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* INCH-POUND *

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FEDERAL SPECIFICATION

SEMITRAILERS, STAKE; COMMERCIAL

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE

1.1 Scope. The specification covers commercial stake type semitrailers.

1.2 Classification. Semitrailer shall be one of the following styles, sizes, and classes, as specified (see 6.2):

Style I - 12 ton, single axle

Size C - 30 foot

Style II - 20 ton, tandem axle

Size D - 32 foot
Size E - 35 foot
Size F - 40 foot
Size G - 45 foot
Size H - 48 foot

Style III - 34 ton, tandem axle

Size I - 40 foot

Class 1 - Slat sides
Class 2 - Panel sides

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

FSC 2330

* 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards 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, cited in the solicitation (see 6.2).

Federal Standards

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

Military Specifications

MIL-P-514 - Plate, Identification, Instruction and Marking, Blank
MIL-W-3912 - Wood Parts and Wood Substitutes, Fabricated: for Transport Vehicle Bodies
MIL-V-62038 - Vehicle, Wheeled, Preparation for Shipment and Storage of

Military Standards

MIL-STD-209 - Slinging & Tiedown Provisions for Lifting & Tying Down Military Equipment
MIL-STD-1223 - Nontactical Wheeled Vehicles Treatment, Painting, Identification Marking, & Data Plate Standards
MS75021 - Connector, Receptacle, Electrical - 12 Contact, Intervehicular, 24 Volt, Waterproof

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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

DEPARTMENT OF TRANSPORTATION (DoT)

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

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

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

* THE EUROPEAN TYRE AND RIM TECHNICAL ORGANISATION (ETRTO)

Standards Manual

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

* SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE Standards and Recommended Practices

SAE J318 - Air Brake Gladhand Service (Control) and Emergency (Supply) Line Couplers-Trucks, Truck-Tractors, and Trailers
SAE J534 - Lubrication Fittings
SAE J560 - Seven-Conductor Electrical Connector for Truck-Trailer Jumper Cable
SAE J682 - Rear Wheel Splash and Stone Throw Protection
SAE J700 - Upper Coupler Kingpin- Commercial Trailers and Semitrailers
SAE J702 - Brake and Electrical Connection Locations- Truck-Tractor and Truck-Trailer
SAE J1292 - Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring

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

TIRE AND RIM ASSOCIATION, INC. (TRA)

TRA Yearbook

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

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

* 2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Standard commercial product. The semitrailer shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer’s standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer’s standard commercial product, shall be included in the semitrailer being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market

through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.2 First production vehicle. The contractor shall furnish a semitrailer for first production vehicle inspection.

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

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

3.5 General design.

3.5.1 Federal Motor Vehicle Safety Standards. The semitrailer shall comply with Federal Motor Vehicle Safety Standards in effect at time of manufacture.

3.5.2 Net weight. The net weight of the fully equipped semitrailer shall be the minimum practicable for the service intended.

* 3.5.3 Rated payload capacity. The rated payload capacity, evenly distributed over the load space, shall be not less than that specified in table I.

TABLE I. Rated payload and wheel loading capacities (pounds)

Style	Rated payload (not less than)	Total wheel loading (not more than)
I	24,000	19,000
II	40,000	34,000
III	68,000	57,800

3.5.4 Gross weight. The gross vehicle weight (gvw) shall consist of the net weight and the payload evenly distributed over the load space.

3.5.5 Wheel loading. The axle(s) of the semitrailer shall be positioned so that the portion of the gvw imposed on the tires, with rated payload evenly distributed over the load space, shall be not more than that specified in table I.

* 3.5.6 Dissimilar metals. All dissimilar metals used throughout the vehicle shall be insulated from one another to prevent galvanic or electrolytic action.

3.6 Performance. The semitrailer, fully equipped and loaded with specified payload (see table I), shall be capable of being towed at speeds as great as 10 miles per hour (mph) over unimproved roads (see 6.4.2), and over reasonably hard uneven terrain; and being towed at speeds as great as 55 mph over improved roads (see 6.4.1). The semitrailer shall be capable of traveling 55 mph, unloaded, over improved roads.

3.6.1 Turning ability. The semitrailer shall be capable of assuming a 90 degree angle to the coupled towing vehicle without cramping, or damage to the semitrailer or the towing vehicle.

3.6.2 Tracking ability. The semitrailer shall conform to the tracking requirements of DoT Federal Motor Carrier Safety Regulations, section 393.70a.

