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Multi-Mission Crew Vehicle Apparatus Body Only Specification

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1 — General

1.1 General Statement

1.1.1 This specification describes the utility body which the manufacturer shall mount on a Government-furnished cab and chassis. The manufacturer shall pick up Government-furnished cab and chassis at designated locations. The manufacturer shall be liable for all loss and damage to Government-furnished cab and chassis until completion and final acceptance of work and return to the Government.

1.2 National Fire Protection Association (NFPA) 1906: Standard for Wildland Fire Apparatus

1.2.1 This specification describes the completed apparatus, which shall be compliant with the requirements of NFPA 1906, latest edition, except where noted.

1.3 Minimum Specification

1.3.1 This is a minimum specification. The Government may specify additional requirements such as utility body suspension and body/chassis protection requirements.

1.4 Vehicle Stability

1.4.1 The apparatus shall be tilted to 30 degree minimum before lifting a front tire or rear tire set when tested at the estimated in-service weight in accordance with NFPA 1906.

1.5 Departure Angle

1.5.1 The apparatus shall have a departure angle of 20 degrees minimum when loaded at the estimated in-service weight.

1.6 Ground Clearance

1.6.1 The apparatus body shall have a minimum of 26 inches of ground clearance.

1.7 Brand Name or Equivalent Products

1.7.1 The Government may approve products equivalent to the brand name components specified herein. The manufacturer shall not use equivalent products unless the Government approves the products in writing prior to the contract award and documents equivalent products for approval in the resultant contract. The Government may consider equivalent products for approval after the contract award and shall document the approval in writing.

2 — Chassis Electrical Requirements

The manufacturer shall supply and install the following on the Government- or vendor-furnished cab and chassis:

2.1 Master Body Disconnect Switch

2.1.1 The manufacturer shall supply and install one master body disconnect switch in the cab. The switch shall be rated for 175 amps continuous duty and 800 amps intermittent duty. The switch shall have an “ON/OFF” label, and the switch shall be located on the floorboard to the left side of the driver's seat. The switch shall be as far aft as possible to prevent accidental actuation. The exposed terminals shall be protected from damage and inadvertent contact. In the “OFF” position, all electrical power to the apparatus fire package shall be off. Power to the chassis shall remain separate from this switch. The manufacturer shall install a Cole Hersee brand, model #M-2484-16, master body disconnect switch with model #82065 switch plate “ON/OFF” label, or equivalent.

2.2 Backup Alarm

2.2.1 The manufacturer shall supply and install one solid-state backup alarm at the rear of the apparatus, protected from impact and debris. The manufacturer shall wire the backup alarm to the reverse circuit of the transmission, and the alarm shall provide an audible alarm to the rear of the apparatus when the vehicle operator selects the reverse gear. The alarm shall have a sound level of 87 to 112 decibels (dBA) while in operation.

2.3 Map Light

2.3.1 The manufacturer shall supply and install one flexible goose-neck map light on the passenger’s side of the cab center console. The switch for the map light shall be located on the light, and the map light shall include a diffuser to prevent glare at night.

2.4 Antenna

2.4.1 The manufacturer shall mount two antenna NMO type ¾-inch brass mounts with rain caps on the cab roof as specified. The manufacturer shall route the antenna cables to the cab interior, terminating at the location of the radio mounting brackets.

2.5 Radio Pre-Wire

2.5.1 The manufacturer shall wire the chassis cab interior (console) with battery 12-volt (V) direct current (DC) power, battery ground, original equipment manufacturer (OEM) ignition switched power, and radio rebroadcast wires to the siren or public address (PA). The manufacturer shall label the chassis cab interior to simplify Forest Service radio installation. The apparatus shall include two sets of wiring.

2.6 Rearview Backup Camera

2.6.1 If the chassis does not have one, the manufacturer shall supply and install a rearview backup camera and display. The monitor shall have a minimum display measurement of 6 inches diagonally and be either: 1) factory-installed, in-dash, with a combination AM/FM/WX radio, or 2) aftermarket installation separate from the AM/FM/WX radio, professionally-installed, mounted in a location the Government has approved in writing. The monitor display shall be shock- and vibration-resistant, have a high-quality backlit display, and mounting shall not allow vibration. The backup camera shall be high durability, IP69K-rated, and able to withstand harsh vibration and an impact of 7Gs of force. The manufacturer shall ship the camera loose for installation. The manufacturer shall not mount the backup camera on top of the dash or in any location that reduces the driver's field of vision.

2.7 Tire Pressure Monitoring System

2.7.1 If the chassis does not have one, the manufacturer shall supply and install a tire pressure monitoring system (TPMS). The TPMS shall provide in-cab visual and audible alerts for tire pressure deviation, critical pressure drops, and excessive tire/wheel temperatures. The visual display shall be from OEM gauges/lighting or a display mounted in-dash or on the vehicle center console. The manufacturer shall not mount the TPMS on top of the dash or in any location that reduces the driver's field of vision.

3 — Traffic Warning Systems

The Government shall consider requests for equivalent products. Considerations for the approval of equivalent products will be quality, durability, warranty, repair service, and savings to the Government. The manufacturer shall make any requests for substitution of equivalent products in writing to the Government.

The manufacturer shall supply and install the following traffic warning systems on the completed apparatus:

3.1 Electronic Siren

3.1.1 The manufacturer shall supply and install one electronic siren and switch with a rear directional controller in the cab center console. The location of the controller shall be convenient to both the driver and the officer. The siren shall have four basic siren tones: manual, wail, yelp, and hi-lo, as well as an electronic air horn, radio rebroadcast capability, and a public address system. The “emergency master” switch shall power the controller. The manufacturer shall install a Code 3 brand, model Z3 siren, or equivalent.

