

Miami-Dade Fire Rescue
Miami, FL
Hazmat, SVI #1149
Production Specification



LIABILITY INSURANCE

The manufacturer shall furnish with the bid a certificate of insurance for;

Workman's Compensation and Employer's Liability Insurance covering for all employees.

General Liability (each occurrence) of \$1,000,000.00. General Aggregate coverage of \$2,000,000.00. Products Completed / Operations Aggregate coverage of \$2,000,000.00. Medical Expense coverage of \$5,000 (any one person). Personal Injury of \$1,000,000.00.

Automobile liability of \$1,000,000.00 combined single limit (each accident), including any auto, all owned autos, scheduled autos, hired autos, non-owned autos, and garage liability.

Excess Umbrella Liability coverage of \$6,000,000.00 each occurrence, Aggregate of \$6,000,000.00. Garage Keepers Liability coverage of \$6,000,000.00 combined limit.

All insurance policies must be;

- Maintained for the life of the contract,
- Must provide ten (10) days notice before cancellation,
- Must cover all operations of the contractor, or anyone employed by them.

INTERNET IN-PROCESS SITE

The manufacturer shall post and maintain a website where the Miami Dade Fire Rescue will be able to view digital images of their apparatus as its being built. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of unit.

ENGINEERING DRAWINGS

The evaluation of bids shall also be based on design, engineering reliability, and completeness of drawings. No Bidder's proposal shall be considered unless complete engineering drawings to these specifications are submitted with the request for proposal package. Failure to submit factory prepared blueprints with bid shall result in automatic rejection. Submission of "bid drawings" are in addition to "production drawings" which must be submitted for Miami Dade Fire Rescue approval prior to construction. Bid drawings shall allow the Miami Dade Fire Rescue the ability to fully evaluate required product.

The engineering drawings shall be produced on computer aided design (CAD) equipment to assure critical tolerance and detail only available with CAD equipment. The drawings shall be on "B" size paper, 17" x 11" in size, and views must be 1/4" = 1' - 0" scale. This shall allow the Miami Dade Fire Rescue the ability to compare drawings of all manufacturers on an "equal" basis. The drawings shall be completed only by the body manufacturer, and must be exactly to Miami Dade Fire Rescue specifications. Submission of "similar to" drawings or "statements referring to later submission of drawings after award of contract" shall be automatically rejected.

Since the request for proposal package will require extensive evaluation by Miami Dade Fire Rescue, all Bidders must submit exactly the same engineering drawings at the same scale, on the same size paper. For easy comparison of drawings, they must be on a 17" x 11" sheet as follows:

- All bid drawings will be stamped BID DRAWING.
- All items shown on the drawing will be pre-designed with regards to layout and functionality prior to the completion of the BID DRAWING.
- Two (2) 17" x 11" color drawings will be supplied with the bid proposal. Black and white or blue line drawings will not be accepted.
- There shall be five (5) views of the truck with the doors closed (Top, Left, Right, Front, Rear), four (4) views of the truck with the doors open (Top, Left, Right, Rear) and four (4) views of any walk-in area (Top, Left, Right, Rear).

- All compartment door openings and usable space shall be clearly shown in inches.
- The trucks overall length, height, width, wheelbase and cab-to-axle dimensions shall be clearly shown.
- The angles of approach and departure shall be shown in the maximum loaded condition to the nearest degree.
- All lighting packages will be clearly shown on the drawing and verified accurate per the most current NFPA standards (when applicable).
- The exterior view shall show all scene lights, marker lights, speakers, horns, exhaust, tow points, exterior outlets, windows, winch receivers, tow hitches, exterior ladders and any other item important to the function of the vehicle.
- The open view shall show all trays, shelves, air system components, hydraulic components, tool boards, storage modules and any other items important to the function of the vehicle.
- The interior view for all walk-in areas shall show all seating positions, desks, cabinets, windows, tech equipment, radio locations and any other item important to the function of the vehicle.
- Any changes to the BID drawing will require a revision which will be clearly annotated in the upper right hand side of the drawing showing the revision number, reason for the revision, date and who made the changes.

Text Block Items;

- Purchaser's name.
- Body size and material type.
- Chassis manufacturer and model number.
- Unit description.
- Wheelbase (WB) , Cab-to-axle (CA) distance.
- Overall length (OAL), Overall width, (OAW), Overall height (OAH).
- Scale, date, drawn by, drawing number and sheet number.

RESPONSIBILITY OF PURCHASER

It shall be the responsibility of the purchaser to specify the details of the apparatus in addition to the requirements in NFPA 1901 needed by the manufacturer to build the apparatus, including:

- 1) Requirements not uniquely specified in NFPA 1901, such as the type of apparatus desired.
- 2) Any features of the apparatus desired in addition to, or in excess of, the requirements in NFPA 1901.

After acceptance of the fire apparatus, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the apparatus and the associated equipment.

RESPONSIBILITY OF CONTRACTOR

The Contractor shall provide a detailed description of the apparatus, a list of equipment to be furnished, and other construction and performance details to which the apparatus shall conform. The detailed description of the apparatus shall include, but shall not be limited to,

1. Estimated In-Service Weight,
2. Wheelbase, Turning Clearance Radius,
3. Principal dimensions, Angle of Approach, Angle of Departure,
4. Transmission, Axle Ratios.

The Contractor's detailed description shall include a statement specifically describing each aspect of the delivered apparatus that will not be fully compliant with the requirements of this standard.

The purpose of these Contractor specifications shall be to define what the contractor intends to furnish and deliver to the purchaser.

Responsibility for the apparatus and equipment shall remain with the contractor until they are accepted by the purchaser.

VEHICLE STABILITY

ROLLOVER STABILITY

The apparatus shall meet the criteria defined below, or it shall be equipped with a stability control system defined below.

The apparatus shall meet the criteria defined in either of the following:

- 1) The apparatus shall remain stable to 26.5 degrees in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.
- 2) The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

Compliance shall be certified by testing, calculating, or measuring the apparatus or by comparing the apparatus to a compliant, substantially similar example apparatus and the certification shall be delivered with the fire apparatus.

The example apparatus shall be considered substantially similar if it includes a chassis with the same or higher CG height, the same or narrower rear axle track width, the same or greater water tank size and CG height, the same type of front and rear suspension and the same type and size of aerial device.

The apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb in each seating position and weight equivalent to the Miscellaneous Equipment Allowance as defined in Table 12.1.2.

If the apparatus is designed to meet a specified higher equipment loading or larger hose bed capacity or to carry additional ground ladders, these greater loads shall be included in the testing, calculating or measuring.

The weight added to the fire apparatus for the purpose of test, calculation or measurement shall be distributed to approximate typical in-service use of the fire apparatus while not exceeding the manufacturer's published individual compartment weight ratings.

If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer and individual wheel brake controls.

FIRE APPARATUS PERFORMANCE

The fire apparatus shall meet the requirements of this standard at elevations of 2000 ft (600 m) above sea level.

The fire apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The fire apparatus shall meet the requirements of this standard in ambient temperature conditions between 32°F (0°C) and 110°F (43°C).

HIGHWAY PERFORMANCE

The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- 1) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
- 2) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
- 3) Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (95 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

SERVICEABILITY

The fire apparatus shall be designed to allow the manufacturer's recommended routine maintenance checks of lubricant and fluid levels to be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

FIRE APPARATUS DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

- 1) The manufacturers record of apparatus construction details, including the following documents:
 - a) Owner's name and address
 - b) Apparatus manufacturer, model, and serial number
 - c) Chassis make, model, and serial number
 - d) GAWR of front and rear axles and GVWR
 - e) Front tire size and total rated capacity in pounds (kilograms)
 - f) Rear tire size and total rated capacity in pounds (kilograms)
 - g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)

- h) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
 - i) Type of fuel and fuel tank capacity
 - j) Electrical system voltage and alternator output in amps
 - k) Battery make, model, and capacity in cold cranking amps (CCA)
 - l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
 - m) Ratios of all driving axles
 - n) Maximum governed road speed
 - o) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
 - p) Pump transmission make, model, serial number, and gear ratio
 - q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
 - r) Water tank certified capacity in gallons or liters
 - s) Foam tank (if provided) certified capacity in gallons (liters)
 - t) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
 - u) Paint manufacturer and paint number(s)
 - v) Company name and signature of responsible company representative
 - w) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
- 2) Certification of compliance of the optical warning system (*see 13.8.16*)
 - 3) Siren manufacturer's certification of the siren (*see 13.9.1.1*)
 - 4) Written load analysis and results of the electrical system performance tests (*see 13.14.1 and Section 13.15*)
 - 5) Certification of slip resistance of all stepping, standing, and walking surfaces (*see 15.7.4.5*)
 - 6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability (*see 16.2.4.1*)
 - 7) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions (*see 16.2.4.2*)
 - 8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications (*see 16.3.1*)
 - 9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed (*see 16.3.2.2*)
 - 10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test (*see 16.5.2.2*)
 - 11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 16.5.2.1, the pump manufacturer's certification of the hydrodynamic test
 - 12) If the apparatus has a fire pump, the certification of inspection and test for the fire pump (*see 16.13.1.1.5 or 16.13.1.2.4 as applicable*)
 - 13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test (*see Section 17.13*)
 - 14) When the apparatus is equipped with a water tank, the certification of water tank capacity (*see Section 18.6*)
 - 15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device (*see Section 19.24*)
 - 16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911
 - 17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy (*see 20.10.4.2*) and the final installer's certification the foam proportioning system meets this standard (*see 20.11.2*)
 - 18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests (*see Section 21.9*)
 - 19) If the apparatus has a line voltage power source, the certification of the test for the power source (*see 22.15.7.2*)
 - 20) If the apparatus is equipped with an air system, air tank certificates (*see 24.5.1.2*), the SCBA fill station certification (*see 24.9.6*), and the results of the testing of the air system installation (*see 24.14.5 and 24.15.4*)
 - 21) Any other required manufacturer test data or reports

OPERATIONS AND SERVICE DOCUMENTATION

The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

The contractor shall also deliver with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- 1) Manufacturer's name and address
- 2) Country of manufacture
- 3) Source for service and technical information
- 4) Parts replacement information
- 5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 6) Wiring diagrams for low voltage and line voltage systems to include the following information:
 - a) Pictorial representations of circuit logic for all electrical components and wiring
 - b) Circuit identification
 - c) Connector pin identification
 - d) Zone location of electrical components
 - e) Safety interlocks
 - f) Alternator–battery power distribution circuits
 - g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- 7) Lubrication charts
- 8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- 9) Precautions related to multiple configurations of aerial devices, if applicable
- 10) Instructions regarding the frequency and procedure for recommended maintenance
- 11) Overall apparatus operating instructions
- 12) Safety considerations
- 13) Limitations of use
- 14) Inspection procedures
- 15) Recommended service procedures
- 16) Troubleshooting guide
- 17) Apparatus body, chassis and other component manufacturer's warranties
- 18) Special data required by this standard
- 19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The contractor shall deliver with the apparatus all manufacturer's operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE

The vehicle construction details and the operations and service documentation as required per NFPA 1901 latest edition shall be provided on a USB Flash Drive. These manuals shall be divided into sections for ease of reference. There shall be two (2) USB flash drives provided with the completed vehicle.

FIRE APPARATUS SAFETY GUIDE

A Fire Apparatus Safety Guide published by Fire Apparatus manufacturer's Association shall be provided with delivered vehicle. This manual includes essential safety information for fire fighters, fire chiefs, apparatus mechanics, and fire department safety officers. The guide is applicable to municipal, wildland, and airport fire fighting apparatus manufactured on either custom or commercial chassis.

STATEMENT OF EXCEPTIONS

The final-stage manufacturer shall deliver with the fire apparatus either a certification that the apparatus fully complies with all requirements of this standard or alternatively, a Statement of Exceptions specifically describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery.

The Statement of Exceptions shall contain, for each noncompliant aspect of the apparatus or missing required item, the following information:

- 1) A separate specification of the section of the applicable standard for which compliance is lacking
- 2) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
- 3) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance
- 4) Identification of the entity that will be responsible for making the necessary post delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance with this standard

Prior to or at the time of delivery of the apparatus, the Statement of Exceptions shall be signed by an authorized agent of the entity responsible for final assembly of the apparatus and by an authorized agent of the purchasing entity, indicating mutual understanding and agreement between the parties regarding the substance thereof.

CARRYING CAPACITY

The GAWR and the GCWR or GVWR of the chassis shall be adequate to carry the weight of the completed vehicle when loaded to its estimated in-service weight. The manufacturer shall establish the estimated in service weight during the design of the vehicle.

The estimated in-service weight shall include the following:

1. The chassis, body and tank(s)
2. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
3. Full water and other agent tanks
4. *250 lb (114 kg) in each seating position
5. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
6. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
7. An allowance for miscellaneous equipment that is the greatest of the following:
 - a) The values shown for items 1 - 7
 - b) A purchaser-provided list of equipment to be carried with weights
 - c) A purchaser-specified miscellaneous equipment allowance

The manufacturer shall engineer and design the fire apparatus such that the completed apparatus, when loaded to its estimated in-service weight, with all movable weights distributed as close as is practical to their intended in-service configuration, does not exceed the GVWR.

A final manufacturer's certification of the GVWR or GCWR, along with a certification of each GAWR, shall be supplied on a label affixed to the vehicle.

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

The label shall show the height of the completed unequipped fire apparatus in feet and inches (meters), the length of the completed fire apparatus in feet and inches (meters), and the GVWR in tons (metric tons).

Wording on the label shall indicate that the information shown was current when the apparatus was manufactured and that, if the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate.