* 3.6.3 Brake performance. The semitrailer service and emergency brake system shall stop the tractor-semitrailer combination, with the semitrailer loaded with the specified payload, within the stopping distance performance requirements of DoT Federal Motor Carrier Safety Regulations, section 393.52.

3.7 Dimensions and clearances. The semitrailer, uncoupled from the towing vehicle, resting level on the landing legs, without payload, on level ground, shall conform to the dimensions specified in table II.

TABLE II. Dimensions and clearances

Overall length, feet, +1 inch	30, 32, 35, 40, 45 and for 48 for sizes C, D, E, F, G, H, and I respectively
Overall width (not more than)	96 inches
Inside width (not less than)	88 inches
Ground clearance (not less than)	9 inches
Landing gear clearance (not less than)	11 inches
Swing clearance (radius from centerline of kingpin to any portion of semitrailer 6 inches or more below upper fifth wheel plate) (not less than)	84 inches
Swing radius from centerline of kingpin to most distant point on semitrailer nose (not more than)	52.5 inches for style I 59 inches for style II and II
Distance from centerline of kingpin to front end of semitrailer (not less than)	24 inches for style I 36 inches for style II and II
Platform height (not more than)	58 inches
Rack and panel height (not less than)	42 inches for style I 60 inches for style II and II
Upper fifth wheel height	52 +/-1 inch

3.8 Chassis components. The chassis components shall be adequate to support the specified payload (see 3.5.3 and table I) under the operating conditions specified herein.

3.8.1 Frame construction. Main frame members shall run the full length of the semitrailer. The main frame members shall be fabricated of high strength steel with full length one piece upper and lower flanges. All parts of fabricated beam, where welding is required, shall be continuously electric welded. High strength steel of not less than 50,000 pound-force per square inch yield strength shall be furnished. When the semitrailer is statically loaded, with the payload distributed as specified in 3.5.3, the maximum fiber stress in any frame member shall not be greater than 50 percent of the frame material yield strength. The frame defection shall be not greater than 2 inches.

* 3.8.1.1 Stress analysis. Stress analysis for semitrailer, loaded as specified in 3.5.3, shall be furnished. The stress analysis shall include shear and moment diagrams and deflection calculations. The strength of the floor, crossmembers, and outside frame members shall not be included in the calculations to compute the main frame maximum fiber stress, but the weight of the floor crossmembers, and outside frame members imposed on the main frame shall be included in the total load imposed on the main frame. Stress calculations shall include complete analysis of the gooseneck and kickup area.

* 3.8.1.2 Container securement devices. When specified (see 6.2), the frame shall be equipped with two sets of four shipment container securement devices. The securement devices shall be of the retractable type which will provide for a flat platform when retracted and not in use. Eight securement devices (four in each half of the trailer) shall be provided. Securement devices shall be located for the alinement and securement of two ISO freight containers, "I C" Designator, each 20 feet by 8 feet by 8 feet, as specified in ISO 668, with freight container corner fittings conforming to ISO 1161. The securement devices shall be mounted with reinforcements so as to meet or exceed all the requirements of Federal Motor Carrier Safety Regulation 393.100(e).

3.8.2 Suspension system. The semitrailer shall be furnished with the manufacturer’s standard suspension system. Each component of the suspension system shall have a rated capacity at least equal to the load imposed, measured at the ground, when the semitrailer is loaded with its specified payload (see 3.5.3). Clearances shall preclude interference between wheels and any other part of the semitrailer under the operating conditions specified herein.

* 3.8.2.1 Full air suspension system. When specified (see 6.2), the semitrailer shall be equipped with an air suspension system, with components having a rated capacity at least equal to the load imposed on each member measured at the ground, with the semitrailer loaded as specified in 3.5.3. Hydraulic double-acting shock absorbers shall be provided on the axles. The suspension system shall incorporate leveling valves with time delays to avoid constant air consumption. The suspension system shall have none of the sprung weight carried on anything other than the air springs. No other spring medium such as leaf, coil or rubber springs, may be used in conjunction with the air springs. The air suspension system shall incorporate radius rods to control lateral and longitudinal movement. Radius rods shall transmit driving and pulling forces to the chassis and body. Each end of the radius rods shall be equipped with rubber bushings that do not require periodic lubrication. The suspension shall be provided with a mechanism at each wheel to assure lifting of the wheel and axle when jacking the semitrailer from the applicable jacking location.

