



Ambulance Manufacturers Division (AMD)

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KKK-A-1822

FEDERAL SPECIFICATION FOR THE STAR-OF-LIFE AMBULANCE

COMPARISON - REVISION "D" TO REVISION "E"

May 14, 2002

The following list outlines the changes made in the Federal Specification for Ambulances (KKK-A-1822) from Revision D to E. The comparison was performed using an official copy of Revision D dated November 1, 1994 and Draft #6 of Revision E that incorporated the changes made during the June 1, 2001 Ambulance Manufacturers Division (AMD) meeting in New Orleans, LA. , the February 15, 2002 changes provided by Mel Globerman and the "final" draft copy dated May 1, 2002. The list is only meant to be a guide and assist in your review of Revision E and comparison with Revision D. The list may not be all inclusive and **does not** include inconsequential changes (spelling, typos, punctuation and other minor changes for clarification, etc.) that do not affect the "Star of Life" Certification Provisions of Paragraph 4.3. Where there were substantial changes to a paragraph, we copied either a portion or the entire paragraph and underlined the new text. Deleted text is not shown.

Some of the changes added references to the new AMD Standards 010 through 015. The references did not change any of the performance requirements of the specification. The new AMD Standards only established performance test procedures for the existing requirements in Revision D.

Carefully compare Revision D and E in order to determine and identify changes not included in the following list. This document was prepared by the Ambulance Manufacturers Division (AMD) of the National Truck Equipment Association.

PARAGRAPH

1.2.1 – Ambulance Types, Classes and Floor Configurations: Added "Additional Duty classification for Types I and III.

2.1 – Military Standards: Change reference to MIL-STD 461 and Deleted MIL-STD-462.

Laws and Regulation: Added – 29 CFR 1910.133 Bloodborne Pathogens.

2.2 – Other Publications: Added – AMD Standards 010 – 015, American College of Emergency Physicians, American society for Testing and Materials, National EMSC Resource alliance. Deleted – Illumination Engineering Society.

3.1.2.1 - Type I-AD (Additional Duty) Ambulance: Added (new vehicle classification)

3.1.4.1 – Type III-AD Additional Duty) Ambulance: Added (new vehicle classification)

3.1.5.1 – Configuration “A” (ALS): Minor word changes - three seated patients or EMTs on the squad bench.

3.1.5.2 – Configuration “B” (BLS): Minor word changes - three seated patients or EMTs on the squad bench.

3.1.6 – Four Wheel Drive, Class 2, 4x4: Minor word changes to fifth and sixth sentence for clarification.

3.4.2 – Temperature Conditions: Added reference to AMD Standard 011.

3.4.4 – Vehicle Performance: Added “without abnormal vibration”

3.4.5 – Brakes: Added “...and when available from the chassis manufacturer shall include ABS.”

3.4.11.1 - Length: Added “and functional” to the last sentence.

3.4.11.2 - Width: Increased the overall width tolerance to +/- 6.35 cm (+/- 2.5 in.).

3.4.11.4 – Ground Clearance: Added “and (6”) for chassis mounted components

3.4.11.5 – Angle of Approach, Ramp Breakover, and Departure: Added “With the exception of the chassis manufacturer’s furnished and installed components,”.

3.4.11.7 – Floor Height: Added “The use of an automotive “dump valve” on air suspension vehicles is acceptable to achieve the loading height requirement. The system shall include an interlock that only permits vehicle lowering when the vehicle is in neutral or park and the parking brake is set.”

3.5.1 – Curb Weight: Added “...and any non-portable vehicle mounted rescue (extrication) equipment, permanently mounted fire suppression system and equipment including nozzles, hoses, tanks, pumps, etc. and including a full complement of water and related foam, chemicals, etc.”

3.5.2 – Payload Allowance: Added “The usable payload for modular Type I AD, or Type III AD (with increased GVWR e.g. 14,000 lbs.) ambulances shall be specified by the purchaser.” and “10. Portable fire extinguishers in addition to units required in 3.15.2 as specified by purchaser.”

3.5.4 – Weight Distribution: Added “...and for air brake vehicles FMVSS 121”, “To meet the above weight distribution requirements...” and reference to AMD Standard 013. Deleted the last sentence prohibiting ballasting.

3.6.3.2 – Engine Low Temperature Starting: Changed the starting temperature to –18 degrees C (0 degrees F) Changed first sentence to read; “The engine shall start satisfactorily with out the aid of engine block preheating devices (except glow plugs or combustion air preheater)...”

