MIL-T-740G
27 May 1983
SUPERSEDING
MIL-T-740F
19 December 1967

MILITARY SPECIFICATION

TRUCKS: 5 TON, 6X6, MILITARY DESIGN, M39, M39A1, M39A2 AND M809 SERIES

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

1. SCOPE

1.1 Scope. This specification covers general and special purpose 5 ton, gasoline, multi-fuel, and diesel engine powered, six-wheel, six-wheel drive, military design truck chassis, trucks, and truck tractors having single front and dual rear wheels.

1.2 Classification. Vehicles shall be of the model specified (see tables I, II, III and 6.2).

1.2.1 Group. Group of vehicle shall be determined by engine application as follows:

a. Group 1 - Gasoline engine powered.
b. Group 2 - Multi-fuel engine powered.
c. Group 3 - Diesel engine powered.

TABLE I. Model and group.

Model	Group 1 – Gasoline engine
M40	Chassis, Truck
M40C	Chassis, Truck
M51	Truck, Dump, 5 Cubic Yard

Beneficial comments (recommendations, additions deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: DRSTA-GSS, Warren, MI 48090, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

FSC 2320

TABLE I. Model and group. – Continued

Model	Group 1 – Gasoline engine
M52	Truck, Tractor
M54	Truck, Cargo, 14 Ft. Body
M55	Truck, Cargo, 21 Ft. Body
M61	Chassis, Truck
M63	Chassis, Truck
M63C	Chassis, Truck

TABLE II. Model and group.

Model	Group 2 – Multi-fuel engine
M40A2	Chassis, Truck
M40A2C	Chassis, Truck
M51A2	Truck, Dump, 5 Cubic Yard
M52A2	Truck, Tractor
M54A2	Truck, Cargo, 14 Ft. Body
M55A2	Truck, Cargo, 21 Ft. Body
M61A2	Chassis, Truck
M63A2	Chassis, Truck
M63A2C	Chassis, Truck
M63A2D	Chassis, Truck
M139A2	Chassis, Truck
M246A2	Truck, Tractor, Wrecker
M291A2C	Truck, Van, Expansible
M291A2C	Truck, Van Expansible
M291A2D	Truck, Van Expansible
M328A2	Truck, Stake: Bridge Building
M543A2	Truck, Wrecker, Medium
M748A2	Truck, Bolster: Logging

TABLE III. Model and group.

Model	Group 3 – Diesel engine
M40A1	Chassis, Truck
M40A1C	Chassis, Truck
M51A1	Truck, Dump
M542A1	Truck, Tractor
M54A1C	Truck, Cargo
M54A1C	Truck, Cargo
M55A1	Truck, Cargo
M63A1	Chassis, Truck
M63A1C	Chassis, Truck
M139A1	Chassis, Truck
M246A1	Truck, Tractor, Wrecker
M291A1	Truck, Van, Expansible
M291A1D	Truck, Van, Expansible
M328A1	Truck, Stake, Bridge Transporting
M543A1	Truck, Wrecker, Medium
M748A1	Truck, Bolster
M809	Chassis, Truck
M809A1	Chassis, Truck
M810	Chassis, Truck
M811	Chassis, Truck
M811A1	Chassis, Truck
M811A2	Chassis, Truck
M812	Chassis, Truck
M812A1	Chassis, Truck
M813	Truck, Cargo
M813A1	Truck, Cargo: Dropside
M814	Truck, Cargo
M815	Truck, Bolster
M816	Truck, Wrecker, Medium
M817	Truck, Dump
M818	Truck, Tractor
M819	Truck, Tractor, Wrecker
M820	Truck, Van, Expansible
M820A1	Truck, Van, Expansible
M820A2	Truck, Van, Expansible
M821	Truck, Stake, Bridge, Transporting

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.11 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS
FEDERAL

VV-L-751	- Lubricating Oil: Chain, Wire-rope, and Exposed Gear.
VV-F-800	- Fuel, Oil, Diesel.
VV-L-800	- Lubrication Oil, General Purpose, Preservation, (Water Displacing, Low Temperature).

MILITARY

MIL-P-514	- Plate, Identification, Instruction and Marking, Blank.
MIL-L-2104	- Lubricating Oil, Internal-combustion Engine, Tactical Service.
MIL-L-2105	- Lubricant Oil, Gear, Multipurpose.
MIL-G-3056	- Gasoline, Automotive, Combat.
MIL-L-3150	- Lubricating Oil, Preservative, Medium.
MIL-H-6083	- Hydraulic, Fluid, Petroleum Base, for Preservative and Operation.
MIL-L-6085	- Lubricating Oil, Instrument, Aircraft, Low Volatility.
MIL-G-10924	- Grease, Automotive and Artillery.
MIL-A-11755	- Antifreeze, Arctic-type.
MIL-C-11796	- Corrosion Preventative Compound, Petrolatum, Hot Application.
MIL-T-13714	- Trailer, Bolster: Utility Pole, 2 1/2 Ton to 7 1/2 Ton Trailer, Cable Reel: 2 1/2 Ton to 7 1/2 Ton.
MIL-C-16173	- Corrosion Preventative Compound, Solvent Cutback, Cold Application.
MIL-G-23827	- Grease, Aircraft and Instrument, Gear and Actuator Screw.
MIL-A-46153	- Antifreeze, Ethylene Glycol, Inhibited, Heavy Duty, Single Package.

MIL-L-46167	- Lubricating Oil, Internal Combustion Engine, Arctic.
MIL-B-46176	- Brake Fluid, Silicone, Automotive All Weather, Operational and Preservative.
MIL-R-0046164	- Rustproofing for New and Fielded Military Vehicles.

STANDARDS
MILITARY

DOD-STD-100	- Engineering Drawing Practices.
MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-130	- Identification Marking of U.S. Military Property.
MIL-STD-193	- Painting Procedures, and Marking for Vehicles, Construction Equipment and Material Handling Equipment.
MIL-STD-461	- Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference.
MIL-STD-462	- Electromagnetic Interference Characteristics, Measurement of.
MIL-STD-642	- Identification Marking of Combat, and Tactical Transport Vehicles.
MIL-STD-882	- System Safety Program Requirements.

2.1.2 Other Government documents, drawings and publications. The following documents, drawings, and publications form a part of this specification to the extent specifed herein.

PURCHASE DESCRIPTION

DAPD-292	- Engine, Multi-fuel; 6-Cylinder, 210 H.P., LDS-465-1A and 1
ATPD-2023	- Engine, Diesel-fuel, NHC-250 and ENDT-673.

ORDNANCE DRAWING

10883507	- Engine w/Accessories (Service Only).

(Copies of specifications, standards, drawings, and publications required by contractors in accordance with specific procurement functions should be obtained from the procuring activity, or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 First article (initial production vehicles). The vehicles of each model selected as first production shall be fully representative of vehicles proposed to be furnished under the contract with all current modifications included in and on the selected vehicles. Vehicles shall be submitted for inspection and test to determine conformance to this specification. If submitted vehicles meet all requirements of this specification, no modifications shall be applied to subsequent vehicles to be produced under contract without prior approval by the Government. The first production model of the complete vehicle shall not establish acceptance criteria for the remainder of the vehicles under contract (see 4.3.2.1 and 6.3).

3.1.1 Reliability. Minimum acceptable value (MAV) for the vehicles shall not be less than 545 Mean Miles Between Failure (MMBF) during the first 20,000 miles (11,400 miles for wrecker and van models) of operation. A failure for calculation of MMBF shall be defined by the failure definition and scoring criteria for M809 series 5-ton tactical trucks as follows:

a. A failure is defined as any malfunction of the end item that requires corrective action which cannot be deferred:

   (1) Until the next schedule maintenance (exclusive of lubrication services) if organizational maintenance is prescribed for correction, or
   (2) For the remainder of its specified life before overhaul, replacement, rebuild or salvage (as applicable) if direct or general support maintenance is prescribed for correction.

b. Corrective action is not deferrable if the malfunction causes or would cause (if not corrected):

   (1) Inability to commence operation, cessation of operation or degradation of performance capability of the end item below that required for the accomplishment of its prescribed mission function, or
   (2) A critical or catastrophic hazard to personnel or equipment as defined in MIL-STD-882.

c. Any malfunction which the operator or crew (user) can remedy will not be considered a failure provided that the repair is authorized or prescribed as an operator function and can be accomplished within 60 minutes using only controls, tools, or spare parts incorporated in or carried with the end item.

3.1.1.1 Reliability operation. To assure that workmanship and reliability requirements are met during the 20,000 miles and 11,4000 miles of operation, as applicable, the vehicle with rated payload shall be capable of operating to the following percentages:

20,000 Miles (for trucks)

a.	Hard-surfaced roads	30 percent
b.	Gravel and dirt roads	28 percent
c.	Level and hilly cross-country 1/	41 percent
d.	Belgian block (or equal)	1 percent

20,000 Miles (for truck-tractors)

a.	Hard-surfaced roads	60 percent
b.	Gravel and dirt roads	24 percent
c.	Level and hilly cross-country 1/	15 percent
d.	Belgian block (or equal)	1 percent

11,400 Miles (for wreckers and vans)

a.	Hard-surfaced roads	66 percent
b.	Gravel and dirt roads	13 percent
c.	Level and hilly cross-country 1/	20 percent
d.	Belgian block (or equal)	1 percent

1/ Level and hilly cross-country mileage shall be divided as equally as is reasonable.

3.1.2 Maintainability. The total maintenance (schedule and unscheduled) for the vehicles, excluding driver or crew checks and services, shall be no more than 260 man-hours (131 man-hours for wrecker and van models) of operation. This equates to a Maintenance Ratio (MR) of 0.26 (0.23 for wrecker and van models) at 20 mph. Maintenance intervals are specified in the applicable maintenance manuals and documents.

3.1.3 Durability. Vehicles with rated payload shall have no less than 0.50 probability of completing a minimum of 20,000 miles (11,400 miles for wrecker and van models) of operation without replacement or overhaul of the engine, transmission, transfer or differentials.

3.2 Materials. Materials shall be as specified herein and in referenced specifications, standards and drawings. Materials shall be free of defects which adversely affect performance or serviceability of the finished product (see 6.10).

3.2.1 Qualified products. The contractor shall be responsible for using parts, assemblies, and lubricants from Qualified Products Lists (QPL's) when required. Contractor's inspection records shall specifically list all QPL items by number and date of the QPL, name of supplier and part or drawing number(s). When parts and assemblies are approved as qualified products, but not yet listed on the QPL, the contractor shall list the products by number and date of the approved document and name of supplier(s).

3.2.2 Ozone resistance. When rubber components are required to be ozone resistant, the degree of resistance shall be as specified in applicable specifications or drawings.

3.3 Construction. Vehicle(s) specified, (see 6.2), shall be fabricated and assembled in accordance with applicable specifications and standards listed in 2.1.1, other Government documents listed in 2.1.2 and applicable drawings, Supplementary Quality Assurance Provisions (SQAP's) and Quality Assurance Requirements (QAR's) contained in the Technical Data Package (TDP) for the appropriate vehicle(s), (see appendix).

3.3.1 Special kits. When specified (see 6.2 and 6.9), kits shall be furnished and installed on a specific vehicle. When installation of kits requires permanent change in vehicle configuration or adaption, such as weldments, drilled holes, or metal cutouts, prior approval must be obtained from the contracting officer.

