Edmonton Fire Department
Hazmat
Production Specification

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LIABILITY INSURANCE

Bidder shall furnish with the bid a certificate of insurance for;

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

General Liability each occurrence of $1,000,000.00, General Aggregate of $2,000,000.00 including Products Completed / Operations Aggregate.

Personal Injury of $1,000,000.00, Fire damage of $50,000.00 and Medical expense of $10,000.00. 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 $2,000,000.00 each occurrence, Aggregate of $2,000,000.00.

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 Bidder shall post and maintain a website where the Edmonton Fire Department will be able to view digital images of their apparatus as its being manufactured. 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 the apparatus.

LEGAL REQUIREMENTS

The apparatus shall comply with all applicable federal and state or provincial laws and regulations.

VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS

The cab/chassis shall be 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.

CONSTRUCTION DOCUMENTATION

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

(1) The manufacturers record of apparatus construction details, including the following information:
   (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), 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 and Foam tank certified capacity in gallons or liters
   (s) Paint manufacturer and paint number(s)
   (t) Company name and signature of responsible company representative
   (u) 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
(3) Siren manufacturer's certification of the siren
(4) Written load analysis and results of the electrical system performance tests
(5) Certification of slip resistance of all stepping, standing, and walking surfaces
(6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
(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
(8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
(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
(10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
(11) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
(12) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
(13) When the apparatus is equipped with a water tank, the certification of water tank capacity
(14) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
(15) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
(16) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
(17) If the apparatus has a line voltage power source, the certification of the test for the power source
(18) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification *(see 24.9.7)*, and the results of the testing of the air system installation
(19) Any other required manufacturer test data or reports

OPERATIONS AND SERVICE DOCUMENTATION

The contractor shall deliver at the time of ***FINAL INSPECTION*** at least two (2) sets of 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 manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM

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

STATEMENTOF EXCEPTIONS

The contractor 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.

An apparatus that is delivered subject to a Statement of Exceptions other than a certification of full compliance shall not be placed in emergency service until the apparatus has been modified as necessary to accomplish full compliance with this standard.

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 values for type of vehicle per NFPA 1901, a purchaser provided list of equipment to be carried with weights, or a purchaser specified miscellaneous equipment allowance.

The manufacturer shall engineer and design the vehicle such that the completed unit, 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.

			Equipment Allowance	
Apparatus Type	**Equipt. Storage Area**	**Apparatus Size**	**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

Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Roadability Section.

The tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws.

The tests shall be conducted on dry, level, paved roads that are in good condition.

The apparatus shall be loaded to its estimated in service weight.

The engine shall not operate in excess of the maximum governed speed.

Acceleration tests shall consist of two runs in opposite directions over the same route.

The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds.

The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

If the apparatus is equipped with an auxiliary braking system, the manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

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 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 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 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.

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 tested and certified by Underwriters Laboratories, 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 percent 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 percent of the continuous rated wattage as stated on the power source specification label for a minimum of 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 ±10 percent 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 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 percent capacity at 150 psi (1000 kPa) net pump pressure. The test shall be permitted to be run concurrently with the pump certification test.

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 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 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.

GENERAL WARRANTY - ONE (1) YEAR

The entire body and all contractor installed components shall be warranted, including parts and labor for a period of at least ***one (1) year*** commencing upon the placing of the unit in-service by the Edmonton Fire Department (except that warranty on the tires and tubes, batteries, electrical lamps, and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for same are to be made directly with the manufacturer). Extended warranties on the engine, transmission, or other major components shall be detailed by contractor in their proposal.

This warranty shall not apply to those items which are usually considered normal maintenance and repair; including but not limited to normal lubrication or proper adjustment of main functional operating components. All manufacturers' warranties (apparatus & equipment) shall be furnished and indicated in the manufacturer's bid. Any standard warranties, including, but not limited to engine, transmission, tires and axles furnished by the original equipment manufacturer (OEM) or the prime contractor will be passed on to the Edmonton Fire Department. Also include any available extended warranties that will start after the initial warranty period. Goods or property shall be as represented by these specifications as well as additional agreements as a result of discussions regarding these specifications and shall be as promised with implied liability on the manufacturer.

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

LOW VOLTAGE ELECTRICAL SYSTEM - FIVE (5) YEARS

Contractor shall warrant the integrity of the electrical system on this emergency vehicle for a period of ***five (5) years, or 60,000 miles*** from date of delivery. To be free from defects in materials and workmanship under normal use and service. The obligation of contractor under this warranty is limited to repairing or replacing, at its option, any part or parts thereof which shall, after delivery of such vehicle to the original purchaser, be returned with transportation charges pre-paid to contractor or an authorized distributor or dealer, and which examination shall disclose to have been defective, except as herein after provided.

Items specifically covered are:

- Electrical harness and harness installation
- Printed circuit boards
- Load management system
- Warning light control panel switches that are provided and installed by bidder.

Items excluded are:

- Chassis electrical systems and components installed by chassis manufacturer including, but not limited to: printed circuit boards, switches, relays, fuses, and similar equipment.
- Separately manufactured items installed by bidder including, but not limited to: batteries, sirens, battery chargers, inverters, light bars and similar equipment. These are covered by warranties supplied by the manufacturer of the components.
- Periodic tightening and cleaning of connection terminals as this is considered routine maintenance.
- Normal wear, abuse, accident, negligence or unapproved alteration of original parts.

STRUCTURAL WARRANTY - TEN (10) YEARS

The contractor shall warrant that each new rescue body (exclusive of paint, finish, hardware, moldings, windows, and other appointments and accessories) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity for a period of ***ten (10) years*** from the completion date listed on the Manufacturer's data plate attached to the vehicle inside the cab.

The contractor further warrants that this structural integrity warranty may be transferred to a second purchaser providing the vehicle is inspected by the original contractor or their authorized representative within thirty (30) days of ownership transfer. To maintain warranty coverage, the proper ownership transfer papers shall be kept on file at contractor's facility.

In the event of a chassis remount, this structural warranty shall remain in effect providing that the re-chassis work is completed by the contractor or a facility which obtains written authorization from the contractor.

Should repairs become necessary under the terms of this warranty, the extent of the repair shall be determined solely by the Manufacturer and shall be repaired by the contractor or an Authorized Service Center designated by the contractor. The expense of any transportation to or from the ASC shall be the responsibility of the Edmonton Fire Department and is not an item covered by this warranty.

There shall be a Warranty Certificate supplied with the completed apparatus to detail the warranty configuration.

PAINT WARRANTY - TEN (10) YEARS

The exterior paint and finish on the portion of the unit painted by the contractor shall be warranted against cracking, checking, hazing, chalking, or fading or peeling of the topcoat or any layers from the substrate due to defects in manufacturing or improper preparation for a period of ***Ten (10) years*** from acceptance.

Edmonton Fire Department
Hazmat
Production Specification

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within three hundred sixty five (365) 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 Edmonton Fire Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

PENALTY CLAUSE

There shall be a $200.00 per day penalty clause if the vehicle cannot be delivered within 365 days after receipt of the purchase order.

OVERALL HEIGHT

The overall height (OAH) of the vehicle shall be approximately 146" (12' - 2") from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

OVERALL LENGTH

The overall length (OAL) of the vehicle shall be approximately 506" (42' - 2").

Dealer Commission

DELIVERY AND DEMONSTRATION

The contractor shall be responsible for the delivery of the completed unit to the Edmonton Fire Departments 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 Edmonton Fire Department regarding the operation, care, and maintenance of the apparatus and equipment supplied at the Edmonton Fire Departments location.

The delivery engineer shall set delivery and instruction schedule with the person appointed by Edmonton Fire Department.

After delivery of the apparatus, the Edmonton Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment as defined in NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, and NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

Edmonton Fire Department
Hazmat
Production Specification

MODEL

The chassis shall be a Gladiator model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2009 model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of Canada (CAN).

APPARATUS TYPE

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

VEHICLE TYPE

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

AXLE CONFIGURATION

The chassis shall feature a 6 X 4 axle configuration consisting of a tandem rear drive axle set with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 40,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

CAB STYLE

The cab shall be a custom, enclosed model, built specifically for the fire service by a company specializing in cab and chassis design for all fire service applications.

The cab shall be manufactured for heavy-duty service utilizing adequate strength and capacity for the application of protecting firefighters. The cab shall be of a modular design offering improved strength, durability and reduced weight. The modular design shall allow for faster, less costly replacement of components. Per pound, sheet panel aluminum extrusions offer a higher tensile strength, 45,000 PSI, and yield strength, 40,000 PSI, than that of lower grade sheet such as 3003-H13. For this reason, the cab shall be of aluminum extrusion construction, which shall offer superior strength and the truest, flattest surface ensuring less expensive paint repairs if needed.

The method of cab construction shall use a process incorporating techniques outlined in accordance with the American Welding Society D1.1-96 requirements for structural steel welding. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side panels shall be assembled using proven industrial adhesives, designed specifically for aluminum fabrication, which exceed the strength of a weld, for construction.

All interior and exterior seams shall be sealed for optimum noise reduction in addition to the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 Marine Grade, one hundred percent primary aluminum plate. A single formed, one (1) piece extrusion, manufactured from 6061-T6 100 percent primary one- quarter inch thick aluminum shall be used for the “A” pillar adding strength and rigidity to the cab as well as additional roll-over protection. The cab side wall skins and shall be 0.125 inch thick, the rear wall and roof skin shall be 0.19 inch thick, the front skin shall be 0.125 inch thick.

The cab shall incorporate tongue and groove fitted 6061-T6 0.25 inch thick aluminum extrusions for extreme duty situations. The cab shall include multi-layer composite insulation for improved cab heating and cooling in addition to noise reduction.

Proposals offering products built with anything less than the alloy-temper mentioned or from any other material, other than aluminum, shall not be considered. Additionally, any cabs utilizing recycled or recovered aluminum plate or extrusion products shall not be considered due impurities in the composition leading to a lack of strength.

The cab shall incorporate a fully enclosed design, allowing for a spacious cab area with no partition between the front and rear sections of the cab. The walls of the vehicle shall include roof supports allowing for an open design. The outside dimension of the cab shall be 96.00 inches wide with a minimum interior width of 90.00 inches.

The cab overall length shall be 150.38 inches in length with 74.00 inches from the centerline of the front of the axle to the back of the cab. The cab shall offer an interior height of 58.00 inches from the front floor to the headliner and a rear floor to headliner height of 79.00 inches in the crew area, at a minimum. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

In order to offer the optimum amount of cab space to occupants, there shall be no consideration given for any cab unable to comply with the minimum measurements for interior cab space as listed.

The cab shall include a driver and officer area with two (2) cab door openings. The front door opening shall offer a clear door opening of 43.00 inches wide X 56.00 inches high. The rear door opening shall offer a clear door opening of 38.00 inches wide X 88.00 inches high. This style of cab shall also include a crew area offering up to ten (10) seating positions.

The cab shall incorporate a two (2) step configuration from the ground to the cab floor for each door opening. The lower step shall be constructed of heavy duty safety grating which meets or exceeds Federal Specification RRG-1602-latest revision and performs under dry, greasy, muddy, soapy and icy conditions and offers open drainage.

The first step for the driver and officer area shall measure 11.44 inches deep X 31.13 inches wide. The intermediate step shall measure 8.75 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure 12.13 inches deep X 20.44 inches wide. The intermediate step shall measure 10.50 inches deep X 23.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.090 of an inch thick, one hundred percent primary aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the “Classic” design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

FRONT GRILLE

The front cab fascia shall include a classic box style, 304 stainless steel front grille with a Spartan logo. The grille shall measure 44.45 inches wide at the top of tapering to 39.30 inches wide at the bottom X 33.50 inches high X 1.50 inches deep.

The grille shall include a minimum free air intake of 632.90 square inches shall be installed on the front of the cab.

The upper portion of the grille shall be hinged at the bottom so it can be opened to allow easy access for examination of the windshield wiper motor, linkage and other options mounted within that area. The upper portion of the grille shall be secured with two (2) flush push button latches.

CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the specific color designated by the customer with a minimum thickness of 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The lower paint color shall be PPG FBCH 71665 Red.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owners date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, .190 of an inch thick, aluminum alloy plate. The tunnel shall be a maximum of 41.50 inches wide X 29.00 inches high.

CAB ENTRY DOORS

The doors shall be full height and constructed of extruded aluminum with a nominal thickness of .125 inch. The exterior skins shall be constructed of .125 inch aluminum plate. The cab shall include three (3) entry doors, two (2) front doors and one (1) crew on the officer side of the cab as high as possible for ease of entering and egress when outfitted with an SCBA. The driver and officer door openings shall offer a clear door opening of 40.75 inches wide. The crew door opening shall offer a clear door opening of 32.50 inches wide.