3.6.3.3 – Diesel Engine: Changed the first sentence “Unless otherwise specified by the purchaser, the chassis manufacturer’s standard or optional horsepower/displacement diesel engine and powertrain shall be provided...” Added “For Type I – AD vehicles the powertrain shall meet the performance requirements specified herein or as specified or approved by the purchaser.”

3.6.4.5 – Cooling System: Added reference to AMD Standard 014.

3.6.4.6 – Exhaust System: Added “...and be angled/positioned to project the exhaust...” to the third sentence.

3.6.5.2 – Automatic Transmission: Changed the second sentence to read: “The transmission shall provide not less than four speeds forward...”

3.6.5.10 – Suspension: Added “laterally” to the first sentence

3.6.8 – Tires: Changed entire paragraph to read; “Tires shall be OEM tubeless, steel belted radials. All tires furnished shall comply to FMVSS 120.

3.7.1.1 – Warning Indicators: Added “Electronic displays that are visible in all ambient light, that projects narrative information may be used in lieu of discrete, colored, indicator/warning lights provided the projected message is at least as visible as the basic required warning light and complies with FMVSS 101 for displays. The use of “high intensity” LEDs in lieu of the 13 mm warning light is acceptable.”

3.7.2 – Wiring Installation: The ninth sentence was changed to read; “ Wiring necessarily passing through an oxygen compartment shall be protected from damage (see 3.11.3). Added “Cable ties shall not be used to support harnesses, but may be used for bundling purposes.”

3.7.2.1 – Wiring Criteria: Added “All exterior wiring to lights or any other component shall utilize sealed connectors or splices.” Changed the “Circuit Breaker Rating (Amps)/Minimum Wire Size” table to include wire sizes for 40 through 150 amp circuits. Deleted last paragraph related to RF grounding (Note: RF Grounding requirements moved to paragraph 3.7.3 - Grounding.

3.7.3 – Grounding: New Paragraph

3.7.6 – Electrical Generating System (Reference Figure 5): First sentence changed to read “Unless otherwise specified (see 6.2q), the ambulance shall, when available from the chassis manufacturer be equipped with standard or optional generating system designed for ambulance applications, and shall be nominally rated at 14 volts, with a minimum under hood temperature of 93 degrees C (200 degrees F).” Changed the third sentence to read “ The generating system shall supply the maximum electrical load, at the regulated voltage, at 93 degrees C (200 degrees F) under hood temperature, and with an engine speed not exceeding the furnished engine manufacturer’s high idle setting in order to maintain battery charge at the regulated voltage.” Added reference to Figure 5b in fifth sentence.

3.7.6.1 – Engine High-Idle Speed Control, Automatic: The first sentence was changed to read; “An engine high- idle speed control shall be furnished on all vehicles which automatically increases the engine speed (RPM) to the engine manufacturer’s recommended setting to sustain the ambulance’s total continuous electrical load at the regulated voltage, and provide maximum heating/air conditioning output.”

3.7.6.2 – Ammeter: The paragraph was changed to read; “The electrical system (see Figure 5A or 5B) shall incorporate a center scale ammeter or equivalent electronic digital display which is capable of indicating a current of +/- 150 amperes or greater to exceed the worst case ampere load. The ammeter shunt, Hall Effect, or other current sensing device shall be electrically located in the electrical system to indicate all the current going to (charging) or from (discharging) the vehicle’s batteries. When specified, furnished, (see 6.2) or when the chassis manufacturer disallows the cutting of power leads, a “Hall Effect” or other similar current sensing device shall be furnished in place of the ammeter shunt. The shunt or other current monitoring device shall not exceed 150 MV drop at maximum current. The ammeter and shunt, or equivalent device, shall have a combined accuracy of +/- 10 percent of the full scale reading. The meter shall be mounted in a location highly visible to the vehicle operator and shall be illuminated for night operation. The shunt or monitoring device shall be protected against physical damage, weather, road spray, and shall be mounted in an easily accessible location, and shall minimize the length of the power cables.”

3.7.7 – Battery System: The first paragraph was changed to read; “Two 12 volt batteries (or additional batteries as required by the chassis manufacturer), for ambulance use shall be furnished. When installed by the chassis manufacturer, a labeled “Battery Disconnect Switch” (or a switch operated solenoid) shall be furnished per figure 5A. All electrical loads added by the ambulance manufacturer shall be controlled by an illuminated “Module Disconnect” switch or an illuminated, switch controlled, solenoid as shown in figure 5A or 5B. Unless otherwise specified (see 3.15.3-5), the batteries shall be equivalent to the chassis OEM batteries. When high cycle batteries are specified (Delco /Delphi 1150 or 1151, or equal), ratings for each battery shall not be less than 700 cold cranking amps, and 180 minutes reserve capacity.