The center auxiliary buttons on the Code 3 brand, model Z3 siren/switch controller shall have the following labels:

- Auxiliary button “A”–Left alley
- Auxiliary button “B”–Right alley
- Auxiliary button “C”–Front flood
- Auxiliary button “D”–Rear scene
- Auxiliary button “E”–Left scene
- Auxiliary button “F”–Right scene
- Auxiliary button “G”–Ground
- Auxiliary button “H”–Cab lights

3.2 Speaker

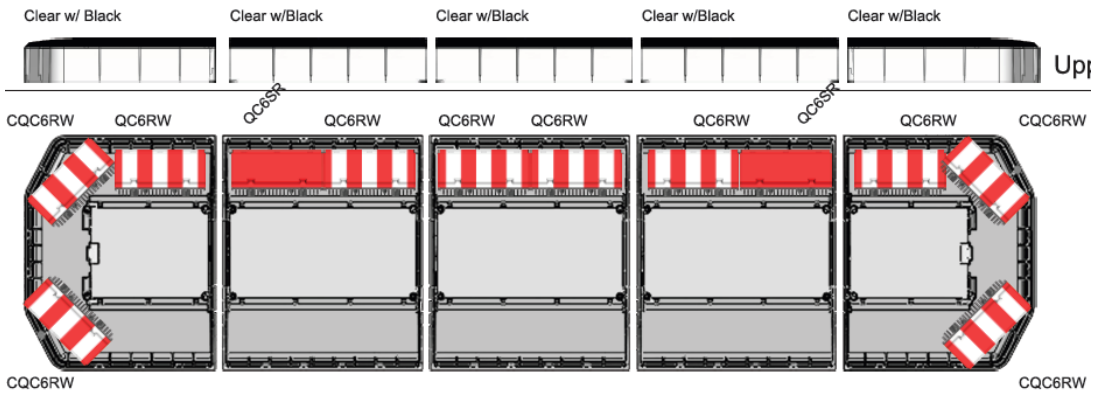
3.2.1 The manufacturer shall supply and install one 100-W siren speaker mounted behind the driver’s side of the front bumper. The manufacturer shall wire the speaker to the specified electronic siren controller. The manufacturer shall install Code 3 brand, model #C3100 speaker, or equivalent.

3.3 Forward Upper Zone A/B/D Lightbar

3.3.1 The manufacturer shall supply and install one light-emitting diode (LED) lightbar on the cab roof, facing forward. The lightbar shall be 58 inches wide. The lightbar shall consist of ten dual-color, flashing LED modules and two single-color, steady-burning, red LED modules. The manufacturer shall program the lightbar to Government-provided specifications. The manufacturer shall install Code 3 brand, Defender model LED lightbar configuration number C86391 lightbar, or equivalent.

3.3.2 The manufacturer shall permanently mount the lightbar to the cab roof and wire it to the "Lightbar" switch in the cab center console.

3.3.3 Diagram—LED lighting locations and flashing/steady configuration



3.3.4 The manufacturer shall mount the lightbar in a position that minimizes the height above the apparatus cabin.

3.3.5 The manufacturer shall mount the lightbar horizontally, not pointed upwards or downwards along the apparatus cabin roof. The manufacturer can use modified feet or shims, but the lightbar mount must also adhere to section 3.3.4.

3.4 Lower Zone A Warning Lights

3.4.1 The manufacturer shall supply and install two red LED warning lights with mounting flanges on the front of the apparatus, forward-facing, one per side, in the brush guard. The manufacturer shall wire the lights to the Code 3 brand, model Z3 siren switch located on the cab center console. The manufacturer shall install a Code 3 brand, model M180SR red LED flasher, or equivalent.

3.5 Forward Zone B/D Warning Lights

3.5.1 The manufacturer shall supply and install two red LED warning lights with mounting flanges on the front corners of the apparatus chassis, side-facing, one per side. The manufacturer shall program the lights in a triple flash mode and shall wire the lights to the Code 3 brand, model Z3 siren switch located on the cab center console. The manufacturer shall install a Code 3 brand, model 4612RBZ-75 red LED flasher, or equivalent.

3.6 Lower Zone C Warning Lights

3.6.1 The manufacturer shall supply and install two red LED warning lights with mounting flanges on the lower rear of the apparatus, rear-facing, one per side. The lights shall be located in the bottom position of a four-position bezel at the rear of the body with the Department of Transportation (DOT) lights, and the manufacturer shall wire the lights to

the Code 3 brand, model Z3 siren switch on the cab center console. The manufacturer shall install a Code 3 brand, model 4612CABZ-75 amber LED flasher, or equivalent.

3.7 Headlight Flasher

3.7.1 The manufacturer shall supply and install and wire one solid-state headlight flasher for daytime operation. The flasher shall be a multipurpose type with a high-beam activated cutout option. The manufacturer shall wire the flasher to the Code 3 brand, model Z3 siren switch (“Wig Wag” switch) on the cab center console, through the parking brake valve, so that it disables when the vehicle operator applies the parking brake. The manufacturer shall install a Code 3 brand, model 950 flasher, or equivalent.

4 — Chassis Additions and Modifications

The manufacturer shall install the following additional equipment on, and perform modifications to, the specified cab and chassis:

4.1 Apparatus Fluid Types and Quantities

4.1.1 The manufacturer shall supply and install a permanently-mounted label in the apparatus cab interior near the driver's seating position showing the recommended fluid types and quantities for the apparatus chassis and associated components.

4.1.2 This label shall list the recommended fluid types and quantities for the following components:

- Chassis engine lubricant
- Chassis engine coolant
- Chassis power steering fluid
- Chassis transmission fluid
- Chassis transfer case lubricant
- Chassis drive axle lubricant
- Chassis brake fluid

4.2 Seating Capacity

4.2.1 The manufacturer shall supply and install a warning label in the apparatus cab interior listing the seating capacity of the completed apparatus. The label shall be visible from all seating positions.

4.2.2 The apparatus shall have a seating capacity of two personnel in the front and three personnel in the rear for a maximum seating capacity of five.

4.3 Seat Belt Warning

4.3.1 The manufacturer shall supply and install a warning label in the apparatus cab interior stating: “DANGER- Personnel Must Be Seated And Seat Belts Must Be Fastened While Vehicle Is In Motion Or DEATH OR SERIOUS INJURY MAY RESULT.” The label shall be visible from all seating positions.