All cab and crew doors shall be of substantial weight for the optimum strength and rigidity for the best performance in all cab crash testing. Any cab with front and crew doors manufactured of less than the material thickness of .125 inch in both the extrusion and exterior skin shall not be considered.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each hinge shall be .375 inch piano style and be constructed of stainless steel.

The piano style hinge and hidden flush mounted door is the most favorable construction keeping dirt and debris out of the hinge allowing for optimum operation throughout the lifetime of the door.

Proposals offering door hinge thickness any less than stated shall not be considered.

Proposals including doors that do not comply with the flush mounting as described or those including exposed hinges shall not be considered.

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

LH EXTERIOR REAR COMPARTMENT

The cab shall contain an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 16.25 inches wide X 21.19 inches high. The compartment size shall be 17.84 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall include a 17.13 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a locking bent D-ring slam latch. There shall be a switch to activate the open compartment warning light in the cab in the event the door is left ajar.

LH EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10" long and shall include three (3) bright white Gen3 LEDs for long life and low amp draw.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a DA sanded finish.

RH EXTERIOR REAR COMPARTMENT

The cab shall contain an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 16.25 inches wide X 21.19 inches high. The compartment size shall be 17.84 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall include a 17.13 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a locking bent D-ring slam latch. There shall be a switch to activate the open compartment warning light in the cab in the event the door is left ajar.

RH EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10" long and shall include three (3) bright white Gen3 LEDs for long life and low amp draw.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a DA sanded finish.

REAR CAB WALL CUTOUT

The rear wall of the cab shall include a cut out which measures 24.00 inches wide X 76.50 inches tall to accommodate a walk through application.

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

CAB TEST INFORMATION

The cab shall have successfully achieved survival of the International crash test ECE-29, Addendum 28, Revision 1 as indicated below.

As part of the ECE regulation 29 test, the frontal area of the cab is struck by a 3,700 pound pendulum weight. The weight is brought back to a sixty degree angle and then the weight is released and allowed to swing forward, imparting some 32,600 lbs/ft of force to the cab front face.

The cab shall be so constructed that after the test, there will be minimal intrusion of the cab structure into the passenger area. The doors shall remain usable for both entry and exit. Also, as part of the test the cab roof must withstand a static load bearing test. The cab shall withstand a weight of over 60,000 pounds without permanent damage or collapse.

The above tests shall be witnessed by and attested to by an independent third party. The test results shall be recorded on/by cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed on the officer side bulkhead below the dash which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vista III display which shall be located on the left side of the dash in the switch panel. The Vista III shall feature a full color LCD display screen which includes a message bar displaying the time of day, the current ambient outside temperature and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be virtual controls for the auto climate control and on-board diagnostics. The display screen shall be video ready for back- up cameras, thermal cameras, and DVD.

The Vista III display shall measure approximately 10.38 inches wide X 7.50 inches overall. The display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- ☐ Vehicle Speed
- ☐ Acceleration
- ☐ Deceleration
- ☐ Engine Speed
- ☐ Engine Throttle Position
- ☐ ABS Event
- ☐ Seat Occupied Status
- ☐ Seat Belt Status
- ☐ Master Optical Warning Device Switch Position
- ☐ Time
- ☐ Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

POWER & GROUND STUD

A 40 amp battery direct power and ground stud shall be provided and installed in the electrical distribution panel. The stud shall be size #10 and protected with a 40 amp circuit breaker.

EXTERIOR ELECTRICAL TERMINAL COATING

All terminals exposed to the elements will be sprayed with a yellow protective rubberized coating to prevent corrosion.

ENGINE

The power plant for the vehicle shall offer proven performance and reliability while meeting all 2007 Federal diesel-engine emission requirements. During acceleration, the electronically actuated variable geometry turbocharger (VGT) shall automatically and precisely boost output across the operating range for improved throttle response and greatly reduced turbo lag. The VGT shall optimize airflow during Jake operation which shall offer increased auxiliary engine braking performance.

The Detroit Diesel engine shall achieve the oxides of nitrogen by 55 percent and particulate matter by 90 percent. The Detroit Diesel shall achieve the nitrogen oxide target by optimizing the existing exhaust gas recirculation system. Particulates shall be reduced with the after treatment system, comprised of a Diesel Oxidation Catalyst and a Diesel Particulate Filter (DPF). The engine manufacturer shall be responsible for total engine emissions by the addition of maintenance free crankcase breather and oil separator. The centrifugal oil separator shall send oil droplets back to the sump which shall emit a much cleaner vapor.

The Series 60 engine shall include an advanced fuel system which shall add performance and cleanliness to the engine. Dual solenoid Electronic Unit Ejectors shall provide exact fuel and metering and enable independent injection pressure control. This system shall have multiple injection capability to maintain performance advantages and improved sound quality. The Series 60 shall be rated at 455 HP at 1800 RPM and shall be governed at 2100 RPM with 1550 foot pounds of torque with peak torque occurring at 1200 RPM for rapid off the line acceleration. The engine shall have an 855 cubic inch displacement (14 Liters).

The Series 60 shall include a DDEC VI engine management system. The DDEC VI shall employ a powerful microprocessor, increased memory and enhanced diagnostics. The DDEC VI shall be capable of managing all engine functions and shall be a key strategy in greater operating efficiency and cleaner exhaust emissions. A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indication on the Vista screen for the high idle speed control.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

FLUID FILLS

The front of the chassis shall accommodate fluid fills for the engine oil and the windshield washer fluid though the grille. This area shall also accommodate checks for the engine oil.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

ENGINE BLOCK HEATER

A Kim Hotstart 1000 watt, 120 volt engine coolant heater with automatic thermostat shall be installed. The block heater shall be connected to the electrical inlet.

EMERGENCY ENGINE SHUTDOWN SYSTEM

An emergency engine shutdown, which shuts off the air supply to the engine by activating a flapper valve to stop a run-away engine, shall be installed in the air intake system. It shall be activated by a locking rocker switch located on the rocker switch panel.

Resetting this flapper valve shall require manually resetting the rocker switch and turning the lever on the air intake flapper valve. Refer to the chassis operator manual for complete instructions for resetting the air intake flapper valve.

ENGINE WARRANTY

The Detroit Diesel engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

The engine low idle speed will be programmed at 700 rpm.

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the fire industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall utilize heavy-duty welds and be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a stacked, single depth package that provides the maximum cooling capacity for the specified engine as well as offers excellent serviceability. The main components shall include a surge tank, a charge air cooler, a recirculation shield, and a radiator.

There shall be a single depth core that allows greater efficiency, enhanced serviceability, and lighter weight with a higher ambient capability.

The cooling package core shall be protected by a radiator skid plate and not protrude below the frame of the vehicle by more that 3.5 inches. This feature shall provide an improved angle of approach thereby reducing possible damage.

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall include a minimum of a 910 square inch core and shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded Polymer fan blade designed to provide long life in harsh environments. Polymer fans provide a significant weight reduction over metal fans providing longer life for fan clutch linings and bearings along with increased fan belt life.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufactures pressure requirements as well as the system design requirements.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance. When a center bumper compartment is installed an additional shield may be required to redirect the airflow into the coolers.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall have a minimum of a 473 square inch core and be bolted to the top of the radiator to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel “constant torque” style clamps meeting the engine manufactures requirements.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 55/45 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -40 degrees F.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

ENGINE COOLANT FILTER

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote overflow bottle shall be provided in the case of over filling the coolant system; this is usually done to locate the expansion fluid in the overflow bottle rather than on the ground. The overflow bottle that is used on the system will only be a catch bottle and will not return coolant back to the surge tank. The system is designed with a single seal cap and does not allow the coolant to return to the surge tank.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the officer side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a galvanized steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the officer side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE EXHAUST SYSTEM

The exhaust system shall include a diesel particulate filter and a diesel oxidation catalyst to meet current EPA standards.

The system shall utilize 0.065 inch thick stainless steel exhaust tubing between the engine turbo and the diesel particulate filter. This section of the exhaust system shall be wrapped with a thermal cover in order to retain the necessary heat for system regeneration. Zero leak clamps seal all system joints between the turbo and diesel particulate filter.

From the diesel particulate filter to the end of the tailpipe the system shall be plumbed with 0.065 inch thick aluminized steel tubing connected with overlapping band style clamps. The discharge shall terminate horizontally on the officer side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the inboard position maximizing space for the body compartments.

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Nederman 45 degree exhaust extraction system.

TRANSMISSION

The drive train shall include an Allison Gen IV-E model EVS 4000 torque converting, automatic transmission which shall include electronic controls and an output retarder. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters which shall offer Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

1st	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
6th	0.64:1 (if applicable)
Rev	4.80:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The EVS group package number 127 shall contain the 199 vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module.

Function ID	Description	Wire assignment
C	PTO Request	143
F	Aux. Function Range Inhibit (Special)	101/142
G	PTO Enable Output (See Input Function C)	130
S	Neutral Indicator for PTO	145
	Signal Return	103

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

TRANSMISSION RETARDER CONTROL

The Allison transmission retarder control shall be modulated by a one-third at 0% throttle and two- thirds brake pedal actuation and shall include a virtual button on the multiplex display. The activation of the retarder shall activate the brake lights and shall be inactive during pump mode.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

TRANSMISSION COOLING SYSTEM

The transmission shall include an air to oil cooler integrated into the lower portion of cooling package. The transmission cooling system shall meet all transmission manufacturer requirements.

The transmission retarder application shall feature a separate water to oil cooling system consisting of a tube bundle cooler installed into the transmission hydraulic circuit to provide additional cooling for the retarder. The tube bundle cooler shall be mounted to the chassis, connected to the engine cooling system plumbing.

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

LH PTO

A Spartan supplied ten (10) bolt standard duty clutched drive PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

LH PTO MODEL

A ten (10) bolt Chelsea model 277-XGFJP-B5XD heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides torque ranges from 250 to 335 lb. ft.

PTO LOCATION

The transmission driven power take off (PTO) shall be mounted in the 8:00 oclock position.

PTO CONTROL

The left hand power take off shall be controlled by the transmission. It will use a virtual switch on vista with text messages. Disable is displayed when switch is off. Enable is displayed when the switch is turned on. Active is displayed when the switch is on with positive engagement of the power take off.

Required operating conditions for enabling this function are:
☐ Throttle position is low
☐ Engine speed is within customer modifiable constant limits
☐ Output speed is within customer modifiable constant limits
☐ Park brake set

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fuel Pro 382 fuel filter/water separator as a primary filter. The fuel filter shall have a see through cover to allow visual inspection of fuel and filter condition and a drain valve.

A secondary fuel filter shall be included as approved by the engine manufacturer.

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

FUEL LINES

The fuel system lines shall be black textile braid covered high tensile steel reinforced wire braided supply and return hoses with steel reusable fittings installed from the tank to engine.

FUEL SHUTOFF VALVE

There shall be two (2) fuel shutoff valves which shall be installed, one (1) in the fuel draw line at the primary fuel filter and one (1) in the fuel draw line at the secondary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A third fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

ELECTRIC FUEL PRIMER

A Facet brand electric fuel primer pump shall be provided and include a fuel primer momentary switch located on a panel under the dash to activate the primer pump. A check valve and by-pass system shall be installed for normal draw of fuel for the engine fuel pump.

FUEL TANK

The fuel tank shall have a minimum capacity of one hundred (100) gallons and measure 35.00 inches wide X 15.00 inches high X 48.00 inches long. The baffled tank shall be made of 14 gauge aluminized steel. The tank exterior is painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The fuel tank shall be mounted 2.00 inch below the frame, behind the rear axle. The tank can be easily lowered and removed for service purposes.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

Dual draw tubes and dual sender ports shall be installed. A 2.00 inch NPT fill ports shall be available for right or left hand fill. A 0.5 inch NPT drain plug shall be centered in the bottom of the tank.

FUEL TANK FILL PORT

The fuel tank fill ports shall be provided with the right fill port located in the rearward position and the left fill ports located one (1) in the forward position and one (1) in the middle position of the fuel tank.

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 21,500 pounds FAWR.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

FRONT SUSPENSION

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column shall be a seven (7) position tilt and 2.25 inch telescopic type with an 18.00 inch steering wheel located on the left side of the cab designating the drivers position. The steering wheel shall be covered with black absorbite padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

POWER STEERING PUMP

The hydraulic power steering pump shall be a Vickers 20V and shall be gear driven from the engine. The pump shall be a fixed displacement vane type.

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 48 degrees to the left and 44 degrees to the right.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

The completed apparatus shall be rechecked for proper alignment once the chassis has been fully loaded and before being placed in service.

