Rubber Or Latex Or Rubber Coated Fabric Lined, With Couplings.
- GGG-A-926 - Ax (Single Bit, Double Bit, Pick Head and Mattock Head).
- GGG-B-101 - Bars, Chisel, pinch, Pry, Wrecking, Digging, Tamping, Digging and Tamping; and Crowbars.
- GGG-W-665 - Wrench, Spanner.

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- MIL-T-704 - Treatment and Painting of Materiel.
- MIL-C-4556 - Coating Kit, Epoxy, For Interior of Steel Fuel Tanks.
- MIL-S-12165 - Strainers, Suction, Fire Hose; And Strainers, Suction, Hose.
- MIL-N-12279 - Nozzles, Fire Hose, Foam.
- MIL-F-24385 - Fire Extinguishing Agent, Aqueous Film Forming Foam (AFFF) Liquid Concentrate, For Fresh and Sea Water.
- MIL-P-43116 - Pipe, Wire and Pikes, Pole.
- MIL-C-52404 - Connections, Hose, Fire and Water.

STANDARDS

FEDERAL

- FED-STD-297 - Rustproofing of Commercial (Nontactical) Vehicles.

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- MIL-STD-1223 - Nontactical Wheeled Vehicles Treatment, Painting, Identification Marking and Data Plate Standards.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from Military Specifications and Standards, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

* 2.1.2 Other Government documents and publications. The following other Government documents and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DEPARTMENT OF TRANSPORTATION (DoT)

- Federal Motor Vehicle Safety Standards and Regulations.
- Federal Motor Carrier Safety Regulations.

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

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ENVIRONMENTAL PROTECTION AGENCY (EPA)

Code of Federal Regulations, Title 40, Part 86 - Control of Air
Pollution from New Motor Vehicles and New Motor Vehicle Engines:
Certification and Test Procedures.
Interstate Motor Carrier Noise Emission Standards.

(Application for copies should be addressed to the Public Affairs Office,
Environmental Protection Agency, Rockville, MD 20852; or CFR, Title 40
should be addressed to the Superintendent of Documents, U.S. Government
Printing Office, Washington, DC 20402.)

(Copies of specifications, standards, handbooks, drawings, and publications
required by manufacturers in connection with specific acquisition functions
should be obtained from the contracting activity or as directed by the
contracting officer.)

* 2.2 Non-Government publications. The following document(s) form a part
of this specification to the extent specified herein. Unless otherwise
specified, the issues of the documents which are DOD adopted are those
listed in the issue of the DODISS cited in the solicitation. Unless
otherwise specified, the issues of documents not listed in the DODISS are
the issues of the documents which is current on the date of the
solicitation (see 6.2).

THE EUROPEAN TYRE AND RIM TECHNICAL ORGANISATION (ETRTO).

Standard Manual.

(Application for copies of the European Tyre and Technical Organisation
publications should be addressed to the European Tyre and Rim Technical
Organisation, 32, Avenue Brugmann, 1060 Brussels, Belgium).

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA No. 1901 - Automotive Fire Apparatus.
NFPA No. 1931 - Fire Department Ladders, Ground and Aerial.

(Application for copies should be addressed to the National Fire Protection
Association, Batterymarch Park, Quincy, MA 02269.)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE Standards and Recommended Practices.

SAE J534 - Lubrication Fittings
SAE J537 - Storage Batteries (DoD adopted).
SAE J551 - Performance Levels and Methods of Measurements of
Electromagnetic Radiation from Vehicle and Devices
(30-1000 MHz).

(Application for copies should be addressed to the Society of Automotive
Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

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STATE OF CALIFORNIA

California Vehicle Code.

(Application for copies should be addressed to the Department of Motor Vehicles, 2570 24th Street, Sacramento, CA 95809.)

THE TIRE AND RIM ASSOCIATION, INC. (TRA)

TRA Yearbook.

(Application for copies should be addressed to the Tire and Rim Association, Inc., 3200 West Market Street, Akron, Suite 304, OH 44313.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

* 2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The truck shall be a four-wheel, four-wheel-drive, diesel-engine-driven, truck cab-and-chassis having a gross vehicle weight (gvw) of not less than 22,000 pounds (lb). The truck shall be equipped with a 500 gpm fire pump, midship mounted, and driven by the truck engine; a 600-gallon water tank; a 55-gallon foam tank; hose bed; booster hose reel(s); operator's control panel for fire pump; foam equipment; and such other equipment and accessories as are specified herein.

3.2 First article. The contractor shall furnish a truck for first article inspection and approval (see 4.2.1, 6.2, and 6.4).

3.3 Standard truck, components, and accessories. Except as specified herein, the truck, components, and accessories shall be the manufacturer's standard or optional items which meet or exceed the requirements of this specification.

3.3.1 Heavy-duty cooling system. A heavy-duty cooling system shall be provided. The heavy-duty cooling system shall be of the pressurized type of sufficient capacity to provide proper cooling without overheating or loss of coolant when operated in an ambient temperature range of -25 deg F to +125 deg F during operating conditions of either stationary pumping or mobile performance as specified. A separate line with back check valve shall be provided for the purpose of filling the radiator from the discharge side of the fire pump. An additional radiator overflow pipe shall be provided of adequate size, to take full flow of direct cooling water without damage to the radiator. Silicone rubber radiator and heater hoses shall be furnished.

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3.3.1.1 Coolant system and indicators. Coolant system shall include a surge tank or shall include a coolant recovery reservoir of not less than 2 quart capacity. The surge tank or reservoir shall be of metal or unbreakable translucent material. The translucent reservoir shall be located in a position readily visible for checking system coolant level. In addition, a low coolant level or high coolant temperature alarm buzzer and red indicator warning light shall be provided on the cab instrument panel, and fire pump control panel.

3.3.1.2 Heat exchanger. An auxiliary heat exchanger shall be provided which shall permit delivery of water from the fire pump to the heat exchanger for cooling of the engine liquid coolant without admixture. The heat exchanger shall not be connected to the cab heater circuit. The heat exchanger shall be made of brass and shall be separate from the radiator. The discharge water from the heat exchanger shall be piped into the suction side of the pump. The size of the heat exchanger discharge line shall be large enough to effectively minimize back pressure on the heat exchanger. The flow of water from the fire pump to the heat exchanger shall be controlled by a valve, with the valve control extended to the fire pump control panel.

3.3.1.3 Drain Valves. Drain valves shall be installed at the low point of the cooling and heat exchanger systems and at any other points necessary to completely drain the systems. The drain valves shall be of a type that will remain closed under the most severe operating conditions to be encountered by the truck. Drain lines shall be furnished and shall discharge to the ground at a point not above the bottom of the chassis frame.

3.3.1.4 Brush guard. A brush guard shall be provided. The brush guard shall be as wide as the widest part of the front fenders, and shall be as high as the hood in the center and not less than 4 inches above the top of the front fenders. The brush guard shall be four-point suspension mounted.

3.3.2 Drain plugs. Permanent magnet-type drain plugs shall be provided on the transmission, transfer case, axles, and engine.

3.3.3 Radio interference suppression . The vehicle shall be suppressed to limit the electromagnetic radiation in accordance with SAE J551. Any body equipment emitting radiation shall be suppressed to the same level as the vehicle chassis.

3.3.4 Engine hour meter. An engine hour meter of the oil pressure or electrical type, having a totalizing mechanism of not less than 9,999 hours, shall be furnished for the truck chassis engine to register accurately the number of hours of operating time. The meter shall be of rugged construction to insure continuous trouble-free performance under severe operating conditions. Engine hour meter shall be mounted on the cab instrument panel or in the engine compartment in a readable location.

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3.3.5 Air pollution control. Trucks shall comply with the EPA Regulations governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect on the date of manufacture. In addition, trucks destined for California shall comply with State of California regulations governing air pollution control in effect on the date of manufacture.

3.3.6 Sound level. The exterior sound level produced by the truck shall not exceed the noise limits established by the EPA. The interior sound level shall be in accordance with DoT Federal Motor Carrier Safety Regulations, section 393.94.

3.4 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.5 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specifications are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.6 Performance. The fully equipped truck, loaded as specified in 3.7.2, and operating at all altitudes up to 3,000 feet above sea level and in any ambient temperature from +125 deg F to -25 deg F, shall be capable of the following:

- a. Service brakes controlling and holding the truck heading upgrade and/or downgrade on a 30 percent grade.
- b. Service brakes stopping the truck within 30 feet from a speed of 20 miles per hour (mph) on a dry, smooth, level surface free from loose material.
- c. Parking brakes holding the truck, heading upgrade and/or downgrade, on a 30 percent grade, with the fire pump operating and discharging a full tank of water at a flow rate of not less than 30 gpm at a pressure of not less than 200 pounds per square inch gage (psig) through the boosterhose nozzle or when two booster hose reels are furnished, through each booster hose nozzle simultaneously.
- d. Accelerating on a level road from a standing start to a speed of 35 miles per hour (mph) in not more than 30 seconds.
- e. Negotiating side slopes up to 30 percent on a surface reasonably hard and free from loose material.
- f. There shall be no evidence of body distortion, water leakage, tire and body contact, malfunction of components, irregular

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chassis noise, vibration or sway, when subjected to road test of not less than 60 miles over improved roads at maximum speed of not less than 55 mph, and not less than 30 miles over unimproved roads at maximum speed of not less than 30 mph, and not less than 10 miles over cross-country terrain at maximum speed of not less than 15 mph (see 6.5).