4.4 Vehicle Height Warning

4.4.1 The manufacturer shall supply and install a warning label in the apparatus cab interior listing the overall height, length, and gross vehicle weight rating (GVWR) of the completed apparatus. The label shall be visible from the driver's seating position.

4.5 Final Stage Manufacturer Vehicle Certification

4.5.1 The manufacturer shall supply and install a final stage manufacturer vehicle certification label on the driver's door jamb in the apparatus cab.

4.6 Noise Hazard Warning

4.6.1 The manufacturer shall supply and install a warning label in the apparatus cab interior stating: “WARNING: Noise Hazards Occur During Siren Operation.” The label shall be visible from all seating positions.

4.7 Air Filter Ember Protection Screen Warning

4.7.1 The manufacturer shall supply and install a warning label, stating: “This apparatus is equipped with an air filter ember protection screen; routine inspection is required” in the apparatus cab interior. The label shall be visible from the driver's seating position.

4.8 Cab Console

4.8.1 The manufacturer shall equip the cab with an angled front, form-fitted control console between the front driver's and passenger’s seats. The size of the console shall accommodate the installation of a switch panel for the control of the emergency and general illumination lighting, siren controller, traffic advisor control head, and customer-mounted radios. The manufacturer shall fabricate the cab console from steel and powder-coat it with a black finish.

4.8.2 The position of the following controls and switches shall be as follows, from forward to aft, on the center console:

- One flexible map light
- Two faceplates and prewiring for Government-mounted mobile radio
- Two microphone clip brackets, mounted on driver's side
- One switch panel with five switches
- One Code 3 brand, model Z3 electronic siren/lighting controller
- One traffic advisor control head
- One two-position cup holder
- One four-position 12-V power outlet
- One 6-inch storage compartment
- One red, low-battery indicator light
- Two universal serial bus (USB) charging ports

4.9 Front Bumper With Brush Guard

4.9.1 The manufacturer shall supply and install a heavy-duty bumper and brush guard assembly with a black, powder-coated finish on the front of the apparatus. The complete assembly shall follow the chassis body lines and encompass the perimeter of the chassis front. The design of complete assembly shall prevent the guard from vibrating and provide a solid mounting area for warning lights, speakers, or other specified equipment. The bumper shall accommodate the OEM driving lights. The bumper shall be mounted to the frame rails.

4.9.2 The bumper shall include two tow hooks with a working load limit rating that exceeds the vehicles GVWR. The tow hooks shall accommodate 3-inch-wide tow straps.

4.10 Rear Bumper

4.10.1 The manufacturer shall supply and install a rear bumper that extends across the width of the apparatus body. The size of the bumper shall be a minimum of 3 inches tall by 8 inches deep. The manufacturer shall fabricate the bumper from heavy-duty steel tubing and shall powder-coat it black. The top of the bumper shall be NFPA-compliant perforated skid-resistant surface or NFPA-compliant, skid-resistant tread plate surface. The bumper shall protect the apparatus body.

4.10.2 The bumper shall include two tow hooks with a working load limit rating that exceeds the vehicle's GVWR. The tow hooks shall accommodate 3-inch-wide tow straps.

4.11 Bug Screen

4.11.1 The manufacturer shall supply and install a bug screen in the front grill to help protect the radiator from damage or blockage caused by insects and small pieces of road debris. The screen shall be No. 8 mesh (60 percent open area), 0.097-inch opening, and 0.028-inch-diameter wire and shall not restrict airflow to the chassis cooling system.

4.12 Mudflaps

4.12.1 The manufacturer shall supply and install one pair of flexible rubber mudflaps, one on each side of the apparatus body behind the rear wheels. The mudflaps shall not bear any company logos.

4.12.2 The mudflaps shall extend down far enough to be effective but shall not extend down to where the flaps may become entangled with the rear tires when the apparatus is backing up.

4.13 Exhaust System

4.13.1 The apparatus exhaust system shall extend beyond the exterior of the body per OEM chassis recommendations. The manufacturer shall mount the exhaust system in a horizontal configuration under the passenger's side of the body.

4.14 Fuel Hose and Electrical Harness Protection

4.14.1 If applicable, the manufacturer shall supply and install fire-proof sleeves (specifically designed for such purpose) to protect any fuel lines or electrical harnesses below the chassis frame rails.

4.15 Chassis Air Intake Ember Guard

4.15.1 The manufacturer shall supply and install an ember guard to protect the chassis air intake. The ember guard shall be No. 18 mesh, 0.017-inch-diameter wire, with a maximum opening of 0.039 inches and shall be corrosion- and heat-resistant. The

ember guard shall not decrease the existing surface area of the chassis air intake. The ember guard shall be sized to fit at the intake opening. The ember guard shall be readily accessible for inspection and maintenance.

4.16 Cabin Air Ember Guard

4.16.1 The manufacturer shall supply and install an ember guard to protect the cabin air filter. The ember guard shall have a maximum opening of 0.039 inches and shall be corrosion- and heat-resistant. The manufacturer shall install the screen at the point of intake and it shall be easily accessible for inspection and maintenance.

4.17 Chassis Component Protection

4.17.1 The manufacturer shall supply and install aftermarket skid plates to protect (at a minimum) the radiator system and the diesel emissions fluid (DEF) tank. The manufacturer shall install powder-coated, 1-inch-diameter, 0.095-inch minimum wall thickness, tubular steel skid plates. Skid plates shall attach to existing chassis mounting points and shall be readily removable for maintenance. Baja Fabrication & Shock Works skid plates meet this requirement.

4.18 Hitch Receiver

4.18.1 The manufacturer shall supply and install a Class IV, frame-mounted, 2.5-inch hitch receiver. The receiver shall not reduce the angle of departure.

4.19 Trailer Electrical Connection

4.19.1 The manufacturer shall supply and install a 7-way, round-pin trailer connector at the rear of the apparatus close to the hitch receiver. The manufacturer shall use chassis OEM-provided electrical connections for the connector.