The third paragraph was changed to read; “If the chassis manufacturer furnishes and installs the “Battery Disconnect Switch”, it shall be clearly visible to the driver, in the seated position. If the switch is not visible, a green indicator light, shall be furnished indicating the batteries are “ON” (see 3.7.1.1). Battery switch/ device wiring and added/ modified starting motor circuit wiring shall meet or exceed the SAE J1127 for high temperature SGX wire and SAE J541 for maximum voltage drop requirements for 12 volt heavy-duty applications.

3.7.7.1 – Battery Charger or Conditioner: Added reference to new Figure 7 (Portable Equipment Battery Charging Circuit) to second sentence. Deleted; the last sentence of the first paragraph requiring an on/off switch and a charging indicator.

Added “Portable Equipment Charging Circuit (See Figure 7) - A circuit shall be furnished (see figure 7) for charging all portable battery powered devices, i.e. suction units, hand lights, defibrillators, portable radios, etc. This circuit shall prevent discharge of chassis batteries by only permitting the charging of portable devices when the vehicle is either running or the battery conditioner is connected to shore power (operational). Circuit breaker protection shall be provided and shall have a minimum of 10 amp. capability. An additional tagged, identified lead shall be furnished in both the cab and module for connection of additional (future) portable equipment that requires recharging. When specified by the purchaser, (see 3.15.3-7) additional leads shall be furnished, and shall be located in areas as designated by the purchaser. A decal shall be furnished in a conspicuous location in the cab stating, This vehicle is equipped with a battery conditioner to maintain batteries in a full state of charge, and a dedicated 12 volt recharging circuit for portable battery powered equipment. For operation, vehicle shall be plugged into 115 volt AC shore power during periods of non-use”.

3.7.7.2 – Portable Equipment Charging Circuit: Added “A permanently mounted decal or engraved plate shall be furnished...” to the sixth sentence.

3.7.7.3 – Internal 12 volt DC Power (Reference Figure 5): Changed the first sentence to read; “Unless otherwise specified by the purchaser, two automotive “Power Point” type connectors shall be furnished (see 6.2-s), in the patient compartment. Each connector shall be rated for 12 volt DC, 20 ampere capacity, and be on a separately protected circuit. Replaced the word “receptacle” with “connector”, replaced “unless otherwise” with “when” and “connected” with “plugged”.

3.7.7.4 – Master Module Disconnect Switch or Device:

3.7.8.2 –Electrical 115 Volt AC Receptacles: The paragraph was changed to read; “The patient compartment shall be furnished with a pair of 2-wire plus ground duplex 115 volt AC receptacles. Receptacles shall be near flush, vertically mounted. One outlet shall be located on the primary patient, action wall and the other shall [be] located in the right front cabinet / storage area. Both outlets shall be at least 31 cm (12 in.) from any oxygen outlet. An indicator shall be located within each 115 volt AC receptacle as a line monitor indicating a live (hot) circuit. The receptacles shall be labeled with the following: “115 VOLT AC.”

3.7.8.3- Solid state Inverter for Onboard 115 Volt AC Power: Added “The single phase RMS output sine wave type regulated voltage with minimal harmonic distortion, shall not rise...” to third sentence.

3.7.12 – Electromagnetic Radiation and Suppression: The last sentence was changed to read; “When specified by the purchaser, electrically operated medical equipment, both installed and portable, furnished shall comply to MIL-STD-461, Interface Standard - Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

3.8.1- Ambulance Exterior Lighting: The following “Note” was added; “Note: To minimize electrical system loading and reduce maintenance, light emitting diode (led) stop/tail, directional and marker lights shall be furnished when specified by the purchaser, (see 6.2 fff) on modular bodies.”

3.8.2 – Ambulance Emergency Lighting: The first sentence was changed to read; “As specified (see 6.2-v), a strobe, halogen, HID, LED, or any other source of light for the emergency lighting system shall provide the ambulance with 360 degrees of conspicuity for safety during its missions. The third sentence was changed to read; “The ambulance standard warning light system shall not impose a continuous average electrical load exceeding 40 amperes at 14.2 volts and 42 amperes with the optional second amber rear light.”