3.8.3 Axle(s). Axle ratings shall be at least equal to the load imposed on each axle, measured at the ground, when the semitrailer is loaded with the applicable rated payload. The wheel bearings and axle spindles shall be oil lubricated. The oil viscosity shall be in accordance with the manufacturer's recommendations. The hubcaps shall have a window for visual determination of oil level. Provision for venting or other method of withstanding internal pressure buildup, and for replenishing the oil supply, shall be incorporated. The hubs shall be fitted with seals.

* 3.8.3.1 Sliding axle assembly. When specified (see 6.2), a sliding axle, spring and tire assembly shall be furnished. The sliding axle assembly shall have an adjustment length of not less than 174 inches in increments of not more than 6 inches. The sliding axle assembly subframe construction shall meet the requirements of 3.8.1.

3.8.4 Wheels, rims, tires.

* 3.8.4.1 Wheels, rims, and tires. Semitrailer shall be equipped with dual wheels on each axle. When specified (see 6.2), disc type wheels shall be furnished. Rims shall conform to Tire and Rim Association or European Tyre and Rim Technical Organisation recommendations for the type and size of tires furnished. Tires shall be of the tubeless type. Multi-piece rims shall not be furnished. Tires shall conform to Tire and Rim Association or European Tyre and Rim Technical Organisation Standards recommendations. Tire and rim sizes shall be the same for all wheels on the semitrailer. Tires shall be tubeless-type with highway tread. Tires shall be of rated capacity at least equal to the load imposed on each tire, measured at each wheel at the ground, when the semitrailer is loaded with the applicable rated payload.

* 3.8.4.2 Tire carrier. When specified (see 6.2), a spare tire carrier shall be installed under the semitrailer on the curbside, in an accessible location. Threaded fasteners, when used to secure the spare tire in the carrier, shall be constructed of or plated with corrosion-resistant material. Means shall be provided for securing the tire within the carrier to prevent accidental loss.

3.8.4.3 Spare wheel. When specified (see 6.2), a spare wheel or rim shall be mounted on the tire carrier.

3.8.4.4 Spare tire. When specified (see 6.2), an inflated spare tire shall be mounted on the spare wheel or rim specified in 3.8.4.3. The spare tire shall be of the same size and tread design and of the same ply rating as tires installed on the semitrailer.

* 3.8.5 Brakes. Brakes shall be of the full air type and shall conform to DoT Federal Motor Carrier Safety Regulations, 393.40, 393.42, 393.43 and 393.45 through 393.47. Brake linings shall be of nonasbestos material. The braking system shall include automatic slack adjusters, piping, hose connections, gladhands, spring-loaded dust covers or dummy gladhands equipped with security chains, and other components required for a complete air brake system. Gladhands location shall comply with SAE J702. Gladhands shall conform to SAE J318. The braking system shall be installed in a manner which provides road clearance for travel over uneven terrain and protection against damage caused by objects striking components. No part of the braking system shall extend below the bottom of wheel rims.

* 3.8.5.1 Parking brakes. Spring or air diaphragm mechanical lock type parking brakes shall be provided. The parking brakes shall be automatically applied upon disconnection of the supply (emergency) air line and under emergency braking conditions. When applied, the parking brake shall hold the semitrailer, with rated payload, on a 10 percent grade despite the depletion of the compressed air supply. Parking brakes shall conform to DoT Federal Motor Carrier Safety Regulation, section 393.41.

* 3.8.6 Upper fifth wheel plate. The upper fifth wheel plate shall be designed for coupling to a full oscillating and fore and aft rocking fifth wheel; shall be of sufficient strength to support a fifth wheel 36 inches in diameter; and shall conform to DoT Federal Motor Carrier Safety Regulation, section 393.70b. The kingpin shall be of heat treated alloy steel and shall conform to SAE J700. The forward end of the upper fifth wheel plate shall have a turned-up lip not less than 2 inches high, for ease for coupling.

* 3.8.7 Lighting. The electrical lighting system shall be 12-volt (V) potential. The brake lights shall override the four-way emergency flasher, or the two way systems shall be independent of each other. The lighting system shall conform to DoT Federal Motor Carrier Safety Regulations, sections 393.14, 393.20, 393.22, 393.23, 393.25 through 393.29, 393.32, and 393.33. All lights and reflectors shall be protected from operational hazards by mounting in recessed or otherwise guarded locations. Lights and reflectors shall not be mounted on vertical surfaces of the rub rails (unless recessed and fully protected) or on semitrailer bumpers. When specified, clearance, identification and marker lights shall be constructed so that the lenses can be removed without the use of any tools. The front of the semitrailer shall be equipped with a receptacle conforming to SAE J560, with the receptacle located and the conductors connected and color coded as specified herein. All electrical wiring shall conform to SAE J1292.