4.20 Onboard Air System

4.20.1 The manufacturer shall supply and install an onboard air system for light cleaning of firefighting equipment and filling tires. The compressor shall have a 100-percent duty cycle. The system shall include a 2.5-gallon (minimum) air storage tank, an adjustable pressure regulator, and all necessary fittings capable of filling tires and cleaning off firefighting equipment. Viair brand, part numbers 20001 and 90150 meet this requirement.

5 — Apparatus Body Description

5.1 Fire Apparatus Body

5.1.1 The manufacturer shall design the body for fire/rescue service operations only and shall construct the body to withstand off-road use. The design of the body must be sufficient to withstand the twisting and abnormal flexing, stresses, and other occupational hazards that occur when traveling on unimproved mountainous and rangeland roads. No commercially designed bodies intended for use in other vocations or applications are acceptable in quality, construction, design, or longevity.

5.1.1 The manufacturer shall fabricate the body from galvanneal steel.

5.1.2 The manufacturer shall avoid damaging the hardware or the mounting surface when installing hardware parts, such as hinges, catches, handles, or knobs. After fabrication, the manufacturer shall clean all parts of the following: smudges; loose, spattered, or excess welding; metal chips or filings; or any other foreign material which might detract from the intended operation, function, or appearance of the apparatus or its equipment. This would include any particles which could loosen or become dislodged during the normal expected life of the equipment. Whenever possible, cleaning shall take place before assembling the parts.

5.1.3 Threaded parts or devices shall show no evidence of cross-threading, mutilation, or detrimental burrs. All screw type and rivet fasteners shall be tight to allow no relative movement between the attached parts. All bolts and screws shall not be tightened in excess of the Society of Automotive Engineers (SAE) torque standard established for the grade, screw, and thread type.

5.2 Apparatus Body

5.2.1 The entire apparatus body shall be an independent structure and shall be removable in its entirety without the disassembly of any compartments, flooring, or other structural components.

5.2.2 The design of the body shall be approximately as wide as the outside wheel track on the rear axle. This will allow the apparatus to maneuver more easily in off-road environments. The body shall be a maximum of 94 inches wide (±0.5 inch) from side to side at the rear of the apparatus.

5.2.3 Each compartment shall have a ¾-inch drain in the rear of the compartment, fitted with an easily removable rubber grommet closure.

5.2.4 The manufacturer shall use 12-gauge (minimum) structural steel cross-members to fabricate the apparatus body to provide structural support.

5.2.5 The manufacturer shall use $^{1}/_{8}$-inch (minimum) diamond plate steel to construct the deck. The manufacturer shall use 18-gauge galvanneal steel to construct the exterior

and interior panels to provide a strong, corrosion-free structure that will withstand the rigors of wildland fire operations.

5.2.6 The manufacturer will treat all materials used in the construction of the body with a corrosion-preventing coating.

5.2.7 The deck width shall be 54 inches wide with no wheel-well intrusions.

5.3 Body Frame Construction

5.3.1 The manufacturer shall construct and install a commercial-grade steel channel or tubular steel members frame to support the apparatus body and compartments. The frame shall extend under the wheel well areas at the front and rear and shall attach to the compartments. The manufacturer shall space the cross-members in the support system so there is no more than ¼-inch of vertical deflection per 256 square inches when 250 pounds are evenly distributed over 40 square inches. The manufacturer shall construct the frame to become an integral portion of the apparatus body. The channel or tubular steel deck and compartment support frames shall be strong enough to support 5,000 pounds in the bed area and 1,000 pounds of equipment in each side compartment (the actual load capability of the completed apparatus may be limited by the GVWR).

5.4 Body Mounting

5.4.1 The manufacturer shall use a spring-loaded system to mount the body to the chassis. The design of this system shall allow independent movement between the body frame and the chassis frame to protect the module from stresses and twisting rendered by the flexing of the chassis frame. The manufacturer shall pre-engineer the mounts for their intended use.

5.4.2 The manufacturer shall use grade 8 mounting hardware (nuts, bolts, washers) for sizes ½-inch and smaller and grade 5 for sizes larger than ½-inch to complete body installation. All nuts shall be self-locking style. All mounting brackets shall be painted black.

5.4.3 The manufacturer shall use springer type mounts to mount the body front and shall affix the rear body mounts via solid mounts to the chassis frame.

5.4.4 After body mounting, the manufacturer shall readjust headlights and accessory fog lights to chassis manufacturer's recommended levels.

5.5 Vertical Corner Scuff Guards

5.5.1 The manufacturer shall supply and install an aluminum tread plate with a minimum thickness of $^{1}/_{8}$-inch to protect the outboard vertical corners of the body.

5.6 Rear Warning Plate

5.6.1 The manufacturer shall affix one warning plate to the rear of the apparatus body in a conspicuous location stating: “WARNING: DO NOT RIDE ON REAR BUMPER WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT.”

5.7 Compartmentation

5.7.1 The manufacturer shall use galvanneal steel to fabricate all compartments walls, ceilings, and floors and shall weld all compartments to strengthen them and seal them from the elements.

5.7.2 All compartment interiors shall be free of exposed electrical harnesses.

5.7.3 All compartments shall be dust- and water-tight.

5.7.4 All compartments shall be as large as possible, as determined by the design of the apparatus.

5.7.5 The apparatus body height shall be about 54 inches and the compartment depth shall be as deep as possible, as determined by the design of the apparatus.

5.8 Driver's Side Compartments

5.8.1 The manufacturer shall supply one rescue-style compartment on the driver’s side of the apparatus body, forward of the rear wheels. The compartment shall extend from the front of the body to the front of the rear wheel area in width. The approximate size of the rescue-style compartment is 36 inches wide by 54 inches high (±0.25 inches). The compartment shall be vertically-hinged, with the hinged side toward the front of the apparatus body. The rescue-style compartment shall have a pass-through to the passenger side. The pass-through shall be the maximum size that the chassis will allow in the given space. The manufacturer shall install one dual-direction, slide-out in the pass-through compartment. The manufacturer shall mount the slide-out, equipped with a lever-style progressive latch and custom tray, on the bottom of the pass-through.

