



NOTICE:

This standard contains numerous changes and deletions from the previous revision, as well as new requirements. Do not make any assumptions as to the context of the document. This standard should be carefully read prior to ordering a vehicle and its options, submitting an offer, building a vehicle, or conducting an inspection.

Further, to maintain the integrity of contracts, the past practice of underscoring changes has been discontinued because it is impractical to show all changes, deletions, etc. The contract must stand on the substance of the document as written.

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THIS STANDARD IS APPROVED BY THE COMMISSIONER, FEDERAL SUPPLY SERVICE, GENERAL SERVICES ADMINISTRATION, FOR THE USE OF ALL FEDERAL AGENCIES.

1. PURPOSE, APPLICATION, AND COVERAGE.

1.1 PURPOSE.

This document covers new commercially produced, four wheeled, two and four wheel drive (4x2 & 4x4) medium trucks. It is intended to simplify competitive procurement of commercial vehicles, and achieve a practical degree of standardization within the federal fleet.

1.2 APPLICATION.

This Federal Standard does not include all the varieties of the commodity indicated by the title but is intended to cover only those vehicles generally acquired by the Government. This standard highlights, in concise form, types of trucks with standardized components and equipment. A selection of coded optional additional systems and equipment is included for agencies, divergent geographic and operational related needs. Vehicles must meet the integrated requirements of the tables, the schedule, and the detailed paragraphs (see section 3). The requirements of the standard may be tailored to meet unusual operating conditions, to incorporate special purpose equipment, and to provide for exceptions not otherwise covered.

These trucks are warranted by the contractor/supplier upon delivery as specified in 6.5 of this standard. Vehicle procurement must comply with the Federal Property Management Regulations (FPMR) and the Federal Procurement Regulations (FPR).

1.3 COVERAGE OF TRUCK TYPES.

The types of vehicles covered by this standard are listed below. A list for additional optional equipment appears after each table. For Type V, truck, wrecker, see WARRAN (Wrecker and Rollback Requirements Available Now) program brochures. For Type VI truck, maintenance, see also SADI (Standard Aerial Devices and Digger/Derricks Immediately Available) program brochure for aerial devices and digger derricks.

Figure 1. Types and Classes

TYPES	NOMENCLATURE	CLASS
I	Chassis, truck, with cab (see 3.5.1)	C D F G
II	Truck, tractor, with cab (see 3.5.2)	E F G
III	Truck, stake, with cab (see 3.5.3)	C D F
IV	Truck, dump, with cab (see 3.5.4)	C D F G
V	Reserved (see 3.5.5)	Reserved
VI	Truck, maintenance/line body, with cab (see 3.5.6)	C D F
VII	Truck, van, with cab (see 3.5.7)	C D F
VIII	Truck, refrigerator van, with cab (see 3.5.8)	C D F

1.4 CLASSIFICATION.

The vehicle(s) are divided into "Types" and "Classes." The vehicle types are determined by the chassis/body configuration. The "Class" of vehicle(s) shall be determined by the minimum gross vehicle weight rating (GVWR) as follows:

CLASS	C	D	E	F	G
(KG)	9,500	11,500	12,700	14,500	15,900
(LBS)	21,000	25,500	28,000	32,000	35,000

1.5 REPRESENTATIVE MODELS.

Representative chassis models are indicated in Chart A. The figures under each table in section 3 illustrate the typical style of the trucks covered in that type.

1.6 STANDARD TRUCK AND ALTERNATE COMPONENTS.

The standard truck shown as a "numbered item" and components listed in the tables are minimum requirements and equipment acceptable. The components designated "STD" shall be furnished in accordance with the referenced specification. A selection of alternate options and equipment is listed at the end of each table with "codes" applicable to the specific type/style truck. These shall be furnished when the code(s) are specified. NOTE: Payload is reduced by the weight of options specified such as lift gates, winch, snowplow, increased body size, and other equipment not included in the Standard Item.



NOTICE: ALTERNATIVE FUEL VEHICLE AVAILABILITY IS LISTED ON PAGE NO. 7

CHART A Representative Models

CLASS		C	D	F	G
GVWR KG		9,500	11,500	14,500	15,900
GVWR LB		21,000	25,500	32,000	35,000
MANUFACTURER	ENGINE				
Conventional Cab					
Sterling	Diesel	6500 Series & Acterra	7500 Series & Acterra	7500 Series & Acterra	8500/9500 Series
Ford	Diesel	F650	F650	F750	
GMC	Diesel, Gas	C6500	C7500	C7500/ C8500	C8500
International	Diesel	4000	4000	4000/ 7000	7000
Freightliner LLC	Diesel	M2	M2	M2	M2
Volvo	Diesel	-	-	VNM42/VHD42	VHD42
Mack	Diesel	-	-	CV/CX	CV/CX
Peterbilt	Diesel	-	-	335	335/385
Tilt Cab					
GMC	Diesel	T6500	T7500	T7500	T8500
Autocar	Diesel	-	-	WX & WXL 42	WX & WXL 42
Mack	Diesel	-	MR	-	-
Peterbilt	-	-	-	320	320
Sterling	Diesel	-	SC	SC	Condor

2. REFERENCED DOCUMENTS.

2.1 ISSUES OF DOCUMENTS.

The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this standard to the extent specified herein.

Fed. Std. No. 595B - Colors.

Federal standards and specifications are available from:

GSA Specification Section
Suite 8100
470 L'Enfant Plaza, S.W.
Washington, D.C. 20407
Telephone: (202) 619-8925.

Copies of this standard are available by writing to:

General Services Administration
Centralized Mailing List Service (7CAFL)
P.O. Box 6477 Fort Worth, TX 76115
Telephone (817) 334-5215 FAX: (817) 334-5227
Request AUTO-0001.

Copies of this standard are available from the General Services Administration, Office of Vehicle Acquisition and Leasing Services, GSA Automotive homepage: fss.gsa.gov/vehicles/buying. Copies are also available on CD-ROM from the GSA Automotive Division. Contact Customer CARE at 703-308-CARS (2277).

2.1.1 SPECIFICATIONS, STANDARDS, AND HANDBOOKS.

The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, in effect on date of solicitation.

COMMERCIAL ITEM DESCRIPTIONS

A-A-55439Battery, Storage: Vehicular, Ignition, Lighting and Starting
A-A-50271Plate, Identification, instruction and marking

HANDBOOKS

MIL-HDBK-1223 ..Nontactical Wheeled Vehicles Treatment, Painting, Identification Marking, and Data Plate Standard.

MIL-HDBK-1791 ..Designing for Internal Aerial Delivery in Fixed Wing Aircraft.
 DH-1-11AFSC Design Handbook.

SPECIFICATIONS

Military

MIL-T-5624Turbine Fuel, Aviation, Grades JP-4 and JP-5.
 MIL-T-83133Turbine Fuel, Aviation, Kerosene Type, Grade JP-8.
 MIL-PRE-20696Cloth, Waterproof, Weather Resistant.

STANDARDS

Federal

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

Military

MIL-STD-209Lifting and Tiedown Provisions.
 MS 75020.....Connector, Plug, Electrical - 12 Contact, Intervehicular, 28-Volt, Waterproof.
 MS 75021.....Connector, Receptacle, Electrical - 12 Contact, Intervehicular, 28-Volt, Waterproof.

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

2.1.2 OTHER GOVERNMENT DOCUMENTS, DRAWINGS, AND PUBLICATIONS.

The following other Government document, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues are those in effect on date of solicitation.

Department of Commerce (DOC)
 Voluntary Product Standard PS 1-95 Construction and Industrial Plywood.

(Application for copies of DOC publications should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9325.)

Department of Transportation (DOT)
 Federal Motor Carrier Safety Regulations.
 Federal Motor Vehicle Safety Standards.

(Application for copies of DOT publications should reference the Code of Federal Regulations, 49 CFR, and the Federal Register, and should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

Environmental Protection Agency (EPA)
 Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines.

Noise Emission Standards for Transportation Equipment - Medium and Heavy Trucks.

(Application for copies of EPA publications should reference the Code of Federal Regulations, 40 CFR, and the Federal Register and should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

Occupational Safety and Health Administration (OSHA)
 Subpart N Cranes, Derricks, Hoists, Elevators, and Conveyors.

(Application for copies of OSHA publications should reference the Code of Federal Regulations, 29 CFR, and the Federal Register and should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

2.2 NON-GOVERNMENT PUBLICATIONS.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issued of the documents that are DOD adopted are those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents in effect on the date of solicitation.

The European Tyre and Rim Technical Organization (ETRTO) Standards Manual.

(Application for copies of the ETRTO publication should be addressed to the European Tyre and Rim Technical Organizations, 32, Avenue Brugman, 1060 Brussels, Belgium.)

National Fire Protection Association (NFPA)
 NFPA No. 70 National Electric Code.

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

National Truck Equipment Association (NTEA)
 Conversion Hoist Chart.
 Dump Body Hoist Chart.

(Application for copies of NTEA publications should be addressed to the National Truck Equipment Association, 38705 Seven Mile Road, Suite 345, Livonia, MI 48152.)

SAE, INC.

SAE Standards and Recommended Practices

- J318.....Air Brake Gladhand Service (Control) and Emergency (Supply) Line Couplers - Trucks, Truck-Tractors, and Trailers (DOD adopted).
- J350.....Spark Arrester Test Procedure for Medium Size Engines (DOD adopted).
- J516.....Hydraulic Hose Fittings.
- J517.....Hydraulic Hose.
- J537.....Storage Batteries.
- J551.....Performance Levels and Methods Measurement of Electromagnetic Radiation from Vehicles and Devices (30-1000 MHz).
- J560.....Seven-Conductor Electrical Connector for Truck-Trailer Jumper Cable.
- J682.....Rear Wheel Splash and Stone Throw Protection (DOD adopted).
- J683.....Tire Chain Clearance - Trucks, Buses, and Combinations of Vehicles.
- J700.....Upper Coupler Kingpin - Commercial Trailers and Semi trailers.
- J704.....Openings for Six- and Eight-Bolt Truck Transmission Mounted Power Take-Offs.
- J844.....Nonmetallic Air Brake System Tubing (DOD adopted).
- J994Alarm- Backup- Electric.
- J1067.....Seven-Conductor Jacketed Cable for Truck-Trailer Connections.
- J2188.....Truck Ability Prediction Procedure (DOD adopted).

(Application for copies of SAE publication should be addressed to SAE, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

The Tire and Rim Association, Inc.
Year Book.

(Application for copies of Tire and Rim Association publication should be addressed to the Tire and Rim Association, Inc., 175 Montrose West Avenue, Copley, OH 44321.)

The Maintenance Council (TMC).

Recommended Maintenance Practices Manual.

- RP 105BBattery Cable Assemblies.
- RP 109ABattery Ratings and Engine Cranking Requirements.
- RP 111BCircuit Protections.

- RP 112Terminals for Heavy Duty Truck-Tractor Primary Wiring Systems.
- RP 113AElectrical Systems Connectors.
- RP 114AHarness Protection.
- RP 118ATurn Signal Switches.
- RP 120AWiring Systems Identification.
- RP 137Antilock electrical supply for tractors through SAE J560 seven pin connector.
- RP 138Auxiliary forward lighting.
- RP 321Fuel Crossover Line Protection and Configuration Guidelines.
- RP 325Radiator Integrity for Highway Trucks.
- RP 329Specifications for Ethylene Glycol Base Coolant Containing Nitrite.
- RP 403Placement of Safety Equipment.
- RP 404BTruck and Tractor Access System.
- RP 417Supporting pneumatic electrical lines between cab and trailer.
- RP 418Heavy-duty, in-cab R134A air conditioning systems.
- RP 624Synthetic Lubricants.
- RP 637Air Dryer Guidelines.
- RP 710Overhead door selection.
- RP 71112 year life swing - type freight van, trailer doors.

(Applications for copies of TMC publications should be addressed to the Maintenance Council, American Trucking Associations, 2200 Mill Road, Alexandria, VA 22314-5388.)

2.3 ORDER OF PRECEDENCE.

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

2.4 ABBREVIATIONS AND DEFINITIONS.

Following are the abbreviations or contractions and their meanings as they appear and are used in this standard:

ABBREVIATIONS	DEFINITIONS
AMP	AMPERE
AT	ALL TERRAIN TIRES
AUX	AUXILIARY
BAT	BATTERY
BBC	FRONT BUMPER TO BACK OF CAB
CA	CAB TO CENTER OF REAR AXLE
CAP	CAPACITY

CMCENTIMETERS
 CYLCYLINDERS
 DIA.....DIAMETER (IN INCHES)
 FC.....FORWARD CONTROL
 FT.....FOOT OR FEET
 FRT.....FRONT
 GASGASOLINE
 GAWRGROSS AXLE WEIGHT RATING
 GCWRGROSS COMBINED WEIGHT RATING
 GHPGROSS HORSEPOWER
 GVWRGROSS VEHICLE WEIGHT RATING
 H.D.HEAVY DUTY
 H.D.A.HEAVIEST DUTY AVAILABLE
 HWYHIGHWAY
 HYD.....HYDRAULIC
 ININCHES
 KGKILOGRAMS
 LLITERS
 LBSPOUNDS
 MMETERS
 MANMANUAL
 MAXMAXIMUM
 MFR.....MANUFACTURER'S
 MINMINIMUM
 MPG.....MILES PER GALLON
 MSPC.....MFR. STD. PAINT COLOR
 N/A.....NOT APPLICABLE OR
 NOT AVAILABLE
 NHPNET HORSEPOWER
 OEM.....ORIGINAL EQUIPMENT
 MANUFACTURER
 OOON-OFF ROAD TIRES
 OPTOPTION, OPTIONAL
 PASS.....PASSENGERS
 PTOPOWER TAKEOFF OPENING
 RAD.....RADIAL
 RBM.....RESISTING BENDING MOMENT
 SPDSPEED
 STDSTANDARD (SPECIFICATIONS)
 V.....V-TYPE (ENGINE)
 W/, & W/O.....WITH, AND WITHOUT
 /.....AND

**ALTERNATIVE FUEL VEHICLES
AVAILABLE IN FED. STD. 794X**

MANUFACTURER	FUEL TYPE	STANDARD ITEM NO.	REMARKS
NONE	NONE	NONE	NONE



3. SELECTION AND REQUIREMENTS.

CHARTS BEGIN ON PAGE 8.

TABLE 1

4X2 CHASSIS, TRUCK WITH CAB, 2 OR 4 DOOR (See paragraph 3.5.1)

ITEM NO. TYPE/CLASS	414	511	513	514
	I/C	I/D	I/F	I/G
MINIMUM REQUIREMENTS				
Payload (approx. W/ out body) kg (lbs)	6,100 (13,000)	7,900 (16,000)	10,500 (22,000)	11,300 (24,000)
Style, cab/tilt hood	Conv. 2 Door	Conv. Door	Conv. 2 Door	Conv. 2 Door
GVWR/GCWR, lbs	21000/ 26000	25500/ 33000	33000/50000	35000/55000
Curb weight, approx. base, kg (lbs)	3,400 (8000)	3,600 (10,000)	4,000 (10,500)	4,500 (11,000)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	12000 ¹ /oil	12000/oil
Axle, min rear rating, lbs / spd / seals	15000 / 1 spd/oil	17500 / 1 spd/oil	21000 ¹ / 1 spd/oil	23000 / 1 spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	12000/21000 ¹	12000/23000
Cab to axle (CA)	Optional	Optional	Optional	Optional
Frame, RBM, min, in- lb	440,000	475,000	800,000	1,600,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine cyl / ghp / gross torque, min.	6-8 / 200 / 520	6-8 / 210 / 605	6-8 / 230 / 660	6-8 / 245 / 660
Transmission type/speeds, min.	Auto/5 spd	Auto/ 5 spd	Auto/ 5 spd	Auto/5 spd
Differential	Std	Std	Std	Std
Brakes, type	Hyd/power	Full air	Full air	Full air
Steering	Power	Power	Power	Power
Springs /shocks	Aux rear/Front shocks	Aux rear/Front shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc	Disc
Tires, tubeless / min cap / tread (std.)	9R22.5F /Hwy	10R22.5F /Hwy	11R22.5G ¹ /Hwy	11R22.5G /Hwy
Alternator, rating cap., min	130 amp	130 amp	130 amp	130 amp
Battery, CCA @ 0°f/reserve	1875/540 min	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, l (gal)	170 (45)	170 (45)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex	Flat & convex
Horn	Electric	Electric & air	Electric & air	Electric & air

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shut-down (if diesel), daytime running lights, anti-lock brake system on air brake vehicles, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

(CA) CAB TO AXLE Dimension Must be Specified – See Options Codes CA1-CA8.

Special or Additional CA dimensions may be specified, if required.

See Option Codes listing on pages 10 & 11.

TABLE 1

4X4 CHASSIS, TRUCK WITH CAB, 2 OR 4 DOOR (See paragraph 3.5.1)

ITEM NO. TYPE/CLASS	712 I/D	714 I/F
MINIMUM REQUIREMENTS		
Payload (approx. w/out body) kg (lbs)	7400 (16,500)	10,000 (21,000)
Style, cab/tilt hood	Conv. 2 dr.	Conv. 2 dr.
GVWR/GCWR, lbs	25500/ 33000	33000/50000
Curb weight, approx. base, kg (lbs)	4,100(9300)	4,500 (10000)
Axle, min frt rating, lbs/seals	8000/grease	12000 ¹ /grease/oil
Axle, min rear rating, lbs/spd/seals	17500/1 spd/oil	21000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	8000/17500	12000/21000 ¹
Cab to axle (CA)	Optional	Optional
Frame, RBM, min, in.-lb.	620,000	800,000
Engine, type	Diesel, turbo	Diesel, turbo
Engine cyl/GHP/gross torque, min.	6-8/210/605	6-8/230/660
Transmission type/speeds, min.	Auto/5 spd	Auto/5 spd
Differential	Std	Std
Brakes, type	Full air	Full air
Steering	Power	Power
Springs/shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc
Tires, tubeless/min cap/tread (std.)	10R22.5F/AT-00	11R22.5G ¹ /AT-00
Alternator, rating cap., min	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540
Cooling and indicators	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	(170) 45	170 (45)
Mirrors, dual	Flat & convex	Flat & convex
Horn	Electric & air	Electric & air

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shut-down (if diesel), daytime running lights, anti-lock brake system, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

(CA) cab to axle dimension must be specified – See Options Codes CA1-CA8.
Special or additional CA dimensions may be specified, if required.

See Option Codes listing on pages 10 & 11.

CAB AND CHASSIS - OPTION CODE LISTING

A = Option available, S = Standard on specified item		4X2				4X4		
		REF. PARA.	414	511	513	514	712	714
ENGINES								
YD38	DIESEL ENGINE MIN 175 GHP, 420 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	N/A	N/A	N/A	N/A	N/A
YD2	DIESEL ENGINE MIN 190 GHP, 520 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	A	N/A	N/A	A	N/A
YD3	DIESEL ENGINE MIN 210 GHP, 605 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	S	A	A	S	A
YD4	DIESEL ENGINE MIN 230 GHP, 660LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	S	N/A	A	S
YD51	DIESEL ENGINE MIN 245 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	A	S	N/A	A
YD31	DIESEL ENGINE MIN 275 GHP, 800 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	N/A	A	N/A	N/A
E5	V8 OEM GAS ENG.	3.4.1.2	A	A	A	A	A	A
CNG	COMPRESSED NATURAL GAS ENGINE	3.4.1.2	A	A	A	A	A	A
ASI	AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A	A	A	A
EH	ENGINE BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A	A	A	A
EXB	ENGINE EXHAUST BRAKE (not available with all makes and sizes of engines)	3.4.11.4(C)	A	A	A	A	A	A
EHM	ENGINE HOUR METER	3.4.22	A	A	A	A	A	A
FFP	FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A	A	A	A
H4	COOLANT PROTECTION TO -47°C (-63f)	3.4.1.7	A	A	A	A	A	A
SEH	COLD WEATHER PACKAGE (INCLUDES SEH A, B, AND D)	3.4.1.9	A	A	A	A	A	A
SEHA	COOLANT HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A
SEHB	ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A
SKS	SPARK ARRESTER, EXHAUST SYSTEM (W/GASOLINE ENGINES ONLY)	3.4.4.1	A	A	A	A	A	A
VES	VERTICAL EXHAUST PIPE DIESEL ONLY	3.4.4	A	A	A	A	A	A
TRANSMISSION								
2500	AUTOMATIC TRANSMISSION, ALLISON MODEL 2500	3.4.5.1	A	A	N/A	N/A	A	N/A
2200	AUTOMATIC TRANSMISSION WITH PARKING PAWL, ALLISON MODEL 2200	3.4.5.1	S	A	N/A	N/A	A	N/A
3000	AUTOMATIC TRANSMISSION, ALLISON MODEL MD 3000	3.4.5.1	A	S	S	S	S	S
3500	AUTOMATIC TRANSMISSION, ALLISON MODEL MD 3500	3.4.5.1	A	A	A	A	A	A
T1	INTEGRAL OUTPUT RETARDER (with automatic transmission 3000 series or larger)	3.4.11.4(D)	A	A	A	A	A	A
T6	MANUAL TRANSMISSION 6 SPD MIN	3.4.5.2	A	A	N/A	N/A	A	N/A
T7	MANUAL TRANSMISSION 7 SPD MIN	3.4.5.2	A	A	A	N/A	A	A
T10	MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	N/A	A	A	A	N/A	A
LST	SYNTHETIC LUBE – MANUAL TRANSMISSION	3.4.31	A	A	A	A	A	A
TSTF	SYNTHETIC LUBE – AUTOMATIC TRANSMISSION	3.4.31	A	A	A	A	A	A
AXLE, REAR								
ATC	AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A	A	A	A
D1	DRIVER CONTROLLED DIFFERENTIAL LOCKOUT	3.4.9.2	N/A	A	A	A	A	A
D3	TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A	A	A	A
LSD	SYNTHETIC LUBE-DIFFERENTIAL	3.4.30	A	A	A	A	A	A
SUSPENSION								
AUXS	AUXILIARY REAR SPRINGS	3.4.8	A	A	A	A	A	A
SAR	REAR AIR SUSPENSION.	4.8.1	N/A	A	A	A	N/A	N/A
ELECTRICAL								
A14	ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A	A	A	A
DRLD	DAYTIME RUNNING LIGHTS – DELETE	3.4.2.4	A	A	A	A	A	A
VOL	AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A	A	A	A
BODY AND CHASSIS								
CC	CREW CAB	3.4.12.2	A	A	A	A	A	A
CE	EXTENDED CAB	3.4.12	A	A	A	A	A	A
COE	TILT CAB	3.4.12	A	A	A	A	N/A	N/A

CAB AND CHASSIS - OPTION CODE LISTING

A = Option available, S = Standard on specified item		4X2				4X4	
		414	511	513	514	712	714
OPTION CODES	REF. PARA.						
BODY AND CHASSIS (CONTINUED)							
LH LOW PROFILE CHASSIS (N/A W/COE)	3.4.7	A	A	N/A	N/A	N/A	N/A
CA6 CA 59/60 IN	3.5.1	A	A	A	A	A	A
CA7 CA 71/72 IN	3.5.1	A	A	A	A	A	A
CA8 CA 83/84 IN	3.5.1	A	A	A	A	A	A
CA1 CA 101/108 IN	3.5.1	A	A	A	A	A	A
CA2 CA 119/126 IN	3.5.1	A	A	A	A	A	A
CA3 CA 136/138 IN	3.5.1	A	A	A	A	A	A
CA4 CA 150/156 IN	3.5.1	A	A	A	A	A	A
CA5 CA 167/171 IN	3.5.1	A	A	A	A	A	A
FFE FRAME, FRONT EXTENSION	3.4.7	N/A	A	A	A	A	A
FHD FRAME, HEAVY DUTY	3.4.7	A	A	A	A	A	A
STF FRAME, STAGGERED	3.1.1.16	N/A	N/A	N/A	N/A	A	A
EXTERIOR							
RM3 MIRROR, MOTORIZED RIGHT SIDE (INCLUDES RM4)	3.4.20	A	A	A	A	A	A
RM4 MIRRORS, HEATED FLAT	3.4.20	A	A	A	A	A	A
SRP RUSTPROOFING	3.1.1.3	A	A	A	A	A	A
INTERIOR							
DA AIR CONDITIONING, DELETE	3.4.25	A	A	A	A	A	A
SK ODOMETER, METRIC	3.4.19	A	A	A	A	A	A
RACS RADIO, WITH INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A	A	A	A
RAD RADIO, WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A	A	A	A
DSS SEAT, DRIVER SUSPENSION (MECHANICAL ON HYD BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A	A	A	A
DSS2 SEAT DRIVER AND PASSENGER SEAT CONFORMING TO DSS	3.4.12.1	A	A	A	A	A	A
FUEL							
EJP ENGINE, DIESEL AVIATION JET FUEL COMPATIBLE	3.4.1.1	A	A	A	A	A	A
SEHC FUEL WARMER, IN-LINE	3.4.1.9	A	A	A	A	A	A
SEHE FUEL WARMER, IN-LINE (ELECTRICAL)	3.4.1.9	A	A	A	A	A	A
SEHD FUEL WARMER, IN-TANK	3.4.1.9	A	A	A	A	A	A
FFS SEPARATOR, FUEL/WATER HEATED	3.4.1.9.1	A	A	A	A	A	A
FTC TANKS, FUEL MIN 70 GAL TOTAL CAP	3.4.3.2	A	A	A	A	A	A
FTD TANKS, FUEL MIN 100 GAL TOTAL CAP	3.4.3.2	A	A	A	A	A	A
SAFETY							
BUA BACKUP ALARM	3.4.23	A	A	A	A	A	A
FEX EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A	A	A	A
TIRES AND WHEELS							
STC CARRIER SPARE TIRE	3.4.10.2	A	A	A	A	A	A
AICE AUTOMATIC TIRE CHAINS	3.4.10.5	N/A	A	A	A	A	A
CTIS INFLATION SYSTEM, CENTRAL TIRE	3.1.1.20	N/A	N/A	A	A	N/A	A
SLP LOW PROFILE TIRES	3.4.10.1	A	A	A	A	A	A
STA SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A	A	A	A
STB SPARE TIRE ASSEMBLY (REAR AXLE)	3.4.10.4	A	A	A	A	A	A
MS TREAD, MUD & SNOW TIRES (REAR AXLE)	3.4.10.1	A	A	A	A	S	S
TOWING							
TTP TRAILER TOWING PKG	3.1.1.8	A	A	A	A	A	A
MTL TRAILER LIGHTING CABLE	3.1.1.8	A	A	A	A	A	A
PH PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A	A	A	A
RTH REAR TOW HOOKS (N/A W/TTP OR PH)	3.1.1.6	A	A	A	A	A	A
TBE ELECTRIC BRAKE CONTROLLER	3.1.1.9	N/A	A	A	A	A	A
TBT BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	N/A	A	A	A	A	A
MISCELLANEOUS							
BTC TOOL COMPARTMENT	3.1.1.14	A	A	A	A	A	A
EDR DRIVELINE RETARDER	3.4.11.4(A)	A	A	A	A	A	A

CAB AND CHASSIS - OPTION CODE LISTING

A = Option available, S = Standard on specified item		4X2				4X4	
OPTION CODES	REF. PARA.	414	511	513	514	712	714
MISCELLANEOUS (CONTINUED)							
MHW FRONT MOUNTED WINCH	3.4.27	A	A	A	A	A	A
MIL MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A	A	A	A
MPR SNOWPLOW PROVISIONS	3.5.4.8.1	A	A	A	A	A	A
PSM PARTS AND SERVICE MANUAL(S) PRINTED	6.6	A	A	A	A	A	A
PSME PARTS AND SERVICE MANUAL(S) ELECTRONIC	6.6	A	A	A	A	A	A
PSM2 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A	A
PSM3 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A	A
TJ TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A	A	A	A
XP EXPORT PACKAGING	5.1	A	A	A	A	A	A
PAINT							
CPT CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A	A	A	A
TP TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A	A	A	A
WLP WHEELS PAINTED SAME COLOR AS CAB	3.1.1.1	A	A	A	A	A	A

TABLE 2

4X2 TRUCK, TRACTOR, WITH CAB, 2 DOORS (See paragraph 3.5.2)

ITEM NO. TYPE/CLASS	522 I/E	523 I/F	524 I/G
MINIMUM REQUIREMENTS			
Payload (approx range including trailer) kg (lbs)	8,600 (33,000)	10,200 (41,000)	11,000 (45,500)
Style, cab/tilt hood	Conv. 2 Doors	Conv. 2 Doors	Conv. 2 Doors
GVWR/GCWR	29000/45000	33000/55000	35000/60000
Curb weight, approx. base, kg (lb)	4,100 (10,500)	4,300 (11,000)	4,900 (11,500)
Axle, min frt rating, lbs./seals	8000/oil	10000/oil	12000/oil
Axle, min rear rating, lbs./spd/seals	21000/ spd/oil	23000/1 spd/oil	23000/1spd/oil
Cab to axle (CA) cm (in.)	200-230 (80-90)	200-230 (80-90)	200-230 (80-90)
Suspension, frt/rear, min, lbs	8000/21000	10000/23000	12000/23000
Frame, RBM, min, in-lb	890,000	1,100,000	1,600,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine Cyl/GHP/gross torque, min.	6-8/330/1050	6-8/350/1260	6/370/1350
Trans. type/speeds, min.	Auto/ 5 spd	Auto/ 5 spd	Auto/ 5 spd
Differential	Std	Std	Std
Brakes, type, w/ trailer brake controls	Full air	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Front shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless/min cap./tread (std.)	10R22.5 F/hwy	11 R22.5 F front/H rear hwy*	11R22.5H/hwy
Alternator, rating cap.	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal or vertical	Horizontal or vertical	Horizontal or vertical
Fuel tank, capacity, L (gal)	380(100)	380(100)	380(100)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex
Horn	Electric & air	Electric & air	Electric & air
fifth wheel, cm(in)	90(36) in dia w/forks	90(36) in dia w/forks	90(36) dia w/forks
Fifth wheel, cab to center line/ground HT, cm (in.)	160 (64)/122(48)±3(1)	160 (64)/122(48)±3(1)	160 (64)/122(48)±3(1)

NOTES: Extended warranty coverage may be available on these vehicles.
Refer to New Vehicle Guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; splash & stone guards; fan clutch, AM/FM radio; tachometer (if diesel); clearance lamps; power takeoff opening; seatbelts; cab heater & defroster; sliding fifth wheel, deck plate; hoses/wiring 110"; electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), day time running lights, anti-lock brake system, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

Note: Option Code OSW is only available to Military Agencies.

See Option Codes listing on pages 14 & 15.

TRUCK, TRACTOR - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2		
		REF.PARA.	522	523
OPTION CODES				
ENGINES				
YD11 DIESEL ENGINE MIN. 300 GHP, 860 LB/FT TORQUE TURBOCHARGED	3.4.1.1	A	N/A	N/A
YD30 DIESEL ENGINE MIN. 320 GHP, 1150 LB/FT TORQUE TURBOCHARGED	3.4.1.1	A	A	N/A
YD52 DIESEL ENGINE MIN. 350 GHP, 1260 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	S	A
YD53 DIESEL ENGINE MIN. 365 GHP, 1340 LB/FT TORQUE TURBOCHARGED	3.4.1.1	N/A	A	S
YD44 DIESEL ENGINE MIN. 410 GHP, 1450 LB/FT TORQUE TURBOCHARGED	3.4.1.1	N/A	N/A	A
ASI AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A
ECB ENGINE COMPRESSION BRAKE	3.4.11.4(B)	A	A	A
EH BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A
EHM ENGINE HOUR METER	3.4.2.2	A	A	A
EXB ENGINE EXHAUST BRAKE (not available with all makes and sizes of engines)	3.4.11.4(C)	A	A	N/A
FFP FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A
H4 COOLANT PROTECTION TO -50° C (-60° F)	3.4.1.7	A	A	A
SEH COLD WEATHER PACKAGE (INCLUDES SEH A, B, AND D)	3.4.1.9	A	A	A
SEHA COOLANT HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A
SEHB ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A
VES VERTICAL EXHAUST PIPE DIESEL ONLY	3.4.4	A	A	A
TRANSMISSION				
3000 AUTOMATIC TRANSMISSION, ALLISON MODEL MD 3000	3.4.5.1	S	A	N/A
4000 AUTOMATIC TRANSMISSION, ALLISON MODEL 4000 RDS	3.4.5.1	A	S	S
T10 MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	A	A	A
T1 INTEGRAL OUTPUT RETARDER (WITH AUTOMATIC TRANSMISSION)	3.4.11.4(D)	A	A	A
LST SYNTHETIC LUBE - MANUAL TRANSMISSION	3.4.31	A	A	A
TSTF SYNTHETIC LUBE - AUTOMATIC TRANSMISSION	3.4.31	A	A	A
AXLE, REAR				
ATC AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A
D1 DRIVER CONTROLLED DIFFERENTIAL LOCKOUT	3.4.9.2	A	A	A
D3 TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A
LSD SYNTHETIC LUBE - DIFFERENTIAL	3.4.31	A	A	A
SUSPENSION				
AUXS AUXILIARY REAR SPRINGS	3.4.8	A	A	A
SAR REAR AIR SUSPENSION	3.4.8.1	A	A	A
ELECTRICAL				
A14 ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A
AUXL AUXILIARY LIGHTS FOR CPR & CPR1	3.5.2.11	A	A	A
DRLD DAYTIME RUNNING LIGHTS - DELETE	3.4.25	A	A	A
VOL AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A
BODY AND CHASSIS				
CE EXTENDED CAB (CHASSIS MFG. MAY BE LIMITED)	3.4.12	A	A	A
SLP1 SLEEPER CAB	3.4.12.4	A	A	A
FTR TAPERED FRAME RAILS	3.4.7	A	A	A
EXTERIOR				
RM3 MOTORIZED RIGHT SIDE MIRROR (INCLUDES RM4)	3.4.20	A	A	A
RM4 HEATED FLAT MIRRORS	3.4.20	A	A	A
SRP RUSTPROOFING	3.1.1.3	A	A	A
INTERIOR				
DA DELETE AIR CONDITIONING	3.4.10	A	A	A
DSS DRIVER SUSPENSION SEAT (MECHANICAL ON HYD. BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A

TRUCK, TRACTOR - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2		
OPTION CODES	REF.PARA.	522	523	524
INTERIOR (CONTINUED)				
DSS2 DRIVER SEAT AND PASSENGER SEAT CONFORMING TO DSS	3.4.12.1	A	A	A
RACS RADIO, WITH INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A
RAD RADIO, WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A
SK METRIC ODOMETER	3.4.19	A	A	A
FUEL				
FTD FUEL TANKS, MIN 100 GAL TOTAL CAPACITY	3.4.3.2	S	S	S
FTE DUAL 100 GAL FUEL TANKS	3.4.3.2	A	A	A
FES HEATED FUEL/WATER SEPARATOR	3.4.1.9.1	A	A	A
FJP AVIATION JET FUEL COMPATIBILITY WITH DIESEL ENGINE	3.4.1.1	A	A	A
SEHC IN-LINE FUEL WARMER	3.4.1.9	A	A	A
SEHD IN-TANK FUEL WARMER	3.4.1.9	A	A	A
SEHE IN-LINE FUEL WARMER (ELECTRICAL)	3.4.1.9	A	A	A
SAFETY				
BUA BACKUP ALARM	3.4.23	A	A	A
FEX EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A
TIRES AND WHEELS				
SLP LOW PROFILE TIRES	3.4.10.1	A	A	A
HF WIDE BASE SINGLE TIRES & WHEELS	3.4.10	A	A	A
MS MUD & SNOW TREAD TIRES (REAR AXLE)	3.4.10.1	A	A	A
AICE AUTOMATIC TIRE CHAINS	3.4.10.5	A	A	A
STA SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A
STB SPARE TIRE ASSEMBLY (REAR AXLE)	3.4.10.3	A	A	A
VMS VERTICAL MOUNT SPARE TIRE CARRIER (64 in. fifth wheel clearance required)	3.4.10.2	A	A	A
TOWING				
TTP TRAILER TOWING PKG	3.1.1.8	A	A	A
PH PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A
MTL TRAILER LIGHTING CABLE (Not Required, unless TTP is Specified)	3.1.1.8	A	A	A
TBE ELECTRIC BRAKE CONTROLLER	3.1.1.9	A	A	A
TBT BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	A	A	A
MISCELLANEOUS				
ARW AIR SLIDE 5TH WHEEL (N/A w/OSW)	3.5.2.7	A	A	A
OSW OSCILLATING 5TH WHEEL (MILITARY ONLY)	3.5.2	A	A	A
ATR AIR TRANSPORTABILITY (INCLUDES LTD)	3.1.1.21	A	A	A
HTR HIGHWAY TRANSPORTABILITY	3.1.1.21.2	A	A	A
MTR MARINE TRANSPORTABILITY	3.1.1.21.4	A	A	A
RTR RAIL TRANSPORTABILITY	3.1.1.21.3	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.21.5	A	A	A
TDN TIEDOWN PROVISIONS	3.1.1.21.6	A	A	A
BTC TOOL COMPARTMENT	3.1.1.14	A	A	A
CPR CAB PROTECTION RACK	3.5.2.11	A	A	A
CPR1 CAB PROTECTION RACK	3.5.2.11	A	A	A
EDR DRIVELINE RETARDER	3.4.11.4 (A)	A	A	A
MIL MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A
PSM PARTS AND SERVICE MANUAL(S) PRINTED	6.6	A	A	A
PSME PARTS AND SERVICE MANUAL(S) ELECTRONIC	6.6	A	A	A
PSM2 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A
PSM3 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A
TJ TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A
TWD TRACTOR WIND DEFLECTOR	3.5.2.8	A	A	A
XP EXPORT PACKAGING	5.1	A	A	A
PAINT				
CPT CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A
TP TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A
WLP WHEELS PAINTED SAME COLOR AS CAB	3.1.1.1	A	A	A

TABLE 3

4X2 TRUCK, STAKE, WITH CAB, 2 DOORS (See paragraph 3.5.3)

ITEM NO. TYPE/CLASS	434 III/C	531 III/D	533 III/F
MINIMUM REQUIREMENTS			
Payload (approx. range) kg (lbs)	5200 (11,000)	7300 (13,000)	9500 (18,500)
Style, cab/tilt hood	Conv/2 Doors	Conv/2 Doors	Conv/2 Doors
GVWR/GCWR	21000/26000	25500/33000	33000/50000
Curb weight, approx. base kg (lb)	4300(10,000)	4500 (11,500)	5000 (13,000)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	10000 ¹ /oil
Axle, min rear rating, lbs/spd/seals	15000/1 spd/oil	17500/1 spd/oil	23000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	10000/23000 ¹
Cab to axle (CA), in.	As required	As required	As required
Frame, RBM, min, in-lb	440,000	475,000	800,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine cyl/ghp/gross torque, min	6-8/200/520	6-8/210/605	6-8/230/660
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential	std	std	std
Brakes, type	Hyd/power	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Aux rear/Front shocks	Aux rear/Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless, min cap/tread (std)	9R22.5F/hwy	10R22.5F/hwy	11R22.5G ¹ /hwy
Alternator, rating cap. (H.D.)	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	170 (45)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex
Horn	Electric	Electric & air	Electric & air
Body, length x width, m (ft) (+0")	4.9 (16)x2.4 (8)	5.5 (18)x2.4 (8)	6.6 (22)x2.4 (8)
Body floor platform	Wood	Wood	Wood

1. Class F alternate minimum axle and suspension rating, front/rear, lb - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to New Vehicle Guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), day time running lights, anti-lock brake system on air brake vehicles, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine, and throttle control, (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 18 & 19.