Apparatus Type	Equip. Storage Area	Apparatus Size	Equipment Allowance	
			lb.	kg.
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	10,000 lb to 15,000 lb (4,500 kg to 7,000 kg) GVWR	2,000	910
		15,001 lb to 20,000 lb (7,001 kg to 9,000 kg) GVWR	2,500	1,135
		20,001 lb to 30,000 lb (9,001 kg to 14,000 kg) GVWR	3,000	1,350
		30,001 lb to 40,000 lb (14,001 kg to 18,000 kg) GVWR	4,000	1,800
		40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700
		50,001 lb to 60,000 lb (23,001 kg to 27,000 kg) GVWR	8,000	3,600
		60,001 lb and up (27,001 kg) GVWR	10,000	4,500

TESTING

ROAD TEST

Each apparatus shall be tested by the manufacturer before delivery to verify that it meets the following criteria;

Tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws. Tests shall be conducted on a dry, level, paved surface that is free of loose material, oil, or grease. Tests shall be conducted with the water and foam tanks full (water or product).

The apparatus shall accelerate from 0 to 35 mph (55 km/hr) within 25 seconds. The apparatus shall attain a speed of 50 mph (80 km/ hr).

The auxiliary braking system, if so equipped, shall function as intended by the auxiliary braking system manufacturer.

The air service brakes shall bring the apparatus to a complete stop from a speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m).

The hydraulic service brakes shall bring the apparatus to a complete stop from a speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m).

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

The vehicles low voltage electrical system shall be tested and certified by the manufacturer. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (–18°C and 43°C).

TEST SEQUENCE

The following three (3) tests shall be performed in the order in which they appear below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for ten (10) minutes. Failure of any of these tests shall require a repeat of the sequence.

1. RESERVE CAPACITY TEST

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes.

All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure of the battery system.

2. ALTERNATOR PERFORMANCE TEST

TEST AT IDLE

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

TEST AT FULL LOAD

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the warning system required in 13.3.4, or a system voltage of less than 11.8 V dc for a 12 V nominal system, 23.6 V dc for a 24 V nominal system, or 35.4 V dc for a 42 V nominal system for more than 120 seconds shall be considered a test failure.

3. LOW VOLTAGE ALARM TEST

The following test shall be started with the engine off and the battery voltage at or above 12 V for a 12 V nominal system, 24 V for a 24 V nominal system or 36 V for a 42 V nominal system.

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals.

The test shall be considered a failure if the alarm does not sound in less than 140 seconds after the voltage drops to 11.70 V for a 12 V nominal system, 23.4 V dc for a 24 V nominal system, or 35.1 V for a 42 V nominal system.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

- 1) Documentation of the electrical system performance tests
- 2) A written electrical load analysis, including the following:
 - a) The nameplate rating of the alternator
 - b) The alternator rating
 - c) Each of the component loads specified that make up the minimum continuous electrical load
 - d) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
 - e) Each individual intermittent electrical load

UL 120/240 VAC CERTIFICATION

The 120/240 volt electrical system shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901 to perform as listed below;

The prime mover shall be started from a cold start condition, and the unloaded voltage and frequency shall be recorded.

The line voltage electrical system shall be loaded to at least 100% of the continuous rated wattage stated on the power source specification label. Testing with a resistive load bank shall be permitted.

The power source shall be operated in the manner specified by the apparatus manufacturer as documented on instruction plates or in operation manuals. The power source shall be operated at a minimum of 100% of the continuous rated wattage as stated on the power source specification label for a minimum of two (2) hours.

The load shall be adjusted to maintain the output wattage at or above the continuous rated wattage during the entire 2-hour test.

The following conditions shall be recorded at least every 1/2 hour during the test:

- 1) The power source output voltage, frequency and amperes
- 2) The prime mover's oil pressure, water temperature and transmission temperature, if applicable
- 3) The power source hydraulic fluid temperature, if applicable
- 4) The ambient temperature and power source air inlet temperature

The following conditions shall be recorded once during the test for power sources driven by dedicated auxiliary internal combustion engines:

- 1) Altitude
- 2) Barometric pressure
- 3) Relative humidity

If the generator is driven by the chassis engine and the generator allows for operation at variable speeds, the chassis engine speed shall be reduced to the lowest rpm allowed for generator operation and the voltage and frequency shall be recorded.

The load shall be removed and the unloaded voltage and frequency shall be recorded.

Voltage shall be maintained within $\pm 10\%$ of the voltage stated on the power source specification label during the entire test. Frequency shall be maintained within ± 3 Hz of the frequency stated on the power source specification label during the entire test.

The total continuous electrical loads, excluding those loads associated with the equipment defined in NFPA 22.15.7.3.11.2, shall be applied during the testing unless an auxiliary engine drives the power source.

If the apparatus is equipped with a fire pump, the 2-hour certification test of the power source shall be completed with the fire pump pumping at 100% capacity at 150 psi (1000 kPa) net pump pressure. The test shall be permitted to be run concurrently with the pump certification test.

DOCUMENTATION

The results of each test shall be recorded on an appropriate form and provided with the delivery of the fire apparatus.

DIELECTRIC VOLTAGE WITHSTAND TEST

The line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one (1) minute. The testing shall be performed after all body work has been completed.

The test shall be conducted as follows:

- 1) Isolate the power source from the panel board and disconnect any solid state low voltage components
- 2) Connect one lead of the dielectric tester to all the hot and neutral buses tied together
- 3) Connect the other lead to the fire apparatus frame or body
- 4) Close any switches and circuit breakers in the circuit(s)
- 5) Apply the dielectric voltage for one (1) minute in accordance with the testing equipment manufacturer's instructions

The electrical polarity of all permanently wired equipment, cord reels and receptacles shall be tested to verify that wiring connections have been properly made.

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes and receptacle ground connections that are accessible to fire fighters in normal operations.

If the apparatus is equipped with a transfer switch, it shall be tested to verify operation and that all non grounded conductors are switched.

Electrical light towers, floodlights, motors, fixed appliances and portable generators shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

WARRANTY

A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials and the cost of labor.

The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source and will deal directly with the Miami Dade Fire Rescue on all warranty work.

GENERAL LIMITED WARRANTY - TWO (2) YEARS

The vehicle shall be free of defects in material and workmanship for a period of two (2) years or 36,000 miles (or 57,936 kilometers), whichever occurs first starting thirty (30) days after the original invoice date.

The Contractor must be the "single source" coordinator of all warranties on the vehicle.

LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS

The vehicle low voltage electrical system shall be free of defects in material and workmanship for a period of five (5) years or 60,000 miles (or 96,561 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

STRUCTURAL WARRANTY - FIFTEEN (15) YEARS

The body shall be free of structural or design failure or workmanship for a period of fifteen (15) years, or 125,000 miles (or 201,168 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

UNDERCOAT WARRANTY

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

PAINT LIMITED WARRANTY - TEN (10) YEARS

The body shall be free of bubbling or peeling as a result of a defect in the method of manufacture for a period of ten (10) years or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date. **Pro-rated warranties will not be acceptable.**

GRAPHICS LIMITED WARRANTY

The 3M graphics installation shall be warranted for a period of two (2) years. The 3M materials installed on completed vehicle shall be warranted for seven (7) years. The 3M Diamond grade film (if specified) shall be warranted for ten (10) years.

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within four hundred (400) days after receipt of a purchase order or contract.

Contractor shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Contractor shall provide immediate written notice to Miami Dade Fire Rescue as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

OVERALL HEIGHT REQUIREMENT

The overall height (OAH) of the vehicle shall not exceed 13'4" at that highest point of the vehicle.

OVERALL LENGTH

The overall length (OAL) of the vehicle shall be approximately 44' 8-1/2"

OVERALL WIDTH

The overall width (OAW) of the body at drip rails shall be 102" (8' - 6"), and body shall be 100" (8' - 4").

ANGLE OF APPROACH

The angle of approach for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

ANGLE OF DEPARTURE

The angle of departure for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be required at the Contractor's factory for one (1) personnel from the Miami Dade Fire Rescue to finalize all construction details prior to manufacturing.

The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the pre-construction conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

FINAL INSPECTION CONFERENCE

A final inspection conference shall be required at the Contractor's factory for one (1) personnel from the Miami Dade Fire Rescue to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the final inspection conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

DELIVERY AND DEMONSTRATION

The Contractor shall be responsible for the delivery of the completed unit to the Miami Dade Fire Rescue's location. On initial delivery of the apparatus, the Contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the Miami Dade Fire Rescue regarding the operation, care and maintenance of the apparatus and equipment supplied at Miami Dade Fire Rescue location.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Miami Dade Fire Rescue.

After delivery of the apparatus, the Miami Dade Fire Rescue shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

OEM Supplied Cab/Chassis: Sutphen 73" 3-Door, 20"RR

CAB TO AXLE DIMENSION

Cab to axle to center of rear tandems will be 217".

CHASSIS MODIFICATIONS

LUBRICATION AND TIRE DATA PLATE

A permanent label in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle and tire information:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid . . (if applicable)
- Pump priming system fluid, if applicable . . (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant . . (if applicable)
- Air conditioning lubrication oil . . (if applicable)
- Power steering fluid
- Cab tilt mechanism fluid . . (if applicable)
- Transfer case fluid . . (if applicable)
- Equipment rack fluid (if applicable)
- CAFS air compressor system lubricant . . (if applicable)
- Generator system lubricant . . (if applicable)
- Front tire cold pressure
- Rear tire cold pressure
- Maximum tire speed ratings

VEHICLE DATA PLATE

A permanent label in the driving compartment which indicates the following:

- Filter part numbers for the;
 - Engine
 - Transmission
 - Air
 - Fuel
- Serial numbers for the;
 - Engine
 - Transmission
- Delivered Weights of the Front and Rear Axles
- Paint Brand and Code(s)
- Sales Order Number

OVERALL HEIGHT, LENGTH DATA PLATE (US)

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

The label shall show the height of the completed unequipped vehicle in feet and inches (meters), the length of the completed vehicle in feet and inches (meters to nearest 1/10th), and the GVWR in tons (metric tons).

Wording on the label shall indicate that; "The information shown was current when the apparatus was manufactured. If the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate".

PERSONNEL CAPACITY

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

SEAT BELT WARNING - FAMA06/07

A safety sign FAMA06 shall be visible from each seat that is not equipped with occupant restraint and therefore not intended to be occupied while the vehicle is in motion.

A safety sign FAMA07, which warns of the importance of seat belt use, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

EQUIPMENT MOUNTING FAMA10

A safety sign FAMA10, which warns of the need to secure items in the cab, shall be visible inside the cab.

FIRE SERVICE TIRES - FAMA12

A safety sign FAMA12, which warns of the special requirements for fire service-rated tires, shall be visible to the driver entering the cab of any apparatus so equipped.

HELMET WARNING - FAMA15

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

CLIMBING METHOD - FAMA23

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

REAR STEP CROSSWALK WARNING - FAMA24

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION

A final stage manufacturer vehicle certification label shall be provided and installed in the driver cab door jamb area.

FRONT BUMPER

The front bumper shall be as provided by the cab/chassis manufacturer. No other alteration or modifications are required to extension length.

FRONT WINCH

The front winch shall be supplied and installed by the cab/chassis manufacturer.

FRONT TOW PROVISIONS

The front tow provisions shall be supplied and installed by the cab/chassis manufacturer.

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the customer cab/chassis manufacturer.

Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

The air inlet shall be equipped with a means of separating water and burning embers from the air intake system.

This requirement shall be permitted to be achieved by either of the following methods:

1. Provision of a device such that burning particulate matter larger than 0.039 in. (1.0 mm) in diameter cannot reach the air filter element.
2. Provision of a multi screen ember separator capable of meeting the test requirements defined in the Parker Hannafin, Racor Division, publication LF 1093-90, *Ember Separation Test Procedure*, or an equivalent test.

EXHAUST

The existing exhaust tailpipe shall be extended to ahead of the rear axle on the streetside.

The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the apparatus or equipment to excessive heating.

Exhaust pipe discharge shall be directed away from any operator's position.

Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.

- The tail pipe(s) shall terminate in a standard straight cut pipe.
- The tail pipe(s) shall terminate parallel to rear axle and flush with body.

SEAT BELT COLOR

Section 14.1.3.3 of the NFPA 1901 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

SEAT BELT WEB LENGTH - CUSTOM CAB

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the custom chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

SEAT BELT / VDR SYSTEM - CUSTOM CAB

The seat belt warning and vehicle data recorder systems shall be provided by the cab/chassis manufacturer.

TIRE PRESSURE VISUAL INDICATORS

The tire pressure visual indicators shall be supplied by the cab and chassis manufacturer.

HELMET STORAGE

No helmet storage is required in the cab driving area. A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

HELMET STORAGE

No helmet storage is required in the cab crew area. A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

CAB CRASH TEST CERTIFICATION

A cab crash test certification from the fire apparatus manufacturer shall be provided with the equipment. A copy of this certification shall be included with the bid.

NOTE: There shall be no exception to any portion of the cab integrity certification requirements. Nonconformance shall lead to immediate rejection of bid.

The certification shall state that the cab does meet or exceed the requirements below:

- 1) European Occupant Protection Standard ECE Regulation No. 29.
- 2) SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.

CAB MIRRORS, DRIVER ADJUSTABLE

Section 14.3.5 of the NFPA 1901 Standards, 2009 edition, requires all primary rear view mirrors used by the driver to be adjustable from the driver's position.

HUB AND NUT COVERS

The cab and chassis supplied front and rear wheels hub caps and wheel nut covers shall be installed prior to delivery of completed unit.

MUDFLAPS

There shall be 1/4" rubber mudflaps provided and installed behind each set of tires to prevent throwing road debris and lower road spray.

AIR BRAKE SYSTEM QUICK BUILD-UP

The air brake quick build-up system shall be supplied from the cab/chassis manufacturer.

The quick buildup system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time.

ROAD EMERGENCY SAFETY KIT

The DOT required reflective triangles, warning flares, and fire extinguisher shall be provided by cab and chassis supplier.

