TO: **Captain Matt Carter**
Emergency Operations
Fort Bend County Sheriff's Office
1410 Williams Way Blvd.
Richmond, TX 77469

FOR: C-40X-3 Mobile Command Vehicle

SUBMITTED BY: Allen Nalley

DATE: May 5, 2017

This picture is for reference only and may show optional equipment

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1. PURPOSE AND SCOPE

1.1. Introduction

The purpose of this document is to define the minimum operational performance standards and equipment required for the Mobile Command Vehicle.

Compliance with this document is a means of assuring that the vehicle will perform its intended function(s) satisfactorily under all conditions normally encountered in operations. Any regulatory operation of this vehicle is the sole responsibility of user.

Section 1.0 of this document provides information needed to understand the rationale for the vehicle's operational performance and equipment requirements. It describes typical vehicle applications and operational goals, as envisioned by the proposal team and establishes the basis for the standards stated in Section 2.0 and Section 3.0.

Section 2.0 contains the minimum performance standards required for the vehicle's chassis. These standards specify the required performance under normal environmental conditions. Also included are recommended road test procedures necessary to demonstrate vehicle compliance with the minimum requirements.

Section 3.0 describes the vehicle modular body area and accessory equipment requirements. Operational equipment characteristics are defined as well as conditions that will assure the equipment user that operations can be conducted safely and reliably in the expected operational environment.

Section 4.0 provides an area to list and describe Customer Furnished Equipment (CFE) and allows inclusion of addition details and instructions as needed for installation and/or expected operation of CFE components.

Section 5.0 is used to list and describe optional equipment and features as selected by the customer. Additional details and instructions may be included to ensure that optional items are installed and function as designed.

Section 6.0 outlines the basic FRONTLINE warranty. Additional warranty features may be identified if warranty deviations or enhancements are included.

2. VEHICLE REQUIREMENTS

2.1. Vehicle Design Requirements

The vehicle's mobile deployment goal defines the design and minimum chassis performance standard requirements. As mentioned, the vehicle shall be a self-propelled truck-body vehicle with an enclosed modular body area (defined in section 3). Furthermore, due to quick maintenance turn-around, locally experienced maintenance mechanics, and availably of replacement parts, preference is given to a vehicle that is manufactured in the United States. With this in mind, the sub-sections below define the vehicle's design and performance requirements.

General Chassis Specification

Model: Freightliner M2-106 Conventional Chassis Regular Cab
Model year: Current Year
Axle, front: Rated @ 12,000 pounds
Axle, rear: Rated @ 21,000 pounds
Battery: Two (2) Group 31 12V Maintenance Free
Alternator: 275 Amps
Brakes: Power, 4-wheel antilock, air operated
Emissions: 50 State Federal, 2010 EPA/Carb Emission Cert.
Engine: Cummins ISL 300HP @ 2000 RPM
Engine cooling: Heavy Duty Coolant to -34F
Frame: Rail and cross member
Fuel capacity: 50 Gallon Tank LH, polished aluminum
GVWR: 33,000 pounds
Suspension, front: Taper-leaf Spring 12,000 lb
Suspension, rear: Leaf spring 21,000 lb
Steering Gear: Power Steering
Transmission: ALLISON 3000 EVS Automatic with PTO provision
Wheelbase: 260" rear axle
Bumper: OEM, 3-piece, chrome
Wheels: Painted steel
Glass: Tinted windshield
Mirror: Dual West Coast, chrome
Cab Color: White
Climate Control: OEM Dash heat, defrost and air conditioner with recirculation switch
Door Locks and Windows: Power
Interior Finish: Gray with black rubber flooring
Instrument Panel: Gray panels with black gauge bezels
12V Outlet: Installed in cab
Seat, Driver-Bostrom Talladega 910 High Back Air Suspension, dual armrests
Seat, Passenger-Basic High Back Non Suspension, dual armrests
Restraints: 3-point harness
Radio: AM/FM/WB

Steering Column: Tilt/Telescopic
Windshield Wipers: Variable intermittent
Unless otherwise stated all other features will be the OEM standard available at time of manufacture
Frontline: Body Safety Warning Package including audio and visual alerts

Frontline: Body Safety Warning Package including audio and visual alerts

2.3. Operation and Accessibility of Controls

The operation and accessibility of controls shall be within the physical means and the ergonomic ability of a human of average stature. The vehicle shall not be required to meet handicapped driver requirements.

2.4. Road Test Procedures

The Road Test Procedures shall not be required if the vehicle has been delivered under its own power at a distance of not less than 200 miles. If the vehicle is to be delivered by flat bed trailer or any other means other than driven under its own power, a factory road trip of not less than 30 miles is required before being loaded for delivery to end customer.

2.5. Vehicle Design Assurance, Safety, and Fire Protection Equipment

The vehicle shall comply with all State and Federal Transportation Agencies. The vehicle shall include two 5lb fire extinguishers, one in cab and one in body.

General Design and Construction

To control quality, ensure compatibility, and provide a single source for service and warranty, the body will be entirely designed, assembled/welded and painted in Pierce owned manufacturing facilities.

Quality and Workmanship

Pierce/Frontline has set the pace for quality and workmanship in the emergency vehicle field. Our tradition of building the highest quality units with craftsmanship second to none has been the rule right from the beginning and we demonstrate that ongoing commitment by: Ensuring all steel welding follows American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding follows American Welding society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding follows American welding Society B2.1-2000 requirements for structural welding of sheet metal. Our flux core arc welding uses alloy rods, type 7000 and is performed to American Welding Society standards A5.20-E70T1. Furthermore, all employees classified as welders are tested and certified to meet the American Welding Society codes and recertify every three (3) years. Pierce also employs an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

Pierce Manufacturing operates a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that are established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance is included with this proposal.
In addition to the Quality Management system, we also employ a Quality Achievement Supplier program to insure the vendors and suppliers that we utilize meet the high standards we demand. That is just part of our overall "Quality at the Source" program at Frontline/Pierce.

Certificate of Registration

nqa global assurance

This is to certify that the Quality Management System of:

Frontline Communications & Oshkosh Specialty Vehicles, Inc.

12770 44th Street North
Clearwater, FL 33762

applicable to:

The design, manufacture and service of broadcast, medical, commercial and military products

has been assessed and approved by
National Quality Assurance, U.S.A., against the provisions of:

ISO 9001: 2008

For and on behalf of
NQA, USA, 4 Post Office Square,
Acton, MA 01720

ANAB ACCREDITED

Certificate Number: 13820
EAC Code: 19
First Issued: June 24, 2011
Valid Until: June 17, 2017
Reissued: June 17, 2014

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This approval is subject to the company maintaining its system to the required standard, which will be monitored by NQA, USA, an accredited organization under the ANSI-ASQ National Accreditation Board.

VEHICLE BODY AREA REQUIRMENTS

3.1. Vehicle Body Area

The vehicle's mission goal of providing a self-contained mobile unit defines the design and minimum performance standard requirements of the modular body area.