TABLE 3

4X4 TRUCK, STAKE, WITH CAB, 2 DOORS (See paragraph 3.5.3)

ITEM NO. TYPE/CLASS	732 III/D	734 III/F
MINIMUM REQUIREMENTS		
Payload (approx. range) kg (lbs)	6800 (12,000)	9100 (17,500)
Style, cab/tilt hood	Conv/2 Doors	Conv/2 Doors
GVWR/GCWR	25500/33000	33000/50000
Curb weight, approx. base kg (lb)	4000 (13,000)	5400 (14,000)
Axle, min frt rating, lbs/seals	8000/grease	12000 ¹ /grease/oil
Axle, min rear rating, lbs/spd/seals	17500/ 1 spd/oil	21000 ¹ / 1 spd/oil
Suspension, frt/rear, min, lbs	8000/17500	12000/21000 ¹
Cab to axle (CA), in.	As required	As required
Frame, RBM, min, in-lb	620,000	800,000
Engine, type	diesel, turbo	diesel, turbo
Engine cyl/GHP/gross torque, min	6-8/210/605	6-8/230/660
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd
Differential	Std	Std
Brakes, type	Full air	Full air
Steering	Power	Power
Springs/shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc
Tires, tubeless, min cap/tread (std)	10R22.5 G/ST-00	11R22.5G ¹ /AT-00
Alternator, rating cap. (H.D.)	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex
Horn	Electric & air	Electric & air
Body, length x width, m (ft)	6 (20) x 2.4 (8)	6 (20) x 2.4 (8)
Body floor platform	Wood	Wood

1. Class F alternate minimum axle and suspension rating, front/rear, lb - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shut-down (if diesel), day time running lights, anti-lock brake system, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 18 & 19.

TRUCK, STAKE - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2			4X4		
		REF.PARA	434	531	533	732	734
ENGINES							
YD38	DIESEL ENGINE MIN 175 GHP, 420 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	N/A	N/A	A	N/A
YD2	DIESEL ENGINE MIN 190 GHP, 520 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	N/A	A	N/A
YD3	DIESEL ENGINE MIN 210 GHP, 605 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	S	A	S	A
YD4	DIESEL ENGINE MIN 230 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	A	S	A	S
YD39	DIESEL ENGINE MIN 250 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	A	N/A	A
E5	V8 OEM GAS ENGINE	3.4.1.2	A	A	A	A	A
CNG	COMPRESSED NATURAL GAS ENGINE	3.4.1.2	A	A	A	A	A
AS1	AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A	A	A
EH	BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A	A	A
EHM	ENGINE HOUR METER	3.4.2.2	A	A	A	A	A
EXB	ENGINE EXHAUST BRAKE (FOR DIESEL ONLY)(not available with all makes and sizes of engines)	3.4.11.4C	A	A	A	A	A
H4	COOLANT PROTECTION TO -50° C (-60° F)	3.4.1.7	A	A	A	A	A
SEH	COLD WEATHER PACKAGE (INCLUDES SEH A, B, AND D)	3.4.1.9	A	A	A	A	A
SEHA	COOLANT HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A
SEHB	ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A
SKS	SPARK ARRESTER, EXHAUST SYSTEM (W/GASOLINE ENGINES ONLY)	3.4.4.1	A	A	A	A	A
TRANSMISSION							
2200	AUTOMATIC TRANSMISSION, ALLISON MODEL 2200 RDS (N/A W/YD3, YD4 OR YD39)	3.4.5.1	S	A	N/A	A	N/A
2500	AUTOMATIC TRANSMISSION, ALLISON MODEL 2500 RDS (N/A W/YD3, YD4 OR YD39)	3.4.5.1	A	A	N/A	A	N/A
3000	AUTOMATIC TRANSMISSION, ALLISON MODEL 3000 RDS	3.4.5.1	A	S	S	S	S
3500	AUTOMATIC TRANSMISSION, ALLISON MODEL 3500 RDS	3.4.5.1	A	A	A	A	A
T1	INTEGRAL OUTPUT RETARDER (WITH AUTOMATIC TRANSMISSION 3000 SERIES OR LARGER)	3.4.11.4(D)	A	A	A	A	A
T5	MANUAL TRANSMISSION 5 SPD MIN	3.4.5.2	A	A	N/A	A	N/A
T6	MANUAL TRANSMISSION 6 SPD MIN	3.4.5.2	A	A	N/A	A	N/A
T7	MANUAL TRANSMISSION 7 SPD MIN	3.4.5.2	A	A	A	A	A
T10	MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	A	A	A	A	A
LST	SYNTHETIC LUBE - MANUAL TRANSMISSION	3.4.31	A	A	A	A	A
TSTF	SYNTHETIC LUBE - AUTOMATIC TRANSMISSION	3.4.31	A	A	A	A	A
AXLE, REAR							
ATC	AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A	A	A
D1	DRIVER CONTROLLED DIFFERENTIAL LOCKOUT	3.4.9.2	N/A	A	A	A	A
D3	TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A	A	A
LSD	SYNTHETIC LUBE - DIFFERENTIAL	3.4.31	A	A	A	A	A
SUSPENSION							
AUXS	AUX REAR SPRINGS	3.4.8	A	A	A	A	A
SAR	REAR AIR SUSPENSION	3.4.8.1	N/A	A	A	N/A	N/A
ELECTRICAL							
A14	ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A	A	A
DRLD	DAYTIME RUNNING LIGHTS - DELETE	3.4.2.4	A	A	A	A	A
VOL	AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A	A	A
BODY AND CHASSIS							
COE	TILT CAB	3.4.12	A	A	A	N/A	N/A
CC	CREW CAB	3.4.12.2	A	A	A	A	A
CE	EXTENDED CAB	3.4.12	A	A	A	A	A
B12	BODY 12 FT	3.5.3	A	A	A	A	A
B14	BODY 14 FT	3.5.3	A	A	A	A	A
B16	BODY 16 FT	3.5.3	S	A	A	A	A
B18	BODY 18 FT	3.5.3	A	S	A	A	A
B20	BODY 20 FT	3.5.3	A	A	A	S	S
B22	BODY 22 FT	3.5.3	A	A	S	N/A	N/A
BBS	BULKHEAD FRNT, SOLID STEEL W/SCREEN ILO FRONT RACKS	3.5.3.6	A	A	A	A	A
BCS	CARGO BODY (OPEN TOP)	3.5.3.11	A	A	A	A	A
BDF	FLOOR, 1/8 IN DIAMOND TREAD STEEL	3.5.3.3.2	A	A	A	A	A
BDF2	FLOOR, 3/16 IN DIAMOND TREAD STEEL	3.5.3.3.2	A	A	A	A	A
BDF3	FLOOR, APITONG WOOD	3.5.3.3.1	A	A	A	A	A
BDF4	FLOOR, RECYCLED MATERIAL (RUBBER AND PLASTIC)	3.5.3.3.3	A	A	A	A	A
BDS	DUMP STAKE & PLATFORM	3.5.3.9	A	A	A	A	A
BSF	SMOOTH STEEL FLOOR 1/8 IN	3.5.3.3.2	A	A	A	A	A
BSF2	SMOOTH STEEL FLOOR 3/16 IN	3.5.3.3.2	A	A	A	A	A
BSR	SWING R&L SIDE CTR RACKS	3.5.3	A	A	A	A	A
BTB	TARPAULIN, BOWS & TIES 70 IN HEIGHT	3.5.3.10	A	A	A	A	A
DBEM	DELETE SIDE & END RACKS and Add BBS	3.5.3.6	A	A	A	A	A
FFE	FRONT FRAME EXTENSION	3.4.7	A	A	A	A	A
FHD	HEAVY DUTY FRAME	3.4.7	A	A	A	A	A
LED	LIGHT EMITTING DIODE LIGHTS	3.4.2.4	A	A	A	A	A
STF	STAGGERED FRAME	3.1.1.16	N/A	N/A	N/A	A	A

TRUCK, STAKE - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2			4X4	
OPTION CODES	REF.PARA	434	531	533	732	734
EXTERIOR						
HTG HYD TAILGATE, FOLD UP (N/A WITH CODE TTP)	3.1.1.11.1	A	A	A	A	A
HTGC HYD TAILGATE, CART-STOP	3.1.1.11	A	A	A	A	A
HTGU HYD TAILGATE, FOLD UNDER (N/A WITH CODE TTP)	3.1.1.11.2	A	A	A	A	A
HTGX HYD TAILGATE, EXTRA CAPACITY (N/A WITH CODE TTP)	3.1.1.11	A	A	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.22	A	A	A	A	A
MPP SNOWPLOW POWER ANGLING	3.5.4.8.2.2	A	A	A	A	A
MPR SNOWPLOW PROVISIONS	3.5.4.8.1	A	A	A	A	A
MPS SNOWPLOW, REVERSIBLE TYPE	3.5.4.8.2.1	A	A	A	A	A
RM3 MOTORIZED RIGHT SIDE MIRROR (INCLUDES RM4)	3.4.20	A	A	A	A	A
RM4 HEATED FLAT MIRRORS	3.4.20	A	A	A	A	A
SRP RUSTPROOFING	3.1.1.3	A	A	A	A	A
INTERIOR						
DA DELETE AIR CONDITIONING	3.4.25	A	A	A	A	A
DSS DRIVER SUSPENSION SEAT (MECHANICAL ON HYD. BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A	A	A
DSS2 DRIVER SEAT AND PASSENGER SEAT CONFORM TO DSS	3.4.12.1	A	A	A	A	A
RACS INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A	A	A
RAD RADIO, WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A	A	A
SK METRIC ODOMETER	3.4.19	A	A	A	A	A
FUEL						
FTC FUEL TANKS, MIN 70 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A
FTD FUEL TANKS, MIN 100 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A
FFP FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A	A	A
FFS HEATED FUEL/WATER SEPARATOR	3.4.1.9.1	A	A	A	A	A
FJP AVIATION JET FUEL COMPATIBILITY WITH DIESEL ENGINE	3.4.1.1	A	A	A	A	A
SEHC IN-LINE FUEL WARMER	3.4.1.9	A	A	A	A	A
SEHD IN-TANK FUEL WARMER	3.4.1.9	A	A	A	A	A
SEHE IN-LINE FUEL WARMER (ELECTRICAL)	3.4.1.9	A	A	A	A	A
SAFETY						
FEX EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A	A	A
TIRES AND WHEELS						
SLP LOW PROFILE TIRES	3.4.10.1	A	A	A	A	A
MS MUD & SNOW TREAD TIRES (REAR AXLE)	3.4.10.1	A	A	A	S	S
AICE AUTOMATIC TIRE CHAINS	3.4.10.5	N/A	A	A	A	A
STA SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A	A	A
STB SPARE TIRE ASSEMBLY (REAR AXLE)	3.4.10.4	A	A	A	A	A
STC CARRIER SPARE TIRE	3.4.10.2	A	A	A	A	A
VMS VERTICAL MOUNT SPARE TIRE CARRIER	3.4.10.2	A	A	A	A	A
TOWING						
TTP TRAILER TOWING PKG	3.1.1.8	A	A	A	A	A
PH PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A	A	A
MTL TRAILER LIGHTING CABLE	3.1.1.8	A	A	A	A	A
RTH REAR TOW HOOKS (N/A W/TTP OR PH)	3.1.1.6	A	A	A	A	A
TBE ELECTRIC BRAKE CONTROLLER	3.1.1.9	A	A	A	A	A
TBT BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	N/A	A	A	A	A
MISCELLANEOUS						
ATR AIR TRANSPORTABILITY (INCLUDES LTD)	3.1.1.21	A	A	A	A	A
HTR HIGHWAY TRANSPORTABILITY	3.1.1.21.2	A	A	A	A	A
MTR MARINE TRANSPORTABILITY	3.1.1.21.4	A	A	A	A	A
RTR RAIL TRANSPORTABILITY	3.1.1.21.3	A	A	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.21.5	A	A	A	A	A
TDN TIEDOWN PROVISIONS	3.1.1.21.6	A	A	A	A	A
EDR DRIVELINE RETARDER	3.4.11.4(A)	A	A	A	A	A
EPH PLACARD HOLDERS PLATES	3.4.29	A	A	A	A	A
MHW FRONT MOUNTED WINCH	3.4.27	A	A	A	A	A
MIL MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A	A	A
PSM PARTS AND SERVICE MANUAL (S) PRINTED	6.6	A	A	A	A	A
PSME PARTS AND SERVICE MANUALS ELECTRONIC	6.6	A	A	A	A	A
PSM2 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A
PSM3 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A
PTS POWER OPERATED PTO ENGAGEMENT (N/A W/MAN. TRANS.)	3.4.5.3	A	A	A	A	A
SAC MATERIAL HANDLING CRANE	3.5.3.8	A	A	A	A	A
TJ TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A	A	A
TSW LOAD SECURING STRAPS AND STORABLE WINCH BINDERS	3.5.3.12	A	A	A	A	A
XP EXPORT PACKAGING	5.1	A	A	A	A	A
PAINT						
CPT CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A	A	A
TP TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A	A	A
WLP WHEELS PAINTED SAME COLOR AS CAB	3.1.1.1	A	A	A	A	A

TABLE 4

4X2 TRUCK, DUMP, WITH CAB, 2 DOORS (See paragraph 3.5.4)

ITEM NO. TYPE/CLASS	444 IV/C	541 IV/D MINIMUM REQUIREMENTS	543 IV/F	544 IV/G
Payload (approx. range) kg (lbs.)	5000 (10,000)	6800 (13,500)	8600 (18,000)	9500 (20,000)
Style, cab/tilt hood	Conv/2 doors	Conv/2 doors	Conv/2 doors	Conv/2 doors
GVWR/GCWR	21000/26000	25500/30000	33000/50000	35000/55000
Curb weight, approx. base, kg (lbs)	4550 (11,000)	5000 (12,500)	5900 (14,000)	6300(15,000)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	12000 ¹ /oil	12000/oil
Axle, min rear rating, lbs/spd/seals	15000/1spd/oil	17500/1spd/oil	21000 ¹ /1spd/oil	23000/1spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	12000/21000 ¹	12000/23000
Cab to axle (CA), in.	As reqd.	As reqd.	As reqd.	As reqd.
Frame, RBM, min, in-lb	590,000	850,000	1,300,000	1,600,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine Cyl/GHP/gross torque, min	6-8/200/520	6-8/210/605	6-8/230/660	4-6/250/660
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential, type	Standard	Standard	Standard	Standard
Brakes, type	Hyd/power	Full air	Full air	Full air
Steering	Power	Power	Power	Power
Springs/shocks	Aux rear/Front shocks	Aux rear/Front shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc	Disc
Tires, tubeless, min cap/tread frt/rear	9R22.5F/hwy	10R22.5F/hwy	11R22.5G ¹ /hwy	11R22.5H/hwy
Alternator, rating cap. (H.D.)	130 amp	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L(gal)	170(45)	170(45)	170(45)	170(45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex	Flat & convex
Horn	Electric	Electric & air	Electric & air	Electric & air
Body, dump cap, m ³ (yd ³)/ L & W, m (in), min	2.7 (3.5)/ 2.4 (96) x2.1 (84)	3.1 (4)/ 2.75 (108) x2.1 (84)	4.6 (6)/ 3 (120) x2.1 (84)	4.6 (6)/ 3 (120) x2.1 (84)
Cab protector, cm (in)/hoist rating	60 (23)/ class 40	60 (23)/ class 40	60 (23)/ class 50	60 (23)/ class 60

1. Class F alternate minimum axle and suspension rating, front/rear, lb - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; splash & stone guards, fan clutch, AM/FM radio; tachometer (if diesel); clearance lamps; power takeoff opening; seatbelts; variable speed hoist control; dump body safety lock; cab heater & defroster; backup alarm; electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), traction control, day time running lights, anti-lock brake system on air brake vehicles, hub piloted wheels, rear tires to be Goodyear G244 MSD, Michelin XDE M/S or equal, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), intermittent windshield wipers, and dump bed cover.

See Option Codes listing on pages 22 & 23.

TABLE 4

4X4 TRUCK, DUMP, WITH CAB, 2 DOORS (See paragraph 3.5.4)

ITEM NO. TYPE/CLASS	742 IV/D	744 IV/F	745 IV/G
	MINIMUM REQUIREMENTS		
Payload (approx. range) kg (lbs.)	6400 (12,500)	8200 (17,000)	9100 (18,500)
Style, cab/tilt hood	Conv/2 doors	Conv/2 doors	Conv/ 2 doors
GVWR/GCWR	25500/30000	33000/50000	35000/55000
Curb weight, approx. base, kg (lbs)	4600 (13,000)	6400 (15,000)	6600 (16,500)
Axle, min frt rating, lbs/seals	8000/grease	12000 ¹ /grease/oil	12000/grease/oil
Axle, min rear rating, lbs/spd/seals	17500/1 spd/oil	21000/1 spd/oil	23000/1 spd/oil
Suspension, frt/rear, min, lbs	8000/17500	12000/21000 ¹	12000/23000
Cab to axle (CA), in.	As reqd.	As reqd.	As reqd.
Frame, RBM, min, in-lb	890,000	1,300,000	1,600,000
Engine, type	diesel, turbo	diesel, turbo	Diesel, turbo
Engine Cyl/GHP/gross torque, min	6-8/210/605	6-8/230/660	6/250/660
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential, type	Standard	Standard	Standard
Brakes, type	Full air	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Front shocks	Front shocks	Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless, min cap/tread (std)	10R22.5G/AT-00	11R22.5G ¹ /AT-00	11R22.5H/AT-00
Alternator, rating cap. (H.D.)	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L(gal)	170(45)	170(45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex
Horn	Electric & air	Electric & air	Electric & air
Body, dump cap, m ³ (yd ³)/ L & W, m (in),min	3.8 (5)/ 3 (120) x 2.1 (84)	4.6 (6)/ 3 (120) x 2.1 (84)	4.6 (6)/ 3 (120) x 2.1 (84)
Cab protector, cm (in)/hoist rating	60 (23)/class 40	60 (23)/class 50	60 (23)/class 60

1. Class F alternate minimum axle and suspension rating, front/rear, lb - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; splash & stone guards, fan clutch, AM/FM radio; tachometer (if diesel); clearance lamps; power takeoff opening; seatbelts; variable speed hoist control; dump body safety lock; cab heater & defroster; backup alarm; electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), traction control, day time running lights, anti-lock brake system, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine, throttle control (if diesel), intermittent windshield wipers, and dump bed cover.

See Option Codes listing on pages 22 & 23.

TRUCK, DUMP - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2				4X4			
		REF.PARA	444	541	543	544	742	744	745
ENGINES									
YD38	DIESEL ENGINE MIN 175 GHP, 420 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	N/A	N/A	N/A	N/A	N/A	N/A
YD2	DIESEL ENGINE MIN 190 GHP, 520 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	N/A	N/A	A	N/A	N/A
YD3	DIESEL ENGINE MIN 210 GHP, 605 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	S	A	A	S	A	A
YD4	DIESEL ENGINE MIN 230 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	A	S	N/A	A	S	N/A
YD39	DIESEL ENGINE MIN 250 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	A	S	N/A	A	S
YD31	DIESEL ENGINE MIN 275 GHP, 800 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	N/A	A	N/A	N/A	A
E5	V8 OEM GAS ENGINE	3.4.1.2	A	A	A	A	A	A	A
CNG	COMPRESSED NATURAL GAS ENGINE	3.4.1.2	A	A	A	A	A	A	A
ASI	AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A	A	A	A	A
ECB	ENGINE COMPRESSION BRAKE (not available with all makes and sizes of engines)	3.4.11.4(B)	A	A	A	A	A	A	A
EH	BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A	A	A	A	A
EHM	ENGINE HOUR METER	3.4.2.2	A	A	A	A	A	A	A
EXB	ENGINE EXHAUST BRAKE (not available with all makes and sizes of engines)	3.4.11.4(C)	A	A	A	A	A	A	A
FFP	FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A	A	A	A	A
FJP	AVIATION JET FUEL COMPATIBILITY WITH DIESEL ENGINE	3.4.1.1	A	A	A	A	A	A	A
H4	COOLANT PROTECTION TO -50° C (-60° F)	3.4.1.7	A	A	A	A	A	A	A
SEH	COLD WEATHER PACKAGE (INCLUDES SEH A, B, AND D)	3.4.1.9	A	A	A	A	A	A	A
SEHA	COOLANT HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A	A
SEHB	ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A	A
SKS	SPARK ARRESTER, EXHAUST SYSTEM (W/GASOLINE ENGINES ONLY)	3.4.4.1	A	A	A	A	A	A	A
VES	VERTICAL EXHAUST PIPE DIESEL ONLY	3.4.4	A	A	A	A	A	A	A
TRANSMISSION									
2500	AUTOMATIC TRANSMISSION, ALLISON MODEL 2500 RDS	3.4.5.1	A	A	N/A	N/A	A	N/A	N/A
2200	AUTOMATIC TRANSMISSION, ALLISON MODEL 2200 RDS	3.4.5.1	S	N/A	N/A	N/A	N/A	N/A	N/A
3500	AUTOMATIC TRANSMISSION, ALLISON MODEL 3500 RDS	3.4.5.1	A	S	S	S	S	S	S
T1	INTEGRAL OUTPUT RETARDER (WITH AUTOMATIC TRANSMISSION 3000 SERIES OR LARGER ONLY)	3.4.11.4(D)	A	A	A	A	A	A	A
T6	MANUAL TRANSMISSION 6 SPD MIN	3.4.5.2	A	A	N/A	N/A	A	A	A
T7	MANUAL TRANSMISSION 7 SPD MIN	3.4.5.2	A	A	A	N/A	A	A	A
T10	MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	A	A	A	A	N/A	A	A
LST	SYNTHETIC LUBE - MANUAL TRANSMISSION	3.4.31	A	A	A	A	A	A	A
TSTF	SYNTHETIC LUBE - AUTOMATIC TRANSMISSION	3.4.31	A	A	A	A	A	A	A
AXLE, REAR									
ATC	AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A	A	A	A	A
D1	DRIVER CONTROLLED DIFFERENTIAL LOCKOUT	3.4.9.2	N/A	A	A	A	A	A	A
D3	TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A	A	A	A	A
LSD	SYNTHETIC LUBE - DIFFERENTIAL	3.4.31	A	A	A	A	A	A	A
SUSPENSION									
AUXS	AUX REAR SPRINGS	3.4.8	A	A	A	A	A	A	A
ELECTRICAL									
A14	ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A	A	A	A	A
DRLD	DAYTIME RUNNING LIGHTS - DELETE	3.4.2.4	A	A	A	A	A	A	A
LED	LIGHT EMITTING DIODE LIGHTS	3.4.2.4	A	A	A	A	A	A	A
VOL	AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A	A	A	A	A
BODY AND CHASSIS									
CC	CREW CAB	3.4.12.2	A	A	A	A	A	A	A
CE	EXTENDED CAB	3.4.12	A	A	A	A	A	A	A
DHD	HEAVY DUTY BODY	3.5.4.1	A	A	A	A	A	A	A
FFE	FRONT FRAME EXTENSION	3.4.7	A	A	A	A	A	A	A
UN	NESTED UNDERSTRUCTURE	3.5.4.4.2	A	A	A	A	A	A	A
EXTERIOR									
ART	AIR RELEASE TAILGATE	3.5.4.3	N/A	A	A	A	A	A	A
DBC	DELETE DUMP BED COVER	3.5.4.10	A	A	A	A	A	A	A
LTD	LIFTING & TIEDOWN PROVISIONS	3.1.1.22	A	A	A	A	A	A	A
MPP	SNOWPLOW POWER ANGLING	3.5.4.8.2.2	A	A	A	A	A	A	A
MPR	SNOWPLOW PROVISIONS	3.5.4.8.1	A	A	A	A	A	A	A

TRUCK, DUMP - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2				4X4		
OPTION CODES	REF.PARA	444	541	543	544	742	744	745
EXTERIOR (CONTINUED)								
MPS SNOWPLOW, REVERSIBLE TYPE	3.5.4.8	A	A	A	A	A	A	A
NAS SAND & SALT SPREADER TAILGATE	3.5.4.9	A	A	A	A	A	A	A
RM3 MOTORIZED RIGHT SIDE MIRROR (INCLUDES RM4)	3.4.20	A	A	A	A	A	A	A
RM4 HEATED FLAT MIRRORS	3.4.20	A	A	A	A	A	A	A
SRP RUSTPROOFING	3.1.1.3	A	A	A	A	A	A	A
INTERIOR								
DA DELETE AIR CONDITIONING	3.4.25	A	A	A	A	A	A	A
DSS DRIVER SUSPENSION SEAT (MECHANICAL ON HYD. BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A	A	A	A	A
DSS2 DRIVER SEAT AND PASSENGER SEAT CONFORMS TO DSS	3.4.12.1	A	A	A	A	A	A	A
RACS INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A	A	A	A	A
RAD RADIO, WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A	A	A	A	A
SK METRIC ODOMETER	3.4.19	A	A	A	A	A	A	A
FUEL								
FTC FUEL TANKS, MIN 70 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A	A	A
FTD FUEL TANKS, MIN 100 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A	A	A
FFS HEATED FUEL/WATER SEPARATOR	3.4.1.9.1	A	A	A	A	A	A	A
SEHC IN-LINE FUEL WARMER	3.4.1.9	A	A	A	A	A	A	A
SEHD IN-TANK FUEL WARMER	3.4.1.9	A	A	A	A	A	A	A
SEHE IN-LINE FUEL WARMER (ELECTRICAL)	3.4.1.9	A	A	A	A	A	A	A
SAFETY								
BUA BACKUP ALARM	3.4.23	S	S	S	S	S	S	S
FEX EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A	A	A	A	A
TIRES AND WHEELS								
SLP LOW PROFILE TIRES	3.4.10.1	A	A	A	A	A	A	A
AICE AUTOMATIC TIRE CHAINS	3.4.10.5	N/A	A	A	A	A	A	A
CTIS CENTRAL TIRE INFLATION SYSTEM	3.1.1.20	N/A	A	A	A	A	A	A
STA SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A	A	A	A	A
STB SPARE TIRE ASSEMBLY (REAR AXLE)	3.4.10.4	A	A	A	A	A	A	A
VMS VERTICAL MOUNT SPARE TIRE CARRIER	3.4.10.2	A	A	A	A	A	A	A
TOWING								
TTP TRAILER TOWING PKG	3.1.1.8	A	A	A	A	A	A	A
RTH REAR TOW HOOKS (N/A W/TTP OR PH)	3.1.1.6	A	A	A	A	A	A	A
PH PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A	A	A	A	A
MTL TRAILER LIGHTING CABLE	3.1.1.8	A	A	A	A	A	A	A
TBE ELECTRIC BRAKE CONTROLLER	3.1.1.9	A	A	A	A	A	A	A
TBT BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	N/A	A	A	A	A	A	A
MISCELLANEOUS								
ATR AIR TRANSPORTABILITY (INCLUDES LTD)	3.1.1.21	A	A	A	A	A	A	A
HTR HIGHWAY TRANSPORTABILITY	3.1.1.21.2	A	A	A	A	A	A	A
MTR MARINE TRANSPORTABILITY	3.1.1.21.4	A	A	A	A	A	A	A
RTR RAIL TRANSPORTABILITY	3.1.1.21.3	A	A	A	A	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.21.5	A	A	A	A	A	A	A
TDN TIEDOWN PROVISIONS	3.1.1.21.6	A	A	A	A	A	A	A
BTC TOOL COMPARTMENT	3.1.1.14	A	A	A	A	A	A	A
EDR DRIVELINE RETARDER	3.4.11.4(A)	A	A	A	A	A	A	A
FPH PLACARD HOLDERS PLATES	3.4.29	A	A	A	A	A	A	A
MHW FRONT MOUNTED WINCH	3.4.27	A	A	A	A	A	A	A
MIL MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A	A	A	A	A
NSP SKID-MOUNTED SAND & SALT SPREADER WITH HOPPER	3.5.4.9	A	A	A	A	A	A	A
PSM PARTS AND SERVICE MANUAL(S) PRINTED	6.6	A	A	A	A	A	A	A
PSME PARTS AND SERVICE MANUAL(S) ELECTRONIC	6.6	A	A	A	A	A	A	A
PSM2 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A	A	A
PSM3 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A	A	A
PTS POWER OPERATED PTO ENGAGEMENT (N/A W/MAN. TRANS)	3.4.5.3	A	A	A	A	A	A	A
TJ TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A	A	A	A	A
XP EXPORT PACKAGING	5.1	A	A	A	A	A	A	A
PAINT								
CPT CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A	A	A	A	A
TP TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A	A	A	A	A
WLP WHEELS PAINTED SAME COLOR AS CAB	3.1.1.1	A	A	A	A	A	A	A

TABLE 6

4X2 TRUCK, MAINTENANCE/LINE BODY, WITH CAB, 2 DOORS (See paragraph 3.5.6)			
ITEM NO.	464	561	563
TYPE/CLASS	V/C	V/D	V/F
MINIMUM REQUIREMENTS			
Payload (approx. w/ body) kg (lbs)	5700 (11,000)	7700 (13,500)	10000 (19,500)
Style, cab/tilt hood	Conv. 2 doors	Conv. 2 doors	Conv. 2 doors
GVWR/GCWR, lbs	21000/26000	25500/30000	33000/50000
Curb weight, approx. base, kg (lbs)	3,400 (10,000)	3,600 (11,000)	4,000 (12,500)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	12000 ¹ /oil
Axle, min rear rating, lbs/spd/seals	15000/1 spd/oil	17500/1 spd/oil	21000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	12000/21000 ¹
Cab to axle (CA)	Optional	Optional	Optional
Frame, RBM, min, in-lb	440,000	475,000	800,000
Engine, type	diesel, turbo	diesel, turbo	diesel, turbo
Engine cyl/GHP/gross torque, min.	6-8/200/520	6-8/210/605	6-8/230/660
Trans. type/speeds, min.	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential	Std	Std	Std.
Brakes, type	Hyd/power	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Aux rear/Front shocks	Aux rear/Front shocks	Aux rear/Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless/min cap/tread (std.)	9R22.5F/ hwy	10R22.5F/ hwy	11R22.5G ¹ / hwy
Alternator, rating cap., min	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	170 (45)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex
Horn	Electric	Electric & air	Electric & air
Body, length x width x cabinet height, M (FT)	3 (10) x2.4 (7.7) x1.2 (4)	3.3 (11) x2.4 (7.7) x1.2 (4)	4.2 (14) x2.4 (7.7) x1.2 (4)

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shut-down (if diesel), daytime running lights, anti-lock brake system on air brake vehicles, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control, (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 26 & 27.

TABLE 6

4X4 TRUCK, MAINTENANCE/LINE BODY, WITH CAB, 2 DOORS (Ssee paragraph 3.5.6)

ITEM NO. TYPE/CLASS	762 V/D	764 V/F
MINIMUM REQUIREMENTS		
Payload (approx. w/body) kg (lbs)	7300 (12,000)	9,500 (18,000)
Style, cab/tilt hood	Conv. 2 doors	Conv. 2 doors
GVWR/GCWR, lbs	25500/30000	33000/50000
Curb weight, approx. base, kg (lbs)	3200 (13,000)	4,500 (13,500)
Axle, min frt rating, lbs/seals	8000/grease	12000 ¹ /grease/oil
Axle, min rear rating, lbs/spd/seals	17500/1 spd/oil	21000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	8000/17500	12000/21000 ¹
Cab to axle (CA)	Optional	Optional
Frame, RBM, min, in-lb	620,000	800,000
Engine, type	Diesel, turbo	Diesel, turbo
Engine cyl/GHP/gross torque, min.	6-8/210/605	6-8/230/660
Transmission type/speeds, min.	Auto/5 spd	Auto/5 spd
Differential	Std	Std
Brakes, type	Full air	Full air
Steering	Power	Power
Springs/shocks	Aux. Rear, Front shocks	Aux. Rear, Front shocks
Wheels, type w/ dual rear	Disc	Disc
Tires, tubeless/min cap/tread (std.)	10R22.5G/AT-00	11R22.5G ¹ /AT-00
Alternator, rating cap., min	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540
Cooling and indicators	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	(170) 45	170 (45)
Mirrors, dual	Flat & convex	Flat & convex
Horn	Electric & air	Electric & air
Body, length x width x cabinet height, M (FT)	3.3 (11) x 2.4 (7.7) x 1.2 (4)	3.6 (12) x 2.4 (7.7) x 1.2 (4)

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to new vehicle guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; fan clutch, AM/FM radio; power takeoff opening at transmission; seatbelts, cab heater and defroster; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), day time running lights, anti-lock brake system, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 26 & 27.