- g. Uninterrupted discharging of a full tank of water at a flow rate of not less than 30 gpm at a pressure of not less than 200 psig through the booster hose nozzle or when two booster hose reels are furnished, through each booster hose nozzle simultaneously during continuous forward motion over cross-country terrain at a truck speed of not less than 3.0 or more than 4.5 mph.

3.7 General design.

3.7.1 Federal Motor Vehicle Safety Standards. The truck shall comply with all Dot Federal Motor Vehicle Safety Standards in effect at time of manufacture.

3.7.2 Weight rating. The manufacturer's gvwt rating for the truck chassis furnished shall be not less than 22,000 lb. The total gross weight of the complete truck shall not exceed the manufacturer's gvwt rating when fully equipped as specified herein, including all specified firefighting equipment, serviced with fuel, water, and lubricants; loaded with 600 gallons of water in the water tank; filled liquid foam tank; not less than a 1,500 lb simulated load in the hose bed; and crew of five men, three men in a cab and two men on rear platform weighing not less than 175 lb each or equivalent deadweight. Weight distribution ratio between the front and rear axle shall be such as to insure positive traction at all four wheels and positive steering at the front wheels under all operating conditions specified herein. Percentage of gvwt at front axle shall be not less than 25 percent nor more than 35 percent. The application of weights to the chassis for the purpose of meeting the gvwt distribution requirements between front and rear axles is not acceptable.

3.7.3 Dimensions. The truck overall dimensions shall be not more than the following:

- a. Width - 96 inches.
- b. Length - 312 inches.
- c. Height - 110 inches.

The rear-of-cab to centerline of rear-axle dimension shall be not less than 100 inches. The angle of departure shall be not less than 13 deg.

3.8 Chassis components. The truck-chassis shall be a four-wheel, four-wheel-drive, front-wheel-steer, dual rear wheel, conventional type with cab.

3.8.1 Engine. The fire truck engine shall be a diesel engine having horsepower, torque, and speed characteristics to meet satisfactorily all mobile and pumping performance requirements specified herein. The diesel engine shall have the necessary constant load and endurance characteristics

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for long pumping operations. The diesel engine shall be a liquid cooled, compression ignition, two-stroke or four-stroke cycle engine, with not less than six cylinders. The fire truck shall meet the mobile and pumping performance requirements specified herein utilizing diesel fuel.

3.8.1.1 Lubrication system. The engine lubrication system shall be the full forced feed type. A low oil pressure warning device shall be provided and located on the fire pump operator's control panel. A full flow type oil filter shall be furnished.

* 3.8.1.2 Governor. A governor shall be provided that will limit the engine to the maximum full load revolutions per minute (rpm) recommend by the engine manufacturer. The governor shall provide maximum effectiveness under all engine operating conditions and shall not restrict engine power output below governed full load rpm.

3.8.2 Fuel System. Fuel system shall conform to DoT Federal Motor Carrier Safety Regulations, section 393.65 and 393.67, and as specified herein.

3.8.2.1 Air cleaner. Manufacturer's dry type air cleaner shall be furnished.

3.8.2.2 Fuel filters. The fuel system shall be provided with a primary and a secondary fuel filter.

3.8.2.3 Fuel tank(s). The fuel tank(s) shall be of not less than 40-gallon capacity. Tank and fill piping shall be so placed as to be protected from mechanical injury. Step tank(s) may be furnished, but side running boards are required as specified in 3.10.6. When more than one fuel tank is furnished, means shall be provided to assure equalized fuel level in both tanks. When supplied, an auxiliary electric fuel pump and flame arrester shall be provided.

3.8.3 Exhaust system. Exhaust system shall conform to DoT Federal Motor Carrier Safety regulations, section 393.83. Where necessary, exhaust pipe shall be insulated and shielded. A spark arresting muffler or a spark arrester shall be provided, except when a turbocharged engine is supplied. Muffler and tailpipe shall be aluminized steel. The exhaust system discharge shall be directed away from the fire pump operator's control panel area.

3.8.4 Frame. Chassis frame shall be the manufacturer's standard welded, riveted, or bolted construction, and shall be rated for operation at rated gvwt. Frame shall be reinforced. Reinforcements shall extend at least from the rear of the front-suspension, rear hanger bracket, to the front of the rear-spring, front hanger bracket. The frame shall show no evidence of permanent deformation or distortion when operating the fully equipped and loaded truck under conditions specified herein.

* 3.8.5 Electrical equipment. The truck shall be provided with a complete 12-volt (dc) negative ground starting and lighting system. Electrical equipment, including all truck lights and wiring, shall conform to DoT Federal Motor Carrier Safety Regulations, sections 393.12, 393.19, 393.20,

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393.22, 393.24, 393.25, 393.27 through 393.31, and 393.33 except as specified herein. Reflectors shall conform to DoT Federal Motor Carrier Safety Regulations, section 393.26. Wiring shall be weatherproof, resistant to moisture and fungus, and color-coded or numbered for ready identification. Wiring identification shall be consistent throughout the truck. Two spare, single pole, 15-ampere (A) breakers shall be furnished for future radio use. The truck chassis electrical circuits and the truck body electrical circuits shall be separate circuits. The truck body electrical circuits, excluding truck chassis electrical circuits, shall be provided with overload protective devices of the manual automatic reset, overload-circuit-breaker type.

3.8.5.1 Starting system. The manufacturer's starting system shall be furnished including an ether starting aid or glow plug system. When an ether aid system is furnished, it shall be of the measured shot type with a reservoir of not less than 12 fluid ounces, operated from the driver's compartment inoperative with the engine warm.

3.8.5.2 Alternator. An alternator shall be furnished, complete with rectifier and regulator. Alternator shall be rated for not less than 100A.

3.8.5.3 Transformer-rectifier powerpack. When specified (see 6.2), a transformer-rectifier powerpack capable of providing not less than 750 watts (W), 110-V direct current power, for auxiliary purposes, shall be furnished. Three fused, grounded, weatherproof receptacles with spring-loaded covers shall be provided and located on the truck body adjacent to the fire pump operator's control panel above the water discharge connectors. Receptacles shall be of the twist-lock type, and shall be furnished with matching plugs.

3.8.5.4 Battery system. A dual 12-V battery system shall be provided. Each battery shall have a total reserve capacity rating of not less than 430 minutes and a total cold cranking ampere rating of not less than 900A at 0 deg F, both measured in accordance with SAE J537. The battery units shall be mounted in an enclosed compartment and shall be accessible for testing and servicing. The batteries shall be securely held in place on tray(s) with removable locking devices and shall be protected against engine and exhaust heat and road splash. Provisions shall be made for securely locking the sliding tray(s) in the retracted position. The battery compartment(s) shall be ventilated and treated against acid fumes and spillage. Batteries shall be provided with a polarized receptacle for station charging, so located as to automatically be disconnected when the truck moves forward. Each receptacle shall be of the recessed female type with a spring loaded cover and provided with a matching male plug with protected prongs. A carrying handle for the batteries shall be provided. Battery circuits and switching system shall be provided whereby:

a. Each battery may be used:

- (1) For starting alone.
- (2) For starting and lighting.
- (3) For operation of priming pump.
- (4) For operation of electric booster hose reel(s).

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- b. Both batteries may be used simultaneously in starting.

* 3.8.5.5 Lights. All lights shall be mounted in such a manner as to prevent being obscured by riding personnel or mounted equipment. All metal rims, shells, mounting arms, and bases of all exterior lights shall be chromium plated or polished stainless steel. Stoplights and taillights shall be flush mounted at the rear of the body. The following additional lighting shall be furnished and shall be provided with overload protection (see 3.8.5).

- a. Two roof mounted or post type, Unity Model 225 or equal, spotlights shall be furnished. One spotlight shall be located near each front corner of the cab roof. Controls shall be extended inside the cab for on-off control and movement of lamp housing through a horizontal included angle of at least 270 deg, and a vertical angle of at least 90 deg above and 36 deg below horizontal.
- b. Two adjustable, sealed beam, hose pickup lights, with weatherproof switches, mounted on rear handrail supports.
- c. Two shielded engine compartment lights, arranged to illuminate both sides of the engine, with switch located on cab dashboard.
- d. Two automatic back-up lights, not less than 4-inch diameter, flush mounted at rear of body.
- e. Pump compartment light, or lights, arranged to provide nonglare illumination of the compartment and enclosed within a protective housing, with switch mounted on pump control panel.
- f. Pump control panel lights (see 3.10.2i).
- g. Two 6-inch sealed beam red alternating flashing warning lights shall be mounted on the rear handrail supports adjacent to the hose pick-up lights. The lamps shall have a minimum output rating of 200 candlepower. The lamps shall have a combined minimum flash rate of 80 flashes per minute. The rear mounted warning lights shall be operated by means of a single, separate switch which shall be suitably identified.
- h. Two low mounted red flashing lights shall be mounted on the front of the truck. The warning lights shall be installed adjacent to or over the headlights. The warning lights shall be sealed beam lamps, 6 inches in diameter, with a minimum output rating of 200 candlepower. The lights shall have a combined minimum flash rate of 80 flashes per minute. The low mounted warning lights shall be operated by means of a single separate switch which shall be suitably identified.