AUTOMATIC VEHICLE LEVELING SYSTEM

A Quadra Manufacturing, Inc. "Big Foot" model MQ-DPA1 shall be provided and installed on the completed vehicle designed for large heavy duty vehicles. The system shall have the following features;

- Simple, one touch operation for fully automatic leveling of the vehicle or trailer.
- Individual power units at each corner, which means nearly 4x the pump life compared to ordinary central pump systems due to each pump only running 25% of the time, less cycles = less wear & tear.
- Interlock to system to prevent transmission from engaging a gear when leveling system is down.
- All-Up safety feature signals if one or more of the cylinders are not fully retracted before you drive off.
- Manual adjustment feature that allows you to operate each cylinder individually.
- Four powder coated cylinders made at our facility capable of lifting 17,000 pounds each with 18" of stroke.
- Four weatherproof hydraulic power units, each with an American made marine pump & motor wrapped in a steel housing, allows the unit to be mounted outside in the elements so it does not take up storage space.
- 100 square inch "Bigfoot" pads for secure ground contact during operation.
- Emergency Retract operation.

The system shall be provided with Lifetime Cylinders, 2 Years Parts, 1 Year Labor limited warranty from Quadra Manufacturing, Inc.

REAR CAB DESK LAYOUT

REAR CAB DESK - STRAIGHT

The rear portion of the cab shall be provided with a desktop which shall be approximately 26" deep x 85" long and located approximately 30" from floor. The desk top surface shall be fabricated of 3/16" smooth finish aluminum.

There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top. The desk top shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

DESKTOP COMPONENT CONSOLE

There shall be a console at top rear of the desk for optional component mounting. The console shall be fabricated from 1/8" aluminum approximately 6" high x 9" deep with a 6" sloping component mounting face. The console shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

The sloped component mounting surface shall be a one-piece hinged cover to allow access to optional components, and wiring and held closed with fastener in each corner.

- There shall be two (2) phone(s) mounted in specified console.
- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.
- There shall be one (1) CAT 6 data port(s) provided, shall be routed from cab overhead cabinet (rear facing curbside) OCM.

Add CAT6 cable runs from each cab mounted monitor to slide out left hand side overhead cabinet for future install by Customer of a satellite TV system. CAT 6 will be used with HDMI extenders for the length of cabling to the cab monitors. Slideout monitors will utilize HDMI cables (customer provided and install)

- There shall be three (3) 12 VDC power plug(s) provided in specified console.

Sutphen to supply and SVI to install.

- There shall be three (3) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in specified console.
 - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- There shall be three (3) Blue Sea 12 VDC USB port(s) provided in specified console.

Sutphen supplied and SVI to install.

MAP LIGHT

There shall be two (2) 19" goose neck 12 volt map light(s) furnished and installed on the officer dash and cab desk top.

FILING CABINET, 2-DRAWER

One (1) Hon 2-drawer Efficiency Pedestal cabinet(s) with "K" type pull handles shall be provided under specified desk areas. Cabinet(s) shall have a keyed lock and shall be painted charcoal. Each filing cabinet shall be approximately 15" wide x 27" high x 20" deep. Both drawers of the cabinet shall be capable of storing 8-1/2" x 11" file folders.

LCD VIDEO DISPLAYS

Two (2) Samsung 24" flat panel, 4 Series (or equal) LED commercial grade, display(s) shall be provided and installed on completed unit.

Monitors will be hung from the sutphen overhead cabinets, will need outlets provided and have a minimum of two (2) HDMI Inputs (computer and satellite TV). Camera on mast and Drone feeds will be through customer supplied and installed computers at each monitor.

Inputs/Outputs:

- (2) HDMI
- (1) USB
- (1) Component
- (1) Composite In (AV)
- (1) RF In (Terrestrial/Cable Input)
- (1) RS232C

Display(s) shall be complete and fully operational, including all miscellaneous coax or CAT 6 cable, HDMI to CAT6 extenders (if required), 120 volt AC wiring, and cable connections.

MONITOR MOUNT

Specified monitor(s) shall be mounted to desk or wall using a Ram RAM-D-101U246 (or equal) double ball mount black aluminum flat surface mount with a 3.68" diameter base, standard length arm, and 4.75" square VESA 75/100mm compatible plate.

FUEL FILL

There shall be one (1) fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall be fabricated from brushed stainless steel. There shall be a permanent label with the text "DIESEL FUEL ONLY" located adjacent to the fuel fill access.

BODY DESIGN

The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Miami Dade Fire Rescue to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Miami Dade Fire Rescue from such repair and shall NOT be used. All fabricated body components to be cut by a laser or water-jet for superior cut edge quality.

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

EXTERIOR STAINLESS STEEL BODY

The fabrication of the body shall be constructed from 12 gauge type #304 stainless steel. This shall include the compartment front panels, vertical side sheets, side upper roll-over panels, rear panels and compartment door frames.

The body exterior panels and compartment floors shall be constructed with not less than 12 gauge type #304 stainless steel. Interior compartment dividing walls shall be constructed with not less than 14 gauge type #304 stainless steel. Lighter gauge sheet metal will not be acceptable in these areas.

The compartment door frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, shall not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All seams in sheet metal below frame, and around the rear wheel well area shall be welded and caulked to prevent moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall have louvers in lower back wall of compartment for ventilation.

ALUMINUM TREADPLATE ROOF OVERLAY

The roof overlay shall not be integral with the roof structure or body sheet metal construction. The body roof structure shall be overlaid with .100" aluminum 3003H-14 alloy NFPA compliant non-skid tread plate. Roof overlay shall be bolted to the roof structure with countersunk stainless steel bolts and caulked to prevent entry of moisture. Any steel body components shall be painted and caulked and barrier material used prior to assembly to prevent dissimilar materials contact.

BODY SUBFRAME

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from stainless steel tubing. The subframe shall consist of a **minimum of two (2) 2" x 5" x 11 gauge** ILO 2" x 4" x 11 gauge type #304 stainless steel tubes running the full length of the body and spaced the same width as the chassis frame rails. Welded to the two (2) stringers shall be 2" x 4" x 11 gauge type #304 stainless steel tubing cross members. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of body, below compartment divider walls, and in front and rear of wheel well opening. Additional stainless steel cross members shall be located on 16" centers, or as necessary to support walkways or heavy equipment.

The compartment area behind the rear axle may be supported by a drop frame fabricated of the same 2" x 4" x 11 gauge stainless steel tube and the main stringers. Any such rear drop frame shall be constructed using a minimum of four (4) vertical drop tubes, welded to the main subframe. In areas where heavy equipment shall be mounted, drop frame support shall be constructed with 2" x 4" x 11 gauge stainless steel tube. All drop frame structures must be welded directly to the body subframe to allow the body to be a completely separate structure from the chassis.

To form the frame, the tubing shall be welded at each joint using a wire feed MIG welders with ER308 stainless steel welding wire.

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with a minimum of six (6) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilize two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

18" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2 x 11 gauge stainless steel tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 18" and provide a rear step with a minimum of 1/2" space at body for water drainage.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the chassis frame and mounted above the rear bumper. The tow eyes shall be fabricated from 1" thick steel plate with a 3" diameter opening. Tow eyes shall have a black powder coat finish.

TRAILER HITCH

A Class III weight distributing style rear hitch receiver shall be provided below the rear bumper. The receiver shall be attached to chassis frame with heavy duty steel frame work with a black hammertone powder coat paint finish.

The hitch shall be complete with a 2" square receiver. With a "weight distribution" type ball hitch the Class III receiver shall have a capacity of 10,000 lbs. gross trailer weight and a maximum tongue weight of 1,000 lbs.

The hitch shall be complete with a 1,000 lb. round bar weight distribution kit for trailers not exceeding 1,000 tongue weight and/or 10,000 lb. GTW. Comes equipped with the standard hitch bar - 2" square, 1" drop/ 5-1/2" rise and a 12" length. A chrome 2-5/16" hitch ball and also includes (1) friction sway control unit. Provides everything needed to improve towing, safety and performance right out of the box.

A label shall be provided in a location in which it is visible to an operator making trailer connections. The label shall state the maximum GVWR and tongue weight of the trailer that can be safely towed with the hitch system

Two (2) safety chain attachment points shall be provided near the hitch point for hitches designed to use safety chains, each designed with an ultimate strength of not less than the maximum GVWR specified on label.

RECEIVER WITH TRAILER BALL

No hitch receiver with trailer ball will be provided with completed unit.

GROUND LIGHTS

There shall be two (2) OnScene 8" Access LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting shall be switchable but activated automatically when the vehicle park brake is set.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel wells shall be constructed from not less than 12 gauge type #304 smooth stainless steel, bolted to the body and completely removable. The stainless steel panels shall be un-painted with a brushed finish.

STAINLESS STEEL BODY FENDERS

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using nylon washers to space them slightly away from the body to reduce buildup of moisture and/or debris.

WHEEL WELL LINERS

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

SCBA CYLINDER COMPARTMENTS

There shall be five (5) SCBA cylinder storage compartments located, three (3) on curbside, and two (2) on streetside of rear tandem wheel well area.

The outer compartments shall have a brushed stainless steel door assembly with a positive catch latch. Each compartment shall allow the storage of one (1) SCBA cylinder or a fire extinguisher up to 8" in diameter x 22" deep.

The center compartments (between tandems axles) shall have a drop-down stainless steel door with a positive catch latch and stainless steel hinge. This compartment shall allow for the storage of three (3) SCBA cylinders or a fire extinguishers up to 8" in diameter x 22" deep.

The doors shall activate the "Hazard Warning Light" in the cab when not in the closed position.

Customer Bottles are 7-1/2" x 26"

BODY PAINT SPECIFICATIONS

BODY PAINT PREPARATION

After the body and components have been fabricated they shall be disassembled so when vehicle is complete there shall be finish paint beneath the removable components. The body shall be removed from chassis during the paint process to insure proper paint coverage. The body and components shall be metal finished as follows to provide a superior substrate for painting.

The exterior (and interior, if painted) body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion.

All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

PAINT PROCESS

The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years. The body shall go through the following paint process;

- 1) Clean bare metal with a wax and grease remover using low lint rags.
- 2) Inspect, straighten, and hammer high points, grind all seams, sharp edges, and welds. DA sand entire paintable surfaces using 24-180 grit dry paper. Plastic fill all low spots and DA sand fill areas using 36-180 grit dry paper. Apply pinhole filler and DA sand areas using 80-180 grit dry paper.
- 3) Re-clean bare metal using a wax and grease remover and low lint rags.
- 4) Within 24 hours, a PPG Delfleet® epoxy color primer with proper hardener for corrosion resistance using a pressure pot spray gun and applying 2-5 full wet coats or 1.5-8.0 dry mils max. achieving full hiding and allow to air dry 60 minutes @ 70°F or bake for 45 minutes @ 140°F degree.
- 5) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
- 6) Re-clean bare metal using a wax and grease remover using low lint rags.
- 7) A PPG Delfleet® primer sealer with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 1 full wet coat or 1.0-2.0 dry mils achieving full hiding and allow to flash off in spray booth for minimum of 60 minutes @ 70°F.
- 8) A PPG Delfleet® FBCH basecoat (color) with proper hardener and dry additive shall then be sprayed using a pressure pot set @ 45-60 PSI and achieving full hiding or 1.5-2.0 wet mils and allow to flash off in spray booth 45-60 minutes before applying clearcoat.
- 9) A PPG Delfleet® clearcoat with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 2-3 full wet coats or 5.0 wet mils for a uniform gloss and allow to flash off in spray booth 10 minutes and bake for 120-140 minutes @ 125°F (surface temp.).
- 10) After cooling, DA sand heavy orange peel or runs using 1000 grit dry sand paper and final DA sand using 1500-2000 grit dry sand paper. Wipe off all surfaces to remove dust and debris. Buff unit as needed using 3M rubbing compound and a white wool pad and inspect until all sand scratches are removed.
- 11) Polish as needed using 3M Perfect-It-Polish and a black foam pad, repeat as necessary and inspect until all sand scratches are removed.

PAINT - ENVIRONMENTAL IMPACT

The contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.

FASTENERS

Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, a Mylar isolation tape, or gasket shall be used to prevent damage to the finish painted surface. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nut-surts into body surface using stainless steel bolts to prevent corrosion from dissimilar metals.

ELECTROLYSIS CORROSION CONTROL

The vehicle shall be assembled using ECK brand or similar corrosion control compound on all high corrosion potential areas.

ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution per Miami Dade Fire Rescue approved paint spray out provided.

A small touch-up bottle of paint shall be provided with completed vehicle.

- **Paint Color: Atlas Yellow #843494EW For the body**
- **Paint Color: Artic Silver #902972EW For the Rooftop A/C units**

BODY UNDERCOATING

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help prevent corrosion under the vehicle.

UNDERCOAT WARRANTY

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

PAINT WARRANTY

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle. **Pro-rated warranties will not be acceptable.**

COMPARTMENT INTERIOR FINISH

The interior of all exterior body compartments shall be a "Maintenance Free" smooth unpainted finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.

REFLECTIVE STRIPE REQUIREMENTS

Material

All retroreflective materials shall conform to the requirements of ASTM D4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

All retroreflective materials used that are colors not listed in ASTM D4956, Section 6.1.1, shall have a minimum coefficient of retro-reflection of 10 with observation angle of 0.2 degrees and entrance angle of -4 degrees.

Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D4956, Section 6.1.1.

Minimum Requirements

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the vehicle, not including mirrors or other protrusions.

The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

A graphic design shall be permitted to replace all or part of the required striping material if the design or combination thereof covers at least the same perimeter length(s).

GRAPHICS PROOF

A color graphics proof of the reflective striping layout shall be provided for approval by Miami Dade Fire Rescue prior to installation. The graphics proof shall be submitted to Miami Dade Fire Rescue on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.