TRUCK MAINTENANCE/LINE BODY - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2			4X4	
OPTION CODES	REF.PARA	464	561	563	762	764
ENGINES						
YD38 DIESEL ENGINE MIN 175 GHP, 420 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	N/A	N/A	N/A	N/A
YD2 DIESEL ENGINE MIN 190 GHP, 520 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	N/A	A	N/A
YD3 DIESEL ENGINE MIN 210 GHP, 605 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	S	A	S	A
YD4 DIESEL ENGINE MIN 230 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	S	A	S
YD39 DIESEL ENGINE MIN 250 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	A	N/A	A
E5 V8 OEM GAS ENG.	3.4.1.2	A	A	A	A	A
CNG COMPRESSED NATURAL GAS ENGINE	3.4.1.2	A	A	A	A	A
ASI AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A	A	A
EH BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A	A	A
EHM ENGINE HOUR METER	3.4.2.2	A	A	A	A	A
EXB ENGINE EXHAUST BRAKE (not available with all makes and sizes of engines)	3.4.11.4C	A	A	A	A	A
FFP FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A	A	A
FJP AVIATION JET FUEL COMPATIBILITY WITH DIESEL ENGINE	3.4.1.1	A	A	A	A	A
H4 COOLANT PROTECTION TO -50° C (-60° F)	3.4.26.1	A	A	A	A	A
SEH COLD ETHER PACKAGE (INCLUDES SEH A, B, AND D)	3.4.1.9	A	A	A	A	A
SEHA COOLANT HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A
SEHB ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A
SKS SPARK ARRESTER, EXHAUST SYSTEM (W/GASOLINE ENGINES ONLY)	3.4.4.1	A	A	A	A	A
TRANSMISSION						
2500 AUTOMATIC TRANSMISSION, ALLISON MODEL 2500 RDS	3.4.5.1	A	A	N/A	A	N/A
2200 AUTOMATIC TRANSMISSION WITH PARKING PAWL, ALLISON MODEL 2200 RDS	3.4.5.1	S	N/A	N/A	N/A	N/A
3000 AUTOMATIC TRANSMISSION, ALLISON MODEL 3000 RDS	3.4.5.1	A	A	A	A	A
3500 AUTOMATIC TRANSMISSION, ALLISON MODEL 3500 RDS	3.4.5.1	A	S	S	S	S
T1 INTEGRAL OUTPUT RETARDER (WITH AUTOMATIC TRANSMISSION 3000 SERIES ONLY)	3.4.11.4(D)	A	A	A	A	A
T5 MANUAL TRANSMISSION 5 SPD MIN	3.4.5.2	A	A	N/A	A	A
T6 MANUAL TRANSMISSION 6 SPD MIN	3.4.5.2	A	A	N/A	A	N/A
T7 MANUAL TRANSMISSION 7 SPD MIN	3.4.5.2	A	A	A	A	A
T10 MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	A	A	A	N/A	N/A
LST SYNTHETIC LUBE - MANUAL TRANSMISSION	3.4.31	A	A	A	A	A
TSTF SYNTHETIC LUBE - AUTOMATIC TRANSMISSION	3.4.31	A	A	A	A	A
AXLE, REAR						
ATC AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A	A	A
D1 DRIVER CONTROLLED DIFFERENTIAL LOCKOUT	3.4.9.2	N/A	A	A	A	A
D3 TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A	A	A
LSD SYNTHETIC LUBE - DIFFERENTIAL	3.4.31	A	A	A	A	A
ELECTRICAL						
A14 ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A	A	A
DRLD DAYTIME RUNNING LIGHTS - DELETE	3.4.2.4	A	A	A	A	A
LED LIGHT EMITTING DIODE LIGHTS	3.4.2.4	A	A	A	A	A
VOL AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A	A	A
BODY AND CHASSIS						
CC CREW CAB	3.4.12.2	A	A	A	A	A
CE EXTENDED CAB	3.4.12	A	A	A	A	A
AL ALUMINUM BODY	3.5.6.5.1	A	A	A	A	A
B9 BODY 9 FT	3.5.6	A	A	A	A	A
FG FIBERGLASS BODY	3.5.6.5.1	A	A	A	A	A
B10 BODY 10 FT	3.5.6	S	A	A	A	A
B11 BODY 11 FT	3.5.6	A	S	A	S	A
B12 BODY 12 FT	3.5.6	A	A	A	A	S
B14 BODY 14 FT	3.5.6	A	A	S	A	A
FFE FRONT FRAME EXTENSION	3.4.7	A	A	A	A	A
USS SUPERSTRUCTURE CLOSED BODY - STD. HT.	3.5.6.5.1	A	A	A	A	A
USS2 SUPERSTRUCTURE CLOSED BODY - INC. HT.	3.5.6.5.1	A	A	A	A	A
UTR TELESCOPING ROOF (N/A W/UTC)	3.5.6.5.1	A	A	A	A	A
EXTERIOR						
HTG HYD TAILGATE, FOLD UP (N/A WITH CODE TTP)	3.1.1.11.1	A	A	A	A	A
HTGC HYD TAILGATE, CART-STOP	3.1.1.11	A	A	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.22	A	A	A	A	A

TRUCK MAINTENANCE/LINE BODY - OPTION CODES LISTING

A = Option available, S = Standard on specified item		4X2			4X4	
OPTION CODES	REF.PARA	464	561	563	762	764
EXTERIOR (CONTINUED)						
MPP SNOWFLOW POWER ANGLING	3.5.4.8	A	A	A	A	A
MPR SNOWFLOW PROVISIONS	3.5.4.8	A	A	A	A	A
MPS SNOWFLOW REVERSIBLE TYPE	3.5.4.8	A	A	A	A	A
RM3 MOTORIZED RIGHT SIDE MIRROR (INCLUDES RM4)	3.4.20	A	A	A	A	A
RM4 HEATED FLAT MIRRORS	3.4.20	A	A	A	A	A
SRP RUSTPROOFING	3.1.1.3	A	A	A	A	A
UPR PIPE RACK	3.5.6.5.1	A	A	A	A	A
URH ROPE HOOKS	3.5.6.5.1	A	A	A	A	A
URO OVERHEAD LADDER RACKS	3.5.6.5.1	A	A	A	A	A
USM SIDE MOUNTED LADDER RACKS W/USS ONLY	3.5.6.5.1	A	A	A	A	A
INTERIOR						
DA DELETE CONDITIONING	3.4.25	A	A	A	A	A
DSS DRIVER SUSPENSION SEAT (MECHANICAL ON HYD. BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A	A	A
DSS2 DRIVER SEAT AND PASSENGER SEAT CONFORMS TO DSS	3.4.12.1	A	A	A	A	A
RACS INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A	A	A
RAD RADIO, WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A	A	A
SK METRIC ODOMETER	3.4.19	A	A	A	A	A
FUEL						
FTC FUEL TANKS, MIN 70 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A
FTD FUEL TANKS, MIN 100 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A
FFS HEATED FUEL/WATER SEPARATOR	3.4.1.9.1	A	A	A	A	A
SEHC IN-LINE FUEL WARMER	3.4.1.9	A	A	A	A	A
SEHD IN-TANK FUEL WARMER	3.4.1.9	A	A	A	A	A
SEHE IN-LINE FUEL WARMER (ELECTRICAL)	3.4.1.9	A	A	A	A	A
SAFETY						
BUA BACKUP ALARM	3.4.23	A	A	A	A	A
FEX EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A	A	A
TIRES AND WHEELS						
SLP LOW PROFILE TIRES	3.4.10.1	A	A	A	A	A
MS MUD & SNOW TREAD TIRES (REAR AXLE)	3.4.10.1	A	A	A	S	S
AICE AUTOMATIC TIRE CHAINS	3.4.10.5	N/A	A	A	A	A
HF WIDE BASE SINGLE TIRES & WHEELS	3.4.10	N/A	N/A	N/A	N/A	A
STA SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A	A	A
STB SPARE WHEEL ASSEMBLY (REAR AXLE)	3.4.10.4	A	A	A	A	A
UTC TIRE CARRIER (INSIDE LOAD SPACE)	3.5.6.5.1	A	A	A	A	A
TOWING						
TTP TRAILER TOWING PKG	3.1.1.8	A	A	A	A	A
PH PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A	A	A
MTL TRAILER LIGHTING CABLE	3.1.1.8	A	A	A	A	A
TBE ELECTRIC BRAKE CONTROLLER	3.1.1.9	A	A	A	A	A
TBT BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	N/A	A	A	A	A
MISCELLANEOUS						
ATR AIR TRANSPORTABILITY (INCLUDES LTD)	3.1.1.21	A	A	A	A	A
FFE FRONT FRAME EXTENSION	3.4.7	A	A	A	A	A
HTR HIGHWAY TRANSPORTABILITY	3.1.1.21.2	A	A	A	A	A
MTR MARINE TRANSPORTABILITY	3.1.1.21.4	A	A	A	A	A
RTR RAIL TRANSPORTABILITY	3.1.1.21.3	A	A	A	A	A
LTD LIFTING & TIEDOWN PROVISIONS	3.1.1.21.5	A	A	A	A	A
TDN TIEDOWN PROVISIONS	3.1.1.21.6	A	A	A	A	A
EDR DRIVELINE RETARDER	3.4.11.4(A)	A	A	A	A	A
FPH PLACARD HOLDERS PLATES	3.4.29	A	A	A	A	A
MHW FRONT MOUNTED WINCH	3.4.27	A	A	A	A	A
MIL MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A	A	A
PSM PARTS AND SERVICE MANUAL(S) PRINTED	6.6	A	A	A	A	A
PSME PARTS AND SERVICE MANUAL(S) ELECTRONIC	6.6	A	A	A	A	A
PSM2 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A
PSM3 PARTS AND SERVICE MANUALS - AIR FORCE	6.6	A	A	A	A	A
TJ TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A	A	A
UVB VICE BRACKET	3.5.6.5.1	A	A	A	A	A
XP EXPORT PACKAGING	5.1	A	A	A	A	A
PAINT						
CPT CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A	A	A
PCI PAINT CABINET INTERIOR (GLOSS GRAY)	3.5.6.5.1	A	A	A	A	A
TP TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A	A	A

TABLE 7

4X2 TRUCK, VAN, WITH CAB, 2 DOORS (See paragraph 3.5.7)

ITEM NO. TYPE/CLASS	474 VII/C	571 VII/D	573 VII/F
MINIMUM REQUIREMENTS			
Payload (approx. range) kg (lbs)	5400 (10,000)	7200 (13,000)	9800 (18,500)
Style, cab/tilt hood	Conv/2 doors	Conv/2 doors	Conv. 2 doors
GVWR/GCWR	21000/26000	25500/30000	33000/50000
Curb weight, approx. base, kg (lbs)	4000 (11,000)	4300 (12,000)	47000 (13,500)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	12000 ¹ /oil2
Axle, min rear rating, lbs/spd/seals	15000/1 spd/oil	17500/1 spd/oil	21000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	12000/21000 ¹
Cab to axle (CA)	As reqd.	As reqd.	As reqd.
Frame, RBM, min, in-lb	440,000	475,000	800,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine cyl/GHP/gross torque, min	6-8/250/660	6-8/275/800	6-8/300/860
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential	Std	Std	Std
Brakes, type	Hyd/power	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Aux rear/Front shocks	Aux rear/Front shocks	Aux rear/Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless, min cap/tread (std)	9R22.5F/hwy	10R22.5F/hwy	11R22.5G ¹ /hwy
Alternator, rating cap. (H.D.)	130 amp	130 amp	130 amp
Battery, CCA @ 0°F/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	170 (45)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat & convex
Horn	Electric	Electric & air	Electric & air
Body, aluminum, interior size	Nom 5.5 m(18 ft) L/ 215cm(84 in) H/ 230cm(89 in) W	Nom 6 m (20 ft) L/ 215cm (84 in) H/ 230cm(89 in) W	Nom 6.7 m(22 ft) L/ 215cm (84 in) H/ 230cm(89 in) W
Body, rear door(s)	Rollup 195 cm H x205 cm W	Rollup 195 cm H x205 cm W	Rollup 195 cm H x205 cm W

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to New Vehicle Guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; splash & stone guards; fan clutch; AM/FM radio; clearance lamps; seatbelts, rear end protection, cab heater & defrosters; body walls lined; steel scuff plate; body dome light; dock bumpers; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), day time running lights, anti-lock brake system on air brake vehicles, hub piloted wheels, air conditioning, remote jump start posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 30 & 31.

TABLE 8

4X2 TRUCK, REFRIGERATOR VAN, W/CAB, 2 DOORS (See paragraph 3.5.8)

ITEM NO. TYPE/CLASS	484 VIII/C	581 VIII/D	583 VIII/F
MINIMUM REQUIREMENTS			
Payload (approx. range) kg (lbs)	5200 (9,500)	7000 (11,500)	9800 (18,500)
Style, cab/tilt hood	conv/2 doors	Conv/2 doors	Conv/2 doors
GVWR/GCWR	21000/26000	25500/30000	33000/50000
Curb weight, approx. base, kg (lbs)	4300 (11,500)	4500 (13,000)	47000 (13,500)
Axle, min frt rating, lbs/seals	6000/oil	8000/oil	12000 ¹ /oil ²
Axle, min rear rating, lbs/spd/seals	15000/1 spd/oil	17500/1 spd/oil	21000 ¹ /1 spd/oil
Suspension, frt/rear, min, lbs	6000/15000	8000/17500	12000/21000 ¹
Cab to axle (CA), cm (in)	As reqd.	As reqd.	As reqd.
Frame, RBM, min, in-lb	440,000	475,000	800,000
Engine, type	Diesel, turbo	Diesel, turbo	Diesel, turbo
Engine cyl/GHP/gross torque, min	6-8/250/660	6-8/275/800	6-8/300/860
Trans. type/speeds, min	Auto/5 spd	Auto/5 spd	Auto/5 spd
Differential	Std	Std	Std
Brakes, type	Hyd/power	Full air	Full air
Steering	Power	Power	Power
Springs/shocks	Aux rear/Front shocks	Aux rear/Front shocks	Aux rear/Front shocks
Wheels, type w/ dual rear	Disc	Disc	Disc
Tires, tubeless, min cap/tread (std)	9R22.5F/hwy	10R22.5F/hwy	11R22.5G ¹ /hwy
Alternator, rating cap. (H.D.)	130 amp	130 amp	130 amp
Battery, CCA @ -18 C/reserve	1875/540 min	1875/540 min	1875/540 min
Cooling and indicators	H.D.A.	H.D.A.	H.D.A.
Exhaust, type	Horizontal	Horizontal	Horizontal
Fuel tank, capacity, L (gal)	170 (45)	170 (45)	170 (45)
Mirrors, dual	Flat & convex	Flat & convex	Flat &convex
Horn	Electric	Electric & air	Electric & air
Body, van, interior size m(ft)/rear doors style	4.2(14)/double rear doors	4.0(16)/double rear doors	6.1(20)/double rear doors
Refrigeration control temperatures	2° to -23° ± 2°C	2° to -23° ± 2°C	2° to -23° ± 2°C

1. Class F alternate minimum axle and suspension rating, front/rear, LB - 10000/23000 - Tires, min 11R22.5H rear/G front

NOTES: Extended warranty coverage may be available on these vehicles. Refer to New Vehicle Guide warranty section.

Standard equipment includes: Coolant recovery; front towing devices; splash & stone guards; fan clutch; AM/FM radio; clearance lamps; seatbelts; shelf type bumper w/step; cab heater & defroster; aluminum body; interior body lighting; interior scuff plate 30 cm high, 12 gage steel, galvaneal or equal; tachometer (if diesel); electric power point, tinted glass, dual cab entry assist handles, gages, predelivery serviced, engine shutdown (if diesel), daytime running light, anti-lock brake system on air brake vehicles, hub piloted wheels, air conditioning, remote jump starts posts, electronic controlled engine and throttle control (if diesel), and intermittent windshield wipers.

See Option Codes listing on pages 30 & 31.

TRUCK, VAN - OPTION CODES LISTING

A = Option available, S = Standard on specified item		TRUCK DRY VAN 4X2			TRUCK REFRIGERATED VAN 4X2		
OPTION CODES	REF.PARA	474	571	573	484	581	583
ENGINES							
YD38 DIESEL ENGINE MIN 175 GHP, 420 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	N/A	N/A	A	N/A	N/A
YD2 DIESEL ENGINE MIN 190 GHP, 520 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	A	N/A	A	A	N/A
YD4 DIESEL ENGINE MIN 230 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	A	A	A	A	A
YD39 DIESEL ENGINE MIN 250 GHP, 660 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	S	A	A	S	A	A
YD31 DIESEL ENGINE MIN 275 GHP, 800 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	A	S	A	A	A	A
YD46 DIESEL ENGINE MIN 300 GHP, 860 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	A	S	N/A	A	S
YD41 DIESEL ENGINE MIN 310 GHP, 1050 LB/FT TORQUE, TURBOCHARGED	3.4.1.1	N/A	N/A	A	N/A	N/A	A
E5 V8 OEM GAS ENG.	3.4.1.2	A	A	N/A	A	A	N/A
CNG COMPRESSED NATURAL GAS ENGINE	3.4.1.2	A	A	N/A	A	A	N/A
AS1 AIR FILTER SERVICE INDICATOR	3.4.3.1	A	A	A	A	A	A
EH BLOCK HEATER, OEM, 110V	3.4.1.9	A	A	A	A	A	A
EHM ENGINE HOUR METER	3.4.2.2	A	A	A	A	A	A
EXB ENGINE EXHAUST BRAKE (not available with all makes and sizes of engines)	3.4.11.4(C)	A	A	A	A	A	A
FFP FUEL FIRED ENGINE PREHEATER	3.4.1.10	A	A	A	A	A	A
H4 COOLANT PROTECTION TO -50° C (-60° F)	3.4.1.7	A	A	A	A	A	A
SEH COLD WEATHER PACKAGE (INCLUDES SEH A, B AND D)	3.4.1.9	A	A	A	A	A	A
SEHA COOLANT HEATER INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A
SEHB ENGINE OIL HEATER, INCLUDES JUNCTION BLOCK & CORD	3.4.1.9	A	A	A	A	A	A
SKS SPARK ARRESTER, EXHAUST SYSTEM (W/GASOLINE ENGINES ONLY)	3.4.4.1	A	A	A	A	A	A
TRANSMISSION							
2000 AUTOMATIC TRANSMISSION, ALLISON MODEL 2000 RDS (available with YD38 or YD2 engines only)	3.4.5.1	A	A	N/A	A	A	N/A
3000 AUTOMATIC TRANSMISSION, ALLISON MODEL 3000 RDS	3.4.5.1	S	S	S	S	S	S
3500 AUTOMATIC TRANSMISSION, ALLISON MODEL 3500 RDS (N/A W/YD41)	3.4.5.1	A	A	A	A	A	A
T1 INTEGRAL OUTPUT RETARDER (WITH AUTOMATIC TRANSMISSION 3000 SERIES OR LARGER ONLY)	3.4.11.4(D)	A	A	A	A	A	A
T6 MANUAL TRANSMISSION 6 SPD MIN	3.4.5.2	A	A	N/A	A	A	N/A
T7 MANUAL TRANSMISSION 7 SPD MIN	3.4.5.2	A	A	A	A	A	A
T10 MANUAL TRANSMISSION 10 SPD MIN	3.4.5.2	A	A	A	A	A	A
LST SYNTHETIC LUBE - MANUAL TRANSMISSION	3.4.31	A	A	A	A	A	A
TSTF SYNTHETIC LUBE - AUTOMATIC TRANSMISSION	3.4.31	A	A	A	A	A	A
AXLE, REAR							
ATC AUTOMATIC TRACTION CONTROL (through ABS system)	3.4.9.1	A	A	A	A	A	A
D1 DRIVER CONTROLLED DIFFERENTIAL	3.4.9.2	N/A	A	A	N/A	A	A
D3 TRACTION CONTROL DIFFERENTIAL, AUTOMATIC	3.4.9.2	A	A	A	A	A	A
LSD SYNTHETIC LUBE - DIFFERENTIAL	3.4.31	A	A	A	A	A	A
SUSPENSION							
SAR REAR AIR SUSPENSION	3.4.8.1	N/A	A	A	N/A	A	A
ELECTRICAL							
A14 ALTERNATOR, MIN 145 AMP	3.4.2.3	A	A	A	A	A	A
DRLD DAYTIME RUNNING LIGHTS - DELETE	3.4.2.4	A	A	A	A	A	A
LED LIGHT EMITTING DIODE LIGHTS	3.4.2.4	A	A	A	A	A	A
VOL AUXILIARY 24 VOLT SYSTEM W/TRAILER RECEPTACLE	3.4.2.8	A	A	A	A	A	A
BODY AND CHASSIS							
CE EXTENDED CAB	3.4.12	A	A	A	A	A	A
COE TILT CAB	3.4.12	A	A	A	A	A	A
B12 BODY 12 FT	3.5.8	A	A	A	A	A	A
B14 BODY 14 FT	3.5.7 & 3.5.8	A	A	A	S	A	A
B16 BODY 16 FT	3.5.7 & 3.5.8	A	A	A	A	S	A
B18 BODY 18 FT	3.5.7	S	A	A	A	A	A
B20 BODY 20 FT	3.5.7 & 3.5.8	A	S	A	N/A	A	S
B22 BODY 22 FT	3.5.7	A	A	S	N/A	A	A
B24 BODY 24 FT	3.5.7	A	A	A	N/A	A	A
B26 BODY 26 FT	3.5.7	A	A	A	N/A	N/A	A
FRP FIBERGLASS REINFORCED PLYWOOD BODY CONSTRUCTION I/O ALUMINUM	3.5.7.1.1	A	A	A	A	A	A
BDD DOUBLE RR DOORS FULL WIDTH AND HEIGHT	3.5.7.1.1	A	A	A	S	S	S
BSD SIDE DOOR (CURBSIDE) 30 IN X 71 IN	3.5.7.1.4	A	A	A	A	A	A
FFE FRONT FRAME EXTENSION	3.4.7	A	A	A	N/A	N/A	N/A
ROD ROLLUP OVERHEAD REAR DOOR	3.5.8.2.6	S	S	S	A	A	A
FHD HEAVY DUTY FRAME	3.4.7	A	A	A	A	A	A
RDO DIESEL ONLY REFRIGERATION UNIT (DELETES ELECTRIC STAND-BY)	3.5.8.3.4	N/A	N/A	N/A	A	A	A

TRUCK, VAN - OPTION CODES LISTING

A = Option available, S = Standard on specified item

OPTION CODES	REF.PARA	TRUCK DRY VAN 4X2			TRUCK REFRIGERATED VAN 4X2			
		474	571	573	484	581	583	
EXTERIOR								
BR	TRANSLUCENT ROOF	3.5.7.4	A	A	A	N/A	N/A	N/A
HTG	HYD TAILGATE, FOLD UP (N/A WITH CODE TTP)	3.1.1.11.1	A	A	A	A	A	A
HTGC	HYD TAILGATE, CART-STOP	3.1.1.11	A	A	A	A	A	A
HTGR	HYD TAILGATE, RAIL LIFT (NOT RECOMMENDED W/BDD)	3.1.1.11.3	A	A	A	A	A	A
HTGU	HYD TAILGATE, FOLD UNDER (N/A WITH CODE TTP)	3.1.1.11.2	A	A	A	A	A	A
HTGX	HYD TAILGATE, EXTRA CAPACITY (N/A WITH CODE TTP)	3.1.1.11	A	A	A	A	A	A
RM3	MOTORIZED RIGHT SIDE MIRROR (INCLUDES RM4)	3.4.20	A	A	A	A	A	A
RM4	HEATED FLAT MIRRORS	3.4.20	A	A	A	A	A	A
SRP	RUSTPROOFING	3.1.1.3	A	A	A	A	A	A
INTERIOR								
BFA	ALUMINUM (OVER WOOD) 1/8 IN DIAMOND PLATE	3.5.7.9	A	A	A	A	A	A
BRT	INTERIOR ROPE TIES, FLUSH TYPE 36 TIES IN 3 TIERS	3.5.7.7	A	A	A	A	A	A
CRP	VAN BODY LOGISTICS POSTS (E TRACK TYPE SLOTS)	3.5.7.5	A	A	A	A	A	A
CRT	CARGO CONTROL TRACKS, TWO TIERS BOTH SIDES	3.5.7.8	A	A	A	A	A	A
DA	DELETE AIR CONDITIONING	3.4.25	A	A	A	A	A	A
DSS	DRIVER SUSPENSION SEAT (MECHANICAL ON HYD.BRAKED VEHICLES/AIR ON AIR BRAKED VEHICLES) INCLUDES FIXED PASSENGER SEAT	3.4.12.1	A	A	A	A	A	A
DSS2	DRIVER SEAT AND PASSENGER SEAT CONFORMS TO DSS	3.4.12.1	A	A	A	A	A	A
RACS	INTEGRAL CASSETTE PLAYER	3.4.24	A	A	A	A	A	A
RAD	RADIO WITH INTEGRAL COMPACT DISC PLAYER	3.4.24	A	A	A	A	A	A
SK	METRIC ODOMETER	3.4.19	A	A	A	A	A	A
FUEL								
FTC	FUEL TANKS, MIN 70 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A	A
FTD	FUEL TANKS, MIN 100 GAL TOTAL CAPACITY	3.4.3.2	A	A	A	A	A	A
FFS	HEATED FUEL/WATER SEPARATOR	3.4.1.9.1	A	A	A	A	A	A
FJP	AVIATION JET FUEL COMPATIBILITY WITH DIESEL ENGINE	3.4.1.1	A	A	A	A	A	A
SEHC	IN-LINE FUEL WARMER	3.4.1.9	A	A	A	A	A	A
SEHD	IN-TANK FUEL WARMER	3.4.1.9	A	A	A	A	A	A
SEHE	IN-LINE FUEL WARMER (ELECTRICAL)	3.4.1.9	A	A	A	A	A	A
SAFETY								
BUA	BACKUP ALARM	3.4.23	A	A	A	A	A	A
FEX	EMERGENCY EQUIPMENT, EXTINGUISHER, AND TRIANGLES	3.4.28	A	A	A	A	A	A
TIRES AND WHEELS								
SLP	LOW PROFILE TIRES	3.4.10.1	A	A	A	A	A	A
MS	MUD & SNOW TREAD TIRES (REAR AXLE)	3.4.10.1	A	A	A	A	A	A
AIC	AUTOMATIC TIRE CHAINS	3.4.10.5	N/A	A	A	A	A	A
STA	SPARE TIRE ASSEMBLY	3.4.10.3	A	A	A	A	A	A
STB	SPARE TIRE ASSEMBLY (REAR AXLE)	3.4.10.4	A	A	A	A	A	A
STC	CARRIER SPARE TIRE	3.4.10.2	A	A	A	A	A	A
TOWING								
PH	PINTLE HEIGHT 510 MM (20 IN)	3.1.1.8	A	A	A	A	A	A
TBE	ELECTRIC BRAKE CONTROLLER	3.1.1.9	A	A	A	A	A	A
TBT	BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE	3.4.11.3	N/A	A	A	N/A	A	A
MISCELLANEOUS								
ATR	AIR TRANSPORTABILITY (INCLUDES LTD)	3.1.1.21	A	A	A	A	A	A
HTR	HIGHWAY TRANSPORTABILITY	3.1.1.21.2	A	A	A	A	A	A
MTR	MARINE TRANSPORTABILITY	3.1.1.21.4	A	A	A	A	A	A
RTR	RAIL TRANSPORTABILITY	3.1.1.21.3	A	A	A	A	A	A
LTD	LIFTING & TIEDOWN PROVISIONS	3.1.1.21.5	A	A	A	A	A	A
TDN	TIEDOWN PROVISIONS	3.1.1.21.6	A	A	A	A	A	A
BTC	TOOL COMPARTMENT	3.1.1.14	A	A	A	A	A	A
BWD	BODY WIND DEFLECTOR FAIRING	3.5.7.1.3	A	A	A	N/A	N/A	N/A
EDR	DRIVELINE RETARDER	3.4.11.4(A)	N/A	N/A	A	N/A	N/A	N/A
FLU	FORK LIFT USE, INCLUDES FORK LIFT REINFORCED FLOOR, AND THRESHOLD PLATES	3.5.8.2.3	A	A	A	A	A	A
FPH	PLACARD HOLDERS PLATES	3.4.29	A	A	A	A	A	A
MIL	MILITARY SERVICE MARKING, TAGS, DATA PLATES & FORMS	3.1.1.2	A	A	A	A	A	A
PSM	PARTS AND SERVICE MANUAL(S) PRINTED	6.6	A	A	A	A	A	A
PSME	PARTS AND SERVICE MANUAL(S) ELECTRONIC	6.6	A	A	A	A	A	A
PSM2	PARTS AND SERVICE MANUAL(S) - AIR FORCE	6.6	A	A	A	A	A	A
PSM3	PARTS AND SERVICE MANUAL(S) - AIR FORCE	6.6	A	A	A	A	A	A
R35	REFRIGERATION UNIT HEATING CAP AT-25F TO MAINTAIN AT 35F	3.5.8.1	N/A	N/A	N/A	A	A	A
TJ	TOOLS, HYD JACK, WHEEL WRENCH & HNDL	3.4.16.1	A	A	A	A	A	A
XP	EXPORT PACKAGING	5.1	A	A	A	A	A	A
PAINT								
CPT	CUSTOM PAINT EXTERIOR CAB	3.1.1.1	A	A	A	A	A	A
TP	TWO-TONE PAINT, EXT. CAB (OEM STD)	3.1.1.1	A	A	A	A	A	A
WLP	WHEELS PAINTED SAME COLOR AS CAB	3.1.1.1	A	A	A	A	A	A

OPTION CODE INDEX

Refer to number paragraph text for complete description of option and requirements.

Para. Code	Description	Ref. Para.
A		
A14	Alternator, 145 AMP. MIN	3.4.2.3
AICE	Chains, tire, automatic	3.4.10.5
AL	Body, aluminum	3.5.6.5.1
ART	Tailgate, air released for dump body,	3.5.4.3
ARW	Air slide 5th wheel	3.5.2.7
ASI	Air filter service indicator	3.4.3.1
ATC	Automatic traction control	3.4.9.1
ATR	Air transportability	3.1.1.21.1
AUXL	Lights, auxiliary for CPR & CPR1	3.5.2.11
AUXS	Springs, auxiliary rear	3.4.8
B		
B9	9 ft. body	3.5.6
B10	10 ft. body	3.5.6
B11	11 ft. body	3.5.6
B12	12 ft. body	3.5.3, 3.5.6 & 3.5.8
B14	14 ft. body	3.5.3, 3.5.6, 3.5.7 & 3.5.8
B16	16 ft. body	3.5.3, 3.5.7 & 3.5.8
B18	18 ft. body	3.5.3 & 3.5.7
B20	20 ft. body	3.5.3, 3.5.7 & 3.5.8
B22	22 ft. body	3.5.3 & 3.5.7
B24	24 ft. body	3.5.7
B26	26 ft. body	3.5.7
BBS	Bulkhead, solid steel w/screen	3.5.3.6
BCS	Cargo body (open top)	3.5.3.11
BDD	Doors, van body, double rear full width and height	3.5.7.11
BDF	Floor, 1/8 in. diamond tread steel	3.5.3.3.2
BDF2	Floor, .1875 in diamond tread steel	3.5.3.3.2
BDF3	Floor, Apitong wood	3.5.3.3.1
BDF4	Floor, recycled material (rubber & plastic)	3.5.3.3.3
BDS	Dump, platform or stake	3.5.3.9
BFA	Floor, 1/8 in. aluminum diamond plate overlay	3.5.7.9
BR	Roof, translucent for van body	3.5.7.4
BRT	Ties, interior rope, 3 tiers with 36 ties	3.5.7.7
BSD	Door, van body curbside 30 in. x 71 in.	3.5.7.14
BSF	Floor, 1/8 in. smooth steel	3.5.3.3.2
BSF2	Floor, .1875 in. smooth steel	3.5.3.3.2
BSR	Swing center racks, R & L side	3.5.3
BTB	Tarpaulin, bows & ties, 70 in. height	3.5.3.10
BTC	Tool compartment	3.1.1.14
BUA	Alarm, backup	3.4.23
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3. REQUIREMENTS

3.1 STANDARD VEHICLE AND ACCESSORIES.

Except as specified in 3.1.1 through 3.1.1.16, the vehicle, components, assemblies, and accessories to be delivered under the contract shall be standard or optional items, which meet or exceed the requirements of this standard. Except as specified in 3.1.1 through 3.1.1.22, no removal, substitution or alteration of the chassis manufacturer's standard or optional chassis model components shall be made. All chassis items shall be as represented in the chassis manufacturer's technical data book. Special bodies or mounted equipment shall be as represented in the body and equipment manufacturer's technical data. Capacities shall not exceed those published in the manufacturers' technical data. Technical data shall be limited to specifications and technical material, identical to that furnished to the authorized company representatives for selection of vehicle models and components, and shall be available to the engineering offices of the procuring activity, prior to delivery of the items. The chassis model furnished shall be not older than the chassis manufacturer's current model on the date of invitation for bids.

3.1.1 SPECIAL REQUIREMENTS.

In addition to the standard vehicle and components specified in 3.1, the vehicle shall be furnished with special equipment as specified herein.

3.1.1.1 TREATMENT AND PAINTING.

The vehicle body, including compartments, doors, and tool boxes, except bright finish aluminum and stainless steel, shall be treated and painted in accordance with MIL-HDBK-1223. The manufacturer's standard treatment and painting for cab and chassis is acceptable. When code CPT is specified, a custom or Federal Standard 595 color shall be provided. Unless otherwise specified, the exterior color shall be selected by the manufacturer from one of the manufacturer's standard, nonmetallic light or medium colors. When specified, color selection will be made after contract award from the standard color charts to be supplied by the manufacturer. When code TP is specified, any of the manufacturer's production multi-tone paint combinations may be selected. When code WLP is specified, the wheels shall be painted the same color as the cab.

3.1.1.2 MILITARY MARKING, AND DATA PLATES AND FORMS.

When code MIL is specified, marking, data plates and DD Form 250s shall be provided in accordance with the requirements of the receiving military service. Unless otherwise specified, a decal, sticker, or label shall provide at least the following information: contract number; purchase order number; date of delivery month and year; and the warranty time, in months and miles (GSA Form 1398). When specified (see 6.2), concealed markings shall be furnished.

3.1.1.3 RUSTPROOFING.

When code SRP is specified, the vehicle shall be rustproofed in accordance with FED-STD-297.

3.1.1.4 DRAIN PLUGS.

Drain plugs installed in manual transmissions, transfer case and rear axles shall be of the permanent magnet type.