3.8.7.1 Dual voltage system. When specified (see 6.2), a dual 12V and 24V system shall be furnished. The dual voltage system shall be either two independent lighting type (3.8.7.1.2), or resistor type (3.8.7.1.3) as specified by the procuring activity.

3.8.7.1.1 Receptacles. The front of the semitrailer shall be equipped with a 7-contact receptacle conforming to SAE J560, with the receptacle located and the conductors connected and color coded as specified therein. The front of the semitrailer shall also be equipped with a 12-contact receptacle and cover conforming to MS75021, part No. MS75021-1. The 24V, 12-contact receptacle shall be connected to the 24V lights as follows:

Contact B.	Connect to left-hand turn signal and stop lamp (yellow)
Contact D.	Connect to ground (white)
Contact E.	Connect to clearance, side marker, identification, and tail lamps (black and brown)
Contact J.	Connect to right-hand turn signal and stop lamp (green)
Contact L.	Connect to ground (white)

The rest of the contacts shall not be connected. Circuits B and J on tactical trucks are combination stop and turn indicator circuits. The normal 12V turn signal lights will function both as turn signals and stop lights, and the normal 12V stop lights will not be operational when the semitrailer is connected to a

towing vehicle with a 24V power supply. Because of this condition, the stop light (red) circuit is not connected to the 24V 12-contact receptacle.

3.8.7.1.2 Two independent lighting systems. Two independent lighting systems, one 12V and the other 24V, shall be provided. Individual light fixtures, wiring and bulbs shall be furnished for each system, except that fixtures containing two or more bulbs may be furnished. Both lighting systems shall conform to 3.8.7, except the 24V stop and turn lamps shall be combined.

3.8.7.1.3 Resistor type. The 12-contact receptacle shall be provided with resistance to each circuit to reduce the voltage to the tactical (military design) towing vehicle from nominal 24V to 12V. Each circuit resistor shall be selected to reduce the 28V direct current regulated voltage of the tactical truck to within the maximum rated voltage of the semitrailer electrical components. The resistor assembly shall be located in a protective housing and provided with adequate ventilation or a heat sink to preclude overheating and any damage to resistors, wiring, or adjacent components. The 7-contact receptacle shall be wired in accordance with SAE J560 to supply nominal 12V directly to the semitrailer circuits.

3.8.8 Landing gear. Semitrailer shall have two vertical lift, telescopic, nonrotating landing legs, with two speed gears and a handcrank on the curb side.

Landing legs shall be equipped with not less than 9 inch diameter steel wheels or self leveling sand shoes of not less than 10 inch by 10 inch square bearing area. Supports for the crank extension shafts and clips for holding cranks when folded shall be provided. The landing gear shall withstand, without deformation, the combined static and dynamic forces due to proportion of gross weight sustained and the forces resulting from impact during coupling and uncoupling operations. When placed in travel position, the landing gear legs shall remain positively locked. The landing gear shall be protected to preclude the entrance of foreign matter which would impair its functioning or mechanical efficiency. The landing gear shall have a range of adjustment to vary the height of the upper fifth wheel from 47 inches to not less than 52 inches from the ground. With the semitrailer coupled to a towing tractor and in level position, the clearance under the fully retracted landing gear shall be as specified in table II.

3.8.9 Rear end protection. Semitrailer rear end protection shall be in accordance with DoT Motor Carrier Safety Regulations, section 393.86. A dock bumper and an extension type step bumper, as specified in 3.8.9.1 and 3.8.9.2, shall be furnished.

3.8.9.1 Dock bumper. A dock bumper, extending not less than 1-1/2 inches beyond the rear of semitrailer, shall be furnished. The dock bumper shall be full width of vehicle and shall be located approximately at floor level.

3.8.9.2 Extension type step bumper. An extension type step bumper shall be furnished, consisting of a horizontal bumper (step), vertical extensions, and angular extension supports. Bumper extension supports shall be attached to the bumper (step) and semitrailer frame members. The extension bumper shall be of all welded construction and be fabricated from steel members. The rear edge of the bumper (step) shall not protrude to the rear of the dock bumper and shall be

located not more than 1-1/2 inches forward of the rear edge of the dock bumper. The bumper step height shall be approximately halfway between ground level and floor level.