REAR AXLE

The rear axle shall be a Meritor model number RT-40-145 tandem drive axle. The axle shall offer the widest range of ratios available in an efficient single reduction axle design. The axle shall feature a robust housing design with a standard 0.5 inch wall thickness, a shot-peened hypoid Generoid gearing with bolted ring gear to differential case attachment backed by a thrust screw. The axle shall feature precision forged differential gears, one-piece forward carrier design, large diameter input shaft and a rigid differential case.

The axle shall feature precision forged differential gears and shall have a rated capacity of 40,000 pounds.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR AXLE DIFFERENTIAL CONTROL

The tandem axle chassis shall include an inter-axle differential lock, which shall allow both axles to be engaged as drive axles. The inter-axle differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the inter-axle differential lock.

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 60 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The tandem axle shall feature a Raydan Air-Link AL-460 air suspension. The Air-Link AL-460 shall feature a unique air ride and walking beam suspension design which combines a super smooth ride with durability. The suspension offer two (2) moving parts which shall provide long wear and low maintenance cost. The rear tandem suspension shall have 54.00 inch axle centers.

Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load.

The rear suspension shall be run flat capable at reduced speeds.

The rear suspension capacity shall be rated at 40,000 to 46,000 pounds.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

FRONT TIRE

The front tires shall be Michelin 425/65R-22.5 20PR "L" tubeless radial XZY3 mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The front tire U. S. Fire Service intermittent load capacity shall be 23,000 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

REAR TIRE

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2 all weather tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

The rear tire US Fire Service Intermittent Usage load capacity shall be 28,880 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

TIRE PRESSURE EQUALIZATION SYSTEM

There shall be a voucher provided with the chassis for Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. The Crossfire pressure system shall equalize and monitor the valve which is mounted between the dual tires. This shall bolt easily to the drive axle end allowing air to flow freely from one tire to the other, maintaining equal tire pressure and load distribution. The Crossfire system shall maximize tire life, decrease rolling resistance for increased fuel mileage and improve stability braking and overall safety.

The Crossfire dual tire equalization system shall be redeemed upon the vehicle manufactures receipt of the voucher along with the vehicle in-service weight for each axle.

TIRE PRESSURE INDICATOR

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturers receipt of the voucher for installation by the customer.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoas Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04" installed between the inner and outer wheel hub to help prevent corrosion caused by metal to metal contact. There shall also be a plastic isolator between the axle hub and the wheels on both front and rear axles.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a total of 6220 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A six (6) sensor, six (6) modulator anti-lock braking system (ABS) shall be installed on the front and tandem rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Automatic traction control which shall be installed on the tandem rear axle. The automatic traction control system shall apply the anti-lock braking system when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

Additional handling capabilities shall include roll stability control which shall monitor the vehicles rollover threshold based on the lateral acceleration. The system shall activate a computerized device which shall slow the vehicle when the threshold is exceeded in either direction. Normal vehicle operation shall resume once the problematic conditions cease. Roll stability control shall be integral with the ABS and ATC systems.

A virtual style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The electronic stability control unit (ESC) is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicles motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicles lateral acceleration. The CAN bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

The front brakes shall be Meritor 16.5" x 6" S-cam drum type.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the center of the dash within easy access of the driver and the officer positions.

FRONT BRAKE SLACK ADJUSTERS

The front brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

FRONT BRAKE DUST SHIELDS

The front axle shall be equipped with brake dust shields.

REAR BRAKE DUST SHIELDS

The rear brakes shall be equipped with brake dust shields.

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 30 brake chambers.

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/30 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 30 brake chamber shall offer a 30.00 square inch effective area.

AIR COMPRESSOR

The air compressor provided for the engine shall be to provide and maintain air under pressure to operate devices in air brake systems. The brand provided shall be a Bendix BA-922 which shall be a twin-cylinder reciprocating compressor rated at 32.00 CFM. The compressor shall consist of a water-cooled cylinder head assembly and an integral air-cooled crankcase assembly.

The cylinder head assembly shall be made up of the cylinder head, cooling plate and valve plate assembly and shall use two sealing gaskets. Depending on the application, the cylinder head and cooling plate may be aluminum or cast iron. A cooling plate shall be located between the cylinder head and valve plate assemblies and assists in cooling. The valve plate assembly consists of brazed steel plates which have valve openings and passages for air and engine coolant to flow into and out of the cylinder head. The compressor's discharge valves shall be part of the valve plate assembly. The inlet reed valve/gasket shall be installed between the valve plate assembly and the top of the crankcase.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air cleaner bracket on the right frame rail behind the officer step.

AUXILIARY AIR RESERVOIR

One (1) auxiliary air tank, 2084 cubic inch reservoir, shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

MOISTURE EJECTORS

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system. The manual drain provision shall include an actuation pull cable coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

AIR SUPPLY LINES

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

WHEELBASE

The chassis wheelbase shall be 264.50 inches.

REAR OVERHANG

The chassis rear overhang shall be 126.00 inches.

FRAME

The frame shall consist of double channel side rails and cross members forming a ladder style frame. The sides of the rails shall be formed in the shape of a "C" channel, 10.25 inches high X 3.50 inches deep upper and lower flanges X .38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and .38 inches thick. The high strength low alloy steel shall have a Tensile Elastic Limit of 110,000 psi. Each double rail shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the “box method” shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The head bolts shall be flanged type with distorted threads, held in place by flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.
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Any proposals not including additional reinforcement for each cross member shall not be considered.

Frame rails will be manufactured such that bolt attachment holes are specific for each component and shall not include any unnecessary holes.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME WARRANTY

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

REAR TOW DEVICE

Two (2) heavy duty painted tow eyes shall be installed extending rearward from the frame at the rear of the chassis. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inches and shall have a chamfered edge. The tow eyes shall be bolted one (1) on each side to the outside of the chassis frame with grade 8 bolts. The tow eyes shall be painted to match the chassis frame.

FRAME CLEAR AREA

The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

FRAME PAINT

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils. The salt spray resistance per ASTM B-117-97 shall pass 500 hours of salt spray test. The applied process shall allow the application of other products over it and still maintain or exceed the 500 hours salt spray test.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12" high and 101" wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 16.00 inches ahead of the cab.

FRONT BUMPER EXTENSION WIDTH

The front bumper extension splayed frame rails shall include an overall width of 44.75 inches.

FRONT BUMPER APRON

The 16.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

AIR HORN

The front bumper shall include two (2) Grover brand air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horn shall be a trumpet style and shall include a chrome finish. Each horn shall be enclosed in an aluminum box and insulated with foam type insulation to limit the sound that is transmitted to the rear into the cab area.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper face, one (1) on the driver side of the bumper in the inboard position relative to the left hand frame rail and one (1) on the officer side of the bumper in the inboard position relative to the right hand frame rail.

AIR HORN SNOW SHIELDS

The air horns shall include snow guards which shall prohibit snow and debris from accumulating inside the horn and disrupting sound.

AIR HORN RESERVOIR

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

ELECTRONIC SIREN SPEAKER

The bumper shall include two (2) Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall include a flat mounting flange, an insulated encapsulation and shall be chrome in color.

ELECTRONIC SIREN SPEAKER LOCATION

The two (2) electronic siren speakers shall be located on the front bumper face outboard of the frame rails with one (1) on the right side and one (1) on the left side in the outboard positions.

CAB TILT SYSTEM

The entire cab shall be capable of tilting 45.00 degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the “Down” button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CAB TILT AUXILIARY PUMP

A manual cab tilt pump module shall be attached to the rear surface of the driver side battery box.

CAB TILT CONTROL RECEPTACLE

The cab tilt shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a 6-pin Deutsch connector that includes a cap. The remote control pendant shall also include 20.00 feet of cable which also includes a mating connector.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2884.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The distance from the driver and officer to the windshield shall be a minimum of 42.00 inches at the furthest seated position. This distance shall ensure the safety of the driver and officer from intruding objects in the unlikely event of a head on collision.

The glass utilized for the windshield a standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and maintenance costs. All proposals offering windshields not in compliance with the minimum measurement of surface area stated above and are not fully interchangeable shall not be considered.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished via electric actuation. The power windows shall be controlled via switching on the driver door and by a switch on each respective door.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as “cozy glass” ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

GLASS TINT FRONT DOOR

The windows located in the left and right front doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR RH

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the drivers door panel.

GLASS TINT REAR DOOR RH

The window located in the right hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR LH

The left hand side of the cab where the middle side window and rear door would normally be shall include a window which is 50.00 inches in width X 26.00 inches in height. The window shall be a fixed type window. The window shall be mounted using self-locking window rubber.

GLASS TINT REAR DOOR LH

The window located in the left hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS SIDE MID RH

The cab shall include a window on the officers side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID RH

The window located on the right hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS UPPER SIDE FRONT

The raised roof on the left and right sides of the cab shall include a triangular shaped window which shall be 14.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted to the cab using black self-locking window rubber.

GLASS TINT UPPER SIDE FRONT

The windows located in the upper section on the left and right side towards the front of the cab shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS UPPER SIDE MID

The middle section of the raised roof on the right side of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. This window shall be fixed within this space. The window shall be mounted using black self-locking window rubber.

GLASS TINT UPPER SIDE MID

The windows located in the upper section on each side in the middle of the cab shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS UPPER SIDE REAR DOOR

A window shall be provided in the upper portion of the right rear door of the raised roof cab. The window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The window shall be rectangular in shape and fixed within this space. The window shall be mounted using black self-locking window rubber.

GLASS TINT UPPER SIDE REAR DOOR

The window located in the upper section on the crew doors of the cab shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CLIMATE CONTROL

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. When in "Cabin Mode" the system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of ABS plastic.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

CLIMATE CONTROL ACTIVATION

The heating controls, and air conditioning if included, shall be located on the Vista screen.

AUXILIARY CLIMATE CONTROL FRONT UNDERSEAT

Two (2) 13,500 Btu heaters shall be provided and installed in the face of the seat riser storage area for the driver and officer. The fan controls shall be located on the Vista display(s).

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. The auxiliary heater system shall include one (1) seasonal shut-off valve. The valve shall be supplied at the front of the right hand corner of the cab. The cab must be tilted to access the shut-off valve.

AUXILIARY CLIMATE CONTROL REAR UNDERSEAT

One (1) 53,500 BTU heater shall be provided and installed in the rear section of the crew cab on the floor behind the driver's seat. The fan controls shall be located on the heater unit.

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. The auxiliary heater system shall include one (1) seasonal shut-off valve. The valve shall be supplied at the front of the right hand corner of the cab. The cab must be tilted to access the shut-off valve.

HEATER HOSE INSULATION

The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose improving heating in extreme cold climates. The heating hoses which shall be routed inside the cab shall not be insulated.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on cab forward of raised roof against the slope rise.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

CAB ROOF VENT

The cab roof shall include two (2) powered Evans E6E cab roof vents capable of exhausting 100 CFM each which shall be installed, one (1) each side of the cab in the rear crew area.

CAB CIRCULATION FANS FRONT

The cab shall include two (2) all metal 6.00 inch air circulation fans installed in the outer front cab corners. Each fan shall be controlled by an individual toggle switch on each fan. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

CAB CIRCULATION FANS REAR

The cab shall include two (2) individually switched all metal construction 6.00 inch fans which shall be installed in the upper rear cab corners as far outboard as possible. The multi purpose fans can be used to increase air circulation or help defog windows.

CAB INSULATION

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer foam insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The insulation shall measure .56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil backing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab.

INTERIOR TRIM FLOOR

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

INTERIOR TRIM VINYL

The cab interior shall include trim on the front and rear crew ceiling, the cab walls and the rear wall of the cab. The trim shall be constructed of insulated vinyl over a hard board backing. The trim shall be securely fastened to the interior of the cab utilizing snap style fasteners with a decorative cover for a more appealing appearance.

INTERIOR TRIM VINYL COLOR

The cab interior vinyl trim surfaces shall be gray in color.

INTERIOR ABS TRIM COLOR

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

HEADER TRIM

The cab interior shall include a header over the driver and officer dash which shall be vacuum formed ABS composite panel with robust styling grooves providing structural integrity. The header shall include (2) vents within the header which are directed at the windshield. Also included will be a drop down panel for access behind the header for service of electronic components, if necessary. The header shall include (2) cut outs, (1) over the driver and (1) over the officer to accommodate speakers and molded areas to accommodate the sun visors.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge outboard of the electrical access opening for ventilation.

TRIM LH DASH

The left hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick, one hundred percent primary aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.63 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment, recessed 3.00 inches below the surface of the dash and measure 16.00 inches wide X 14.00 inches deep.