5.8.4 The manufacturer shall supply two horizontal compartments on the driver’s side of the apparatus body that span the entire wheel well. The approximate size of the top horizontal compartment over the wheel well shall be 72 inches wide by 14 inches high by 20 inches deep (±0.25 inches). The top horizontal compartment shall be a horizontally-hinged with a lift-up door and shall have a minimum clear opening of 12 inches high. The approximate size of the bottom horizontal compartment over the wheel well shall be 72 inches wide by 18 inches high by 20 inches deep (±0.25 inches). The bottom horizontal compartment shall be horizontally-hinged with a drop-down door and shall have a minimum clear opening of 16 inches high.

5.8.7 The manufacturer shall supply one lower compartment on the driver’s side of the apparatus body, behind the rear wheels. The lower compartment shall extend from behind the rear wheel area to the front of the rear step area in width and from the top of

the fender area over the rear wheels to the bottom of the body in height. The approximate size of the lower compartment shall be 27 inches wide by 22 inches high (±0.25 inches). The lower compartment shall be vertically-hinged with the hinged side toward the rear of the apparatus body.

5.9 Passenger's Side Compartments

5.9.1 The manufacturer shall supply one rescue-style compartment on the passenger's side of the apparatus body, forward of the rear wheels. The compartment shall extend from the front of the body to the front of the rear wheel area in width. The approximate size of the rescue-style compartment shall be 36 inches wide by 54 inches high (±0.25 inches). The compartment shall be vertically-hinged, with the hinged side toward the front of the apparatus body. The rescue-style compartment shall have a pass-through to the driver's side.

5.9.2 The manufacturer shall supply one compartment on the passenger's side of the apparatus body that spans across the entire wheel well area and the lower compartment behind the rear wheels. The approximate size of the compartment shall be 72 inches wide by 27 inches high by 20 inches deep (±0.25 inches). The compartment shall be horizontally-hinged, with a lift-up door.

5.9.3 The manufacturer shall supply one horizontal compartment with a pull-out drawer on the passenger's side of the apparatus body that spans the wheel well. The manufacturer shall install a drawer of maximum size in this compartment. The drawer shall be horizontally-mounted with a slider mechanism and shall have a stop to keep the drawer from retracting when on uneven ground. The drawer shall have five 4-inch-high, aluminum, adjustable dividers and a hinged lid constructed of ⅛-inch aluminum that can be used as a work area when the lid is closed and the drawer is open. The approximate size of the compartment shall be 72 inches wide by 5 inches high by 18 inches deep (±0.25 inches).

5.9.4 The manufacturer shall supply and install one compartment on the low side the passenger's side of the apparatus body, behind the rear wheels. The compartment shall extend from behind the rear wheel area to the front of the rear step area in width and from the top of the fender area over the rear wheels to the bottom of the body in height. The approximate size of the compartment shall be 27 inches wide by 22 inches high (±0.25 inches). The compartment shall be vertically-hinged with the hinged side toward the rear of the apparatus body.

5.10 Bed Compartment

5.10.1 The manufacturer shall supply and install one full-depth, sweep-out type bed compartment. The bed area shall be fully enclosed with two barn doors for rear access. The compartment clear opening shall be at least 48 inches wide by 30 inches high.

5.10.2 The manufacturer shall supply and install one full-depth, 1,000-pound rated, 100-percent extension slide-out in the rear bed compartment. The slide-out shall have the capability

of being locked in the closed, 50-percent, and 100-percent positions and shall have a lever-style progressive latch and a custom tray. The slide-out shall be Load'N'Go brand or equivalent, with dividers, and one side shall have bolt-in framework. The slide-out shall be about 12 inches high and shall have proper reinforcement and a spare tire mount.

5.11 Compartment Doors

5.11.1 All compartment doors shall be integral in design and recessed into the apparatus body sides, sized to provide easy access to all interior areas of the compartment. All doors shall be consistent in fit and finish with the apparatus body. All doors shall be weatherproof and maintain contact with all points of the weather stripping. The manufacturer shall attach bulb type weather stripping to the opening flange of the compartment opening.

5.11.2 The manufacturer shall equip each compartment door with a full-length, 100-percent stainless steel, continuous piano hinge with $^{1}/_{16}$-inch stainless steel pin. The manufacturer shall weld the hinge to the door between the inner and outer panel and shall bolt the hinge to the compartment inner frame so no fasteners are visible on the door or compartment when the door is closed. The mounting holes in the hinge shall be pre-punched slots in a uniform and standard manner to allow for adjustments and easy replacement of the door if damaged.

5.11.3 The manufacturer shall install red/white reflector DOT striping on the interior surface of all vertically-hinged doors.

5.11.4 The manufacturer shall paint or powder coat the inside door panels to match exterior body surfaces.

5.12 Door Latches and Hardware

5.12.1 Unless noted, the manufacturer shall install all compartment door latch assemblies with threaded fasteners; they shall not be welded and shall be easily removable for servicing or replacement. All latches shall be of a slam-type design, with a single-point latching operation. The manufacturer shall use matching striker bolts with all latch assemblies. All striker bolts shall have slotted mounting holes and shall be attached with bolts to captive steel plates in the body structure for strength and ease of adjustment. The manufacturer shall not use welded striker bolts or plates.

5.12.2 All hardware shall be corrosion-resistant and suitable for its intended use. All nuts and bolts shall be stainless steel. Stainless steel nuts shall be the self-locking type. The manufacturer shall key all latch assemblies alike to 1250. All compartment locks for a given apparatus shall be either vertical or horizontal when locked so that it is visually apparent whether or not a compartment is locked or unlocked. The manufacturer shall provide ten spare keys.

5.12.3 All door latch assemblies shall be of a flush-mount, “D-Handle,” two-step design, with all external components fabricated from polished stainless steel.

5.13 Door Hold Open Devices

5.13.1 The manufacturer shall supply and install all vertically-hinged, outward-opening compartment doors with an over-center door check to hold the door in the desired position. The manufacturer shall attach the door check to the top of the door and shall fasten it to a stainless steel plate bolted into the body and door.