3.2.1. Body

The Modular Custom Body will be completely designed and manufactured in-house, and will be an all-aluminum body manufactured utilizing aluminum alloys capable of carrying the maximum payload allowed by the chassis. All framing and structural supports will be welded in accordance with the current standards as set forth in the American Welding Society Code. The Body shall have a seamless finish with no exposed fasteners. The body shall be attached to the chassis with hardened steel "U" bolts fastened to the chassis and body mounting rails. A neoprene-mounting cushion shall be installed between the modular body and the chassis frame. The body shall be designed and constructed to insure a life expectancy of more than ten years with normal use.

The Body should also include the following features:

- Welded 0.1875 Aluminum 5052-H32 alloy wheel wells with mud flaps
- All body trim pieces, hinges, and handles shall be stainless steel or other non-corrosive material

3.2.1.1 Paint Prep Procedure

All bodies and applicable parts will be painted using the Akzo Nobel / Sikkens Autocoat BT System. This is a Base Coat / Clear Coat system that delivers a durable low maintenance and long lasting finish.

The exterior body paint finishing process is as follows:
Manual Surface Preparation – All exposed metal surfaces on the body will be thoroughly cleaned and sanded for paint. All imperfections on the surface will be removed or filled, then sanded smooth. All welds in the body will be filled and sanded to achieve a smooth seamless finish.
Chemical Cleaning and Treatment – All metal surfaces will be cleaned to remove all dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. An Alodine pretreatment will be applied to ensure proper adhesion and help prevent corrosion.
Sealer Primer Coat – A two part Epoxy Primer / Sealer will be applied in a single coat, followed by two coats of a High Build Primer Surfacer. This will be sanded smooth prior to Top Coating. All seams and gaps will then be sealed with a Urethane seam sealer.
Topcoat Paint – Akzo Nobel Autocoat BT LV650 Basecoat will be applied to opacity for correct color matching.
Clearcoat – Akzo Nobel Autocoat BT LV650 Clear will be applied in two single coats to achieve gloss.

All removable items such as brackets, compartment doors, trim, etc. will be painted separately to insure paint behind all mounted items.

3.2.1.2 Welding Specifications

All materials used for fabrication shall be new and unused. All structural welds shall be continuous bead welds. Skip welds may be used in specific areas as the design permits. All welds shall be of first-quality standard with no slag scale, flux, spatter or pinholes prior to the application of any surface coating.

All welding will follow procedures as recommended by the American Welding Society (AWS). A certified AWS weld inspector will be available for auditing of weld quality in critical locations as required by the design.

3.2.2. Roof

3.2.2.1. Roof Structure

Roof structure shall be T-6063 alloy 2” x 3” x 0.125” aluminum tube welded in place on 12” maximum centers, and will be constructed to ensure a 0.50” crown to facilitate water run-off. The roof is framed around the perimeter with a custom aluminum extrusion with an integrated drip rail. All roof beams shall be welded in place to the edge extrusions and to other beams. No mechanical fasteners shall be used for the roof, floor or body construction. Sub structure bracing for aluminum tapping plates of sufficient size and strength shall be welded in place for equipment racks, masts, HVAC platforms, grab handles or other body components.

3.2.2.2. Roof Skin

A roof that can be walked on and utilized for observation and equipment mounting is required. Therefore, a minimum of 0.125” NFPA aluminum diamond plate shall be utilized and shall be continuously welded around the perimeter to insure watertight integrity. Upon completion the body shall go through a standing water test before moving to the paint finish process. The roof section will be fixtured to hold 1” of standing water for 2 hours. Test will be observed for water intrusion into the body area and the results documented in the body build log.

3.2.3. Walls

3.2.3.1. Wall Structure

The wall structure shall be designed to incorporate framing around all doors, windows and I/O panels. The design also incorporates the lower compartments and wheel wells into a single piece wall construction, eliminating add on skirts. The construction shall be T-6063 alloy 2” x 2” x 0.125” aluminum tube welded in place on 16” maximum centers. Aluminum tapping plates of sufficient size and strength shall be welded in place for masts, ladders, and any other body mounted components that may be added to the structure. Main door frames and the lower horizontal main tube section will incorporate

2” x 3” x .25” tubing for maximum support. The top tube section will mate perfectly with a custom corner extrusion that creates a 2” continuous seal along the upper body ridge before the wall skin is applied.

3.2.3.2. Wall Skin

The finished wall skin shall be a 0.125 aluminum 5052-H32 alloy material. The finished wall shall be free of vertical or horizontal seam lines. The aluminum sheet shall be bonded to the wall tubing using a 2-part, glass beaded industrial acrylic adhesive. The wall section will be loaded on a horizon plane with a minimum 10 psi to ensure the proper bonding properties are achieved. All skin joints will be continuously welded to ensure a completely void free seam.
Metal conditioning between the body skin and frame / corner extrusions will be achieved by applying a BASF Chromate Epoxy 801-703 direct to metal primer. Additionally, a 3M brand seam-sealer tape will be applied to the back of the frame extrusions. This process will create a 4 mil barrier between the skin and extrusion to ensure against galvanic or electrolysis corrosion.

3.2.3.3 Pocket Door

A pocket door will be provided to separate the interior sections of the vehicle per vehicle drawing. The pocket doors will be constructed of 3/4" x 1 3/4" aluminum tube frame covered in .063 aluminum skins. The door will be wrapped in carpeting to match the walls. A window will be installed in the upper section of the door. A nylon or fabric cover will be provided for the window and attach to the door with Velcro or snaps.

3.2.3.4 Rub Rail

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

3.2.3.5 Body Fender Crowns

Stainless steel fender crowns will be provided around the rear wheel openings. These fender crowns must be wide enough to prevent splashing onto the body from the specified tires.
A rubber welting will be provided between the body and the crown to seal the seam and restrict moisture from entering.
A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

3.2.3.6 Rear Bumper

A rear bumper will be provided with the vehicle. It will be constructed of ASTM A36 and structural A500 steel material. The bumper will be a minimum of 3" high with a minimum 10" top deck covered in 1/8" NFPA diamond plate for walking. The bumper will be 96" wide with 45 degree chamfers on the back outside corners.

To provide adequate support strength, the bumper will be mounted directly to the rear of the stock chassis frame. The bumper will be mounted using 1/2" grade 8 bolts to attach to pre-drilled holes in the chassis frame.