3.3.1.1 Deep water fording kits. The fording kits shall be in accordance with applicable drawing for a specific model specified in 6.9, and shall permit the vehicle to ford hard-bottomed, fresh or salt water crossings up to a depth of 78 inches including wave height. The kit shall permit the vehicle to be operated in the water for a period of 15 minutes without damage to vehicle and components. With the kit installed, the vehicle shall operate continuously on land, prior to and after fording operation, without damage to vehicle or components.

3.3.1.2 Winterization kits. Kit shall be in accordance with applicable drawings for group 1, 2, or 3 vehicles. When installed (see 6.2), winterization kit shall assure operation under arctic conditions in ambient temperatures of minus 60ºF.

3.3.1.3 A-frame kit (derrick). A-frame or derrick, furnished for winch equipped vehicles shall be mounted at the front of vehicle and used as a general-utility lifting device in conjunction with the vehicle winch.

3.3.1.4 Air-brake kit. The air-brake kit furnished for vehicles used with trailers having air brakes, shall supply power to apply brakes for stopping and holding the combination.

3.3.1.5 Troop seat accessory kit. The troop seat accessory kit which provides seating for 10 heavy clothed personnel of average size, shall be installed in dump trucks M51, M51A1, M51A2 and M817 vehicles for use in transporting troops.

3.3.1.6 Kit, tie-down. Four tie-down kits shall be installed in the M54, M54A2, and M613 in accordance with Drawing 8389670. Six kits shall be installed in the M55, M55A2, and M814 in accordance with Drawing 8389583. The tie-down kits shall restrain equipment being hauled by the cargo vehicles.

3.3.2 Soft top. The soft top furnished and installed in accordance with applicable drawings shall provide maximum protection for personnel when vehicle is operating in adverse climatic conditions.

3.3.3 Wheel balance. Wheels, hubs, brake drums, tires and tubes shall be in balance to prevent front wheel vibration and tire wear.

3.3.4 Stowed material. Original equipment material (OEM) items shall be stowed on the vehicle in the spaces provided to assure that items will not interfere with other components and operation of the vehicle.

3.3.5 Engines. Engines, when installed in group 1, 2, and 3 vehicles, shall be in accordance with the following:

a. Group 1, Gasoline engines, Ordnance Drawing 10883507.
b. Group 2, Multi-fuel engines, LDS-465-1A and 1; - DAPD-292.
c. Group 3, Diesel engines; NHC-250 and ENDT-673; - ATPD-2023.

3.3.6 Heaters and air conditioners (truck, van: expansible).

3.3.6.1 Heaters. Two multi-fuel burning space heaters shall be furnished and installed on trucks, van, expansible, M291A1, M291A1D, M2191A2, M291A2C, M291A2D, M291A2F, M820, M820A1 and M820A2, in accordance with applicable TDP requirements.

3.3.6.1.1 Air flow modulation. Air inlet damper shall be provided to control the percentage of circulating air mixture.

3.3.6.2 Air conditioner. Provisions shall be made so that a 36,000 British thermal unit per hour (Btu/hr), air conditioner can be installed on vehicles listed in 3.3.6.1, in accordance with applicable TDP requirements.

3.3.7 Winches. Winches, controls and equipment, installed in accordance with applicable drawings on vehicles requiring winches, shall supply power to retrieve disabled equipment under all climatic conditions. The winch and controls shall supply power for the operation of wrecker equipment.

3.3.8 Lubrication fittings. All surfaces requiring lubrication shall be provided with lubrication fittings.

3.3.9 Wrecker crane and controls. Wrecker crane and controls, constructed and installed in accordance with specified drawing, shall operate without malfunction throughout all ranges of operation, under all operating conditions.

3.3.10 Truck, bolster, logging (M748A1 w/winch, M748A2 w/winch, and M815 w/winch. Truck, bolster, logging M748A1 w/winch, M748A2 w/w and M815 w/w shall consist of a body, bolster, logging, constructed in accordance with specified drawings and mounted on a M40A1, M40A2 w/w or M809 w/w truck chassis.

3.3.11 Truck, stake, bridge transporting (M328A1, M328A2 w/winch and M821 w/winch. Truck, stake, bridge transporting M328A1, M328A2 w/w, and M821 w/w, shall consist of a body, stake, bridge transporting, constructed in accordance with specified drawings and mounted on an M139Al, M139A2 w/w or M812 w/w truck chassis.

3.3.12 Drop-side cargo body. Drop-side cargo body, constructed in accordance with specified drawings, shall consist of sides and tailgate, that can be either rotated on hinges or removed to permit access to the cargo bed floor area from three sides of the vehicle.

3.4 Performance. Vehicle(s) fully equipped and serviced with standard products specified in table IV, and loaded with rated payload in accordance with tables V, VI, and VII, as applicable, shall meet performance requirements specified herein. Vehicle, serviced and equipped for existing climatic conditions, shall operate as specified without special equipment. Performance shall be demonstrated on relatively level, smooth, hard-surfaced roads free of loose material.

TABLE IV. Fuels, lubricants, and preservative materials.

Application	Specification	Types or grades
Corrosion preventatives:		
Petrolatum	MIL-C-11796	Grade 1, 2, 3
Nonlubricating	MIL-C-16173	Grade 1, 2, 3
Engine oils:		
(for special instructions see 6.7)		
Heavy duty and operational	MIL-L-2104	10, 30
Operational	QPL-2104-7	10, 30
Subzero	MIL-L-46167	One grade
Fuels:		
Gasoline, combat	MIL-G-3056	Type I, II
Fuel oil, diesel	VV-F-800	All grades
Grease:		
Automotive and artillery	MIL-G-10924	One grade
Aircraft and instrument	MIL-G-23827	One grade
Hydraulic oils:		
Hydraulic brake fluid	MIL-B-46176	One grade
Preservatives	MIL-H-6083	Type I
Lubricating oils:		
Chain Lubricants	VV-L-751	All grades
Lubricating oil, gear, multipurpose	MIL-L-2105	75, 80, 90
Instrument	MIL-L-6085	One grade
Preservative, medium, oil can	MIL-L-3150	One grade
Preservative, special	VV-L-800	One grade
Antifreeze:		
Arctic type	MIL-A-11755	One grade
Ethylene glycol	MIL-A-46153	One grade

3.4.1 Special kits. With special kits installed, vehicles shall meet the specified requirements (see 3.3.1 through 3.3.1.7).

3.4.2 Environmental. The vehicle(s) shall operate under extreme conditions of weather and ambient air temperature ranging from minus 25ºF to plus 115°F, and with special equipment installed (see 3.3.1.2), at temperature ranges of minus 25ºF to minus 60ºF. The complete vehicle when in storage shall withstand a temperature of minus 65ºF to plus 160ºF without deterioration that may cause failure of any component part of the vehicle.

3.4.3 Vehicle loading. Vehicle performance requirements shall be demonstrated with the specific vehicle loaded as specified in table V, VI, or VII; with full complement of fuel, lubricant, and coolant; with driver and assistant driver or equivalent weight of 200 pounds each; with winch assembly or 860 pounds equivalent weight mounted at the front of the vehicle to simulate mounting of winch; with soft-top cab, and with full vehicular equipment. Vehicle weight shall not include tire chains, metal cab enclosures or special equipment kits.

TABLE V Curb weights and maximum load allowances.
(Group 1) 1/

Model	Curb weight 2/	Gross load allowance 3/	Payload allowance 4/	Towed load allowance 5/
(1)	(2)	(3)	(4)	(5)
M40	17,950	12,950	-	15,000
M40C	18,500	22,300	-	20,000
M51	22,900	-	10,000	15,000
M52	18,900	-	15,000 9/	37,500 6/
M54	20,600	-	10,000	15,000
M55	24,100	-	10,000	15,000
M61	18,280	14,600	-	15,000
M63	19,000	15,100	-	15,000
M63C	18,800	-	-	-

1/ through 9/ - see table VII.

TABLE VI. Curb weights and maximum load allowances.
(Group 2) 1/

Model	Curb weight 2/	Gross load allowance 3/	Payload allowance 4/	Towed load allowance 5/
(1)	(2)	(3)	(4)	(5)
M40A2	17,750	12,500	-	15,000
M40A2C	18,300	22,300	-	20,000
M51A2	22,700	-	10,000	15,000
M52A2	18,700	-	15,000 9/	37,500 6/
M54A2	20,400	-	10,000	15,000
M55A2	23,900	-	10,000	15,000
M61A2	18,080	14,600	-	15,000
M63A2	18,770	15,100	-	15,000
M632C	18,600	-	-	-
M63A2D	17,800 8/	13,300	-	15,000
M139A2	20,200	16,000	-	15,000
M246A2	32,630	-	12,000 9/	37,500 6/
M291A2	26,100 8/	-	5,000	15,000
M291A2C	25,800 8/	-	5,000	15,000
M291A2D	27,850 8/	-	5,000	15,000
M328A2	27,300	-	10,000	15,000
M543A2	24,400	-	7,000 7/	20,000
M748A2	20,550	-	10,000	15,000

1/ through 9/ see table VII.

TABLE VII. Curb weights and maximum load allowances (Group 3). 1/

Model	Curb weight 2/	Gross load allowance 3/	Payload allowance 4/	Towed load allowance 5/
(1)	(2)	(3)	(4)	(5)
M40A1	-	12,000	-	15,000
M40A1C	-	22,275	-	20,000
M51A1	22,860	-	10,000	15,000
M52A1	18,450	-	15,000 9/	37,500 6/
M54A1	20,350	-	10,000	15,000
M54A1C	20,912	-	10,000	15,000
M55A1	21,967	-	10,000	15,000
M61A1	-	-	15,000	15,000
M63A1	-	12,000	-	-
M63A1C	-	26,031	-	-
M139A1	-	11,635	12,000 9/	15,000
M246A1	32,745	-	5,000	37,500 6/
M291A1 8/	26,736	-	5,000	15,000
M291A1D 8/	25,572	-	10,000	15,000
M328A1	26,791	-	7,000	15,000
M543A1	34,178	-	10,000	20,000
M748A1	21,040	-	-	15,000
M809	19,350	12,500	12,500	15,000
M809A1	20,958	22,300	-	20,000
M810	19,685	14,600	-	15,000
M811	20,425	15,100	-	15,000
M811A1	20,514	26,031	-	22,500
M811A2 8/	18,648	13,300	-	15,000
M812	22,155	16,000	-	15,000
M812A1	21,955	16,000	-	15,000
M813	22,127	-	10,000	15,000
M13A1	22,144	-	10,000	15,000
M814	25,574	-	10,000	15,000
M815	21,974	-	10,000	15,000
M816	36,129	-	7,000 7/	20,000
M817	24,426	-	10,000	15,000
M818	20,995	-	15,000 9/	27,500 6/
M819	33,940	-	12,000 9/	37,500 6/
M820 8/	27,506	-	5,000	15,000
M820A1 8/	27,206	-	5,000	15,000
M820A2 8/	29,256	-	5,000	15,000
M821	27,888	-	10,000	15,000

1/ Group 1 - Gasoline engine, R26602. Group 2 - Multi-fuel enging, LDS-465-1. Group 3 - Diesel engine.
2/ Curb weight. in pounds (column 2).
Truck chassis - Includes weight of chassis with soft-top cab, fully serviced with fuel, lubricants, coolants and on vehicle equipment including winch (860 pounds), without payload and operating personnel.
3/ Gross load allowance, in pounds (column 3), consists of body and payload without operatiang personnel (400 pounds) included for truck chassis only.
4/ Payload allowance, in pounds (column 4) - Covers payload for complete truck without operating personnel.
5/ Towed-load allowances, in pounds (Column 5) - Includes pintle towed trailers, equipped with pneumatic tires.
6/ Semitrailer towed loads includes truck-tractor fifth-wheel load allowances.
7/ Towed suspended payload (less crew) on crane hook with boom braced and secured.
8/ Wo/W model weight.
9/ On fifth wheel.