5.13.2 The design of all vertically-hinged, outward opening compartment doors shall allow an individual to close them with one hand, allowing a free hand to hold equipment or supplies.

5.13.3 All horizontally-hinged, drop-down, outward-opening compartment doors shall open to a 90-degree angle. The manufacturer shall use a minimum of $^{3}/_{32}$-inch, aircraft-type, stainless steel cable with stainless steel fork ends, or heavy-duty steel chain with sheath to support the doors. The manufacturer shall attach fork ends at each end to a stainless bracket so that the cable can hinge as the is door closed.

5.13.4 The manufacturer shall supply and install all horizontally-hinged, overhead lift-up compartment doors with two extending, gas spring hold-open devices, one mounted vertically on each side of the compartment door opening. The pressure rating of the gas springs shall be carefully matched to the size and weight of the compartment door. The devices shall hold the compartment door securely open at 90 degrees to the apparatus body, or more when required, without any additional support. The devices shall dampen the upward movement of the compartment door while opening, and shall permit the closing of the compartment door without the need to release any type of manual locking device.

5.14 Adjustable Shelf Channels

5.14.1 The manufacturer shall supply and install vertically-mounted steel Unistrut channels in all enclosed body compartments for the current or future installation of infinitely-adjustable shelving, slide-out trays, or equipment brackets.

5.15 Compartment Shelves

5.15.1 The manufacturer shall supply and install seven adjustable shelves in the completed body compartments. The shelf locations shall be as follows:

- Two in the driver's side aft vertical compartment
- Two in the passenger's side aft compartment
- One in the passenger's side horizontal compartment
- Two in the pass-through compartment; one per side

5.15.2 The apparatus shall have no shelving in the driver's side horizontal compartments.

5.16 Compartment Venting

5.16.1 The compartments shall have venting to aid in air circulation and reduce moisture and fumes caused by fuel storage. The manufacturer shall install moisture barriers to resist infiltration into the lower compartment and to allow for the ventilation of the compartment interior. All compartments shall have louvered vents.

5.17 Compartment Floor Mats

5.17.1 The manufacturer shall supply all enclosed side body compartments with floor mats, custom cut to fit the compartment floors. The floor mats shall be black in color and shall be easily removable to allow for cleaning of the compartment. The design of the floor mats shall provide ventilation to the equipment stored in the compartment and protect the stored equipment from direct contact with the metal compartment floor surfaces. Turtle Tile brand floor mats meet this requirement.

5.18 Spare Tire Storage

5.18.1 The manufacturer shall supply and securely mount a spare tire, vertically, on the rear of the slide-out bed tray.

5.19 Drip Rails

5.19.1 The manufacturer shall supply and install horizontal drip rails along the entire length of the apparatus body where the exterior sidewall surfaces meet the roof. The manufacturer shall provide a full-width horizontal drip rail across the back of the apparatus body where the exterior rear-facing wall surface meets the roof. All side body compartment doors shall have horizontal drip rails above them.

5.20 Wheel Chock Mounting Brackets

5.20.1 The manufacturer shall supply and install two wheel chock vertical mounting brackets at the rear of the body, one mounted vertically on each side, inboard of the rear DOT lighting, above the bumper. The manufacturer shall provide an aluminum tread plate above the mounting brackets to protect the paint from damage.

6 — Body Electrical Requirements

6.1 Electrical Components

6.1.1 The manufacturer shall supply and install independent circuits, separate and distinct from the apparatus cab and chassis electrical circuits, to serve all apparatus body electrical components. The manufacturer shall wrap all wiring in flexible split convoluted loom and shall color code and function label all wiring at 6-inch intervals. All wiring shall be grease-, oil-, and moisture-resistant, and the manufacturer shall securely fasten all wiring with insulated metal clamps and nylon wire ties. The manufacturer shall use solderless insulated connectors at all splice joints and shall enclose them with heat shrink tubing for extra corrosion protection. Wherever possible, the manufacturer shall provide automatic reset type circuit breakers.

6.2 Impact Protection

6.2.1 The manufacturer shall supply and install either aluminum guards sufficient for use or a false bottom to protect all recessed lights against impacts from equipment inside compartments, as applicable.

6.3 Electrical Equipment

6.3.1 The completed apparatus shall include the following electrical components:

6.4 Rear DOT Lighting

6.4.1 The rear DOT lighting shall consist of the following components:

6.5 Tail Lights, Brake Lights

6.5.1 The manufacturer shall supply and install a pair of red LED combination tail/brake lights at the rear of the body, one per side, above the rear step. The manufacturer shall install Code 3 brand, model 65STR red LED combination tail/brake lights or equivalent.

6.6 Turn Signal Lights

6.6.1 The manufacturer shall supply and install a pair of amber LED arrow-style turn signal lights at the rear of the body, one per side, above the rear step. The manufacturer shall install Code 3 brand, model 65STA amber LED arrow-style turn signal lights or equivalent.

6.7 Backup Lights

6.7.1 The manufacturer shall supply and install a pair of clear high-intensity LED backup lights at the rear of the body, one per side, above the rear step. The manufacturer shall wire backup lights so they illuminate when the operator places the chassis in reverse gear and/or when the operator activates the rear scene light switch in the cab. The

manufacturer shall install Code 3 brand, model 65RV clear high-intensity LED backup lights or equivalent.

6.7.2 The manufacturer shall supply and install above DOT lighting with a vertical, cast aluminum, four-position frame at the rear of the body, one per side. The frames shall have a polished, aluminum finish and shall also contain the lower zone “C” warning lights. The manufacturer shall install Code 3 brand, model 65STK4 frames or equivalent.

6.8 License Plate Bracket and Light

6.8.1 The manufacturer shall supply and install one clear light fixture with a license plate mounting bracket at the rear of the body.

6.9 Cluster/Clearance Lights and Reflectors

6.9.1 The manufacturer shall supply and install three round Interstate Commerce Commission (ICC) LED clearance lights at the rear of the apparatus, above the bumper.