3.8.2.1 – Emergency Lighting System Configuration: The paragraph was changed to read; “The ambulance standard emergency warning light system shall contain twelve fixed red lights, one fixed clear light and one or two fixed amber or SAE “selective yellow” light(s) (see 6.2 v.) The upper body warning lights shall be mounted at the extreme upper corner areas of the ambulance body, below the horizontal roofline. The single clear light shall be centered between the two front facing, red, upper corner lights or in a dedicated housing mounted forward of the body on the cab roof (see Figures 1, 2, and 3). If due to limited body dimensions and physical size of the outboard forward facing lights, the lights may also be mounted in dedicated housings on the cab roof. The standard warning lights shall not be obstructed by doors or other ancillary equipment. The amber light(s) shall be symmetrically located between the two rear facing red lights. The red “grille” lights shall be located at least 76 cm (30 in.) above the ground and below the bottom edge of the windshield and be laterally separated by at least 46 cm (18 in.), measured from centerline to centerline of each lamp. The lateral facing intersection lights shall be mounted as close as possible to the front upper edge of each front fender and may be angled forward a maximum of 30 degrees. All warning lights furnished shall be mounted to project their highest intensity beams on the horizontal plane, (see 3.8.2.4). The “Flash Pattern” illustration was changed. Table 1 was changed to “Minimum Flash Energy, (Cd-S) Per Flash, Per Fixture” and the “Minimum Effective Intensity” was deleted.

3.8.2.2 – Photometric, Chromaticity and Physical Requirements: The paragraph was changed to read; “Each emergency light shall flash 75 to 125 times per minute. The chromaticity values of the lights shall conform to SAE J578, for their respective color, except for the red lights, which in addition may conform to the following expanded boundary limits of: $y = .34$; $y = .32$; $x = .62$. All warning lights shall project a beam spread of at least 5 degrees up and 5 degrees down and at least 45 degrees left and right of H-V. Each light shall produce flash energy, (Cd-s) per flash, measured from the H-V to all the extreme test point coordinates and shall be tested at all 5° increments. At no point shall the Cd-S values drop to less than the minimum values as shown in the table above when tested at 14.2 volts. Flash energy shall be determined in accordance with the SAE J845 method for determining the flash energy of a light. Testing shall be conducted on the device(s) as manufactured including use of the actual light source and all other related system components. The “Flash Pattern” diagram was changed.

3.8.2.5 – Tests, Warning, Light System: The first sentence was changed to read; “The lighting manufacturers shall furnish and certify or the ambulance manufacturer shall measure and record the total average current load of the standard emergency warning light system on the vehicle as manufactured at the regulated voltage of 14.2 V, when operated in the mode which draws maximum current.” The last sentence was changed to read; “The warning light system and related components and devices shall conform to temperature conditions in 3.4.2

and be tested and approved by an Automotive Manufacturers Equipment Compliance Agency (AMECA) accredited laboratory independent from the lighting device manufacturer's own labs and listed with the AMECA for compliance with the requirements in this specification.

3.8.3 – Flood and Loading Light (Exterior): The paragraph was changed to read: “Flood and loading lights shall be not less than 191 cm (75 in.) above the ground and unobstructed by open doors. Floodlights shall be located on the sides, and a patient loading light on the rear of the ambulance. They shall be firmly fastened to reinforced body surfaces, below the roofline. When specified by the purchaser (see 6.2 w) two flood lights shall be furnished on each side and, and two patient loading lights shall be furnished on the rear. These flood lights shall be mounted on fixed body surfaces, and should have the maximum possible spacing between them. The lamp(s) H-V shall be projected downward, either mechanically or optically, at an angle of 12 to 18 degrees from the horizontal plane and the lighting on each side of the ambulance shall provide a minimum of 800 beam candle power and produce a flood light pattern similar to a H7619 sealed beam lamp. Floodlight switches shall be located on the cab console and control each side independently. Loading light(s) shall provide a minimum of 500 candlepower and shall illuminate the area surrounding the back loading doors. The light(s) shall produce a light pattern equivalent to a 4406 sealed beam. Loading light(s) shall automatically be activated when rear doors are opened and may be incorporated with the FMVSS backup lighting system.”

3.8.4 – Spotlight: The last sentence was changed to read; “Remote control, exterior, light housings shall be chrome plated, bronze, brass, or other materials with intrinsically corrosion resistant construction.”