3.4.4 Engine. Engine, when properly installed, shall meet performance requirements under all test conditions.

3.4.4.1 Cooling system. The cooling system shall maintain a coolant temperature at engine outlet of no greater than 220ºF, with no evidence of aeration from the radiator, under all environmental and performance requirements specified herein, and in the engine specifications.

3.4.5 Cross-country operation. The vehicle shall transport the rated payload and towed-load over unimproved roads, trails, open fields, hills, and rough cross-country terrain.

3.4.5.1 Limited cross-country operation. The vehicle, except truck tractor in combination with semitrailer, shall transport the rated payload and towed load over reasonably firm terrain, other than highways or roads.

3.4.6 Highway operation. The vehicle shall transport the rated payload and towed load over prepared roads. Performance shall be demonstrated on smooth, dry, relatively level concrete roadway.

3.4.6.1 High speed. The vehicle transporting its rated payload and towed load, shall operate at a sustained high speed of not less than 50 miles per hour (mph).

3.4.6.2 Low speed. With the engine operating in the speed range which delivers maximum torque, the vehicle shall operate at a sustained low speed of not more than 2 1/2 mph without damage to vehicle.

3.4.6.3 Towing and recovery operations. Vehicles M543A1, M543A2, M246A1, M246A2, M816, and M819, shall tow the M54A2, or equivalent, loaded with rated payload and with front end hoisted to not less than 12 inches above the ground, for a distance of not less than 2.6 miles. The wreckers shall perform various recovery operations without damage to the frame or other components under highway and cross-country operating conditions.

3.4.7 Fording operation. Vehicle, loaded with rated payload and transporting its rated towed load, and without prior preparation, shall ford hard bottomed crossings of fresh or salt water to a depth of 30 inches for a period of 15 minutes duration without damage or requiring additional maintenance prior to further operation. With special kits installed (see 3.3.1.1), fording depth shall be as specified.

3.4.8 Gradeability. The vehicle shall demonstrate gradeability operations on prepared grades having the minimum percentage specified herein without stalling, overheating, or upsetting.

3.4.8.1 Longitudinal grades operation. The vehicle, loaded with rated payload and transporting its rated towed load shall ascend not less than a 2 percent grade at a speed of not less than 30 mph. The vehicle loaded with its rated payload, without towed load, shall ascend a 60 percent grade at a minimum speed of 2 1/2 mph. Grade surface shall be smooth, dry concrete.

3.4.8.2 Side slope operation. Vehicle, with payload, shall function on a side slopes up to 20 percent with each side of vehicle up slope. As a result of the operation, no evidence of faulty lubrication, leakage or other malfunction shall be found.

3.4.9 Braking ability. The vehicle, fully equipped and with payload, shall be decelerated, held, and controlled by use of the brakes under the conditions specified for each braking system. Road surface shall be smooth, dry, concrete.

3.4.9.1 Service brakes. Application of service brakes shall stop, hold, and control the vehicle when ascending and descending 60 percent grades. On relatively levely roadway, application of service brakes shall bring the vehicle to a complete stop, from a speed of 20 mph within 30 feet, measured from point of brake application.

3.4.9.2 Parking brake (hand). Application of the hand brake shall hold vehicle motionless on a dry concrete 40 percent grade, when headed up or down grade with rated payload less towed load.

3.4.10 Cramping angle. Front wheel cramping angle shall be not less than 28 degrees, measured at the wheel on the inside of the turning circle. Angle stops shall be provided, adjusted (within a tolerance of plus 1 degree, minus 0 degree) to provide the maximum safe cramping angle. When adjusted, axle stops shall be so set that the angle adjustment cannot be readily altered and will positively limit the cramping angle to the maximum angle intended by the stop adjustment.

3.4.11 Truck, wreckers M543A1, M543A2, M246A1, M246A2, M816 and M819.

3.4.11.1 Crane operation. The crane hydraulic system, when serviced with oil of the type and grade specified in table IV for the applicable environmental conditions, shall demonstrate performance requirements as specified herein when operating on level ground and/or on slopes fore and aft direction and to either side slope up to 5 degrees. The crane shall continuously rotate through 360 degrees without stops. When the boom is fully extended on the M543A1, M543A2 and M816 models, the hoist line speed shall be not less than 54 feet per minute, with a 3,000 pound load. When the boom is fully extended on the M246A1, M246A2 and M819 models, the hoist line speed shall not be less than 60 feet per minute with 1,700 pound load. The M543A1, M543A2 and M816 models shall demonstrate a maximum practical traverse, with stops, at a rate of 4 rpm. The M246A1, M246A2 and MB19 models shall demonstrate a maximum practical traverse, with stops, at a rate of 3 rpm. Crane shall be equipped with not less than 60 feet of usable single-part line. The hydraulic system oil temperature will be not less than 100ºF during all the above tests.

3.4.11.1.1 Operating conditions (M543A1, M543A2 and M816 models only). With the vehicle on relatively level ground the crane shall operate under the following conditions:

a. Radius of operation, from center of rotation to center of boom sheave:
   Boom fully extended, not less than ---------- 18 feet
   Boom fully retracted and horizontal, not more than ---------- 10 feet

b. Boom fully retracted and horizontal, maximum distance from center of boom sheave to rear bumperettes ---------- 34 inches

c. Lifting height, hook bearing point to ground, with boom in maximum extended and elevated position and boom to ground supports, not less than 219 inches and with boom at 15 foot radius with boom to ground support, the lifting height shall not be less than 186 inches.

3.4.11.1.2 Lifting capacities (M543A1. M543A2 and M816 models only). The lifting capacities of the crane as installed on the vehicle in traverse operations for the radii indicated, or inverse proportion to load values for radii not shown, shall be as follows:

a. Crane capacity, outriggers not in use:
   At 18 foot radius, not less than ---------- 3,000 pounds
   At 10 foot radius, not less than ---------- 6,500 pounds

b. Crane capacity, outriggers in place:
   At 18 foot radius, not less than ---------- 4,000 pounds
   At 10 foot radius, not less than ---------- 10,000 pounds

c. Crane capacity, crane boom supported:
At 15 foot radius, rear outriggers not in use,
boom supported from ground, not less than ---------- 20,000 pounds
At 10 foot radius, outriggers in place, boom
supported from vehicle, not less than ---------- 20,000 pounds

For a crane capacity of 10,000 pounds, the maximum allowable settling (rate of descent), with outriggers in place and crane capacity at 10 foot radius, with system stabilized and oil temperature at 100ºF, shall be not more than 3 inches in 6 minutest using a two part line with power divider lever engaged or disengaged and with load at least 15 inches from ground. The specified crane capacities may be attained utilizing multiple line arrangement, two-part line preferred. A three-part line arrangement may be utilized for lifting capacity requirements of 20,000 pounds.

3.4.11.1.3 Operating conditions (M246A1, M246A2 and M819 models only). With the vehicle on relatively level ground the crane shall have operating dimensions as follows:

a. Radius of operation, from center of rotation to center of boom sheave:
Boom fully extended, not less than ---------- 26 feet
Boom fully retracted and horizontal, not less than ---------- 11 1/2 feet

b. Boom fully retraced and horizontal, maximum distance
from center of boom sheave to rear of vehicle
tie down shackles ---------- 12 inches

c. Lifting height, hook bearing point to ground, boom at
15 ft. radius with boom to ground supports not less than 151 inches.

3.4.11.1.4 Lifting capacities (M246A1, M246A2 and M819). The lifting capacities of the crane as installed on the vehicle in traverse operations for the radii indicated, or in inverse proportion to load values for radii not shown, shall be as follows:

a. Crane capacity, outriggers not in use:
At 26 foot radius, not less than ---------- 1,700 pounds
At 11 1/2 foot radius, not less than ---------- 5,200 pounds

b. Crane capabity, outriggers in place:
At 26 foot radius, not less than ---------- 4,500 pounds
At 11 1/2 foot radius, not less than ----------10,000 pounds

c. Crane capacity, crane boom supported:
At 15 foot radius, rear outriggers not in use, boom supported from ground,
not less than ---------- 20,000 pounds
At 11 1/2 foot radius, outriggers in place,
boom supported from vehicle, not less than ---------- 10,000 pounds

For a crane capacity of 10,000 pounds, the maximum allowable settling (rate of descent) with outriggers in place and crane capacity at 11 1/2 foot radius, and with system stabilized and oil temperature at 100ºF, shall be not more than 3 inches in 6 minutes, using a two-part line with power take-off lever engaged or disengaged and with load at least 15 inches from ground. The specified crane capacities may be attained utilizing multiple line arrangement; two-part line preferred. A three-part line arrangement may be utilized for lifting capacity requirements of 20,000 pounds.

3.4.11.1.5 Crane controls. Each control for operation of the crane shall be of the "deadman" type and shall automatically return to neutral position should the operator inadvertently or intentionally release the control.

3.4.11.1.6 Boom markings. Boom extension markings for M246A1, M246A2, and M819 only shall be the same color paint as the vehicle markings (see 6.8).

3.4.12 Trucks van; expansible (M291A1, M291A1D, M291A2, M291A2C, M291A2D, M820, M820A1 and M820A2).

3.4.12.1 Van bodies. Van bodies shall expand to the maximum width without interference, binding, or damage to the basic and extended positions of the van body or equipment. All locks and fasteners shall be positive in locking or fastening the extended portion to the basic van body so as to provide firm, water-tight joints.

3.4.12.2 Waterproofness. Van bodies and all components shall be waterproof to preclude entrance of water due to rain, melting snow, and road splash or other causes. Vapor barrier material shall be applied to prevent possible accumulation of condensation on interior of van body. Prior to riveting, the seams shall be coated with sealer to provide a waterproof joint.

3.4.12.3 Heaters and air conditioners. Heaters and air conditioners furnished and installed shall meet all requirements specified herein.

3.4.12.3.1 Heaters. Two multi-fuel burning space heaters, conforming to specified drawings and having an output capacity of not less than 60,000 Btu/hr, shall be capable of operating from a 120 volt, single phase, 60 cycle electrical source.

3.4.12.3.2 Airflow modulation. each heater shall incorporate an air inlet damper, actuated from the underside of bonnet on the outside of the van. pulling for fresh air and pushing for recirculating air shall control the percentage of circulating air mixture.

3.4.12.3.3 Air conditioner. Air conditioner, conforming to specified drawings, shall control air temperature under all operating conditions.

3.4.12.4 Electrical system. All wiring shall be fastened or clipped at points of bending and shall be protected against chafing and damage. Special care shall be exercised to prevent damage of insulation by fasteners employed in van body assembly. All electrical circuits shall maintain continuity from end to end without shorts and shall meet electromagnetic compatibility requirements specified herein.

3.4.12.5 Lightproofness. Van bodies, in the expanded position with access door closed and blackout shades covering windows, shall be lightproofed sufficiently so that light from interior of van is not visible from the outside at night, nor bright sunlight visible in the interior of the van during the day.

3.4.12.6 Lift gate platform (M291A1D, M291A2D, and M820A2 only). The lift gate platform of the M291A1D, M291A2D, and M820A2 models, shall raise, lower and hold a 3000 pound payload safety to positions specified on the drawings without damage to the vehicle and without interference or binding of the various components.