3.2.4. Floor

3.2.4.1. Floor Structure

The floor structure shall be 2” x 3” x 0.25” T-6063 aluminum tubing on 16” maximum centers. The cross section of the floor is as follows:

a. ½” Neoprene spacer glued in place on top of the chassis frame rails.

b. Body floor structure will be welded to two 4” x 8” aluminum I-beams for maximum stability. This creates a flat floor interior and maximizes underbody compartment capacity.

c. Aluminum 0.063 sheeting on the bottom of the body floor structure is welded in place, then completely sealed between each tube section using a Dow urethane sealant to provide a moisture barrier before the sub-floor is installed.

d. Main frame section is 2” x 3” x 0.25” aluminum tubing on 16” maximum centers welded in place to the I-beams.

e. A minimum 2” of a 2-part Dow Chemical polyethylene insulating foam is sprayed in place between floor structure tubing members.

f. The sub-flooring is ¾” Okume 10-ply; void free plywood screwed in place to the floor tube structure. Each fastener location is countersunk, treated with body filler and sanded to a smooth even finish.

g. The floor shall be finished with black Lonseal heavy-duty vinyl flooring. An 8 foot wide material will be used to eliminate seams in the finished floor.

3.2.5. Personnel and Compartment Doors

3.2.5.1. Door Construction

The doors shall be fabricated by design of the vendor. Doors to be installed with 3” continuous stainless steel hinges. All door hardware shall be fully adjustable to maintain a perfect alignment throughout the life of the vehicle.

Entry door shall have a minimum width of 29” with a minimum height of 6 feet and include heavy-duty spring-loaded devices to keep the door open or closed as required.

Compartment and utility doors shall all include heavy-duty stops or stainless steel cable stops for operator convenience.

Compartment doors include automatic DC compartment lights that may be manually turned off at the power panel.

3.2.5.2. Door Design

The door design is a pan formed and welded assembly with 0.125” aluminum sheet forming the exterior skin. Two rotary latches shall be installed in the edge of each door.

3.2.5.3. Door Jamb

The door jamb extrusion shall be welded to the body wall structure. Two striker pins shall be installed in each entry door jamb.

3.2.5.4. Door Handles

The door handles shall be stainless steel to include locking two stage rotary latches with paddle-type handles and dual door striker pins for secure closure.

3.2.6 Hinges

All exterior hinges used for entry and compartment doors shall be stainless steel, continuous, (piano type), with a 3” open dimension with a 1/4” diameter hinge pin. Hinge mounting holes shall be slotted to allow door adjustment in two planes. Holes shall be drilled and tapped in door and jamb extrusions to accept stainless steel fasteners protected with an anti-corrosion material.

3.2.7 Gaskets

The passenger and compartment door gaskets shall be designed to match the door jamb extrusions. The gaskets will be extruded from a material designed to satisfy use in extreme ambient temperatures. There shall be no interruptions in the gasket for door locks, latches or hinges. Gaskets shall be miter cut at the corners and sealed with weather strip adhesive.

3.2.7 Door Window

Each entry door shall have a tempered tinted glass non-opening window

3.2.8 Entry Steps

A fold out / flip down entry step system shall be provided in a dedicated compartment below the curbside entry door. The compartment is reinforced with a welded 2” x 3” aluminum sub frame integrated into the sidewall design.

The step system is behind a custom door that matches the other storage doors on the body. The door folds out flat, with an additional two-step extension that extends down. The step system creates a 4-step entry that is ergonomically designed for a nominal 8” to 9” step height.

The surfaces are welded in place, and made of 0.125” NFPA bright aluminum diamond plate material. A 12VCD light is installed in the lower portion for step visibility.

3.2.8.1 Grab Handles

For entry step safety, two 1¼" non-slip grab handles with rubber inserts that meet NFPA 1901 shall be installed. One shall be installed vertically on the modular body at the opening side of the entry door and one shall be installed on the inside of the door at a 45 degree angle. The grab handles will be approximately 30-36 inches in length and be securely mounted to properly reinforced locations within the structure.

3.2.9 Compartments

3.2.9.1 Generator Compartment

The generator compartment shall be designed and constructed from 0.125" aluminum sheet, continuously welded to prevent carbon monoxide intrusion into the user area of the vehicle. The floor of the compartment shall be reinforced to withstand a minimum static load of 1000 pounds. This requirement is needed support the generator and all related equipment.

Air flow through the compartment is critical to the extended operation of the generator in high ambient temperature conditions. Fresh air intake and exhaust are located to provide maximum air flow while minimizing noise. Air louvers that are exposed to the exterior painted surfaces of the vehicle shall custom designed and manufactured units fabricated from 0.125 aluminum welded to an aluminum frame and shall match the exterior of the vehicle. The design of the louver will provide a minimum air flow and provide a minimum of 85 percent free air efficiency. Behind the louvers shall be a wire mesh screen to prevent small object infiltration, while maximizing air flow.

The compartment shall be lined with thermal and acoustical insulation to minimize thermal and audible intrusion into the personnel area. The material shall be Polymer Technologies or equal and provide a triple composite insulation system. The thickness shall be 1.3875 inches minimum, and shall be bonded to the generator compartment walls and ceiling.

The compartment shall be lighted by a minimum of two compartment lights. All 12 VDC circuits and battery cables shall be protected in high temperature loom and supported. All high voltage wiring will be run in flexible metallic conduit properly sized to handle the circuits and cables.

Service points shall be readily accessible and not blocked by added equipment or devices. An oil drain system shall be included to prevent drain oil from entering the compartment, and provide a secure shutoff and drain hose extension system.

3.2.9.2 Battery Compartment

The battery compartment shall be constructed from 0.125" aluminum sheet, continuously welded to prevent battery gas intrusion into the user area of the vehicle. Vent fittings shall be installed on the inboard side of the compartment. This vent system includes a 120VAC fan that is activated during charger operation and shall allow for air circulation around the batteries.

3.2.9.3 Storage Compartments

Storage Compartments shall be installed on the street and curbsides of the modular area body, and shall be a continuously welded all-aluminum design. The compartment shall be fabricated from 0.125" aluminum sheet and be a "Sweep out" design. These compartments will offer quick access for easy service and maintenance from the exterior of the vehicle. All compartments have weather strip gaskets around the full perimeter of the doors, and non-skid material installed on the sills.

All compartments include locking two stage rotary latches with stainless steel paddle-type handles and dual "Nader Pins" for secure closure. All compartments will have automatic DC LED lighting and alarm system protection.

Compartments will be made of smooth aluminum. All storage compartments will have a small circular filtered air vent in the upper rear corner to allow moisture to escape.

All compartments include heavy duty gas shock closers, one installed per door.

3.2.9.4 Storage / Air Compressor Compartment

A storage compartment shall be installed at the rear street side of the modular body that is used for the air compressor, if required by selected options. The compartment shall be fabricated from 0.125" aluminum sheet and be "Sweep out" design.

3.2.9.5 Electrical Connection Compartment

A compartment shall be installed on the curbside of the modular body that is used for the electrical connections. The compartment shall be fabricated from 0.125" aluminum sheet and be "Sweep out" design.

3.2.10 Fasteners

All exterior fasteners such as machine screws, bolts and sheet metal screws shall be stainless steel.