REFLECTIVE STRIPE - CAB SIDE

The reflective stripe material shall be 10" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe color shall be determined at the pre-construction conference.

REFLECTIVE STRIPE - CAB FRONT

The reflective stripe material shall be 10" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe color shall be determined at the pre-construction conference.

REFLECTIVE STRIPE - CAB DOOR INTERIOR

Any door of the apparatus designed to allow persons to enter or exit the apparatus shall have at least 96 in.2 (62,000 mm2) of retroreflective material affixed to the inside of the door.

The inside of each cab door shall have 4" Chevron style 3M Scotchlite 680 series graphic film.

This reflective chevron stripe shall alternate red and yellow in color.

REFLECTIVE STRIPE - BODY SIDES

The reflective stripe material shall be 10" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe color shall be determined at the pre-construction conference.

The stripe shall extend from the front of cab in a straight line, then just ahead of the rear wheels the stripe shall angle up and extend straight back to the rear of the body.

CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS

At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.

The rear side panels of the body on each side of a rear stairway or compartment shall have a chevron style reflective stripe, extending from bumper to full body height. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panel shall have a minimum 10 year warranty for material failure, and colorfastness.

The stripe material shall be 3M Diamond Grade.

This reflective chevron stripe shall alternate red and fluorescent yellow-green in color.

LETTERING

GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by Miami Dade Fire Rescue prior to installation. The graphics proof shall be submitted to Miami Dade Fire Rescue on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.

The following lettering shall be provided and installed on the completed unit as follows;

SIDE CAB DOOR LETTERING

There shall be sixty (60) 3" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlamine applied before installation.

Final design and layout shall be determined prior to construction.

UPPER BODY SIDE LETTERING

There shall be forty (40) 8" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlamine applied before installation.

Final design and layout shall be determined prior to construction.

There shall be forty four (44) 8" high reflective letters furnished and installed on the vehicle.

- This reflective lettering color shall be determined at the pre-construction conference.

FRONT OF CAB LETTERING

There shall be ten (10) 3" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlamine applied before installation.

Final design and layout shall be determined prior to construction.

CUSTOM DECAL LOGO - 12" -18"

Three (3) custom designed 12" - 18" 3M Scotchlite type retroreflective logo shall be provided and located on the completed vehicle. The exact design and/or artwork shall be provided by the Miami Dade Fire Rescue prior to construction.

Three (3) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Miami Dade Fire Rescue.

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION - AMDOR

The apparatus shall be equipped with Amdor brand exterior roll-up compartment doors. Amdor roll-up doors shall be complete with the following features;

- 1" aluminum double wall slats with continuous ball & socket hinge joint and recessed dual durometer slat seal
- Double wall reinforced bottom panel with stainless steel lift bar latching system
- Bottom panel flange with cut-outs for ease of access with gloved hands
- Reusable slat shoes with positive snap-in securement
- Smooth interior door curtain to prevent equipment hang-ups
- One-piece aluminum door track / side frame, top gutter with non-marring seal
- Non-marring recessed side seals with UV stabilizers to prevent warping
- Dual leg bottom seal, with all wear component material to be Type 6 Nylon
- The door shall be warranted for a period of 36 months from the date of delivery. AMDOR Inc. liability covers the replacement or repair of any component that fails due to defects in material and / or workmanship during the coverage period.

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 5.50" in height for the bottom section of door assembly.

The specified retroreflective stripe material shall be applied on the roll-up compartment doors. The stripe shall be precision machine cut for each door slat of the roll-up doors. Under no circumstance will the stripe material be cut on roll-up door surface.

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	88.7"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Total Body Height	111.2"
D	Compartment Height Above Frame	48.0"
E	Compartment Height Below Frame	25.0"
F	Vertical Door Opening:	
	-with roll-up door	65.0"
	-with hinged door	68.5"

ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
G	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.5"

BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
H	Bottom of Subframe to Bottom of Body	20.0"
I	Compartment Height Above Frame	48.0"
J	Compartment Height Below Frame	22.5"
K	Vertical Door Opening:	
	-with roll-up door	62.0"
	-with hinged door	65.5"

GENERAL

	<u>Description</u>	<u>Dimension</u>
L	Top of Body to Bottom of Drip Rail	38.5"

(Dimensions are approximate and subject to change during construction or design process.)

Five (5) UPPER BODY COMPARTMENTS (OPEN)

The forward transverse compartment shall be 90.0" long x 27.0" wide x 33.5" deep. There shall be four (4) compartments parallel to the sides of the body, two (2) on each side. Each of these compartments shall be 72.25.0" long x 28.0" wide x 33.5" deep. The side compartments shall be open under each door sill to allow for long equipment. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" aluminum tread plate. Each door shall have two (2) pneumatic type cylinders, one (1) at each end, attached to cast aluminum brackets mounted to the interior surface of the door to hold the door in both the opened and closed positions. Each door shall be mounted using multiple 16" long, equally spaced, 14 gauge stainless steel hinges, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between stainless steel hinge and the body mounting surface as necessary to prevent corrosion caused by dissimilar metals.

Each compartment door shall overlap a 2" vertical lip on the body roof to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Each roof compartment door shall have a chrome 7" handle bolted to center of each door.

Each compartment shall have a 13/16" drain hole located in floor of compartment with a 1" flexible drain tube that terminates below body.

Each compartment shall have a horizontally mounted OnScene Solutions LED light on the underside of the door. The light and NFPA door ajar system shall be automatically activated by an individual switch per compartment.

The hinged door(s) shall have an automotive tailgate style lift-up locking handle. A gasket shall be placed between the handle and the compartment exterior wall. Door latches shall be a single point, double-catch latch, mounted on the interior wall of the compartment panel.

Will be Key Lock 1250

SIDE ROOF COMPARTMENT - SHELF TRAC

The upper body side compartments shall be provided with horizontally mounted aluminum Shelf-Trac welded to the walls for vertical partition installation and adjustability.

- There shall be one (1) storage module(s) for eleven (11) air bags. The module shall be fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. Circular notches shall be provided along the front edge to ease the access to the air bags. Each bay shall be sized to hold the air bag and a matching piece of 1/2" plywood (plywood not provided).
- The make, model, qty and exact dimensions of the air bags:

Paratech Brand:

- One (1) KPI1 8x8x1
- One (1) KPI3 14x8x1
- One (1) KPI5 12x12x1
- One (1) KPI12 17x17x1
- One (1) KPI17 23x18x1
- One (1) KPI22 22x22x1
- One (1) KPI32 25x25x1
- One (1) Paratech Leak Seal 8x8x1
- One (1) Paratech Leak Seal 16x22x1
- One (1) Paratech Leak Seal 12x12x1
- One (1) Paratech Leak Seal 25x25x1

- There shall be four (4) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.

ROOF COMPARTMENT - VERTICAL PARTITION

There shall be eight (8) vertical partition(s) provided in the roof compartment(s). Three (3) will be on Streetside and five (5) will be on Curbside. One (1) divider on streetside shall be installed adjacent to the airbag module.

The partition(s) shall be used to retain or hold equipment in place during travel. Each partition shall be fabricated from 3/16" smooth aluminum and bolted to specified Shelf-Trac for ease of adjustment.

UPPER BODY WALKWAY

A 34" wide, upper body walkway shall be provided at the center of body and recessed into the roof structure. The walkway shall be fabricated from NFPA compliant 3/16" aluminum tread plate with continuously welded cross seams to prevent moisture penetration into apparatus body, No Exceptions. The walkway shall be supported with 2" x 2" tubing on 14" - 22" centers.

13/16" drains shall be installed at front of walkway connected to 1" flexible drain tubes that will terminate below the body.

WALKWAY/STEP LIGHTS

There shall be four (4) OnScene Solutions Rough-Service 9" LED lights provided to illuminate the walkway or step area.

Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.

Lighting shall provide illumination at a minimum level of 2 fc (20 lx) on all work surfaces, steps, and walkways. Lighting shall be switchable but activated automatically when the vehicle park brake is set.

ROOF ACCESS STAIRWAY

The rear of the body shall be provided with a minimum 34" wide roof access stairway recessed into the side rear compartments. Stairs treads shall be 9 1/2" minimum depth and formed from 3/16" NFPA compliant aluminum tread plate with uniformed riser height design. Stair treads will be continuously welded into side walls. Bolt-in tread design will not be acceptable.

Roll-out ladder design requiring set-up time and 8 plus feet behind apparatus or vertical ladders that do not allow firefighter to safely ascend or descend with equipment will not be acceptable.

STAIRWAY HANDRAILS

There shall be four (4) lighted Hansen handrails with Green LED's, two (2) handrails provided on each side wall of recessed center stairway providing three-points of contact at all times for safer access to roof compartments. The handrails shall be angled for optimum use during ingress or egress of the upper walkway area.

STAIR TREAD SAFETY DELINEATION

For increased visibility and safety, the front edge of walkway at top of stairway and each step including the front edge of bumper shall have two (2) rows of red reflective squares provided between the diamond pattern of stepping surface to delineate stair tread edges.

WALKWAY/STEP LIGHTS

There shall be two (2) OnScene Solutions Rough-Service 9" LED lights provided to illuminate the walkway or step area.

Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.

Lighting shall provide illumination at a minimum level of 2 fc (20 lx) on all work surfaces, steps, and walkways. Lighting shall be switchable but activated automatically when the vehicle park brake is set.

STEP COMPARTMENT(S) - LOWER

There shall be two (2) compartment(s) located in the roof access stairway area below frame level. Each compartment shall have a horizontally hinged brushed stainless steel door with a D-ring handle. Each compartment shall be manufactured to prevent road debris, dirt and moisture from entering the enclosure. Each compartment(s) shall be 33" wide x 12" high x maximum depth based on chassis mounted components and requirements for structural integrity of the body.

Each compartment shall have an OnScene LED light that shall automatically activate when the door is opened and wired to the NFPA required hazard warning light provided in the cab.

- The hinged door shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latch shall be a single point latch flush mounted to exterior door panel.
These will comprise the bottom two (2) step risers.

STEP COMPARTMENT - UPPER

There shall be one (1) upper compartment located directly below walkway area. The compartment shall have a horizontally hinged brushed stainless steel door with a D-ring handle. The compartment shall be manufactured to prevent road debris, dirt and moisture from entering the enclosure. The compartment shall be approximately 26" wide x 8" high x maximum depth available

Each Compartment shall have an OnScene LED light that shall be automatically activated when the door is opened and wired to the NFPA required hazard warning light provided in the cab.

Devices to secure equipment, compartment dividers, or UHMW plastic angles, or sheeting will be used for storage of specified equipment as required to prevent damage to equipment.

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latch shall be a single point latch flush mounted to exterior door panel.
- One (1) 24' 2-section ladder(s). Manufacturer, model number of the ladder shall be provided in equipment section of specification, or at pre-construction meeting when provided by Miami Dade Fire Rescue.
- One (1) 14' roof ladder(s). Manufacturer, model number of the ladder shall be provided in equipment section of specification, or at pre-construction meeting when provided by Miami Dade Fire Rescue.
- Two (2) pike pole(s). Manufacturer, model number of the pike pole shall be provided in equipment section of specification, or at pre-construction meeting when provided by Miami Dade Fire Rescue.

FOLD-DOWN STEP

There shall be one (1) 30" wide fold-down step located at the bottom of the roof access stairway to reduce the distance from the ground to the first step. The step surface shall be NFPA compliant aluminum treadplate. The step shall manually fold up into the stairway with an over-center gas shock to hold step in position during travel. The step shall activate the "Hazard Warning Light" in the cab when not in the stowed position.

REAR BODY HANDRAILS

There shall be two (2) 24" vertical Hansen handrails with Green/ White backlighting on rear body. This will switch by same switch as cab the cab uses.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

BODY WIDTH DIMENSIONS

The walk thru body shall be 100.0" wide, and 102.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

<u>Area Description</u>	<u>Dimension</u>
Transverse above subframe	95.0" (If specified.)
Compartment depth above subframe	31.0" (To walkway wall.)
Compartment depth below subframe	24.5"
Walkway width	34"

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.0" wide.

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track to activate compartment lighting and door ajar signal in cab when door is opened.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring handle. A manual key lock and electric lock shall be provided. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) OnScene Access LED, full width compartment light mounted at the top of the compartment toward the door opening.
- Location for specified inverter.
- The 12 volt electrical distribution panel shall be located in the front lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.0" wide.

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track to activate compartment lighting and door ajar signal in cab when door is opened.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring handle. A manual key lock and electric lock shall be provided. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from stainless steel sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

This tray will be holding the Inverter battery supply and components.

- The above component(s) shall have a smooth un-painted finish.
- One (1) OnScene Access LED, full width compartment light mounted at the top of the compartment toward the door opening.
- Location for specified inverter deep cycle batteries. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S3)

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 26" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
 - The above component(s) shall have a smooth un-painted finish.
 - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the

closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

- The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S4)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The above component(s) shall have a smooth un-painted finish.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S5)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 1/2".

1/2 width aft of specified partition.

- The above component(s) shall have a smooth un-painted finish.
- 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - REAR (S6)

The interior useable compartment space shall be approximately 70.5" wide.

The compartment door opening shall be approximately 63.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
- **Tray will suspend above frame level due to toolbox.**
 - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

Forward of specified partition.

- The above component(s) shall have a smooth un-painted finish.
- 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.

- There shall be two (2) slide-out smooth aluminum vertical tool board(s) approximately 26" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

Aft of specified partition.