3.4.13 Truck, bolster, logging, M748A1 w/winch, and M748A2 w/winch and M815 w/winch. The truck, bolster, logging, consisting of a body, bolster, logging, mounted as specified on a M40A2 w/w, or M809 w/w truck chassis shall meet all the applicable requirements of this specification.

3.4.13.1 Body, bolster logging. The body, bolster, logging shall include a logging fifth wheel bolster, a trailer carrying rack, walkways, a cab protector and other accessories specified herein and on applicable drawings (see 6.6).

3.4.13.1.1 Loading. The body bolster, when mounted on the M40A1, M40A2, or M809 w/w truck shall withstand vehicle payloads specified for the M748A1, M748A2, or M815 w/w truck, using logs or other comparable payloads. The body and the trailer carrying rack shall withstand the curb weight of trailer, conforming to MIL-T-13714 when loaded on truck and transported over cross-country terrain.

3.4.13.1.2 Trailer, racks, ramp and tie-down accessories. Removeable trailer-loading ramps shall be furnished, so that the midship-mounted winch or other power equipment can roll trailer, conforming to MIL-T-13714, from the ground into carrying position on the truck. The ramps shall allow the trailer to be lowered back down to the ground. The use of power equipment is not necessary for this operation provided that it is done in a fully-controlled, safe manner. Each ramp shall be not less than the width of the trailer dual tires and shall contain a means of guiding the trailer down the ramp. The trailer shall be supported on the upper portion of the ramps while being carried. The portion of the ramps (from truck to ground) shall be not less than 100 inches long. Each section of ramp that must be handled shall not exceed 100 pounds. The front and rear trailer carriers shown on drawings (see 6.6) shall be compatible with the ramps. Tie-down

attachments and load binders shall be provided to secure the trailer on the truck in the carrying position. The trailer load binders shall be positioned diagonally to prevent shifting of the trailer when subjected to travel over cross-country terrain. Provision shall be made for storing the ramps and the trailer tie-down accessories while in transit, both with and without trailer. No part of the ramps or the accessories shall exceed the width of the truck in their stored position.

3.4.14 Truck stake, bridge transporting, M328A1, w/winch. M328A2 w/winch and M821 w/winch. The truck, stake, bridge transporting M328A1 w/w M328A2 w/w and M821 w/w consisting of a body, stake, bridge transporting, mounted on an M139A1 w/w M139A2 w/w and M812 w/w truck chassis shall meet all requirements of this specification.

3.4.14.1 Body, stake, bridge transporting. The body stake bridge transporting, shall be constructed as shown on drawings (see 6.6).

3.4.14.1.1 Front bulkhead opening grill. The opening in the front bulkhead shall be guarded by a removeable, expanded-metal grill. The grill shall be installed on the rear of the bulkhead and the dimensions and location shall be as shown in Figure 1. The grill shall be fabricated of unflattened, carbon steel expanded metal of commercial style designation 3/4 inches, number 9. Framing of the grill shall be fabricated of flat steel, 1/4 by 3 inches, to provide a bearing surface for the fasteners. The expanded metal shall be welded to the frame. The grill shall be fastened to the bulkhead by use of six 1/2-inch UNC bolts with lock washers. The nuts shall be secured by welding or similar means to the front side of the headsheet.

3.4.14.1.2 Floodlights. Floodlight shall be mounted as shown on the drawings. The light shall be of the two-wire type (live and ground wires). When the body is mounted, the grounding wire terminal shall be attached to the truck chassis by means of bolt, star washer, and nut. Each light shall operate satisfactorily without the wire leads becoming taut when either or both lights are in the fully extended position.

3.4.14.1.3 Controls. The body controls shall control and operate the various systems without malfunction throughout the ranges of operation for the M328A1, M328A2, and M821 w/w truck.

3.4.15 Dump truck. With the hydraulic system filled with engine oil of the type and grade specified in table IV, for the applicable temperature, and adjustment completed, vehicle(s) shall demonstrate performance requirements with loads specified herein during dumping operations. The hydraulic system controls shall control and actuate the system to raise and lower the dump body, and hold body in any position during the raising and lowering range of operation. The controls shall operate without binding, interference, or failure, using hand effort only.

3.4.16 Drop side cargo body. The drop sides and tailgate shall raise, and lower freely, without binding. The locking devices shall retain the sides and tailgate rigidly in closed position without chatter or failure, using hand effort only. The drop sides shall be interchangeable from left to right sides and from right to left.

3.4.17 Air transportability. All vehicles, except the M246A1, M246A2, M543A1, M543A2, M291Al, M291A2, M291A2C, M291A2D, M816, M819, M820, M820Al and M820A2 models shall be air transportable in phase II of airborne operations -without disassembly. The M246A1, M246A2, M543A1, M543A2, M291Al, M291AID, M291A2, M291A2C, M291A2D, M816, M819, M820, M820A1, and M820A2 models shall be capable of air transportability in phase III airborne operations without disassembly. The M291A1, M291AID, M291A2, M291A2C, M291A2D, M820, M820Al and M820A2 models shall be capable of air transportability in phase II airborne operations by removal of body from chassis.

3.4.18 Radio-interference suppression. Each vehicle shall be radio-interference suppressed in accordance with the tactical vehicle requirements of MIL-STD-461.

3.5 Painting, marking, and data plates.

3.5.1 Painting. The vehicle, body(s) and components shall be cleaned, treated, and painted in accordance with MIL-STD-193, as specified for the appropriate service (see 6.2). Painted surfaces shall be free of sags, runs, and thin areas.

3.5.2 Marking. Vehicle marking shall be in accordance with MIL-STD-642, as specified for the appropriate service (see 6.2).

3.5.3 Data plates. Data plates shall conform to type III, composition A, class 2 of MIL-P-514.

3.5.3.1 Data plates (bolster and stake trucks). The bolster truck, M748Al, M748A2, M815 and truck, stake, bridge transporting, M328A2 wo/w, M328A2 w/w, M328A1 w/w, and M821 w/winch, shall have permanently located instruction warning and caution plates describing any special procedure to be followed in operation, loading and servicing of the specified body.

3.6 Rustproofing. When specified (see 6.2), vehicles shall be rustproofed in accordance with MIL-R-0046164.

3.7 Wood treatment. All wood parts shall be cleaned and treated in accordance with the requirements of MIL-STD-193.

3.8 Safety. No condition shall exist which may create a safety hazard to operating or maintenance personnel.

3.9 Servicing and adjustment. Prior to delivery, the contractor shall service the vehicles for operational use. Such servicing, fit and adjustment shall include, as a minimum, the focusing of lights, the proper adjustment of the engine, electrical system, brake system, seats, doors, windows, windshield, windshield wipers, horn, hood, tailgate, front wheel alignment and tire pressure. The chassis, engine and all running gear shall be serviced with lubricants of the proper grade for the climatic conditions at point of delivery. Engine cooling system shall be serviced with a solution of ethylene glycol (see table IV), and water in equal parts by volume.

3.10 Workmanship. The workmanship displayed in the fabrication and assembly of the vehicle(s) shall be such as to meet performance requirements under all applicable environmental conditions. The quality of workmanship shall assure delivery of vehicles which are free of defects, improper manufacturing or assembly practices, and which meet or exceed requirements specified herein. Defective components or parts and assemblies which have been repaired or modified to overcome deficiencies shall not be furnished.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified in the contract, 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Materials and qualified products. The contractor's inspection records shall be examined to determine contractor conformance to 3.2 through 3.2.2.

4.1.2 Parts and components. Parts, components and assemblies shall be inspected for conformance to applicable drawings and documents, (see 3.3).

4.2 Classification of inspections. Classification of inspection shall be as follows:

a. Initial production vehicle inspection (see 4.3).
b. Quality conformance inspection (see 4.5)

4.3 Initial production inspection. On beginning production, two vehicles shall undergo, and shall pass, initial production inspection (see 3.1). One vehicle shall undergo, first production vehicle inspection, see 4.3.1), and the second vehicle will be subjected to the initial production test, (see 4.3.2).

4.3.1 First production vehicle inspection.

4.3.1.1 In-process inspection. During fabrication of the first production vehicle an in-process examination will be conducted by representatives of TACOM Product Assurance Directorate to evaluate conformance of materials and workmanship to specified requirements. Examination will be made at the contractor's or subcontractor's facility prior to application of primer and paint. Processing and welding procedures, quality system, and inspection records will be evaluated during this examination.

4.3.1.2 Completed first production vehicle contractor inspection. The first completed production vehicle shall be road tested and inspected by the contractor, as specified in 4.6.2.2 to determine conformance to contract and specifications. After inspection, the contractor shall submit the vehicle (and all inspection records and certifications) to the responsible Government inspection element at contractor's plant for preliminary examination.

4.3.1.3 Preliminary examination. The responsible Government inspection element will conduct a preliminary examination, as specified in 4.5.2, of the first completed production vehicle.

4.3.1.4 Provisional inspection. Provisional inspection of the first completed production vehicle will be conducted jointly by representatives of TACOM Product Assurance Directorate and the responsible Government inspection element. Contractor shall provide any required assistance. Testing will be as specified in 4.6.2.2. Contractor shall make available his inspection plan, records, and certifications pertinent to the vehicle and components.

4.3.1.5 Repair of defects. Defects found as a result of the foregoing inspections shall be corrected by the contractor at no cost to the Government. Failure of the contractor to promptly correct defects shall be cause for suspension of acceptance of vehicles until corrective action has been accomplished and approved by the Government.

4.3.1.6 Vehicle disposition. On completion of first production vehicle inspection, the vehicle shall remain at the manufacturing facility, as a production sample, and shall be the last vehicle shipped on the contract. Vehicle may be released sooner at the discretion of the Government. The contractor shall service and maintain the vehicle during this period.

4.3.1.7 Final approval and acceptance. Final approval and acceptance of the first production vehicle shall be withheld until second vehicle is accepted (see 4.3.2).

4.3.2 Second initial production vehicle inspection. An additional vehicle (see 4.3) from the first month's production, or the first 20 produced, will be subjected to the initial production test.

4.3.2.1 First article (initial production) test. To determine conformance to Section 3 (inclusive), vehicle will be examined as specified in 4.5.2, and tested as specified in table XI. Subsequently, vehicle will be road tested as specified in table VIII, IX or X, as applicable. Inspection will be performed by the Government, and will require no more than 140 days. The contractor shall expeditiously furnish repair parts, as required to support testing, at no cost to the Government.

TABLE VIII. 20,000 Mile test for all models except wrecker and expansible van models.

Course	Mileage and speeds	Payloads 2/
Hard surface	6,000 miles at varying speeds up to maximum	(see 3.4.3)
Secondary	5,625 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Level and hilly cross-country 1/	8,225 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Belgian block (or equal)	150 miles at speeds applicable to conditions of terrain	(see 3.4.3)

TABLE IX. 20,000 Mile test for truck tractor in combination.

Course	Mileage and speeds	Payloads 2/
Hard surface	12,000 miles at varying speeds up maximum	(see 3.4.3)
Secondary	4,850 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Level and hilly cross-country 1/	3,000 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Belgian block (or equal)	150 miles at speeds applicable to conditions of terrain	(see 3.4.3)

TABLE X. 11,400 Mile test for wrecker and expansible van models.

Course	Mileage and speeds	Payloads 2/
Hard surface	7,500 miles at varying speeds up maximum	(see 3.4.3)
Secondary	1,525 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Level and hilly cross-country 1/	2,275 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Belgian block (or equal)	100 miles at speeds applicable to conditions of terrain	(see 3.4.3)

1/ Level and hilly cross-country mileage shall be divided as equally as is reasonable.
2/ Fifty percent of the test specified in tables VIII and X shall be performed with applicable payload and towed loads.