3.2.11 Expandable Room Section (Slide-out)

See additional included equipment

3.2.13 Electrical

3.2.13.1 12 VDC Wiring

All DC wires are heat resistant type that meets SAE J1128 type SXL and/or Multi-Conductor, Tinned Copper Conductors, PVC Insulation Cable. (Multi-conductors are used only for Control and Instrumentation inside the modular body) The wires are loomed and routed the maximum distance away from possible high heat sources and properly clamped to body or frame members to preclude chaffing on other components.

Where holes are cut in the body structure for wiring they shall have the whole circumference grounded and filed smooth and rubber grommets shall be installed. The wiring harnesses are function coded every 4 inches and of a gauge that is rated to carry 125% of the maximum current for which the circuit is projected. All wires and cables will be marked at each end with a function number that is documented in the DC schematic and described in the wire list.

Battery cables are sized to match the OEM cables with crimped terminals and a black shrink tubing protecting the negative terminals and red for the positive terminals.

An As-Built DC schematic and wire list accompany each unit upon delivery.

3.2.13.2 Modular Body Battery System

The modular body shall be equipped with a dual battery system. Two Group 31 lead acid batteries with a minimum of 210 amp hours are used to support the modular body and communications loads. The batteries shall be charged by a converter/charger. The system batteries are protected by a 300 amp in-line fuse.

3.2.13.3 Power Converter/Charger

One 120VAC to 12VDC Progressive Dynamic marine grade 80-amp power converter shall be provided to support the 12VDC electrical load and charge the batteries during generator or shore power operations.

3.2.13.4 120/240 VAC Wiring

Wire sizes shall be determined per circuit requirements and in accordance with the National Electrical Code. All 120/240VAC wiring shall be routed through cable raceways. Fixed wiring systems that are not in raceway are routed in metallic flexible conduit rated at not less than 194 degrees Fahrenheit.

Type SO cord with a rating at least 600 volts are use on equipment plugged into receptacles. All wires shall be type THHN, THW or Type SO cord. Electrical cords or conduits shall be supported within 6 inches of any junction box and at a minimum of every 24 inches of continuous run. All wiring shall be secured and fastened at all bends and shall be protected against chaffing and damage. Wiring shall be concealed but easily accessible for repairs.

All circuits will be properly grounded in accordance with the National Electrical Code NEC-250-6. All wires and cables will be mark at each end with a function number that is documented in the AC schematic and described in the wire list.

All wiring and associated equipment shall be tested by the manufacturer or Installer and Quality assurance personnel. Electrical Polarity verification shall be made on all permanently mounted equipment and receptacles.

An as built AC schematic and wire list accompany each unit upon delivery.

3.2.13.5 Power Distribution Panel

The Power Distribution Panel shall consist of an anodized black aluminum panel with white laser etched descriptions for every breaker and switch. The panel is equipped with 120/240-volt, 50 amps, single-phase, three-wire system that has appropriately sized circuit breakers.

An Analog Frequency/Amps/Volt meter is located on the main power distribution panel. Its features are frequency display 55 to 65Hz, Ammeter display 0 to 100amps, AC Voltmeter display 0 to 150vac with selector switch between phases. A surge suppression device that meets the requirements of ANSI and IEEE shall be installed per phase located in the power distribution enclosure. Other appropriately sized circuit breakers shall be installed for 12 VDC applications.

A manual power transfer switch shall be located in the electrical distribution panel for selection of either generator power or shore power. The transfer switch will switch both hot legs and the neutral keeping all power sources isolated.

The panel shall also contain DC meters for monitoring voltage and generator hours. A Generator remote start/stop switch and Line Alive indicators for Shore power, generator and night service shall be provided.

The panel is hinged to provide easy service entrance for maintenance.

3.2.13.7 External Shore Power Input Connector(s)

An external Power Inlet, Hubbell 50A 125/250V, 3 pole 4 wire Twist-Lock shall be installed on the street side of the modular body. The stainless steel shore power inlet has a self-closing cover so that the interior is shielded from the elements when not in use. It is watertight when the cover is securely fastened. This connector shall be used to provide the required 240-volt, 50 amp, single-phase, three-wire AC service to the power distribution panel.

3.2.13.8 120 VAC Outlets

One (1) 120VAC quad outlet will be installed in the conference area. One (1) 120VAC/USB duplex outlet will be installed in the raceway at each of the workstations.

Two (2) 120VAC GFCI duplex outlets with weatherproof covers shall be installed on the exterior curbside; each exterior duplex will be on separate circuits.

3.2.13.9 12 VDC Lighting (Interior)

12-volt ceiling mounted I2 red/white dimmable light fixtures with switches shall be installed in the interior areas.

These lights shall be individually switched in zones or by switches on each light fixture or at the electrical Power Distribution Panel.

3.2.13.10 12 VDC Lighting (Exterior)

Six (6) Whelen 900 series LED exterior scene lights shall be installed on the exterior of the vehicle, with two (2) curbside, two (2) street side and two (2) on the rear.

The two on the rear shall also serve as back up lights that will be activated along with the standard reverse lights when the transmission is placed in the reverse gear.

The scene lights shall be two-way switched from the electrical control panel or cab dash.

Each exterior compartment shall have a 12VDC LED lighting.

3.2.13.11 Rear FMVSS Lighting

The rear (D.O.T.) LED lighting will consist of the following:

Two (2) Whelen®, Model M6BTT, red LED stop/tail lights

Two (2) Whelen, Model M6T, amber LED arrow turn lights

Two (2) Whelen Model M6BUW, LED backup lights

The lights will be mounted in polished combination housing.

Two (2) Whelen, Model M6FCV3P , three (3) place chromed ABS housings provided for the rear M6 series stop/tail, directional, and back up lights.

The marker and clearance lights will be Truck-Lite, LED light fixtures.

Truck-Lite NYK-77 anti-corrosive shall be applied to lamp-plug interfaces.

3.2.14 Generator

3.2.14.1 Generator Description

A 20KW 120/240VAC 60 Hz water-cooled diesel powered generator shall be provided. The generator compartment will be soundproofed to attenuate noise to the maximum degree possible. The generator and muffler shall be mounted as required to suppress sound and vibration.

3.2.14.2 Shutdown System

The generator shall be equipped with sensors that will activate the generator shut down system on low oil pressure and high water temperature.

3.2.14.3 Block Heater

The generator shall be equipped with engine block heater if available from the generator manufacturer as an OEM feature.

3.2.14.4 Remote Start

The generator shall include a remote Start/Stop preheat switch and hour meter located in the modular body power distribution panel.

3.2.14.5 Fuel Supply

Fuel supply for the generator shall be from the chassis fuel tank. The system shall be designed and installed to leave a minimum of 10% of fuel in the tank when the generator runs out of fuel.

3.2.14.6 12VDC Alternator

The generator shall be equipped with a 12VDC alternator that will be wired to charge the modular body battery as well as satisfy all 12VDC systems of the generator.

3.2.14.7 Night Service

A "Night Service" 120VAC auxiliary AC input allows connection of chassis and generator block heaters, and the battery charger/converter. This circuit is used when the vehicle is on the road and standard external power is not available overnight.