3.8.5.6 Warning light. A cab roof mounted light bar, with built-in public address system speaker, shall be furnished. Light beams shall be reflected to the front and rear. The warning light and roof bar shall be Federal "Aero Twin Sonic," "Aero Dynic," "Omni-Chief," or equal. The sealed beam lamps shall be high intensity, red and white in color. The light system housing shall be clear. The speaker shall be as specified in 3.8.5.6.1.

3.8.5.6.1 Electronic siren, public address, and radio amplifier system. An electronic siren system with selector controls for the siren, public address, and radio amplification through an external speaker shall be provided. System Sound intensity shall be not less than 98 decibels at a

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distance of 100 feet from the speaker. The speaker shall be at least 100W. The amplifier and control shall be installed inside the vehicle in a location accessible to the driver and assistant driver. A microphone of the magnetic noise canceling type, connected by a coiled cord, shall be provided and located in a position convenient for use. Microphone storage shall be provided on the instrument panel. The system shall permit broadcasting, routine and emergency announcements, from an on-board Government installed radio. The siren shall be capable of being actuated by a foot-operated switch. The amplifier shall include volume control and selection of "Radio," "P.A.," "Manual," "Yelp," "Wail," and "HiLo" (European) modes. Switch positions shall be identified. A two-way radio audio type cable, for rebroadcasting two-way radio messages through the PA system, shall be furnished. The speaker shall be fitted with a weatherproof housing and shall be suitable for installation in the lightbar specified in 3.8.5.6.

3.8.5.7 Horn. Manufacturer's standard air type horn shall be furnished.

3.8.6 Transmission and transfer assemblies. The truck shall have not less than eight forward speed ranges and shall be furnished with manually shifted transmission. A positive, manually operated, locking device shall be provided for locking the transmission in direct drive position during stand and pump operation. Gear ratios in transmission and transfer assemblies shall be matched with axle ratios to provide truck performance specified in 3.6. The transmission shall provide not less than four forward and one reverse speed range. Transmission shall provide synchronized shift in at least the three highest forward speed ranges. The transfer assembly shall be of the two-speed type with neutral position. The shifting from high to low range, and from low to high range shall be accomplished with ease while the truck is traveling at speeds up to 15 mph. Unless equipped with devices which compensate for differential torque and speeds between front and rear axles, transfer case shall provide for driver selection of either two-wheel or four-wheel drive. When interaxle compensating devices are furnished, they shall provide for positive transfer of power to all driving axles. A power takeoff capable of transmitting full engine torque when the transmission is in direct drive shall be furnished and shall be mounted on the rear top of the transfer case, and controlled by the driver inside the cab. The power takeoff shift, and if applicable transfer case shift, shall be manual by means of control rods and appropriate linkage. Cable controls are not acceptable.

3.8.7 Clutch. Clutch shall be largest capacity optional clutch offered for the truck chassis and engine furnished, with torque capacity exceeding maximum delivered engine torque.

3.8.8 Drive line components. Drive line components shall have continuous duty torque capacity of not less than the maximum delivered torque of the engine, as developed through the maximum gear train reduction.

3.8.9 Drive hubs. Manually operated drive hubs, for disengaging front wheels from power train shall be provided, except for trucks equipped with interaxle compensating devices between front and rear axles.

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3.8.10 Axles. The axles shall be single reduction, full floating type. Axle capacities shall be adequate to carry the imposed load, with truck loaded to rated gvwt. When an interaxle differential between front and rear axle is furnished, it shall be equipped with:

- a. An automatic or driver controlled interaxle differential lock.
- b. The front and rear axle differentials shall be equipped with an automatic or driver controlled lock.
- c. An indicator light shall be provided when driver control differential lock(s) are furnished to indicate when lock(s) are engaged.

3.8.11 Suspension. Truck shall be equipped with suspension system with components having a rated capacity at least equal to the load imposed on each member, measured at the ground, with the truck loaded to rated gvwt. When suspension capacity is rated at the spring pads, unsprung weight shall be deducted. Double action, heavy duty shock absorbers shall be provided at front wheels.

* 3.8.12 Wheels, rims, tires, and tubes. Truck shall have single front and dual rear wheels. Rim and tire ratings shall conform to Tire and Rim Association or European Tyre and Rim Technical Organisation recommendations. Tires shall be tube or tubeless type with standard commercial mud and snow tread. Tire flaps shall be provided for tube type tires. All tires furnished on the truck shall be of the same size. The rated individual tire capacity at 55 mph highway conditions shall be not less than the maximum wheel loading imposed with truck loaded to rated gvwt. Wheel and tire assemblies shall be dynamically balanced at simulated speeds up to 55 mph. A spare wheel or rim, with spare tire, shall be furnished and stowed in the hose bed for shipment. Disk type wheels shall be provided.

3.8.13 Brakes. Brakes shall conform to DoT Federal Motor Carrier Safety Regulations, sections 393.40 through 393.45 through 393.51, as specified herein. Brake system shall be equipped with all necessary equipment to safely control the truck under any operating condition.

3.8.13.1 Service brakes. The truck shall be provided with full air-type brakes. The air braking system, complete with all necessary components, shall include:

- a. Air compressor, unloader-head-type, engine driven and engine lubricated, air or water cooled, and having a capacity of not less than 12 cubic feet per minute.
- b. Air storage reservoir(s) with not less than 2,000 cubic inches total capacity, each tank equipped with drain, and with safety and check valves between compressor and last reservoir tank.
- c. Foot control, suspended or treadle type.
- d. Quick-release valve or relay valve for rear brakes.
- e. Air pressure gauge, visible to the driver.
- f. Low-air-pressure warning, visible and audible.
- g. Alcohol aspirator with unbreakable transparent container.
- h. Automatic moisture ejector.

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3.8.13.2 Parking brake. Truck shall be equipped with a parking brake. Parking brake shall be capable of meeting performance requirement specified in 3.6.

3.8.14 Steering mechanism. The truck shall be equipped with a power-assist steering mechanism of hydraulic type. The mechanism shall permit manual steering in the event of failure of the hydraulic system, and shall be properly effective at all vehicle speeds. The system shall be furnished complete with all necessary piping, valves, and accessories. The steering mechanism shall provide for controlling the direction of the fully loaded truck under all operating conditions. The cramping angle shall be not less than 28 deg +/-1 deg right and left.

3.8.15 Front bumper and towing devices. A heavy-duty, full width, front bumper and two tow hooks shall be provided at the front of the truck. The two front tow hooks shall be mounted to the frame or to rigid members which are attached to the frame. Two recessed 3-inch inside diameter (id), towing rings or comparable U-bolts shall be provided at the rear of the truck, and shall be mounted directly to the chassis frame rails.

3.8.16 Cab. Unless otherwise specified (see 6.2), the cab shall be of all metal construction and shall provide unobstructed seating for three men. When specified (see 6.2), the cab shall be constructed of aluminum. The engine and driver's compartment shall be separated by an insulated firewall. Cab shall have upholstered, full-width adjustable seat. Cab shall be provided with a floormat, and boots for all levers and controls extending to the exterior of the cab. The cab doors shall be equipped with locks, operable from inside the cab through mechanical linkage, and with at least the curb side door equipped with external, key operated lock. Safety grips shall be provided on each side of the cab to assist personnel in climbing into the truck cab. Fastenings and three pairs of seat belts and inside rearview mirror shall be furnished. Safety glass shall be provided throughout the cab. Dual sun visors shall be furnished. A dome light shall be provided.

3.8.16.1 Outside rearview mirrors. The truck shall have an exterior mounted rearview mirror on both the right and left sides of the cab. Each mirror shall have at least three supporting arms. Combination (flat and convex) mirrors enclosed in a common housing shall be furnished. Each combination mirror shall have not less than 50 square inches of flat reflective area and an convex surface having not less than 20 square inches of reflective area.

3.8.16.2 Windshield wipers. The truck shall have dual electric windshield wipers, multispeed type, and controlled at the instrument panel. The wipers shall be the heavy-duty type. When specified (see 6.2), air windshield wipers shall be furnished.

3.8.16.3 Windshield washers. Standard manufacturer's supplied windshield washers, equipped with plastic container for cleaning fluid, shall be furnished.