- The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.
- The above component(s) shall have a smooth un-painted finish.
- Each tool board shall be horizontally adjustable; mounted on aluminum shelf Trac on compartment floor.
- 3M™ Diamond Grade™ Conspicuity striping shall be provided on both sides of the tool board. The striping shall be 2" wide and red/white in color.
- There shall be one (1) bolt-in vertical compartment partition(s) provided dividing the compartment into left and right sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
 - The above component(s) shall have a smooth un-painted finish.
- One (1) Lista drawer cabinet, model HS-0450-04LM-NB-RG-LG-IDL shall be provided in compartment. The Lista cabinet shall be x 40-1/4" wide x 21 3/4" high x 22-1/2" deep. Cabinet shall have four (4) individual locking drawers as follows; one (1) 2", one (1) 3", one (1) 4", and one (1) 5". The cabinet shall be Light Gray in color.

Forward of specified partition.

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
 - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
 - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.

Reel shall be mounted on Staircase Wall.

- The cable reel shall be equipped with 200' of 10/3 SEOW yellow cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
 - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
 - One (1) 120 VAC, L5-15 dual twist lock receptacles
 - One (1) 120 VAC, L5-15 dual twist lock receptacles
 - One (1) 120 VAC, L5-15 dual twist lock receptacles
 - One (1) 120 VAC, L5-15 dual twist lock receptacles
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Miami Dade Fire Rescue.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- There shall be one (1) Blue Sea Systems 100 amp ST Series blade type fuse block with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits. Fuse block shall be located per required circuits and be protected from damage.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be two (2) adjustable shelf/shelves approximately 30" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
 - The above component(s) shall have a smooth un-painted finish.
 - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf. The striping shall be red/white in color.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 18"-20" deep and as wide as the compartment layout or door opening permits due to the 120/240V panel. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
 - The above component(s) shall have a smooth un-painted finish.
 - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

- There shall be one (1) Blue Sea Systems 100 amp ST Series blade type fuse block with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits. Fuse block shall be located per required circuits and be protected from damage.
- The cab chassis supplied cab tilt control pendant shall be re-located to lower forward wall.
- One (1) 120/240 VAC load center.
- The generator gauge panel.
- The controls for the specified light tower(s).
- There shall be two (2) 120 VAC outlet(s) located in compartment on the forward wall.
- There shall be two (2) 120 VAC, 20 amp custom fabricated outlet strip provided with four (4) 20 amp duplex outlets. Strip shall be approximately long.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- There shall be one (1) underbody slide-out seat. Seat shall be constructed from 9" deep smooth powder coated aluminum mounted to underbody using Delron plastic slides for corrosion resistance. Seat slide shall be securely held in both out and stored position, utilizing a heavy duty pneumatic cylinder designed to have an over center location which will assist the step in both extension and retraction.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be three (3) slide-out smooth aluminum vertical tool board(s) approximately 24" deep, with trays on the side opposite of gas strut. (Toolboards are for Dealer to install SCBA and SCUBA packs.)
- Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.
 - The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.
 - The above component(s) shall have a smooth un-painted finish.
 - Each tool board will be bolted to compartment floor.
 - 3M™ Diamond Grade™ Conspicuity striping shall be provided on both sides of the tool board. The striping shall be 2" wide and red/white in color.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C3)

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)
 - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 47" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C4)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 150 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The above component(s) shall have a smooth un-painted finish.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C5)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

Aft of specified partition.

- The above component(s) shall have a smooth un-painted finish.
- 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - BEHIND REAR AXLE (C6)

The interior useable compartment space shall be approximately 70.5" wide.

The compartment door opening shall be approximately 63.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with an integral switch in the lower door handle retainer block to activate compartment lighting and door ajar signal in cab when door is opened.
- The roll-up doors shall be equipped with an electric power lock system.
- Electric door Locks shall be actuated by the cab/chassis supplied keyless entry system.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

Full width, base of compartment.

- The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)
- **Tray will suspend above frame level due to toolbox.**
- There shall be one (1) bolt-in vertical compartment partition(s) provided dividing the compartment into left and right sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.

Above frame level.

- The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- One (1) Hannay EF1516-17-18 low pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.
 - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
 - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).
 - The hose reel shall equipped with 150' of 3/8" Parker Series 7092 GST II low pressure air hose rated for 300 PSI maximum pressure. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color with blue color coded end.
 - The air reel supply shall be from two (2) ASME 491 SCF @ 6,000 PSI, (does not require hydrostatic testing) air storage cylinder with valve. Cylinder shall be 9.6" dia. x 55" long and weigh 400 lbs. High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.
 - **Two (2) ASME cylinders will be located below the Light Tower tub below the light tower**
 - A reel shut-off valve, 0 - 125 psi adjustable low pressure regulator, and 0 - 300 psi gauge shall be provided on an aluminum control panel with flow diagram graphic overlay near the air reel location, not exceeding 72" from ground.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

ROOF ACCESS STAIRWAY

The rear of the body shall be provided with a recessed center stairway in lieu of a compartment.

LOWER SIDE BODY PROTECTION - RUB RAIL

OnScene Solutions rub rails shall be provided below the compartment door openings on both the streetside and curbside.

The rub rail shall be fabricated from 6063 extruded aluminum, measuring approximately 2-3/4" high x 1-3/8" thick with tapered aluminum end caps. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body.

The rails shall incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rail shall have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting.

There are to be six (6) Micropulse MPS1200U-RW red over white with clear lenses three (3) each side located in the rubrail centered under each compartment, forward of the rear axles .

There are to be two (2) Micropulse MPS1200U-RR red over red with clear lenses one (1) each side located in the rubrail rear area under compartment, rear of axle.

- Eight (8) warning lights shall be provided in lower rub rail, evenly distributed per side of apparatus; Warning light models, colors and etc. are specified in warning lights section.
 - The forward warning lights shall be located:
 - Both ends of rub rail, inboard of marker light(s).
 - The rearward warning lights shall be located:
 - Adjacent to and inboard of marker lights.

ROLL-OUT AWNING CURBSIDE

A Girard G-2000, 120 VAC powered, automatic retractable lateral arm awning shall be provided and mounted on the body. The cassette housing is made of corrosion-resistant, white powder-coated extruded aluminum with components made of stainless steel.

The awning shall activate the door ajar warning system in the cab when not in the stowed position.

The unit shall measure 22' long x 5-1/4" deep, 7-3/4" high with a 9' - 9" outward projection, (length refers to box length; actual fabric length will be shorter).

The G-2000 shall deploy and retract using a 120V AC motor with manual override (to retract awning in the event of a power failure). The controls shall be located in compartments S1 for a streetside awning, and C1 for a curbside awning.

The awning shall have a system to detect canopy motion. The awning shall automatically retract when the canopy reaches a certain level of movement. The G-2000 has a Limited Lifetime Warranty. Wind and rain damage are not covered.

- The awning fabric color shall be charcoal #88049-000

The specified awning above shall be recess mounted into upper body side. An aluminum box enclosure shall be fabricated and recessed into upper body side for awning mounting and painted same color as upper body. The recessed awning shall add approximately 1.5" to body width.

AWNING HOUSING COLOR

The awnings standard white housing color shall be re-painted to match upper body color.

WALK-IN INTERIOR FINISH DETAILS

DESK, CABINET, CONSOLE FINISH

All specified interior desks, cabinets, overhead cabinets, or consoles shall be fabricated from formed 1/8" 3003 H14 alloy smooth aluminum. After fabrication is completed they shall be painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

The use of wood materials or laminated surfaces in the construction of desks, cabinets, overhead cabinets, or consoles will not be allowed. There will be **No Exceptions** allowed on specified ruggedized finish.

CAB/BODY WALK-THROUGH CONNECTION

The front center of the rescue body shall be interconnected with the rear crew area of custom cab through a weather tight walk-through opening. The opening shall be designed to allow the custom cab to tilt forward without disconnecting an attached type seal between the cab and body. The opening shall be approximately 24" wide x 70" high (sized to match the cutout in the rear wall of the cab).

The front of the body shall be cut out to match the cab opening. Additional reinforcements with metal angle or tubing shall be provided to back of cab or front of body, if necessary so that the walk-through opening weakens neither the cab nor body integrity.

The connection shall be weather resistant, yet provide the cab and body to move independent of each other. A flexible 3" rubber weather strip shall be attached to a stainless steel sheet metal frame around the perimeter of the opening in the back wall of the cab. A drip rail shall be provided on front of body above the opening to channel water to both sides of opening. Stainless steel scuff panels shall be provided on back of cab where the rubber seal on body comes in contact with cab.

A formed metal frame shall be bolted to the front of the body. The body-mounted frame shall be provided where the rubber seal comes into contact with the body. The framework shall be painted to match the body color.

The base of the opening shall be covered with a 3/16" aluminum tread plate full width panel, which will overlap from the cab to body so that the rubber seal can not be damaged.

Full width padded foam cushion head bumpers shall be provided on both sides of opening. Head bumpers shall be covered with matching interior vinyl and bolted to each side of walk-through.

CUT OUT IN REAR CAB WALL

The rear wall of the custom cab shall be cut out 24" wide for walk-thru application. The height of the cutout shall be determined by the cab structure in the rear wall and the roof. The opening shall be completed by the custom cab/chassis manufacturer to assure proper cab structural integrity and completed final interior finish.

SLIDING POCKET DOOR

There shall be one (1) sliding pocket door(s) provided on interior of walk-in body area. Pocket door shall be fabricated from 1/8" smooth aluminum and be approximately 1-1/2" thick and hang on adjustable pocket door hardware. The door shall be painted to match the interior wall color. A stainless steel handle shall be provided on each side of door. The door shall be equipped with a pneumatic cylinder which will "over-center" to hold the door in open and closed positions.

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

Following the sheet metal fabrication the roof area, upper exterior walls and the entry door of the apparatus body shall be insulated with Dow Thermax, or equal 1-1/2" glass-fiber reinforced polyisocyanurate foam core laminated between 1.0 mil smooth, reflective aluminum foil facers on both sides, with an R9.8 value. The reinforcement, along with chemical modifications, contributes to fire resistance and dimensional stability. This insulation shall be the type that will not absorb moisture, move once in place or deteriorate. Mat type fiberglass or spray in foam insulation is not acceptable.

INTERIOR FINISH

The interior of the apparatus body shall have a fully maintenance free and durable finish. The interior finish shall be installed on the ceiling, front wall, and interior side walls from top of exterior compartments to ceiling height.

The interior panels shall be installed with sheet metal screws with gray plastic plugs covering the screws. The seams between FRP panels, interior corners, and exterior corners shall be trimmed with gray plastic molding.

The interior finish shall be pearl gray pebble grain FRP.

INTERIOR WALKWAY SIDE WALLS

Walkway side walls from floor level to top of exterior compartments shall be aluminum tread plate panels.

INTERIOR WALKWAY FLOOR

The NFPA compliant 3/16" aluminum tread plate walkway floor shall be installed above the barrier, with a 2" high vertical break on each side of the floor panel to form a watertight splash and kickboard along the walkway sides.

The walkway floor area continuously welded at all cross seams to provide a watertight finish, so that a water hose may be used to flush-out walkway area.

INTERIOR SUB-FLOOR

Above the body sub frame walk in areas shall be an isolation sheet to prevent outside elements from permeating the acoustic and thermal barrier. The isolation sheet shall be fabricated from the same type of material as is used in the subframe, and flanged on sides with a 1" high vertical break.

Plascore PP-30, 3/4" thick or similar material shall be placed between the isolation sheet and finished floor for its structural, acoustic and thermal values.

AIR CONDITIONER - HEATER

One (1) Dometic Penguin II low profile, 120 VAC, 60 cycle, single phase air conditioner(s) shall be provided and installed on roof of vehicle. The unit shall be a roof top contemporary contoured integral evaporator/condenser type with built-in heating elements.

Each unit shall be rated at minimum of 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU. A three-speed fan shall supply a maximum/minimum of 320/250 cfm air flow capacity. Air conditioner(s) shall be controlled by a wall mounted Comfort Control II LCD thermostat.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 99 lbs.

Powered by battery charger shore line.
Cover will be repaint as listed in paint section.

STREETSIDE INTERIOR AREA (IS1)

SLIDE-OUT ROOM EXTENSION

A slide-out room extension with floor offset approximately 3" from main walk-in floor shall be provided on the streetside. The slide-out room shall extend approximately 32". The slide-out extension shall be up to up to 96" in width depending on body configuration. The interior height shall be approximately 9" less than the interior height of the main walk-in floor. The slide-out room shall have a water tight seal in both the fully extended and the retracted positions. The flooring specified on main walk-in floor shall be provided on floor of slide-out room.

The slide-out section shall utilize two (2) PowerGear smooth operating, quiet gear and rack system. Systems using hydraulic components will NOT BE ACCEPTABLE. There shall be only two (2) serviceable items - the 12 VDC motor and the electric control switch. The system shall use a heavy duty, positive, 100% synchronized gear and rack system to prevent binding during the extend or retract cycle. The rack system shall be rated for up to 1,500 pounds. A manual override shall be provided in the event of a system failure. The touch pad control for slide-out system shall be mounted on wall near main entry door.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

A full width padded foam cushion head bumper shall be provided along ceiling of slide-out. Head bumper shall be covered with matching interior vinyl.

There shall be two (2) flashing LED warning lights with red lenses, one (1) at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the slide-out mechanisms.

The slide-out room extension must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs using light weight metal or fiberglass shall not be acceptable.

MAGNETIC WHITEBOARD

There shall be two (2) magnetic whiteboard(s); One (1) will be located on the front bulkhead on streetside, and one (1) to rear wall of the walkin area full width by the upper half of the wall.
(There needs to be a door in the rear wall for access to the valves on teh ASME Cylinders.)

SLIDE-OUT AWNING

A Carefree SlideOut Kover III shall be provided and work automatically with slide-out for increased protection of the slide-out from the elements. Helps keep leaves, debris and rain off the roof and out of the vehicle and keeps the roof cooler by blocking the sun from the roof.

The SlideOut Kover III comes with a built-in wind deflector to prevent the billowing of the slide out fabric. The full-enclosure aluminum case protects the slide out fabric from dirt and debris while traveling.