6.9.2 The manufacturer shall supply and install additional lighting to conform to DOT, Federal, and NHTSA specifications for vehicles of 80 inches wide. All lighting shall be compatible with the 12-V chassis electrical system. Locations of lighting shall be in accordance with ICC regulations.

6.10 Compartment Lights

6.10.1 The manufacturer shall supply and install LED strip lighting in each exterior compartment. The manufacturer shall install full-length LED strip lighting behind the door frame on the left side, right side, and top. The manufacturer shall positively attach strip lighting to the inside of the compartment that shall be easily removable for replacement or repair. The manufacturer shall not use adhesive tape to attach the mounting clips. The LED strip lighting shall have a maximum spacing of 1 inch between the light-emitting diodes. The manufacturer shall install Code 3 brand, model #CW0803, sized per compartment dimensions, or equivalent.

6.10.2 The manufacturer shall supply and mount one manual “push-pull,” off-on, waterproof, marine-type switch in the top corner of each compartment. This switch will allow the operator to turn the LED strip lights on manually and turn off the lights upon closing the door. The manufacturer shall install Cole Hersee brand, #W606, or equivalent.

6.11 Power Inverter

6.11.1 The manufacturer shall supply and install one power inverter, with 12-V DC current input; 110-V alternating current output; four outlets, 500-watts (W) continuous output; 1,000 W minimum peak output (instantaneous) in or near the center console. The manufacturer shall bolt the power inverter on to allow maintenance or replacement. The manufacturer shall wrap all electrical wires passing though the compartment with a flexible split convoluted loom. The manufacturer shall seal any wire pass-through holes

in the compartment with rubber grommets. The manufacturer shall install two outlets in the cab console.

6.12 Rear Directional Lightbar

6.12.1 The manufacturer shall supply and install one directional lightbar at the rear of the apparatus body. The Code brand, model Z3 siren/switch controller shall control the directional lightbar. The manufacturer shall install Code 3 brand, model #NASLT839, or equivalent.

6.13 Perimeter Ground Lights

6.13.1 The manufacturer shall supply and install eight clear, round 35-lumen minimum LED lights around the vehicle's perimeter. The lights shall turn on when either the operator activates the “PERIMETER LIGHTING” switch on the center console, when a cab door is opened, or when the vehicle is placed in “blocking mode.” The vehicle is in blocking mode when the vehicle transmission is in “park” with the parking brake set and the emergency master switch turned on with the forward-facing takedown lights off. The perimeter lighting “OFF” delay shall be synchronized with the chassis exterior courtesy lighting delay.

6.13.2 The manufacturer shall supply and install two 1-inch clear LED lights under the front bumper.

6.13.3 The manufacturer shall supply and install four 1-inch clear LED lights under the apparatus body, forward of the rear wheel wells, two on each side of the body. The manufacturer shall house the lights within an enclosure sufficient to protect them from damage.

6.13.4 The manufacturer shall supply and install two 1-inch clear LED lights under the rear bumper protected from impact and debris.

7 — Electrical System Performance Test, Low-Voltage

7.1 Test Requirements

7.1.1 The manufacturer shall ensure that the testing facility tests the fire apparatus low voltage electrical system as this section requires and the manufacturer shall certify the test results. The manufacturer shall deliver the certification to the Government with the documentation for the completed apparatus. The tests shall be performed when the air temperature is between 0 and 110 degrees Fahrenheit (between -18 and 43 degrees Celsius).

7.2 Test Sequence

7.2.1 The manufacturer shall ensure that the testing facility performs the three tests defined below in the order in which they appear. Before each test, the testing facility shall fully charge the chassis batteries until the voltage stabilizes at the voltage regulator set point, and the lowest charge current is maintained for 10 minutes. The failure of any of these tests shall require a repeat of the test sequence.

7.3 Reserve Capacity Test

7.3.1 The testing facility shall start the chassis engine and keep it running until the chassis engine, and engine compartment temperatures stabilize at normal operating temperatures, and the chassis battery system is fully charged. The testing facility shall shut off the chassis engine and apply the minimum continuous electrical load for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the chassis engine. The chassis battery system shall then be capable of restarting the chassis engine. The failure to restart the chassis engine shall be considered a failure of this test.

7.4 Alternator Performance Test at Idle

7.4.1 The testing facility shall apply a minimum continuous electrical load with the chassis engine running at idle speed. The chassis engine temperature shall be stabilized at normal operating temperatures. The testing facility shall test the chassis battery system to detect the presence of a chassis battery current discharge. The detection of chassis battery current discharge shall be considered a failure of this test.

7.5 Alternator Performance Test at Full Load

7.5.1 The testing facility shall apply the total continuous electrical load the chassis engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two hours. The activation of the electrical system load management system shall be permitted during this test. The activation of an alarm due to excessive chassis battery discharge, as detected by the system required by NFPA (current edition), or an electrical system voltage of less than 11.8 V DC for a 12-V nominal system, for more than 120 seconds, shall be considered a failure of this test.

7.6 Low Voltage Alarm Test

7.6.1 Following the completion of the tests described above, the testing facility shall turn off the chassis engine. With the chassis engine turned off, the testing facility shall apply the total continuous electrical load and shall continue to apply it until the excessive battery discharge alarm activates. The testing facility shall measure the chassis battery voltage at the battery terminals.

7.6.2 The test shall be considered to be a failure if the low voltage alarm has not yet sounded 140 seconds after the voltage drops to 11.70 V DC for a 12-V DC nominal system. The chassis battery system shall then be able to restart the chassis engine. The failure of the chassis battery system to restart the chassis engine shall be considered a failure of this test.

7.7 Documentation

7.7.1 The manufacturer shall provide the results of the low-voltage electrical system performance test, certified in writing, with the documentation provided at the time of delivery of the completed apparatus to the Government.