3.1.1.5 WOOD TREATMENT.

Unless otherwise specified, the manufacturer's standard wood treatment is acceptable. Soft wood shall be pressure treated with a wood preservative. Hardwood need not be treated. When specified, wood shall be treated in accordance with MIL- HDBK-1223.

3.1.1.6 TOWING DEVICES.

Towing devices consisting of two hooks, loops, eyes or pins or the chassis manufacturer's standard single center mounted eye or pin shall be mounted on the front of the vehicle. All towing devices shall be frame rail mounted or reinforced back to each frame rail. When code RTH is specified, additional towing devices shall be mounted on the rear of the vehicle.

3.1.1.7 WHEEL SPLASH AND STONE THROW PROTECTION.

Type III stakes, Type IV dumps, Type VII vans, and Type VIII refrigerator vans shall have rubber mud flaps to the rear of the rear wheels. Type II tractors shall have rigid quarter fenders to the front of the rear wheels and rubber mud flaps to the rear of the rear wheels. Tractor mud flaps and their extension supports shall be readily removable, to increase landing wheel clearance, without the use of hand tools. A metal strip not less than 3.2 mm (0.125 in) thick and not less than 25 mm (1 in) wide, extending the entire width of the mud flap, shall be installed to prevent the bolt heads or bolt nuts from damaging the mud flap. As an alternate method of attaching the mud flaps, tabs or clips with minimum surface contact dimensions of 25 mm (1 in) high by 32 mm (1.25 in) wide by 2.4 mm (0.094 in) thick shall be furnished at each bolt. All tilt cabs shall have rubber mud flaps to the rear of the front wheels. All splash shield and mud flap installations, front and rear, shall conform to the rear splash and stone throw protection provisions of SAE J682. The quarter fenders on tractors need extend down only to the height of the centerline of the rear axle. Splash shields shall have no advertising or logos, except that of chassis or body manufacturer.

3.1.1.8 TRAILER TOWING PACKAGE.

When code TTP is specified, a trailer-towing package shall be provided. Note: option not available when code HTG, HTGU, HTGX, or BDS is specified. The trailer towing package shall consist of a pintle, safety chain attachment devices, a lighting receptacle, a trailer brake control system (see 3.4.11.2 for air brake equipped chassis), and associated reinforcements and wiring, and shall be installed on the rear of the vehicle. The pintle shall be of the rotating type conforming to MS 51118-1. The pintle shall be installed on the chassis frame with reinforcements to transfer a vertical tongue load of not less than 1815 kg (4,000 lb) and a hori-

zontal drawbar load of not less than 178 kilonewtons (kN) (40,000 lb) directly to the chassis rails. Except on Type II tractors, the rear most portion of the pintle shall be forward, but not more than 100 mm (4 in) forward, of the rear most part of the vehicle. Two trailer safety chain attachment devices, one adjacent to each side of the pintle, shall be provided. Each attachment device shall provide an ultimate strength at least equal to the GVW of the truck furnished. The attachment devices shall be capable of accommodating a standard grab hook [116 mm (4-9/16 in) wide, 30 mm (1-3/16 in) thick, 19.8 mm (25/32 in) throat width)] for a 16 mm (5/8 in) chain. The lighting receptacle, conforming to SAE J560, with its conductors connected and color-coded or number coded, shall be mounted in a readily accessible location near the pintle. The lighting receptacle on Type IV dumps shall be located to prevent damage during dumping of the cargo. When code PH is specified, the pintle height, measured to the centerline at the pintle, shall be 510 mm (+125 mm, - 0) (20 in (+5, -0)). The pintle shall be installed with bracket reinforcements to transfer pintle loads directly to the chassis rails. The installation shall be capable of withstanding towed loads equal to the GVW of the truck without permanent deformation. Note: option not available when code HTG, HTGU, or HTGX is specified. When code MTL is specified, a trailer lighting cable conforming to SAE J1067 shall be provided. The cable shall be coiled and shall be not less than 2800 mm (110 in) long when fully extended. Both ends of the cable shall be equipped with a round plug conforming to SAE J560. The plugs shall be equipped with a grip for withdrawing from the connector sockets. The cable shall be packaged and stowed in the vehicle tool compartment. Code MTL is not required for Type II tractors unless a trailer-towing package is specified.

3.1.1.9 ELECTRIC TRAILER BRAKE CONTROLLER.

When code TBE is specified, an electric trailer brake controller shall be provided. The controller shall be installed in the truck cab and wired through the lighting socket. The controller shall operate on the 12-volt electrical system of the vehicle and shall include the load control, hand lever, and accessories.

3.1.1.10 SPARK ARRESTER.

As specified herein (see 3.4.4.1), the vehicle shall be furnished with an exhaust system spark arrester.

3.1.1.11 HYDRAULIC TAILGATE (TYPES III, VII AND VIII ONLY).

When specified (see 6.2), the vehicle shall be equipped with an electric motor driven hydraulic tailgate. The hydraulic system shall comply with the requirements in paragraph 3.1.1.19. Unless otherwise specified (see 6.2), the hydraulic tailgate shall have a rated capacity of not less than 910 kg (2,000 lb) for Types III, VII and VIII. The hydraulic tailgate for Type VI shall have a rated capacity of not less than 590 kg (1,300 lb). All hydraulic cylinders shall be provided with flow restrictors in the down port of the cylinders to prevent the tailgate from falling rapidly in the event of a hydraulic system failure. The tailgate platform shall be of the ramping type and shall have a depth of not less than 810 mm (32 in) exclusive of the ramp. The ramp shall taper down to ground

level to facilitate loading with a wheeled handcart. Platform loading area shall be of nonskid sheet steel. The tailgate shall have devices for holding the platform in stowed position for vehicle travel. When the tailgate is in position for loading the vehicle, the clearance between the rear edge of the vehicle and the tailgate shall be not more than 19 mm (0.75 in) and the tailgate shall be on the same level as the body floor. Controls shall be mounted outside the body on the curbside of the vehicle and shall include an electric control station with environmentally sealed connections, that the operator can reach easily while standing on the ground, or riding on the platform. The vehicle ignition switch or a separate switch in the driver's compartment shall allow the driver to disconnect the power source to the tailgate. A 150-ampere minimum, automatic reset circuit breaker shall be furnished with the electric system of the tailgate, to protect the electric system of the vehicle. A minimum of 2-gage wire shall be furnished on the power cables for maximum operating efficiency and increased electrical component life. A rustproof enclosure shall be furnished to protect the pump motor from dirt and weather. Self-lubricated bearings shall be furnished on all load bearing rollers and hinges. A decal or plate describing operation of the hydraulic tailgate shall be provided in close proximity to the hydraulic tailgate controls (see 3.1.1.13). When code HTGX is specified, the tailgate shall have a rated capacity not less than 1350 kg (3000 lb) and a depth of not less than 1500 mm (60 in). When code HTGC is specified, a spring loaded cart-stop retention system shall be furnished on the end of the platform. The cart-stop shall spring up to a vertical position when the foot control is depressed. The cart-stop may be manually returned (with a maximum force of 25 pounds required) to the plane of the horizontal tailgate platform and automatically lock in place. The cart-stop shall remain locked in horizontal or vertical position until the foot control mechanism is depressed. All hydraulic lines shall be grommeted where they are routed through walls and supports and furnished with clamps for protection from damage. Hydraulic tailgates must conform to FMVSS-223 and 224.

3.1.1.11.1 REAR FOLD TAILGATE.

When code HTG is specified, the tailgate shall fold vertically against the rear of the vehicle for travel. All tailgate operations shall be hydraulically powered or metered, providing for raising, lowering, folding and unfolding without manual assistance. The tailgate platform width shall be not less than 2130 mm (84 in) for Type VII vans and Type VIII refrigerator vans and not less than 2290 mm (90 in) for Type III stakes. For Type VI maintenance/line body, the tailgate platform width shall be not less than 4 inches wider than the floor width, allowing recessed lights to be located outside of the vertical tailgate upright posts. Rear bumper and additional rear end protection need not be furnished.

3.1.1.11.2 FOLD-UNDER TAILGATE.

When code HTGU is specified, the tailgate shall manually fold under the vehicle for travel and manually unfold for use. Hydraulically powered raising and metered lowering shall be provided. The tailgate platform width shall not be less than 2135 mm (84 in). Rear bumperettes extending to the rear

beyond the stowed tailgate shall be provided on each side of the rear, beyond the 2135 (84 in) platform width. Additional rear end protection need not be furnished. A fold under tailgate is available on vans only with a van roll-up rear door. If a fold-under tailgate is furnished on a van body with swing type doors, the top of the tailgate in the elevated position will be up to 3 inches below the level of the van body floor, due to door locking hardware. The hydraulic system shall comply with the requirements in paragraph 3.1.1.19.

3.1.1.11.3 RAIL LIFT TAILGATE (TYPES III, VII and VIII ONLY)

When code HTGR is specified, the tailgate shall be a body mounted rail lift type conforming to 3.1.1.11.1. and a rear under-ride guard shall be provided. When cable or chain is utilized in the tailgate mechanism, an emergency brake shall be required to automatically stop and hold the fully loaded platform in the event of loss or tension on cable or chain. Van bodies may only be furnished with rail lift tailgates if the van is equipped with rear roll-up doors.

3.1.1.12 HYDRAULIC FLUID IDENTIFICATION PLATE.

When a body hydraulic system is provided, an identification plate or decal shall be furnished. The plate shall be installed near the filler cap and shall identify the type of hydraulic fluid to be used. (See 3.1.1.13.)

3.1.1.13 DECALS AND DATA PLATES.

The hydraulic tailgate operating instructions, the hydraulic fluid identification information and the power takeoff caution notice shall be on a standard decal or plate from the supplier of that item.

3.1.1.14 TOOL BOX.

When code BTC is specified, a toolbox shall be provided. The toolbox shall provide for storage in addition to that required by 3.4.16. Minimum dimensions shall be 457 mm (18 in) by 457 mm (18 in) by 609 mm (24 in). A door opening size of not less than 482 mm (19 in) by 330 mm (13 in) shall be furnished. The toolbox shall be fabricated of not less than 14 gage (2.657 mm) (0.1046 in) steel or of equivalent strength aluminum. The toolbox shall be weatherproof and shall provide for locking. The toolbox shall be mounted as close as possible to the rear of the cab, on the curbside of the vehicle.

3.1.1.15 BRUSHGUARD.

The 4x4 vehicle shall be equipped with a radiator and headlamp brush guard. When the headlamps are recessed into and protected by the front bumper, a headlamp brush guard is not required.

3.1.1.16 4X4 CONVERSION.

The chassis manufacturer's standard 4x2 truck chassis may be modified to provide all-wheel drive conforming to the requirements specified herein if:

- (a) The conversion axle manufacturer specifically approves and certifies that all such modifications meet the design requirements and standards of the conversion axle manufacturer. Certification shall be based on both design analysis and proving ground test reports.

- (b) The chassis manufacturer's front axle rating before conversion is not exceeded by the conversion axle to be installed.
- (c) Components used in the all-wheel drive conversion are of current production.
- (d) Components used in the all-wheel drive conversion are approved for the conversion application by the component manufacturers.
- (e) The converted vehicle is certified to conform to Federal Motor Vehicle Safety Standard No. 121 by the intermediate or final manufacturer.
- (f) Replacement headlights, if required to be added, shall meet the height requirement of not less than 560 mm (22 inches) and not more than 1370 mm (54 inches), measured above the road surface, in conformance with Federal Motor Vehicle Safety Standard No. 108. Replacement headlights shall be equivalent in mounting, protection, range and precision of adjustment to the chassis manufacturer's original standard headlights.
- (g) Unused headlight cavities are covered in a neat workmanlike manner, treated and painted to match the chassis cab color with treatment and painting equivalent to the chassis cab manufacturer's process for the remainder of the chassis cab.
- (h) Complete installation drawings for the specific chassis are available.
- (i) Warranty and parts service is available at a facility no more distant than the chassis manufacturers nearest authorized dealer.

When code STF is specified, the frame shall be staggered behind the cab to lower the height of the rear frame by the amount the frame was raised to accomplish the 4X4 conversion.

3.1.1.17 ELECTRICAL COMPONENTS FOR TRUCK BODIES AND ACCESSORY EQUIPMENT.

Truck bodies and accessory equipment shall conform to TMC RP 105B, RP 111B, RP 112, RP 113A, RP 114A, and RP 120A when applicable.

3.1.1.18 BRAKE LIGHTS.

At least one pair of brake lights shall override the four-way emergency flasher or the two systems shall be independent of each other. Modifications to the manufacturer's standard product to accommodate this requirement shall not compromise conformance to any Federal Motor Carrier Safety Regulation referenced herein or to any Federal Motor Vehicle Safety Standard. If additional lights are added to the vehicle, the lights shall be selected from the chassis manufacturer's standard matching hardware. On truck tractors, the brake lights need to override the four-way flasher only when coupled to a semitrailer, in accordance with TMC RP 118A.

3.1.1.19 HYDRAULIC SYSTEM GENERAL REQUIREMENTS.

The following requirements shall apply to vocational hydraulic systems installed on vehicles with GVWR exceeding 17,000 lbs. Hydraulic tailgates are exempt from these requirements.

A. Drive systems.

Hydraulic pumps shall be driven by one of the following:

1. Engine or transmission mounted PTO. Pumps shall be flange mounted for transmission mounted PTO Drive shafts from the PTO to the pump are not acceptable. Belt drives of any type are not acceptable and shall not be used.
2. Electric motor driven pumps (authorized for hydraulic tailgates only) shall be flange mounted to the electric motor.
3. Engine crankshaft front PTO driven. Only OEM integral frame extensions and OEM approved and furnished chassis for front PTO shall be used.
4. Pump support brackets shall be installed from the transmission to support the pump(s) if the combined weight of the pump(s), hoses, and fittings exceed 40 lbs., or if the combined length of the PTO and pump(s) exceeds 18 inches measured from the center-line of the PTO to the end of the pump(s).
5. PTO's shall be rated at a minimum of 150% of the maximum horsepower requirement of the hydraulic system. The minimum PTO horsepower rating shall be calculated by the following formula:

$$\frac{PV \times 1.50}{1714 \times .85} = \text{Minimum PTO HP Rating}$$

Where P = max working pressure in PSI
and V = max flow in GPM

6. PTO's shall be of the power shift design. PTO shift controls shall be electric-over-hydraulic for automatic transmissions, manual transmissions shall have electric shift controls for hydraulic braked chassis and air shift controls for air braked chassis. There shall be a PTO engagement indicator located in the truck cab, in close proximity to control switch. Over speed engagement protection shall be furnished. PTO shall disengage when pre-set engine RPM is reached.
7. The torque or horsepower required of the hydraulic drive PTO shall not exceed the maximum torque or horsepower rating of the PTO opening on the transmission or PTO drive pad on the engine or engine crankshaft.

8. All PTO's shall be installed within the backlash recommendations of the PTO manufacturer.

B. Hydraulic system hoses, fittings, pressures, and flow rates.

1. Hydraulic hoses shall be rubber covered double wire braid reinforced and comply with SAE 100R2, Type A or AT, or 100R9, type A or AT, of SAE J517. The working pressure of the hose shall exceed the pressure setting of the relief valve. Hoses shall be sized such that the maximum velocity of hydraulic fluid in the hose does not exceed the following:

A. Fluid velocity in suction lines shall not exceed 4 ft./sec.

B. Fluid velocity in discharge lines shall not exceed 25 ft./sec

2. All hoses shall be installed in accordance with the requirements and recommendations of SAE J1273
3. System working pressures shall not exceed 3500 PSI. A system pressure test port shall be provided. The test port shall be located so that the maximum pressure produced by the system can be monitored without disconnecting any component of the system.
4. Hydraulically actuated implements, such as snowplows, which are deployed while the vehicle is moving, shall be furnished with mechanical stops that prevent hydraulic shock if the implement strikes an obstruction while the vehicle is in operation.
5. Hydraulic hose fittings shall comply with the requirements of SAE J516 for permanently attached (crimped) fittings with JIC 37° flare. Field replaceable type fittings are not acceptable. Forged steel hydraulic adapters shall be used. Cast steel fittings are not acceptable.

C. Pressure protection:

All hydraulic systems shall be furnished with either a spring or pilot actuated pressure relief valve. The relief valve shall be used for overpressure protection only and shall not be used for any flow control purpose. In no case shall a relief valve be set at a pressure higher than the working pressure of the lowest rated component (hose, coupler, adapter, cylinder, etc.) in the system.

D. Flow control valves.

Flow control valves shall be of a type (such as open-center valves) that assures that hydraulic fluid is never deadheaded and forced to flow over the relief valve. Flow control valves may be stacked to control multiple devices, either in parallel or in series. Series designed

systems shall not exceed the maximum working pressure of any component in the series. Flow control valve body shall not be mounted inside the cab. Flow control valves shall be operated through leavers mounted inside the cab within easy reach of the seated driver. Control leavers shall operate valves through flexible cables or air pressure and permit smooth, infinitely variable operation of equipment through the full designed range of operational travel/speed limits of the equipment.

E. Fluid filtration.

A return line hydraulic filter shall be furnished having a minimum efficiency rating of 99% down to 10-micron size particles and meet or exceed the filtration requirements of the pump, motor, or driven device manufacturer. The filter shall be furnished with a pressure differential type service gage or service indicator.

F. Hydraulic system cooling.

Hydraulic systems shall be designed to operate in ambient temperatures ranging from -20 deg F to +120 deg F.

The hydraulic system shall be designed such that the maximum hydraulic oil temperature does not exceed 200 deg. F. For continuously driven devices, such as spreaders and other motor driven applications, auxiliary cooling, such as air-to-oil coolers or water-to-oil coolers, shall be furnished if required to meet the maximum oil temperature requirement. The government reserves the right to request and be furnished test documents showing maximum stabilized temperatures of hydraulic systems.

G. Hydraulic reservoirs.

A stainless steel, aluminum (6061-T6 or 5086-H32 construction only), or other non corroding type hydraulic reservoir shall be furnished and sized such that the reservoir working volume is a minimum of 150% of the maximum hydraulic flow rate. The reservoir shall be furnished with the following:

1. The reservoir shall be furnished with a baffle separating the suction from the return flow.
2. The reservoir shall be furnished with minimum 1/2 in. air filtration type breather or combination breather cap with not greater than 10-micron air born particle rating.
3. The reservoir shall be furnished with a sump and valve for draining water from the bottom of the tank and for draining oil.
4. The reservoir shall be furnished with a metal enclosed and protected sight glass for observing oil level.
5. The reservoir shall be furnished with a maximum

300 mesh (50 micron) fill strainer.

6. The reservoir shall incorporate a return tube that discharges return oil below the surface of the reservoir oil.

H. Hydraulic oil.

Hydraulic oils shall meet the minimum requirements of the hydraulic pump or other critical component manufacturer(s). Water based hydraulic fluids shall not be used. A nameplate shall be affixed near the fill cap on the reservoir indicating the type of oil to be used.

I. Installation and workmanship.

The hydraulic system shall be comply with the following requirements:

1. All tapered threaded fittings shall be installed using an anti-seize thread sealing compound. Teflon tape is not acceptable.
2. Hoses shall be routed for easy tracing of hoses and shall be protected with grommets when passing through bulkheads. Hoses shall be protected from abrasion when routed over or through bare metal edges.
3. Hydraulic hoses shall be supported with metal hose clamps that provide protection for the hose from the metal portion of the clamp. Hoses shall not be allowed to droop or to be entangled with other hoses or lines. The clamps shall be spaced not more than 18 in. apart.
4. Overhanging weight of fittings, hoses, valves, or piping shall be supported from the reservoir to eliminate flexing of sidewalls.
5. All hoses shall be routed and installed in accordance with the requirements and recommendations of SAE J1273. Special attention to routing and installation shall be given to avoid to the following:
 - A. Tensile loads on the hose
 - B. Side loads
 - C. Flattening
 - D. Kinking
 - E. Thread damage
 - F. Damage to sealing surfaces
 - G. Abrasion
 - H. Twisting

- I. Exceeding minimum hose bend radius
- J. Operational Test

The hydraulic system and hydraulically driven components shall be operated and checked for leaks and proper operation. The operational test shall include the maximum requirements (height, extension, speed, etc.) of the driven devices under no-load conditions. No leakage is permitted beyond a class "1" leak in accordance with SAE J1176-External Leakage Classifications for Hydraulic Systems.

3.1.1.20 CENTRAL TIRE INFLATION SYSTEM.

When code CTIS is specified, a central tire inflation system shall be provided. The system shall include but not be limited to the following components:

- (a) 850 L/min (30 CFM) air compressor with 14 liter engines and above; 453 L/min (16 CFM) with engines between 10 liters and 14 liters; and 373 L/min (13.2 CFM) with engines less than 10 liters
- (b) Compressor with automatic moisture ejector
- (c) Axles compatible with installation of the Central Tire Inflation System
- (d) 10 hole disc type wheels, all axles
- (e) Front axle-standard profile tires with highway type tread (low profile acceptable on 18000/20000 lb axles)
- (f) Rear axle-standard profile tires with traction type tread
- (g) Electronic Control Unit (ECU)
- (h) Operator Control Panel (OCP)
- (i) Pneumatic Control Unit (PCU)
- (j) Distribution Manifold (DM)
- (k) Wheel Valves
- (l) Pressure Switch
- (m) Speed Sensor
- (n) Air Lines
- (o) Wiring Harness

The system shall allow the driver to adjust vehicle tires to any of four pre-set tire pressures (highway and off-highway for both loaded and unloaded conditions) on up to three separate channels (steer/drive/trailer) and shall include an emergency key and a run flat key. System shall provide for manual tire inflation/deflation capability, an air priority system, and speed/pressure control, and warning at OCP.

3.1.1.21 TRANSPORTABILITY.

When vehicles covered by this Standard are to be transported by Air (option ATR), Highway (option HTR), Sea (option MTR) or Rail (option RTR) by the using agency, the following sequence of events shall occur:

1. The agency is to send a written certification request containing a description of the physical characteristics of the vehicle to The Air Transportability Test Loading Agency (ATTLA) when Air Transportability (option ATR) is requested or to The Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) for all other modes of transportability.
2. Upon receipt of the order the contractor is to contact the customer agency to ascertain if the Customer Agency has made application for Transportability Certification to the ATTLA / SDDCTEA.
3. The contractor is to make contact with the ATTLA / SDDCTEA and shall provide and submit all related drawings and engineering data, within 90 days after receipt of order, directly to ATTLA / SDDCTEA.
4. The contractor will continue to work with the ATTLA / SDDCTEA to obtain Transportability Certification for the vehicle(s) ordered. The contractor shall supply the ATTLA / SDDCTEA certification memo to the customer agency within 120 days after receipt of the vehicle(s) order. A copy of the ATTLA / SDDCTEA certification memo shall be available during the final inspection.

ATTLA (The Air Transportability Test Loading Agency) is located at Wright Patterson Air Force Base and can be contacted via e-mail at "ATTLA@wpafb.af.mil". SDDCTEA (The Military Surface Deployment and Distribution Command Transportation Engineering Agency) is located in Newport News, VA and can be contacted by e-mail at "dpe-mail@tea.army.mil" or by phone at (757) 599-1113. A transportability report form for SDDCTEA can be obtained at "<http://www.tea.army.mil/pubs/nr/deploy/transinstruction/DI-PACK-80880B.pdf>" \t "_new" References, publications, assistance and engineering services are available from SDDCTEA. Testing information can be obtained from the Aberdeen Test Center (ATC). ATC can be contacted through their website at "<http://www.atc.army.mil>".

Upon receipt of the request, drawings and data; ATTLA / SDDCTEA conducts an analysis of the item's transportability at no cost to the requesting federal agency. If the Item meets the requirements, ATTLA / SDDCTEA return a certification memo to the customer agency with a copy to the contractor stating the conditions of approval. Otherwise, ATTLA / SDDCTEA recommend changes that will allow the item to meet those requirements. Very rarely an item cannot be airlifted or transported at all. In these cases ATTLA's / SDDCTEA's reply will include an explanation of the rejection.

If analysis alone cannot positively determine the transportability of the item, then a test loading may be required. Test loadings are done when the transportability is uncertain. The test loads require a formal test report and usually are conducted as Special Airlift or Transport Missions. The customer agency shall be responsible for all costs associated with test loadings when it is determined to be required.

Removal or relocation of mechanically attached (non-welded, non-riveted, etc.) components with common tools, requiring not more than 1 man-hour total to remove, relocate and tiedown; and not more than 1 man-hour total to return the vehicle to its original, as opposed to reduced, configuration; shall be acceptable. The self-mobility of the vehicle shall not be affected by reducing its configuration. Tie downs for removed or relocated equipment shall be furnished. In addition to the requirements 3.2.6 or 3.2.6.1, as applicable, the rated capacity of the axles and suspension system shall be not less than 1.25 times the load imposed on each by the curb weight of the vehicle. The vehicle shall be transportable as described above without any other special provisions and without any shoring. The vehicle shall not be delivered to the Government in its reduced configuration.

3.1.1.21.1 AIR TRANSPORTABILITY.

When code ATR is specified, air transportability requirements for class C, D, E and F vehicles shall include air transport certification in C-130, C-141, C-5, and C-17 aircraft in accordance with the guidelines in MIL-HDBK-1791. In addition, all vehicles must be equipped with military standard tie down provisions as specified in MIL-STD-209 and option code TDN (section 3.1.1.21.6) also see 3.1.1.21.

3.1.1.21.2 HIGHWAY TRANSPORTABILITY.

When code HTR is specified, highway transportability requirements for class C, D, E and F vehicles shall include unrestricted highway transport in both the Continental United States (CONUS) and Outside the Continental United States (OCONUS) in accordance with the interface criteria published in “<http://www.tea.army.mil/pubs/nr/deploy/transinstruction/MIL-STD-1366D.pdf>” \t “_blank”, for unrestricted highway transport.

In addition, all vehicles with a highway transportability requirement must be equipped with military standard tie down provisions as specified in MIL-STD-209 and option code TDN (section 3.1.1.21.6) also see 3.1.1.21.

3.1.1.21.3 MARINE TRANSPORTABILITY.

When code MTR is specified, marine transportability requirements for class C, D, E and F vehicles shall include unrestricted water transport by all standard military and commercial watercraft in accordance with the interface criteria published in “MIL-STD-1366 Transportability Criteria”.

In addition, all vehicles must be equipped with military standard lifting and tie down provisions (option LTD) as specified in MIL-STD-209 and option code LTD (section 3.1.1.21.5) also see 3.1.1.21.

3.1.1.21.4 RAIL TRANSPORTABILITY.

When code RTR is specified, rail transportability requirements for class C, D, E and F vehicles shall include unrestricted rail transport in both the CONUS and OCONUS, unless otherwise specified, as described below and in accordance with the interface criteria published in “<http://www.tea.army.mil/pubs/nr/deploy/transinstruction/MIL-STD-1366D.pdf>” \t “_blank”, for unrestricted rail transport.

TESTING REQUIREMENTS

Vehicles must be capable of successfully completing the military standard rail impact test as prescribed in MIL-STD-810 using standard tie down procedures as illustrated in “http://www.tea.army.mil/pubs/nr/deploy/fgpamplets/PAM_55-19.pdf” \t “_new”.

In addition, all vehicles must be equipped with military standard tie down provisions as specified in MIL-STD-209 and option code TDN (section 3.1.1.21.6) also see 3.1.1.21.

3.1.1.21.5 LIFTING AND TIEDOWN PROVISIONS.

When option code MTR or LTD is specified, the vehicle shall be equipped with four (4) lifting provisions and four (4) tie down provisions to ensure interoperability between transported equipment and lifting and tie down devices commonly used in the transportation environment. Lifting and tiedown provisions shall conform to MIL-STD-209 for both Type I and Type II equipment. The contractor shall perform a structural analysis of the tie down and lifting provisions and the surrounding structural elements in accordance with MIL-STD 209 requirements. In cases when the structural analysis indicates the provisions will clearly pass the requirements, actual physical testing may not be necessary. In cases when where the structural analysis indicates the provisions will marginally pass the requirements, redesign or testing shall be recommended to the contractor. In cases where the structural analysis indicates the provisions will clearly fail the requirements, a redesign of the provisions shall be required.

A shipping data plate shall be furnished and shall conform to composition A (class 1 or 2) or composition C of A-A-50271. The shipping data plate shall be inscribed with a diagram showing the lifting attachments and lifting slings, the capacity of each attachment, and the required length and size of each sling cable. A silhouette of the vehicle showing the center of gravity shall be provided on the transportation plate. Stenciling or other suitable marking shall identify all lifting and tie down attachments. Tie down markings shall clearly indicate that the attachments are intended for the tie down of the equipment on the carrier (also see 3.1.1.21).

3.1.1.21.6 TIEDOWN PROVISIONS.

When option code ATR, HTR, RTR, or TDN is specified, the vehicle shall be equipped with four (4) tie down provisions to ensure interoperability between transported equipment and tiedown devices commonly used in the transportation environment. Tie down provisions shall conform to MIL-STD-209 for both Type I and Type II equipment. The contractor shall perform a structural analysis of the tiedown provisions

and the surrounding structural elements in accordance with MIL-STD 209 requirements. In cases when the structural analysis indicates the provisions will clearly pass the requirements, actual physical testing may not be necessary. In cases where the structural analysis indicates the provisions will marginally pass the requirements, redesign or testing shall be recommended to the contractor. In cases where the structural analysis indicates the provisions will clearly fail the requirements, a redesign of the provisions shall be required.

A shipping data plate shall be furnished and shall conform to composition A (class 1 or 2) or composition C of A-A-50271. The shipping data plate shall be inscribed with a diagram showing the tie down attachments, the capacity of each attachment, and the recommended tie down pattern for securing the equipment during transport. A silhouette of the vehicle showing the center of gravity shall be provided on the transportation plate. Stenciling or other suitable marking shall identify tiedown attachments. Tie down markings shall clearly indicate that the attachments are intended for the tiedown of the equipment on the carrier (also see 3.1.1.21).

3.2 GENERAL DESIGN.

3.2.1 FEDERAL MOTOR VEHICLE SAFETY STANDARDS.

The vehicle furnished accessories shall comply with all Federal Motor Vehicle Safety Standards in effect on the date of manufacture.

3.2.2 AIR POLLUTION CONTROL.

The vehicle shall comply with the Environmental Protection Agency Regulations governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect on the date of manufacture. Vehicles with a final destination of California or opt-in states shall comply with State of California regulations governing air pollution control in effect on the date of manufacture.

3.2.3 SOUND LEVEL.

The cab interior sound level shall not exceed 84db(A) when measured in accordance with Federal Motor Carrier Safety Regulation 393.94. The vehicle exterior sound level shall conform to the Environmental Protection Agency Noise Emission Standards for Transportation Equipment, Medium and Heavy Trucks.

3.2.4 CURB WEIGHT.

The curb weight is defined as the empty weight (no payload included) of a fully equipped truck. Curb weight shall include the chassis-cab, body or fifth wheel for Type I chassis, all attached devices, equipment, and full complement of fuel, lubricants, and coolants.

3.2.5 GROSS VEHICLE WEIGHT.

The gross vehicle weight (GVW) shall consist of the curb weight, operator and passenger weight (computed at 80 kg (175 lb each) and a payload to provide not more than the specified GVWR.

3.2.6 WEIGHT DISTRIBUTION.

Except as specified in 3.2.6.1 and 3.5.4.8.2.1.1, the distribution of GVW for the purpose of establishing suspension, axle and tire capacities shall be determined with the payload uniformly distributed over the load area. For Type II tractors furnished with a sliding fifth wheel, the weight distribution shall be determined with the sliding fifth wheel in its most forward position of adjustment.

3.2.6.1 SPECIFIED GAWR.

When specified (see 6.2), front and rear GAWR shall be designated and 3.2.6 does not apply. For Class D, GVWR shall not exceed 11,800 kg (26,000 lb) and no commercial driver's license shall be required for driver, without written approval of customer agency. For Class F, GVWR shall not exceed 15,000 kg (33,000 lb) for excise tax; except Type II tractors; without written approval of customer agency.

3.2.7 GROSS COMBINATION WEIGHT.

Gross combination weight (GCW) shall consist of the truck or truck tractor curb weight, operator and passenger weight (computed at 80 kg (175 lb) each), and the weight of a trailer loaded to provide not less than the specified GCWR. The fifth wheel shall be located so that with the truck tractor loaded to GVW, the load rating of the chassis components are not exceeded.

3.2.8 RATINGS.

Vehicle ratings shall be the manufacturer's published ratings. Component and vehicular ratings shall not be raised to meet the requirement of this specification. Minimum GVW and GCW ratings shall conform to Figure 1 for the specified class of vehicle. All individual components, including engine, transmission, driveline and drive axle, shall have a minimum GCWR specified for each class.

Figure 1 GVW and GCW Minimum Ratings				
VEHICLE CLASS	GVW, KG	(POUNDS)	GCW, KG	(POUNDS)
C	9,500	(21,000)	13,650	(30,000)
D	11,500	(25,500)	19,500	(43,000)
E	12,700	(28,000)	20,400	(45,000)
F	14,500	(32,000)	24,950	(55,000)
G	15,900	(35,000)	27,200	(60,000)

3.2.9 OVERALL WIDTH.

The overall width of the vehicle, exclusive of tires, wheel nuts and safety related items such as mirror, lights, and reflectors shall be not more than 2440 mm (96 inches). The width over the tires shall be not more than 2540 mm (100 inches).

3.2.10 ACCESSIBILITY.

The design of the vehicle and optional equipment shall permit access for routine servicing and shall permit access for replacement and adjustment of component parts and accessories with minimal disturbance of other components and systems.

3.2.11 RECOVERED MATERIALS/REGULATORY REQUIREMENTS.

In accordance with Section 23.403 of the Federal Acquisition Regulations, the Government's policy is to acquire items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers employees to undue hazards from the recovered materials. The term "recovered materials" means materials that have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this document. The use of re-refined oil shall not be prohibited. This does not prohibit vehicle manufacturers from using performance criteria for acceptable oil. Any re-refined oil products shall meet the performance criteria of the vehicle and component manufacturers.

3.3 PERFORMANCE.

3.3.1 MAXIMUM VEHICLE SPEED

The maximum vehicle governed speed shall be not less than 113 km/h (70 mph) or more than 121 km/h (75 mph) for 4x2 and not less than 96 km/h (60 mph) or more than 104 km/h (65 mph) for 4x4. Under no circumstance shall the vehicle maximum governed speed exceed the speed rating of any of the furnished tires.

3.3.2 SERVICE BRAKES.

On all vehicles except Type II tractors, the service brakes shall stop the vehicle, loaded to specified GVW, within the stopping distance requirements of Federal Motor Carrier Safety Regulation 393.52. The service brakes on Type II tractors shall stop the tractor-semitrailer combination, loaded to specified GCW, within the stopping distance requirements of Federal Motor Carrier Safety Regulation 393.52. All service brakes shall be of the self-adjusting type.

3.4 CHASSIS COMPONENTS.

3.4.1 ENGINE.

The engine furnished for the specified vehicle class shall be the chassis manufacturer's standard or optional engine for the commercial model truck that meets or exceeds the requirements of this specification.

3.4.1.1 DIESEL ENGINE.

Unless otherwise specified (see 3.4.1.2), the vehicle shall be equipped with a liquid cooled, compression ignited, diesel engine, electronically controlled, with not less than four cylinders. When code FJP is specified, the engine shall operate satisfactorily using grade JP-5 fuel conforming to MIL-T-5624 under emergency, short duration conditions and on grade JP-8 fuel conforming to MIL-T-83133 under normal conditions. A power loss when operating on JP-5 or JP-8 is acceptable. An electronically controlled engine shall be provided. Standard and optional diesel engines shall be provided

meeting the minimum as specified in the tables. When code CNG is specified, an OEM dedicated natural gas fueled engine shall be provided.