- The awning fabric color shall be charcoal.

SLIDE-OUT KOVER

The SlideOut Kovers standard white housing color shall be re-painted to match upper body color.

WINDOW(S)

There shall be two (2) 18" wide x 22" high, double-paned insulated, high non-sliding window(s) installed, one (1) on each side of the slide-out. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

- There shall be two (2) 42" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.
- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.

INTERIOR UNDER CABINET LED LIGHTS

Two (2) OnScene Solution model #70152, 10" x 6" x 7/8", 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

SLIDE-OUT AREA - FULL WIDTH DESK

The slide-out area shall be provided with a full width desk which shall be 24" deep and located approximately 30" from floor.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum. There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top. The desk shall be painted with a dark gray hammer tone powder coat paint finish for a hard and durable surface.

COMMUNICATION AND ELECTRONICS CONSOLE

There shall be one (1) 42" wide communication and electronics console(s) provided at back of specified desk or counter top. The console(s) shall provide mounting locations for any specified radios, phones, network jacks, 120 VAC outlets, 12 VDC power points, or any required control switches. A six (6) circuit 12 VDC fuse block with cover shall be provided inside console for wiring needs.

Each console shall be rectangular in shape with a sloped hinged access cover constructed of 1/8" smooth finish aluminum and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

A hinged access cover shall be provided on front to access equipment mounting and wiring with ¼ turn knobs to secure cover closed. Two (2) 12 VDC cooling fans shall be provided on ends for proper ventilation of radio and electrical equipment.

The following communications and/or electrical equipment shall be provided for;

The following options shall be provided in specified desktop console;

- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.
- There shall be one (1) CAT 6 data port(s) provided in specified console and connected to on-board computer network.

(The cable shall be routed from the cab overhead cabinet, rear facing curbside)

- There shall be one (1) 12 VDC power plug(s) provided in specified console.
- There shall be two (2) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in specified console.

***The outlet and outlet strips will be an intergral part of the desk and there will be three (3) Duplex outlets on either side of the refridgerator.**

– Outlet(s) shall be powered by both the on-board generator and specified inverter through a relay system.

- There shall be one (1) Blue Sea 12 VDC USB port(s) provided in specified console.

REFRIGERATOR

There shall be one (1) Norcold NR751 120 VAC/12 VDC refrigerator/freezer(s) furnished and installed below the desk.

- - Performance*
 - Danfoss BD35 compressor improves performance especially at higher ambient temperatures
 - Self-venting technology
 - - Convenience*
 - LED interior light
 - Hidden ventilation grill
 - White powder-coated wire shelf with raised lip
 - Removable door bins for easy cleaning
 - Wire retainer for keeping taller items secure
 - - Other features*
 - Base model operates on 12 – 24V/ DC – 120V/ AC. Power cord not included for AC operation.

- Separate door for freezer
- Stylish, easy-pull handle
- Can be flush- or proud-mounted without additional hardware
- 2-Year Warranty

Power Supply Options

- Alternating Current (US/ Canada): 120 Volts @ 60Hz
- Alternating Current (Europe/ Australia): 220 Volts @ 50Hz
- Direct Current: 12 or 24 Volts

Cutout Dimensions & Weight		
Height	Width	Depth
20-1/2 in: 52.1 cm	18-1/2 in: 47 cm	21-1/16 in: 53.5 cm
Flush	Carton Weight	Net Weight
23-3/16 in: 58.9 cm	53 lbs.: 24 kg	49 lbs.: 22.2 kg

LCD VIDEO DISPLAYS

Two (2) Samsung 32", Series 5 (or equal) LED commercial grade, multiple input, flat panel, multi-function display(s) shall be provided and installed on completed unit.

Display(s) shall be complete and fully operational, including all miscellaneous coax or CAT 6 cable, HDMI to CAT6 extenders (if required), 120 volt AC wiring, and cable connections.

- Specified monitor shall be mounted using a Ram Mount monitor mounting system which consists of a heavy duty universal assembly that will attach a flat surface to another flat surface. Includes a universal base piece to mount heavy devices to a flat surface and a 4.75" x 4.75" face plate recommended for mounting heavy devices such as monitors and flat screen electronics. Features a hole pattern for 100mm and 75mm VESA standards.

INTERIOR PEDESTAL SEAT, 2-POINT

One (1) Bostrom Sierra high back reclining pedestal type seat(s) shall be provided. Seat(s) shall have swivel pedestal base with 5" fore/aft adjustment. Seat(s) shall be securely mounted to the reinforced floor structure.

The seat(s) will have the MDFR logo.

The Bostrom seat(s) shall include a covering of extra high strength, wear resistant fabric made of durable Durawear Plus™ ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. The material meets FMVSS 302 flammability requirements. Seats material color shall closely match the cab chassis supplied seat colors.

- There shall be one (1) 120 VAC outlet strips located under desk.
- There shall be two (2) 120 VAC custom fabricated outlet strip provided with three (3) 20 amp duplex outlets. Strip shall be approximately long.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered through the on-board generator system.

CURBSIDE INTERIOR AREA (IC1)

- There shall be one (1) interior counter height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately (insert actual dimensions).
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
 - The above cabinet(s) shall have a 4" x 4" toe kick area at the base to allow for the top surface to be used as a working surface.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- There shall be two (2) vertically adjustable shelves in each of the above cabinets.
- The interior deck area over the top of the exterior side compartments shall be powder coated smooth aluminum.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with four (4) 20 amp duplex outlets. Strip shall be approximately long.

Outlet Strip will be in the back vertical corner of the cabinet. Will have four (4) outlets for a total of eight (8) plugs.

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
- Outlet(s) shall be powered by specified inverter through a relay system.

CURBSIDE INTERIOR AREA (IC2)

- There shall be one (1) interior counter height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately (insert actual dimensions).
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
 - The above cabinet(s) shall have a 4" x 4" toe kick area at the base to allow for the top surface to be used as a working surface.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- There shall be two (2) vertically adjustable shelves in each of the above cabinets.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with four (4) 20 amp duplex outlets. Strip shall be approximately long.
Outlet Strip will be in the back vertical corner of the cabinet. Will have four (4) outlets for a total of eight (8) plugs.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered by specified inverter through a relay system.

LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC

General

Any low voltage electrical systems or warning devices installed on the fire apparatus shall be appropriate for the mounting location and intended electrical load.

Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Electrical connections shall be with double crimp water-tight heat shrink connectors.

All 12 VDC wiring running from front to back of vehicle body shall be run in full length electrical wiring raceway down each side of body.

Wiring

All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 13.

The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10%. The use of star washers for circuit ground connections shall not be permitted.

All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring*.

Wiring and Wire Harness Construction

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable*, or SAE J1128, *Low Voltage Primary Cable*, type SXL, GXL, or TXL.

All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures. The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.

Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.

Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.

Circuits shall be provided with properly rated low voltage over-current protective devices. Such devices shall be readily accessible and protected against heat in excess of the over-current device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:

- 1) SAE J156, *Fusible Links*
- 2) SAE J553, *Circuit Breakers*
- 3) SAE J554, *Electric Fuses (Cartridge Type)*
- 4) SAE J1888, *High Current Time Lag Electric Fuses*
- 5) SAE J2077, *Miniature Blade Type Electrical Fuses*

Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125% of maximum current for which the circuit is protected.

Power Supply

A 12 V or greater electrical alternator shall be provided. The alternator shall have a minimum output at idle to meet the minimum continuous electrical load of the vehicle, at 200°F (93°C) ambient temperature within the engine compartment, and shall be provided with full automatic regulation.

Minimum Continuous Electrical Load

The minimum continuous electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode during emergency operations:

- 1) The propulsion engine and transmission
- 2) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
- 3) The radio(s) at a duty cycle of 10 percent transmit and 90% receive (for calculation and testing purposes, a default value of 5 A continuous)
- 4) The lighting necessary to produce 2 fc (20 lx) of illumination on all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus, 5 fc (50 lx) of illumination on all control and instrument panels, and 50 percent of the total compartment lighting loads
- 5) The minimum optical warning system, where the apparatus is blocking the right-of way
- 6) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
- 7) Other warning devices and electrical loads defined by the purchaser as critical to the mission of the apparatus

If the apparatus is equipped to tow a trailer, an additional 45 A shall be added to the minimum continuous electrical load to provide electrical power for the federally required clearance and marker lighting and the optical warning devices mounted on the trailer.

The condition of the low voltage electrical system shall be monitored by a warning system that provides both an audible and a visual signal to persons on, in, or near the apparatus of an impending electrical system failure caused by the excessive discharge of the battery set.

The charge status of the battery shall be determined either by direct measurement of the battery charge or indirectly by monitoring the electrical system voltage.

If electrical system voltage is monitored, the alarm shall sound if the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems, 23.6 V for 24 V nominal systems, or 35.4 V for 42 V nominal systems for more than 120 seconds.

A voltmeter shall be mounted on the driver's instrument panel to allow direct observation of the system voltage.

Electromagnetic Interference

Electromagnetic interference suppression shall be provided, as required, to satisfy the radiation limits specified in SAE J551/1, *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*.

Wiring Diagram

A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.

Low Voltage Electrical System Performance Test

A low voltage electrical system test certification shall be provided with delivered apparatus.

12 VOLT CLASS 1 ES-KEY CONTROL CENTER

The apparatus shall be equipped with a Class 1 ES-Key 12 volt electrical system that will provide complete diagnostic capability, No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

CLASS 1 ES-KEYSYSTEM INTERFACE DISPLAY

The Class 1 ES-Key system interface display(s) shall be provided by the cab/chassis manufacturer.

BATTERY SYSTEM

The battery connectors shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. Where required, the cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.

Batteries shall be of the high-cycle type. With the engine off, the battery system shall be able to provide the minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then to restart the engine. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer. The batteries shall be mounted to prevent movement during fire apparatus operation and shall be protected against accumulations of road spray, snow, and road debris. The batteries shall be readily accessible for examination, testing, and maintenance.

A means shall be provided for jump-starting the engine if the batteries are not accessible without lifting the cab of a tilt-cab apparatus.

Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.

An onboard battery conditioner or charger or a polarized inlet shall be provided for charging all batteries. Where an onboard conditioner or charger is supplied, the associated line voltage electrical power system shall be installed in accordance with Chapter 22.

One of the following master disconnect switches shall be provided:

- 1) A master body disconnect switch that disconnects all electrical loads not provided by the chassis manufacturer
- 2) A master load disconnect switch that disconnects all electrical loads on the apparatus except the starter

Electronic control systems and similar devices shall be permitted to be otherwise connected if so specified by their manufacturer.

The alternator shall be wired directly to the batteries through the ammeter shunt(s), if one is provided, and not through the master load disconnect switch.

A green "battery disconnect on" indicator light that is visible from the driver's position shall be provided.

Rechargeable hand lights, radios, and other similar devices shall be permitted to be connected to the electrical system ahead of the master disconnect switch.

A sequential switching device shall be permitted to energize the optical warning devices and other high current devices required in minimum continuous electrical load, provided the switching device shall first energize the electrical devices required in minimum continuous electrical load within 5 seconds.

BATTERY SWITCH

One (1) "battery disconnect on" switch in cab located within easy reach of Driver with green indicator light that is visible from the driver's position shall be provided. The switch and indicator light shall be supplied and installed by the cab/chassis manufacturer.

BATTERY SOLENOID

Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.

BATTERY CONDITIONER

The battery conditioner shall be supplied and installed by the cab chassis manufacturer.

ENGINE COMPARTMENT LIGHT

Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.

CAB HAZARD WARNING LIGHT

A red flashing or rotating light, located in the driving compartment. The light shall be furnished by the cab/chassis manufacturer. The light shall be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

- Any passenger or equipment compartment door is not closed.
- Any ladder or equipment rack is not in the stowed position.
- Stabilizer system is not in its stowed position.
- Powered light tower is not stowed.
- Any other device permanently attached to the apparatus is open, extended, or deployed in a manner that is likely to cause damage to the apparatus if the apparatus is moved.

Compartments and equipment meeting all of the following conditions shall be permitted to be exempt from being wired to the hazard light:

- The volume is less than or equal to 4 ft³ (0.1 m³).
- The compartment has an opening less than or equal to 144 in.² (92,900 mm²).
- The open door does not extend sideways beyond the mirrors or up above the top of the fire apparatus.
- All equipment in the compartment is restrained so that nothing can fall out if the door is open while the apparatus is moving.
- Manually raised pole lights with an extension of less than 5 ft (1.5 m).

The hazard light shall be labeled "DO NOT MOVE APPARATUS WHEN FLASHING".

BACK-UP ALARM

An electronic back-up alarm shall be supplied and installed by the cab/chassis manufacturer. The back-up alarm shall actuate automatically when the transmission gear selector is placed in reverse.

REAR VIEW CAMERA

The cab chassis provided rear view box camera shall be installed on the rear of the body.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be furnished;

- Two (2) Federal Signal FireRay FR6-ARROW amber LED turn lights
- Two (2) Federal Signal FireRay FR6-BTT red LED stop/tail lights
- Two (2) Federal Signal FireRay FR6-BACKUP clear LED back-up lights
- Two (2) specified ZONE C lower warning Lights

Lights shall be installed in a pair of chrome 4-Position vertical Flanges.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen model T0A00MAR 2" round amber LED midship body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.

MARKER LIGHTS

The body shall be equipped with all necessary side and rear clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS). Clearance lights shall be Truck-Lite model 18 series, 3 diode LED, reflectorized type to reduce the need for maintenance and lower the amp draw. Clearance lights on body shall be connected to the clearance light circuit of the chassis.

REAR BUMPER MARKER LIGHTS

Two (2) Britax style dual face flexible mounted rear bumper markers shall be located, one (1) each side lower rear corner of body visible from driver mirrors.