4.3.2.1.1 Reliability verification. To determine conformance to 3.1.1, the Minimum Acceptable Value (MAV) of 545 MMBF shall be demonstrated during initial production testing (see 4.3.2.1). The reliability requirement shall be verified at a point estimate. The point estimate is computed by dividing the total cumulative test miles (of designated test vehicles) by the total number of associated mission failures.

4.3.2.1.2 Maintainability verification. To determine conformance to 3.1.2, the maintainability requirements will be verified during initial production vehicle test (see 4.3.2.1).

4.3.2.1.3 Durability verification. To determine conformance to 3.1.3, the durability requirements shall be verified during initial production testing, (see 4.3.2.1), at 50% confidence (Binominal Distribution).

4.3.2.2 Test failure. Failure of the vehicle to comply with any of the requirements specified or any deficiency of a workmanship or materials nature found on the vehicle during or as a result of the 20,000 mile or 11,400 mile test, will be cause for rejection of the vehicle. Further, the Government will refuse to continue acceptance of production vehicles until evidence has been provided by the manufacturer that corrective action has been taken to eliminate the deficiency found during or as a result of the 20,000 mile or 11,400 mile test shall be prima facie evidence that all vehicles already accepted prior to completion of the 20,000 or 11,400 mile tests are similarly deficient, unless evidence satisfactory to the contracting officer is furnished by the contractor that they are not similarly deficient. Such deficiencies on all vehicles shal1 be corrected by the contractor without cost to the Government.

TABLE XI. Classification and location of inspections.

Test	Requirement	Initial production test - 1/	Acceptance test 2/	Control test 2/	Comparison test 1/
First article (initial production) test	3.1	4.3.2.1			
Reliability verification	3.1.1	4.3.2.1.1			
Maintainability verification	3.1.2	4.3.2.1.2			
Durability verification	3.1.3	4.3.2.1.3			
Special kits examination	3.3.1 through 3.3.1.7	4.4.1	4.4.1	4.4.1	
Soft top examination	3.3.2	4.4.2		4.4.2	
Wheel balance examination	3.3.3	4.4.3	4.4.3		
Stowed material examination	3.3.4	4.4.4	4.4.4	4.4.4	
Engine examination	3.3.5	4.4.5	4.4.5		
Heater examination	3.3.6.1	4.4.6	4.4.6		
Air flow modulation examination	3.3.6.1.1	4.4.6	4.4.6		
Air conditioner examination	3.3.6.2	4.4.7	4.4.7		
Winch examination	3.3.7	4.4.8	4.4.8		
Lubrication and fittings examination	3.3.8	4.4.9	4.4.9		
Wrecker, crane and controls examination	3.3.9	4.4.10	4.4.10		
Truck, bolster; logging, examination	3.3.10	4.4.11	4.4.11		
Truck, stake: bridge transporting examination	3.3.11	4.4.12	4.4.12		
Drop side cargo body examination	3.3.12	4.4.13	4.4.13		
Performance	3.4	4.4.14			
Special kits test	3.4.1	4.4.14.1			4.4.14.1
Environmental test	3.4.2	4.4.14.2			4.4.14.2
Vehicle loading test	3.4.3	4.4.14.3			4.4.14.3
Engine operational test	3.4.4	4.4.14.4	4.4.14.4		
Cooling system test	3.4.4.1	4.4.14.4	4.4.14.4		
Cross country operational test	3.4.5	4.4.14.5			
Limited cross-country operational test	3.4.5.1	4.4.14.5			
Highway operational test	3.4.6	4.4.14.6			
High speed test	3.4.6.1	4.4.14.6	4.4.14.6		

TABLE XI. Classification and location of inspections.

Test	Requirement	Initial production test - 1/	Acceptance test 2/	Control test 2/	Comparison test 1/
Low speed test	3.4.6.2	4.4.14.6	4.4.14.6		
Towing and recovery operational test	3.4.6.3	4.4.14.7			4.4.14.7
Fording ability test	3.4.7	4.4.14.8			4.4.14.8
Longitudinal grade operational test	3.4.8.1	4.4.14.9			4.4.14.9
Side slope operational test	3.4.8.2	4.4.14.10			4.4.14.10
Braking ability test	3.4.9 through 3.4.9.2	4.4.14.11	4.4.14.11		4.4.14.11
Cramping angle test	3.4.10	4.4.14.12	4.4.14.12		
Crane operation test	3.4.11.1 through 3.4.11.1.5	4.4.14.13		4.4.14.13	4.4.14.13
Boom marking examination	3.4.11.1.6	4.4.14.14			
Van bodies operational test	3.4.12.1	4.4.14.15	4.4.14.15	4.4.14.15	
Waterproofness test	3.4.12.2	4.4.14.16		4.4.14.16	
Heater operational test	3.4.12.3.1	4.4.14.17		4.4.14.17	
Air flow modulation operational test	3.4.12.3.2	4.4.14.17		4.4.14.17	
Air conditioner operational test	3.4.12.3.3	4.4.14.17		4.4.14.17	
Electrical system test	3.4.12.4	4.4.14.18		4.4.14.18	
Lightproofness test	3.4.12.5	4.4.14.19		4.4.14.19	
Lift gate operational test	3.4.12.6	4.4.14.20		4.4.14.20	
Loading, bolster logging test	3.4.13.1.1	4.4.14.21			
Trailer loading and tie down accessories test	3.4.13.1.2	4.4.14.22		4.4.14.22	
Body, stake, bridge transporting	3.4.14 through 3.4.14.1.4	4.4.14.23		4.4.14.23	
Dump truck operational test	3.4.15	4.4.14.24		4.4.14.24	
Drop side cargo body operational test	3.4.16	4.4.14.25		4.4.14.25	
Air transportability	3.4.17	4.4.14.26			
Radio-interference suppression test	3.4.18	4.4.14.27			
Painting	3.5.1	4.4.15.1			
Marking	3.5.2	4.4.15.2			
Data plates	3.5.3 and 3.5.3.1	4.4.15.3			

TABLE XI. Classification and location of inspections.

Test	Requirement	Initial production test - 1/	Acceptance test 2/	Control test 2/	Comparison test 1/
Rustproofing	3.6	4.4.16	4.4.16		
Wood treatment	3.7	4.4.17	4.4.17		
Safety	3.8	4.4.18			
Service and adjustment	3.9	4.4.19			
Workmanship	3.10	4.4.20			
Preservation, packaging and vehicle processing	Section 5	4.4.21			

1/ Government proving grounds.
2/ Manufacturer/contractor facility.

4.4 Methods of inspection.

4.4.1 Special kits installation examination. To determine conformance to 3.3.1 through 3.3.1.7, a specific kit when furnished shall be installed on vehicle(s), and examined for proper installation or interference with other components.

4.4.2 Soft top examination. To determine conformance to 3.3.2, the vehicle shall have a complete soft top installed. Top shall be examined for proper installation, completeness, and for functional requirements.

4.4.3 Wheel balancing examination. To determine conformance to 3.3.3, the front wheels shall be examined for balance.

4.4.4 Stowed material examination. To determine conformance to 3.3.4, all manufacturer and depot installed OVM shall be stowed on selected vehicle. All items shall fit with proper clearance in the spaces provided. The equipment shall be removed after test. The OVM used shall be as specified in the contract. The contractor will be permitted to unpackage and repackage equipment used for test.

4.4.5 Engine examination. To determine conformance to 3.3.5, engine shall be examined for conformance to applicable documents and proper installation.

4.4.6 Heaters and air flow modulation examination. To determine conformance to 3.3.6.1, heaters shall be examined for damage, conformance to applicable drawings, and proper installation. Air inlet damper shall be adjusted to determine conformance to 3.3.6.1.1.

4.4.7 Air conditioner examination. To determine conformance to 3.3.6.2, air conditioner installation provisoins shall be examined for conformance to applicable drawings.

4.4.8 Winch examination. To determine conformance to 3.3.7, winch and controls shall be examined for completeness and proper installation.

4.4.9 Lubrication and fittings examination. All surfaces requiring lubrication shall be examined for proper fitting and means for proper lubrication in accordance with 3.3.8.

4.4.10 Wrecker crane and controls examination. To determine conformance to 3.3.9, the wrecker crane and controls shall be examined for damage, completeness, and proper installation.

4.4.11 Truck, bolster logging examination. To determine conformance to 3.3.10, the body bolster shall be examined for proper installation of all components as specified on applicable drawings.

4.4.12 Truck, stake, bridge transporting examination. To determine conformance to 3.3.11, truck stake body shall be examined for proper installation of all components as specified on applicable drawings and Figure 1.

4.4.13 Drop side cargo body examinations. To determine conformance to 3.3.12, the sides and tailgage shall be examined for completeness of assembly, proper mounting, and locking.

4.4.14 Performance. Conditions for performance shall be as specified in 3.4 as applicable.

4.4.14.1 Special kits operational tests. To determine conformance to 3.4.1, specific kit when furnished with a vehicle, or subsequent to arrival of vehicle for testing, shall be installed on vehicle and tested for operational requirements.

4.4.14.2 Environmental operational tests. To determine conformance to 3.4.2, the vehicle, properly serviced and equipped, shall be operated and stored at specified temperatures. The vehicle shall experience no evidence of damage as a result of such operation or storages.

4.4.14.3 Vehicle loading tests. To determine conformance to 3.4.3, the specific vehicle furnished shall be loaded in accordance with table V, VI, or VII as applicable.

4.4.14.4 Engine tests. To determine conformance to 3.4.4 and 3.4.4.1, during tests, the engine and components shall be observed for performance requirements, in accordance with applicable engine drawing or purchase description (see 3.3.5).

4.4.14.5 Cross-country operation test. To determine conformance to 3.4.5 and 3.4.5.1, the vehicle(s) shall be operated over cross-country terrain at specified speeds and observed for performance requirements.

4.4.14.6 Highway speed tests. To determine conformance to 3.4.6 through 3.4.6.2, the vehicle shall be operated at specified speeds and observed for performance requirements.

4.4.14.7 Towing and recovery operation test. To determine conformance to 3.4.6.3, vehicles shall perform recovery operations as specified and shall be observed for performance requirements.

4.4.14.8 Fording test. To determine conformance to 3.4.7, the vehicle shall be operated through water crossings at dept and for the time specified. Vehicle and components shall subsequently be examined for water damage, or detrimental water contamination.

4.4.14.9 Longitudinal grades test. To determine conformance to 3.4.8.1, vehicle shall be operated on specified grades and observed for performance requirements.

4.4.14.10 Side slope operation. To determine conformance to 3.4.8.2, the vehicle shall be operated on 20 percent side slopes with each side of vehicle up slope and observed for performance requirements.

4.4.14.11 Braking ability test. To determine conformance to 3.4.9, through 3.4.9.2, the vehicle shall be operated as specified and observed for distance to stop and hold vehicle. Brake stopping distance shall not exceed that specified.

4.4.14.12 Cramping angle test. To determine conformance to 3.4.10, each vehicle shall be cramped as specified, and observed for performance requirements.

4.4.14.13 Crane lifting capacity tests. To determine conformance to 3.4.11.1 through 3.4.11.1.5, all tests see (4.4.14.13.1 through 4.4.14.13.3) shall be performed with transmission in specified gear and engine operating at specified speed. Oil temperature for hoist mechanisms shall be no less than 100ºF. All tests shall be performed so as to demonstrate performance requirements when operating on level ground and on slopes fore and aft to either side up to 5 degrees.