3.2.15 Alarms

3.2.15.1 Smoke and CO Detectors

The modular body shall be provided with smoke and CO detectors, per zone (ops / conference), powered by the 12-volt system.

3.2.16 HVAC

3.2.16.1 HVAC

Three (3) air conditioners will be roof-mounted units rated at 15,000 BTU each. Each unit shall be centrally located with respect to each area and will discharge through a ceiling mounted discharge / return air vent. Two (2) 110V wall-mounted heaters rated at 5000 BTU each will be installed in the interior of the body. One will be mounted on the back wall and one will be mounted in the forward area.

3.2.17 Interior

3.2.17.1 Walls

The walls shall be insulated with minimum 2” sprayed in two-part Dow Chemical polyethylene insulating foam. The insulation will be covered with 3/8” plywood and

screwed to the aluminum wall structure. The walls shall be finished with gray colored commercial grade non-static sound absorbing carpet.

3.2.17.2 Floor

The floor shall be insulated with minimum 2” sprayed in two-part Dow Chemical polyethylene insulating foam. The insulation will be covered with 3/4” plywood and screwed to the aluminum floor tubes. The floor shall be finished with black Lonseal heavy-duty vinyl flooring. An 8 foot wide material will be used to eliminate seams in the finished floor.

3.2.17.3 Ceiling

The ceiling shall be insulated with minimum 2” sprayed in two-part Dow Chemical polyethylene insulating foam. 3/8” plywood shall be applied to the bottom of the roof structure and finished with gray colored commercial grade non-static sound absorbing carpet that matches the interior walls.

3.2.18 Cabinet

3.2.18.1 Cabinet Construction

Interior cabinets shall be constructed of aluminum panels, aluminum extrusions and zinc plated, aluminum or stainless steel fasteners. No rivets shall be used and all components shall be CNC punched. The principal walls, shelves and frames shall be fabricated from .063” aluminum and pre-punched with all required assembly and mounting slotted holes. Latches shall be a full width extruded pull handle with integrated self-latching mechanisms that allow one hand unlatching and opening on the entire width of the panel. The finish shall be a polyester powder coat, color to be light gray. Drawer slides shall be all steel double carriage ball bearing, full extension slides capable of withstanding 234 lbs. loading per drawer. Doors are formed to a 1” thickness from a single sheet of aluminum. Countertops are industrial grade laminate bonded to ¾” plywood.

3.2.19 Conference Area

The conference area is located as shown in the body plan view drawing. This area consists of a conference table with seating for six. Six (6) chairs are provided, for the conference table. These will be secured with bungee cords while the vehicle is in transit. One (1) Analyst workstation with pedestal chair. A bench with storage.

3.2.20 Workstation Area

The workstation area is located as shown in the body plan view drawing.. Overhead storage cabinets shall be installed above the four (4) work stations. Three (3) rolling desk chairs will be provided for the front area workstations. Chairs will be secured with bungee cords while vehicle is in transit. One (1) pedestal chair. Galley, wet lavatory and 2 racks.

3.2.21 Workstation Wiring Provisions

A minimum 1” x 4” cable duct will be run from the equipment racks to provide for communication cabling to the work stations.

3.2.22 Equipment Rack

One, custom-built, EIA 19” equipment rack will be installed for maximum strength and best utilization of space. See drawing for locations. The rack will be manufactured from angled steel rails drilled and tapped per industry standards. The rack frame will be constructed of 0.125” aluminum sheet reinforced with 0.25” aluminum plate as required. The rack frame will be securely fastened to 0.25” plate that is welded to modular body frame. A 0.5” wide braided ground strap will be installed between the racks and the modular body frame. No wood shall be used for any structural component of equipment racks.

All racks include edge protected circular openings for clean routing of cables, and full length cable tie-off bars to facilitate secure and reliable equipment installation.

The rear of the rack will have a minimum of 16 AC outlets for equipment power distribution. Racks are to have maximum amount of vertical space for equipment installation, and will be 30” deep with rear mounting rails at 18” and 24”.

3.2.23 Securing the Interior

Various methods will be provided for positively securing all drawers, tables, TV, chairs, doors, or other items within the interior of the unit.

3.2.24 Safety

a) Two (2) five (5) pound fire extinguishers – one in cab and one in body

b) A set of three (3) reflective safety triangles

3.2.25 Documentation

a) OEM Chassis manuals and individual OEM component manuals are included as provided by the OEM manufacturers

b) Two sets of As-built Electrical Schematics in B size (11 x 17) AC and DC schematics, and one set of laminated A size (8 1/2 x 11) AC and DC schematics will be supplied.

c) Two sets of As-built Systems Diagrams in B size (11 x 17) (Audio, Video, Network/data, Phones, RF, and systems DC diagrams minimum), and one set of laminated As-built Systems Diagrams in A size (8 1/2 x 11) will be supplied.

3.3 Roadworthiness of the Modular Body Area

An underlining objective of Section 2 and 3 is to specify requirements that insure a high degree of roadworthiness of the final vehicle design. Such is also reinforced by the requirement that the vehicle shall meet State and Federal guidelines, code and compliances, and safety regulations. The body area shall be designed as to equally distribute the curbside-to-street side payload to the maximum degree possible. Payload distribution with respect to the front and rear axles shall be arranged as to not to exceed the load of either axle. The modular body is designed to withstand intermittent use on unimproved surfaces.

4.0 Customer Furnished Equipment (CFE)

A list of all CFE must be provided to allow for consideration of vehicle preparation, materials and labor for installation and integration.

Customer furnished equipment will be handled and integrated with due care, and will be delivered in the same condition it was received. Frontline Communications assumes no liability for equipment that is damaged during shipment to our facility, and any equipment received damaged will be reported to appropriate personnel at the customer's facility for direction as to appropriate action.

Customer furnished equipment includes:

Motorola Radio's

Computers for command vehicle

5.0 Additional Included Equipment

A list of all optional equipment must be provided to allow for consideration of vehicle preparation, materials and labor for installation and integration.