CAB PAINT INTERIOR

The interior metal surfaces shall be painted with a Zolatone #20-71 onyx black texture finish.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with .44 of an inch thick multi-layer mat consisting of .25 inch closed cell foam, .13 of an inch thick PVC acoustical barrier and .06 inch thick non-slip pebble grain. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

POWER POINT DASH MOUNT

The cab shall include one (1) 12 volt cigarette lighter type receptacle in the cab dash dedicated as a power source for additional portable or mobile items. The receptacle shall be wired to be live with the battery master switch.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of 14 gauge 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in .084 inch thick 3003-H22 embossed aluminum tread plate.

STEP TRIM KICKPLATE

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 aluminum Tread-plate which is 0.072 inches thick.

INTERIOR DOOR TRIM

The doors of the cab shall include an aluminum plate the same weight and grade as the cab on the interior of the door. The aluminum shall be then painted.

DOOR TRIM KICKPLATE

The inner door panels shall include an aluminum tread kick plate which shall be fastened to the lower portion of the door panels.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with a Zolatone #20-71 black onyx finish.

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape that measures 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

A rubber covered 11.00 inch grab handle shall be provided on the inside of the cab on the hinge post at the driver and officer doors. The handle shall assist personnel in exiting and entering the cab.

INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

DASH PANEL GROUP

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

SWITCHES CENTER PANEL

The center dash panel shall include six (6) switch positions in the upper left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have red backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have red backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall include no rocker switches or legends.

SWITCH PANEL IGNITION

The vehicle shall be equipped with a keyless ignition and master, with an “Off/ On” and a two switch for “Off/ Start”.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide visual and audible warning when any seat is occupied (sixty pounds minimum), the corresponding seat belt remains unfastened, and the park brake is released.

Once activated, the visual and audible indicators shall remain active until all occupied seats have the seat belts fastened. The dash shall include a display on the Weldon Vista screen(s) indicating the occupancy of each seat.

SEAT MATERIAL

The seats shall include a covering of high strength, wear resistant fabric made of durable 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. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

All seats supplied with the chassis shall be black in color.

SEAT BACK LOGO

The seat back shall include a black and gray diamond logo which features a capital S in red located in the middle of the diamond. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK DRIVER

The drivers seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature six-way electric positioning. The six (6) positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK OFFICER

The officer seat back shall include a Ziamatic brand Quic-Lock® mechanical self contained breathing apparatus (SCBA) bracket. The Positive Locking Mechanical walk away bracket shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of fire truck cabs. The brackets shall be third Party tested to ten (10) times the force of gravity.

The bracket shall secure a self-contained breathing apparatus with all sizes of cylinders. The bracket shall include four PVC coated clamping arms which securely lock the SCBA in place without damaging the cylinder wall. The bracket shall also include a pull release strap which shall include a 30.00 inch nylon lanyard which activates the lever on the bracket saving the occupant from reaching behind the SCBA in order to release the bracket. The nylon strap shall be located on the right side of the seat.

The basic bracket and clamp arms shall be made of strong, yet light-weight, aluminum alloys. Hex arms and operating levers shall be plated steel to withstand years of constant use. The bracket shall feature donning of the SCBA in a fast and easy manner.

POWER SEAT WIRING

The power seat or seats installed in the cab shall be wired directly to battery power.

SEAT BELT ORIENTATION CREW

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

SEAT FORWARD FACING OUTER LOCATION

The crew area shall include one (1) forward facing outboard seat located directly behind the engine tunnel on the officer side of the cab.

SEAT CREW FORWARD FACING OUTER

The crew area shall include a seat in the forward facing outer position which shall be a theatre style series. The seat shall feature a padded seat, and cushion which shall be hinged and attached to the wall providing optimum space savings. The seat shall remain in the stored position until occupied.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK FORWARD FACING OUTER

The crew area shall include a seat in the forward facing outer position which shall be a theatre style seat. The rear wall padded trim shall act as the backrest for each seat.

There shall be a red, three-point shoulder harness with lap belt and an automatic retractor attached to the cab and available to the seat. 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. The seat belt assembly anchorages shall conform to the Federal Safety Standard (FMVSS) No. 210, “Seat belt assembly anchorages”.

SEAT MOUNTING FORWARD FACING OUTER

The forward facing outer seat shall be mounted in the furthest outboard position facing the front of the cab.

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right front under seat storage areas shall each have a vented aluminum hinged door with a non-locking latch. The surface of the doors facing the interior of the cab shall be coated with the same material as the interior metal surfaces of the cab.

WINDSHIELD WIPER SYSTEM

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the drivers position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow “Check Message Center” indicator light on the instrument panel shall illuminate and the message center in the speedometer shall display a “Check Washer Fluid Level” message.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be aluminum with a polished chrome plated finish. The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel. All doors shall be keyed alike and designed to prevent accidental lockout.

The interior latches shall be black flush paddle type, which are incorporated into an upper door panel.

DOOR LOCKS

The doors shall include a CAN based electronic door lock system which shall include two (2) external keypads, one (1) located on the left side next to the front grab handle and one (1) on the right side next to the front grab handle. There shall be one (1) red rocker switch provided on the inside of each front cab entry door to actuate the door locks. The rear cab entry doors shall be provided with a red manual knob on the interior paddle handle to actuate the door lock on the respective door. The electronic door lock system shall include four (4) key fobs for actuation with buttons for cab entry door locks and for compartment door locks.

Wiring shall also be provided for up to four (4) exterior cab compartments and up to four (4) body compartments.

DOOR LOCK LH REAR CAB COMPARTMENT

The driver side rear compartment shall feature a power door lock actuator.

DOOR LOCK RH REAR CAB COMPARTMENT

The officer side rear compartment shall feature a power door lock actuator.

POWER DOOR LOCK COMPARTMENT ACTIVATION

The power door lock feature shall include activation for exterior compartment door locks through the key fob, keypads and through a virtual switch on the multiplex display.

GRAB HANDLES

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Ramco model 6015-FFHR-750HR bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high with an additional top mount convex assembly. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 15.00 inch long polished cast aluminum arms with 3" vertical risers.

The mirrors shall feature a remote controlled heated full flat glass and a top mounted remote controlled heated convex glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a virtual button on the multiplex display.

TRIM LOWER SIDE

A stainless steel trim band, 10.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab and doors. The trim shall be installed so that the top edge approximately 1.00 inch below the top of the front bumper, and shall be affixed without holes and fasteners.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. The two-piece liners shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

CAB EXTERIOR MODEL NAMEPLATE

The cab shall include custom “Gladiator” nameplates on the front driver and officer side doors.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab exterior above the wheel well.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a ¼ turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the “ON” position.

The starter button shall only operate when both the master battery and ignition switches are in the “ON” position.

A hidden toggle switch with protective cover shall be provided. The switch shall be located so it can be activated at the drivers discretion. The switch shall be wired in such a manor so if the parking brake is released and the transmission is placed in gear, electrical power will be cut to disable the engine to prevent unauthorized personnel from commandeering the vehicle.

BATTERY

The single start electrical system shall include (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

BATTERY TRAY

The batteries shall be installed within two (2) stainless steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

BATTERY BOX COVER

Each battery box shall include a stainless steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

BATTERY CABLE

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jump stud and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There will be 4 remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

The starting system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

AUXILIARY AIR COMPRESSOR

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET

A Kussmaul 15 amp super auto-eject electrical receptacle shall be installed on the drivers side of the cab above the wheel well. It shall automatically eject the plug when the master switch is moved to the on position.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that its connected to.

Amp Draw Reference List:
Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps

ELECTRICAL INLET COLOR

The Kussmaul Auto-Eject electrical inlet connection shall include a red cover.

AUXILIARY ELECTRICAL INLET

An additional Kussmaul 15 amp electrical receptacle shall be connected to the block heater and installed on the drivers side of the cab above the wheel well.

AUXILIARY ELECTRICAL INLET COLOR

The additional Kussmaul electrical inlet connection shall include a grey cover.

HEADLIGHTS

The cab front shall include (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

The headlights shall be controlled via a virtual button on the Vista display.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed in polished aluminum housing above and outboard of the front warning and head lamps.

HEADLIGHT LOCATION

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) cab LED marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

CORNERING LIGHTS

The bumper tail shall include two (2) Whelen model 500 halogen steady-on cornering lights with clear lenses in the upper position, one (1) each side.

GROUND LIGHTS

Each door shall include an LED NFPA compliant ground light mounted to the under side of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side as well as through the Vista screen.

STEP LIGHTS

The middle step located at each door shall include a recess mounted LED light which shall activate with the opening of the respective door.

ENGINE COMPARTMENT LIGHT

There shall be two (2) LED NFPA compliant lights mounted under the engine tunnel for area work lighting on the engine. The lights shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life.

FRONT SCENE LIGHTS

The front of the cab shall include two (2) Fire Research Focus model FCA800-M10 contour roof mount lights installed on the brow of the cab.

Each lamp head shall have one (1) quartz halogen 1000 watt 120 volt bulb. The bulb shall draw 8.3 amps and generate 22,000 lumens. Each lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Each lamp head shall be no more than 4.75 inches in height X 15.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be two (2) scene lights mounted to the front brow of the cab in the outboard position centered over the outer front marker lights.

FRONT SCENE LIGHTS ACTIVATION

The front scene lights shall be pre-wired to be activated by the OEM.

-SIDE SCENE LIGHTS

The side of the cab shall include two (2) Tomar model RECT-79H13-C-890HP scene lights, one (1) each side which shall be surface mounted. The Tomar lights shall offer 37 watt halogen lighting at a 13-degree angle.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the driver and officer sides of the cab shall be mounted in the upper mid forward portion of the 10.00 inch raised roof of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The left and right side scene lights shall be activated by opening the respective side door and by individual virtual buttons on the MUX display(s) in the cab.

INTERIOR OVERHEAD LIGHTING

The cab shall include a two-section Whelen LED dome lamp with a red and white lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The white portion of each lamp shall be activated by opening the respective door and both the red and white portion can be activated by individual switches on each lamp.

An additional two-section Whelen LED dome lamp with a red and white lens shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

AUXILIARY DOME LIGHT LH

The cab shall include two (2) 7.00 inch round auxiliary dome lamp over the driver position, the lens on one (1) lamp shall be clear and the other lens shall be red in color. The lamps shall be activated by an individual switch located on the side of the lamp.

AUXILIARY DOME LIGHT RH

The officer position shall include two (2) 7.00 inch round auxiliary dome lamp in the headliner of the cab, the lens on one (1) lamp shall be clear and the other lens shall be red in color. The lamps shall be activated by an individual switch located on the side of the lamp.

AUXILIARY DOME LIGHT REAR CREW

The cab headliner above the forward facing crew seats shall include two (2) 7.00 inch clear dome lamps and one (1) 7.00 inch red dome lamp. The clear lamps shall be in the outboard positions and the red lamp shall be in the center in line with the clear lights. These lamps shall be activated by an individual switch located on the side of each lamp.

MAP LIGHTS

A Federal Signal gooseneck style map light shall be provided. The light shall have a clear lens with a sliding red filter, shall be 18.00 inches tall, and shall have a rheostat control switch on the base. The light shall be located on the right hand side of the dash.

SPOTLIGHT

There shall be 2 (two) 12 volt Optronics QH-100 hand-held spotlights shipped loose with the chassis. The Optronics spot light shall offer 1,000,000 candle power with a 55 watt quartz halogen bulb. It shall include a 10.00 foot coiled cord and a push button switch.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a Whelen 500 series red LED light, located in the center for greatest visibility. The light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, a remote audible alarm and an audible alarm on the MUX shall be included which shall sound when a door is open and the parking brake is released.

The light and alarm shall be interlocked for activation when a cab door is not firmly closed, an apparatus cabinet door is not closed and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included, as a button on the MUX display screen and be labeled “E Master” for identification. The switch shall feature control over all devices wired thought it. Any warning device switches left in the “ON” position when the master switch is activated shall automatically power up.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include dual Tomar RECT-46LLWS LED warning lights which shall offer multiple flash patterns including steady burn. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the inboard position.

INBOARD FRONT WARNING LIGHTS COLOR

The inboard front warning lights mounted in the fascia shall be split clear/clear, both with clear lenses.

OUTBOARD FRONT WARNING LIGHTS

The cab front fascia shall include dual Tomar RECT-46CLLWS LED warning lights which shall offer multiple flash patterns including steady burn. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the outboard position.

OUTBOARD FRONT WARNING LIGHTS COLOR

The front warning lights mounted on the fascia for the outboard position shall be red/ red.

FRONT WARNING SWITCH

The front warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Tomar RECT-37CLLWS intersection warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red/ red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted in the rear position on the side of the bumper.

SIDE WARNING LIGHTS

The cab sides shall include two (2) Tomar RECT-37CLLWS LED warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the chassis shall be red/ red.