3.4.1.2 GASOLINE ENGINE.

When code E5 is specified, the vehicle shall be equipped with a liquid cooled, internal combustion, four-stroke cycle gasoline engine with not less than eight cylinders. The gasoline engine shall meet or exceed the horsepower required for the diesel engine it replaces. The rated horsepower shall be obtained when operated on unleaded fuel with an octane rating of 87. The engine rated horsepower shall be at or below the manufacturer's governed or recommended maximum speed. The battery(s) supplied with the gasoline engine shall, as a minimum, have ratings of 535 CCA @ -18°C and reserve of 115 amps.

3.4.1.3 OIL FILTER.

A full flow or combination full flow and bypass oil filter with replaceable element shall be furnished.

3.4.1.4 GOVERNOR.

An engine governor shall be furnished and set and sealed to limit the engine to the engine manufacturer's recommended operating speed.

3.4.1.5 COOLING SYSTEM.

The chassis manufacturer's heaviest duty cooling system for the model provided shall be supplied. The cooling system shall include a surge tank or a coolant recovery reservoir of not less than 1.89 L (two quart) capacity. On tilt cab models, a radiator servicing access door shall be provided if needed to allow verification of the coolant level without tilting the cab. For cooling system servicing see 3.4.1.7. Radiator furnished shall conform to TMC RP 325.

3.4.1.6 COOLANT TEMPERATURE CONTROL.

Thermostatic control of engine coolant temperature shall be provided. On diesel engine driven vehicles, the control shall include complete thermostatic control of all coolant flow through the radiator.

3.4.1.7 ENGINE COOLANT.

The engine coolant shall be a solution of chassis manufacturers ethylene glycol antifreeze and water or propylene glycol antifreeze and water, in equal parts of antifreeze and water by volume (-36°C (-34°F protection)). The coolant supplied shall comply with TMC-RP329 or TMC-RP330 as applicable. When code H4 is specified, the percentage of antifreeze in the cooling system shall be increased to provide protection against freezing down to -50° C (-60° F).

3.4.1.8 FAN CLUTCH.

A fan clutch shall be provided. The fan clutch shall reduce the fan speed automatically when the fan is not required for engine cooling. The fan clutch shall be asbestos free.

3.4.1.9 POWER PLANT HEATERS AND FUEL WARMER.

When code EH is specified, an OEM engine block heater(s) shall be provided. When code SEH is specified, a coolant heater (A), an engine oil heater (B), and fuel warmers (C), (D) and (E) shall be provided as individually specified. Heaters shall operate on 115/120-volt alternating current (ac), and shall be wired through a junction block, including fuse or circuit breaker, to a single three-pronged (male), weather proof slave receptacle for receiving external power and grounding the vehicle. The receptacle shall be located on the front or street side of the vehicle, as near the cab as practicable. A three-wire connecting cable, not less than 7600 mm (25 feet) long and of adequate line capacity to supply power for all heater units simultaneously, shall be furnished. Connecting cable shall include a matching female connector at the vehicle end and a standard three-pronged (two power plus one ground) male connector at the other end. Electrical apparatus shall conform to Federal Motor Carrier Safety Regulation 393.77(c)(7). The electrical insulation of the connecting cable shall withstand normal operating stresses in low ambient air temperatures (down to -51°C (-60°F)) without cracking or loss of dielectric capacity. All heater lead wires shall be installed without interfering with vehicle component operation and without loose excess wire. Provisions for stowage of the cable shall be provided in the vehicle cab. Heaters and fuel warmers shall be furnished as follows:

- (A) A coolant heater, 1000-watt (W) minimum rating, shall be installed in the engine block or in the lower coolant inlet hose.
- (B) An oil pan heater of the permanent external surface mount or immersion type that meets the following requirements shall be installed.
 - (1) Immersion type - not more than 11 W/L (10 watts per quart) or less than 5W/L (5 watts per quart) heating capacity.
 - (2) Surface type - not more than 2.8 watts per square centimeter (W/cm²) (18 watts per square inch) or less than 1.4 watt/sq. cm (9 watts per sq. in.) heating capacity.
 - (3) Thermal balance design or thermostat control providing for uninterrupted operation.
 - (4) Provision for mounting below minimum service oil level.

One of the following type fuel warmers or preheaters shall be furnished, if specified.

- (C) An in-line fuel warmer or preheater unit shall be provided on diesel engine driven vehicles to prevent clogging of fuel filters due to waxing of the fuel. The unit shall use engine coolant to transfer sufficient heat to the diesel fuel to heat it from an inlet temperature of -40°C

(-40°F) to an outlet temperature of -13°C (9°F), with a fuel flow rate not less than the maximum fuel demand of the engine fuel system. A coolant shutoff valve shall be provided for the coolant inlet side of the fuel warmer unit. The unit shall not cause heating of the fuel above 27°C (80°F) under any possible condition.

- (D) An in-tank fuel warmer or preheater unit shall be provided on diesel engine driven vehicles. The unit shall use engine coolant to transfer heat to the fuel in one fuel tank. The warmer shall not cause heating of any fuel above 27°C (80°F) under any possible condition, shall not disable or cause elimination of the fuel gage sending unit and shall not violate 3.2.1 or any Federal Motor Carrier Safety Regulation. A coolant shut off valve shall be included.
- (E) An in-line fuel warmer of the electrically heated type shall be provided which meets the performance requirements of 3.4.1.9 C.

3.4.1.9.1 HEATED FUEL AND WATER SEPARATOR.

When code FFS is specified, the fuel and water separator required by 3.4.3.3 shall be the heated type.

3.4.1.10 FUEL FIRED ENGINE PREHEATER.

When code FFP is specified, for diesel engine driven vehicles, a diesel fuel fired engine water heater shall be provided to preheat the engine. The heater shall include a timer, a thermostat and a circulating pump, and shall be connected to the engine coolant system. The heater shall be capable of starting and operating at -51°C (-60°F) and shall heat the engine to 4°C (40°F) from -51°C (-60°F) in not more than 1 hour. The system shall be equipped with a start light, visible to the driver, to indicate that the preheater is operating.

3.4.1.11 ELECTRONIC THROTTLE CONTROL.

An electronic controlled throttle with quick release shall be furnished, on electronically controlled engines.

3.4.2 ELECTRICAL SYSTEM.

The electrical system shall be in accordance with Federal Motor Carrier Safety Regulations 393.27 through 393.31 and 393.33.

3.4.2.1 STARTING SYSTEM.

For diesel engine driven vehicles, a 12-volt starting system, with 12-volt direct current (dc) lighting system shall be furnished. Engine starting equipment shall include an ether starting system or electric grid heater. If an ether system is furnished in lieu of a grid heater, it shall be of the measured shot type. The measured shot type ether system shall be key operated or manually operated from the driver's compartment, and shall be inoperative with the engine warm. Complete provisions for a replaceable ether reservoir of not less than 355 milliliters (ml) (12 fluid ounces) shall be furnished. A reservoir need not be furnished. On diesel engines 6.6L and larger, the electric starter motor shall be equipped with a thermostat controlled, automatic resetting circuit breaker to protect the motor from over crank heat damage.

Easily accessible remote jump - start post(s) shall be furnished, within close proximity to the battery box. Posts shall be furnished with protective rubber or plastic type covers that are tethered to prevent loss.

3.4.2.2 IGNITION SYSTEM.

For gasoline engine driven vehicles, a 12-volt dc ignition system shall be furnished.

3.4.2.3 ALTERNATOR.

Unless otherwise specified, a minimum 130-ampere alternator shall be provided. The alternator output with the engine at idle speed shall be not less than 70 amperes. When code A14 is specified, a minimum 145-ampere alternator shall be provided. The alternator output with the engine at idle speed shall be not less than 70 amperes.

3.4.2.4 LIGHTING.

All vehicle lights, reflectors, and wiring shall conform to Federal Motor Carrier Safety Regulations 393.19, 393.20 and 393.22 through 393.26(d). Type I chassis need not be furnished with rear identification lamps or clearance lamps and reflectors. Type IV dump rear lighting shall be positioned or guarded to prevent damage during dumping of the cargo. Positioning and guarding shall permit normal replacement of the bulbs and lenses. Lights and reflectors shall not be mounted on vertical surface of rub rails (unless recessed and fully protected) or mounted on vehicle bumpers. When right hand drive is specified by acquisition documents, left-dip headlights shall be provided. Left-dip headlights may be provided as a replacement set, stowed in the cab for shipment. Daytime running lights shall be furnished, in accordance with FMVSS 108, and TMC RP 138. Truck bodies shall be furnished with conspicuity markings in accordance with FMVSS 49 CFR Part 571.108. When code DRLD is specified, daytime running lights shall not be provided. When code LED is specified, all added stop/tail directional, and marker lights shall be light emitting diodes. LED lights shall be installed with tamper resistant hardware.

3.4.2.5 TURN SIGNALS.

Turn signal control shall be mounted on the steering column. Type II tractor turn signal units shall be visible when not in combination with a towed vehicle. Turn signals shall have visible flash indicators. Temporary mounting for rear signal units shall be provided on chassis models. Turn signals shall conform to TMC RP 118A.

3.4.2.6 LIGHTING CABLE FOR TYPE II TRUCK TRACTOR.

The semitrailer lighting cable for Type II tractors shall conform to SAE J1067. The cable shall incorporate a connector conforming to SAE J560 on the semitrailer end. The cable shall be coiled and shall have an extended length of not less than 110 inches. The SAE J560 connector shall include a grip for withdrawing from the semitrailer receptacle. Stowage for the cable shall be provided by the means of a hook and hanging loop or a protective holding bracket. When the hook and loop method is used, the cable shall be so attached as to

ensure that the plug is pointed down when the cable is stowed. Unless otherwise specified, stowage shall be by:

- (a) A hook provided on the rear of the truck tractor cab.
- (b) A hook on a pogo-stick type hose tender.
- (c) A protective bracket mounted at the rear of the cab below the roofline. Each shall hold the cable plug so as to prevent water from entering the terminals. The lighting cable; when on the hook, loop or protective bracket; shall be accessible to an operator standing on the ground to the rear of the cab, on the streetside of the vehicle.

3.4.2.7 BATTERIES.

Each battery shall be of 12-volt potential. The total reserve capacity ratings and the total cold cranking ampere ratings at -18°C (0°F), both measured in accordance with SAE J537, shall be not less than specified in Figure 2. The batteries shall be of the maintenance-free type having the maintenance-free characteristics listed in A-A-55439. Batteries shall conform to TMC RP 109A.

Figure 2 Batteries		
RESERVE CAPACITY		COLD CRANKING
ENGINE TYPE	(MINUTES)	(AMPERES)
Diesel engine	540	1875
Gasoline engine	115	535

3.4.2.8 AUXILIARY 24-VOLT SYSTEM WITH TRAILER RECEPTACLE.

When code VOL is specified, an auxiliary 24-volt system, with a trailer receptacle assembly, shall be provided. Either a converter type (see 3.4.2.8.1) or an alternator type (see 3.4.2.8.2) system, meeting specified requirements, shall be provided. A trailer receptacle, conforming to MS 75021-2, with cover assembly, shall be provided in an accessible location on the rear end of the vehicle. A 12-conductor truck tractor cable, not less than 3048 mm (10 ft) long with both ends of cable equipped with connectors conforming to MS 75020-1 and MS 75020-2, shall be furnished. The cable assembly shall be stowed in the vehicle. The 24-volt, service lighting circuit shall be connected through the appropriate lighting controls to terminals B, D, E, J and L of MS 75021-2. On Type II tractors, a pogo stick type hose tender shall be provided behind the cab to accommodate and secure the 24-volt cable.

3.4.2.8.1 CONVERTER TYPE 24-VOLT SYSTEM.

The 12- to 24-volt converter(s) shall operate from the 12-volt battery (see 3.4.2.7). The output capacity shall be not less than 24 amperes. More than one converter may be provided to furnish a total of 24 amperes.

3.4.2.8.2 ALTERNATOR TYPE 24-VOLT SYSTEM.

The alternator type 24-volt system shall be separate from the 12-volt vehicle lighting and ignition system and shall include:

- (a) Nominal 24-volt alternator with not less than 25 amperes rated capacity and capable of providing not less than 7 amperes dc output at normal engine idle speed.
- (b) Two 12-volt batteries with a combined capacity of at least 40 ampere-hours at a 20 hour rate or one 24-volt battery with at least 20 ampere-hours capacity at a 20 hour rate.
- (c) Voltage regulating device.
- (d) An ammeter for the 24-volt system, mounted on the instrument panel.

3.4.2.9 RADIO INTERFERENCE SUPPRESSION.

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

3.4.3 FUEL SYSTEM.

The fuel system shall conform to Federal Motor Carrier Safety Regulations 393.65 and 393.67.

3.4.3.1 AIR CLEANER.

A dry type air cleaner shall be provided. When code ASI is specified, a re-settable dash mounted service indicator or warning light, that registers the highest air restriction reading shall be furnished.

3.4.3.2 FUEL TANK(S).

Except as specified for Type II tractors or unless otherwise specified for other vehicle types (see 6.2) in the tables or, fuel tanks shall be not less than 170 L (45 gallons) total capacity. Type II tractors shall be equipped with fuel tank(s) of not less than 378 L (100 gallons) total capacity. When more than one fuel tank is furnished on diesel engine driven vehicles, means shall be provided to assure equalized fuel level in both tanks. When more than one tank is furnished on gasoline engine driven vehicles, a selector valve connecting either tank to engine fuel intake shall be provided and means shall be provided to monitor the fuel level of either tank from a single fuel gage; or an equalizing pump shall be used to maintain the same fuel level in both tanks. When code FTC is specified, fuel tank(s) totaling not less than 265 L (70 gallons) shall be provided. When code FTD is specified, fuel tank(s) totaling not less than 380 L (100 gallons) shall be provided. When fuel crossover lines are furnished they shall be in accordance with TMC RP 321. When code FTE is specified, dual 378 L (100 gallons) minimum capacity tanks shall be provided. When code CNG is specified, an OEM compressed natural gas engine shall be provided. CNG fuel capacity shall provide for a minimum of 175 miles range without refueling.

3.4.3.3 FUEL AND WATER SEPARATOR.

The manufacturer's standard or optional fuel filter shall be provided. A fuel and water separator shall also be furnished for diesel engines. The separator shall include a water coalescent

and a drain valve. A combination filter/separator unit may be provided. See 3.4.1.9.1 for heated fuel and water separator.

3.4.4 EXHAUST SYSTEM.

The exhaust system shall conform to Federal Motor Carrier Safety Regulation 393.83. When code VES is specified, a vertical exhaust pipe shall be provided. The vertical exhaust pipe shall be equipped with a heat shield and turnout tail pipe or hinged rain cap. A vertical exhaust pipe is not available on gasoline driven vehicles.

3.4.4.1 SPARK ARRESTER.

When code SKS is specified, a spark arrester shall be provided. The spark arrester shall have a 80 percent arresting efficiency when rated in accordance with SAE J350. Note: not available on vehicles with turbocharged engines.

3.4.5 TRANSMISSION.

Unless otherwise specified, the vehicle shall be equipped with an automatic transmission. When specified (see 6.2), the vehicle shall be equipped with a manual transmission, complete with clutch. The input torque capacity of the transmission shall be at least equal to the maximum torque delivered by the engine.

3.4.5.1 AUTOMATIC TRANSMISSION.

The automatic transmission shall include a hydraulic torque converter and not less than five forward gear ratios. Normal driving range selector position shall provide not less than five gear ratios without movement of the selector. The transmission shall be provided with a power takeoff provision. The net torque capacity and the net power rating of the transmission shall exceed the output ratings of the engine.

3.4.5.2 MANUAL TRANSMISSION.

When code T6, T7 or T10 is specified, a six, seven or ten speed manual transmission, respectively, shall be provided. Gear ratios in the transmission and axle shall be matched to provide a progressive shifting pattern throughout the complete range. The transmission shall be provided with SAE J704 power takeoff openings at the right and left sides. The transmission shall provide for maximum ease of shifting in all speeds.

3.4.5.2.1 CLUTCH.

The clutch shall be the largest capacity clutch offered for the type and class vehicle and engine furnished with the clutch torque capacity exceeding the maximum delivered engine torque. The clutch lining shall be asbestos free. The clutch shall be equipped with spring dampening and a greaseable release bearing.

3.4.5.3 TRANSFER CASE.

A two-speed transfer case shall be provided on 4x4 vehicles.

3.4.6 DRIVELINE COMPONENTS.

Driveline components shall be rated to transmit the maximum delivered torque of the engine, as developed through the maximum gear train reduction. The drive shaft for front mounted winches shall have an angle not greater than 16

degrees from the longitudinal plane. Components shall be rated no less than the GCWR in 3.2.8. Drivelines shall be balanced and free of vibration.

3.4.7 FRAME.

The chassis frame shall be the manufacturer's standard for the type and class vehicle furnished. Reinforcements shall extend at least from the rear of the front suspension, rear hanger bracket to the front of the rear spring, front hanger bracket. Reinforcements for Type III stake dumps and Type IV dumps shall provide sufficient structural strength in the chassis frame, through increased resisting bending moment (RBM), to at least equal the loads imposed, with the dump truck loaded to provide specified GVW. Frame reinforcement for Type III stake with crane shall be in accordance with the body manufacturer's recommendations for the size of the crane furnished. Frame rails shall not project beyond the rear end of the body. Unless otherwise specified, on Type II tractors, the chassis frame rails shall be cut off immediately to the rear of the rear spring rear hanger brackets or the frame crossmember closest to the rear of these brackets. When code FTR is specified, the frame rails shall extend and shall taper from maximum cutoff position so as to assist in coupling to a semitrailer. When a RBM is specified, any frame combination of yield strength and section modulus that provides the required RBM is acceptable. When code FHD is specified, a heavy-duty frame in accordance with the requirements of Figure 3 shall be provided. When code LH is specified, a low profile chassis shall be provided with minimum 19.5 tires and a maximum of 25 cm (35 in) to top of unloaded frame at centerline of rear axle. When code FFE is specified, an integral front frame extension, minimum 45 cm (18 in) ahead of grille shall be provided, with a radiator and hood compatible for the installation of a front crankshaft PTO to accommodate pumps, winches, or other equipment and a stationary grill shall be furnished. The FFE bumper shall be the chassis manufacturer's swept-back full width channel front bumper.

Figure 3 Heavy Duty Frame	
Requirements for Code FHD	
CLASS	RBM MINIMUM IN LB
C	590,000
D	850,000
E	900,000
F	1,300,000
G	1,600,000

3.4.8 SUSPENSION.

Except as specified in 3.2.6.1 and 3.5.4.8.2.1.1, the vehicle shall be equipped with a suspension system with components having a rated capacity at least equal to the load imposed on each member, measured at the ground, with the vehicle loaded to specified GVW. When suspension is rated at the spring pads, un-sprung weight shall be deducted. The vehicle shall be equipped with hydraulic, double-acting shock

absorbers at the front wheels. When code AUXS is specified, auxiliary rear springs shall be provided.

3.4.8.1 REAR AIR SUSPENSION.

When code SAR is specified, an air suspension shall be provided on the rear axle for class E, F and G vehicles. The suspension system shall have not less than 55 percent of the sprung weight carried on the air springs. The air suspension system shall incorporate at least one track bar to control lateral movement. Each end of the track bar(s) and of the torque rod(s), if so equipped, shall be equipped with rubber bushings that do not require periodic lubrication. The suspension system shall incorporate leveling valve(s) with time delay or other devices to minimize constant air consumption. On Type II tractors, the system shall be equipped with an air pressure dump valve. Controls shall be located in the cab, accessible to the seated driver. Hydraulic double-acting shock absorber(s) shall be provided near each of the air springs. The air suspension system shall include mechanisms to prevent damage from excessive extension when lifting and towing the vehicle. The suspension shall be provided with a mechanism at each wheel to assure lifting of the wheel and axle when jacking the vehicle from the applicable jacking location. Note: option not available on Type IV dumps.

3.4.9 AXLES.

Except as specified in 3.2.6.1 and 3.5.4.8.2.1.1, axle ratings shall be at least equal to the load imposed on each axle, measured at the ground, with the vehicle loaded to specified GVW. The wheel bearings and axle spindles shall be oil lubricated except on front drive axles. The hubcaps, except for driving axles, shall have a window for visual determination of oil level. Provisions for venting or withstanding internal pressure buildup and for replenishing the oil supply shall be provided.

3.4.9.1 TRACTION CONTROL.

Maximum traction capabilities shall be maintained at all times under each drive wheel(s) for the life of the vehicle. When code ATC is specified, automatic traction control through the ABS system shall be supplied. When code D1 is specified, a driver controlled differential lockout shall be provided. When code D3 is specified, the differential traction control shall actuate automatically to ensure that power is transmitted to the wheel having traction when the opposite wheel loses traction. Traction control shall be provided on all Type IV dumps.

3.4.10 WHEELS, RIMS, TIRES AND TUBES.

Unless otherwise specified, the vehicle shall be equipped with single front and dual rear wheels. Disc wheel sizes shall be the same for all wheels except where required otherwise. Tire size and load range (ply rating) shall be the same for all tires except class F vehicles or where required to be otherwise. The rear axles of dump trucks shall have Goodyear G244MSD, Michelin XDE M/S or equal tires. When code HF is specified, wide base type tires and single wheels for front and rear axles shall be provided. Wide base wheels shall be interchangeable without the use of an adapter. The front track of wide base tires shall be within plus or minus 25

cm of the rear track. Unless otherwise specified disc type wheels shall be furnished. Hub piloted wheels shall be furnished. Tire and wheel assemblies shall be balanced. When the front tires extend beyond the cab fenders, rubber fender extensions extending at least to the outside of the tire tread shall be furnished. Tires and wheels shall conform to the Tire and Rim Association or to the European Tyre and Rim Technical Organization recommendations for the type and size furnished. Tires and wheels supplied shall be speed rated the same as or higher than the maximum geared road speed of the vehicle at engine manufacturer's recommended maximum governed speed (RPM) for engine supplied.

3.4.10.1 TIRES.

Unless otherwise specified, standard profile steel belted radial ply tires shall be provided. Tires shall have highway tread on 4x2 vehicles and all terrain (AT) tires or on-off road (OO) tires on 4x4 vehicles, and the rear axle of dump trucks. Tires shall be of the tubeless type. Except as specified in 3.2.6.1 and 3.5.4.8, tires shall be of rated capacity at least equal to the load imposed on each tire, measured at each wheel, at the ground, with the vehicle loaded to specified GVW. Tires shall conform to the Tire and Rim Association or to The European Tyre and Rim Technical Organization recommendations. When code SLP is specified, low profile tires shall be provided. When code MS is specified on 4x2 vehicles, mud and snow tread shall be provided on rear axles.

3.4.10.2 CARRIER FOR SPARE TIRE ASSEMBLY.

When code STC is specified, a carrier for a spare tire assembly shall be provided. The carrier design shall enable safe removal or mounting of a spare tire assembly using only the tools specified in 3.4.16.1. The carrier shall enable the safe removal and installation of the spare tire assembly from and to the vehicle and carrier without personnel positioning themselves or any part of their body under the spare tire assembly. Threaded fasteners, when used to secure the spare tire assembly in the carrier, shall be constructed of or plated with corrosion resistant material. The carrier shall be installed in a readily accessible location on the vehicle. On Type VII and Type VIII vehicles, the carrier shall be installed on the curbside, under the body, forward of the rear axle. When code VMS is specified, a vertical carrier for a spare tire assembly shall be provided. The carrier shall be mounted behind the cab above the chassis frame for Type II tractors or Type IV dumps. When code VMS is specified, for Type III stakes, a vertical carrier for a spare tire assembly shall be provided. The carrier shall be mounted behind the cab on the front rack or bulkhead.

3.4.10.3 SPARE TIRE ASSEMBLY.

When code STA is specified, a spare tire assembly for the front axle shall be provided. The spare tire assembly shall be identical to those on the axle for which is intended. The spare tire assembly shall include an inflated spare tire(s) mounted on the spare wheel(s). If a Class F vehicle is furnished with a higher load range on the rear, the spare shall be the higher load range. When code STB is specified, a spare tire assembly for the rear axle shall be provided.

3.4.10.4 TIRE CHAIN CLEARANCE.

Tire chain clearance in accordance with SAE J683 shall be provided. Allowance for spring deflection shall be included.

3.4.10.5 AUTOMATIC TIRE CHAINS.

When code AICE is specified, the vehicle shall be equipped with automatic tire chains on the rear axle. This option is available only on vehicles with air brakes. The chains shall be permanently mounted to the rear suspension. Controls to engage and disengage the chains shall be located in the cab, and be easily accessible to the seated driver. Activation of the chains shall be accomplished without stopping the vehicle, to enhance braking and traction in forward and reverse speeds. When activated the chains shall provide improved traction under tires on the rear axle. Installation of the chains shall be in accordance with the application requirements of the manufacturer of the automatic tire chains.

3.4.11 BRAKES.

Brakes shall conform to Federal Motor Carrier Safety Regulations 393.40 through 393.43 and 393.45 through 393.52. Brake linings shall be of non-asbestos material. Class C vehicles shall be equipped with power assisted, hydraulic or air-hydraulic, service brakes.

3.4.11.1 AIR BRAKES.

The class D, E, F and G vehicles shall be equipped with full-air brakes. The braking system, complete with all necessary components, shall include:

- (a) Air compressor, unloader-head type, engine driven and engine lubricated, air or water cooled, and having a capacity of not less than 340 L/min (12 cubic feet per minute (cfm)).
- (b) Air storage reservoir(s), each tank equipped with drain, and with safety and check valves between the compressor and the last reservoir tank
- (c) Foot control, suspended or treadle type
- (d) Air control valves
- (e) Air pressure gage, visible to the driver
- (f) Low air pressure warning, visible and audible
- (g) Service brake stop lamp switch
- (h) Automatic moisture ejector on air storage reservoir
- (i) Automatic slack adjusters on cam type brakes or internal self-adjusting brakes on wedge and disc type brakes on all axles
- (j) Brake dust shields on rear
- (k) Spring set parking brake

3.4.11.1.1 AIR DRYER.

An air dryer with a replaceable spin on/off desiccant cartridge shall be installed in the air brake system. The dryer shall have the capability of removing not less than 95 percent of the moisture in the air being dried. The dryer shall have a pre-cooler and a filter to screen out oil and solid contaminants. The dryer shall have an automatic self-cleaning cycle and a thermostatically controlled heater to prevent icing of the purge valve. Air dryer shall conform to TMC RP 637.

3.4.11.2 TRAILER BRAKE CONTROL SYSTEM.

In addition to the components specified in 3.4.11.1 and 3.4.11.1.1, a trailer brake control system shall be furnished for Type II tractors and when a trailer-towing package code TTP (see 3.1.1.8) is required for air brake equipped chassis. The trailer brake control system shall include:

- (a) Identification of emergency and service lines
- (b) Coincident control of trailer brakes with prime mover foot control
- (c) Independent hand control for trailer brakes
- (d) Prime mover protection valve with dash control and automatic breakaway feature
- (e) Trailer stoplight control operable with foot brake and with hand control for trailer brakes
- (f) Two SAE J844 coiled air hoses, not less than 2800 mm (110 inches) long when fully extended, with SAE J318 glad hand couplers on both ends of hoses (not required for Type II tractors unless a trailer towing package is specified). The hoses shall be packaged and stowed in the vehicle tool compartment for shipment.
- (g) Air connectors for trailer with SAE J318 glad hand couplers mounted at the rear of the vehicle, located to prevent interference with a trailer (not required for Type II tractors unless trailer towing package is specified). Air connectors and glad hands on Type IV dumps shall be located to prevent damage during dumping of the cargo.
- (h) Two SAE J844 coiled (or when specified (see 6.2), straight) connecting air hoses, not less than 2800 mm (110 inches) in length when fully extended, equipped with coiled spring hose guards, and SAE J318 glad hand quick connector on trailer end of hoses (Type II tractors only).
- (i) Unless otherwise specified, supports on the cab or on a pogo stick type hose tender with dummy glad hand connectors to retain hoses when not in use (Type II tractors only). Supports shall not be mounted on the cab roof. The dummy glad-hand couplers shall be located on the street side rear of the cab and shall be accessible to an operator standing on the ground. Supports shall conform to TMC RP 417.

- (j) Dummy glad hand couplers with security chains or cables (not required for Type II tractors unless a trailer towing package is specified).
- (k) Prime mover only parking brake valve to permit mover parking brakes to be applied while charging the trailer air brake system.

3.4.11.3 BRAKE CONTROLS FOR USE FROM A TOWING VEHICLE.

When code TBT is specified, the vehicle shall be provided with a system for controlling the brakes from a towing vehicle (wrecker). The installation shall be complete with air brake couplers, relay emergency valve with no-bleed-back feature (except when spring applied emergency brake is furnished), additional air lines and fittings. The service and emergency couplers shall be mounted on the front in a protected position providing for ready attachment of air hoses from a towing vehicle. The service and emergency couplers shall be identified and provided with dummy glad-hand couplers with chains. The system shall not compromise conformance to any Federal Motor Carrier Safety Regulation referenced herein or to any Federal Motor Vehicle Safety Standard.

3.4.11.4 INCREASED BRAKING CAPABILITY.

When specified for class E, F or G vehicles (see 6.2), the service brakes shall be augmented by one of the following braking systems:

- (a) An electromagnetic or hydrodynamic drive shaft retarder, code EDR;
- (b) A system which opens all or some of the engine exhaust valves near the end of the compression stroke, thereby converting vehicle motion to a pumping loss, code ECB;
- (c) A controlled gate valve in the exhaust manifold, which produces backpressure on the engine pistons during the exhaust stroke, code EXB;
- (d) When an automatic transmission is specified, a hydrodynamic retarder integral with the transmission, code T1.

A dash mounted switch shall be provided to activate, modulate, or cut the brake augmentation. The switch shall be marked to indicate its position. When active, the system shall be fully controlled by means of the conventional driving controls to apply retardation during vehicle deceleration, and to cut it out in the other operating modes. For (b) or (c), above, the retarder shall be approved by the engine manufacturer.

3.4.11.5 ANTILOCK BRAKE SYSTEM.

Vehicles equipped with air brakes shall be provided with an antilock brake system in accordance with FMVSS 571.121. Vehicles equipped with hydraulic brakes, shall be provided with an antilock brake system in accordance with FMVSS 571.105. Type II tractors shall have the SAE J560 seven-pin connector wired to conform to TMC RP 137.

3.4.12 CAB.

Unless otherwise specified, an OEM conventional type full

width cab shall be provided. Unless otherwise specified, a cab with a forward tilting hood and fender assembly, including tilting and locking mechanism, shall be provided. Tilting shall not interfere with installed equipment. When code CE is specified a chassis OEM extended cab having an inside length (from firewall to back of cab) of not less than 78 In. nor more than 81 In. shall be provided. When code COE is specified, a cab-over-engine (tilt cab) shall be provided. Both cab doors shall be equipped with locks, operable from inside the cab through mechanical linkages and equipped with external, key operated locks. Drip protection shall be provided above the cab doors. Safety grips or grab handles shall be provided on each side of the cab to assist personnel in entering and leaving the cab and, in addition, for Type II tractors, to assist personnel in climbing onto the truck tractor deck plate. When step height into the cab exceeds 610 mm (24 inches) a secondary step shall be provided, in accordance with TMC RP 404B. For tilt type cabs, provisions to facilitate cleaning the windshield shall be provided by means of a bumper step, or bumper step cutouts, and a grab handle located under the windshield. When a snowplow or snowplow provisions are specified, service hatches or access or butterfly type hood shall be furnished to provide access for routine engine maintenance with a snowplow attached. Cab equipment shall include: a 12-volt electrical power point outlet (receptacle), easily accessible to the seated driver; and tinted glass in all windows, where optionally available from the chassis manufacturer.

3.4.12.1 CAB INTERIOR.

Unless otherwise specified, the cab shall have an upholstered, full width, adjustable seat and back or individual, adjustable, driver's seat and individual passenger seat. When code DSS is specified, a driver's individual, adjustable suspension seat and an individual passenger seat shall be provided. The driver's suspension seat shall be the manufacturer's standard mechanical type on class C and air ride suspension type on class D, E and F. When code DSS2 is specified, the driver seat and the passenger seat shall conform to the requirements of code DSS. The color of the upholstery and the interior finish shall be compatible with the exterior color (see 3.1.1.1). White upholstery shall not be furnished. Interior lighting shall be provided. Three sets of seat belts shall be installed on bench seats. Outboard seats shall have combination pelvic and upper torso restraint seat belts. A rear cab window shall be furnished, unless a sleeper compartment is specified.

3.4.12.2 CREW CAB.

When code CC is specified, a four-door, full width crew cab shall be provided. The cab shall be equipped with two upholstered, full width seats and backs. The front seat shall be adjustable. Three pairs of seat belts shall be installed for both the front and rear seats. Front outboard seats shall have combination pelvic and upper torso restraint seat belts. Cab doors shall be equipped with locks operable from inside the cab through mechanical linkages, with both front doors equipped with an external key operated lock. Cab doors shall have windows with crank operated window regulators. A rear window shall be provided. Interior lighting shall be provided. Safety grips or grab handles shall be provided at each door

of the cab to assist personnel climbing into the cab. The cab roof shall be of one-piece construction; or, if welded, the roof shall give the appearance of one piece, with weld seams being continuous, waterproof, and free of visible bumps or protrusions. Full-length drip moldings shall be mounted above the doors.

3.4.12.3 CREW CAB SEAT SPACING.

With the front seat adjusted to the extreme forward position there shall be not less than 760 mm (30 inches), measured in a horizontal plane, between the front of the rear seat back and the rear of the front seat back. A kick-space height of not less than 70 mm (2.75 inches) shall be maintained between the floor and the rear of the front seat in all positions of adjustment. Legroom and space forward of the front seat shall be equivalent to that provided ahead of the seat in a two-door standard cab.

3.4.12.4 SLEEPER CAB.

When code SLP1 is specified, a sleeper cab meeting the requirements of 3.4.12 and 3.4.12.1 shall be provided with the following additional space, equipment and features: The sleeper compartment shall be not less than 914 mm (36 inches) in depth and fitted with a foam or inner spring mattress not less than 863 mm (34 inches) in depth, and a sleeper occupant restraint system. A luggage compartment with locking access doors on each side of the cab shall be provided. Curtains and a dome light shall be provided. The sleeper compartment shall have heating and air conditioning. Auxiliary air temperature controls or louvers shall be provided in the sleeper compartment. The controls or louvers shall provide for remote regulation of both heating and air conditioning from within the sleeper compartment.

3.4.13 STEERING.

Power steering shall be furnished.

3.4.14 WINDSHIELD WIPERS AND WASHERS.

The vehicle shall be equipped with dual windshield wipers and windshield washers. Windshield wipers shall be of the multi-speed intermittent type and operated by electric motor(s).

3.4.15 BUMPER.

Unless the bumper is an integral part of vehicle cab, a channel type front bumper shall be provided on each vehicle.

3.4.15.1 REAR END PROTECTION.

Except for Type I chassis, Type II tractors, and Type IV dumps, the rear end of the vehicle shall be protected in accordance with Federal Motor Carrier Safety Regulation 393.86. A rear bumper shall be provided as specified herein for the various vehicle types.

3.4.16 TOOL STOWAGE.

Stowage space of sufficient size to accommodate a vehicle jack, hand tools, anti-skid chains (for outside tires on duals only) and emergency reflective triangles shall be provided. The stowage space shall provide for positive retention of this equipment during vehicle operation. Stowage space for these tools may be furnished in the cab. When stowage space for

these tools is located outside the cab, it shall be weatherproof and shall provide for locking with a padlock or integral lock.