Additional included Cab and Box equipment:

Item #	FPN	Qty	Manufacturer	Model	Description
1.2		1	Freightliner	M-2	Additional 50 gallon fuel tank, RS with inboard frame mounted horizintal DPF and SCR
1.6		1	Freightliner	M-2	Air ride suspension
2.3		1	Quadra	Bigfoot	4 Quadra Mfg. "Bigfoot" stabilizer jacks with remote control and individual "jacks down" indicator lights located on the dash
2.13		1	Frontline		Class V Trailer Hitch installed on rear of vehicle. 15,000 lb. Gross Towing Weight/1,500 lb. Tongue Weight, 2 1/2 " receiver. Includes seven pin electrical connections for lights and brakes. (Call engineering to verify chassis engine/transmission with tow load)

3.5		1	Frontline		Frontline custom communications console to house controller and two radios
5.3		1	Zico	3096	Zico Model 3096 Quic-Ladder folding ladder, installed on rear of vehicle.
5.7		2	Frontline		Tubular antenna raceway installed on roof, custom fabricated, .125" aluminum, approximately 6" x 6", welded to roof with 2" standoffs at 60" spaces. Includes vertical raceway/chimney welded through diamond plate roof for interior wiring routing. Exterior side and ends of raceway painted to match vehicle.
5.8		3	Frontline	Small slide-out less than 9' (108") raised floor	Custom sized slide-out, 8' or less in width and 30" extension depth, with a raised floor area. Utilizes an HWH side mounted hydraulic slide system to extend and retract the slide-out section. Operated with a rocker switch placed in a convienient location. Two amber flashing lights installed one in each end of slideout. Controlled by switch.
6.1		1	Frontline		I/O Compartment for external cable connections to rack/interior. Custom fabricated aluminum frame and door approximately 18" x 18". Painted to match body. Includes two stage lockable latch to allow cables to exit and prevent access to I/O panel and connections. Includes custom aluminum anodized panel with etched connector identification, two door stays, and compartment lighting.
6.2		1	Frontline		LCD Display Compartment for external mounted LCD display. Custom fabricated aluminum frame and door. Painted to match body. Includes two stage lockable latch to allow cables to exit and prevent access to I/O panel and connections. Includes custom aluminum anodized panel with etched connector identification, two door stays, and compartment lighting. Includes raceway and wiring for power/video/audio.

6.4		1	Frontline		Fold down tray for keyboard, mouse at exterior LCD Monitor Compartment
6.11		1	Frontline		Add 20 x 30 stationary glass window
7.1		1	Fan-tastic	1200 RDMS	FAN-TASTIC MODEL 12000 RDMS 14" X 14" ROOF VENT(S) A Fan-Tastic Model #2000 RDMS (or equal) "RV style" 14" by 14" electric/manual vent shall be installed in the roof of the module body. It shall include a quiet 12-volt ceiling fan with 3-speeds, on/off switch, up and down switch and a rain sensor.
8.2		1	APC	SUA-3000-RM2U	APC Smart UPS System SUA-3000-RM2U 3 KVA UPS. Built in surge protection. This UPS is on line at all times. Rack mounted using 2 rack units. Typical location is bottom of rack, typically 1 UPS per rack. Approximate back up time is 10-20 minutes depending on type of load. The APC Uninterruptible Power Supply (UPS) is designed to prevent blackouts, brownouts, sags, and surges from reaching your equipment. The UPS filters small utility line fluctuations and isolates your equipment from large disturbances by internally disconnecting from the utility line. The UPS provides continuous power from its internal battery until the utility line returns to safe levels or the battery is fully discharged.
8.12		1	Mockett	PCS9	Recessed enclosure with hinged covers installed in conference table. Approximately 12" X 7". Includes four duplex 120V outlets and six duplex Cat 5 outlets wired to equipment rack.
8.14		5	Frontline		Additional interior or exterior duplex 120VAC outlets/each.
8.16		5	Frontline		Additional interior Phone or Data jacks / each
8.19		1	Hubbell		Upgrade from 50amp 120/240vac to 100amp shore power (Hubbell Pin & Sleeve connector and 25ft Cable)
8.24		1	Kussmaul		Kussmaul - Super Auto Eject 30 Amp, 120V - 091-159-30-120

9.1		1	Bunn	BTX	Coffee Maker, 10 cup, Bunn, BTX
9.3		1	Dometic		Microwave Oven- Dometic 1.2 cubic foot, 1000W, installed in cabinet or on counter top. Includes mounting flange.
9.4		1	Norcold		Refrigerator- Norcold 2.7 cubic foot, AC/DC, installed in lower cabinet.
9.11		4	Frontline	Custom	Sliding, swivel, pedastal mounted chair.
9.13		1	Frontline		Wet Lavatory- Includes ceramic toilet system, ducting to the exterior of the vehicle, paper holder, stainless steel sink, paper towel dispenser, fresh water tank with city water connection, black water tanks with manual dump valve for waste tank and stainless steel mirror.
10.1		1	Frontline		Additional full height equipment rack, includes exterior access door.
11.1		1	Whelen		Amber or Green LED strobe lights mounted on roof or mast top
11.2		8	Whelen	M9LZC	Scene light upgrade from Whelen 900 series LED to Whelen M9 series LED (price per light)
11.5		1	Will-Burt	NS1.8-3000	Wil-Burt Night Scan Chief - NS1.8-3000 with the Optimum Lights (4x750w) 240vac, Wire HHRC NFPA with E-Stop and 50ft DC Cable
12.2		1	Whelen	Freedom F4W2xxxx	Whelen 55" Freedom IV DYAD WC Series Lightbar, fully populated w/ (8) Duo Series Linear-LED® Flasher lightheads, on a permanent / Adjustable Mounting Bracket to the roof of cab. color to be determined by customer at CDR
12.17		2	Whelen	ULF44	Whelen Lighthead Flasher - 4 outlet (flash on terminal), 2 channel flasher (maximum 8 lights per unit - typically 2 units per truck)
12.21		1	Whelen	295HFSA7	Whelen Siren 295HFSA7 w/flush mount control head, remote dual siren amplifier and public address capability Meets CA Title 13
12.23		1	Whelen	SA314A	Whelen Speaker SA314A, aluminum, 100W

12.28		8	Whelen	M6 series	Whelen M6 series Super-LED Steady burn with Clear outer lens, blue, red, amber, clear, (requires ULF44 flasher)
12.30		8	Whelen	M6FC	Flange, Chrome, M6 Series Lighthead
12.34		10	Whelen	M9 series	Whelen M9 series Super-LED Steady burn with Clear outer lens, blue, red, amber, clear, (requires ULF44 flasher)
12.36		10	Whelen	M9FC	Flange, Chrome, M9 Series Lighthead
13.2		1	Will-Burt	TMD-7-42-35X-36X	42' heavy-duty Will-Burt mast TMD-7-42-35X-36X. Includes air compressor, oiler, regulator, hoses and controls.
13.4		1	Frontline		Custom aluminum mast cover. Painted to match body. Includes uncoil nest at top of enclosure.
14.1		1	Simplex	LR-101-1-26D-41	Cipher L1000 lock with keypad installed on entry door. Includes latch and 5" backset.
16.7		1	Carefree of Colorado	Mirage	20' 110V Electric Awning- Carefree of Colorado, Mirage with Direct Response, Acrylic.
18.1		1	Frontline	Custom	Vehicle manual, custom produced for vehicle operation and service. 2 hard copies and 1 electronic format copy provided.
21.1		1034	Frontline		Professional drive-away service to customer facility. (Per mile)
Non HGAC		1	Frontline		Graphic/wrao Allocation

Additional included Systems equipment:

Video Audio Systems Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
44.1	BTT	1	Extron	60-1545-002293	Modular Digital Matrix Switcher XTP 2 1600Custom XTP II 1600~66222222A XTP II CROSSPOINT 1600 FRAME w/RPS XTP CP 4i VGA INPUT BOARD (x2) XTP CP 4i HDMI INPUT BOARD (x2) XTP CP 4o HDMI OUTPUT BOARD (x4)