SIDE WARNING LIGHTS LOCATION

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

INTERIOR DOOR WARNING LIGHTS

The interior panels of each door shall include one (1) red 4.00 inch diameter LED Truck-Lite warning light which shall be provided on the inner surface of each cab door. Each light shall activate with a flashing pattern when the door is in the open position to serve as an indicator to oncoming traffic.

SIREN CONTROL HEAD

A Code 3 V-Con model 3692 200 watt siren amplifier control head shall be provided and recess mounted in the in the center switch panel in the lower right section of the panel. The siren shall feature wail, yelp, hi-lo, air horn, radio broadcast, public address, a hard wired noise cancelling microphone, park kill, instant “ON”, and adjacent backlighting.

AIR HORN ACTIVATION

The air horn actuation shall be accomplished by a drivers side mounted Linemaster model SP491-S81 foot switch and a black push button on the dash. The LH foot switch shall only activate the horn when the parking brake is released. The dash push button shall only activate the horns when the master warning switch is on. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

BACK-UP ALARM

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of not less than 107 dB. The alarm shall automatically activate when the transmission is placed in reverse. A virtual switch shall be provided on the MUX display to disable of the backup alarm.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. The gauges shall be backlit with red LED lamps. All gauges shall be driven by stepper motor movements. The instrumentation system shall be multiplexed and shall receive engine and transmission information over the J1939 data bus to reduce redundant sensors.

The instrument panel shall contain the following gauges:

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) electronic speedometer with an integral LCD odometer/ trip odometer and hour meter shall be included. The speedometer shall have a dual scale with kilometers per hour (KPH) as the dominant scale and miles per hour (MPH) on the minor scale. The speedometer scale shall read from 0 to 140 KPH (0 to 90 MPH). The odometer shall display up to 9,999,999.9 kilometers. The trip odometer shall display up to 9,999.9 kilometers. The LCD screen shall also be capable of displaying certain diagnostic functions. The hour meter shall display engine hours of operation.

One (1) three function gauge with primary air system, secondary air system and fuel level shall be included. The scale on the air pressure gauges shall read from 0 to 140 pounds per square inch (PSI). The air pressure scales shall be non-linear to expand the scales in the region of normal operation. A red indictor light in the gauge shall indicate a low air pressure. The scale on the fuel level gauge shall read from empty to full. A yellow indicator light in the gauge shall indicate low fuel at the quarter tank level.

One (1) four function gauge with engine oil pressure, coolant temperature, transmission oil temperature and a voltmeter shall be included. The scale on the engine oil pressure gauge shall read from 0 to 140 pounds per square inch (PSI). The engine oil pressure scale shall be non-linear to expand the scale in the region of normal operation. A red indicator light in the gauge shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 70 to 120 degrees Celsius (C). A red indicator light in the gauge shall indicate high coolant temperature. The scale on the transmission oil temperature gauge shall read from 50 to 150 degrees Celsius (C). A red indicator light in the gauge shall indicate high transmission oil temperature. The scale on the voltmeter shall read from 8 to 16 volts. A red indicator light shall indicate high or low system voltage.

The instrument panel shall contain an Annunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

RED LAMPS
Stop Engine - indicates critical engine fault. (5)
Park Brake - indicates park brake is set.
Volts - indicates high or low system voltage. (4)
Low Oil Press - indicates low engine oil pressure. (4)
High Coolant Temp - indicates excessive engine coolant temperature. (4)
High Trans Temp - indicates excessive transmission oil temperature. (4)
Low Air - indicates low air pressure in either system one or system two. (4)
Low Coolant Level - indicates low engine coolant level. (1) (5)
Air Filter - indicates excessive engine air intake restriction. (5)
Brake System Fault - indicates a failure in the brake system (hydraulic brake systems only). (5)
Seat Belt Indicator - indicates that a seat is occupied and the corresponding seat belt(s) remains unfastened.

YELLOW LAMPS
Check Engine - indicates engine fault. (5)
Check Trans - indicates transmission fault. (5)
Wait to Start - indicates active engine air preheat cycle. (2) (5)
ABS - indicates anti-lock brake system fault. (5)
Water in Fuel - indicates presence of water in fuel filter. (1) (5)
Check Message Center indicates that there is a fault message present in the LCD digital display.
SRS - indicates a problem in the RollTek supplemental restraint system. (1) (5)
DPF - indicates restriction of the diesel particulate filter. (3) (5)
HEST - indicates a high exhaust system temperature. (3) (5)
MIL - indicates an engine emission control system fault. (3) (5)
Low Fuel - indicates low fuel. (4)

GREEN LAMPS
Left and Right turn signal indicators.
Aux Brake Active - indicates secondary braking device is active. (1)
High Idle - indicates engine high idle is active. (1)
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system. (1) (5)
Ok To Pump - indicates that pump engage conditions have been met. (1)
Pump Engaged indicates that pump is currently in use. (1)

BLUE LAMP
High beam indicator.

The instrumentation system shall provide a constant audible alarm for the following situations:
Low air pressure.
Low engine oil pressure.
High engine coolant temperature.
High transmission oil temperature.
Low coolant level. (1)
High or low system voltage
Critical engine fault (Stop Engine).

The Check Message Center icon will illuminate and a message will be displayed in the LCD screen for the following situations:
Cab Ajar
Low Oil Level
Door Ajar
Engine Communication Error
Transmission Communication Error
ABS Communication Error
High Coolant Temp
Turn Signal Reminder (turn signal left on for more than one (1) mile)
Low Fuel
Low Oil Pressure
Low Coolant Level
Low Battery Voltage
High Battery Voltage
Low Primary Air Pressure
Low Secondary Air Pressure
High Trans Temp

The instrumentation system will provide a continuous alarm for the following situations:
Stop Engine
Low Coolant Level (1)
Brake System Fault
Check Trans
Check Engine
ABS
Engine Communications Error
Transmission Communications Error
ABS Communications Error
Low Fuel
Low Primary Air Pressure
Low Secondary Air Pressure
Low or High Battery Voltage
High Trans Temp
Low Oil Pressure
High Coolant Temp

The instrumentation system will provide a 160 millisecond second alarm every 880 milliseconds for the following situations:
Seat Belt
Air Filter
Water in Fuel (1)
Cab Ajar
Low Oil Level
Door Ajar

The instrumentation system will provide a 160 millisecond second alarm every 5 seconds for the following situation:
Turn Signal Reminder (turn signal left on for more than one (1) mile)

(1) Feature only available when optionally equipped.
(2) Feature only available on engines with preheat capability.
(3) Feature only on vehicles with diesel particulate filter (DPF).
(4) Warning light is present in gauge.
(5) A message in the LCD screen will also be displayed.

AMMETER

Within the LCD screen of the speedometer, a digital ammeter gauge shall be installed which shall measure the electric current flow of the chassis. The LCD screen shall be capable of reporting an amperage reading from between -300 and 270 amps within an accuracy of 1/10 of an amp.

BRAKE APPLICATION PRESSURE GAUGE

Within the dash panel, a brake application pressure gauge shall be installed which shall measure the application air pressure when the brakes are applied.

CLOCK

The officer dash shall include a Class 1 digital style clock. The clock shall include a digital readout in either standard or military time.

AIR RESTRICTION GAUGE

The instrument panel shall include an Engineered Products air cleaner restriction gauge.

FUEL PRESSURE GAUGE

The dash panel shall include a fuel pressure gauge. This gauge shall utilize an electronic sensor to show increased fuel pressure when the fuel filters become clogged.

CAMERA

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) box shaped camera shall be shipped loose for OEM installation in the body to afford the driver a clear view of the rear of the vehicle and one (1) camera with a teardrop shaped chrome plated housing shall be mounted on the officer side of the cab below windshield ahead of the front door at approximately the same level as the cab door handle. The cameras shall be wired to a single Weldon Vista display located on the drivers side dash. The rear camera shall activate when the transmission is placed in reverse and the right camera shall activate with the right side turn signal. Each camera shall also be activated by a button on the Vista display.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

FIRE EXTINGUISHER

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road side triangle kit.

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

AS BUILT WIRING DIAGRAMS

The cab and chassis shall include two (2) complete sets of wiring schematics and option wiring diagrams. One (1) set shall be printed, one set (1) shall be provided in PDF format on a CD.

WARRANTY - CAB AND CHASSIS

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twelve (12) months, or the first 24,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

OPERATORS AND PARTS LIST MANUAL

There shall be two (2) chassis operator's manual which includes a parts list. Also, wiring and air plumbing diagrams shall be provided as well as a list of any parts or equipment that is shipped loose with the vehicle. All standard wiring and plumbing diagrams shall be created specifically to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

There shall be two (2) sets of engine operation and maintenance manuals and two (2) sets of transmission operation manuals specific to the models ordered included with the final vehicle in the ship loose items.

CAB/CHASSIS PREPAYMENT

The specified cab/chassis shall be prepaid by Edmonton Fire Department within 30 days of invoice from Contractor. Purchaser understands that if payment in made after 30 days, additional interest charges may apply.

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

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 fire apparatus in feet and inches or in meters, the length of the completed fire apparatus in feet and inches or in meters, and the GVWR in tons or 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.

ACCIDENT PREVENTION

There shall be a placard in the cab seating area which reads, "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION".

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.

ACCIDENT PREVENTION

If the rear bumper is 8" deep or more, there shall be a placard on the rear face of the body, in clear sight from the ground, which reads, "WARNING - DO NOT RIDE ON STEPS OR DECK AREAS WHILE THE APPARATUS IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT".

WEARING HELMET WARNING

A label stating “DO NOT WEAR HELMET WHILE SEATED” shall be visible from each seating location.

FRONT BUMPER

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

BUMPER GRAVELSHIELD

The bumper extension gravel shield shall be provided by the cab/chassis manufacturer.

AIR HORN(S)

The air horn(s) 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.

FRONT LIFTING BAR

Front bumper extension shall be provided with a front lifting bar located under bumper to provide contact point for wrecker cable attached to front axle and help prevent cable contacting lower edge of bumper. Tow eyes shall be incorporated into design of lifting bar. Design shall match existing Fire Department pumpers. The lifting bar shall be powder coated silver, T353-GR06.

CAB SPOTLIGHTS

The two (2) cab cab/chassis supplied spotlights shall be mounted in cab crew area one (1) each side between upper forward and middle windows in raised roof.

EXHAUST

The exhaust system shall be as provided by cab/chassis manufacturer. No other alternation or modifications are required.

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.

CONVEX MIRROR

Add one (1) 3" convex mirror on lower right officer main mirror to assist in blind spot.

THREE (3) ANTENNAS - RAIL MOUNTED CAB ROOF

There shall be one (1), radio antenna rail(s) provided and installed on the roof of the cab/chassis. The rails shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Total of three (3), antenna bases shall be provided and installed in each rail. The bases shall include a minimum of 20' of LMR195 cable. The antenna wiring shall enter the cab roof at a single point under the end of the rail. The end of each radio antenna shall be routed to the area behind the officers seat in the cab.

Due to multiple configurations of antenna whips, the Manufacturer shall provide the antenna base, and Edmonton Fire Department shall provide the whip.

WIRING CHANNEL

There shall be a wiring channel located adjacent to the engine tunnel on the officers side floor extending from behind the officer seat to the area under the officer side dash panel. The channel shall be constructed of 2" x 2" smooth plate aluminum powder coated to match the interior as closely as possible. The channel shall be used to run cabling from the dash mounted radio and MCT to the CPU located behind the officers seat.

MCT MOUNTING PROVISION

The officers side dash panel shall contain provisions for mounting one (1) Edmonton Fire Department supplied Mobile Computer Terminal. The provisions shall include a slide out tray to hold the terminal display and shall be constructed per the Edmonton Fire Department design as specified in previous units.

MUD FLAPS

There shall be rubber mud flaps furnished and installed behind each set of tires. In addition, there shall be two (2) rubber mud flaps furnished and installed on front outer edge of body. These mud flaps shall measure approximately 24" wide and shall be located approximately 9" from the ground. A horsehair type full width mud flap shall be provided on the front edge of the underside of the rear step bumper to prevent road spray from accumulating on the rear of the apparatus.

AUTOMATIC VEHICLE LEVELING SYSTEM

A Quadra Manufacturing, Inc. "Big Foot" model QE-2 shall be installed on the unit designed for large heavy duty vehicles with a GVWR over 23,000 pounds. The system shall have four (4) mounting brackets bolted to the chassis frame rails, two (2) front and two (2) rear. Each jack shall bolt to the bracket attached to the chassis frame and shall include an 18" x 18" 3/8" thick steel pad on the base to provide a more stable lifting surface than the factory supplied jack plate.