* 3.8.10 Rear wheel splash and stone throw protection. Rear wheels shall have mud flaps at rear. A metal strip not less than 1/8 inch thick and not less than 1 inch 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 1 inch high by 1-1/4 inches wide by 3/32 inch thick shall be furnished at each bolt. All splash shield and mud flap installations, front and rear, shall conform to the rear wheel splash and stone throw protection provisions of SAE J682.

* 3.9 Platform. The platform shall have crossmembers spaced not more than 12 inches on center. The platform shall have a flat front with not more than 12-inch radius front corners or the manufacturer's standard bevel front corners to provide the swing radius specified in table II. Protruding steel stake pockets shall be furnished. Protruding type pockets shall be protected all around by a steel rub rail not less than 2 inches wide and not less than 5/16-inch thick. Flooring shall be of apitong hardwood and shall conform to 3.9.1. Laminated hardwood is not acceptable. Floorboards shall be not less than 1-1/4 inches thick and not less than 6 feet long, laid lengthwise with shiplap joints. Flooring shall be secured with countersunk phosphate-coated or other corrosion-resistant screws or bolts. Not less than two securing screws or bolts shall be installed at each cross sill and not less than two on each side of each butt joint. Top of countersunk screw or bolt head shall be not less than 1/8-inch and not more than 1/4-inch below top of wood surface. Butt joints shall be centered over crossmembers and staggered. When rub rails cannot be used for securing cargo, tiedown devices for that purpose shall be provided and spaced on centers not greater than 2 feet. Cargo tiedown devices, when required, shall be of not less than 3/8-inch diameter steel stock and shall be protected by the rub rail.

* 3.9.1 Hardwood. Flooring and other wood parts specified herein to be furnished in hardwood shall be fabricated from the types of lumber specified in MIL-W-3912. Apitong shall be acceptable for flooring only.

3.9.2 Wood treatment. Wood surfaces shall be treated in accordance with the requirements of MIL-STD-1223, except manufacturer's method, which provides an equivalent protection, may be substituted upon approval by the contracting officer. Apitong need not be treated.

* 3.9.3 Class 1. Class 1, slat side semitrailer shall be furnished with side and rear racks and front bulkhead only of the height specified in table II. The front bulkhead shall be of steel. The front bulkhead shall have a reinforced or flanged top edge, and shall be designed to sustain an end thrust of not less than 50 pound-force per square foot, when interlocked with the adjacent side racks. The number of side sections shall be held to a minimum, with rack section width not exceeding 54 inches. All sections including the front bulkhead shall be easily removable and show no evidence of binding or jamming. The intermediate side sections shall be interchangeable on the same side, except for the adjusting racks. All sections shall meet and fit so that locking devices engage and disengage freely and shall not require the use of other than

small handtools. The stakes shall be either hardwood, fitted with a metal ferrule at the lower end; pressed or structural steel not less than 0.1345-inch (U.S. revised standard gage No. 10) thick; or extruded aluminum not less than 0.094-inch thick. When the racks are installed, the slats shall be inside the load space, with the upright posts outside, and the rear platform corners shall be square. The front bulkhead and side and rear racks shall be provided with heavy-duty interlocking hardware. All hardware and fasteners shall be of corrosion-resistant material. Each rear rack section shall be equipped with locking devices to lock rack to the body. Slats used in the construction of the side and rear racks shall be at least 3/4 inch by 3-1/2 inches in finished dimensions. The slats in the bottom half shall be spaced as close together as practicable, and the slats in the upper half shall be spread not less than 2 inches and not more than 3 inches apart. Stakes and slats, including hardware, shall be held together with bolts or other through-type fasteners at least 1/4-inch in diameter. All woods parts shall be hardwood conforming to 3.9.1. Two sets of crosstie chains shall be installed at equidistant points across bed, fastened to the top of the racks. Ends of chains on one side shall be fitted with grab hooks.

* 3.9.3.1 Lashing D-rings. When specified (see 6.2), lashing D-rings, of the heavy duty type, shall be furnished. The lashing D-rings shall not protrude beyond the outer edge of the platform when not in use. The semitrailer shall have 24 or more lashing rings located as follows:

a. Ten or more on each side of the platform, equally spaced every 3 feet. Spacing may be adjusted where necessary to avoid interference with stake pockets.

b. Two D-rings in the front and two D-rings on the rear, equally spaced from the center of the platform.