44.2	BTT	2	Extron	60-708-02	X-Y Remote Control Panel for Extron Matrix Switchers
44.3	BTT	2	Extron	70-1097-02	SMB 112 Two-gang, Black
NON HGAC	BTT	1	Apantac	MiniDE-4	COMPACT MULTIVIEWER / QUAD-SPLITS
44.5	BTT	10	Viewsonic	VT2216-L	22" Monitors at Workstations. Professional - 22" Class (22" Diag.) - LED-LCD TV - 1080p - HDTV 1080p - Multi (2 per work stations) (Or equivalent)
44.6	94558	10	Peerless	STL646	Fixed Wall Mount 10 to 29in Display VESA
44.7	BTT	1	Visio	D40-D1	40” Class Full-Array LED Smart TV - Black (Or equivalent) Exterior compartment
44.8	94557	1	Peerless	STL646	Tilting Wall Mount 32 to 50in Display VESA
24.5	BTT	1	Samsung	DH55D	Samsung DH55D - 55" LED display (Or Equivalent) Rear Wall
24.6	BTT	1	Samsung	CY-TD55LDAH	55" Touch Overlay (Or Equivalent)
NON HGAC	BTT	1	Chief	LSM1U	Large Fusion Micro-Adjustable Fixed Wall Display Mount
44.9	BTT	2	BRG	HP440R	DuraTime HP High Precision Factory Synchronized Clocks 24 Hour Format
44.10	BTT	1	Winegard	SK-SWM3	TRAV'LER DIRECTV Slimline SWM
44.11	BTT	2	Direct TV	H-24	High Definition MPEG-4 Enabled Receiver (service not included)
NON HGAC	95383	2	iView	3500STBII	Multi-Function Digital ATSC Tuner. Built-in HDMI and Analog Output or Equivalent
44.12	88417	4	Middle Atlantic	RC-2	2 RU Clamping Rack Mount Shelf
44.13	BTT	1	Winegard	RS-3000	RoadStar Omni-Directional VHF UHF Antenna
NON HGAC	BTT	1	PCT	MA28PN	8-Port Bi-Directional Cable TV HDTV Amplifier Splitter Signal Booster
44.15	FLC	1	FLC	ATEBC	Additional Terminal equipment, Brackets, and cables for AV system
PA Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
NON HGAC	BTT	1	Shure	BLX24/B58	Shure BLX24 Wireless System With PG58 Mic (J10: 584 - 608 MHz)
NON HGAC	00122	2	Maxrad	Scan1000	Antenna 150-840 MHz NMO Mount

NON HGAC	BTT	1	SPECO	PMM120A	120W RMS P.A. Mixer Amplifier
NON HGAC	BTT	1	SPECO	PBMRK2	Rack Mount Kit
NON HGAC	BTT	1	FEDERAL SIGNAL	AS124	100 WATT SPEAKER
Mast Camera Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
NON HGAC	BTT	1	WTI	SW720HV-H.264-HD30-POE	SIDEWINDER PTZ CAMERA, POE++, SIDE EGRESS, HD WITH 30X OPTICAL ZOOM AND ENG BRAKES with Image Stabilization, De-Fogging feature, Wide Dynamic Range and ENG Brake.
NON HGAC	BTT	1	WTI	WTI-POE-I	Sidewinder POE Injector
45.2	90802	1	WTI	SWC10-HD	10 ft High Definition Interface Cable
45.3	BTT	1	KanexPro	RGBRLHD	Component to HDMI Audio/Video Converter YPbPr to High-resolution HDMI Video Input - up to 1080p/UXGA 10-Bit digital-to-analog Converter Output Resolution - up to 1080p
45.4	4442	1	Carlon	E989NNJ	4" x 4" x 2" Nonmetallic Junction Box
45.5	FLC	1	Frontline	MTCB	Mast Top Camera Bracket
45.6	90813	1	Altronix	ALTV244	Four (4) Fused Outputs 24VAC @ 4A Wall Mount Power Supply
45.7	BTT	1	WTI	DTC-720-A	SIDEWINDER DESKTOP CONTROLLER, INCLUDES WALL BLOCK TERMINAL JUNCTION BOX, PATCH CABLE AND POWER SUPPLY
45.8	FLC	1	FLC	ATEBC	Additional Terminal equipment, Brackets, and cables for camera system
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
Perimeter Camera Equipment					
22.1	BTT	1	Eclipse	COR-HF88H	QTY 6 HYBRID AHD & ANALOG OUTDOOR IR TURRET DOME (or equivalent)
22.2	BTT	1	Eclipse	ECL-121R	QTY 6 REGULATED 12VOLT DC 1000MA (1A)
22.3	BTT	1	EverFocus	ECORFHD16F	16 CH, H.264, 1080p Full HD (Or Equivalent)

22.4	FLC	1	FLC	ATEBC	Additional Terminal equipment, Brackets, and cables for camera system
	Cab Back-Up Camera Equipment				
25.1	BTT	1	Intec	CVC500AH	CAMERA - COLOR W/ AUDIO & HEATER 123x91 FOV
25.3	BTT	1	Intec	CVC500AHFMS-2	CAMERA - SIDE MOUNT RIGHT FRONT W/ FLUSH MOUNT
25.4	BTT	1	Intec	CVD650LCD	DISPLAY - 6.4" LCD WATERPROOF
25.5	BTT	1	Intec	CVS500H	CONTROLLER - 5 CHANNEL MOLEX
25.6	BTT	1	Intec	CVR500	REMOTE - CVS500 WATERPROOF
25.7	BTT	1	Intec	CVH11MA	QTY 2 CABLE ASSY - 11 METER (36')
25.8	BTT	1	Intec	CVH21MA	CABLE ASSY - 21 METER (69')
25.9	BTT	1	Frontline	ATEMC	Additional terminal equipment, mounting hardware, and cables
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
	KU VSAT 1M Option				
32.1	BTT	1	AVL	1000K-11	Ku-Band 1.0 Meter MVSAT Antenna Includes: * Reflector 1.0M * Optics Offset, Prime Focus * Drive System Patented Roto-Lok® 3-axis Positioner * Mount Geometry Elevation over Azimuth - Vertical stow clearance 14.80" * Polarization Adjustment Rotation of Feed / Emergency Pol Handle * Controller One-button Auto-acquisition Fully Automatic Satellite Acquisition, Peaking, and Cross-Pol Adjustment using GPS, Compass, and Level * Sensor Inputs with Entry of Desired Satellite, Certified for Auto-commissioning on select services
32.2	BTT	1	AVL	801-018-301	Universal BUC Mounting Kit - Includes 24" Flex Waveguide
32.3	BTT	1	AVL		Antenna Controller, 1RU (Required)