Each jack has its own hydraulic reservoir and 12 volt DC motor wired to the chassis electrical system. Jack pads shall have a 100 square inches surface to prevent sinking in soft ground. Jacks shall be rated for lifting 17,000 pounds minimum (each).

The system shall have a drive-off safety feature. If the vehicle ignition switch is on and any legs are not fully retracted, a warning alarm shall sound with the Deluxe-Touch Pad, fully automatic panel with sensor.

The system shall be provided with a 5 year limited warranty from Quadra Manufacturing, Inc.

CHASSIS AIR TANK LABELS

Labels shall be provided on streetside rubrail area above cable drains for air tanks as follows; front-to-rear; "WET" "FRONT" "REAR" "AUX".

REAR CAB AREA LAYOUT

REAR CAB DESK - "L" SHAPED

The rear portion of cab shall be provided with an "L" shaped desk extending from the curbside to streetside directly behind the driver and officer and extending to the rear wall of the cab on the streetside.

The section directly behind the driver and officer shall be approximately 26" deep and located 30" from the floor. The streetside extension shall be approximately 18" deep and located 30" from the floor. The front edge of desk shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum with a 2" vertical downward edge along the front to cover the 2" x 2" reinforcement. There shall be 2-1/2" diameter holes with plastic edge grommets 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 knurled thumb type latch in each corner.

- There shall be two (2) phones mounted in the front face of the component console
- There shall be two (2) data port(s) provided in the front face of the component console.
- There shall be two (2) 12V outlet(s) provided in the front face of the component console.
- There shall be four (4) 120 volt, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.

CAB INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a dark gray hammer tone powder coat paint finish for a hard durable surface. Each cabinet shall be approximately 14" high x 14" deep x 26" wide. Exact dimensions shall be verified by Edmonton Fire Department prior to construction of apparatus to ensure binders and other materials will fit into space.

The above cabinet(s) shall have sliding clear Lexan door(s).

CAB COMMAND 120V INTERIOR LIGHT(S)

There shall be one (1) 120 volt, interior light fixture(s) installed above the desk/deck area under the overhead cabinet(s). Fixture shall be provided with single bulb and switch on fixture. Exact location to be determined at the preconstruction meeting.

CAB INTERIOR CABINET - OVERHEAD STREETSIDE

There shall be two (2) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a dark gray hammer tone powder coat paint finish for a hard durable surface. Each cabinet shall be approximately 14" high x 14" deep, length to best fit the designated area.

OVERHEAD RADIO MOUNTING CONSOLE

There shall be one (1) overhead radio mounting console provided in the cab command interior. The radio cabinet shall provide mounting area for the radios specified and shall be approximately 14" deep by 4" high. The surface shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

The radio cabinet shall be constructed of 1/8" smooth finish aluminum and front of the cabinet shall have standard bolt-on 8-1/2" x 3" black radio trim mounting plates. A hinged 3/16" aluminum drop down access cover shall be provided on the bottom to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. Ventilation louvers shall be provided for proper ventilation of radio equipment.

- There shall be two (2) radio(s) mounted in the front face of the component console

CAB COMMAND 120V INTERIOR LIGHT(S)

There shall be two (2) 120 volt, interior light fixture(s) installed above the desk/deck area under the overhead cabinet(s). Fixture shall be provided with single bulb and switch on fixture. Exact location to be determined at the preconstruction meeting.

2-DRAWER FILING CABINET

One (1) Hon 2-drawer Efficiency Pedestal cabinet(s) with "K" type pull handle shall be installed in the cab command area. Each cabinet shall have a keyed lock and shall be painted charcoal. Each filing cabinet shall be 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.

INTERIOR PEDESTAL SEAT

Two (2) Bostrom Sierra high back Duraware fabric pedestal type seat(s) with 6" fore/aft adjustment shall be provided on the completed apparatus. Each seat shall be mounted on a swivel style pedestal base and securely bolted to the reinforced floor structure. The seat shall closely match the driver and officer seat colors.

The seat(s) shall be provided with an automotive type lap seat belt. The seat belt(s) shall be secured to the attachment point provided on the seat and shall be red.

The seat(s) shall be integrated with the Vehicle Data Recorder system. The system shall provide visual and audible warning when any seat is occupied (sixty pounds minimum), the corresponding seat belt remains unfastened, and the park brake is released.

Once activated, the visual and audible indicators shall remain active until all occupied seats have the seat belts fastened. The dash shall include a display on the Weldon Vista screen(s) indicating the occupancy of each seat.

MAGNETIC WHITEBOARD

There shall be two (2) magnetic whiteboards, approximately 30" wide x 36" high located; one (1) on rear streetside of cab above seat, and one (1) on rear fixed wall of front curbside slide-out.

INTERIOR CAB WINDOW COVERS

An interior window cover shall be provided on eight (8) windows in the cab.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the cab to allow each window to be covered.

INTERIOR CAB COMMAND CURTAIN

An interior curtain shall be provided between the command center and the front of the cab.

The curtain shall be of Cover Lite Select, 22 oz material. Straps shall be installed to hold the curtain rolled in the up position when not in use.

- Four (4) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R). Outlet(s) shall be located under command desk area and used to power the specified monitors and printer.

FUEL FILL

There shall be one (1) Cast Products fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall have a spring-loaded hinged door and a permanent label with the text "DIESEL FUEL ONLY".

PLACARD HOLDERS

Four (4) placard holds shall be provided, one (1) on front bumper, and one (1) in each upper window on side of cab, and one (1) on rear curbside body panel above reflective stripe.

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 Edmonton Fire Department 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 Edmonton Fire Department from such repair and shall NOT be used.

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 ALUMINUM BODY

The fabrication of the body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas.

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

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

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

ROOF CONSTRUCTION

The roof shall be integral with the body and shall be all welded construction. The roof of the body shall not be less than 3/16" aluminum 3003H-14 alloy NFPA nonskid compliant tread plate, fully and continuously welded. The roof shall be reinforced with 2" x 2" x 1/4" aluminum tubing running the full width of the body. A 2" rounded radius shall be provided along the body sides.

BODY SUBFRAME

To assure proper body alignment and clearance, the body subframe shall be constructed directly on the chassis.

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 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be crossmembers of 2" x 6" x 1/4" aluminum. These crossmembers shall extend the full width of the body to support the compartments. Crossmembers shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum crossmembers shall be located as necessary to support walkway or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with a minimum of eight (8) 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 utilizing 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.

17" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 17" 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 body subframe, below the apparatus body. The tow eyes shall be fabricated from steel plate and shall have a black powder coat finish.

TRAILER HITCH

A Class III, 7,500 lbs. weight carrying capacity (gross trailer weight) rear hitch receiver shall be provided below the rear bumper. The receiver shall be attached to the apparatus body frame.

The hitch shall be complete with a 2" square receiver. Without the use of a "weight distribution" ball hitch the Class III receiver shall have a capacity of 5,000 lbs. gross trailer weight.

For hydraulic brake equipped or electric brake equipped trailer towing capability, a primary electrical receptacle shall be provided near the hitch point and shall match the umbilical cable specified.

An auxiliary electrical receptacle shall be provided near the hitch point and shall match the umbilical cable specified for optical warning lights.

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.

TRAILER BRAKE CONTROLLER

A trailer brake controller shall be supplied and installed in the cab. The controller shall apply power to the trailer brakes in proportion to vehicle's deceleration. The controller shall provide a continuous diagnostic check for proper connection and shorted magnet conditions.

GROUND LIGHTS

Two (2) OnScene Solutions 9" LED Nightstik ground lights shall be mounted below the rear bumper.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

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 BOTTLE COMPARTMENTS

There shall be seven (7) SCBA compartments located adjacent to the rear tandem wheels. There shall be four (4) on the curbside and three (3) on the streetside of the apparatus body. Each compartment shall have a Cast Products aluminum door assembly with a positive catch latch. The compartment shall allow the storage of SCBA bottles up to 7-3/4" in diameter.

ALUMINUM BODY PAINT SPECIFICATIONS

The final finishing of this apparatus shall be to fire apparatus standards exhibiting excellent gloss, durability, and color retention properties. Commercial type paint finish shall not be acceptable. A warranty sheet with all conditions shall be provided with completed apparatus.

All flush mounted lights, drip moldings, windows, and other equipment shall be fitted to the apparatus prior to paint finishing, then removed to assure full paint coverage under all equipment.

The apparatus body shall be sanded smooth on all exterior surfaces to assure removal of all imperfections in metal surface and to assure good adhesion of paint to body. All metal surfaces shall be chemically cleaned and metal etched with acid cleaner prior to paint.

The body shall receive a corrosion resistant epoxy primer coat. The primer coat shall be lightly sanded to assure a smooth surface for a final coat. All seams and corners in sheet metal on interior and exterior shall be sealed with automotive type caulk prior to painting finish coat.

Prior to the assembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items, an isolation tape, or gasket material must be used to prevent damage to the finish painted surfaces.

Touch-up paint shall be provided with completed apparatus.

PAINT FINISH - SINGLE COLOR

The apparatus body shall be painted single color with PPG Delfleet paint with clear coat for a high gloss, hard finish.

- Paint Color: Match cab/chassis supplied paint color.

The painted body shall be finished with a clear coat of acrylic urethane for paint protection and maximum quality finish.

PAINT WARRANTY

The apparatus shall be provided with a ten (10) year non-prorated warranty to the original Owner. Warranty is provided by PPG Inc. A "PPG Warranty" sheet with all conditions shall be provided with the delivered apparatus.

BODY UNDERCOATING

The entire underside of apparatus body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas to retard corrosion under the apparatus.

UNDERCOAT WARRANTY

The undercoating shall be provided with a warranty by its manufacturer for the lifetime of the vehicle. The re-spray warranty shall be transferable between vehicle owners. Should the coating 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.

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

All retroreflective materials shall conform to the requirements of ASTM D 4956, *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 D 4956, Section 6.1.1, shall have a minimum coefficient of retroreflection 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 D 4956, Section 6.1.1.

REFLECTIVE STRIPE - CAB SIDE

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side.

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

The 6 in. (152 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.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 3/4" Scotchcal reflective stripe located 1/4" above and a second 3/4" Scotchcal reflective stripe located 1/4" below the main stripe.

- This reflective stripe shall be blue in color.

REFLECTIVE STRIPE - CAB FRONT

A reflective stripe shall be affixed to the front of cab. The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 6 in. (152 mm) wide retroreflective stripe(s) shall be affixed to at least 25 percent of the width of the front of the apparatus.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 3/4" Scotchcal reflective stripe located 1/4" above and a second 3/4" Scotchcal reflective stripe located 1/4" below the main stripe.

- This reflective stripe shall be blue in color.

REFLECTIVE STRIPE - BODY SIDES

A 6" minimum reflective stripe shall be affixed to the sides of the body.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 3/4" Scotchcal reflective stripe located 1/4" above and a second 3/4" Scotchcal reflective stripe located 1/4" below the main stripe.

- This reflective stripe shall be white in color.

The stripe shall extend from the chassis to the body where it will angle up ahead of cab front wheels and then 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 only of the body shall have a Chevron style reflective stripe layout, and cover as much of the rear side panels as possible. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panels shall have a minimum 10 year warranty for material failure, and colorfastness.

- The stripe material shall be 3M Diamond Grade.

All retroreflective materials required shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

- This reflective Chevron stripe shall alternate red and yellow in color.

LETTERING

The following lettering shall be furnished and installed on the completed unit:

SIDE CAB DOOR LETTERING

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

Lettering shall be provided inline with reflective stripe on front cab doors as follows; "FIRE"

- This reflective lettering shall be white in color.

UPPER BODY SIDE LETTERING

There shall be thirty six (36) 10" high reflective letters furnished and installed on the upper body sides as follows;

"EDMONTON FIRE RESCUE"

- This reflective lettering shall be white in color.

There shall be sixty six (66) 6" high reflective letters furnished and installed on upper body sides. The exact wording of the lettering shall be determined by Edmonton Fire Department prior to the completion of the apparatus.

- This reflective lettering shall be white in color.

REAR BODY LETTERING

There shall be four (4) 10" high reflective letters furnished and installed on the upper rear body as follows;

"FIRE"

- This reflective lettering shall be white in color.

FRONT OF CAB LETTERING

There shall be three (3) 4" high reflective letters furnished and installed on the vehicle.

"825"

- This reflective lettering shall be white in color.

CAB ROOF LETTERING

There shall be ten (10) 22" high reflective letters furnished and installed on the cab roof as follows;

"825"
"FIRE / DG"

- This reflective lettering shall be white in color.

CUSTOM DECAL LOGO - 46"

Two (2) custom designed Haz-Mat, approx. 46" Scotchcal type retroreflective logo(s) shall be provided on the completed vehicle, located on the body sides.. The layout shall be provided identical to previous Edmonton DG unit.