3.9.3 – Cab Compartment Driver and Assistant Seat: Added “FMVSS 302” to the third sentence. The last sentence was changed to read; “Driver’s seat shall have the OEM’s full, unobstructed range of longitudinal adjustment, and a minimum of 30 percent of the range of inclination, but not less than the angle furnished on the chassis manufacturer’s standard non reclining high back seat.”

3.9.5 – Outside Rearview Mirrors: Added “[approx. 130 sq.cm, (20 sq. in.)]” to the second sentence.

3.9.6.2 – Bumper Guards: Added “...and permitted by the chassis manufacturer...” to the first sentence.

3.10.1 – Body Accommodations: Changes to Table II, Style 2; the word “wheels” in lieu of “casters”, Length Minimum – 200 cm/79 in, Width Minimum 33 cm/13 in.

3.10.3 – Emergency Medical Technician (EMT) Seating: Added “...conforming to FMVSS 207, when applicable FMVSS 210...” to the first sentence. Added “FMVSS 213” to the last sentence.

3.10.8 – Doors: Added “or sliding” to the second sentence. Added “ Should the rear doors be rendered inoperable, the side door and interior configuration shall permit emergency removal of the patient either on a backboard or other device used for spinal immobilization.” Last paragraph changed to read; “A red light or reflector, minimum 7.6 cm (3 in.) diameter, shall be installed, one on the interior surface of the side, and each rear door. The reflectors shall be so positioned as to provide maximum visibility when the doors are in the fully open position. At the manufacturer’s option, red reflective tape, with the equivalent surface area, conforming to FMVSS 108 may be furnished in lieu of the reflector.”

3.10.9 - Door Latches, Hinges, and Hardware: Eighth sentence changed to read; “Hardware shall be chrome plated, bright finish, stainless steel, anodized aluminum, or other powder coated metal.”

3.10.13 - Wheel housings: Added “Wheel house openings shall **comply with SAE J683** to allow for tire chain usage and easy tire removal and service.”

3.10.15.1 – Door/Walkthru: The first sentence changed to read; “Unless otherwise specified by the purchaser to delete walkthru or the specify or approve alternate door opening dimensions...”

3.11.1.2 – Interior Compartment With Exterior Access: Added “...or other interior configuration as specified by the purchaser...” to the first sentence.

3.11.1.3 – Waste and Sharps Disposal: Deleted the word “full” (as in “full” size plastic/rubber trashcan) from the first sentence.

3.11.4 - Squad Bench, Seats, and Backrests: First Paragraph, Added; “Unless otherwise specified by purchaser (see 6.2)” to the first and second sentences. Added “Top opening squad bench platform(s) shall be fitted with an automatic hold open **device** and **when** closed, **a** latching device for safety.” to the third sentence. Changed the last sentence to read; “To facilitate cleaning and disinfecting, all seats furnished and installed by the ambulance manufacturer shall be cleanable to OSHA standards, and all exposed surfaces shall be free of vent devices that would permit the entrapment of biological contaminants.” Third Paragraph, Deleted “CPR” from the third sentence.

3.11.5.1 – Combination Stretcher Chair: Deleted “Ferno Washington Model 107B” reference.

3.11.7 - Litter Fasteners and Anchorages: Deleted “Ferno Washington Model 175” reference. Changed the fourth sentence to read: “The installed cot fastener device(s) for wheeled cots shall be tested to comply with a 2200 lb. pull test in accordance with AMD Standard 004, Litter Retention System.”

3.11.9 – I.V. Holders For Intravenous Fluid Containers: Changed the last sentence to read; “When specified (3.15.4 M2), a fold down, rigid, telescoping I.V. pole and holder shall be provided on the left side of the cot. (deleted minimum height requirement).

3.12.1 - Oxygen, Main Supply and Installation: First Paragraph, Added; “(see 6.2kk additional sizes or aluminum or composite bottles) to the second sentence. Third Paragraph, deleted “Ohio Diamond” and replaced with “an Ohmeda type connector”. Fourth Paragraph, Added reference to AMD Standard 015.

3.12.1.1 - Oxygen Pressure Regulator and Flowmeter: Changed the first sentence to read; “The medical, oxygen pressure reducing and regulating valve with inlet filter at the cylinder shall have line relief valve set at 1378 kPa (200 psi) maximum, and a gauge or digital monitor with a minimum range of 0 to 17225 kPa (0 to 2,500 psi) [27,560 kPa (4,000 psi) tested] with the gauge or display scale graduated in not more than 100 PSI increments.

3.12.2 – Portable Oxygen Unit: Changed from 40 liters per minute to 100 liters per minute for the manually triggered valve in the second sentence.