4.4.14.13.1 Outriggers (not in use) test. Test shall be conducted without using outriggers with 3000 pound test weight for the M543A1, M543A2, and M816 trucks, and with 1700 pounds for the M246A1, M246A2, and M819 trucks and with boom extended to maximum radius. Elevate and lower load using lifting cylinder(s). Swing boom to right and lower load using hoist winch. With load partially raised, swing boom right to left 180 degrees with stops in place, and 360 degrees without stops in place, for determination of 3 or 4 rpm traversing rate. Repeat for three cycles for each condition. Using a 3000 pound load with boom fully extended and elevated, raise and lower the load, using the hoist winch to determine a line speed of not less than 54 feet per minute for the M543A1 models, all series, and not less than 60 feet per minute for the M246A1 models, all series. Repeat for three cycles. Perform tests extending and retracting boom simultaneously lowering and raising a load using the hoist winch. The other tests, without the determination of traveling rate and line speed, shall be repeated until a total time of 40 minutes has elapsed.

4.4.14.13.2 Outriggers (in use) test. To determine conformance to 3.4.11.1.2 and 3.4.11.1.4, test shall be conducted as specified in 4.4.14.13.1, except that the test weight shall be 10,000 pounds with the outriggers in position, and the load radius limited to minimum boom length on either side of the wrecker and increased only sufficiently for the load to clear the outriggers and the rear of the vehicle. The rate of traversing or line speed tests are not required. The payload shall be raised 20 inches above the ground and the vertical drift (rate of descent) observed after stabilization of system with power shut off. The rate of descent shall not exceed a total of 3 inches for a six minute period. Test shall be repeated three times with the crane in each of the three positions; center, 90 degrees to right of center, and 90 degrees to left of center.

4.4.14.13.3 Three part line test. Test shall be conducted using a 20,000 pound test weight, a three part line, the boom extended to a 15 foot radius supported by boom jacks, and front outriggers in place. Raise and lower test weight approximately 4 1/2 feet for three cycles. Repeat the same test, except that the load radius shall be limted to minimum boom length, the boom supported from vehicle, and the outriggers in place. Test shall be performed for three cycles.

4.4.14.14 Boom marking examination. Boom extension marking shall be examined for conformance to 3.4.11.1.6 (see 6.8).

4.4.14.15 Van body extended test. To determine conformance to 3.4.12.1, each selected vehicle shall have the body fully extended, locked into position, and observed for performance requirements.

4.4.14.16 Waterproofness test. To determine conformance to 3.4.12.2, each selected vehicle shall have the van body subjected to not less than 15 minutes spray test in both expanded and retracted condition. The spray shall be delivered by nozzles operating at 25 pounds (minimum) per square inch (psi) water pressure, sufficient in number to afford full coverage of the roof, floor, sides, front and rear of body. Nozzles shall be placed within two feet of area being tested. During water test, all doors and windows shall be closed. If leaks occur within the van body, the vehicle shall be rejected until defects have been corrected and the van body retested with foregoing procedures.

4.4.14.17 Heater, air flow modulation and air conditioner test. To determine conformance to 3.4.12.3.1 through 3.4.12.3.3, each vehicle selected shall have heater, air flow modulator, and air conditioner operated and observed for performance requirments.

4.4.14.18 Electrical system test. To determine conformance to 3.4.12.4, during vehicle operation the complete electrical system shall be operated and observed for functional requirements.

4.4.14.19 Lightproofness test. To determine conformance to 3.4.12.5, with van body in the expanded position, with access door closed, and blackout shades down, vehicle shall be placed in bright sunlight or exposed to high intensity illumination. No light shall be visible inside van body. The test shall be repeated at night with all sources of illumination operating within the van body. No light shall be visible outside of van body.

4.4.14.20 Lift gate platform functional test. To determine conformance to 3.4.12.6, the lift gate platform loaded with specified weight shall be operated as specified. There shall be no binding or interference of various components.

4.4.14.21 Body bolster loading test. To determine conformance to 3.4.13.1.1, a trailer conforming to MIL-T-13714, shall be used. Test the truck's bolster body by booming a load between the truck bolster and trailer bolster so that the boomed load will impose not less than 20,000 pounds of payload on the truck bolster. Permanent deformation, cracked welds, or other damage shall be considered as noncomformance to requirements. The loaded combination shall be driven a distance of not less than 50 miles, of which not less than 10 miles shall be over cross-country terrain.

4.4.14.22 Trailer rack, ramps and tiedown accessories test. To determine conformance to 3.4.13.1.2, with the winch, load the trailer on the truck using the ramps. Secure the trailer and the ramps in the loaded position. During the test make 5-U turns to the right and 5-U turns to the left at a safe speed not less than 5 mph with the steering wheel turned against the stops. Incompatibility between the trailer and ramps loaded on the truck, any obstruction or damage to lights, or permanent shifting of the trailer and racks shall constitute a failure of this test.

4.4.14.23 Body, truck, stake bridge building operational test. To determine conformance to 3.4.14 through 3.4.14.1.4, the complete body and its components, mounted on M139A1, M139A2, or M812 W/W truck chassis, shall be lubricated and serviced (see table IV). The body shall be subjected to an 8 hour test specified in table XII. During these operations the truck shall be loaded as specified. On conclusion of the test the body shall be free of defects specified herein.

TABLE XII. Operational test (M328A1, M328A2 and M821 W/W.

Course	Hours and speed	Payload
Hard surface	2 hours at variable speeds up to 45 mph	(see 3.4.3)
Cross-country	6 hours at variable speeds up to maximum	(see 3.4.3)

4.4.14.24 Dump and truck operational test. To determine conformance to 3.4.15, with specified load in dump body, the controlling and operating mechanisms shall be operated and observed for performance requirements.

4.4.14.25 Drop side cargo body operational test. To determine conformance to 3.4.16, the tailgate and locking device shall be operated as specified, the drop sides interchanged from side to side and examined for performance requirements.

4.4.14.26 Air transportability test. To determine conformance to 3.4.17, when required, the vehicle shall be evaluated for air transportability.

4.4.14.27 Radio interference suppression test. To determine conformance to 3.4.18, the vehicle shall be subjected to radio interference suppression test as specified in MIL-STD-462.

4.4.15 Painting, marking and data plates.

4.4.15.1 Painting examination. To determine conformance to 3.5.1, preparation and painting shall be examined during and after application.

4.4.15.2 Marking examination. To determine conformance to 3.5.2, vehicle markings shall be examined.

4.4.15.3 Data plates examination. To determine conformance to 3.5.3, and 3.5.3.1, all identification plates shall be examined.

4.4.16 Rustproofing examination. When rustproofing is specified, vehicle shall be examined to determine conformance to 3.6.

4.4.17 Wood treatment. To determine conformance to 3.7, all wood used in manufacture of vehicles shall be examined for conformance to specified requirements.

4.4.18 Safety examination. To determine conformance to 3.8, all exposed parts which are electrically energized shall be located, insulated, fully enclosed or guarded so as to prevent hazards to operating personnel and equipment functioning. All moving parts which are of such nature, or so located, as to be a hazard to operating or maintenance personnel shall be enclosed or guarded. Protective devices shall not impair operating functions.

4.4.19 Service and adjustment examination. To determine conformance to 3.9, servicing and adjustment of specified items shall be examined.

4.4.20 Workmanship examination. Vehicle shall be examined to determine conformance to 3.10.

4.4.21 Preservation, packaging, and vehicle processing. Material and equipment shall be inspected, prior to shipment, to assure conformance to Section 5 of this specification.

4.5 Quality conformance inspection.

4.5.1 Inspection provisions.

4.5.1.1 Lot size. An inspection lot shall consist of all vehicles, from an identifiable production period (one day's production), submitted at one time for examination and test.

4.5.1.1.1 Sampling for inspection. For the purposes of visual, dimensional, and primary functional inspection, a representative sample shall be selected from each inspection lot in accordance with inspection level II of MIL-STD-105. Before sampling, the contractor shall 100 percent inspect the first 20 vehicles to establish a process average (see 6.4), to allow normal sampling in accordance with MIL-STD-105.

4.5.2 Examinations. Visual, dimensional, and primary functional examination shall consist of examination of the vehicle for conformance to applicable drawings and this specification. Examinations shall be performed against the classification of defects and with the acceptable quality levels (AQL's) specified in tables XIII and XIV. These examinations shall be performed during all phases of manufacturing and subsequent to road test.

TABLE XIII. Major defects - 25 defects/100 units.

Defect no.	Characteristic	Defect	Method of inspection
101	Steering mechanism	Malfunction; leaks (see 6.5.3 b)	Visual and functional
102	Engine	Malfunction; leaks (see 6.5.3 a & b; mounting improper)	Visual and functional
103	Clutch	Malfunction	Visual and functional
104	Transmission	Malfunction; leaks (see 6.5.3 c & d; mounting improper)	Visual and functional
105	Prop. shafts	Malfunction; misalignment	Visual and functional
106	Transfer	Malfunction; leaks (see 6.5.3 c & d; mounting improper)	Visual and functional
107	Power take-off	Malfunction; leaks	Visual and functional
108	Compressed air devices	Malfunction; leaks	Visual and functional
109	Hydraulic hoist	Malfunction; leaks (see 6.5.3 c & d 1/ and 2/)	Visual and functional
110	Cooling system components	Malfunction; leaks (see 6.5.3 b); damage; improper clearance	Visual and functional
111	Engine governors	Malfunction; seals defective or missing	Visual and functional
112	Fuel system components	Malfunction; damage; leaks (see 6.5.3 a & b)	Visual and functional
113	Instrumentation, switches, warning, indicating and safety devices	Malfunction; damage	Visual and functional
114	Electrical system components	Malfunction; damage	Visual and functional
115	Service, handbrakes and locks	Malfunction; damage; leaks (see 6.5.3 a & b)	Visual and functional
116	Axles	Malfunction; leaks (see 6.5.3 c & d)	Visual and functional
117	Speed	Nonconformance	Visual

TABLE XIII. Major defects – 25 defects/100 units – Continued

Defect no.	Characteristic	Defect	Method of inspection
118	Windshield and windows	Fogged; cracked; broken	Visual
119	Tires for defects	Damaged, improper type, under, over inflated	Visual
120	Intervehicular cable, hose	Improper lengths; damaged	Visual
121	Lubrication system components	Engine, damage; leaks (see 6.5.3 b)	Visual and functional
122	Fifth wheel	Malfunction; improper assembly or installation; welding defects	Visual and functional
123	Frame structure components	Riveting, welding defects	Visual
124	Tank structure	Riveting, welding defects	Visual
125	Suspension system components	Damage; leaks (see 6.5.3 b)	Visual
126	Exhaust system components	Damage; leaks	Visual
127	Controls	Malfunction, clearance improper	Visual and functional
128	Miscellaneous items or accessories	Malfunction; damage	Visual and functional
129	Suspension system components	Malfunction; damage	Visual and functional
130	Shock absorbers	Damage, leaks (see 6.5.3 a)	Visual
131	Bodies, cabs, vans, winches, bolsters	Improper fit, installation, weldments	Visual and functional
132	Vehicle registration and identification marking	Incomplete data, missing, improper location or size	Visual
133	Sheet metal fabrication	Improper assembly, installation	Visual
134	Paint	Improper assembly, installation	Visual
135	Lube fittings	Defective, improperly installed, missing	Visual
136	Cushions, upholstery, canvas top and curtains	Damage, improper fit and installation	Visual
137	Trim defects	Damaged, improper installation	Visual

TABLE XIII. Minor defects – 150 defects/100 units. – Continued

Defect no.	Characteristic	Defect	Method of inspection
138	Decals, marking, data and instruction plates	Incomplete data, missing, improper location or size	Visual
139	Protective coatings	Improper application, coverage, materials	Visual
140	Record forms and publications	Missing or improperly processed	Visual
141	Lubrication	Improper	Visual

1/ Any droplet that occurs at a static fit, metal to metal or gasket combination shall constitute a major defect.