CAB STEP LIGHTS / GROUND LIGHTS

The step lights and/or ground lights shall be supplied and installed by the cab/chassis manufacturer. Light(s) shall be capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.

LICENSE PLATE LIGHT

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

ELECTRONIC SIREN

The siren control head shall be supplied and installed by the cab/chassis manufacturer, if required by Miami Dade Fire Rescue. Siren power shall be wired through the master warning light switch.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer, if required by Miami Dade Fire Rescue.

SIDE LED SCENE LIGHTS

There shall be four (4) HiViz Guardian model FT-GESM, 9" x 7" surface mounted scene light(s) provided on the upper body. Light quantity shall be divided equally per side. The Guardian series light shall have 12,290 useable lumens each. Each light shall have a chrome flange. The scene light is covered by a FireTech limited life-time factory warranty.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights.

The Lights shall be controlled at the Switch Panel in Cab.

REAR LED SCENE LIGHTS

Two (2) HiViz Guardian Elite model FT-GESM, 9" x 7" surface mounted scene lights shall be provided on the upper rear body to light the work area immediately behind the vehicle. The Guardian series light shall have 12,290 useable lumens each. Each light shall have a chrome flange. The scene light is covered by a FireTech limited life-time factory warranty.

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid within a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

The Lights shall be controlled at the Switch Panel in Cab.

The rear scene lights shall also be activated when the apparatus is in reverse.

WARNING LIGHT PACKAGE

Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.

The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four (4) warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four (4) zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.

Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.

A master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. One (1) mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One (1) mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two (2) signaling modes.

The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

Steadily burning, non flashing optical sources shall be permitted to be used.

UPPER LEVEL OPTICAL WARNING DEVICES

The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.

ZONE A - FRONT WARNING LIGHTS

The light bar shall be supplied and installed by the cab/chassis manufacturer.

ZONE B & D - SIDE WARNING LIGHTS

There shall be four (4) Federal Signal FR9 LED Light(s) provided, two (2) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities. Component shall be covered by a five year factory warranty.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS

There shall be four (4) Federal Signal FR9 LED Light(s) provided, two (2) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities. Component shall be covered by a five year factory warranty.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

The Lights shall be controlled at the Switch Panel in Cab.

LOWER LEVEL OPTICAL WARNING DEVICES

To define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the front axle centerline and as close to the front corner points of the apparatus as is practical.

The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1600 mm) above level ground.

A midship optical warning device shall be mounted right and the left sides of the apparatus if the distance between the front and rear lower-level optical devices exceeds 25 ft (7.6 m) at the optical center. Additional midship optical warning devices shall be required, where necessary, to maintain a horizontal distance between the centers of adjacent lower-level optical warning devices of 25 ft (7.6 m) or less. The optical center of any midship mounted optical warning device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground.

ZONE A - FRONT WARNING LIGHTS

The front lower warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Federal lights to complete an NFPA compliant lower level warning light system.

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)

The front lower warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Federal lights to complete an NFPA compliant lower level warning light system.

ZONES B AND D - BODY LIGHT (BODY WHEELWELL AREA)

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities. Component shall be covered by a five year factory warranty.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

The Lights shall be controlled at the Switch Panel in Cab.

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities. Component shall be covered by a five year factory warranty.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

The Lights shall be controlled at the Switch Panel in Cab.

ZONES B AND D - BODY INTERSECTION LIGHT (AUXILLARY - RUBRAIL)

FIRST PAIR FRONT RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side. Component shall be covered by a three year factory warranty.

Each Light shall have:

- Red and white LEDs, split horizontally
- Clear Lens

- Red Above/White Below

Each light shall have a chrome flange.

The Lights shall be controlled at the Switch Panel in Cab.

SECOND PAIR FRONT RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side. Component shall be covered by a three year factory warranty.

Each Light shall have:

- Red and white LEDs, split horizontally
- Clear Lens

- Red Above/White Below

Each light shall have a chrome flange.

The Lights shall be controlled at the Switch Panel in Cab.

THIRD PAIR FRONT RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side. Component shall be covered by a three year factory warranty.

Each Light shall have:

- Red and white LEDs, split horizontally
- Clear Lens

— Red Above/White Below

Each light shall have a chrome flange.

The Lights shall be controlled at the Switch Panel in Cab.

FIRST PAIR REAR RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side. Component shall be covered by a three year factory warranty.

Each Light shall have:

- Red LEDs
- Red Lens

Each light shall have a chrome flange.

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities. Component shall be covered by a five year factory warranty.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

The Lights shall be controlled at the Switch Panel in Cab.

LINE VOLTAGE ELECTRICAL SYSTEM

DIESEL GENERATOR

An Onan model SM20-1 diesel driven generator shall be installed on the vehicle. The generator shall be installed so that fumes, vapors, heat, and vibrations do not enter the driving or crew compartment. The generator shall be rated at 20,000 watts continuous at 120/240 VAC, 166/83 amps, single phase. Current frequency shall be stable at 60 hertz.

The engine shall be a Kubota model V2403-CR-TIE4BG, with fuel consumption @ 25% / 50% / 100% Load .44 / .88 / 1.75 (US Gal./hr.). Unit shall be 58" wide x 26.00" deep, x 34" high, and weigh 1,140 lbs.

If the generator is installed in a compartment and the compartment doors must be open during its operation, the generator shall be equipped with an interlock system to prevent its operation if the doors are not open, or the compartment shall be equipped with a high temperature alarm.

If the generator is located in a position on the apparatus where the operator cannot see the instrumentation and operate the controls while standing at ground level or positioned at a specifically designated operator station, an operating panel with the required instrumentation, start and stop controls, and other controls necessary for safe operation shall be provided at a remote operator's panel.

Generator shall be equipped with a high temperature automatic shutdown system and a low oil (pressure or level) automatic shutdown system. The generator shall be installed in accordance with the generator manufacturer's requirements for ventilation and service accessibility.

GENERATOR BONDING

A minimum of four (4) 16" x 2 gauge copper ground straps shall be bolted to body sub-frame and chassis sub-frame for proper bonding of high voltage system. The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Generators shall be free from defects in material and workmanship for a period of two (2) years or two thousand (2,000) hours, whichever comes first, from the date of delivery to the first purchaser.

Limited qty of these generators available, please consult factory before using.

GENERATOR MOUNTING

The generator shall be mounted in a lower exterior compartment on rubber vibration isolators. The compartment shall be reinforced where necessary to hold weight of generator. A valve shall be provided on the generator oil drain outlet and piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

FUEL SYSTEM

The generator fuel system shall be plumbed to the chassis main fuel tank. A separate fuel line shall be installed directly from the tank, not connected to the truck engine fuel line system. The generator fuel line shall be properly protected and secured inside of chassis frame. A shut-off valve shall be provided between the generator and fuel line as it enters the compartment.

Fuel lines shall be protected from chafing at all wear points. If the fuel source is shared with the apparatus engine, a separate fuel pickup system shall be provided that is arranged to ensure that the generator cannot utilize more than 75 percent of the fuel tank capacity.

STARTING SYSTEM

The generator starting system shall be powered by chassis battery system with heavy duty stranded copper cables. The starter line shall by-pass the chassis master switch to permit generator operation when the apparatus engine is not running. This starter line shall be of sufficient size for the generator, adequately protected and supported inside the chassis frame area.

COOLING

Since the generator is radiator cooled, the ventilation of the generator is crucial. The installation shall permit operation of the unit both while the apparatus is stationary and while it is in motion.

The cooling air flow shall be through screened panels in the compartment doors. Two (2) dual Flex-a-lite fans will be installed to help direct the air flow through the compartment; one (1) fan will push the air into the compartment while the other fan pulls the air out.

The additional fans shall provide adequate air flow for operation of the generator in stationary or moving, with the compartment doors in the closed position.

EXHAUST SYSTEM

The generator exhaust system shall be equipped with a residential type muffler for maximum quieting, and black iron rigid pipe to link the generator to the muffler.

The exhaust piping and discharge shall be located or shielded to prevent thermal damage to the apparatus or equipment. The exhaust shall be piped to the exterior of the vehicle and discharged at a location away from any operator's position.

Where parts of the exhaust system are exposed so that they can cause injury to operating personnel, protective guards shall be provided.

Silencing devices shall be provided and shall not create exhaust back pressure that exceeds the limits specified by the engine manufacturer.

Route exhaust to streetside away from awning.

MANUALS AND SCHEMATICS

Two (2) complete manuals on parts list, maintenance, wiring schematics, hydraulic schematics, circuit boards, voltage regulator board and other components shall be provided on delivery.

GENERATOR COMPARTMENT INSULATION

The generator compartment shall be provided with heavy duty sound insulation applied to walls and ceiling. Insulation shall have a high temperatures rating with a foil facing and attached to walls with a positive type fasteners, glue type adhesive shall not be acceptable.

GENERATOR CONTROLS

In addition to generator controls provided at the generator, there shall be controls provided in the cab near the 12 volt control panel. The following controls shall be provided:

- One (1) pre-heat switch (if generator is diesel).
- One (1) start/stop switch.
- One (1) generator running indicator light.

Note: Controls will be near the driver's position.

LOADCENTER

The loadcenter shall be an Eaton BR Series specifically designed for protection and distribution of AC line voltage such as lighting and small motor branch circuits. The loadcenter enclosure is made of 16 gauge galvanized sheet steel with a galvanized coating provided for corrosion protection. All trims used on BR loadcenters are chromate sealed and finished with an electro-disposition epoxy paint (ANSI-61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door is supplied with indoor loadcenters rated from 100 through 400 amperes. All plug-in loadcenters are CSA listed to file LL98266. CSA Certified to C22.2 No.29, to loadcenter type and CSA listing.

GENERATOR MONITORING PANEL

An Accuvim CL digital meter package shall be provided to properly monitor the generator performance and load demand during operation. The electrical parameters can be viewed on a backlit LCD screen. The 15 screens are accessible via four buttons on the front panel allowing the user to scroll between various screens. The following shall be displayed full-time;

- Generator frequency in hertz
- Line 1 current in amperes
- Line 2 current in amperes
- Generator voltage in volts

In addition, an elapsed generator hours gauge shall be provided near the digital meter.

SHORE POWER INLET - BATTERY CHARGER

The above mentioned shore power inlet, and battery conditioner shall be specified in the 12 volt section.

OUTLETS AND CIRCUITS

The generator and or shore power shall supply the 120/240 volt electrical equipment and outlets outlined below. Proper circuit protection shall be installed as noted:

- Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.
 - The outlet receptacle(s) shall be 20 amp, twist-lock (NEMA L5-20R).

INVERTER

(Inverter Controls and Display will be located at Cab Communications Console)

A Newmar model 3000TQ-12, uses 12 volt battery power to produce pure sine wave 120 VAC power in mobile applications, and recharges vehicle batteries when an external AC source is available. The circuitry and construction are field-proven to provide reliable power in harsh environments and in rugged mobile and industrial applications.

- 3000 Watt Continuous / 5500 Watt surge / 150 Amp Max, Pure Sine
- Built - in, high output 3 stage charger for rapid battery bank replenishment - programmable for Gel, lead acid or AGM battery
- Automatic electronic short circuit/overload protection
- Automatic over temperature shutdown, and AC output circuit breaker(s)
- Automatic low battery shutdown at 10.5VDC with in-rush delay
- Auto Sleep Mode when the LED Display Panel is used, the inverter can be programmed to go to sleep after no load is detected over programmed interval
- Heavy duty powder coated aluminum construction and conformal coated circuitry
- 3 year warranty
- Remote LCD Monitor & Control Panel, TQ-DSP-12/24

Inverter:

Output Power: 3000 Watts (Cont.) / 5500 Watts (Surge)

Output Current: 25 Amps AC Cont., 80 Amps Peak

Output Voltage: 120 +/- 3%

Output Frequency: 60 +/- .05%

Output Waveform: Pure Sine < 5% THD

Input Current: Up to 263 Amps DC Cont.

Input Voltage: 10.5 to 17.0 VDC

Charger:

Output Current: 3 Stage, up to 150 Amps DC

Input Current: Up to 22 Amps VAC

General:

Operating Temperature: 0 F to 149 F, (-20 C to 65 C)

Efficiency: Up to 88%

Weight: 68 lbs

Warranty: 3 Years

INVERTER BATTERY SUPPLY

There shall be three (3) deep cycle batteries provided as the 12 VDC power source for the onboard inverter. The batteries shall incorporate Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.

INVERTER BATTERY SUPPLY - VSR

There shall be a BEP model 701-MDVS motorized voltage sensitive relay (VSR) provided with the specified inverter battery system. The VSR allows both the starting and inverter battery systems to be charged at the same time. When the engine is started and the starting batteries reaches 13.7 VDC, the VSR engages allowing both battery banks (starting and inverter) to be charged simultaneously. When the voltage drops below 12.8 VDC (e.g. the engine is stopped), the VSR disengages, separating the batteries.

This system eliminates the possibility of draining the starting batteries and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes. System shall be protected from overcharging from alternator with a 300 amp fuse. The VSR shall have a limited 5 year warranty.

SHORE POWER INLET - INVERTER

A transfer switch shall be required to isolate one power source from the other where a circuit(s) is intended to be supplied from more than one power source. To protect both the generator and external power source from back feed, two (2) 120 volt, 30 ampere, 4PST auxiliary contact with safety interlock relay shall be installed. Relay shall cut-off the connection between the generator supply circuit and device circuits when shore power is connected.

Transfer equipment, including transfer switches, shall operate such that all ungrounded conductors of one power source are disconnected before any ungrounded conductors of the second power source are connected. The neutral conductor shall be switched through the transfer switch. The apparatus shall have a label permanently affixed at the power inlet that indicates the line voltage, and amperage.

SHORE POWER INLET

The shore power inlet for battery conditioner shall be supplied and installed by the cab chassis manufacturer.

Shore power shall be wired to the specified 120 volt inverter.