3.4.16.1 TOOLS.

When code TJ is specified, tools for changing a mounted tire assembly with the spare assembly shall be provided. Tools shall include at least a hydraulic jack, jack handle and wheel nut wrench. The jack shall be of such closed height as to permit its location under an axle, or other satisfactory lift point at any wheel with the tire flat. The jack, without blocking, shall be capable of raising any wheel of the loaded vehicle to a height adequate to permit removal and replacement of a wheel and tire assembly.

3.4.17 HEATER AND DEFROSTER.

The vehicle shall be provided with a hot water heater with fresh air intakes and discharge outlets to the floor and to windshield defroster louvers. The heater shall be complete with blower and mounted controls convenient to the driver.

3.4.18 CONTROLS AND OPERATING MECHANISMS.

All controls and operating mechanisms shall be located for left hand drive. Controls shall be complete and conveniently operable by the driver. Lever controls shall be designed and located to permit easy entrance and exit of the operator to and from the driver's compartment. Instruments and controls shall be identified as to their function and installed in a manner to facilitate removal and servicing. All instruments shall be visible to the driver when seated in the driving position.

3.4.19 ACCESSORIES AND EQUIPMENT.

Chassis equipment shall be complete with all accessories furnished as standard equipment by the manufacturer. The following minimum equipment shall be furnished:

- (a) Key operated ignition switch
- (b) Ammeter or voltmeter
- (c) Fuel gage
- (d) Oil pressure gage
- (e) Engine coolant temperature gage
- (f) High coolant temperature low coolant level and low oil pressure alarm buzzer
- (g) Speedometer with recording odometer
- (h) Dual sun visors
- (i) Driver's compartment ventilator other than window
- (j) Tachometer (for diesel engine driven vehicles)
- (k) Front door or seat mounted armrest on driver and on passenger side

(l) An engine shutdown system shall be provided. The engine shutdown system shall include an engine coolant temperature, engine coolant level and engine oil pressure red indicator warning light and alarm buzzer. The warning light and buzzer actuation shall precede engine shutdown. The system shall permit engine restart and run for approximately 30 seconds following automatic shutdown. When a Gasoline engine is furnished, engine shutdown feature is not required.

(m) When code SK is specified, the odometer shall show cumulative distance in kilometers.

3.4.20 REARVIEW MIRRORS.

Outside rearview mirrors shall be mounted on both sides of the cab. The mirrors shall have flat and convex areas. The flat portion shall have not less than 320 square centimeters (50 square inches) of reflective area. The convex portion shall have not less than 155 square centimeters (24 square inches) of reflective area. The convex portion shall be attached to the lower mirror-supporting arm and shall not interfere with use of the flat mirror. When code RM3 is specified, the curbside flat mirror shall be of the motorized type, with remote control. The mirror motor shall provide not less than 60 degrees horizontal rotational viewing range. Code RM3 shall include the requirements of code RM4. When code RM4 is specified, the flat mirrors shall be electrically heated. Mirror remote and heating controls shall be within reach of the seated driver.

3.4.21 HORN.

The manufacturer's standard electric horn shall be furnished. In addition, on class D, E, F and G, an air operated horn shall be provided.

3.4.22 ENGINE HOUR METER.

When code EHM is specified, an engine hour meter shall be provided. The meter shall have a totalizing mechanism of not less than 9,999 hours for the chassis engine to register accurately the number of hours of operating time. The meter shall be of rugged construction to ensure continuous trouble-free performance under severe operating conditions. The meter shall be mounted on the cab instrument panel or in the engine compartment in a readable location.

3.4.23 BACKUP ALARM.

When code BUA is specified, an alarm shall be provided which provides an audible warning whenever the ignition switch is "on" and the vehicle transmission control is in reverse. The alarm shall automatically adjust to ambient noise levels. Alarm shall conform to SAE J994. Note: Code BUA is required for a Type IV dump.

3.4.24 AM/FM RADIO.

An OEM AM/FM radio with clock shall be provided. When code RACS is specified, an OEM AM/FM/clock radio with integrated cassette player shall be provided. When code RAD is specified, an OEM AM/FM/clock radio with integrated compact disc player shall be provided.

3.4.25 AIR CONDITIONING.

The vehicle shall be equipped with the chassis manufacturer's standard all weather air conditioner. The use of a Class I or Class II controlled substance refrigerant is prohibited. Air conditioning system shall conform to TMC RP 418. When code DA is specified, the vehicle supplier shall furnish the vehicle without air conditioning components.

3.4.26 Servicing and Adjusting.

Prior to acceptance of the vehicle by the Government inspector, the contractor shall service and adjust each vehicle and its mounted equipment for operational use including at least the following: alignment of lights, adjustment of the engine and brake systems; filling and charging of batteries; alignment of front wheels; inflation of all tires; complete lubrication of chassis, engine and running gear with grades of lubricants recommended for the ambient air temperature at the delivery point; servicing of the cooling system in accordance with 3.4.1.7; and servicing of the windshield washer reservoir with water and appropriate additives.

3.4.27 FRONT MOUNTED WINCH.

When code MHW is specified, a winch assembly mounted on the front of the vehicle shall be provided. The winch shall be powered by the manufacturer's standard power takeoff or powered hydraulically. If hydraulically powered, the hydraulic system shall comply with the requirements in paragraph 3.1.1.19. The winch shall conform to SAE J706. The winch shall be of the single drum type and shall have one forward and one reverse speed. All winch controls shall be mounted inside the cab. Winch controls shall be located to provide no interference with the entrance or exit of the driver. The winch shall have a rated single line pull capacity of not less than 89 kn. (20,000 pounds) pull on the bare drum. The winch line speed on the bare drum shall be between 4.6 and 9.1 meters/min (15 and 30 feet per minute) at an engine speed equal to 35 percent at engine-governed speed. The winch shall be wound with not less than 56 m (185 feet) of 16 mm (0.625 inch) diameter, preformed, 6x37, improved plow steel, independent wire rope core (IWRC) and shall be equipped with end chain and hook. An integral, adjustable, automatic safety brake shall be provided. The winch shall be equipped with a roller guide. Angles of the winch driveline U-joints shall be not greater than 16.5 degrees.

3.4.27.1 WINCH DRUM GUARD.

A winch drum guard shall be furnished. The guard shall confine the cable to the area between the drum flanges. The guard shall consist of not less than 6.4 mm (0.25 inch) vertical side plates, conforming to the outside radius of the drum flanges. Six bars, 9.5 mm by 32 mm (0.375 inch by 1.25 inches), shall be welded to the vertical side plates. Three bars shall be located on the top and spaced equally on the top radius, and three bars shall be located on the bottom and spaced equally on the bottom radius. The vertical distance between the vertical side plates and the drum flanges shall be not more than half the specified cable diameter.

3.4.27.2 FRONT BUMPER.

When a front mounted winch is specified, the bumper shall be mounted forward of the winch. The open area on either side of the winch shall be covered with a combination step plate and gravel guard. The bumper shall be either a channel (see 3.4.15) or a pipe type front bumper. When a pipe type front bumper is furnished, the nominal diameter shall be not less than 75 mm (three inches), and the wall thickness shall be not less than that specified in schedule 40 of ASTM A53. The pipe type front bumper shall have half-round ball ends.

3.4.27.3 COMBINATION STEP PLATE AND GRAVEL GUARD.

When a front mounted winch is specified, a combination step plate and gravel guard shall be furnished. The step plate shall be fabricated of not less than 14 gage (1.897 mm) (0.0747 inch) steel tread plate exclusive of projections. The step plate shall be secured to the front bumper and shall be not less than 6.4 mm (0.25 inch) or not greater than 9.5 mm (0.375 inch) from the chassis sheet metal. The step plate shall be capable of supporting 1460 kg/m² (300 pounds per square foot). The step plate shall not deflect more than 3.2 mm (0.125 inch) under the loads imposed.

3.4.28 Emergency Equipment.

When code FEX is specified, emergency equipment in accordance with FMCSR 393.95 shall be provided. Equipment shall consist of 393.95: (a)(2)(i) fire extinguisher, min 10 B, C; (c) spare fuses if electrical overload protection devices is not of the rest type; and (f)(z)(i) reflective triangles, in accordance with TMC RP 403.

3.4.29 PLACARD HOLDERS.

When code FPH is specified, hazardous material placard holders in accordance with 40 CFR Part 172 shall be installed on each side and each end of the vehicle.

3.4.30 EXHIBIT OR DISPLAY TRUCK TRACTOR PACKAGE.

When authorized by agency or departmental procurement documents and when specified (see 6.2), Type II tractors shall be furnished with an exhibit or display package. The package shall include a chrome plated or stainless steel exhaust shield and tail pipe, polished aluminum wheels, polished aluminum or polished stainless steel fuel tanks and fuel tank straps, polished aluminum, polished stainless steel or chrome front bumper and polished aluminum or polished stainless steel quarter fenders.

3.4.31 SYNTHETIC LUBRICANTS.

When code LSD is specified, differentials shall be provided with synthetic lubricant. When code LST is specified, the manual transmission shall be provided with synthetic lubricant. When code TSTF is specified, the automatic transmission shall be furnished with synthetic lubricant. Synthetic lubricants supplied shall be approved by the component manufacturer and furnished by the chassis OEM.

3.5 VEHICLE TYPES.

The cab-to-axle dimension specified for the various vehicle types may be reduced by not more than 50 mm (two inches) when the vehicle is furnished with tilt type cab (see 3.4.12).

3.5.1 TYPE I (CHASSIS, WITH CAB).

Type I vehicles shall have one of the usable cab-to-axle (CA) dimensions shown in Figure 4 table I, as specified (see 6.2). Usable cab-to-axle is defined as the distance from the most rearward vehicle obstruction that would interfere with body mounting to the centerline of the axle. Load area for the purpose of determining weight distribution (see 3.2.6) shall be as specified (see 6.2). Chassis shall be suitable for subsequent mounting of the make, model and type of body and equipment specified if specified (see 6.2). Required CA dimensions must be specified when vehicle order is submitted.

Figure 4 Cab-axle (CA)		
CODE	LENGTHS (for fixed body)(select one)	MAXIMUM BODY SIZE
CA1	260/270 cm (101/108 in.)	4.3 m/14 ft
CA2	300/320 cm (119/124 in.)	4.9 m/16 ft
CA3	340/360 cm (136/138 in.)	5.5 m/18 ft
CA4	380/400 cm (150/156 in.)	6 m/20 ft
CA5	420/440 cm (167/171 in.)	6.6 m/22 ft
CA6	150/160 cm (59/60 in.)	2.5 m/8 ft
CA7	180/190 cm (71/72 in.)	3.0 m/10 ft
CA8	210/220 cm (83/84 in.)	3.6 m/12 ft

Specify as needed when other than types covered by Figure 4.

3.5.2 TYPE II (TRUCK TRACTOR).

When a hydraulic lift fifth wheel is specified, Type II tractors shall conform to 3.5.2.9 through 3.5.2.9.3. When an air operated lift fifth wheel is specified, Type II tractors shall conform to 3.5.2.10 through 3.5.2.10.4. Otherwise, Type II tractors shall conform to 3.5.2.1 through 3.5.2.6 with the fifth wheel on 4x2 vehicles mounted on an adjustable sliding base with manual release. Type II tractors shall have an effective cab-to-axle (CA) dimensions not greater than that specified in table II for vehicles furnished with corresponding equipment. Unless otherwise specified, Type II tractors shall be equipped with a fore and aft rocking, 910 mm (36 inch) diameter fifth wheel with forks and semiautomatic lock for SAE J700 kingpin. When code OSW is specified by a Military agency, a type II truck tractor shall be equipped with a full oscillating, 910 mm (36 inch) diameter fifth wheel with forks and semiautomatic lock for SAE J700 kingpin and shall be provided with lockout for locking out side oscillation. The fifth wheel shall be capable of being uncoupled by the operator standing on the driver's side of the vehicle. Uncoupling action shall be protected by a secondary manual lock, preventing movement of the uncoupling lever until the secondary lock is manually released. The fifth wheel shall have a visual indicator or latching mechanism to ensure a

positive lock of the kingpin. The vertical load capacity and the drawbar pull capacity of the fifth wheel shall be not less than the loads imposed with the vehicle loaded to the required GVW and GCW.

3.5.2.1 FIFTH WHEEL LOCATION.

The clearance from the centerline of the kingpin to the cab, or to the vertical spare tire assembly when furnished, or pogo stick type hose tender when furnished, shall be not less than 1620 mm (64 inches). When additional equipment to be mounted behind the cab is specified, the 1620 mm (64 inches) shall be measured to the rearmost point of a pogo stick to be mounted behind the additional equipment. The CA may be increased. The centerline of the fifth wheel for class F tractors shall be not less the 360 mm (14 inches) forward of the rear axle centerline.

3.5.2.2 FIFTH WHEEL MOUNTING.

Fifth wheel mounting shall conform to Federal Motor Carrier Safety Regulation 393.70(b).

3.5.2.3 FIFTH WHEEL HEIGHT.

The unladen level height of the fifth wheel shall be 1219 mm (48 inches), plus or minus 25 mm (1 inch), above ground level for a fore and aft rocking fifth wheel, 1400 mm (55 inches), plus or minus 25 mm (1 inch), for a full oscillating fifth wheel on 4x2, and 1520 mm (60 inches), plus or minus 25 mm (1 inch) for a full oscillating fifth wheel on 4x4.

3.5.2.4 APPROACH RAMPS.

When a full oscillating fifth wheel is provided, approach ramps of plates shall be furnished to give support for fifth wheel forks and a continuous incline for semitrailer approach. The ramps or plates shall extend from the rear of the chassis frame to the fifth wheel forks. The forward (highest) edges of the approach ramps shall be rounded and smooth.

3.5.2.5 DECK PLATE.

A self-cleaning grating of sufficient structural strength for use by the operator in connecting air and electric lines between the tractor and a semitrailer shall be installed. The grating shall extend across and shall be bolted or clamped to the frame rails. Grab handle(s) and step(s) to allow safe access to personnel climbing onto the deck plate shall be furnished. The grating shall be a minimum of 101 CM (40 IN) and the front edge shall be located as close to the cab as possible and shall extend toward the rear of the vehicle. Access through the grating for maintenance of fittings and other equipment shall be furnished. The deck plate shall be free of ragged or sharp exposed edges.

3.5.2.6 HOSE TENDER.

When a tilt cab is furnished, a pogo stick type hose tender shall be provided behind the cab to accommodate and secure the semitrailer lighting cable and air hoses. A pogo stick shall be provided on all types of cabs and mounted rearward when a rear mounted spare carrier or a rear-mounted winch is furnished. When a conventional cab is furnished without a rear mounted spare carrier and without a rear mounted winch, a cab mounted tender as specified in 3.4.2.6 may be

provided in lieu of a pogo stick. Hose tender shall conform to TMC RP 417.

3.5.2.7 SLIDING FIFTH WHEEL (AIR RELEASE).

When code ARW is specified, the fifth wheel shall be mounted on an adjustable sliding base. The slide locks shall be of the air release type with controls mounted on the instrument panel. The fifth wheel shall have an adjustment range of not less than 580 mm (23 inches) with adjustment increments of not more than 100 mm (4 inches). The fifth wheel shall conform to 3.5.2 through 3.5.2.6 and all options therein specified in procurement documents. All clearance requirements specified in 3.5.2.1 shall be met with the sliding fifth wheel in its most forward position of adjustment. With the sliding fifth wheel in its most forward position of adjustment, the centerline of the kingpin shall not be less than 380 mm (15 inches) forward of the centerline of the axle. There shall be no sliding positions to the rear of the axle. For safety, the actuating button in the cab shall be interlocked with trailer parking brake. Code ARW is not available with code OSW.

3.5.2.8 TRUCK TRACTOR WIND DEFLECTOR.

When code TWD is specified, a wind deflector shall be installed or shall be furnished with the vehicle for subsequent installation on the cab roof by the receiving activity. The deflector shall be of molded fiberglass reinforced plastic; shall be not less than 1600 mm (63 inches) wide; and, unless otherwise specified (see 6.2), shall be of a height suitable for use with the vehicle cab furnished in combination with semi-trailer vans having a level height of 3810 mm (12 feet 6 inches) at an upper fifth wheel height of 1250 mm (49 inches). Mounting and support ribs and any other components that require manufacturer installation from the inside of the cab shall be installed by the cab manufacturer. Installation openings shall be sealed to prevent air and water from entering the cab. The deflector, including exterior mounting and supporting hardware, support ribs and the installation instructions, shall be securely stowed on the vehicle for shipment.

3.5.2.9 HYDRAULIC LIFT FIFTH WHEEL.

When specified (see 6.2), Type II tractors shall be equipped with a hydraulic lift fifth wheel. The vehicle shall conform to the following requirements in lieu of all requirements specified in 3.5.2 through 3.5.2.4. If hydraulically powered, the hydraulic system shall comply with the requirements in paragraph 3.1.1.19. The cab-to-axle dimension shall be in accordance with table VIII. The hydraulic fifth wheel shall be designed, warranted and marketed for highway use. The fifth wheel shall be self-contained, of all-steel, with a capacity to lift and support a load of not less than 22 700 kg (50,000 pounds) over a lifting range of at least 300 mm (12 inches) from the lowest to the highest position. Actuation through the full lifting range shall not cause the centerline of the fifth wheel to shift more than 180 mm (7 inches) measured along the longitudinal centerline of the vehicle. The fifth wheel shall be of the bolt-on type. The fifth wheel unit shall include a hydraulic system to actuate an elevating platform equipped with the fifth wheel; shall incorporate a pneumatic system to open a semiautomatic lock for an SAE J700 kingpin; shall include remote controls to permit all operations from within

the vehicle cab; and shall include all necessary components, such as pump, hose and fittings. A manual locking device shall be furnished to lock out lifting capability. A decal or plate conforming to 3.1.1.13 reading "Lock down fifth wheel for highway use" shall be provided.

3.5.2.9.1 HYDRAULIC LIFT FIFTH WHEEL TYPE.

The hydraulic lift fifth wheel shall be of the fore and aft rocking type with a 910 mm (36 inch) diameter steel coupler plate supplied with beveled approach forks. The fifth wheel mounting shall conform to Federal Motor Carrier Safety Regulation 393.70(b).

3.5.2.9.2 HYDRAULIC LIFT FIFTH WHEEL CLEARANCES, HEIGHT AND LOCATION.

The clearance from the centerline of the kingpin to the cab or vertical spare tire assembly, when furnished, or pogo stick type hose tender, with the fifth wheel at all elevated positions, shall be not less than 1520 mm (60 inches). The landing wheel clearance from the centerline of the kingpin to the rear tires and chassis frame rails, with the fifth wheel in its lowest position, shall be not more than 1520 mm (60 inches). The unlined level height from the ground to the top of the coupler plate of the installed fifth wheel unit with the unit in its lowest position shall be 1370 mm (54 inches), plus or minus 25 mm (1 inch). With the fifth wheel in its lowest position, the vertical centerline of the fifth wheel shall be not less than 200 mm (8 inches) forward of the centerline of the rear axle.

3.5.2.9.3 DECK PLATE AND HOSE TENDER FOR HYDRAULIC LIFT FIFTH WHEEL.

A deck plate shall be furnished as specified in 3.5.2.5, and a hose tender or pogo stick type hose tender shall be furnished as specified in 3.5.2.6.

3.5.2.10 AIR LIFT FIFTH WHEEL.

When specified (see 6.2), Type II tractors shall be equipped with an air lift fifth wheel. The vehicle shall conform to the following requirements in lieu of all requirements specified in 3.5.2 through 3.5.2.4. The cab-to-axle dimension shall be in accordance marketed for highway use. The fifth wheel shall be of all steel, with a capacity to lift and support a load of not less than 18,150 kg (40,000 pounds) over a lifting range of not less than 280 mm (11 inches), from the lowest to the highest position. Actuation through the full lifting range shall not cause the center of the kingpin lock to shift more than 75 mm (3 inches) measured along the longitudinal centerline of the vehicle. The fifth wheel unit shall be of the bolt on type. A manual locking device shall be furnished to lock out lifting capability. A decal or plate conforming to 3.1.1.13 reading "Lock down fifth wheel for highway use" shall be provided.

3.5.2.10.1 AIR LIFT FIFTH WHEEL COMPONENTS.

The air lift fifth wheel shall include the following:

- (a) Additional air reservoir tank(s), not less than 210 L (7.4 cubic feet) total capacity, equipped with drain, safety and check valves between compressor and tank

- (b) Automatic moisture ejection valve
- (c) Two air starter valves to emit and expel air from the reservoir tank to the air bellows
- (d) Three-way valve, for raising, lowering, or holding the fifth wheel in all desired positions. The valve shall be mounted on the truck tractor instrument panel in a location accessible to the seated driver driving.
- (e) Snubbers to eliminate spring deflection
- (f) Pneumatic system to open and lock the SAE J700 kingpin, operable from the truck tractor instrument panel.

3.5.2.10.2 AIR LIFT FIFTH WHEEL TYPE.

The air lift fifth wheel shall be of the fore and aft rocking type, with a 910 mm (36 inch) diameter cast steel coupler plate with beveled approach forks. The fifth wheel mounting shall conform to Federal Motor Carrier Safety Regulation 393.70(b).

3.5.2.10.3 AIR LIFT FIFTH WHEEL CLEARANCES, HEIGHT AND LOCATION.

The air lift fifth wheel clearance, measured from the centerline of the kingpin to the cab or pogo stick, shall be not less than 1620 mm (64 inches). The landing wheel clearance to the vertical plane at the outside edge of the rearmost tire and the chassis frame rail, with the fifth wheel in its lowest position, shall be not more than 1620 mm (64 inches) for classes A, B and C vehicles, and also not less than 1400 mm (55 inches) for class C truck tractor. The unlined level height from ground level to the top of the fifth wheel plate shall be 1370 mm (54 inches) plus or minus 25 mm (1 inch). With the fifth wheel in its lowest position, the vertical centerline of the fifth wheel shall be not less than 200 mm (8 inches) forward of the centerline of the rear axle.

3.5.2.10.4 DECK PLATE AND HOSE TENDER FOR AIR LIFT FIFTH WHEEL.

A deck plate shall be furnished as specified in 3.5.2.5, and a hose tender shall be furnished as specified in 3.5.2.6.

3.5.2.11 CAB PROTECTION RACK.

When code CPR is specified, a cab protection rack shall be provided. The cab protector rack shall be mounted behind the cab, and shall be full width and height of the cab, or sleeper compartment, if applicable. The cab protector rack shall permit driver visibility of the vehicle rear frame area through the rear window; when a rear window is furnished. The cab protector rack shall conform to Federal Motor Carrier Safety Regulation 393.106. When code CPR1 is specified, a cab protection rack meeting the requirements for code CPR and furnished with a locking chain rack, and full width locking tool tray (minimum 10 inches high and 8 inches deep) shall be provided. When code AUXL is specified, two auxiliary lights shall be provided. Lights shall be mounted at the top corners of the protection rack and shall not protrude above the rack. Wiring shall be protected. The switch to operate the lights shall be located in the cab and shall be

easily accessible to the seated driver. The lights shall be PAR 36 sealed beams Number 4411-1, 35 watts and shall be mounted in waterproof, adjustable, rubber automotive housings. Lights shall be capable of illuminating the entire frame to the rear of the cab protection rack.

3.5.3 TYPE III (STAKE).

Type III stakes shall have body dimensions specified in table III. Rear bumper shall be furnished. When code BSR is specified, the center racks on both sides shall be the manufacturer's standard swing type, for easy side loading. Stake racks and platform body shall be painted black.

3.5.3.1 STAKE BODY.

The body shall consist of a steel frame platform, wood floor, and side and end racks. When a hydraulic crane is furnished (see 3.5.3.8), the body shall be mounted to provide a space back of cab-to-body of not less than 810 mm (32 inches) for mounting the crane.

3.5.3.2 STAKE BODY FRAME.

Body framing shall be completely welded structure with members of minimum gage thickness specified in Figure 5 for carbon steel; high tensile steel may be furnished in two gages lighter weight in accordance with US Standard gage sizes. Crossmembers shall have no more than 40 cm (16 inch) center spacing, including ends and stub crossmembers as required for proper spacing over axle. Crossmembers shall be of full channel construction, or equal, with a minimum RBM of 55,000 in. / lb. reinforced by gusset plates or brackets at points of attachment to longitudinal sills, and contact edges of welded reinforcements shall be welded for not less than 50 percent of the edge length. Longitudinal sills shall be constructed of structural steel channels or formed channels. Formed channel sills shall be reinforced within the sill, at each crossmember or body mounting point, with formed channel reinforcements.

Wiring harness across the rear apron shall be enclosed in conduit or polyethylene loom except at terminal ends and shall be secured by rubber insulated metal cable clamps to the under body structure on not more than 12 inch centers.

Figure 5 Framing Gages for Stake Bodies

FRAMING MEMBER	CLASS	US STANDARD	EQUIVALENT	EQUIVALENT
		GAGE NO.	MILLIMETER	INCHES
Crossmembers	ALL	10	3.416	0.1345
Side and end rails	D, E, F, G	10	3.416	0.1345
	C	12	2.657	0.1046
Longitudinal sills	D, E, F, G	8	4.176	0.1644
	C	10	3.416	0.1345
Reinforcements	D, E, F, G	8	4.176	0.1644
	C	10	3.416	0.1345
Rack posts	ALL	12	2.657	0.1046

3.5.3.3 STAKE BODY FLOORING.

The platform shall be floored with wood. Wood parts shall be treated in accordance with 3.1.1.5.

3.5.3.3.1 STAKE BODY WOOD FLOORS.

Wood floors shall be apitong, hardwood or pressure treated dense southern yellow pine not less than 29 mm (1-1/8 in) for class C and 33 mm (1-5/16 in) thick (finished dimension) for class D, E, F and G. Plywood type floors shall not be acceptable. Wood floors shall "run" longitudinally with either shiplap or tongue-and-groove joints. When code BDF3 is specified, apitong wood floors shall be provided.

3.5.3.3.2 STAKE BODY STEEL FLOORS.

Steel floors shall be 3.2 mm (1/8 in) thick, one or two-piece diamond tread (code BDF) or smooth (code BSF), with additional lateral support provided at the wheel wells. Two-piece floors shall be spliced longitudinally and completely welded the full length of the splice. One completely welded lateral steel floor splice is acceptable on bodies over 4880 mm (16 feet) in length. When specified diamond tread (code BDF2) or smooth (code BSF2) steel floor shall be minimum 5 mm (3/16 in) thick.

3.5.3.3.3 STAKE BODY RECYCLED MATERIAL FLOOR

When option code BDF4 is specified, recycled tire and plastic plank boards, Rumber Materials Inc. or equal, shall be furnished. Plank boards shall be a minimum of 1-1/2 in. tongue and groove secured to bed frame with minimum 1/4 in. stainless steel self tapping countersunk screws. The installation procedures and plank width shall be in accordance with the manufacturer's recommendation.

3.5.3.6 SIDE AND END RACKS.

A full width front rack section, not less than three removable rack sections on each side, and two removable rack sections across the rear shall be provided. Each rack shall be equipped with a locking device to lock the rack to the body. Body hardware shall be attached to the rack slats with not less than 75 mm (3 inches) total weld for each fastener or bolted with not less than four bolts for each fastener. Upright posts shall be steel sections. Rack slats shall be steel of not less than 16 gage with not less than 3 reinforcing ribs. The width of individual slats shall be manufacturer's standard providing that total of slat widths is not less than 60 percent of total rack height. Not less than four slats per rack shall be provided. Slat edges and end corners shall be rounded or enclosed to protect cargo and personnel from sharp edges. Slat edges shall be riveted, bolted or welded to the inside (load side) of the upright posts, with rivet or bolt heads against the slats. When welded construction is used, not less than 4 welds shall be applied at each upright post and slat intersection. The front rack section shall be capable of withstanding a horizontal static load equal to one-half the payload capacity of the vehicle without permanent distortion of the rack section or its mounting. When a hydraulic tailgate of the type that folds against the rear side racks is furnished (see 3.1.1.11.1), the two removable rack sections across the rear of body are not required and each side

rack section at the rear of body shall be provided with draw-down type of fastening equipped with a locking nut to secure the side racks in place. Rack height shall be a minimum of 102 cm (40 inches). When a hydraulic crane is furnished (see 3.5.3.8), the front rack height may be reduced as necessary to avoid interference with the crane operations. When code BBS is specified, a permanently attached solid front bulkhead, constructed of not less than 12 gage steel with a screen opening behind the cab window shall be provided in lieu of front end racks. When code DBEM is specified, side and end racks shall not be provided and code BBS shall be provided.

3.5.3.7 BODY MOUNTING.

Body shall be secured with U-bolts, twin studs, or brackets. Body shall be mounted in full accordance with the chassis and body manufacturer's recommended practice.

3.5.3.7.1 U-BOLTS OR TWIN STUDS.

When U-bolts or twin studs are used, there shall be not less than three U-bolts or twin studs per side for class B and C and four U-bolts or twin studs per side for class D, E, and F, each having 14 mm (0.563 inch) body diameter with 16 mm (0.625 inch) minimum thread diameter. Tieplates shall be at least 13 mm (0.5 inch) thick and a slight deformation upon assembly is permissible. The vehicle chassis frame shall be protected from crushing by using spacer blocks at each mounting point unless the mounting point is located at a full depth frame crossmember. Blocks shall incorporate a keeper strap or groove for the mounting bolt, and shall be of a width and thickness to assure retention. Two tieback straps shall be provided, one bolted to each side of the rear portion of the body subframe, to maintain body alignment on the vehicle chassis. Forward body mounting bolts shall be located to the rear of the tapered portion of the breaker strips (see 3.5.3.7.4).

3.5.3.7.2 BRACKETS.

When brackets are used, they shall be bolted to the web of the chassis frame rails. The body mounting brackets shall provide means for drawing down the body on the chassis rails, and provisions shall be made to prevent lateral shifting of the breaker strips. When additional holes are required to secure the mounting brackets to the chassis frame rails, they must be located within the area of the rail, which is designated as being safe for drilling in accordance with the chassis manufacturer's body builders layouts. Attachments shall neither interfere with nor obstruct chassis components.

3.5.3.8 CRANE.

When code SAC is specified, a one-man operated, fully hydraulic, articulated boom type crane, mounted on the truck frame between the cab and the platform (see 3.5.3.1) shall be provided. The crane shall conform to all applicable ANSI and OSHA requirements and regulations including OSHA 1926.550. The boom shall consist of an upper and lower section and a hydraulically operated extendable jib(s), and no more than one manual extension capable of extending to a lateral reach not less than 7.3 m (24 ft). Double-acting hydraulic outriggers independently controlled and integrally mounted to the crane base shall be furnished. With the outriggers in the down position, the crane shall be capable of

lifting a minimum load of 700 kg (1,500 pounds) when the load is located at a radius of 7.3 mm (24 feet), without causing the vehicle to become unstable. Vehicle shall be deemed unstable when any one of the vehicle wheels lifts off the ground. The boom, when fully extended, shall have a normal lifting range of 7600 mm (25 feet) above ground level and shall fold to a travel height, between the stake body and the truck cab, not more than 2130 mm (84 inches) above the truck chassis frame. Crane controls shall be provided on each side of the vehicle. Crane and outrigger controls shall be accessible from ground level. Each outrigger control shall be located on the same side of the vehicle as the outrigger. Each outrigger landing pad shall be not less than 900 sq. cm (140 square inches).

3.5.3.8.1 CRANE HYDRAULIC SYSTEM.

A hydraulic pump driven from a power takeoff controlled from inside the truck cab shall be provided to furnish power for the crane. The pump shall be of the positive displacement type and shall provide a working pressure of not less than 12.4 megapascals (MPa) (1,800 psi). Controls shall be of the self-centering, fail-safe type with hydraulic bypass overload valves, and a check valve type locking system in boom and outriggers to prevent the load dropping due to hydraulic or power failure. Controls shall have fine metering qualities to provide variable raising, lowering and rotating motions of the crane boom. The crane hydraulic system shall If hydraulically powered, the hydraulic system shall comply with the requirements in paragraph 3.1.1.19 and contain the following minimum safety features:

- (a) Check valve system in boom and outrigger system to prevent load drop due to hydraulic system failure.
- (b) Flow valve in hydraulic lines or cylinder to prevent boom damage due to sudden load-lowering stops.
- (c) Cushioning valves in boom rotating hydraulic system for rack-and-pinion mounted cranes to prevent damage due to sudden stops.
- (d) Pressure relief valve to prevent loading beyond lifting capacity.
- (e) Devices to limit vertical creep of the boom to not more than 25 mm (1 inch) per hour.
- (f) Signs with 25 mm (1 inch) lettering visible to the operator at both sets of controls: **OUTRIGGERS MUST BE IN PLACE BEFORE LIFT IS MADE.**

3.5.3.9 DUMP STAKE AND PLATFORM.

When code BDS is specified, a dump stake/platform body shall be provided. The stake/platform body shall be as specified in 3.5.3 through 3.5.3.6 for the vehicle class furnished, except the rear end racks shall be the manufacturer's standard swing type, hinged to each side rack. The stake/platform body shall be adequately reinforced to provide support for an evenly distributed payload (GVW minus curb weight and operator weight). The body shall be mounted to a hydraulic

hoist unit. Locking devices shall be provided near the center of the rear racks to lock closed and to lock the racks to the body. All locking devices shall be operable from the ground. A rear bumper is not required. When a steel floor is furnished on dump stakes, it shall have a smooth finish.

3.5.3.9.1 DUMP STAKE AND PLATFORM BODY MOUNTING ON HOIST.

The body shall be mounted to the hoist unit accordance with the hoist manufacturer's recommendations and shall be reinforced, when necessary, for added strength on hoist operations. Rear body mounting shall include hinges securely welded to the body longitudinal sills, a connecting cross shaft, and a plate securely bolted to the chassis main frame rails.

3.5.3.9.2 HYDRAULIC HOIST FOR DUMP STAKE AND PLATFORM.

A hydraulic conversion type hoist shall be furnished. Unless otherwise specified (see 6.2), the conversion hoist shall have a minimum lifting capacity rating of class D for Class C vehicles, class E for class D and E vehicles, and class F for class F vehicles in accordance with the National Truck Equipment Association Conversion Hoist Chart. The hoist shall be a double-acting scissors or under body type with an internal bypass system. Hoist hydraulic cylinder piston rods shall be chrome plated. The hoist shall lift the body to a minimum dumping angle of 45 degrees from the top of the truck chassis frame. The hoist shall be capable of lowering the raised body by gravity when the pump is disabled. The location of the controls shall not interfere with the entry and exit of the driver. Hydraulic system and pumping unit shall comply with 3.1.1.19.

3.5.3.9.3 SAFETY LOCK.

A mechanical safety lock permanently affixed to the body or hoist shall be provided. The safety lock shall provide positive retention of the body in the up position for servicing or repair. The safety lock mechanism shall not interfere with the operation of the body under any operating conditions.