Each lashing D-ring and its mounting shall be capable of withstanding a pull of not less than 10,000 pounds in all directions without permanent deformation.

* 3.9.3.2 Tool compartment. When specified (see 6.2), a weatherproof tool compartment shall be furnished, located under the body on the curbside of the semitrailer. The capacity of the tool compartment shall be adequate for stowing hand tools, tire changing equipment, safety devices and other equipment for operation of the semitrailer. The tool compartment shall provide not less than 14 inches of road clearance. The compartment shall be constructed of not less than 12 gage (0.1046 inch) high tensile, low alloy sheet steel and shall be bolted to frame structural members. A hinged door or lid and provisions for a padlock shall be furnished.

3.9.4 Class 2. Class 2, panel side semitrailer shall be furnished with crosstie chains as specified in 3.9.3. Panel sections shall meet the requirements of 3.9.3 for length, height, spacing, number of panels, ease of removal, interchangeability, stakes, and square corners. The top edges shall be parallel to the platform surface. Positive means shall be provided for fastening the sections together. The panels shall be constructed of plywood, sheet steel, or aluminum alloy, as specified (see 6.2). The front bulkhead shall be capable of sustaining an end thrust of not less than 50 pound-force per square foot, when interlocked with the adjacent side racks.

3.9.4.1 Plywood panels. When plywood panel construction is required, each side and rear panel assembly shall consist of stakes as specified in 3.9.3, and a plywood panel. The panel shall be constructed of exterior grade plywood of not less than 1/2-inch thickness. The ends of adjoining panels shall be square and shall have not more than 1/2-inch clearance when installed on the semitrailer.

3.9.4.2 Steel panels. When steel panel construction is required, each side and rear panel assembly shall consist of stakes as specified in 3.9.3 and a sheet steel panel with reinforced or flanged top edge. The sheet steel panel shall be not less than 0.1046-inch (U.S. revised standard gage No. 12) thick. One end of adjoining panels shall offset the thickness of the metal, to form a 1-inch overlap with the edge of the next panel, or other suitable means of supporting the point and interlocking the adjacent side panel may be used.

3.9.4.3 Aluminum panels. When aluminum panel construction is required, a bolted front panel, side racks, and double rear doors shall be furnished. Panel assemblies shall consist of a smooth, interior aluminum alloy skin not less than 0.063-inch thick, reinforced at top, bottom, and sides; extruded aluminum alloy hat shaped posts; and metal stake pocket inserts. Intermediate side panels shall be approximately 4 feet in width and interchangeable on the same side. The cross section configuration on the vertical edges shall be such that adjoining panels will interlock or overlap to minimize the entrance of water. The panel tops shall be parallel with the platform surface and positively fastened together for rigidity and alinement. The rear doors shall be hung on not less than three hinges so that the doors can swing fully open or be lifted off. A removable rear door header shall be provided.

3.10 Roof bows and tarpaulin. Unless otherwise specified (see 6.2), class 2 panel side semitrailer shall be provided with roof bows and tarpaulin. When specified (see 6.2), class 1 slat side semitrailer shall be provided with roof bows and tarpaulin. The roof bows shall be spaced on centers of not more than 24 inches, with bow curvature height not less than 14 inches. Canvas shall be olive drab color. Tarpaulin shall be fabricated from hard texture cotton duck cloth not less by weight per square yard than No. 8 commercial designation. When specified (see 6.2), the tarpaulin shall be fabricated from vinyl nylon material not less than 20 ounces weight per square yard. The tarpaulin shall be treated to be resistant to fire, water, weather, and mildew, and all seams shall be double stitched. The tarpaulin shall cover the entire body when spread over the roof bows, and shall extend down the sides, front, and rear to within 3 inches of the platform. Manila tiedown ropes, 3/8-inch in diameter, shall be spliced through grommets spaced not more than 2 feet apart. The free ends of the rope shall be secured with metal clips or seized with waxed twine to prevent raveling. Tiedown ropes shall be of sufficient length to permit tying to the tiedown devices. Leather reinforcing pads, of the size, shape, and in the position required to protect the tarpaulin at the rack and panel corners, and roof bows, shall be sewn to the tarpaulin.