SUPPLIED DECALS

The bidder shall install two (2) Edmonton Fire Department supplied decal(s) on the vehicle, located on the.

EXTERIOR COMPARTMENT DOORS

HINGED DOOR CONSTRUCTION

The exterior compartment doors shall be custom manufactured and built for each compartment. The compartment doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.

The compartment doors shall be all aluminum 3003H-14 alloy construction. The exterior panel shall be of 1/8" thickness smooth plate aluminum and the interior panel shall be of 1/8" thickness smooth plate aluminum. Lighter gauge material will NOT BE ACCEPTABLE in these areas. The double panel doors shall be 1-3/4" thick to completely enclose the door latching assembly. Doors shall have drain hole openings for drainage and ventilation.

The doors shall be flush mounted so that the outer surface is in line with the side body surface. Lap or bevel type constructed doors, doors framed with extrusions, or doors requiring rubber bumpers to prevent unnecessary contact are NOT ACCEPTABLE.

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. In addition, rubber molding shall be provided along hinge to prevent moisture entry. Open cell foam type rubber moldings are NOT ACCEPTABLE.

Hinged compartment doors shall have 14 gauge stainless steel hinge, with 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Drip rails shall be installed above all compartment door openings. Drip rails shall be completely removable for easy replacement if necessary.

The latching mechanism of hinged compartment doors shall include stainless steel 6" Hansen offset bent D-ring keyed handles. A gasket shall be placed between stainless steel handle and door. Door latches shall be a double catching two-point rotary slam latch, recessed inside the double panel door with striker plate.

All vertically hinged compartment doors shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE. All horizontally hinged compartment door shall have a door check as specified with each door.

ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

The apparatus shall be equipped with Robinson Series III roll-up exterior compartment doors. Robinson roll-up doors shall be complete with the following features;

- Doors shall be front roll with drum positioned at upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment
- There shall be a non-abrasive side brush seals
- Magnetic door ajar system must be integrated in lift bar handle and the retainer block to signal open door. No mechanical switches or switches interior to the compartment shall be used
- Every slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door
- Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal is not visible to detract from appearance of door
- Slats are to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects
- Slats to be double-wall extrusion 1.366" high by .315" thick. Exterior surface to be flat and interior surface to be concave to prevent loose equipment from interfering with door operation
- Latch system to be a full width one piece lift bar operable by one (1) hand
- A 2" wide finger pull integrated into the bottom rail extrusion for easy one (1) hand opening and closing
- Clip system that connects the curtain slats to the operator drum which allows for easy tension adjustment without tools
- Each roll-up door shall have a 4" diameter counterbalance operator drum to assist in lifting the door.
- Track shall be one-piece aluminum that has an attaching flange and finishing flange incorporated into its design
- Drip rail will have specially designed seal that prevents the seal from scratching the door
- Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door
- Bottom rail to have "V" shaped double seal to prevent water and debris from entering the compartment
- Standard replacement parts to be shipped from the United States and available in as little as 48 hours

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 4.50" in height for the bottom section of door assembly.

EXTERIOR ROLL-UP DOOR FINISH - SATIN

The roll-up doors shall have a satin aluminum finish on the door slats and the door trim components.

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

	Description	Dimension
A	Bottom of Subframe to Top of Body	89.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening - (Short Compartment) -with hinged door	20.0"

ABOVE REAR AXLE

	Description	Dimension
D	Vertical Door Opening - Above Rear Wheel -with roll-up door	34.0"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	22.5"
F	Vertical Door Opening - (Short Compartment) -with hinged door	17.5"

GENERAL

	Description	Dimension
G	Bottom of Drip Rail to Top of Body	38.5"
H	Walk-in Interior Height	83.0"

(Dimensions are generic and subject to change during the actual design process)

BODY WIDTH DIMENSIONS

The body shall be 100.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth dimensions shall be:

Area Description	Dimension
Transverse Area: - Above Top of Subframe	95.5"
Compartment Depth: - Below Top of Subframe - Ahead of Rear Axle	24.5"
Compartment Depth: - Below Top of Subframe - Behind the Rear Axle	23.5" (Eng. Note)

(Dimensions are generic and subject to change during the actual design process)

STREETSIDE COMPARTMENT - FRONT (S1)

Two (2) compartments below slide-out each with interior useable compartment width approximately 46.0" wide.

Each compartment door opening shall be approximately 40.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) 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.

- One (1) horizontally mounted OnScene Solutions LED Nightstik mounted at the top of the compartment toward the compartment door opening.
- Location for specified inverter and deep cycle batteries in second door opening. 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 lower compartment.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

The interior useable compartment width shall be approximately 35.0" wide.

The compartment door opening shall be approximately 28.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan / splash guard shall be provided with the rollup door.

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 COMPONENTS

- There shall be vertically mounted shelf trac for shelving installation.
- There shall be one (1) adjustable shelf/shelves approximately 30" deep.
  - 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) Lista ST0900-0702F, 7-drawer tool cabinet located at base of cabinet. Cabinet to have dark grey finish with one (1) 7", two (2) 5", and four (4) 3" drawers.
- 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 cable reel(s) capable of storing 200' of 10/3 electric cable. The rewind switch for each reel shall be located adjacent to the reel it controls.
  - The cable reel shall equipped with 200' of 10/3 SEOOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
  - One (1) Akron model EJB, cast aluminum electrical power distribution box with yellow powder coat painted finish shall be provided. The power distribution box shall include:
    - 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) 5-15 duplex straight-blade receptacle
      - One (1) L5-20 single twist lock receptacle
      - One (1) L5-20 single twist lock receptacle
      - One (1) L5-20 single twist lock receptacle
  - One (1) EJB vertical apparatus mounting bracket - treadplate
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- The controls for the specified light tower(s) on the front compartment wall above the specified Lista tool cabinet.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan / splash guard shall be provided with the rollup door.

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 COMPONENTS

- There shall be vertically mounted shelf trac for shelving installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 30" deep and as wide as the compartment layout or door opening permits.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the tray. The striping shall be 2" wide and red/white in color.
- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 30" 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.
  - 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) vertically mounted OnScene Solutions LED Nightstiks.
- The specified portable winch shall be mounted in compartment using a heavy duty "U" shaped channel. Winch receiver tube and mounting pin shall be utilized to hold in place during travel.
- One (1) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R).
- One (1) 120 VAC outlet strip(s) approximately 2' long with straight blade household type outlets.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S4)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.

- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.

- One (1) aluminum drip pan / splash guard shall be provided with the rollup door.

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 COMPONENTS

- There shall be vertically mounted shelf trac for shelving installation.

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 30" deep and as wide as the compartment layout or door opening permits.

  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the tray. The striping shall be 2" wide and red/white in color.

- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 30" 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.

  - 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) vertically mounted OnScene Solutions LED Nightstiks.

STREETSIDE COMPARTMENT - REAR (S5)

The interior useable compartment space shall be approximately 70.0" wide.

The compartment door opening shall be approximately 63.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) 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.

- One (1) horizontally mounted OnScene Solutions LED Nightstik mounted at the top of the compartment toward the compartment door opening.

COMPARTMENT COMPONENTS

- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

CURBSIDE COMPARTMENT - FRONT (C1)

The compartments ahead of walk-in door with interior useable compartment width of approximately 81.0" wide.

The compartment door opening shall be approximately 74.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) 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.

- One (1) horizontally mounted OnScene Solutions LED Nightstik mounted at the top of the compartment toward the compartment door opening.
- The cab tilt control pendant.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.

COMPARTMENT COMPONENTS

- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 22" deep and as wide as the compartment layout or door opening permits located below the level of the chassis frame rails.
    - 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) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

SIDE ENTRY DOOR

Access to the interior body compartment shall be provided through a side entry door. The door opening shall be approximately 31" wide x 94" high.

Construction of the side entry door shall be with 1/8" aluminum exterior smooth plate, the interior door pan being constructed from 1/8" aluminum tread plate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. The hinge shall be slotted horizontally and vertically for ease of adjustment. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

The latch mechanism shall include a paddle handle on inside and a locking Hansen offset bent "D"-ring handle on exterior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame.

ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door, one (1) vertical on exterior of body on door handle side, and one (1) on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the walk-in portion of the body.

Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

WINDOW(S)

There shall be one (1) 18" wide x 22" high non-sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

WINDOW(S)

There shall be one (1) 18" wide x 22" vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan / splash guard shall be provided with the rollup door.

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 COMPONENTS

- There shall be vertically mounted shelf trac for shelving installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 30" deep and as wide as the compartment layout or door opening permits.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the tray. The striping shall be 2" wide and red/white in color.
- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 30" 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.
  - 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) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R).
- One (1) 120 VAC outlet strip(s) approximately 2' long with straight blade household type outlets.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C4)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.

- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.

- One (1) aluminum drip pan / splash guard shall be provided with the rollup door.

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 COMPONENTS

- There shall be vertically mounted shelf trac for shelving installation.

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 30" deep and as wide as the compartment layout or door opening permits.

  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the tray. The striping shall be 2" wide and red/white in color.

- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 30" 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.

  - 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) vertically mounted OnScene Solutions LED Nightstiks.

CURBSIDE COMPARTMENT - REAR (C5)

SIDE ENTRY DOOR

Access to the interior body compartment shall be provided through a side entry door. The door opening shall be approximately 31" wide x 94" high.

Construction of the side entry door shall be with 1/8" aluminum exterior smooth plate, the interior door pan being constructed from 1/8" aluminum tread plate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. The hinge shall be slotted horizontally and vertically for ease of adjustment. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

The latch mechanism shall include a paddle handle on inside and a locking Hansen offset bent "D"-ring handle on exterior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame.

ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door, one (1) vertical on exterior of body on door handle side, and one (1) on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the walk-in portion of the body.

Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

WINDOW(S)

There shall be one (1) 18" wide x 22" high non-sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

WINDOW(S)

There shall be one (1) 18" wide x 22" vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

REAR COMPARTMENT - CENTER (R1)

Rear center compartment approximately 30" wide x 65" high x 17" deep. Compartment shall be externally mounted with a vertically hinged door.

This compartment shall have vertically hinged box pan style doors fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

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.

- There shall be horizontally mounted shelf trac on rear wall for mounting holders for Edmonton Fire Department supplied brooms and shovels.
- Two (2) 4" diameter stainless steel louvered vents shall be provided in lower compartment.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

ROOF OBSERVATION AREA

On top of the rear roof area will be an approximate 6' x 6' area to be used as an observation area accessible from the rear ladder.

The perimeter shall be outlined with fold-up hand railing at least 42" high on all four side, except area adjacent to roof access ladder. Handrailing will be fabricated from aluminum tubing. Railing shall be wired to cab hazard light and alarm.

In addition the railing shall be wired into the transmission so the truck can not be shifted into drive with railing in the up position.

PLASTIC FLOOR AND SHELF TILE

All compartment floors, shelves, and trays shall be covered with Dri-Dek plastic interlocking grating.

- The plastic floor tile shall be red.
- The plastic edge trim shall be red.

ROPE TIE-OFF OR PORTABLE WINCH RECEIVERS

The completed unit shall have an integrated receiver system for use with rope rescue accessories and/or electric winch components. Each receiver shall have the following load rating:

	STRAIGHT PULL	SAFETY FACTOR
Rope Tie Off:	600 LBS.	15:1
Winch:	1,000 LBS	4:1

The following items shall be provided to accomplish rope rescue or portable winch operations:

- Two (2) rope tie off anchor accessories shall be provided with the completed vehicle. Each accessory shall include a push button detent pin to lock it in place. The tie off accessories shall have an eyelet for use with a rope rescue carabineer. A mounting bracket shall be provided to store each rope tie off accessory in a body compartment, location shall be determined by the Edmonton Fire Department.

- One (1) Ramsey model QM5000 - 5,000 lb. 12 volt electric winch furnished with the completed apparatus. It shall be capable of being stored in a compartment and mounted to the apparatus by inserting the mounting point into a properly rated receiver. A minimum of 80' of 1/4" stranded galvanized steel cable with pinned utility hook shall be installed on the drum. A 25' remote control shall be provided with the assembly that permits the Operator to stand at a safe operating distance from the cable and winch.

- There shall be one (1) receiver tube(s) located at the front bumper for use with a portable winch or tie-off point accessory.
  - There shall be one (1) 12 volt plug with a quick connect used to power the portable winch.
  - There shall be one (1) rubber cover / plug for the receiver.

- There shall be one (1) receiver tube(s) located on the streetside of the body in the forward portion of the wheel well panel for use with a portable winch or tie-off point accessory.
  - There shall be one (1) 12 volt plug with a quick connect used to power the portable winch.
  - There shall be one (1) rubber cover / plug for the receiver.