2/ Any drip constitutes a major defect when the vehicle has been standing idle and the components are at ambient temperature.

TABLE XIV. Minor defects – 150 defects/100 units. – Continued

Defect no.	Characteristic	Defect	Method of inspection
201	Controls	Improper adjustment or assembly	Visual and functional
202	Coolant	Low or improper mixture	Visual and functional
203	Lubricants	Levels and types improper (all units)	Visual
204	Wheels and tires	Improper size; type and mounting	Visual
205	Pulleys and fan	Misalignment; improper mounting	Visual
206	Belts	Tension improper; defective	Visual
207	Shock absorbers	Improper installation or assembly	Visual
208	Wiring or tubing	Defective; improper installation or coding	Visual
209	Brake system components	Improper assembly, installation, or protection	Visual
210	Body, cab doors, hood items, stowage	Improper fits, assembly, or installation;	Visual

TABLE XIV. Minor defects – 150 defects/100 units. – Continued

Defect no.	Characteristic	Defect	Method of inspection
211	Sheet metal and welding defects		Visual
212	Electrical system components	Improper installation or assembly	Visual
213	Paint	Application and color improper	Visual
214	Suspension system components	Improper installation or assembly	Visual
215	Steering system components	Improper assembly or clearance	Visual
216	Exhaust system components	Improper assembly or installation	Visual
217	Cooling system components	Improper assembly or installation	Visual
218	Fuel system components	Improper assembly or installation	Visual
219	Lube fittings	Defective; missing or improperly installed	Visual
220	Cushions, upholstery, canvas tops and curtains	Damaged; improper fit and installation	Visual
221	Trim defects	Missing; improper	Visual
222	Miscellaneous items or accessories	assembly or installation	Visual functional
223	Decals, marking, data and instruction plates	Incomplete data; missing, improper location or size, vehicle registration and identification marking	Visual
224	Protective coatings,	Missing or improperly processed	Visual
225	Lubrication	Improper	Visual

4.5.2.1 Unclassified defects. Defects considered to be departures from good workmanship but having no bearing on function, safety, interchangeability, or life shall be noted in writing. Such defects recurring in five consecutive lots, or ten lots or more within a thirty day period, will be added to the minor classification of defects with no increase in AQL (see 3.10, 6.5.1 and 6.5.2).

4.5.2.2 Examination failure. If a vehicle fails to pass any examination or test specified herein, the Government inspector shall stop acceptance until evidence has been provided by the contractor that corrective action has been taken.

4.6 Classification of tests.

a. Acceptance tests (see 4.6.1).
b. Control tests (see 4.6.2).
c. Comparison tests (see 4.6.3)

4.6.1 Acceptance tests. To determine conformance to Section 3 (inclusive), each vehicle shall be examined as specified in 4.5.2, operated for a distance of not less than 5 miles, and driven in reverse gear a minimum of 50 feet, without payload, by the contractor. Vehicle shall be completely assembled and serviced. Acceptance tests shall be those specified in table XI. Performance of vehicle shall be demonstrated on relatively smooth, hard-surfaced roads. After completion of the 5 mile road test the vehicle shall be examined for lubrication leakage (see 6.5.3) and other defects.

4.6.1.1 Test failure. If the vehicle fails to pass any acceptance test secified herein, the Government shall stop acceptance of subsequent vehicles until evidence has been provided by the contractor that corrective actions have been accomplished.

4.6.2 Control tests.

4.6.2.1 Frequency. The Government shall select one vehicle out of the first ten production vehicles of each model, and one per month thereafter, for a 50 mile road test by the contractor.

4.6.2.2 Fifty mile test. Vehicle shall be loaded with full or simulated payload, operated for a distance of 50 miles, and subjected to all control tests specified in table IX. These tests shall be performed at the place of manufacture by the contractor. The test course shall be a relatively smooth, level, hard-surfaced road.

4.6.2.2.1 Test failure. If the vehicle fails to pass any control test, the Government will stop acceptance examination and testing on subsequent vehicles until conditions causing the failure have been remedied. Any defect found during or as a result of the test shall be prima facie evidence that vehicles accepted subsequent to the previously accepted control test vehicle are similarly defective, unless evidence satisfactory to the contracting officer is furnished by the contractor that they are not similarly defective. Such defects on all vehicles shall be corrected by the contractor at no cost to the Government. Another vehicles with corrective actions implemented, shall be subjected to the control test, for the required 50 miles.

4.6.3 Comparison tests. The Government may select a vehicle at any time during the contract production period and subject vehicle to all applicable tests listed in table XI, XV and XVI to reveal defects of a workmanship or materials nature that may reduce the vehicle's effective operation in the field, and to compare existing quality with previous standards. These tests shall be conducted at Government laboratories or proving grounds designated by the contracting officer. Selection of vehicle shall be on a spot check basis. Comparison test vehicle shall be loaded as specified in 3.4.3 and table V, VI, or VII. Vehicle selected shall not include any vehicle previously tested for conformance to 4.6.2.

TABLE XV. Comparison test of 4050 miles for all models except wrecker and expansible van models

Course	Mileage and speeds	Payload
Paved surface	900 miles; at speeds up to 50 mph	(see 3.4.3)
Level cross-country	1550 miles; at speeds up to applicable conditions of terrain	(see 3.4.3)
Hilly cross-country	1550 miles; at speeds up to applicable conditions of terrain	(see 3.4.3)
Belgian block (or equal)	50 miles; at speeds up to applicable conditions of terrain	(see 3.4.3)

TABLE XVI. Comparison test of 2250 miles for wrecker and expansible van models.

Course	Mileage and speeds	Payload
Hard surface	250 miles at speeds varying up to maximum	(see 3.4.3)
Secondary	750 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Level cross-country	600 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Hilly cross-country	600 miles at speeds applicable to conditions of terrain	(see 3.4.3)
Belgian block (or equal)	50 miles at speeds applicable to conditions of terrain	(see 3.4.3)

4.6.3.1 Test failure. Failure of any vehicle to conform to any of the requirements specified in the contract or any major defects of a workmanship or materials nature, occuring as a result of the test cycle, may be cause for refusal to continue acceptance of vehicles until objective evidence has been provided by the manufacturer that corrective action has been taken. Any defects found during, or as a result of, the test shall be prima facie evidence that vehicles accepted subsequent to the previous acceptable comparison test vehicles are similarly defective, unless evidence satisfactory to the contracting officer is furnished by the contractor that they are not similarly defective. Such defects on all vehicles shall be corrected by the contractor at no cost to the Government.

5. PACKAGING

5.1 Vehicle processing. Vehicle shall be processed for shipment and storage in accordance with MIL-V-62038 to the extent indicated on the Vehicle Preservation Data Sheets furnished by the procuring activity (see 6.2).

6. NOTES

6.1 Intended use. The vehicles covered by this specification are general and special purpose trucks intended for use by the United States Military Services in transporting personnel or cargo, towing trailers or semitrailers, and recovering disabled equipment during military operations. When fitted with special equipment kits, the vehicles are intended for use under extreme or unusual conditions of climate, weather, terrain, and military service.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Model required (see 1.2 and 3.3).
c. Special kits required for specific vehicles (see 3.3.1).
d. Painting, marking, and data plates as required (see 3.5 through 3.5.3.1).
e. Rustproofing, if required (see 3.6).
f. Selection of level(s) of processing (see 5.1).

6.3 First article. First article samples shall be tested and approved under the appropriate provisions of 7-104.55 of the Defense Acquisition Regulation. The contracting officer should include specific instructions in all procurement instruments regarding arrangements for examination, test and approval of the first article (see 3.1).

6.4 Process average. Sampling may be initiated if the process average value for the first twenty vehicles inspected is less than the AQL specified in the classification of defects for major and minor defects.

$$\text{Process average} = \frac{\text{Number of defects}}{\text{Number of vehicles inspected}} \times 100$$

If the computed process average exceeds the specified AQL, 100 percent inspection shall be performed and continued until such time that process average for twenty consecutive vehicles is less than the specified AQL.

6.5 Definitions.

6.5.1 Recurring major defects. A major defect is recurring when the same defect occurs more than once in the same sample, or when the defect occurs in two successive samples. A major defect may be considered recurring when the historical inspection records ("P" chart or equivalent) reflect such a condition. Recurring major defects shall be cause for the entire lot or lots to be inspected for the recurring defects.

6.5.2 Recurring minor defects. A minor defect is recurring if it occurs more than twice in the same sample or when the defect occurs in four successive samples. Recurring minor defects shall be cause for the entire lot or lots to be inspected for the recurring defects.

6.5.3 Leaks. The following definitions shall be used for the examination of defects for leaks:

a. Weep: - Any evidence of fluid beyond the seal.
b. Seep: - Any evidence of fluid beyond the seal that does not result in formation of a droplet.
c. Droplet: - Any evidence of fluid beyond the seal that results in the formation of a droplet.
d. Drip: - Any evidence of fluid beyond the seal where droplet forms and falls.

6.6 Corps of Engineers. Drawings D8916-1 through D8916-7 are Corps of Engineers drawings depicting the bolster body construction. Drawings D8902-1 through D8902-38 are Corps of Engineers drawings depicting the stake body construction. The above are primarily engineering design drawings and are not intended for use as shop drawings. Critical dimensions and tolerance are furnished; however, the contractor is responsible for preparing his own manufacturing drawings. When tolerances are not shown or where those prescribed could cumulatively result in improper fits, the contractor is responsible for providing tolerances in accordance with DoD-STD-100 for the various machining operations to insure proper fit, assembly and operation of the bolster body. No deviation from dimensions shown on the engineering design drawings is permissible without prior approval of the contracting officer. All parts, subassemblies and assemblies requiring identification shall be identified in accordance with MIL-STD-130.

6.7 Lubricants and oils. Unless otherwise specifically directed by the contracting officer, the power steering should be serviced with oil conforming to grade 10 of MIL-L-2104.

6.8 Boom marking. Boom markings shall be as follows:

a. On driver's side only, scribe and paint a 3/4 inch vertical stripe along the outer edge of shipper. Extend the strip over onto boom, with the boom retracted and retained in horizontal position.

b. To the right of and parallel with the first stripe label “11 1/2 Ft” in 2 inch letters.

c. Pain a horizontal 3/4 X 6 inch long arrow on the shipper pointing to the edge of the first stripe.

d. Extend boom to the maximum length. The second stripe shall be scribed and painted 6 inches to the left of the “11 1/2 Ft” stripe. The 12 foot stripe and each succeding stripe shall be scribed, painted and labeled consecutively at one foot intervals along the boom through “19 ft.”

e. The extension shall be striped at one foot increments with its retracted position to its fully extended position but will not be labeled with number designations. The number of stripes visible on the extension shall be added to the number of feet indicated on the boom to establish the total number of feet the complete boom is extended.

6.9 Kits. When required by the services, the following GFE special purpose or accessory kits are available through normal supply channels when required for a specific vehicle.