3.5.3.10 STAKE BODY TARPULIN, BOWS, AND TIEDOWN DEVICES.

When code BTB is specified, a fitted tarpaulin with knock-down type bows and tiedown devices shall be provided. The tarpaulin shall be fabricated of number 8 cotton duck conforming to Type I of CCC-C-419, or of vinyl-coated nylon conforming to Type II, Class 2 of MIL-PRF-20696. The tarpaulin material shall be reinforced at the corners and other wear points with patches fabricated of the same base material as the tarpaulin. The tarpaulin material shall be water repellent and fire-resistant. The tarpaulin color shall be olive drab. The rear curtain shall be of the roll-up type. The front curtain shall have a window size of not less than 300 mm by 610 mm (12 in by 24 in) and shall be aligned with the rear window of the vehicle cab. The tarpaulin shall completely cover the entire body and shall extend down the sides, front and rear, with the bows in place, to within 75 mm (three inches) of the platform. Bows shall be on the outside of the racks and shall be constructed of metal or

metal and hardwood components. At least five bows shall be furnished and shall provide an inside height of not less than 1780 mm (70 inches) between the floor of the platform body and the tarpaulin cover at the top. Not less than five evenly spaced tiedown devices shall be provided on each side of the vehicle body.

3.5.3.11 CARGO BODY.

When code BCS is specified, a cargo body shall be provided. The cargo body shall be as specified in 3.5.3 through 3.5.3.3.3 and 3.5.3.7 through 3.5.3.7.2 for the class furnished, except that the cargo body shall be 12 feet, 6 inches long by 8 feet wide (nominal). The load space shall be minimum 147 inches in length and 88 inches in width. Sides and ends shall be 24 inches high (minimum) with 5 stake pockets furnished on each side. Sides and ends shall be minimum 12 gage steel. Floor shall be minimum 8 gage diamond tread plate. Drain holes shall be provided in the front corners. The front panel shall be capable of withstanding a horizontal static load equal to half the payload capacity of the vehicle without permanent distortion. The cargo body shall be adequately reinforced to provide support for an evenly distributed payload (GVW minus curb weight and driver weight). A minimum of 10 crossmembers shall be furnished. Crossmembers shall be minimum 10 gage and shall be gusseted on each long sill. The tailgate shall be hinged at the bottom and provided with stay-chains of adequate length to retain the tailgate in a horizontal position. 2 steps shall be furnished on each the left and right sides of the tailgate to assist personnel in mounting and dismounting. The rear lights and reflectors shall be recessed in the rear bolster and shall be positioned to prevent damage by the lowering of the tailgate. Grab handles shall be furnished at the rear of the body on both sides. Cargo tiedowns, fully recessed, with 3 inch inside diameter and a 2000 pound load rating shall be furnished in the load space as follows:

- a) One centered at the front of the load space
- b) Four at the outboard edge of each side, equally spaced, the length of the load space.

Lashing D rings shall be furnished at the exterior of each top rail, mid way between the front and the rear of the body. Mountings and D rings shall be capable of withstanding pulls of 3,000 pounds in any direction without permanent deformation. When D rings are positioned in the raised position, there shall be adequate clearance above the top rail to attach a 2-inch hook.

3.5.3.12 LOAD SECURING STRAPS AND STORABLE WINCH BINDERS.

When code TSW is specified, load securing straps and winch binders shall be provided. Code TSW shall include the following:

- a) 4 inch wide by 27 feet long (minimum) nylon straps webbing, breaking strength 20000 lb/9074 kg, assembled breaking strength 15000 lb/6805 kg., working load limit 5000 lb/2270 kg. Flat hook working load limit 5000 lb/2270 kg on one end with aluminum abrasion

clip to prevent chaffing.

- b) Sliding steel track on curbside, welded to bottom of crossmembers from first crossmember to last crossmember, with removable stop at each end to prevent winches from being lost. Flat steel bar of adequate strength welded to bottom of crossmembers on street side, allowing strap hook to not protrude past side rail of body.
- c) Storable winch binders, capable of storing a 4 inch A 27 feet strap placed in the slide track. A standard winch bar shall be provided, for use in winching down load straps.

Quantities of straps and winch binders shall be 6 each for 16 to 18 foot bodies and 7 each for 20 foot bodies and longer.

3.5.4 TYPE IV (DUMP).

Type IV vehicles shall have a hydraulic hoist operated dump body. A rear bumper is not required. Unless otherwise specified (see 6.2), the body shall have dimensions and level capacity of not less than that specified on Table 4.

3.5.4.1 DUMP BODY CONSTRUCTION.

Body sides and front head shall be constructed from not less than 8 gage (4.176 mm) (0.1644 inch) A570 (50,000 pounds psi yield strength) steel. Body floor shall be no less than 1/4 inch AR235, (100,000 psi yield strength) steel. The front head shall be capable of withstanding a horizontal static load equal to one-half the payload capacity of the vehicle without permanent distortion. When body floor is constructed in two or more pieces, a continuous seam weld having full penetration shall be provided. Full length, formed rub rails of minimum width to cover rear dual tire treads shall be provided. Not less than two on Class C and D and not less than three on Class E, F, and G, triangular or box-section side braces per side, of not less than 10 gage (3.416 mm) (0.1345 inch) steel, shall be equally spaced between body front head and full box type rear corner posts and welded to side plates. One horizontal brace (per side) running the entire length of the body, tied into the front and rear corner pillars is acceptable in lieu of vertical braces. They shall be sloped and continuously welded or formed into each side of the body. Front head sheet shall be formed or reinforced for rigidity. Front head and tailgate shall be not less than 150 mm (6 inches) for class C and 200 mm (8 inches) for class D, E, F, and G higher than the sides. Sides shall have pockets provided at each end for insertion of sideboards. The interior of the body shell and the side reinforcements shall be welded with continuous welds. The top rail, sides and tailgate shall be completely boxed and continuously welded. The body shall have sloping running boards and sloping horizontal tailgate braces to minimize the buildup of dirt. Wiring harness across the rear apron shall be enclosed in conduit or polyethylene loom except at terminal ends and shall be secured by hangers to the under body floor, on not more than 12 inch centers. When code DHD is specified, a heavy-duty body shall be provided. The sides and front shall be constructed of not less than 7 gage (0.1792 in.) A570 steel (65,000 psi tensile strength/50,000 psi yield strength). The floor shall be constructed of not less than 1/4 inch AR400F one-piece steel

(180,000 psi tensile strength/145,000 psi yield strength). A tailgate having not less than six sections shall be provided.

3.5.4.2 CAB PROTECTOR.

A cab protector shall be attached to the front end of the body. The cab protector shall extend the full width of the cab. The cab protector shall extend not less than 580 mm (23 inches) forward from the front of the dump body. The cab protector shall be not less than 10 gage (3.416 mm) for class C and 8 gage (4.176 mm) (0.1644 inch) steel for class D, E, F, G or 12 gage (2.657 mm) for class C and 10 gage (3.416 mm) (0.1345 inch) high tensile, 345 MPa (50,000 psi) yield strength steel. The cab protector shall be capable of supporting an evenly distributed load of not less than 680 kg (1,500 pounds). The cab protector is not intended to be used for additional payload capacity. When specified (see 6.2), and for overseas destinations, even if not specified, the cab protector shall be removable and shall be secured in the dump body for shipment. Fasteners and components shall be packaged, boxed, marked and secured in the vehicle. When code CP is specified, and extended cab protector of not less than 100 cm (40 inches) from the front of the dump body shall be provided.

3.5.4.3 DUMP BODY TAILGATE.

The tailgate panel shall be not less than 8 gage (4.176 mm) (0.1644 inch) A570 steel (50,000 pounds psi yield strength). The tailgate shall be double acting, opening from top and bottom. The tailgate shall include hardware, support chains, and tailgate latch. The latch shall be operable by a control at the left front corner of the vehicle body. All pivot points on the tailgate release shall be furnished with grease fittings, including top pivot pin. The tailgate shall be reinforced to prevent deformation under load. When code ART is specified, the tailgate bottom latch shall be air released.

3.5.4.4 DUMP BODY UNDERSTRUCTURE.

The dump body understructure shall conform to 3.5.4.4.1 or 3.5.4.4.2, at the manufacturer's option.

3.5.4.4.1 CHANNEL OR I-BEAM UNDERSTRUCTURE.

Body longitudinal sills, each having a minimum section modulus equivalent to that provided by a 125 mm (5 inch) by 10 kg/m (6.7 lbs/ft) channel for class C and 125 mm (5 inch), 14.9 kg/m (10 pounds-per-foot) I-beam for class D, E, F, and G shall be provided to support hoist load. Crossmembers shall be on not more than 380 mm (15 in.) center, for Class C and 300 mm (12 in.) centers for Class D, E, F and G. Cross members having an individual, minimum section modulus equivalent to that provided by a 75 mm by 6.1 kg/m (4.1 lbs/ft) channel for class C and 100 mm (4 inch), 8.0 kg/m (5.4 pounds-per-foot- channel, for class D and E shall be provided to support an evenly distributed load of not less than 6800 kg (15,000 lbs) for class C, 9070 kg (20,000 pounds) for class D, and 10,900 kg (24,000 pounds) for class E body. Crossmembers, each having a minimum section modulus equivalent to that provided by a 100 mm (4 inch), 11.5 kg/m (7.7 pounds-per-foot- I-beam, shall be provided to support an evenly distributed load of not less than 1800 kg/m² (370 pounds per square foot) of floor area throughout the full lift range for class F and G vehicles. Crossmembers

shall be welded to the body shell with not less than 100 mm (4 inch) lengths of weld, front and rear of both ends of each crossmember, and with staggered intermittent welds on not more than 300 mm (12 inch) centers. Contact edges of crossmembers with longitudinal sills and contact edges of welded reinforcements shall be welded for not less than 50 percent of the edge length. Crossmembers shall be welded to the shaped outer rub rail to limit twisting. Gussets, 3/16 inches thick, shall be welded to every other crossmember and each longitudinal sill to provide reinforcement.

3.5.4.4.2 NESTED UNDERSTRUCTURE.

When code UN is specified, a nested understructure shall be provided. Longitudinal sills shall extend to the floor of the dump body and shall support the floor between crossmembers. Longitudinal sills shall be capable of supporting the hoist load. Longitudinal for class D, E, F and G shall have a RBM of not less than 52,000 N-m (460,000 inch pounds). Crossmembers shall provide support under the floor every 380 mm (15 inches) or less. Each crossmember shall pass through the longitudinal and be shall be securely welded to longitudinal. Crossmembers shall have a RBM of not less than 12 300 N.M. (109,000 inch pounds). Crossmembers shall be capable of supporting an evenly distributed load of not less than 6800 kg (15,000 lbs) for class C, 9070 kg (20,000 pounds) for class D, 10 900 kg (24,000 pounds) for class E body and 1800 kg/m² (370 pounds per square foot) of floor area for class F and G bodies. Longitudinals and crossmembers shall be welded for not less than 50 percent of the contact edges to the body floor. Longitudinals shall be welded for not less than 50 percent of contact edges with the body ends. Crossmembers shall be welded for not less than 50 percent at the contract edges with the body side rub rails.

3.5.4.5 HYDRAULIC HOIST.

Unless otherwise specified (see 6.2), the hoist shall have a minimum lifting capacity rating specified in table 4 in accordance with the National Truck Equipment Association Dump Body Hoist Chart. The hoist shall be a double-acting scissors or underbody type. Hoist cylinders shall be chrome plated. The hoist shall lift the body to a minimum dumping angle of 50 degrees from the top of the truck chassis frame. The hoist shall be capable of lowering the raised body by gravity when the pump is disabled. The control valve shall be the manufacturer's standard for the hoist model furnished. Controls and levers shall be located in the cab. Hydraulic system pumping unit and controls shall comply with 3.1.1.19.

3.5.4.6 SAFETY LOCK.

A mechanical safety lock permanently affixed to the dump body or hoist shall be furnished. The safety lock shall provide positive retention of the dump body with the body in the up position for servicing or repair. The safety lock mechanism shall not interfere with operation of the body under any operating conditions.

3.5.4.7 DUMP BODY MOUNTING.

Full length rivet pads or a full-length subframe, shall be attached to the top of the chassis frame rails. The pads or subframe shall prevent the body longitudinal sills from contact-

ing and chafing against the chassis frame rails. Body shall be mounted in accordance with OEM recommended practice.

3.5.4.8 SNOWPLOW.

3.5.4.8.1 SNOWPLOW PROVISIONS.

When a snowplow is specified or when code MPR is specified to accommodate future installation of a snowplow, a stationary grille and the following GAWR shall be furnished. The front GAWR shall be not less than the load imposed by the furnished snowplow in raised position plus the front axle portion of the Item No. required payload uniformly distributed over the load area plus the chassis and body front axle weight. When snowplow provisions, code MPR, but not a snowplow, are specified, the front GAWR shall be not less than the load imposed by an 860 kg (1,900 lb) load located 1520 mm (60 in) forward of the centerline of the front axle plus the front axle portion of the Item No. required payload uniformly distributed over the load area plus the chassis and body front axle weight. The rear GAWR shall be not less than the load imposed by the Item No. required payload without the snowplow plus the chassis and body rear axle weight. Note: when code MPR or MPS is specified, a significant increase could be required in the chassis GVWR when a snowplow is installed. The increased GVWR could change a non-CDL chassis to a chassis that requires the operator to have a CDL.

3.5.4.8.2 SNOWPLOW EQUIPMENT

When code MPS is specified, a hydraulically operated snowplow shall be provided. The snowplow shall be complete with a moldboard, a tripping device, a hitch, a hydraulically operated lifting mechanism, a set of auxiliary lights, a snow deflector or radius curve edge and all other necessary mounting and operating apparatus. The weight of the total snowplow assembly shall not cause the vehicle manufacturer's front axle rating to be exceeded. The plow shall be shipped in the load space and lights shall be shipped within the cab when possible. Brackets and connections shall be installed on all vehicles to enable ready installation of the lights and snowplow at the destination. Snowplow and lights shall be installed on the first vehicle to assure proper operation, and they may be removed for shipment after Government inspection.

3.5.4.8.2.1 MOLDBOARD.

The moldboard assembly of the reversible type snowplow, exclusive of the snow deflector, shall have a vertical height of not less than 810 mm (32 inches) for classes B through E and 910 mm (36 inches) class F and G, and shall be capable of clearing a path of not less than 2620 mm (8 feet and 7 inches) at a blade angle of 30 degrees, plus 2 degrees, minus 0 degrees. The actual length of the moldboard shall be not less than 3050 mm (10 feet). The moldboard shall be of not less than 7 gage (4.554 mm) (0.1793 inch) high tensile steel or a one piece (not spliced) sheet of 9.5 mm (0.375 inch) thick polyethylene material. The polyethylene material shall not become brittle in temperatures as low as -54°F, shall not corrode, and shall have an abrasion resistance factor at least equivalent to steel. A snow deflector shall be provided the full length of the top of the moldboard. The snow deflector

shall be of the manufacturer's standard design to prevent snow from topping the snowplow. The snowplow shall be equipped with two heavy duty steel casting, full swivel shoes or tow caster wheels for classes B through E. Class F and G shall be equipped with two heavy duty 410 mm (16 inches) full swivel caster wheels with pneumatic tires. Both the caster wheels and swivel shoes shall be adjustable. The caster wheels shall be roller or ball bearing mounted, shall be of the shielded type to prevent entrance of water and foreign matter, and shall have lubrication fittings.

3.5.4.8.2.2 MOLDBOARD PUSH-FRAME ASSEMBLY.

The push-frame assembly shall attach to the moldboard and hitch in a manner to provide ample road clearance of the assembly and permit sufficient oscillation for the snowplow to follow road contour and clear snow evenly. The positioning of the snowplow moldboard to the right and to the left shall be of the manual angling type and shall be capable of being accomplished by one man without the use of tools. The snowplow shall have a minimum of two angle adjustments both to right hand cast and left hand cast. A shear pin shall be used to lock the snowplow in any of its five plowing positions. Under normal plowing conditions, the shear pin shall be designed to minimize damage to the snowplow and vehicle should the snowplow's leading edge come into contact with an immovable object. When code MPP is specified, the moldboard shall have a power angle capability, with controls located in the cab.

3.5.4.8.2.3 HITCH.

The plow hitch shall be of the push-frame type designed to be attached to and transmit the entire plowing thrust to the truck frame in such a manner that no plowing thrust shall be absorbed by the truck front axle. Front axle hitch supports, when used, shall be attached in a manner to prevent chafing or other damage. Hitch mainframe members and lift frame vertical and horizontal members shall be of adequate size, properly braced, and reinforced to sustain the loads imposed under severe operating conditions. The hitch shall be removable.

3.5.4.8.2.4 HYDRAULIC SYSTEM.

The hydraulic system shall consist of a power operated pumping unit, an under the hood hydraulic fluid reservoir or a reservoir integral with the hoist, controls, cylinder, hoses, piping, and all other parts essential for normal operation. The hydraulic system shall comply with the requirements in paragraph 3.1.1.19. Controls to the pumping unit shall be operable by the truck driver in his normal operating position and shall not interfere with the operation of any truck controls. The hydraulic pump shall be powered by the engine crankshaft or transmission mounted PTO. The snowplow hoist cylinder shall have sufficient travel to hoist the plow to not less than 200 mm (8 inches) ground clearance. The hoisting mechanism, hoist cylinder and hydraulic system shall be capable of holding the snowplow in the fully raised position while the truck is driven over secondary gravel roads at speeds up to 48 km/h (30 mph). Hydraulic lines to the hydraulic cylinder and the pump shall be provided with quick disconnect hose couplers. Hose caps, pump caps and

hydraulic cylinder caps shall be provided if no other protection system is provided. Caps shall be secured with a corrosion-resistant security device to prevent loss. Caps shall prevent entrance of contaminants into the hydraulic system.

3.5.4.8.2.5 SNOWPLOW AUXILIARY LIGHTS.

A set of raised auxiliary dual beam headlights, parking, and turn signal lights shall be provided for use with the snowplow. Parking and turn signal lights shall use a single light bulb. Mounts, adapters and an appropriate wiring harness shall be provided. Quick disconnect plugs and receptacles shall be provided and shall be weatherproof, or shall be located in a weatherproof location. A high beam indicator light shall be provided and shall be readily visible to the driver when in the driving position.

3.5.4.8.2.6 SNOWPLOW MARKERS.

Snowplow markers shall be provided for the street side and curbside of the snowplow. The markers shall be removable when not in use. The markers shall eliminate guesswork as to position of the snowplow caused by blind spots.

3.5.4.9 SAND AND SALT SPREADER.

When code NAS is specified, an under-tailgate type sand and salt spreader shall be provided and shall be easily removable. When code NSP is specified, a skid mounted sand and salt spreader with a material hopper of not less than 2.3 cubic meters (3 cubic yards) capacity shall be provided in lieu of a tailgate type. The sand and salt material feed auger and spreader shall be hydraulically driven by the snowplow hydraulic system when code MPS is specified. When only code NAS is specified, the sand and salt material feed auger and spreader shall be hydraulically powered by a PTO mounted hydraulic pump or by its own auxiliary engine driven hydraulic pump. Controls shall be located in the cab. The hose connections shall be as specified in 3.5.4.8.2.4.

3.5.4.10 DUMP BED COVER.

A dump bed cover with front wind protector, operated from ground level shall be provided. The dump bed cover shall be constructed of a knit mesh polypropylene material with 70% (nominal) mesh content. When code DBC is specified, a dump bed cover shall not be provided.

3.5.5 RESERVED.

3.5.6 TYPE VI (MAINTENANCE/LINE BODY).

Type VI Maintenance/Line body shall be furnished with an open (without roof), utility service body with and applicable equipment. Line bodies shall be manufacturer's commercial model as represented in their current technical data and as required herein: The body and cabinetry shall be constructed of corrosion resistant 14 gage, A40 galvanized minimum, or other specified material such as all fiberglass (code FG), or all aluminum (code AL), each constructed with strength equal to steel. Units other than steel shall generally conform to the dimensional, layout, performance and the design specified herein, with the exception of basic body material used to accomplish the objectives (e.g. safety tread steel plate floor or equal, etc.). The body shall have a center load compartment

with cabinets on each side. The body shall include but not be limited to, the body manufacturer's furnished locks, latches, hinges, wiring harnesses, lights, all mounting hardware and components. Items normally furnished by the chassis manufacturer, such as but not limited to fuel system fill components, shall be used for integrating the body with the chassis. Body installers shall fully confirm to the body and chassis manufacturer's instructions and recommendations.

3.5.6.1 MATERIAL AND DIMENSIONAL REQUIREMENTS.

- Center load compartment shall have a minimum width load space of 57 inches.
- Load compartment floor (treadplate) thickness shall be minimum 7 gage (3/16 in.), safety tread steel plate.
- Vertical compartment height shall be minimum 114 cm (45 in.), maximum 127 cm (50 in.)
- Cabinet depth shall be not less than 46 cm (18 inches).
- Floor understructure (cross sills) thickness shall be minimum 7 gage (3/16 in.)
- Load space height shall be minimum 29 inches.
- Bulkhead shall be constructed to a minimum height of 27 inches above the load space floor and shall not be less than 14 gage galvanized steel, reinforced for rigidity.
- Bulkhead for code UTR shall be constructed to full height of cabinets. The bulkhead shall be capable of withstanding a horizontal static load equal to 1/2 the payload capacity of the vehicle, without permanent distortion. On fiberglass bodies the bulkhead shall be steel or aluminum. The bulkhead shall be at least the width of the load space and the height of the cab and include openings for rear visibility.
- Interior clear height for code USS shall be minimum 160 cm, (63 inches).
- Interior clear height for code USS2 shall be minimum 190 cm, (75 inches).
- Height of racks above cabinets for code USS shall be minimum 89 cm, (35 inches).
- Height of racks above cabinets for code USS2 shall be minimum 119 cm, (47 inches).
- Width of racks for code USS and USS2 shall be minimum 30 cm, (12 inches).
- Rear doors opening height for code USS and USS2 shall be minimum 150 cm, (59 inches).
- Rear doors opening width for code USS and USS2 shall be minimum 142 cm, (56 inches).

3.5.6.1.1 TAILGATE.

Tailgate shall be constructed of not less than 14 gage, 1.9 mm (0.0747 in.) single panel galvaneal steel, reinforced for rigidity. Tailgate shall be hinged and equipped with supports for retention in horizontal position and when in the horizontal position shall be aligned flush or slightly lower than floor level. Tailgate shall be minimum 30 cm, (12 in.) high. Aluminum tailgates shall be double paneled construction from a minimum 0.080 in. material.

3.5.6.1.2 CABINET MATERIALS AND CONSTRUCTION.

Cabinet headers shall be not less than 14 gage 1.9 mm (0.0747 in.) galvaneal steel. Cabinet backs and partitions shall be of not less than 16 gage, 1.5 mm (0.0598 in.) galvaneal steel. Cabinet shelves shall be capable of supporting a minimum of 200 lbs. each when supported no more than 4 in. in from each end of the shelf. Cabinet doors shall be double panel constructed from not less than 20 gage 9 mm (0.0359 in.) galvaneal steel with reinforcement. Aluminum and fiberglass body shall have cabinet material and construction of same material(s) as the rest of the body. Strength of finished cabinets shall be at least equal to that of steel construction. The cabinet interior shall be prepared and primed with a light colored gray finish, except that galvanized coated steel shelves need not be painted.

3.5.6.2 CABINET ARRANGEMENT.

The cabinet arrangement shall be as follows:

(A) 9 and 10 foot bodies

One horizontal cabinet on each side of the body with at least a middle shelf of small bins with adjustable partitions. One full height vertical cabinet on each side of the body at the front with not less than two removable shelves each. One full height vertical cabinet on each side of the body, to the rear of the wheel housing, with one adjustable shelf each.

(B) 11 foot bodies

One horizontal cabinet with at least a middle shelf of small bins with adjustable partitions, on each side of the body. Two full height vertical cabinets, on each side of the body at the front, with not less than two removable shelves each. One full height vertical cabinet to the rear of the wheel housing, on each side of the body, with one adjustable shelf.

(C) 12 foot bodies

One horizontal cabinet with at least a middle shelf of small bins with adjustable partitions, on each side of the body. Three full height vertical cabinets on each side of the body front with not less than two removable shelves each. One full height vertical cabinet on each side of the body, rear of the wheel housing, with one adjustable shelf each.

(D) 14 foot bodies

One horizontal cabinet on each side of the body with at least a middle shelf of small bins and adjustable partitions. Three full height vertical cabinets on each side of the body front with not less than two removable shelves each. One full height vertical cabinet on each side of the body, to the rear of the wheel housing, with one adjustable shelf each.

3.5.6.3 CABINET DOORS.

Cabinet door shall provide access to all portions of each cabinet, and door closures shall be weatherproof incorporating an automotive tubular type neoprene sealing system. Doors shall have full length continuous rod or hem type heavy-duty hinges, with stainless steel hinge pins or stainless steel, bronze, or nylon insert sockets. Latches shall have recessed handles. All doors shall be provided with cylinder type locks, operable from the same key but having various combinations of cylinder locks, as available, between vehicles on multi-unit contracts. Moving parts of latches and locks shall be constructed of, or plated with corrosion-resistant material. All vertical doors shall be furnished with double spring loaded stays to facilitate both hold open and closing, and doors shall not interfere with each other when open. Horizontal doors shall have two (2) removable pivoting supports to hold open in the 90-degree position and be reinforced so as to permit their use as a shelf. Latches and striker plates shall be non-welded, easily replaced and striker plates shall be readily adjustable. Fiberglass bodies shall be reinforced in the latch and hinge hardware areas.

3.5.6.4 REAR BUMPER.

A heavy-duty step bumper shall be required. A safety-tread steel plate step, integrated with the frame attached rear bumper, shall be furnished; extending across the width of the body, having a step surface not less than 23 cm (9 inches) deep.

3.5.6.5 MAINTENANCE /LINE BODY VEHICLE

3.5.6.5.1 OPTION CODES.

The following option codes and their requirements are offered for selected vehicle applications:

Code AL Aluminum Body. When code AL is specified, the body shall be constructed of aluminum with strength equal to specified steel.

Code FG Fiberglass Body. When code FG is specified, the body shall be constructed of fiberglass having equal strength to that of the specified steel.

Code PCI Compartment Paint Interior. When code PCI is specified, all cabinet interiors and doors shall be completely prepared, primed, and finished painted with the same finish paint as the exterior of the body.

Code UPR Pipe Rack. When code UPR is specified, a pipe rack mounted on top of the curbside cabinets shall be provided. The front of the rack shall permit pipes to

clear the cab door. The rack shall be equipped with adjustable chain/spring hold down devices to secure pipes in transit.

Code URH Rope Hooks. When code URH is specified, a minimum of four rope hooks on the inside of a vertical cabinet in lieu of adjustable shelves shall be provided.

Code URO Overhead racks with ladder clamps. When code URO is specified, removable overhead ladder racks with adjustable brackets shall be provided. Code URO is not available with code USS or USS2.

Code USM Side mounted ladder racks. When code USM is specified, side mounted ladder racks with adjustable brackets shall be provided. (Code USM is only available with code USS or USS2).

Code USS Superstructure body with standard interior load space. When code USS is specified, the Maintenance/Line Body shall be provided with an enclosed center load space with inside shelves on each side of the enclosed superstructure and shall be in accordance with 3.5.6.1 as required for code USS. This body shall be furnished with doors opening from the outside; equipment racks above the cabinets, with openings to the inside of the body; a fixed weather tight roof (superstructure) over the load space and double doors at the rear. A bulkhead fixed safety glass window shall be furnished and aligned with rear cab window. The double rear doors shall be hinged at the sides and shall completely enclose the body interior. The doors shall be equipped with safety glass windows in the upper section, doors locks with cylinder locks and retainers for keeping the doors in the open position. The doors shall be equipped with seals to prevent the entry of dust and water. The center load space shall have the interior-finish in accordance with 3.5.6.12.

Code USS2 Superstructure with increased interior load space height. When code USS2 is specified, the Maintenance/Line Body shall be provided with an enclosed center load space as specified in 3.5.6.5.1 and shall be in accordance with 3.5.6.1 as required for code USS2.

Code UTC Spare tire carrier in load space. When code UTC is specified, a vertically mounted tire assembly on a carrier shall be provided. The tire assembly shall be located in the front end of the load space behind the cab. When a load space roof prevents vertical mounting, the tire assembly may be secured horizontally in the load space.

Code UTR Telescoping roof. When code UTR is specified, a telescoping roof and end gate enclosure shall be provided. The telescoping roof shall be provided with automatic catches that lock the roof in full open and full closed positions. The roof shall be constructed to ensure proper roof drainage. The end gate or door enclosure

shall have side opening style doors, or two part folding, or single type that can be swung up without interference, and laid on the roof. A single handle, with key lock, that operates two latches; one on each side; shall be furnished on the end gate enclosure. The load area shall be painted the same color as the body interior. The bulkhead shall comply with 3.5.6.1 as specified for Code UTR.

Code UVB Vise Bracket and Pipe Rest. When code UVB is specified, a removable pipe vise bracket and pipe rest shall be provided on the right side cabinets at rear. The vise plate shall be horizontal, attached to a sliding bar and locked in place by a vertical pin.

3.5.7 TYPE VII (VAN).

Type VII vehicles shall have an overall height of not more than 3810 mm (150 inches) and the minimum dimensions specified in table 7. Effective means shall be taken to prevent electrolytic action between dissimilar metals.

3.5.7.1 VAN BODY.

The body subframe, rear corner posts, rear header, rear crossmember, rear bumper and dock bumper shall be constructed of steel. Body, front posts, roof panels, rub rails or buffer sheets, side and front wall panels shall be constructed of aluminum except when code FRP is specified (see 3.5.7.1.1). Roof bows and side posts shall be aluminum or galvanized steel (see 3.5.7.4). The steel used shall be of the minimum gages specified for carbon steel; high tensile steel used may be two gages lighter weight in accordance with US Standard gages.

3.5.7.1.1 FRP/PLYWOOD PANELS.

When code FRP is specified, FRP/plywood side and end panels shall be provided. FRP/plywood panels shall be fabricated of one-piece plywood core laminate with fiberglass-reinforced plastic. The plywood furnished shall equal or exceed U.S. Department of Commerce Standard PS 1-95, C-D (plugged) with exterior glue and with all plies group 1 species or better. Core material shall be butted, scarfed or finger-joined with joint gaps not greater than 3.2 mm (0.125 inch). The fiberglass-reinforced plastic (FRP) shall contain not less than 0.51 kg (18 ounces) fiberglass woven roving material. The plastic shall be of the thermoset polyester family of resins. The plastic shall be fully cured under heat and pressure to ensure the resins from an integral bond to the plywood core. The exterior surfaces shall consist of a gelcoat or tedlar finish of 0.38 mm + 0.08 mm (.015 inch + .003 inch). The gelcoat or tedlar finish shall be pigmented manufacturer's standard white. Panels shall have an overall finished panel thickness of not less than 16 mm (0.625 inch). Finished panels shall exhibit a smooth vehicle exterior surface with no evidence of discontinuity.

3.5.7.1.2 FRP/PLYWOOD PANEL INSTALLATION.

The FRP/plywood panels shall be installed with extruded aluminum corner posts, top rails, bottom rails and side door frames. Panels shall be one-piece. Vertical intermediate body

posts shall not be used. Posts, rails and side doorframes shall have receiving edges providing attachment to panels with fasteners. Panels shall be secured to posts and rails using through-fasteners with a head diameter of not less than 13 mm (0.50 inch). Panel edges shall be sealed with waterproof mastic prior to installation. Installed panels shall be sealed with a high performance silicone caulking compound on all enclosing edges. All fastener installations shall be waterproof.

3.5.7.1.3 VAN BODY WIND DEFLECTION.

Unless otherwise specified herein, an aerodynamically streamlined body front shall be incorporated into the design of the body to direct airflow around the sides and over the top of the van body. The construction shall be integral with the van body front wall, sidewalls and roof, giving a curved front radius. When code BWD is specified, for vehicles with standard cabs only, a wind deflector fairing shall be attached to the upper front face of the van body. The deflector shall have an aerodynamic fairing shape to direct airflow around the sides and over the top of the van body. The deflector fairing shall have a rounded nose with a convex profile in both side and top views, forming a smooth compound curved surface blending into the rectangular body cross-section. The nose of the fairing shall project forward sufficiently to achieve a significant drag reduction at low yaw angles, and shall have a large enough radius to produce minimal flow separation at yaw angles of up to 20 degrees. In no case shall the forward portion of the fairing be less than 560 mm (22 inches) or less, if required by body parts from the front face of the van body. The lower edge of the fairing shall be located as required to minimize drag due to turbulent airflow from the cab. The fairing construction material shall be molded fiberglass. Design operational limits shall include forward vehicle speeds of 97 km (60 mph) during wind gusts of 97 km (60 mph) from any direction.

3.5.7.2 VAN BODY SUBFRAME.

Van body sub frame shall be welded steel construction, braced at all points of stress. Crossmembers shall be full width, minimum 7.5 cm (3 inches) depth, of full channel, I-beam or equivalent section, steel construction, attached to longitudinal sills by welds on maximum 30 cm (12 inches) centers. When sub framing is a welded assembly, angle gussets (when used), crossmembers, longitudinal sills, and welded reinforcements (when used) shall be joined by weld for not less than 50 percent of the length of the contact edge(s). Spacing of crossmembers shall be equal, ahead of, and to the rear of the wheels. Longitudinal sills shall be constructed of structural steel channels, structural steel I-beams, formed steel channels or form rolled steel I-beams. Formed channel sills shall be reinforced with formed channel reinforcements within the sill. Formed channel reinforcements shall be provided at each subframe crossmember attachment point and at each chassis mounting point. Form rolled I-beam sills shall be high tensile 345 MPa (60,000 psi) yield steel, not less than 100 mm (4 inches) high and not less than 4.75 kg/m (3.190 pounds per foot). Formed channel crossmembers, gussets, formed channel longitudinal sills and reinforcements shall be of not less than 7 gage (2.39 mm)

(0.094 inch) steel. Extruded aluminum or steel side and front rails shall be furnished. When steel side and front rails (out-rails) are furnished they shall be of not less than 12 gage (2.657 mm) (0.1046 inch) steel. Design of the subframe shall permit low floor height, while providing tire chain clearance, and shall permit vehicle operation at speeds up to 88 km/h (55 mph) over improved roads, when loaded with an evenly distributed payload to the rated GVW, without evidence of permanent deformation. Understructure shall be rust proofed in accordance with FED-STD-297.

3.5.7.3 VAN BODY FRAMING.

Side and front post construction of aluminum or galvanized steel bodies shall be extruded aluminum and shall be not less than 29 mm (1.125 inches) in depth and 0.49 kg/m (0.330 pound per foot) when side and front wall posts are spaced on 406 mm (16 inch) maximum centers. Side and front post construction shall be extruded aluminum and shall be not less than 32 mm (1.25 inches) in depth and 0.64 kg/m (0.43 pound per foot) when side and front wall posts are spaced on 460 mm (18 inch) maximum centers. Front corner posts, when used, shall be extruded aluminum and shall be not less than 25 mm (1 inch) in depth and 0.72 kg/m (0.482 pound per foot). When front radius corners without front corner posts are used, the radius corners shall be of not less than 1.8 mm (0.071 inch) aluminum or 0.94 mm (0.037 inch) stainless steel, attached to the nearest side and front posts. The front structure shall be capable of withstanding a horizontal static load equal to 0.4 times the payload capacity of the vehicle without permanent distortion. Rear corner posts shall be provided and shall be of not less than 10 gage (3.416 mm) (0.1345 inch) galvanized or 12 gage (2.67) (0.1046 inch) stainless steel.