32.4	BTT	1	iDirect	X5	Evolution Series Satellite Router (Modem) Includes 24VDC Power Supply (supports BUCs Up to 4 W Ku-band and 5W C-band) Order USA power cord separately. (p/n: P0001034-0001)
32.5	BTT	1	NJRC	NJT5017FL	Block UpConverter (BUC), 4W, Ku Band Output freq: 14.0 - 14.5 GHz, Input freq: 950 - 1450 MHz, RF Interface: F connector
32.6	BTT	1	NORSAT	1107HAF	LNB, Ku Band, 11.7-12.2 GHz input, PLL, 0.7dB Noise Figure, with L.O. Stability +/- 10KHz, F connector
32.7	BTT	1	Frontline	-	Mounting, integration, configuration
Computer Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
47.1	CFE	5	TBD	TBD	Installation of Customer Supplied Workstation computers
47.2	BTT	2	HP	CZ195A#BGJ	LaserJet Pro Printer Laserjet printer prints up to 35 pages per minute 1200 x 1200 dpi (or equivalent)
47.3	FLC	1	FLC	ATEBC	Additional Terminal equipment, Brackets, and cables for work stations
3G, 4G Network Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
48.1	BTT	2	Cradlepoint	IBR1100	Ruggedized 3G/4G/LTE Cellular Modem(Service not included)
48.2	BTT	2	Taoglas	MA750.A.ABICG.003	Pantheon MA750 5in1 Permanent Mount GNSS, 2G/3G/4G 2xMIMO, Wi-Fi 2xMIMO NO GROUND PLANE REQUIRED IP67 Waterproof
48.3	BTT	2	Trendnet	TL2-E284	24-Port 10/100Mbps Layer 2 Switch w/ 4 Gigabit Ports and 2 Shared Mini-GBIC Slots
NON HGAC	BTT	1	Weboost	470510	Drive 4G-X Cellular Booster
Phone Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
49.1	BTT	1	Panasonic	KX-TA824	Advanced Hybrid Telephone System, 3 COs and 8 Stations (Or Latest Model)

49.2	BTT	8	Panasonic	KX-T7720-B	Panasonic KX-T7720-B (or current model) black twelve-line speakerphone telephone. (Or Latest Model)
49.3	BTT	1	Panasonic	KX-TA82493	Caller ID Exp Card
49.4	CFE	3	TBD	TBD	CFE Cellular Terminal (Carrier TBD) (Terminal Requires external antenna connector)
49.5	95138	3	Laird Technologies	TRA6927M3NB-TS1	3G/4G Multiband Antenna Black NMO (Or Latest Model)
49.6	88439	3	Tessco	MABTO	MNO Bases
49.7	BTT	1	Frontline	ATEMC	Additional terminal equipment, mounting hardware, and cables
Cab 2-Way Radio Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
51.1	CFE	1	Motorola	TBD	Install Customer supplied mobile radios with antennas and remote heads.
50.2	88439	2	Tessco	MABTO	MNO Bases
Body Radio Equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
51.1	CFE	5	Motorola	TBD	Install Customer supplied mobile radios with antennas and remote heads. 5 Work Stations 1VHF and 2 800 MHz at dispatch work station
Non HGAC	CFE	3	Jacks	TBD	Install headset jacks on 3 rear work stations under counter
51.2	88439	20	Tessco	MABTO	MNO Bases
51.4	BTT	1	Frontline	ATEMC	Additional terminal equipment, mounting hardware, and cables
Additional Systems equipment					
Item#	**FPN**	**QTY**	**Manufacturer**	**Model**	**Description**
52.1	FLC	1	Frontline	1.25XNYCOIL	NYCOIL, 1.25" DIA. FOR 42' MAST WITH STOCK CABLES
52.2	FLC	1	Frontline	Lot	Engineering, installation, wiring, test and documentation of all audio, video, test, and communications equipment. All cables and wires are numbered and referenced to customer approved flow diagrams. All audio, video and RF cables and construction techniques meet highest industry standards. Fiber and specialized cables will be billed separately

52.3	FLC	1	Frontline	Training	Training (per day)
52.4	REQ	5	Laser Panel	WSIOP	Work station-Exterior I/O Panels
52.5	REQ	1	Laser Panel	MBIOP	Mockett Box I/O Panel
52.6	BTT	1	MOCKETT	PCS9	FLUSH MOUNT EXTRA LARGE GROMMET (installed in conference table, contains Cat 6 LAN, VGA and 120VAC ports)
52.7	REQ	48	Frontline	CAT-6SC	Structured cabling 4 drops per 5 workstation, 4 to conference table
52.8	REQ	1	Laser Panel	RDCDPP	Radio DC Distrubtion Power Panel

6.0 Vehicle Warranty

Frontline Communications warrants the vehicle against defects in material and workmanship for a period of one (1) year.

Frontline Communications warrants the welded structure and skin of the body of this unit against defects in material and workmanship for a period of ten (10) years.

Frontline Communications warrants the fabricated parts and paint of this unit against defects in material and workmanship for a period of five (5) years.

Frontline Communications warrants the electrical system of this unit against defects in material and workmanship for a period of two (2) years.

OEM equipment warranties shall be provided by the OEM.

See warranty document for complete terms and conditions of the Frontline warranty.

FRONTLINE SYSTEMS DESIGN, ENGINEERING AND INSTALLATION SERVICES

Frontline will install all equipment listed in this proposal. This includes equipment provided by Frontline and customer furnished equipment (CFE). Installation service includes all required miscellaneous hardware for complete systems installation. All cables are labeled on both ends with wire numbers that match customer approved flow diagrams. All cables, connectors, and construction techniques meet highest industry standards.

Frontline will provide acceptance testing and one day of operation and maintenance training at our facilities in Clearwater, Florida upon completion of the vehicle.

IMPORTANT NOTE ABOUT FRONTLINE DESIGN AND INTEGRATION POLICIES

Customer approval of Frontline provided system diagrams will be required before integration starts. Changes to the system design by the customer AFTER integration starts will be evaluated for cost and time delay impact. This information will be reported to the customer for a decision to proceed. No changes will be implemented without customer approval of cost and time delay impact. Frontline may elect to make minor changes, such as wire numbering, during construction. These changes will not affect the performance of the system or alter the cost or delivery schedule.

Changes to the specification (including deletions) requested by the customer after integration begins will incur a minimum $100 change order processing fee plus the actual cost of the equipment and the time delay impact, and restocking fees if applicable.

Original systems diagrams plus one revision are included with the project. Second and subsequent revisions will incur a minimum $250 engineering fee.

FRONTLINE PRODUCT DESIGN CHANGE POLICY

In an effort to continually improve the quality of our products; Frontline reserves the right to make changes in the design and construction of our standard product at any time. These changes may be in suppliers, construction techniques and/or materials used in the build and conversion of our vehicles. These changes will not affect the overall design intent and will not reduce the value of the product proposed in this sales proposal. These do not include changes to specific customer approved designs or customer requests concerning components, system design or systems integration.