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3.8.16.4 Heater and defroster. Cab shall be equipped with a hot water type heater having fresh air intakes, discharge outlets to floor, and windshield defroster louvers. Heater shall be quipped with a 12-V (dc), electric-motor-driven, two-speed blower controlled by a dash mounted, three-position switch. Defroster shall be provided with an air regulating control. The defroster may be powered by a separate motor. Heater shall deliver not less than 28,000 British thermal units per hour with a temperature differential of 100 deg F between intake water and intake air.

3.8.16.5 Instrument panel. The cab instrument panel shall include indirect panel lights, speedometer with odometer, engine temperature gage, ammeter, lighting switches, fuel gage, engine lubricating oil pressure gage, keyless starting switch with pilot light, tachometer, fire pump discharge pressure gage, warning light to indicate when power takeoff (pump drive) is engaged, pump gear shift control and position indicator, and all other necessary controls and switches.

3.8.17 Buzzer. A buzzer shall be installed in the cab and a weather-proof pushbutton on one of the rear handrail supports to provide for a signaling device from the rear platform to the truck cab.

3.8.18 Back-up warning device. The fire truck shall be provided with an automatically activated, audible, pulsating, signaling warning device, mechanical or electrical, to caution personnel when fire truck is in reverse gear operation.

3.8.19 Tools. When specified (see 6.2), each truck shall be furnished with tools required for exchanging mounted tire assembly with the spare assembly, and shall include at least a hydraulic jack, jack handle, and wheel-nut wrench. The jack shall be of such closed height as to permit its location under axle, or other satisfactory lift point, at any wheel with the tire flat. The jack, without blocking, shall be capable of raising any wheel of loaded truck to a height adequate to permit removal and replacement of wheel and tire assembly.

3.8.19.1 Stowage space. Stowage space of sufficient size to accommodate jack, hand tools, antiskid chains, and emergency reflective triangles shall be furnished for retaining equipment during truck operation. Stowage space for these tools may be furnished inside the cab. When stowage space for these tools is located outside of cab, it shall be waterproof and shall provide for locking with a padlock.

3.9 Fire pump. Fire pump shall be midship mounted at the rear of the truck cab, and shall be driven by the truck engine. Drive for pump shall be through the full torque power takeoff, mounted on the rear top of the transfer case (see 3.8.6). Pump drive shall be controllable from the cab. Fire pump assembly shall include an integrally mounted transmission which is capable of multiplying the input speed by either one of two gear ratios; one ratio shall be suitable for use when the input speed is equal to the engine speed (direct drive), and the other ratio when the input speed is equal to the engine speed divided by the highest forward speed transmission gear ratio (first or low). Provisions shall be furnished to prevent the pump gears from being shifted to the high speed position unless the chassis

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transmission is in first or low speed position. Pump power assisted gear shift control shall be located in the truck cab, with an indicator or lights to indicate the position of the gears. Pump shall be of centrifugal, two stage, series-parallel type and shall conform to the requirements of NFPA No. 1901. Controls for pump operation in series and parallel shall be the manufacturer's standard and shall be operable from the fire pump operator's control panel. If the transfer (changeover) control is a manual push-pull type, the control handle shall be in the inboard position for pump operation in the series mode. The valve arrangement for switching from parallel to series shall be such that the cutover can be accomplished without completely shutting down the pump operation or causing surges in the hose line. When drafting at lift of 10 feet, but not less than 9 feet, through 20 feet of 4-1/2 inch hard suction hose, pump shall:

- a. Deliver a minimum of 500 gpm at 150 psig discharge pressure at less than the manufacturer's recommended maximum no-load governed speed of the engine.
- b. Deliver a minimum of 350 gpm at 200 psig discharge pressure at less than the manufacturer's recommended maximum no-load governed speed of the engine.
- c. Deliver a minimum of 250 gpm at 250 psig discharge pressure at less than the manufacturer's recommended maximum no-load governed speed of the engine.
- d. Deliver each flow rate specified above at an additional 10 percent discharge gage pressure.

The fire pump shall also deliver not less than 30 gpm at a minimum 200 psig from the water tank through the booster hose nozzle(s) as specified in 3.6c. The fire pump shall also deliver not less than 250 gpm at 250 psig from the water tank and shall maintain the rate of flow for not less than 80 percent of the rated capacity of the water tank. The fire pump shall also deliver, during pump and roll operations, utilizing the water tank and booster hose nozzle(s), the flow rates and requirements specified in 3.6g. When specified (see 6.2), the fire pump shall be provided with piping and with valve control at the fire pump operator's panel for filling the water tank while drafting water. The pumping requirements specified herein shall be accomplished at all altitudes up to 3,000 feet above sea level and in any ambient temperature from +125F to -25 deg F without evidence of over-heating, excessive vibration, or any other malfunction. Drain cocks, push-pull type or rotary with positive stops, accessible at the pump operator's position and arranged so that the open and closed position is clearly indicated, shall be provided to drain the pump and all water-carrying lines. Drain cocks shall be of the water service type and shall be equipped with positive stops. Pump drain lines shall be furnished and shall discharge to the ground at a point not above the bottom of the chassis frame.

* 3.9.1 Pump material. The pump impeller shaft shall be of stainless steel. The pump impellers and the renewable wear rings shall be bronze. The fire pump casing shall be brass or bronze.

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3.9.2 Pressure rating. Pump shall withstand not less than 500 psig hydrodynamic pressure on the discharge side and not less than 350 psig hydrostatic pressure on the suction side.

3.9.3 Suction connections. The fire truck shall be provided with three bronze suction connections. Each suction connection shall be equipped with a removable and accessible brass strainer. Each suction connection shall have machined ends with a mirror finish to permit hand tight connections. Each suction connection shall provide a seat for suction hose gaskets, and shall be threaded with American National fire hose coupling thread (NH). One 4-1/2 inch suction connection shall be located on the fire pump operator's control panel, and one 4-1/2 inch suction connection shall be located directly opposite on the curbside of the fire truck. One 2-1/2 inch suction connection shall be located on the fire pump operator's control panel. The two 4-1/2 inch suction connections shall have a chromium plated, long-handled, gasketed cap. The 2-1/2 inch suction connection shall be gated, and shall be a gasketed female swivel type equipped with a chromium plated rocker lug plug. All suction valves shall be balanced, corrosion-resistant, ball type for quarter-turn operation. Each valve shall be operated and locked by means of an individual control handle as a single-handed operation.

3.9.4 Discharge connections. The fire truck shall be provided with three bronze discharge connections. Each discharge connection shall be gaged, and shall have machined ends with a mirror finish to permit hand-tight connections. Each discharge connection shall provide a seat for discharge hose gaskets, and shall be threaded with NH threads. Each discharge connection shall be provided with a rocker lug, chromium plated, chained, gasketed cap. Each discharge connection shall be provided with a hose discharge pressure gage located on the fire pump operator's control panel. Two 2-1/2 inch discharge connections shall be located on the fire pump operator's control panel, and one 2-1/2 inch discharge connection shall be located directly opposite on the curbside of the fire truck. All discharge valve controls shall be located on the fire pump operator's control panel. Each discharge connection shall be provided with a drain valve of at least 3/4-inch id for draining hose lines with the pump discharge gates closed. The push-pull type drain valves shall be of the water service type and shall be equipped with positive stops. All discharge valves shall be the pump manufacturer's standard valves, and shall be balanced, corrosion-resistant, ball type for quarter-turn operation. Each valve shall be operated and locked by means of an individual control handle as a single-handed operation. Drain lines shall be concealed behind the pump compartment panels and shall discharge to the ground at a point not above the bottom of the chassis frame. Each discharge connection, pressure gage, and drain shall be identified by a related numbering system as well as function.

3.9.4.1 Leader hose preconnects. When specified (see 6.2), two 1-1/2 inch discharge connections shall be provided for the leader hoses. The discharge connections shall be located as specified by the procuring activity (see 6.2). Each discharge connection shall be gated, and shall have machined ends with a mirror finish to permit hand-tight connections. Each discharge connection shall provide a seat for discharge hose gaskets,

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and shall be threaded with NH threads. Each discharge connection shall be provided with a rocker lug, chromium plated, chained, gasketed cap. Each discharge connection shall be provided with a hose discharge pressure gage located on the fire pump operator's control panel. Each discharge connection shall be provided with a drain valve of at least 3/4-inch id for draining hose lines with the pump discharge gates closed. The push-pull type drain valves shall be of the water service type and shall be equipped with positive stops. All discharge valves shall be the pump manufacturer's standard valves, and shall be balanced, corrosion-resistant, ball type for quarter-turn operation. Each valve shall be operated and locked by means of an individual control handle as a single-handed operation. Drain lines shall be concealed behind the pump compartment panels and shall discharge to the ground at a point not above the bottom of the chassis frame. Each discharge connection, pressure gage, and drain shall be identified by a related numbering system as well as function.

3.9.5 Relief valve. An automatic relief valve shall be provided for controlling the pressure from all outlets. The relief valve shall be so located that it is accessible for maintenance when the pump control panel or stowage bin bottom (see 3.10.1) is removed. The relief valve shall be of such design that, when operating from draft, at any discharge pressure from 90 psig to 300 psig, the increase in discharge pressure will be limited to 30 pounds per square inch (psi) when one or more outlet valves are closed slowly. The relief valve shall perform satisfactorily when pumping rated capacity at any pump working pressure over 90 psi. Relief valve drain shall be provided and shall be in a readily accessible location. The relief valve drain line shall discharge to the ground at a point not above the bottom of the chassis frame.