3.11 Cargo control system. When specified (see 6.2), the semitrailer shall be equipped with a cargo control system on the curbside of semitrailer consisting of a slider winch track with 10 each sliding cable winches. The winch mandrel equipped with a steel pin shall be suitable for steel cable or manila rope. The slider winch shall be captivated to remain in the track for

maximum security and have a strength rating of not less than 10,000 pounds. Two heavy duty winch bars shall be furnished. Tiedown straps, cables or rope are not required.

* 3.12 Lifting and tying down attachments. When specified (see 6.2), the semitrailer shall be provided with lifting and tying down attachments. Lifting and tiedown attachments shall conform to type II or type III of MIL-STD-209. A transportation plate conforming to composition A (class 1 or 2) or composition C in accordance with MIL-P-514 shall be attached to the semitrailer. The transportation 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 semitrailer, showing the center of gravity, shall be provided on the transportation plate. Tiedown attachments shall be identified by stenciling or other suitable markings. Tiedown markings shall clearly indicate that the attachments are intended for the tiedown of the semitrailer on the carrier when shipped.

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

* 3.14 Painting and marking. Treatment, painting, marking, and data plates shall be in accordance with MIL-STD-1223. As specified by the procuring activity for the appropriate military service (see 6.2), the exterior color and markings shall be in accordance with MIL-STD-1223.

* 3.15 Rustproofing. When specified (see 6.2), the vehicle shall be rustproofed in accordance with FED-STD-297.

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

a. Inflation of all tires
b. Adjustment of brakes, (when required)
c. Proper functioning of all lighting and electrical systems
d. Complete lubrication with grades of lubricants recommended for ambient temperature at the delivery point

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

* 3.17 Air transportability. When specified (see 6.2), the trailer shall meet the air transportability requirements and shall meet specified dimension and weight limits. If necessary, dimension and weight limits may be achieved with the equipment in a reduced configuration. Weight shall not exceed 13,000 pounds per single axle. The combined weights for both axles in a tandem shall not exceed 13,000 pounds when the two axles are less than four feet apart. Each axle in a tandem shall not exceed 13,000 pounds when the two axles are four feet apart or more. Achieving a reduced configuration shall be limited to the

removal or relocation of mechanically attached (non-welded) components and shall not affect the transportability of the item, including the ability to negotiate a 15 foot ramp at an angle of 17 degrees between two horizontal surfaces. Removal/relocation or reinstallation time of all components required to achieve the reduced configuration shall not exceed 4 hours. Components which require removal or relocation to achieve the reduced configuration and the removal, relocation, reinstallation process shall be described in the equipment manual(s) delivered. When delivered to the Government, the item(s) shall not be in the reduced configuration.

3.18 Workmanship.

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

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

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

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

4. QUALITY ASSURANCE PROVISIONS

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

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor’s overall inspection system or quality program. The

absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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

a. First production vehicle inspection (see 4.2.1).
b. Quality conformance inspection (see 4.2.2).

4.2.1 First production vehicle inspection. The first production vehicle produced under the contract shall be inspected by the contractor at his plant under the direction and in the presence of Government representatives. This inspection shall include the examination of 4.3 and the tests of 4.4. The purpose of the inspection shall be to determine vehicle conformity with the requirements of the contract. Acceptance of the first production vehicle shall not constitute a waiver by the Government of its right under the provisions of the contract.

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

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

4.4 First production vehicle tests.

4.4.1 Vehicle weight. Semitrailer shall be weighted to determine net weight and distribution of net weight on fifth wheel and axle(s). The imposed loading on the fifth wheel and axle(s) shall be computed using the net weight and the payload. Calculated imposed loads on fifth wheel and axle(s) shall be utilized to ascertain that the suspension, axle(s), and tires furnished are of adequate capacity to meet contract requirements, and to determine conformance to 3.5.5.

4.4.2 Road test. Road test shall consist of coupling the semitrailer loaded with rated payload to a truck-tractor. The tractor combination shall be driven a distance of not less than 20 miles under conditions specified in 3.6. At least 20 percent of the distance shall be over hard uneven terrain. At least five sudden stops shall be made from a speed not less than 20 mph. Tracking ability shall be observed to verify conformance to 3.6.2. After the test, the semitrailer shall be examined for evidence of misalinement, binding, or other malfunction.

4.4.3 Turning ability test. A truck-tractor shall be coupled to the semitrailer and driven through turns up to 90 degrees right and left to determine conformance to 3.6.1.