Fording kits

Group	Kit	Vehicle model(s)	Nomenclature
1	5701841	M51 & M61	Kit, Deep Water Fording
	5701842	M52	Kit, Deep Water Fording
	5702843	M54 & M55	Kit, Deep Water Fording
2	5703702	All vehicles except the	Kit, Deep Water Fording
		M543A2 and M139A2F	Kit, Deep Water Fording
	570703	M543A2	Kit, Deep Water Fording
	5702844	M139A2F	Kit, Deep Water Fording

3	11664533	All M809 series	Kit, Deep Water Fording
	11608904	All M39A1 series	Kit, Deep Water Fording
	11664556	M812A1	Kit, Deep Water Fording – Exhaust

Arctic kits

Group	Kit	Nomenclature
1	5704468	Kit, Heater Personnel
	5702006	Kit, Personnel Hot Water Heater
	5701469	Kit, Installation Heater Power Plant
	5701443	Kit, Closure, Hard Top
	570223	Kit, Thermal Barrier
2	5702823	Kit, Thermal Barrier
	5701443	Kit, Closure, Hard Top
	5703530	Kit, Winterization Personnel Heater
	5703535	Kit, Winterization, Power Plant
	5702006	Kit, Hot Water Personnel Heater
M809 Series		
3	11648556	Kit, Winterization Personnel Heater
	11648557	Kit, Water Personnel Heater
	11648752	Kit, Thermal Barrier
	11648581	Kit, Winterization Power Plant
	7354276	Kit, Closure Hard Top
M39A1 Series		
	10932106	Kit, Winterization Personnel Heater
	10938450	Kit, Water Personnel Heater
	10938249	Kit, Thermal Barrierl
	10932107	Kit, Winterization Power Plant
	7354276	Kit, Closure Hard Top
		Miscellaneous Kits
	5703074	Kit, Troop Seat Accessory, (for M51, M51A1, M51A2, and M817 trucks only)
	5702813	Kit, Tie Down
	8337178	Kit, A-Frame
	8758174	Kit, Air Brake

6.10 Recycled materials. The use of recycled materials which meet the requirements of the applicable material specifications without jeopardizing the intended use of the item shall be encouraged (see 3.2).

6.11 Changes from previous issue. Asterisks are not used in this revision, to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:
Army - AT
Navy - YD
Air Force - 99

Review activity:
Navy - MC

User activity
Navy - CG

Preparing activity:
Army - AT

Project No. 2320-1103

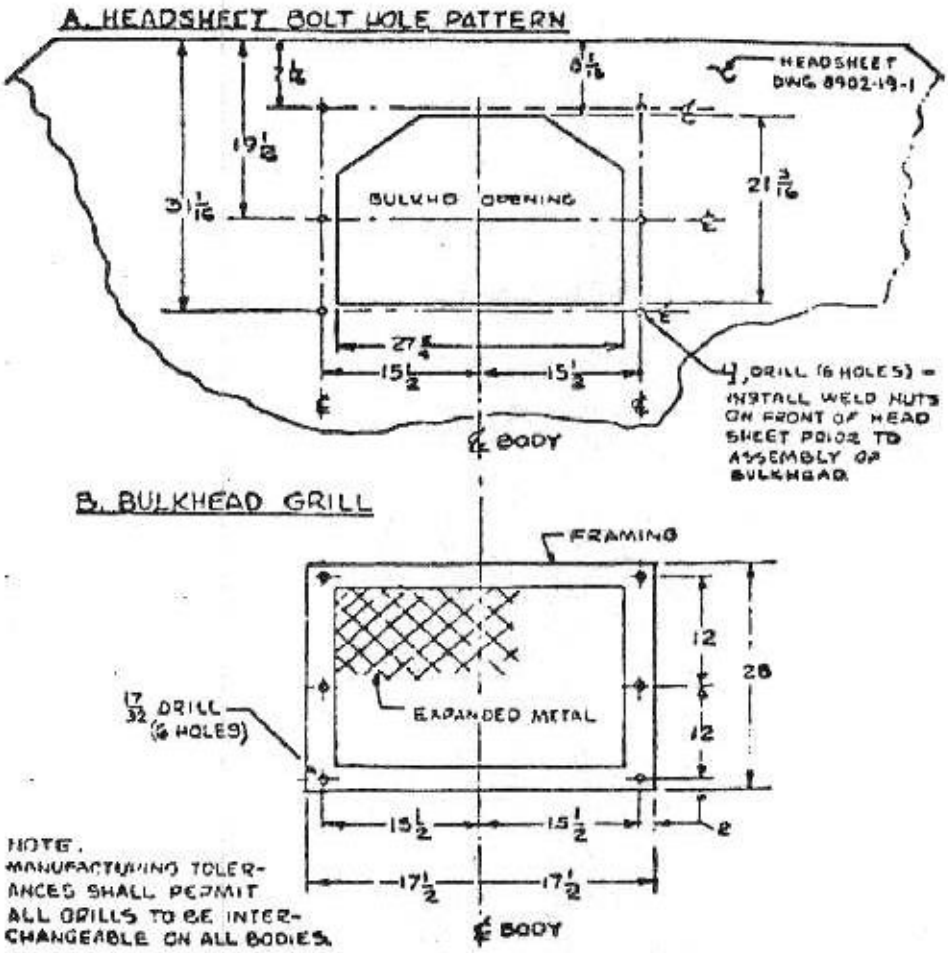

FIGURE 1. Truck; Stake, Bridge Transporting, Front Bulkhead Opening Grill

APPENDIX
DRAWINGS SUPPORTING 3.3

10. SCOPE

10.1 Scope. This appendix is a listing (in numerical order) of army drawings supporting paragraph 3.3 of this specification. The appendix is a mandatory part of the specification.

20. APPLICABLE DOCUMENTS

20.1

DRAWINGS
ARMY

8358326	- Truck tractor: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M52.
8358329	- Truck Tractor: 5 Ton, 6x6, Gasoline Engine, W/Winch, M52
8358330	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, W/Winch, M63.
8358331	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M63.
8358332	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M61.
8358333	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, W/Winch, M61.
8358335	- Truck, Cargo: 5 Ton, 6x6, Gasoline Engine, W/Winch, M54.
8358336	- Truck, Dump: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M51.
8358337	- Truck, Dump: 5 Ton, 6x6, Gasoline Engine, W/Winch, M51.
8358348	- Truck, Cargo: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M54.
8358349	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M40.
8358350	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, W/Winch, M40.
8358724	- Truck, Cargo: 5 Ton, 6x6, Gasoline Engine, W/Winch, M55.
8358814	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, W/Winch, M63C.
8358823	- Chassis, Truck: 5 Ton, 6x6, Gasoline Engine, W/Winch, M40C.
8358973	- Truck, Cargo: 5 Ton, 6x6, Gasoline Engine, Wo/Winch, M55.
8389583	- Installation Instruction, Tie Down Kit.
8389670	- Installation instruction, Tie Down Kit.
8736432	- Truck, Tractor: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M52A1.
8736433	- Truck, Tractor: 5 Ton, 6x6, Diesel Engine, W/Winch M52A1.

8736434	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M54A1.
8736435	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M54A1.
8736443	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M40A1.
8736444	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M40A1.
8736445	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M40A1C
8736448	- Truck, Dump: 5 Ton, 6x6, Diesel Engine, W/Winch. M51A1.
8736449	- Truck, Dump: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M51A1.
8736450	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M55A1.
8736451	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M55A1.
8736452	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M61A1.
8736453	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M61A1.
8736455	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M63A1.
8736456	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M63A1C.
8736457	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M63A1C.
8736460	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M139A1.
8736461	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M139A1.
8736465	- Truck, Wrecker: Medium, 5 Ton, 6x6, Diesel Engine, W/Winch, M543A1.
8736511	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M40A2.
8736512	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M40A2.
8136513	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M40A2C.
8736516	- Truck, Dump: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M51A2.
8736517 -S	- Truck, Dump: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M51A2.
8736518	- Truck, Tractor: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M52A2.
8736519	- Truck, Tractor: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M52A2.
8736520	- Truck, Cargo: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M54A2.
8736521	- Truck, Cargo: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M54A2.

8736522	- Truck, Cargo: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M55A2.
8736523	- Truck, Cargo: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M55A2.
8736524	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M61A2.
8736525	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M61A2.
8736527	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M63A2.
8736528	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M63A2.
8736529	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M63A2C.
8736532	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, W/Winch,M139A2.
8736533	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M139A2.
8736536	- Truck, Tractor-wrecker: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M246A2.
8736537	- Truck, Wrecker: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M543A2.
8736646 -S	- Truck, Tractor, Wrecker: 5 Ton, 6x6, Diesel Engine, W/Winch, M246A1.
8736692 -S	- Truck, Van Expansible: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M291A2.
8736693 -S	- Truck, Van Expansible: 5 Ton, 6x6, Multi-fuel Engine, Wo/Winch, M291A2C.
8736694	- Truck, Van Expansible: 5 Ton, 6x6, Multi-fuel Engine, M291A2D.
9736695 -S	- Chassis, Truck: 5 Ton, 6x6, Multi-fuel, Engine, Wo/Winch, M63A2D.
8736750	- Truck, Bolster: Logging; 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M74BA2.
8736830	- Truck, Stake: Bridge Transporting: 5 Ton, 6x6, Multi-fuel Engine, W/Winch, M328A2.
8736840	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M54A1C.
8736841	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M54A1C.
8736842	- Truck, Van Expansible: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M291A1.
8736844	- Truck, Van Expansible: 5 Ton, 6x6, Diesel Engine, W/Winch, M291A1D.
8736845	- Truck, Stake: Bridge Transporting, 5 Ton, 6x6, Diesel Engine, W/Winch, M328A1.
8736846	- Truck, Bolster: Logging, 5 Ton, 6x6, Diesel Engine W/Winch, M748A1.
8736849	- Chassis, truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M809.
8736850	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M809.

8736851	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M813.
8736852 -S	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M813.
8736853	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M813A1.
8736854	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M813A1.
8736855	- Truck, Bolster: Logging, 5 Ton, 6x6, Diesel Engine, W/Winch, M815.
8736856 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M809A1.
8736857	- Truck, Wrecker: 5 Ton, 6x6, Diesel Engine, W/Winch, M816.
8736858 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M810.
8736859 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M810.
8736860 -S	- Truck, Dump: 5 Ton, 6x6, Diesel Engine, W/Winch, M817.
8736861 -S	- Truck, Dump: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M817.
8736862 -S	- Truck, Tractor: 5 Ton, 6x6, Diesel Engine, W/Winch, M818.
8736863 -S	- Truck, Tractor: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M818.
8736864 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M811.
8736865 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M811.
8736866	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, W/Winch, M814.
8736867	- Truck, Cargo: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M814.
8736868	- Chassis, Truck, 5 Ton, 6x6, Diesel Engine, W/Winch, M811A1.
8736869	- Truck, Tractor-wrecker: 5 Ton, 6x6, Diesel Engine, W/Winch, M819.
8736870 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M811A2.
8736871	- Truck, Van Expansible: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M820.
8736872	- Truck, Van Expansible: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M820A1.

8736873	- Truck, Van Expansible: 5 Ton, 6x6, Diesel Engine, Wo/Winch, M820A2.
8736874 -S	- Chassis, Truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M812.
8736875	- Truck, Stake: Bridge Transporting, 5 Ton, 6x6, Diesel Engine, W/Winch, M821.
8736876 -S	- Chassis, truck: 5 Ton, 6x6, Diesel Engine, W/Winch, M812A1.

Note: SQAP's and QAR's for the subject are designated by the suffix "-S" added to drawing number.