3.9.6 Pump gear train. The pump gear train and pump transmission shall have ball or roller bearings throughout. Gearing, gearbox size, and mounting location shall be such that at rated capacity and pressure, the temperature rise in the gear lubricant shall not exceed the maximum temperature recommended by the pump manufacturer, for continuous operation in an ambient temperature of 125 deg F. The ambient temperature shall be measured at the intake side of the engine radiator. Maximum gear tooth pressure shall be suitable for continuous gear train operation under pump operating requirements indicated herein.

3.9.7 Priming pump. The priming pump shall be of the rotary type, 12-V (dc), motor-driven, complete with lubricating oil reservoir, and necessary valves operated from the pump control panel. The priming pump shall develop a vacuum of 22 inches of mercury (Hg) at an altitude up to 1,000 feet above sea level in not more than 30 seconds. The priming pump shall be operable from each of the two batteries (see 3.8.5.4). A decal or plate shall be located on or near the reservoir identifying the tank and oil to be used.

3.10 Body. The truck shall be equipped with a body which shall incorporate a fire pump housing and stowage bin, fire pump operator's control panel, removable water and foam tanks, hose bed, equipment cabinets, rear platform, booster hose reel(s), and firefighting equipment. Unless otherwise specified (see 6.2), the body shall be made of not less

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than 0.1046-inch (U.S. revised standard gage No. 12) thick steel and shall be reinforced at all points where hose and ladder clamps and hangers are attached. When specified (see 6.2), the body shall be made of aluminum. Body shall be free from rough and sharp edges.

3.10.1 Fire pump housing and stowage bin. Fire pump shall be housed in a metal housing incorporating a stowage bin. Housing shall be self-supporting from the truck frame and entirely separate from the cab. Pump housing top cover plate shall be made of not less than 0.1046-inch (U.S. revised standard gage No. 12) thick steel. Stowage bin above the pump shall have a removable bottom constructed of steel and shall support 200 pound-force per square foot (psf) of area. Stowage bin bottom shall clear the pump and piping. Stowage bin shall be so constructed that, with the bottom removed, the pump can be lifted out intact without removing more than the pump suction and discharge fittings. The sides of the stowage bin shall be the same height as the sides of the hose bed. Adequate drain holes to preclude retention of water shall be provided. Two folding, spring loaded, chromium plated toe steps shall be furnished to permit access to the pump compartment stowage bin. One shall be located on the street side in the vicinity of the pump operator's control panel, and the other shall be located directly opposite on the curbside of the truck.

3.10.2 Fire Drum operator's panel. The truck shall be equipped with a fire pump operator's control panel located on the road side of the truck. The pump pressure and suction gages shall be not less than 3-1/2 inch diameter, liquid filled, flush mounted type. The pump pressure and suction gages shall be accessible to the operator, and equipped with face-mounted adjustment, and front removable glass. All valve operating handles and other controls shall be operable by personnel wearing heavy gloves. All extended controls and handles shall be noninterfering, firmly supported, and realineable. Panel shall include the following:

- a. Pump pressure gage 30 inches Hg (vacuum) to 600 psi.
- b. Pump suction gage - 30 inches Hg (vacuum) to 400 psi.
- c. Engine tachometer - not less than 4,000 rpm range with a provision in the panel to allow checking accuracy with a test revolution counter.
- d. Throttle - pull type with latch and microadjustment.
- e. Pump pressure bypass control.
- f. All pump discharge valve controls.
- g. Tank suction valve control.
- h. Primer pump control.
- i. Illumination of all instruments and controls with nonglare lighting.
- j. Engine coolant temperature indicator (see 3.3.1.1).
- k. Engine oil pressure gage.
- l. Heat exchanger valve control.
- m. All hose discharge pressure gages (0 to 600 psi).
- n. Water tank level gage.
- o. All other pump panel mounted drains and controls mentioned herein.

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- p. Discharge valve and throttle handles shall be of black, extreme temperature resisting plastic, brass, or stainless steel; all gage rims and other exposed metal shall be chromium plated, stainless steel, or high impact plastic.
- q. Plugged 1/4-inch standard pipe connection(s) with pipe or tubing for connection of vacuum or pressure test gage(s) for testing pump pressure and suction gages.
- r. Instruction plates specified in 3.16.
- s. Foam system controls and valves specified in 3.10.9 through 3.10.9.4.
- t. Controls for engagement of pump in series or parallel stage.
- u. Foam tank liquid level gage (if required).

All controls, valves, instruments, and gages shall be identified as to their function and shall have a related identification number.

* 3.10.3 Water tank. A removable water tank of not less than 600-gallon capacity shall be provided to the rear of the fire pump housing. The water tank shall not extend beyond the main hose bed sides. Unless otherwise specified (see 6.2), the water tank shall be fabricated of not less than 0.1345-inch (U.S. revised standard gage No. 10) copper-bearing steel. When specified (see 6.2), the water tank shall be fabricated of aluminum or fiberglass. The water tank shall be capable of discharging its full capacity with the fire truck on a 30-percent grade, heading upgrade and also heading down-grade. The top shall be removable, gasketed to prevent leakage, and shall support not less than 200 pound-force per square foot of surface area. The top retaining fasteners shall not come in contact with the water. A longitudinal and transverse surge partition(s) shall be provided in the tank. The tank drain shall be located at the low point of the tank to provide complete drainage. The water tank drain shall discharge directly to the ground at a point not above the bottom of the chassis frame. The tank shall have a nonsplash combination overflow and vent pipe of not less than 3-inch nominal pipe size, directed to the ground at the rear of the rear axle, and extending below the bottom of the truck frame. The top of tank shall support the hose bed. The water tank shall be warranted a minimum of five years.

3.10.3.1 Tank filler opening. The tank shall have an accessibly located filler opening not less than 6 inches in diameter and shall be provided with a tight, gasketed, hinged cap having a spring-type hold-down catch. The tank fill opening shall be provided with a removable strainer.

3.10.3.2 Tank piping. All piping from the tank to the pump and from the pump to the booster hose reel(s) shall be of corrosion-resistant metal, or shall be galvanized. The pipeline between the tank and the pump shall be of adequate size to permit all flow rates specified in 3.9, and shall incorporate a flexible, reinforced, noncollapsible connection(s) to take up vibration. A quick-opening tank to pump shutoff valve shall be provided with control extended to the operating side of the truck, and a drain valve located at the lowest point with control extended to the operating side of the truck. The tank piping shall provide for discharging the water in the tank through the fire pump discharge manifold at a flow rate of not less than 250 gpm. When required (see 3.9), the tank piping shall provide for

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filling the water tank with the fire pump while drafting water. The tank suction pipeline, valves, and fittings shall withstand not less than 120 psi working pressure. The piping between the pump and the booster reel(s) shall be not less than 1-1/2 inch id and shall incorporate 1-1/2 inch, quick-opening shutoff valves with controls extended to the operating side of the truck. The discharge piping, valve(s), and fittings between the pump and booster reel(s) shall withstand not less than 500 psi working pressure. A complete piping diagram shall be provided. All drain lines shall discharge to the ground at a point not above the bottom of the chassis frame. The piping system shall provide the capability of removing 80 percent of water from the water tank when operating upgrade and/or downgrade on a 30 percent grade.

3.10.3.3 Tank level gage. A water tank level gage shall be furnished and located on the fire pump operator's control panel.

3.10.3.4 Tank interior treatment. The inside surfaces of the tank shall be cleaned to bare metal in accordance with manufacturer's standard practice. The interior surfaces shall then be coated with an epoxy system conforming to MIL-C-4556. The primer and finish coat shall achieve a minimum thickness of 6 mils.

3.10.3.5 Tank mounting. Tank shall be supported on sills to cushion shock and transfer the load to the truck frame. The tank shall be so mounted and attached to the chassis that it can be removed without removing the truck body.

3.10.4 Hose bed. A hose bed shall be provided with the capability of stowing not less than 1,000 feet of 2-1/2 inch double-jacketed, cotton, rubber-lined fire hose and 400 feet of 1-1/2 inch double-jacketed, cotton, rubber-lined leader hose in horizontal layers. The hose bed shall be not less than 72 inches in length. Width of the hose bed on the flat top of water tank shall be 70 inches +/-1 inch. The hose bed interior shall be free of all projections, sharp or rough edges which might chafe or tear fire hose or hinder its placement or removal. Sides, partitions, and front end shall extend 13 inches +/-1 inch above the hose bed. Sides and end shall be flanged and reinforced to withstand not less than 200 lb horizontal pull at any point on top edge without permanent deformation. Two leader hose partitions shall be provided at the right side of the hose bed with a clear space of 3-1/2 inches between each partition opening. The leader hose partitions shall be reduced in length for a distance of 8 inches from the rear to give better accommodation of attached nozzles. The hose bed floor shall be of slatted well-seasoned, select grade oak or other hardwood having equal characteristics. Slats shall be not less than 3-1/2 inches in width. The slats shall have a finished thickness of not less than 3/4 inch, shall run the full length of the hose bed, and shall be spaced so as to provide ventilation for hose. The spacing shall be not less than 5/8 inch nor more than 3/4 inch. The wood floor slats shall be fastened to the crossmembers by countersunk screws or bolts. The floor assembly, slats and sub-floor, shall be removable. The interior of the hose bed shall be free from all projecting nuts, sharp angles, or brackets. Exposed bolt or rivet heads shall be of the oval type. The hose reel(s) and the equipment holders shall be placed so as not to obstruct the loading or removal of fire hose.