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz, ± 3 Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage ± 10 percent when producing power at all levels between no load and full rated power.

The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to *NFPA 70, National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations.

Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4.

If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used.

Only stranded or braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum ampere rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated ampere on the power source specification label.

A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer's instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

Instrumentation

If the power source is rated at less than 3 kW, a “Power On” indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator’s panel:

- 1) Voltmeter
- 2) Current meters for each ungrounded leg
- 3) Frequency (Hz) meter
- 4) Power source hour meter

The instrumentation shall be permanently mounted at an operator’s panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator’s control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator’s station on the apparatus.

Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent ampere rating and shall be sized to carry not less than 115 percent of the ampere of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

Over-current Protection

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

Branch Circuit Over-current Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

- 1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
- 2) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

Wiring Methods

Fixed wiring systems shall be limited to the following:

- 1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
- 2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

- 1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
- 2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*. Conductors used in conduit shall be sized in accordance with 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, "Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes," of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, "Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies," of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be "switch rated" (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

Receptacles and Inlet Devices

Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, "Receptacles in Damp or Wet Locations," of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

- (a) Pictorial representations of circuit logic for all electrical components and wiring
- (b) Circuit identification
- (c) Connector pin identification
- (d) Zone location of electrical components
- (e) Safety interlocks
- (f) Alternator–battery power distribution circuits
- (g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

120/240 VAC SCENE LIGHTING

REAR TRIPOD SCENE LIGHTS

Two (2) Whelen 3200 series folding tripod light(s) model 8728304 shall be provided. The 50" AC folding tripod pole assembly shall incorporate 50" internal aluminum alloy pole with an outer diameter of 1.125" with an inner diameter of 0.875" and 30" folding legs. The internal coil cord cable shall be UL listed and have a liquid tight strain relief that eliminates internal wire twisting. The internal coil cord cable shall be installed with a NEMA 5-20 plug.

The tripod shall have ability to be mounted by an upper body quick disconnect mounting bracket and a lower folded tripod mounting cradle. All mounting hardware shall be stainless steel.

Voltage: +120v AC

Height of Tripod Folded = 56.40"

Height of Tripod Folded Out = 104.51" Max. Length

Diameter of Tripod Legs When Folded Out = 51.12"

Each tripod assembly shall have a Whelen Pioneer Plus model PFP2AP provided. The 150 watt 120 VAC Pioneer light head shall incorporate Super-LED dual flood light installed in a die-cast white powder coated aluminum housing. The PFP2AC configuration shall consist of 72 white Super-LEDs with a clear optic collimator/reflector assembly and a clear non-optic polycarbonate lens. The Pioneer flood light shall have 15,000 usable lumens.

The tripod and light is covered by a five year factory warranty.

Voltage: +120v AC

Size: H=4.125", W=14.00", D=2.50"

Amp Draw: Spot Light = 1.20 Amps

Lens Color: Clear

A weatherproof on-off toggle switch shall be mounted in a switch box below the lamphead.

SHOP NOTE

Make: Whelen

Model:

LIGHT TOWER

One (1) Command Light, CL Series light tower(s) shall be provided and installed on the completed unit.

The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the completed unit.

The light tower shall extend 131" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light tower shall be approximately 42" wide x 74" long x 12" high and weigh approximately 300 pounds.

Light Tower Construction and Design

The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The electrically controlled unit shall not require usage of the vehicle's air supply for operation, thereby eliminating the chance for air leaks in the vehicle braking system. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the specified all electric light tower.

The light tower shall be tested to in wind conditions of 90 mph (150 kph) minimum. Light towers that have not been tested to these conditions are not acceptable.

The light tower shall be capable of overhanging the side or back of the vehicle to provide maximum illumination to the vicinity adjacent to the vehicle for the safety of emergency personnel in high traffic conditions. Light towers that are only capable of rotation at the top of a pole are not acceptable to the specified light tower.

Light Tower Electrical System

The light tower shall be a two-stage articulating device with a lighting bank on top of the second stage capable of continuous 360 degree rotation. The light shall be elevated by electric linear actuators, one (1) actuator shall elevate the light bank and one (1) actuator shall adjust the light bank angle from 0 to 110 degrees. Power for the light bank shall be supplied through power collecting rings thus allowing continuous 360 degree rotation in either direction.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast as required by NFPA 1901.

A red flashing or rotating light located in the driving compartment shall be illuminated automatically whenever the vehicles parking brake is not fully engaged, indicating that the light tower is not in stowed position, as required by NFPA 1901.

Light Tower Floodlights

The Command Light model CL602A-FX shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Fire Research Corp.
Number of lamp heads:	Six (6) SpectraMax SPA100-K28 LED
Voltage:	120 volts
Watts of each lamp head:	335 watt
Total watts of light tower:	2,010 watts
Total lumens of light tower:	168,000 lumens
Configuration:	The light heads shall be mounted with three (3) on each side of the light tower, giving two (2) vertical lines of three (3) when the lights are in the upright position.

Light Tower Backlight Option

A backlight option shall be provided on the light tower. The lower pair of light heads shall be capable of being rotated about a horizontal axis 180 degree, providing light down on the vehicle or to the opposite side of the vehicle while allowing the fixed lights to remain pointed at the scene.

The hand-held remote control shall have an additional switch supplied for the backlight rotation option.

Light Tower Paint

The light tower shall be electro-statically powder coated with a hammer tone gray color.

Light Tower Controls

The light tower(s) shall be operated with a hand-held 15-foot umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The remote control shall be located per the itemized compartment list and include;

Three (3) switches; one (1) for each pair of lights.

One (1) switch for light bank rotation.

One (1) switch for elevating lower stage.

One (1) switch for elevating upper stage.

One (1) switch for optional light bank rotation.

One (1) switch for the optional strobe.

One (1) indicator light to indicate when light bank is out of the roof nesting position.

One (1) indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

The specified light tower(s) shall be recessed into the roof of body to allow light tower(s) to be stowed below roof level. The floor and side walls of recessed area shall be fabricated as a separate module from 3/16" aluminum treadplate with an overlapping 3" flange around perimeter roof line. The recessed area shall be completely water tight. All electrical connections made to light tower shall be located on sidewalls for a water tight connection.

The recessed area shall have two (2) water drain holes (in opposite corners) with flexible 1" diameter hose routed to the area below the body. The drains shall be provided with sheet metal screen to prevent debris from clogging drain hoses.

COMMAND CAMERA SYSTEM

There shall be one (1) Bosch MIC-9502-730BQS dual thermal camera complete with Pan-Tilt-Zoom (PTZ) and integrated wiper and heater provided and installed on the specified mast. The unit shall require a MIC-115PSU-2 MIC 120 VAC, 50/60HZ, power supply.

The MIC IP fusion 9000i camera is an advanced PTZ surveillance platform designed to provide early detection in mission-critical applications. With its dual visible/thermal imaging capabilities, the MIC IP fusion 9000i camera is the perfect solution for robust and high-quality imaging needs. The camera's distinctive, ruggedized design is well suited for extreme environments and adverse weather conditions such as high winds, rain, fog, ice, and snow.

Exceptional imaging performance

The MIC IP fusion 9000i camera incorporates a high performance thermal imaging core and a 1080p starlight camera integrated in the same housing. This allows the camera to deliver simultaneous thermal and visible video streams, maximizing the ability to detect and react to long-range threats.

Thermal imager

The thermal imager incorporates the latest un-cooled vanadium oxide microbolometer technology. This high sensitivity thermal imager is equipped with a fixed focal length Athermal lens that balances the field-of view with maximizing the detection distance. User-adjustable settings for contrast and gain allow operators to optimize the image, ensuring delivery of the highest quality video. In addition, a wide variety of user-selectable thermal color modes are available allowing further optimization of the thermal image. Depending on model mix, QVGA resolution (320 pixels) and VGA resolution (640 pixels) versions are available, with choice of low (<9Hz) or high (30/60Hz) frame rates.

Visible imager

The 1080p60-capable visible imager has starlight technology and a 30x optical/12x digital zoom lens that provides high-quality images, excellent color performance, and unbeatable low-light sensitivity. High dynamic range ensures clear image reproduction in the most challenging high-contrast scenes.

High performance PTZ operations

The camera has a closed-loop feedback control system using a 15-bit position resolver. This resolver ensures high accuracy coordinates are linked with every pan/tilt position. Because the camera always knows where it is pointed, it will return automatically to its original position even if moved by extremely high winds. The pan and tilt mechanism of the camera is a ruggedized, spur gear system. The brushless motors directly control the pan and tilt movement using a finely-tuned gear train designed to minimize backlash and support continuous operation without much wear and tear. With a full 360° continuous rotation pan, 296° tilt control, and super-quick pan (120°/second) and tilt (90°/second) operational speeds, the camera outperforms other cameras in its class.

A Bosch MIC Hinged DCA MIC-DCA-HBA mount shall be provided.

A Bosch 60 W midspan NPD-6001B shall be provided to enable remote High Power over Ethernet (High PoE) for camera. The midspan provides surge protection, optimal for installation of outdoor powered devices. The midspan has a single port and is designed to carry data and power over a standard CAT5e (or better) cable, delivered through all 4 pairs.

CAMERA CONTROLLER

A Bosch KBD-UXF USB CCTV keyboard for use with Bosch video management system or DIVAR IP systems shall be provided and configured.

- USB Keyboard for managing Bosch video management system, building integration system (Bis) with video engine, or DIVAR IP systems with joystick and jog shuttle
- USB powered
- All important functions of the Bosch video management system GUI can be controlled.

TELESCOPING PNEUMATIC MAST

The vehicle shall be equipped with one (1) Will-Burt 7-42 heavy duty pneumatic powered telescoping mast(s). The mast shall utilize air from the chassis brake system. Air to operate the telescoping mast must be drawn from a drier system and be regulated to 20 psig and shall have a back pressure protection valve.

Mast shall be wired to a red flashing warning light in cab visible to the driver to warn when the mast is out of the nested position.

A 70' Nycoil conduit measuring 1" ID x 16-1/2" OD coil shall be provided for the 7-42 telescopic mast.

The mast shall be of a free standing design (non-guyed) and use high strength, heat treated aluminum alloy tubes and collars. Each mast section (tube) shall have two full length external keys and nominal .095" wall thickness collars with matching key ways to maintain directional azimuth.

Each mast section and collar shall be of the low friction synthetic bearings for smooth operation and longer life. Bumpers shall be supplied to reduce shock on extension and retraction. All exterior aluminum surfaces shall be anodized and sealed. Fasteners and fittings shall be plated steel or stainless steel for corrosion resistance.

One (1) maintenance and instruction manual shall be provided for the towers on delivery. Wiring schematic, air piping schematic and installation diagrams shall be provided with the manual. Manufacturer's blueprint of tower, complete parts list and bill of materials for towers provided with manuals.

MODEL 7-42 SPECIFICATIONS

Nested height tower only:	7'-1"
Extended height tower only:	41'-2"
Normal payload capacity:	150 lbs.
Number of sections:	9
Mast Diameter:	9" - 3"
Mast Volume:	7.2 cu. ft.
Collar type:	Non-locking
Maximum operating pressure:	35 psi

The operational envelope of the mast shall be automatically illuminated by a lookup light whenever the mast assembly is being raised as required by NFPA 1901.

A red flashing or rotating light located in the driving compartment shall be illuminated automatically whenever the apparatus's parking brake is not fully engaged, indicating that the light tower is not in stowed position, as required by NFPA 1901.

PNEUMATIC KIT

A pneumatic kit air control assembly (without compressor) shall be provided to control the mast. The assembly includes; a 0 - 160 PSIG air gauge, regulator, 0 - 30 PSIG air gauge, and a 3/8" inlet air hose with NPT fittings to provide air from air source.

MAST MOUNTING - EXTERNAL

The above telescoping mast shall be mounted using an external mounting kit attached to the rear body panel. The mast shall be enclosed with a removable 3/16" smooth aluminum enclosure located on the rear of the body extending from bumper level upward to enclose mast. 2" x 2" x 1/4" angles shall be welded to rear body panel for attachment of enclosure to body. The mast enclosure shall be provided to protect the control cables, air hoses, and the mast from the elements. The specified camera system shall extend above the enclosure, but still be lower than body height.

Controls for the mast shall be recessed into mast enclosure in a Cast Products aluminum box with hinged door. A removable panel shall be provided on side for access to lower section of mast for maintenance purposes.

A stainless steel scuff plate shall be provided on upper section of rear body panel to prevent scuffing of Nycoil cable on body surface.

MAST COVER

The mast enclosure shall be approximately 18" x 18" x full body height. Enclosure shall be fabricated from 1/8" 3003 H14 alloy aluminum and painted same as body color(s).

ANTENNA CABLING

No antenna communications cables shall be provided for future antennas to top of pneumatic mast base.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 10,000 lbs. of Miami Dade Fire Rescue provided equipment based on a 60,001 pound and up gross vehicle weight rating.

EQUIPMENT

The following equipment shall be furnished with the completed special service vehicle;

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- There shall be two (2) Zico SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
 - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be located in specified ladder compartment.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be located in specified ladder compartment.

There shall be two (2) Leatherhead American Hook 12' poles (fiberglass I-Beam) supplied on completed unit.

PLL-12AH-B	12' Hi-Viz Lime w/American Hook and Butt Handle
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- Three (3) Streamlight Fire Vulcan C4 LED flashlight(s) with shoulder strap shall be provided with 80,000 candela and 3 hour run time. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an LED spotlight style bulbs and reflectors. The flashlight(s) shall be wired to battery direct unless otherwise specified by Miami Dade Fire Rescue.
 - The above specified flashlight(s) shall be shipped loose with the completed unit.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901 for special service vehicles, section 10.9.3 shall be supplied and mounted by Miami Dade Fire Rescue before the unit is placed in emergency service.