7.7.2 The test results shall consist of the following documents:

7.7.3 Documentation of the electrical system performance tests.

7.7.4 A written electrical load analysis, including the following:

- The nameplate rating of the alternator
- The alternator rating under the conditions specified in NFPA 1906 (current edition)
- Each of the component loads specified that make up the minimum continuous electrical load
- Additional electrical loads that when added to the minimum continuous electrical load determine the total continuous electrical load
- Each individual intermittent electrical load

8 — Apparatus Finish

8.1 Apparatus Body Color

8.1.1 The color of the chassis cab exterior and body shall be No. 14260 of Federal Standard No. 595 (Forest Service Green).

8.2 Apparatus Body Finish

8.2.1 The manufacturer shall seal compartment interiors for leaks, clean and prep the inside surface areas, and then finish paint them with a durable, polychromatic, modified nitrocellulose coating that is VOC-compliant, isocyanate, and lead-free. One product that meets these requirements is Zolatone 20 series. The color shall be #20-11 (Apollo Gray).

8.2.2 The manufacturer shall paint or powder coat the exterior finish of the apparatus body. All aluminum and stainless steel shall remain unpainted. The manufacturer shall prepare any unpainted steel used in the fabrication of the mounting system for painting and shall follow the paint manufacturer's recommendations for preparing the surface. Paint for all steel parts shall match the chassis cab in which the manufacturer will mount the apparatus upon. Paint or powder coat shall meet or exceed industry standards for color matching, durability, and protection of the base material.

8.3 Vehicle Marking

8.3.1 The manufacturer shall apply a horizontal, 4-inch-wide, white, retroreflective stripe on both the chassis cab and body. The manufacturer shall place the stripe as high as possible on the vertical surfaces of the sides of the chassis hood, running the full length of the apparatus at that height. The stripping shall have one break on either side of the apparatus body, approximately over the rear wheel centerline. The ends of the stripe shall slope on a forward slant at about 45 degrees on either side of the break.

8.3.2 The manufacturer shall apply a horizontal, 4-inch-wide, retroreflective stripe on the tailgate below the crew name.

8.3.3 The manufacturer shall apply block style lettering, fabricated from retroreflective material, on the apparatus as follows:

8.3.4 The word “FIRE,” in 4-inch-tall white letters, on both sides of the apparatus, centered in the 45-degree-angle break of the 4-inch white reflective stripe, on the compartment doors, over the rear wheels.

8.3.5 The unit designator and equipment designator, AA-BBB-WXYZ, as described in the Forest Service Equipment Identification System, in 6-inch-tall white letters, on the rear passenger door(s), below the 4-inch-wide white stripe, on each side of the cab chassis.

8.3.6 The unit designator, in 4-inch-tall white letters, centered on the forward-facing swept back portion of the front bumper on the passenger's side, and the manufacturer shall

apply the equipment designator, in 4-inch-tall white letters, centered on the forward-facing swept back portion of the front bumper on the driver's side.

8.4 Decal, Crew Name, and Logo

8.4.1 The manufacturer shall apply the hot shot crew name (for example, Truckee IHC) in non-reflective black block letters on the apparatus body roof. The letters shall be the appropriate size, allowing for maximum size given the roof area.

8.4.2 The manufacturer shall apply the hot shot crew name in black letters on the outward rear surface of the apparatus body. The Government shall provide the crew name, font size, and typeface of letters.

8.4.3 The manufacturer shall apply the hot shot crew logo, 25 inches maximum diameter, on each forward vertical compartment door.

8.4.4 The manufacturer shall apply Government-supplied door decals in their entirety (FOR OFFICIAL USE ONLY, US GOVERNMENT, 10-inch shield, and vehicle number) below the horizontal stripe on the forward chassis cab doors. There shall be no break in the stripe on the chassis cab doors.

9 — Equipment

9.1 Completed Apparatus

9.1.1 The manufacturer shall provide the following equipment with the completed apparatus. The equipment shall be new and unused and shall meet all current NFPA, OSHA, and other applicable safety regulations.

9.2 Manuals and Drawings

9.2.1 The manufacturer shall provide the following specified materials with the completed apparatus:

9.2.2 One complete set of standard chassis operation, parts, and service manuals.

9.2.3 One apparatus manufacturer's operation and service manual, to include:

- Manufacturer's record of construction
- Warranty registration and information
- Operator safety information
- Vehicle exterior maintenance instructions
- Maintenance and lubrication information and charts
- Complete electrical diagrams
- Component literature (for example: siren, power take-off, hose reel, etc.)
- Weight certificate, service parts replacement list

9.3 Road Kit

9.3.1 The manufacturer shall equip the completed apparatus with a road kit containing the following items:

9.3.2 One 2½-pound, Class B/C fire extinguisher with vehicle mounting bracket, shipped loose.

9.3.3 One set of warning triangle reflectors, containing three folding reflectors in a plastic storage case.

9.3.4 One 6-ton hydraulic jack with a handle and a lug wrench.

9.4 Wheel Chocks

9.4.1 The manufacturer shall provide two, solid bottom wheel chocks with the completed apparatus; one per side. The manufacturer shall provide a Zico brand, model #AC-32-W with aluminum base plate installed, or equivalent.

10 — Warranty Provisions

10.1 Eight-Year Apparatus Warranty

10.1.1 The manufacturer shall guarantee all materials and workmanship herein specified, including all equipment furnished, for a period of eight years after the acceptance date of the apparatus, unless otherwise noted, with the exception of any normal maintenance services or adjustments.

10.1.2 Under this warranty, the apparatus manufacturer shall be responsible for the costs of repairs to the apparatus that defective workmanship or materials caused during this period.

10.1.3 This warranty shall not apply to the following:

- Any component parts or trade accessories, such as chassis, engines, tires, pumps, valves, signaling devices, batteries, electric lights, bulbs, alternators, and all other installed equipment and accessories. These components and accessories are usually covered under separate warranties by their respective manufacturers or are subject to normal wear and tear.
- Failures resulting from the apparatus being operated in a manner or for a purpose not recommended by the manufacturer.
- Loss of time or use of the apparatus, inconvenience, or other incidental expenses.

Any repair or alteration of an apparatus performed outside of the apparatus manufacturer's factory that in any way that affects its stability, or which has been subject to misuse, negligence, or accident.