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Two folding, spring loaded, chromium plated toe steps shall be furnished. One shall be located on the right, and one on the left, at the rear of water tank or body to permit easy access to the hose bed.

3.10.5 Equipment cabinets. Unless otherwise specified (see 6.2), all equipment cabinets and cabinet doors shall be made of not less than 0.1046-inch (U.S. revised standard gage No. 12) thick steel. When specified (see 6.2), equipment cabinets and cabinet doors shall be made of aluminum.

3.10.5.1 Side equipment cabinets. Equipment cabinets shall be provided on each side of the body, front and rear of the wheelhousing, approximately flush with the running boards and the wheel skirting. The cabinet height from running board to the top of the wheelhousing shall be not less than 30 inches, and depth shall be the same as the wheelhousing but not less than 20 inches. Each cabinet shall have a door, hinged forward, and provided with a recessed handle and flush-bolt-type lock to prevent entrance of rain into the mechanism. The clear opening for each cabinet door shall be not less than 24 inches wide and 27 inches high. Each cabinet shall be provided with an adjustable shelf located midway between the top and bottom of the cabinet. The adjustable shelf shall be provided with an upturned lip not less than 3/4 inch at the front of the shelf. Each cabinet shall be illuminated. Cabinet lights shall be controlled by a master control switch, with an indicating light, located on the truck instrument panel. Cabinet tops and wheelhousing tops shall run continuously on each side of the truck and shall be of antiskid surface, same as furnished for running boards, and rear platform surfaces.

3.10.5.2 Rear equipment cabinet. An equipment cabinet shall be provided at the rear of the truck. The rear equipment cabinet shall be an extension of the rear side cabinets, and shall be the full width of the body. The rear equipment cabinet shall be the same height and depth as the side equipment cabinets. The top of the rear equipment cabinet shall be covered with antiskid surface, same as furnished on the side equipment cabinets. Two cabinet doors, hinged on outer edges, shall be furnished, and shall be equipped with identical hardware as the side equipment doors. The clear opening for each cabinet door shall be not less than 18 inches wide and 23 inches high. The rear equipment cabinet shall be illuminated at each cabinet door area, and lighting controlled by the master control switch specified in 3.10.5.1.

* 3.10.6 Rear platform and running boards. The truck shall be provided with a rear platform and running boards. The rear platform shall have a load-carrying capacity of not less than 700 lb. Rear platform shall be not less than 18 inches in width, from front to rear, and the length shall be equal to the width of the truck. Rear platform shall have rounded corners, and shall be flanged downward at least 2 inches. The side running boards shall extend from the rear of cab to the side equipment cabinets. Running boards shall have a load-carrying capacity of not less than 350 lb, and shall extend from the body to full width of the truck. Running board area at each cab door shall provide an unobstructed and easy entrance and exit of personnel from exterior of truck to interior of cab. The rear platform and running boards shall have a nonslip diamond plate tread surface. The

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running boards and rear platform shall be located at the same height from ground level. The rear platform and running boards shall be 22 inches \pm 2 inches, above ground level, with the truck loaded as specified in 3.7.2.

* 3.10.7 Handrails and grab rails. The rear platform shall be provided with two vertical grab rails to assist personnel in climbing onto the rear platform. A horizontal hand rail shall be provided not more than 6 inches forward of the rear end of the hose bed and not more than 15 inches above the hose bed. A handrail shall be provided at, or near, the top of the right and left sides of the stowage bin and shall be the length of the pump compartment. The handrails and grab rails shall be 1-1/4 inch minimum diameter chromium-plated brass, chromium-plated steel, or polished stainless steel tubing. All handrails and grab rails shall be of the non-twist type.

* 3.10.8 Booster hose reel(s). Unless otherwise specified (see 6.2), one booster hose reel shall be provided. When specified (see 6.2), two booster hose reels shall be provided. Each booster hose reel shall be an electrical rewind type, 12V(dc). Each rewind control switch shall be a push type, spring loaded button, and shall be located on the fire pump operator's control panel, and shall be identified as such. Each hose reel shall also have provisions for manual handcrank rewind, with the handcrank facing forward. When one hose reel is furnished, the hose reel shall be mounted over the pump compartment with its axis on the longitudinal centerline of the truck. When two hose reels are furnished, one shall be positioned for operation on the left side of the truck and one shall be positioned for operation on the right side of the truck. The hose reel(s) support shall be independent of the top of the water tank. The booster reel(s) shall not extend over the main hose bed, but may extend over the fire pump stowage bin. Booster hose reel horizontal and vertical rollers shall be furnished on the single hose reel to permit operation on either side of the truck. When two hose reels are furnished, the reel horizontal and vertical rollers furnished shall permit operation on its respective side only. The rollers on each hose reel shall be spaced to preclude hose couplings from snagging on rollers. The location of mounted equipment on the truck shall not interfere with the paying out or rewinding operation of each hose reel. Each booster hose reel shall be connected to the discharge manifold of the fire pump with a 1-1/2 inch id galvanized or corrosion-resistant steel pipeline having a flexible section to take up vibration, and each shall have an operating valve with handle extended to the left side of the truck on or above the pump operator's panel. The discharge piping, valve(s), and fittings between the pump and each booster reel shall withstand not less than 500 psi working pressure. Drain line(s) shall discharge to the ground at a point not above the bottom of the chassis frame.

* 3.10.8.1 Hose. Each booster reel shall be equipped with 200 feet, in four 50-foot lengths, of 1 inch, 800 psi, rubber chemical hose, jointed with smooth full-flow type, couplings.

* 3.10.8.1.1 Nozzles. A 1 inch brass hose nozzle of the combination straight stream and adjustable fog type shall be furnished for each hose reel. Each nozzle shall conform to the current Fire Protection Equipment

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List of the UL. Each nozzle shall be equipped with ball shut-off and click-stop nozzle settings. Each nozzle shall be of the pistol grip type. Each nozzle shall permit preselection of any nozzle setting prior to turning on the nozzle and shall off at any nozzle setting. Each nozzle shall provide settings for straight stream and minimum fog settings of 30 deg, 60 deg, and 90 deg. The capacity at a discharge pressure of not less than 200 psig shall be not less than 30 gpm for straight stream application.

3.10.9 Foam equipment. The truck shall be provided with foam equipment as specified herein. The foam system shall be suitable for operation with AFFF, conforming to MIL-F-24385. The system shall be capable of discharging a 6 percent \pm 0.3 percent foam solution at all pump discharge capacities up to 250 gpm. Foaming capabilities will be required for standstill operations only. The foam equipment system provided shall be the around-the-pump type.

3.10.9.1 Foam liquid tank. The foam liquid tank shall have a capacity of not less than 55 gallons. Foam liquid tank shall be removable and shall be located between the fire pump housing and the curb side of the truck. The foam liquid tank mounting provisions shall include means of effectively reducing the adverse effects of shock and vibration. The foam tank shall be constructed of an unplasticized plastic material reinforced with fiber glass or stainless steel resistant to AFFF concentrate. A drain, with discharge at a point below the bottom of the truck frame, and equipped with valve control extended to the fire pump operator's control panel, shall be provided. Adequate provisions shall be made for filling the foam tank directly from at least three 5-gallon cans simultaneously. A readily removable and cleanable screen of stainless steel, with not less than 1/8-inch mesh, shall be provided in the top foam filler opening to prevent the entry of foreign matter. The foam tank shall be provided with a splashproof vent and its outlet directed where the overflow will not contaminate the truck or create a hazardous condition. The foam tank shall be provided with a liquid level sight gage unless the tank configuration and positioning will reveal the liquid level upon removal of the top fill opening and is unobstructed. Foam tank shall be warranted for a minimum of five years.

3.10.9.2 Foam controls. All controls for the operation of the foam system shall be located on the fire pump operator's control panel, and shall be readily accessible to the operator.

3.10.9.3 Around-the-pump foam proportioner. The proportioner shall provide concentrate into the water flow at a 3 percent and a 6 percent rate. The AFFF concentrate shall be inducted by venturi action into a line carrying a portion of the solution from the fire pump discharge. The concentrate water mixture shall be drawn into the pump intake and shall mix with the main water flow. A metering valve shall be provided in the foam liquid line leading into the venturi for controlling the amount of foam liquid entering the venturi. The foam liquid metering valve shall be calibrated and provided with a dial and pointer to regulate the proportioning or discharge percentage of foam liquid to total solution. The dial and pointer shall not be on the bottom of the foam metering valve.