3.12.2.2 – Oxygen Powered, Manually Triggered (Resuscitator) Valve: Added reference to “ASTM” in “b”.

3.12.3 – Suction Aspirator, Primary Patient: Added reference to “Figures 5A or 5B” in the seventh sentence. Changed the air flow requirements from 20 to 30 LPM in the eight sentence.

3.12.4 – Portable Suction Aspirator: Added “(see Figure 7)” reference in the second sentence. Changed the flow rate at the end of the suction tube from 20 to 30 LPM in the fifth sentence. Added “(see Figure 7)” in the tenth sentence. Changed sentences twelve and thirteen to read; “The unit shall be provided with applicable power cords and plugs (see 3.7.7.3). If the military style plug is furnished, the polarity shall be as follows:...”

3.13.1 – Environmental Systems: Added reference to AMD Standard 012.

3.13.6 – Ventilation Criteria: Added “Exhaust vents may be located on the rear lower half of the module/body, provided the vent/device incorporates a reverse flow damper to prevent backdraft and intrusion of vehicle engine exhaust, dust, dirt, or road spray.”

3.14.6 - Siren - Public Address System: First Paragraph, Added “...or the siren may be switched automatically with the use of the emergency light switch” to the last sentence.

3.15.2 - Standard Mandatory Miscellaneous Equipment: Corrected reference to AMD Standard (008) in “c”.

3.15.3 – Optional Equipment: Changed Item 7 to read; “**12 VDC battery charger or conditioner and portable equipment battery charging circuit; specify conditioner or charger, and locations of additional portable equipment battery charging circuit lead termination point(s)** per 3.7.7.1 and 3.7.8. Added reference to **3.7.7.2** in Item 7. Item 13 (Drapes) Deleted and Reserved. Item 28 deleted word “CPR”. Added Item 36 – Air Horns – (see 3.14.7).

3.15.4 - Medical, Surgical, and Biomedical Equipment: Added the following; “Ambulance purchaser’s and operating authorities should, at a minimum, provision their ambulances (for ALS or BLS) with durable equipment and disposable supplies as recommended by the American college of Emergency Physicians (ACEP), and the National EMSC Resource Alliance (see section 2.2 for addresses)”. Deleted and Reserved - M4.

4.4.3.1 – Weight Distribution Tolerance: Added reference to AMD Standard 013.

4.4.5 – Water Spray Test: Added reference to AMD Standard 010.

4.4.6 – Oxygen System Test: Added reference to AMD Standard 015.

6.1.1 – Federal Specification Coverage: Added “Emergency Medical Services” to the first sentence. Added “...and funded/**authorized** by the Federal and State Governments of the United States”. to the second sentence.

6.2 - Ordering Data: Added “Type I-AD and III-AD” to “b”. Added “maximum” to “f”. Added “Chassis manufacturer’s O. E.” to “n”. Added “military type connector” to “s”. Substituted the word “**capacity**” for “level” in “s” Moved and combined “w” with “v”. New “w” reads; “Flood and Loading Lights. Specify if two flood lights per side and two patient loading lights on the rear are required. (See 3.8.3)”. Added the word “**Compartment**” to the note following “cc”. Added “Specify location(s) of portable radio battery charging circuit leads (see 3.7.7.1)” to “qq”. Added reference to paragraph **3.7.7.2** in “qq”. New “fff” reads; “Light Emitting Diodes (LED) Stop, Tail, Directional, and Marker Lights (see 3.8.1). Specify LED lighting for reduced current draw and lifetime durability.”

6.9 – Changes and Amendments: Added “Federal Interagency Committee on Emergency Medical services (FICEMS)

Figure 1 Added: “* Flashes with front/rear turn signal & vehicular hazard warning signal flasher.” to the Legend. Added: “*For optional mounting location see 3.8.2.1 and Table 1 (Flash Pattern).” to the bottom of the illustration.

Figure 2 Added: “* Flashes with front/rear turn signal & vehicular hazard warning signal flasher.” to the Legend. Added: “*For optional mounting location see 3.8.2.1 and Table 1 (Flash Pattern).” to the bottom of the illustration.

Figure 3 Added: “* Flashes with front/rear turn signal & vehicular hazard warning signal flasher.” to the Legend. Added: “*For optional mounting location see 3.8.2.1 and Table 1 (Flash Pattern).” to the bottom of the illustration.

Figure 5 was revised.

Figure 5b is new.

Figure 6 was revised.

Figure 7 is new.