4.4.4 Landing gear test. Upon completion of the road test, function of landing gear shall be tested to verify conformance to 3.8.8.

4.4.5 Electrical test. An electrical test shall be conducted on the first production vehicle to determine that all vehicle lights are functioning. In addition, when a resistor type dual voltage system (see 3.8.7.1.3), is furnished, the circuits of the 12-contact receptacle shall be energized with 28V depth charge regulated voltage for a time sufficient to stabilize the temperature of the resistor assembly for not less than 30 minutes in an ambient temperature of not less than 77 degrees Fahrenheit. After the test, the resistor assembly, including resistors, wiring and adjacent components shall be examined for evidence of overheating, deterioration or damage.

4.4.6 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 the contract until corrective action has been taken.

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

* 4.4.8 Brake test. Brake test shall be conducted with the fully loaded semitrailer coupled to a truck tractor. The truck tractor used for the brake test shall be selected so that it will be loaded to full capacity (gross vehicle weight and gross combination weight) by the semitrailer being tested. The truck tractor shall be without extra brake capacity. Failure of the vehicle combination to stop within the required 40 feet, from a speed of 20 mph, shall be cause for rejection.

* 4.4.9 Parking brake test. The parking brake shall be tested to verify conformance to 3.8.5.1.

* 4.4.10 Test failure. The first production vehicle shall successfully complete the entire road test. Substitution of a new vehicle or replacement of a major component may require complete retest at the discretion of Government representatives. Rejection of the test vehicle shall be for damage or deficiencies, including but not limited to the following:

a. Damage caused by collision.
b. Failure of any major component.
c. Vibration due to misalinement of wheels or frame.
d. Vibration due to the type of construction or mounting.
e. Evidence of abnormal tire wear due to misalinement or unbalance.
f. Failure of any vehicular safety device, such as lights, electrical circuits or brakes.
g. Evidence of structural weakness in any part of the vehicle, vehicle component or vehicle accessories.
h. Loose mountings of parts or accessories.
i. Tracking ability does not conform to paragraph 3.6.2.

4.5 Production semitrailer tests. The contractor's testing system shall, as a minimum, assure that the semitrailer is capable of meeting the performance requirements specified herein.

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

5. PACKAGING

* 5.1 Vehicle processing. The equipment shall be preserved and packed in accordance with the contractor's standard practice. When specified (see 6.2), equipment shall be preserved, packed, and marked in accordance with the requirements of MIL-V-62038 with the level of preservation and packing as specified (see 6.2).

* 6. NOTES

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

* 6.1 Intended use. The semitrailers covered by this specification are intended for use of transporting cargo. Cargo will be loaded on these semitrailers by forklift having a 14,000 pound axle load supported by 8-inch wide tires, with a tread width between wheels of 30 inches.

* 6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Style, size, and class of semitrailer required (see 1.2).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
d. When container securement devices are required (see 3.8.1.2).
e. When air suspension system is required (see 3.8.2.1).
f. When sliding axle assembly is required (see 3.8.3.1).
g. When disc type wheels are required (see 3.8.4.1).
h. When spare tire carrier is required (see 3.8.4.2).
i. When spare wheel or rim is required (see 3.8.4.3).
j. When spare tire is required (see 3.8.4.4).
k. When dual 12V and 24V voltage systems are required (see 3.8.7.1).
l. When heavy duty lashing D-rings are required (see 3.9.3.1).
m. When tool compartment is required (3.9.3.2).
n. Material to be used for class 2 panel construction (see 3.9.4).
o. When roof bows and tarpaulin are not required for class 2 panel side semitrailer (see 3.10).
p. When roof bows and tarpaulin are required for class 1 slat side semitrailer (see 3.10).
q. When vinyl nylon tarpaulin is required (see 3.10).
r. When cargo control system is required (see 3.11).
s. When lifting and tying down attachments are required (see 3.12).
t. As specified by the procuring activity for the appropriate service, exterior color and markings shall be in accordance with MIL-STD-1223 (see 3.14).

u. When rustproofing is required (see 3.15).
v. When air transportability is required (see 3.17).
w. When semitrailers shall be processed in accordance with MIL-V-62038, with the level of preservation and packing required (see 5.1).

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

6.4 Definitions.

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

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

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

MILITARY INTERESTS:

Custodians

Army - AT
Navy - YD
Air Force - 99

Review Activity

Air Force - 84

User Activity

Navy - MC

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS

PREPARING ACTIVITY:

Navy - YD

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.