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3.10.9.4 Around-the-pump piping. All fittings and valves coming in contact with the AFFF concentrate shall be bronze, and all piping shall be either brass, bronze, or stainless steel. Quarter-turn ball valves shall be installed between the foam tank and metering valve and between the fire pump discharge and the eductor. A ball check valve shall be installed in the flow supply line. A horizontal swing check valve shall be installed in the water tank suction line to prevent entry of foam solution into the water tank. Provisions to enable flushing piping without water entering the foam tank shall be provided. Provisions to enable flushing piping and foam tank with water shall also be provided.

3.11 Fire truck equipment. When specified (see 6.2), the following equipment shall be provided:

- a. Three lengths of 4-1/2 inch hard suction hose, each not less than 126 inches long, with 4-1/2 inch NH long handle couplers on female ends and 4-1/2 inch NH rocker lug couplers on male ends. Couplers shall be chromium-plated brass. Suction hose shall conform to the requirements of NFPA No. 1901.
- b. Hose troughs to accommodate the hoses specified in 3.11a. Three hose troughs shall be provided, one above the other on the roadside of the body, with male ends of hose to rear. Troughs shall be fabricated of the same gage steel as that used for the body. The cross sectional design shall permit ventilation between the hose and trough. Quick-release fastenings shall be provided adjacent to both ends of the hose and shall be of the cam-locking type so designed to permit simultaneous release of one end of the three hoses through a single operation of the locking lever. All exposed metal parts of the fasteners shall be chromium plated. The fasteners shall not permit movement of the hose during travel of the truck.
- c. One 14-foot roof ladder with folding hooks. One 24-foot extension ladder in two sections, tongue and groove construction. All ladders shall conform to the requirements of NFPA No. 1931. All ladders shall be of aluminum alloy metal. All ladders shall be mounted on the right side of the truck above the equipment cabinets and wheel housing. All ladders shall be securely mounted with quick-release fastenings.

3.12 Accessory mounting brackets and holders. When specified (see 6.2), brackets or quick-release holders shall be furnished and installed for mounting the following accessories (accessories are not to be furnished):

- a. One 14-foot length of 4-1/2 inch soft suction hose with 4-1/2 inch long handle, female, gasketed chromium-plated NH brass couplings on both ends. Hose to be mounted in roll rack. Hose shall conform to ZZ-H-451, type I, class A.
- b. One pipe pole, conforming to MIL-P-43116, type III, style B, size 1.
- c. One utility bar, not less than 30 inches long.
- d. One crowbar, conforming to GGG-B-101, type II, class 1, size 4.
- e. One fire ax, conforming to GGG-A-926, type II.
- f. One fire ax, conforming to GGG-A-926, type I, class 1, design A.

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- g. Two universal spanner wrenches, conforming to GGG-W-665, type V, chromium, nickel, or cadmium coated.
- h. One siamese connection, 2-1/2 inch NH female swivel inlet, two gated 1-1/2 inch NH male outlets, conforming to MIL-C-52404, type XIV, class B, chromium-plated brass trim. Siamese connection shall be mounted on the rear platform, not in a cabinet.
- i. Two nozzles, 2-1/2 inch NH adjustable fog to straight stream, chromium-plated brass, with provision for selecting the stream before opening the valve.
- j. Two nozzles, 1-1/2 inch NH adjustable fog to straight stream, chromium-plated brass, with provision for selecting the stream before opening the valve.
- k. Two reducers, 2-1/2 inch NH female gasketed rocker lug coupling to 1-1/2 inch NH male end, chromium-plated brass, conforming to MIL-C-52404, type XV, class C.
- l. Two foam nozzles with shaper, conforming to MIL-N-12279, type III, class B, size 1-1/2 inch, 60 gpm (100 psig), brass, chromium-plated trim, with rocker lugs.
- m. One strainer, conforming to MIL-S-12165, type I, with 4-1/2 inch NH female coupling, chromium-plated brass.
- n. One 30 lb dry chemical extinguisher charged with potassium bicarbonate.

The location of the brackets and holders to be optional with the manufacturer. When mounted, the tools and equipment shall be readily accessible and present no hazard to personnel when boarding, alighting, or removing and replacing equipment. The mounting attachments shall be of rugged construction and designed so that equipment will remain securely in place under all running conditions and yet permit quick removal for service. Externally mounted mounting attachments shall be chromium plated.

3.13 Treatment and painting. Unless otherwise specified (see 6.2), the exterior surfaces of the truck cab, chassis, body, and the interior surfaces of the equipment cabinets shall be cleaned, treated, and painted in accordance with MIL-T-704, type A, except as specified herein. The exterior surfaces shall be painted with two coats of primer and two coats of finish enamel. The primer paint shall be Dupont No. 825-S Zinc Chromate Epoxy Primer, or equal. The finish paint shall be Dupont "IMRON" Air-Dry Polyurethane Enamel, or equal. The thickness of primer and finish coats shall be consistent with good commercial paint procedures for fire trucks. The finish color shall be as specified by the procuring activity (see 6.2). The interior surfaces of the cab shall be cleaned, treated, and painted as specified for the exterior surfaces. The body load space and the interior of the equipment cabinets shall be the same as the exterior color. The finish color on the equipment cabinet tops, running boards, and rear platform shall be of aluminum. The disk wheels shall be painted the same as the exterior color. Rims and tire locking rings treated with permaplate as other similar corrosion-resistant treatment need not be painted. Radiator grille, headlight rings, and other exterior trim shall match the exterior color specified except that chromium-plated, cadmium-plated, stainless steel, plastic, or anodized aluminum surfaces need not be painted. The front bumper shall be chromium-plated. When specified (see 6.2), treatment and painting requirements shall be as specified by the procuring activity.

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3.14 Identification marking and data plates. As specified by the procuring activity for the appropriate service (see 6.2), identification marking, registration numbers, and data plates shall be in accordance with MIL-STD-1223.

3.15 Identification plate. When specified (see 6.2), an identification plate will be furnished by the contracting officer for each truck. The contractor shall stamp all necessary data in the blank spaces of the plate provided for that purpose, and securely affix a plate to each truck on the pump operator's control panel with nonferrous screws, rivets, or bolts not less than 1/8 inch in diameter. The following nomenclature shall be stamped in the space provided on the identification plate "TRUCK, FIREFIGHTING, 500 GPM, 4 BY 4."

3.16 Instruction plates. Plates shall be of nonferrous-base alloy metal or stainless steel. The following plates shall be provided:

- a. A plate indicating the fire pump delivery rate in gpm at 150,200, 250 psig pressure, with manufacturer's specified engine speeds, pump and transmission gear positions, and pump transfer valve position shall be affixed to the fire pump operator's control panel.
- b. All pumping controls, valves, instruments, and such truck operating controls whose function is not obvious shall be provided with suitable instruction plates designating function and operation.

3.17 Rustproofing. When specified (see 6.2), the truck cab, chassis-frame, and chassis underside shall be rustproofed in accordance with FED-STD-297.

3.18 Lubrication. Means for lubrication shall be in accordance with the manufacturer's standard practice. The lubricating points shall be easily visible and accessible. Hydraulic lubrication fittings shall be in accordance with SAE J534. Where use of high pressure lubricating equipment, 1,000 psi or higher, will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

3.19 Servicing and adjusting. Prior to acceptance of the vehicle by the Government, the contractor shall service and adjust the vehicle for immediate operational use as required in the operator's manual. The servicing and adjusting shall include at least the following:

- a. Inflation of all tires.
- b. Adjustment of brakes.
- c. Proper functioning of all lighting and electrical systems.
- d. Wheel alignment, (when required).
- e. Complete lubrication with grades of lubricants recommended for ambient temperature at the delivery point.
- f. Cooling system filled to capacity with a clean solution of equal parts by volume of water and antifreeze (ethylene glycol).

The vehicle shall be conspicuously tagged to identify the lubricants and their temperature range.

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3.20 Workmanship.

3.20.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure uniformity of size and shape.

3.20.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.20.3 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and of uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.20.4 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

* 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on one fire truck (see 3.2, 6.2, and 6.4). This inspection shall include the examination of 4.3 and the tests of 4.4. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the tests of 4.5, and the packaging inspection of 4.6.

4.3 Examination. Each truck shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirement or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.4 First article tests.

4.4.1 Service brakes test. Service brakes shall be tested to determine conformance to 3.6a and b.

4.4.2 Acceleration test. The truck shall be tested to determine conformance to acceleration requirements in 3.6d.

4.4.3 Road tests. The truck shall be subjected to road tests to determine conformance to 3.6f. Cross-country terrain road test shall utilize four-wheel drive.

4.4.4 Fire pump capacity and component tests.

4.4.4.1 Pressure tests. The pump shall be tested hydrostatically at a pressure of 350 psig for 10 minutes to determine conformance to 3.9.2. The pump shall be tested either hydrostatically or hydrodynamically at a discharge pressure of 500 psig for 10 minutes to determine conformance to 3.9.2. The pump pressure tests may be performed and certified by the pump manufacturer prior to installation on the truck.