3.5.7.4 VAN BODY EXTERIOR.

The roof assembly shall be standard for the vehicle, and shall be constructed to ensure drainage. Roof support bow construction shall be extruded aluminum, or not less than 18 gage (1.214 mm) (0.0478 inch) galvanized steel, not less than 35 mm (1.38 inches) in depth. When aluminum roof support bows are spaced on 610 mm (24 inch) maximum centers, the roof bows shall be not less than 25 mm (1 inch) in depth and 0.54 kg/m (0.36 pound per foot), and the roof panel shall be not less than 0.81 mm (0.032 inch) aluminum alloy. When aluminum roof supports bows are spaced on 460 mm (18 inch) maximum centers, the roof bows shall be not less than 25 mm (1 inch) in depth and 0.57 kg/m (0.38 pound per foot), and the roof panel shall be not less than 0.64 mm (0.025 inch) aluminum alloy. When steel roof support bows are used, they shall be spaced on not more than 610 mm (24 inch) centers and the roof panel shall be not less than 1.0 mm (0.040 inch) thick aluminum alloy. Unless FRP/plywood panels are specified (see 3.5.7.1.1), body side panels shall be not less than 0.81 mm (0.032 in) prepainted aluminum alloy. Unless otherwise specified (see 6.2), and except as follows, the color of the prepainted side panels shall be the manufacturer's standard white. When a semi gloss or lusterless vehicle exterior color is specified (see 3.1.1.1), the side panels shall be painted to match that exterior color (see MIL-HDBK-1223). Body side panels shall be removable to facil-

itate body repair. All roof and body seams and joints shall be weatherproof. The body front posts and top front rail shall have a radius of not less than 115 mm (4.5 inches). All body and rub rails shall be extruded aluminum. Rub rails or buffer sheets extending outwards beyond the body skin shall be provided on both sides of the body. The rub rails or buffer sheets shall be permanently attached, or shall be an integral part of the exterior of the body at the floor line. When code BR is specified, the roof panel over the cargo section of the van truck shall be translucent white, fiberglass reinforced, polyester material, minimum 1.8 mm (.070 in).

3.5.7.5 VAN BODY INTERIOR.

Two interior dome lights shall be furnished. Two three-way dome light switches, both controlling both lights, shall be furnished. One switch shall be located on the rear of the curbside wall recessed to prevent damage by cargo or equipment and shall be accessible by an operator standing on the ground at the curbside. The other switch shall be located in the cab with an indicator light. When aluminum side walls are required, the interior of the body walls shall be lined with not less than 9.6 mm (3/8 inch) exterior grade plywood on the side walls and not less than 13 mm (1/2 inch) exterior grade plywood on the front wall, all full height. When front corner posts are not used, interior radius corners shall be lined with aluminum or 3.2 mm (1/8 inch) thick fiberglass material and the scuff plate shall extend completely around the front radius corners. When steel roof bows are furnished, an isolating material shall be installed between the roof skin and the roof bows to prevent electrolytic action. When code CRP is specified, sidewall posts shall be the logistic type. Logistic posts shall be minimum 12-gage steel and shall be 1-1/4 inch (nominal) deep; with "E" type logistics slots on 4-inch centers land shall be rated at 500 pounds per foot of body length.

3.5.7.6 SCUFF PLATE.

A 300 mm (12 inch) high, 12 gage (2.657 mm) (0.1046 inch), smooth steel scuff plate, or an aluminum scuff plate of a thickness, providing an equivalent resistance to puncture, shall be installed on the front and side walls at the floor level. The entire scuff plate shall be treated or coated to resist corrosion (for steel) and need not be painted. The scuff plate shall be installed with corrosion-resistant countersunk screws, riveted, or welded to formed corner plates.

3.5.7.7 INTERIOR ROPE TIES.

When code BRT is specified, interior rope ties, fold-down lashing rings, rope cleats, or rod type, shall be installed and secured to wall frame members. When code FRP is specified, interior rope ties using through fasteners with a head diameter of not less than 13 mm (0.50 inch) shall be provided. FRP/plywood fasteners installation shall be waterproofed and exposed fasteners shall be painted to match the vehicle exterior. A minimum of 36 rope ties shall be arranged in three evenly spaced tiers, four rope ties per tier on each wall, including the front wall. The first tier shall be located just above the scuff plate, the second tier at 1/3 of the wall height, and the third tier at 2/3 of the wall height. Rope ties shall project not more than 9.5 mm (0.375 inch) into the cargo

area beyond the wall lining. Rope tie protrusions shall be rounded and constructed to prevent injury to personnel and snagging of payload inside the cargo area. Note: Code BRT is not available when code CRT is specified.

3.5.7.8 CARGO RESTRAINING TRACK.

When code CRT is specified, cargo-restraining track shall be installed on each interior sidewall. The cargo-restraining track shall be mounted in two tiers, horizontally on each sidewall. The first tier shall be located just above the scuff plate, the second tier at 2/3 of the wall height. Each cargo-restraining track shall be the full length of the van body interior. Tracks shall be attached between posts through full-length wood fillers, to the side wall lining, or not more than 150 mm (6 inch) centers. The track fitting holes or slots shall be on approximately 64 mm (2-1/2 inch) centers. The cargo control tracks shall be fabricated of steel with a thickness of not less than 12 gage (2.657 mm) (1.046 inch). Two cargo control track bars shall be provided. The tracks and cargo control bars shall be capable of withstanding a rearward static load of 17.8 kN (4,000 pounds) without permanent deformation. Code CRT is not available when code CRP is specified.

3.5.7.9 VAN BODY FLOOR.

The floor shall be of laminated hardwood not less than 29 mm (1-1/8 inch). When code BFA is specified, a diamond tread aluminum plate floor, 3.2 mm (1/8 inch) thick and an underlay laminated hardwood of not less than 29 mm (1-1/8 inch) thick, shall be provided. Wood parts shall be treated in accordance with 3.1.1.5. Wood floorboards shall be attached to the subframe at crossmembers with self-tapping, countersunk, corrosion-resistant screws. When code FLU is specified, a reinforced floor shall be provided. The reinforced floor shall withstand concentrated loads imposed by forklifts having a 6350 kg (14,500 lbs.) axle load supported by 180 mm (7 inch) wide tires spaced 760 mm (30 inches) apart on the tire centerline.

3.5.7.10 VAN BODY ROLL-UP OVERHEAD REAR DOOR.

Unless otherwise specified (see 3.5.7.11), a full width, roll-up, overhead rear door shall be provided. The door shall provide a clear opening of not less than 2030 mm (80 inches) in width and not less than 1950 mm (77 inches) in height. The door shall be of the sectional type having not less than five sections. Door sections shall incorporate joints of the tapered tongue and groove type or of shiplap type. The door shall be plastic-covered or aluminum-covered 19 mm (3/4 inch) exterior plywood construction. Door section corrosion-resistant hinges shall be mounted on the inside of the door, not less than four hinges at each section joint. The door track shall be manufacturer's standard corrosion-resistant type equipped with a positive stop at the end of the track. Door rollers, counterbalance unit and cables of corrosion-resistant construction shall be the manufacturer's standard. The door shall be weather tight. A heavy duty, corrosion-resistant, cam operated, lever type lock shall be provided, equipped with provisions for the use of a padlock. One heavy duty, corrosion-resistant grab handle, closed type, shall be provided on the outside bottom on the door. One nylon pull-down strap,

not less than 50 mm (two inches) wide and 300 mm (12 inches) in length, shall be provided and located adjacent to the door lock. Roll-up doors shall conform to TMC RP 710.

3.5.7.11 VAN BODY DOUBLE REAR DOORS.

When code BDD is specified, double rear doors shall be provided, full width and height, with bracing to prevent sagging, and equipped with three cast steel, or equal, hinges per door. The door locking devices shall include not less than three bolts or latches, located at top, bottom and center of the door. Cam type locking devices may be furnished at the top and bottom of the door. The center locking device shall be provided with an operating handle and shall be installed to ensure positive closing under all operating conditions. Provisions for the use of a padlock shall be furnished. The van body shall be equipped at the sides with catches for holding the doors in the fully open position. Hardware shall be the manufacturer's standard. Rear doors shall conform to TMC RP 711.

3.5.7.12 VAN BODY REAR DOCK AND DROP BUMPERS.

A channel type rear dock bumper of not less than 10 gage (3.416 mm) (0.1345 inch) steel and not less than 75 mm (three inches) in height shall be provided. The dock bumper shall be integral with the body and located not less than 35 mm (1 inch) below the rear door(s). The dock bumper shall be the full width of the body. A drop bumper with crossbar shall be provided in addition to the dock bumper.

3.5.7.13 VAN BODY MOUNTING.

Mounting of the van body shall be as specified in 3.5.3.7 through 3.5.3.7.3.

3.5.7.14 VAN BODY SIDE DOOR.

When code BSD is specified, a curbside swing door, not less than 178 cm (70 in.) high and not less than 76 cm (30 in.) wide shall be provided. The door shall be located near the center of the body. The door shall be of aluminum faced plywood or of all aluminum with bracing to prevent sagging. The door shall be equipped with at least three hinges. A cam type locking device shall be provided with an operating handle and shall be installed to ensure positive closing under all operating conditions. Provisions shall be incorporated for a padlock. Handles shall be located to permit operation from ground level. The hardware shall be manufacturer's standard. The door shall have a weather tight rubber or plastic seal around the perimeter. The body shall be equipped with devices to hold door in a fully open position. Side doors on refrigerated van shall be insulated and sealed as required for designated classification.

3.5.8 TYPE VIII (REFRIGERATOR VAN).

Type VIII vehicle shall have a maximum overall height of 3810 mm (150 inches), minimum interior width of 2080 mm (82 inches), minimum interior height of 2030 mm (80 inches), and the minimum cab-to-axle and body length specified in table 8.

3.5.8.1 REFRIGERATOR VAN PERFORMANCE.

The refrigeration unit cooling capacity shall reduce the air temperature in the van body from 38°C (100°F) to -18°C (0°F) in not more than five hours while the vehicle is in an ambient air temperature of not less than 38°C (100°F) The unit shall maintain -23°C (-10°F) in the van body under normal service conditions. The temperature shall be thermostatically controlled by means of a calibrated, manually adjustable device which shall maintain any selected temperature, within 2°C (4°F), from 2°C (35°F) to -23°C (-10°F). When code R35 is specified, the unit shall also have the heating capability to maintain the interior of the refrigerator van at 2°C (35°F), when the ambient air temperature is -32°C (-25°F), at a road speed of 88 km/h (55 mph).

3.5.8.2 REFRIGERATOR VAN BODY.

The body shall be constructed as specified in 3.5.7.1 through 3.5.7.4 for Type VII vehicle including aluminum scuff plate. Vertical members that support the outer panels and the inner panels may have fiberglass transverse spacers to prevent heat transfer. Inner panels shall be secured to the inner vertical members.

3.5.8.2.1 INSULATION.

Insulation required for refrigerator van conformance to 3.5.8.1 shall be furnished. Insulation shall be of the foam-in-place type. The insulation shall have a K-factor of not more than 2.16 W/m²/°C/cm (0.15 Btu per square foot per degree Fahrenheit per hour per inch of thickness). Insulation shall not shrink or swell during the life of the body. The insulation shall be of cellular structure with closed cells. Insulation shall be non-hygroscopic, resistant to fungus growth and vermin retention, and shall be resistant to the passage of air and absorption of water.

3.5.8.2.2 REFRIGERATOR VAN INNER PANELS.

Inner panels including the roof panels shall be ribbed or flat fiberglass sheet, a normal 2.4 mm [3/32 (0.09 minimum) inches] thick.

3.5.8.2.3 REFRIGERATOR VAN FLOOR.

The floor shall be of extruded aluminum alloy sections having equally spaced longitudinal corrugations not less than 25mm (1 inch) in height and approximately 25mm (1 inch) in width. Floor sections, with corrugations lengthwise of body, shall overlap and shall be sealed or shall be welded full length to prevent leakage of moisture through floor to the insulation. The floor surface of the corrugations shall have extruded longitudinal ribs approximately 3.2 mm (0.125 inch) high and 3.2 mm (0.125 inch) wide, and spaced on 4.8 mm (0.188 inch) centers. The ribs shall be knurled or serrated on approximately 4.8 (0.188 inch) centers to provide an anti-skid surface. When code FLU is specified, the floor shall be reinforced to withstand concentrated loads imposed by forklifts having a 6350 kg (14,000 lb) axle load supported by 180 mm (7 inch) wide tires spaced 760 mm (30 inches) apart on the tire centerline. Sides and front of floor shall have an inverted skirt extending upwards for a distance of not less than 125 mm (five inches) and shall be fitted between insulation and the inner panels. Floor design shall permit vehicle operation at speeds up to and including 88

km/h (55 mph), over improved roads, with a concentrated load of not less than 975 kg/m² (200 pounds on any square foot) of floor area.

3.5.8.2.4 REFRIGERATOR VAN REAR BUMPER.

Rear dock and drop bumpers conforming to 3.5.7.11 shall be provided. Unless a hydraulic tailgate is specified, the drop bumper shall be of the shelf, step type, extending not less than 230 mm (9 inches) to the rear. The step surface shall be of self-cleaning grating. The corners shall have a radius of not less than 25 mm (1 inch). All edges of the grating shall be enclosed and free of ragged or sharp edges. A vertical closure plate with cutouts for lights shall extend from the body down to the self step. The load carrying capacity of the bumper step shall be not less than 410 kg (900 lb) applied vertically and uniformly distributed over any two, 127 mm (5 inch) increments of step width [see Federal Motor Carrier Safety Regulation 399.207(5)].

3.5.8.2.5 REFRIGERATOR VAN REAR DOORS.

Unless otherwise specified, two full width doors shall be provided. Doors shall be insulated so that body-insulating efficiency will not be reduced. A door gasket shall be installed to insure a seal. A door-locking device, with operating handle, shall be installed to provide positive closing action and shall have provisions for use of a padlock. The door shall be capable of being opened from inside when locked. The rear doors shall provide an opening within 100mm (4 inches) of the full width and the full height of the body interior. The doors also shall conform to 3.5.7.10.

3.5.8.2.6 REFRIGERATOR VAN ROLL-UP OVERHEAD REAR DOOR.

When code ROD is specified, a full width, roll-up, rear overhead door shall be provided. The door shall be of the sectional type having not less than five sections. Door sections shall be not less than 29 mm (1.125 inch) thick fiberglass filled with polyurethane foam with molded plastic end caps, or equal. Door insulation shall maintain body-insulating efficiency. Door gaskets shall be installed and shall be designed to ensure a positive seal. A door-locking device, with operating handle, shall be installed to provide positive closing action and shall have provisions for the use of a padlock. The door shall be capable of being opened from inside when locked. Door section corrosion-resistant hinges shall be mounted on the inside of the door, not less than four hinges at each section joint. Door track shall be the manufacturer's standard corrosion-resistant type equipped with a positive stop at the end of the track. Door rollers, counterbalance unit, and cables of corrosion-resistant construction shall be the manufacturer's standard. The door shall be weather tight. One heavy duty corrosion-resistant grab handle, closed type, shall be provided on the outside bottom of the door. One nylon double-loop pull-down strap, not less than 38 mm (1.5 inches) wide and 300 mm (12 inches) in length, shall be provided and located adjacent to the door lock. The door opening shall be within 125 mm (five inches) of the full width and within 230 mm (nine inches) of the full height of the body interior.

3.5.8.2.7 REFRIGERATOR VAN INTERIOR LIGHT.

Two interior dome lights shall be provided. A recessed control switch controlling both lights shall be located near the rear door, accessible to an operator standing on the ground at the curbside. A circuit-opening switch controlling both lights shall be operated by closing the door. Fixtures, switches and wiring shall be moisture proof and shall be accessible for repairs.

3.5.8.2.8 REFRIGERATOR VAN ACCESS STEPS.

Access steps and grab handle(s) shall be provided on the front of the body leading up to the refrigeration unit. Steps shall be spaced vertically on not more than 380 mm (18 inches) centers. A platform for servicing the refrigeration unit shall be provided above the cab roof. The platform shall be of aluminum tread plate or open grating, not less than 280 mm (11 inches) deep, not less than the width of the refrigeration unit, and shall be readily accessible from the access steps.

3.5.8.2.9 REFRIGERATOR VAN WIND DEFLECTION.

An aerodynamically streamlined body front shall be incorporated into the design of the body. The construction shall be integral with the van body front wall, sidewalls and roof, giving a curved front radius.

3.5.8.2.10 REFRIGERATOR VAN BODY MOUNTING.

Mounting of the body shall be as specified in 3.5.3.7 through 3.5.3.7.3.

3.5.8.3 REFRIGERATION UNIT.

The refrigeration unit shall contain all components, equipment and accessories normally furnished on the manufacturer's standard unit for comparable commercial applications and shall include all components and features specified herein. The refrigerating capacity shall be adequate to efficiently obtain the performance requirements specified herein. Applicable components of the refrigeration unit shall be mounted on a frame attached to the front of the van exterior. The unit shall incorporate lifting eyes to facilitate removal for installation. The unit shall extend into, but occupy a minimum of, cubage within the van. All components and assemblies shall withstand vibration encountered in normal vehicle operation. The refrigerant shall be: hydrochlorofluorocarbon (HCFC); hydrofluorocarbon (HFC); or other alternative technology. Chlorofluorocarbon (CFC) refrigerant is not acceptable. The unit shall be designed for use with both the primary and secondary power units (see 3.5.8.3.3 and 3.5.8.3.4) with mean for rapid conversion from one to the other. Components requiring lubrication with grease shall be provided with pressure type grease fittings with flush type check ball. Radio interference suppression (see 3.4.2.9) shall be furnished.

3.5.8.3.1 TEMPERATURE CONTROL SYSTEM.

The temperature control system shall provide regulation of the refrigerator temperature.

3.5.8.3.2 COMPRESSOR.

A piston type compressor, with adequate performance characteristics for the specified requirements, shall be installed.

3.5.8.3.3 PRIMARY POWER SOURCE.

An air-cooled or water-cooled auxiliary engine with horsepower and torque capacity for maximum compressor requirements shall be installed for use while the vehicle is moving and at rest. Engine accessories shall include a starter (with a device to prevent the engine from driving the starter), and a generator or alternator. For gasoline engines, choke and resistor type spark plugs shall be provided. Provision shall be made to permit starting the engine under no-compression load. Unless otherwise specified, for gasoline engine driven vehicles, the auxiliary engine shall operate on diesel fuel and shall be equipped with its own fuel tank with min. 20 gal capacity. When specified for gasoline engine driven vehicles (see 6.2) and when heating of the refrigerated body is not required in cold weather, the auxiliary engine shall operate on the same type of fuel as the truck engine. For diesel engine driven vehicles, the auxiliary engine shall operate on the same type of fuel as the truck engine. When the auxiliary engine operates on the same type of fuel as the truck engine, fuel to operate the auxiliary engine shall be supplied from the truck's main fuel tank(s). When two main fuel tanks are furnished on the truck, both shall be connected to the auxiliary engine in a manner ensuring continued operation of the auxiliary engine with either one of the tanks empty. An accessible fuel shut-off valve shall be provided. The system shall conform to Federal Motor Carrier Safety Regulations 393.65 and 393.67. When a water-cooled auxiliary engine is furnished, visual means of checking the coolant level shall be provided and the cooling system shall be serviced in accordance with 3.4.1.7.

3.5.8.3.4 SECONDARY POWER SOURCE.

An auxiliary 208-volt, 3-phase, 60-hertz AC electric motor, with adequate horsepower and torque capacity for maximum compressor requirements, shall be installed for use when the vehicle is at rest. A slave receptacle, wired to the motor, shall be mounted on the van body or on the refrigeration unit control panel to accommodate an outside power source. All electrical materials and workmanship shall conform to the requirements of the National Electrical Code (NFPA No. 70). When code RDO is specified, a secondary power source shall not be required and the refrigeration unit shall be powered by the primary power source (3.5.8.3.3) only.

3.5.8.3.5 CONDENSER.

A condenser, designed and built according to best current commercial practice and adequate for the requirements specified herein, shall be provided.

3.5.8.3.6 RECEIVER.

A receiver of adequate strength and capacity, constructed of welded steel, shall be furnished.

3.5.8.3.7 EVAPORATOR.

A coil type or plate type evaporator designed and built according to best current commercial practice and adequate for the requirements specified herein, shall be provided. The evaporator shall incorporate an evaporator fan and a defroster.

3.5.8.3.8 DEFROSTER.

Means shall be provided to bypass, when desired, refrigerant from the compressor discharge line directly through the

evaporator to defrost the unit. A separate switch shall control the bypass valve and the discharge air duck damper.

3.5.8.3.9 DEHYDRATOR.

A dehydrator, with sufficient dehydrating capacity for the system, shall be installed in the refrigerant line. Means shall be provided to prevent the dehydrator from contaminating the refrigerant.

3.5.8.3.10 STRAINER.

A strainer shall be installed in the liquid line between the dehydrator and the expansion valve.

3.5.8.3.11 EXPANSION VALVE.

The expansion valve shall automatically control refrigerant flow by thermostatic means, or equal. Thermostatic expansion valves shall incorporate a superheat adjustment.

3.5.8.3.12 THERMOMETER.

A thermometer that registers the inside temperature of the van shall be furnished. The thermometer shall be visible to the driver from the normal driving position. Mirrors may be furnished to provide visibility for thermometer reading by the driver. If a column type thermometer is furnished, a guard shall be provided to protect the column and shall be so located as not to obscure the reading.

3.6 WORKMANSHIP.

- A. Vehicles shall be free from defects, which may impair their serviceability or detract from appearance.
- B. All bodies, systems, equipment and interfaces with the chassis shall be done in accordance with the OEM's Body Builders Book. Whenever dissimilar metals are used they shall be insulated against corrosive action.
- C. All components will be new. Defective components shall not be furnished. Parts, equipment and assemblies which have been repaired or modified to overcome deficiencies shall not be furnished without the approval of the purchaser. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances and uniformity. Welded, bolted, and rivet construction utilized shall be in accordance with the highest standards of industry. General appearance of the vehicle shall not show any evidence of poor workmanship.
- D. The following shall be reason for rejection:
 - 1. Rough, sharp or unfinished edges, burrs, seams, corners, and joints.
 - 2. Nonuniform panels. Edges that are not radiused, beveled, etc.
 - 3. Paint runs, sags, orange peel, "fish eyes" etc., and any other imperfection or lack of complete coverage of paints or coatings.
 - 4. Body panels or components that are uneven,

unsealed, or contain cracks, dents or have voids.

5. Misalignment of body fasteners, glass, viewing panels, light housings, other items with large or uneven gaps, spacing etc. such as door, body panels and hinged panels.
6. Improperly fabricated and routed wiring or harnesses, and electrical connections.
7. Improperly supported or secured hoses, wiring harnesses, mechanical controls etc., including interference with other components.
8. Interference of chassis components, body parts, doors etc.
9. Leaks of any gas, vacuum, or fluid lines (air conditioning, coolant, oil, oxygen, etc.).
10. Noise, panel vibrations etc.
11. Inappropriate or incorrect use of hardware, fasteners, components, or methods of construction.
12. Incomplete or improper welding, riveting or bolting.
13. Lack of uniformity and symmetry where applicable.
14. Loose, vibrating abrading body parts, components, subassemblies, hoses, wiring harnesses or trim.
15. Improper body design or interface with the chassis that could cause injury during normal use or maintenance, and which fail to provide access to perform routine or mandatory repairs or maintenance on vehicle electrical and mechanical systems. In addition, the improper combination of options which by their combination and installation are inherently incompatible with regard to function or safety.
16. Sagging non-form fitting upholstery or padding, holes, tears, discoloration, etc.
17. Incomplete or incorrect application of rustproofing.
18. Visual deformities and equipment malfunctions.
19. Unsealed appurtenances or other body components, gaskets, etc.
20. In addition, any deviation from specification requirements or any other item, whether or not stipulated herein, that affects form, fit, function, finish, durability, reliability, safety, performance or appearance shall be cause for rejection.



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 (examination and tests) as 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 ensure supplies and services conform to prescribed requirements.

4.1.1 RESPONSIBILITY FOR COMPLIANCE.

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

4.2 GOVERNMENT VERIFICATION.

Quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of observation of the operations to determine that practices, methods and procedures of the contractor's inspection are being properly applied. Failure of the contractor to promptly correct product deficiencies discovered shall be cause for suspension of acceptance until correction has been made or until conformance of product to specification criteria has been demonstrated.

4.3 FIRST PRODUCTION VEHICLE INSPECTION.

When specified, the first vehicle produced under the contract shall be inspected by the contractor at his plant under the direction and in the presence of Government representatives. The purpose of the inspection shall be to determine vehicle conformance to the contract. Acceptance of the first production vehicle shall not constitute a waiver by the Government of its rights under the provisions of the contract.

4.3.1 VEHICLE WEIGHT.

The first production vehicle shall be weighed to determine the curb weight and distribution of the curb weight on front and rear axles. The total imposed loads on front and rear axles shall be computed by the contractor and verified by the Government, using the curb weight, the operator and passenger weight at each seating position at 80 kg (175 pounds) each and the payload required to provide the specified GVW. Except as speci-

fied in 3.2.6.1, the calculated imposed loads on the front and rear axles shall be compared to the suspension, axle and tire load capacity ratings to determine if these components are of adequate capacity to meet contractual requirements.

4.3.2 ROAD TEST.

The first production vehicle shall be road tested by the contractor without payload. The road test shall be for not less than 16 km (10 miles) at speeds up to 88 km/h (55 mph).

4.3.3 TRUCK BODY TREATMENT AND PAINTING.

A certification regarding the body cleaning, treating, prime painting and salt spray resistance testing, as required by MIL-HDBK-1223, shall be made to the Government representatives at the first production vehicle inspection. The manufacturer's records shall be available to verify that all wood requiring treatment in accordance with MIL-HDBK-1223 has been treated.

4.3.4 TYPE VIII REFRIGERATION UNIT TESTS.

To determine conformance to 3.5.8.1, the following tests shall be conducted. Certification from the body supplier may be accepted. Certification shall be based on test data or calculations.

4.3.4.1 COOLING TEST.

The entire body, without payload and with the rear doors open, shall be soaked for four hours in an ambient air temperature of not less than 38°C (100°F). The cooling capability of the van shall then be determined to verify conformance to 3.5.8.1. The vehicle body shall be continuously exposed to the 38°C (100°F) ambient air temperature during the test.

4.3.4.2 HEATING TEST.

When a diesel powered refrigeration unit is required, (see 3.5.8.3.3), the vehicle, without payload, shall be exposed for four hours to the ambient air temperature at the time of the test. The body heating system shall be operated and the inside temperature shall be raised until a temperature differential between the inside and outside air reaches 33°C (60°F). With the heating system operating, the vehicle shall be driven for 30 minutes at a road speed of 88 km/h (55 mph) to test the capability of the system to maintain the 33°C (60°F) temperature differential.

4.3.4.3 AIR TRANSPORTABILITY VERIFICATION.

When transportability (ATR, HTR, MTR or RTR) (see 3.1.1.21) is specified, the vehicle shall be inspected to determine that it conforms to the approved certification memo the contractor received from Air Transportability Test Loading Agency (ATTLA) or Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA). As a minimum, the following angles, dimensions and descriptions shall be checked against approved data and drawings:

- a) Angle of approach
- b) Ramp breakover angle

- c) Angle of departure
- d) Height, longitudinal location and identification of highest component on truck
- e) Dimensions and locations of any significant projections on truck
- f) Curb weight of each axle
- g) Wheelbase
- h) Front overhang
- i) Rear overhang
- j) Articulation of rear suspension, unloaded, each axle (curb weight)
- k) Rear axle spacing
- l) Axle rating, front, and comparison to 1-1/4 times (curb weight) load
- m) axle rating, rear, and comparison to 1-1/4 times (curb weight) load
- n) Suspension rating, front, and comparison to 1-1/4 times (curb weight) load
- o) Suspension rating, rear, and comparison to 1-1/4 times (curb weight) load
- p) If axle stops are to be removed for ramp loading on aircraft, verification that the driveline remains intact when cresting maximum ramp slope

4.4 FAILURE.

Failure of the first production vehicle to meet requirements of the contract shall be cause for the Government to refuse acceptance of all vehicles under contract until corrective action has been taken.

4.5 INSPECTION OF PRODUCTION VEHICLES.

The contractor's inspection system shall as a minimum ensure that the vehicle conforms to the physical and dimensional requirements and is capable of meeting performance requirements specified herein. For each vehicle under contract, the contractor shall make available to the Government, at the point of final acceptance, records acceptable to the Government indicating that the servicing and adjusting required by 3.4.26 have been accomplished. For civilian agencies, GSA Form 1455 or an approved equivalent form shall be used.

4.6 PRODUCT CONFORMANCE.

The products provided shall meet the salient characteristics of this standard, conform to the producer's own drawings, specifications, standards, and quality assurance practices and be the same product offered for sale in the commercial

market. The Government reserves the right to require proof of such conformance.

Truck, van

5. PACKAGING

5.1 VEHICLE PROCESSING.

The vehicle shall be processed for shipment from the manufacturer's plant to the initial receiving activity, in accordance with the manufacturer's standard commercial practice. When code XP is specified, vehicle is intended for export and all separable and pilferable items including, but not limited to Jacks, spare tires and wheels, mirrors, tarpaulins, etc., shall be boxed, banded, and secured to the vehicle in a manner to reduce as far as practicable the opportunity for theft. When direct consignee delivery is required, each fuel tank shall be filled with a minimum of 10 gallons of fuel.

6. NOTES

6.1 INTENDED USE.

The vehicles covered by this specification are intended for general use by the Government in transporting personnel or cargo; for use in performance of the maintenance and construction tasks indicated; or for the mounting of special bodies or equipment. Agencies shall specify (see 6.2) unusual operating conditions, items and exceptions not specified herein.

6.2 ORDERING DATA.

Acquisition documents should specify the Federal Standard number and revision and the vehicle item number and option codes from a table and the schedule.

6.3 PERFORMANCE PREDICTIONS.

SAE Truck Ability Prediction Procedure computations and computations for low speed and maximum geared speed will be required by the contract. The SAE J2188 Work Sheet, Appendix A, should include vehicle model number, engine model number, and vehicle type and class. Unless other conditions are cited in the contract, computations shall be made for normal atmospheric pressure, normal ambient air temperature, and still, dry air. The factors to be used in predicting truck ability (see 3.3.1.) are established in the procedures and tables contained in SAE J2188.

6.4 SUBJECT TERM (KEY WORD) LISTING.

Chassis, truck	Truck, commercial
Truck, dump	Truck, refrigerator van
Truck, stake	Truck tractor

6.5 WARRANTY.

6.5.1 WARRANTY COVERAGE.

The contractor shall provide the chassis manufacture's commercial warranty and the commercial furnished equipment warranties against parts failure or malfunction due to design, construction or installation errors, defective workmanship, and missing or incorrect parts (6.5.4 exceptions) for a minimum period of 12 months, and 15 months for vehicles outside the (50) states of the United States and District of Columbia, from date of acceptance or 161,000 km (100,000 miles) of operation, exclusive of any authorized accumulated drive away mileage, whichever occurs first. If the contractor receives from any supplier or subcontractor additional warranty on the whole or any component of the vehicle, in the form of time or mileage, including any pro rata arrangements, or the contractor generally extends to its commercial customers a greater or extended warranty coverage, the Government shall receive corresponding warranty benefits. The warranty begins when the government accepts the vehicle from the contractor FOB point of origin/destination.

6.5.2 DOMESTIC USE.

When vehicles are used within the fifty States of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands, the warranty shall include the furnishing, without cost to the Government (FOB contractor's nearest dealer or branch to vehicle's location or station), of new parts and assemblies to replace any that failed or malfunctioned within the warranty period. In addition, when the Government elects to have the work performed at the contractor's plant, branch, dealership, or with the contractor's approval (i) to correct the supplies itself; or (ii) to have them corrected by a commercial garage facility; the cost of the labor involved in the replacement of the failed or malfunctioned parts or assemblies shall be borne by the contractor.

6.5.3 FOREIGN USE.

When vehicles are used outside the fifty States of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands, the warranty shall include the furnishing of new parts or assemblies to replace any returned to the contractor by the Government which failed or malfunctioned within the warranty period. The replacement parts or assemblies shall be delivered by the contractor to the port of embarkation in the United States designated by the Government. The contractor will not be required to bear the cost of the labor involved in correcting defects in vehicles operated in foreign countries.

6.5.4 WARRANTY EXCEPTIONS.

Unless within the additional coverage under 6.5.1, the following items are considered normal maintenance and repair for which the contractor need not assume liability for reimbursing the Government regardless of the vehicle age or mileage.

- (a) Abuse, negligence, or unapproved alteration of original parts
- (b) Damage from accidents

- (c) Brake and standard clutch adjustments
- (d) General tightening, headlamp adjustments
- (e) Wheel alignment or tire balancing
- (f) Tires and batteries (if warranted by their manufacturers)
- (g) Miscellaneous expenses such as fuel, towing, telephone, travel, lodging, or loss of personal property.

6.6 OPERATORS, SERVICING AND PARTS MANUALS.

The successful bidder shall furnish at least one operator's and maintenance handbook, including a handbook(s) for any furnished special equipment. An identification sticker, label, or plate shall be furnished on the vehicle; that will list the contractor name, point of contact, and phone number of contact. This point of contact will be the source of information for parts, part numbers, service, warranty, and answers to operating questions for the vehicle; including any furnished bodies and/or special equipment. The sticker, label, or plate shall be positioned so that the operator may locate and read it easily. When code PSM is specified, a parts list, or book, all shop repair manual(s) for the vehicle and equipment shall be provided.

When code PSME is specified, the parts and service manual shall be furnished in electronic format (CD or web-based). When code PSM2 is specified, one operator's manual shall be packed with each vehicle. Two sets of maintenance and parts data along with any operation, maintenance and parts data for mounted or specialized equipment, shall be furnished, regardless of the number of vehicles the consignee is receiving. Example: if 15 vehicles are shipped to a consignee, only two sets of the tech manuals mentioned above are shipped to the consignee; however, an operator's manual shall be provided for each vehicle.

When code PSM3 is specified, one set of technical manuals consisting of operating, maintenance, and parts, along with manuals covering any mounted equipment, shall be mailed within 15 days after contract award, prepaid, to the address specified below, prior to approval a Technical Order (T.O.) assignment. The package must include a DD Form 250. Mail to:

Warner Robbins ALC/LEET
 Attn: Tenna Horne
 295 Byron St.
 Robins AFB, GA 31098-1640

The approved manuals shall be identified by a T.O. number which will be furnished by WR-ALC/LKC within 45 days after issuance of the contract. The assigned Air Force T.O. number shall be printed, stamped, or otherwise marked on the cover sheet by the contractor prior to issue. When the contractor furnishes multiple manuals, the Air Force may assign more than one T.O. number.

Within 60 calendar days prior to delivery of the first vehicle, two sets of technical manuals shall be mailed prepaid to:

Warner Robbins ALC/LEET
 Attn: Tenna Horne
 295 Byron St.
 Robins AFB, GA 31098-1640

Manuals will be delivered with DD Form 250 showing contract and MIPR number, T.O. number, and number of sets delivered. A copy of the DD Form 250 shall be mailed to:

Warner Robbins ALC/LEET
 Attn: Tenna Horne
 295 Byron St.
 Robins AFB, GA 31098-1640

6.7 STATEMENT OF ORIGIN OR BILL OF SALE.

A manufacturer's statement of origin or bill of sale showing the applicable purchase order number is required for each vehicle procured under this specification. Unless otherwise specified, such documents shall be forwarded to the consignee mailing address.

Military Interest:

ARMY - AT
 NAVY - YD, MC
 AIR FORCE - 84, 99
 ENGINEERS
 DIA
 DLA

Civil Agency Coordinating Activities:

AGRICULTURE
 AAFES
 COMMERCE
 DC GOVT
 EPA
 ENERGY
 GSA
 INTERIOR
 JUSTICE
 PCC
 POSTAL SERVICE
 STATE
 TRANSPORTATION
 TREASURY
 TVA
 VETERANS

Preparing Activity:

GSA - FSS - FFAE

NOTES