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4.4.4.2 Run-in test. A 2-hour run-in test shall be performed in accordance with NFPA No. 1901. The test shall consist of drafting water with a minimum lift of 10 feet through 20 feet of 4-1/2 inch suction hose, and shall include at least the following:

- a. One hour at 500 gpm at 150 psig.
- b. One-half hour at 350 gpm at 200 psig.
- c. One-half hour at 250 gpm at 250 psig.
- d. Each of the 2-1/2 inch discharge outlets shall be used during the above tests.

4.4.4.3 Capacity tests. Tests shall be conducted in accordance with the test procedures of NFPA No. 1901. All tests shall be performed with calibrated instruments. The following tests shall be performed:

- a. The pump shall be capacity tested to determine conformance to 3.9. The pump, while drafting water with a minimum lift of 10 feet through 20 feet of 4-1/2 inch suction hose, shall deliver a minimum of 500 gpm at 150 psig for 2 hours, a minimum of 350 gpm at 200 psig for 1/2 hour, and a minimum of 250 gpm at 250 psig for 1/2 hour, and shall be a continuous operational test using one discharge outlet.
- b. The pump, while drafting water with a minimum lift of 10 feet through 20 feet of 4-1/2 inch suction hose, shall deliver 500 gpm at 165 psig for 10 minutes, 350 gpm at 220 psig for 10 minutes, and 250 gpm at 275 psig for 10 minutes to verify 10 percent overload.
- c. When aluminum cab is required (see 3.8.16).
- d. The primer pump shall be tested to determine conformance to 3.9.7. A vacuum test, using the priming pump, with a capped suction at least 20 feet long, shall develop 22 inches of vacuum and hold the vacuum with a drop of not more than 10 inches in 10 minutes. The primer shall not be used after the 10 minute test period has started. The discharge outlets of the pump shall be uncapped.
- e. A test shall be conducted to verify that the relief valve performs in accordance with 3.9.5.

The results of the above tests shall be reported in Figure 1 with one copy to be included with the truck (reproduction of this form is authorized).

4.4.5 Water tank flow test. The pump shall deliver a minimum of 250 gpm at 250 psig from the water tank for not less than 80 percent of the rated capacity of the water tank, to determine conformance to 3.9.

4.4.6 Pump and roll test. A pump and roll test shall be performed to determine conformance to 3.6g.

4.4.7 Parking brake test. The parking brakes shall be tested to determine conformance to 3.6c.

4.4.8 High temperature pump test. The pump shall be operated at and ambient temperature of +125 deg F for 2 hours at 500 gpm at 165 psig, against a suction lift of not less than 10 feet through 20 feet of 4-1/2 inch suction hose, under actual or simulated conditions of 3,000 foot altitude above sea level to determine conformance to 3.9.

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4.4.9 Foam system test. The foam system shall be tested using foam liquid conforming to MIL-F-24385. The foam system shall deliver 6 percent of foam solution for not less than 1 minute while discharging 250 gpm. Failure to use at least 15 gallons of foam liquid per minute at 6 percent shall constitute failure of this test.

4.4.10 Production sample. Upon acceptance of the first article, it shall remain at the manufacturing facility as a production sample, and be the last truck shipped on the contract. The contractor shall maintain the truck in a serviceable condition for the duration of the contract.

4.5 Production truck tests. Each production truck shall be subjected to the tests specified in 3.6g, 4.4.4.2, 4.4.4.3b, 4.4.4.3c, and 4.4.4.3d. The results of the tests shall be reported in a form similar to that specified in 4.4.4.3 with one copy to be included in the operating manual provided with the truck. Each production truck shall be road tested: loaded as specified in 3.7.2, consisting of not less than 5 miles over improved roads at maximum speed of not less than 55 mph, not less than 5 miles over unimproved roads at a maximum speed of not less than 30 mph, and not less than 5 miles over cross-country terrain at a maximum speed of not less than 15 mph utilizing four-wheel drive (see 6.5). Failure of any test shall be cause for rejection.

4.6 Packaging inspection. The vehicle shall be inspected to verify conformance to the requirements of section 5.

5. PACKAGING

5.1 Vehicle processing. The equipment shall be preserved and packaged in accordance with the contractor's standard practice.

* 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The truck is intended for multipurpose use in combating forest, brush, grass, or similar natural cover fires; and for limited use on structural fires, particularly at small, isolated, limited water supply advance-type bases and outlying base areas.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. When a first article inspection and test is required (see 3.2, 4.2.1, and 6.4).
- d. When transformer-rectifier powerpack is required (3.8.5.3).
- e. When aluminum cab is required (see 3.8.16).
- f. When dual windshield wipers are required (3.8.16.2).
- g. When air windshield wipers are required (see 3.8.16.2).

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- h. When tools for exchanging mounted tire assembly are required (see 3.8.19).
- i. When fire pump capability of filling the water tank is required (see 3.9).
- j. When leader hose discharge connections are required (see 3.9.4.1). Location of leader hose discharge connections (see 3.9.4.1).
- k. When aluminum body is required (see 3.10).
- l. When aluminum or fiberglass water tank is required (see 3.10.3).
- m. When aluminum equipment, cabinets, and cabinet doors are required (see 3.10.5).
- n. When two booster hose reels are required (see 3.10.8).
- o. When fire truck equipment is required (see 3.11).
- p. When accessory mounting brackets or quick-release holders are required (see 3.12).
- q. Color of finish coat required (see 3.13).
- r. When treatment and painting requirements other than as specified are required (see 3.13).
- s. Identification of appropriate service for marking and data plates (see 3.14).
- t. When identification plate is required (see 3.15).
- u. When rustproofing is required (see 3.17).

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.475-1 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data should be delivered by the contractor in accordance with the contract or purchase order requirements.

6.4 First article. When a first article inspection is required (see 3.2), the item will be tested and should be a first production item or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one fire truck. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.5 Definitions.

6.5.1 Improved road. An improved road is a smooth, hard, surfaced road, such as a concrete or asphalt paved highway.

6.5.2 Unimproved road. An unimproved road is an unpaved, unstabilized road with an undulating surface have occasional chuckholes and exposed rocks.

6.5.3 Cross-country terrain. Cross-country terrain consists of open fields, broken ground, and uneven terrain in general.

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6.6 Subject term (key word) listing.

Diesel engine
Motor vehicle drive systems
Truck

6.7 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

TRUCK, FIREFIGHTING, 500 GPM, 4 BY 4

DATE-----USN NO.-----CONTRACT No.-----

Apparatus Mfr.-----Model-----Serial-----

Chassis Mfr.-----Model-----Serial-----

Engine Mfr.-----Model-----Serial-----

Pump Mfr.-----Model-----Serial-----

 Type-----Stages-----Capacity-----

Pumping conditions: Altitude-----Ambient temperature-----

 Suction Lift:-----Ft. Suction hose used-----

Dry pump and capped suction test: Suction size -----

 Suction length-----inches of mercury in-----sec.

 Dropped to-----inches in 10 minutes.

 Time to prime and discharge water-----sec.

APPARATUS GAGES					TEST GAGES				
*Engine*Oil	*Tach*	*Suction*	*Pump	*Counter*	*Suction	*Pump	*Nozzle*		
*Time*temp	*press.*rpm	*press.*rpm	*press.*rpm	*press.*rpm	*press.*rpm	*press.*rpm	*press.*rpm	*GPM	
-----	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	
*FIRST TEST: Layout	-----Nozzle size-----				Parallel/Series				

Figure 1 Test Form

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*-----*
*                                     *
*          APPARATUS GAGES          *          TEST GAGES          *
*-----*
*   *Engine*Oil   *Tach*Suction*Pump *Counter*Suction *Pump   * Nozzle*   *
*Time*temp  *press.*rpm *press. *press.* rpm   *press.  *press.* press.*GPM *
*-----*-----*-----*-----*-----*-----*-----*-----*
*SECOND TEST: Layout-----Nozzle size-----Parallel/Series *
*
*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*
*THIRD TEST:  Layout-----Nozzle size-----Parallel/Series *
*
*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*-----*-----*-----*-----*-----*-----*-----*-----*
*
*OVERLOAD TESTS:
*-----*
*500 *   *   *   *   *   *   *   *   *   *   *   *   *
*GPM *-----*-----*-----*-----*-----*-----*-----*-----*
*350 *   *   *   *   *   *   *   *   *   *   *   *   *
*GPM *-----*-----*-----*-----*-----*-----*-----*-----*
*250 *   *   *   *   *   *   *   *   *   *   *   *   *
*GPM *-----*-----*-----*-----*-----*-----*-----*-----*
*-----*

```

Tested by-----

 Witnessed by-----
 Gov't Inspector

Figure 1 Test Form (Continued)

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Custodian:

Navy - YD

User Activity:

Navy - MC

Preparing Activity:

Navy - YD

(Project 4210-0420)