- There shall be one (1) receiver tube(s) located on the curbside of the body in the forward portion of the wheel well panel for use with a portable winch or tie-off point accessory.
  - There shall be one (1) 12 volt plug with a quick connect used to power the portable winch.
  - There shall be one (1) rubber cover / plug for the receiver.

- The rear center mounted trailer hitch shall be compatible with a pinnable rope tie-off accessory or a portable winch.
  - There shall be one (1) 12 volt plug with a quick connect used to power the portable winch.
  - There shall be one (1) rubber cover / plug for the receiver.

SIDE BODY PROTECTION - RUB RAIL

There shall be side rub rails 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.

- 3M™ Diamond Grade™ Conspicuity striping shall be provided in the rub rail. The striping shall be red/white in color.

FRONT GRAVEL GUARDS

Gravel guards shall be fabricated of brushed stainless steel. Gravel guards shall be installed on the front lower body corners and shall wrap around the corners to the front compartment door hinge on each side.

ROOF ACCESS LADDER

The ladder shall be weld constructed of vertical aluminum extrusion tubing and aluminum grip surface ladder rungs with slip resistant tread grip pattern. It shall be set off from body 8 inches and mounted to body with chrome plated end stanchions bolted to the body with stainless steel bolts. The ladder shall NOT extend above the body roof. The location shall be on the rear curbside of the apparatus body.

BODY PROTECTION PANEL

There shall be one (1) body protection panel constructed of 3/16" aluminum tread plate material installed directly ahead of the ladder. The protection panel(s) shall be designed to protect the body from wear and scuffing.

ROOF ACCESS HANDRAIL

There shall be one (1) handrail mounted on top of body to assist in roof access. Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

ELECTRIC STEP

There shall be two (2) 12 volt, electric folding step(s) furnished and installed under the apparatus. The step(s) shall be located , one (1) under each entry door. Each step shall be 24" wide and shall fold up under the body to improve ground clearance during travel. Upon activation, the step shall drop out and down using electric actuators. The distance from the ground to the first step shall be no more than 24" per in accordance with NFPA 1901 guideline. The top surface of each step shall be covered with an NFPA 1901 nonskid compliant aluminum tread plate.

ROLL-OUT AWNING CURBSIDE

A Carefree Mirage, 110 Volt AC powered, Lateral Arm Acrylic Patio Awning with Direct Response Electronics shall be installed on the apparatus body. The Direct Response Electronics includes easy-to-use controls and a Motion Detection System. The awning shall have a system to detect canopy motion, the most important element to prevent wind/weather damage. The awning shall automatically retract when the canopy reaches a certain level of movement - you determine the movement level on the control panel.

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

The 110V motor shall be completely sealed and UL approved. The awning pitch shall be adjusted to up to 30"

The awning shall be 20' wide with a 10' projection. (Size refers to box length, actual fabric length will be 8" shorter.)

The Mirage shall be covered by a "Two and Four" Limited Warranty - Two years 100% parts, labor, & freight on canopy, four years 100% parts, labor, and freight on motor, electronics, roller & hardware. Warranty covers manufacturer's defects only. Wind and rain damage are not covered.

AWNING HOUSING

The case color will be the standard, Polar White and re-painted to match body color.

- The awning fabric shall be Firesist HUV, Ivory (88054).

COMPARTMENT COMPONENTS DESCRIPTIONS

All interior compartment components shall be fabricated as follows:

ADJUSTABLE SHELVING HARDWARE

Adjustable shelving hardware shall be provided indicated in the numbered compartment list.

The shelving hardware shall include a minimum of four (4) aluminum shelf tracs mounted vertically on compartment side walls or vertical partitions. There shall be one (1) cast aluminum shelf bracket per vertical shelf trac to mount each shelf, tray, or adjustable storage module. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

ADJUSTABLE SHELF/SHELVES

Adjustable shelf/shelves shall be provided in exterior compartment as indicated in the numbered compartment list.

Shelves shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges. Shelves shall be designed to be used with flanges either in the upward position to hold various equipment on shelf, or in the downward position for sweep-out shelf surface.

All shelves shall be fully adjustable, from top to bottom of the compartment. There shall be at least four (4) vertical mounting channels and shelving hardware, two (2) each side of compartment. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

SLIDE-OUT EQUIPMENT TRAY - (400 LB CAPACITY)

Slide-out equipment tray(s) shall be provided in exterior compartment, as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Trays shall be built with a 3" vertical lip, with welded corners, to form a box type tray surface. Sliding tracks shall be Accuride 502 series. The length shall be per numbered compartment list and the extension shall be 100% of the slide length. Slides shall be constructed of formed steel with ball bearings mounted in triple track rails. The tray shall be rated for a maximum 400 lbs. evenly distributed load.

Tray(s) shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

HEAVY DUTY 100% EXTENSION EQUIPMENT SLIDE - (750 LB. CAPACITY)

Heavy duty slide-out equipment tray(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Trays shall be built with a 4" high vertical lip with welded corners to form a box type tray surface. The tray shall be mounted on a slide frame constructed of anodized aluminum extrusion(s). The frame shall be assembled using stainless steel fasteners (no welds). Each slide shall use a three extrusion rail design utilizing twelve to sixteen (12 - 16) urethane rollers. Each roller shall contain two (2) precision roller bearings mounted in an aluminum hub with a molded on urethane cover. The rollers shall not lose contact with the rail extrusion during operation of the slide unit. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release). The slide shall lock in the closed and full extension positions. The slide shall be rated for a maximum evenly distributed load of 750 lbs.

HEAVY DUTY EQUIPMENT TRAYS - SLIDE OUT AND DOWN (150 LBS. CAPACITY)

Heavy duty slide-out equipment tray(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Each tray shall be built with a 4" high vertical lip with welded corners to form a box type tray surface. The tray shall be mounted on a slide frame constructed of anodized aluminum extrusion(s). The frame shall be assembled using stainless steel fasteners (no welds). Each slide shall use a two extrusion rail design utilizing four (4) urethane rollers. Each roller shall contain two (2) precision roller bearings mounted in an aluminum hub with molded on urethane cover. The roller shall not lose contact with the rail extrusion during operation of the slide unit. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release). The slide shall lock in the closed position. The slide shall be rated for a maximum evenly distributed load of 150 lbs.

WALKAWAY SCBA BRACKET

Ziamatic walkaway type SCBA air pack bracket(s) shall be provided and located per the numbered compartment list.

SCBA brackets shall be Ziamatic ULLH type "Load & Lock" type walkaway brackets complying with the current NFPA 1901standard. Bracket shall consist of backplate, short footplate, two (2) non-mar double-coated seats, and our "Load & Lock" adjustable strap assembly. The backplate and footplate are black thermoplastic coated for years of trouble-free service. One size fits all U.S. made 30 to 60 minute rated self-contained breathing apparatus.

LISTA DRAWER CABINET

Lista Drawer Cabinet(s), model HS900-0603-FA-NB-RG-ILD, shall be provided in exterior compartment as indicated in the numbered compartment list.

The drawer cabinet(s) shall be 39-3/8" high x 40-1/4" wide x 22-1/2' deep. The cabinet shall have six (6) individual locking drawers. The drawers shall have usable heights as follows: one (1) 2", one (1) 3", one (1) 4", one (1) 5", one (1) 7", and one (1) 9". The cabinet shall be Light Gray in color.

COMPARTMENT LIGHTING

Each enclosed equipment compartment greater than 4 ft3 (0.1 m3) in volume and having an opening greater than 144 in.2 (92,900 mm2) shallhave sufficient compartment lighting to provide a minimum of 2 fc (20 lx) at any location on the floor of the compartment without any shelves, dividers, or equipment in the compartment.

Compartments such as ladder tunnels, pike pole storage tubes, or underbody compartments designed around the volumetric requirements of specific equipment that can be removed without the use of article illumination shall not be required to have compartment lighting.

All compartments shallbe equipped with OnScene Nightstik LED lights with the following minimum light requirements;

- Full Height Compartments, 54” Section (36 LED's)
- Wheel well Compartments, 36” Section (24 LED's)
- Rear Rescue Compartment, 54” Section (36 LED's)
- Low Compartments, 18" Section (12 LED's), Vertical
- Low Compartments, 36" Section (24 LED's), Horizontal

The OnScene Nightstik lights shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

ELECTRIC CORD REEL

Electric cord reel(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

The 120 volt cord reel(s) shall be Hannay with electric rewind, equipped with fully enclosed 45 amp, three (3) conductor collector rings.

The 12 volt reel rewind system shall be directly wired to the chassis battery system with heavy duty stranded copper wire, with guarded finger type rewind button located within easy reach of the operator.

Each reel shall have a Hannay 4-way roller assembly to permit cable to feed directly off the reel and away from compartment. Plastic roller assemblies are not acceptable.

The wiring from the generator system shall be through Carflex electrical weatherproof conduit, with stranded copper wiring. The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of wiring.

Cord Reel General Requirements

All permanently mounted cord reels shall be rated for continuous duty and installed to be accessible for removal, cord access, maintenance, and servicing.

The power rewind cord reel spool area shall be visible to the operator during the rewind operation, or the reel spool shall be encapsulated to prevent cord from spooling off the reel.

Rollers or guides shall be provided, where required, to prevent damage to the cord at reel spools or compartment openings.

Rewind Provision

Power rewind type reels shall have the control in a position where the operator can observe the rewinding operation.

If a reel is in an enclosure or out of direct view, the cord entry point to the enclosure shall be visible to the operator of the reel control.

The rewind control or crank shall not be more than 72 in. (1830 mm) above the operator's standing position. The rewind control shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.

Cord

The reel shall be designed to hold 110 percent of the capacity needed for the intended cord length.

The wire size shall be in accordance with *NFPA 70*, Table 400.5(A), but in no case shall it be smaller than 12AWG. Electrical cord shall be Type SEOOW, Type SOOW, or Type STOOW.

A label that indicates the following information shall be provided in a visible location adjacent to any permanently connected reel:

(1) Current rating
(2) Current type
(3) Phase
(4) Voltage
(5) Total cord length

POWER DISTRIBUTION BOX

Where a power distribution box is hardwired to the end of a cord that is stored on a fixed cord reel or other fixed storage means, the following requirements shall apply;

The remote power distribution box shall be listed for use in a wet location.

The distribution box shall be as follows:

(1) Protected from corrosion
(2) capable of being carried with a gloved hand
(3) Designed to keep the exterior electrical components above 2 in. (51 mm) of standing water

Inlets, receptacles, circuit breakers, or GFCI devices shall not be mounted on the top surface of the horizontal plane.

Branch circuit breakers shall be installed in the remote power distribution box if the overcurrent device protecting the feed cord to the box is too large to protect the wiring supplying the devices plugged onto the distribution box.

Remote power distribution boxes shall have a light on the box to indicate the power is on. The light shall be visible in a 360 degree plane from a minimum of 200 ft (60 m) in complete darkness. The light shall be mechanically protected to prevent damage.

The hardwired portable cord connection to the box shall have strain relief and meet the intended usage requirements.

STEP / GROUND LIGHTS

Step and ground lights shall be OnScene Solutions 9" LED Nightstik and be placed at any entry door and step where personnel climb on or descend from the apparatus to ground level. OnScene LED lights shall have 6 LED lights per 9" light, and shall be rated at 100,000 hours of service. On Scene Solutions LED lights shall be have a 5 year free replacement warranty.

All of the required step and ground lights shall be activated when the parking brake is set.

WALK-IN INTERIOR FINISH DETAILS

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 were 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.

ROOF HATCH WITH SKYLIGHT

The apparatus roof area shall be specially reinforced for the installation of a hatch with skylight. The opening shall be approximately 24" x 24" in size, suitable for use as an escape hatch, for ventilation, and supplemental light in the interior of the apparatus. The skylight shall have tinted glass. Two (2) compression type door checks are used to hold door in open position. The roof hatch shall be connected to the vehicles door ajar system to alert the driver if the hatch is not in the fully closed position.

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 BODY WINDOW COVERS

An interior window cover shall be provided on ten (10) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.

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 1-1/2" rigid polyurethane foam insulation. 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 are 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 white plastic plugs covering the screws. The seams between FRP panels, interior corners, and exterior corners shall be trimmed with white plastic molding.

The interior finish shall be bright white pebble grain FRP.

INTERIOR WALKWAY FLOOR

There shall be Lonseal, Loncoin-II Flecks installed on the floor substrate. Loncoin II Flecks is a heterogeneous resilient sheet vinyl with a decorative raised coin texture, breathtaking color, and intriguing style. The fleck coloration provides camouflage for simpler maintenance while the raised coin embossing provides enhanced traction. Excellent for interior, retail, commercial, or institutional use where design parameters call for a high performance, sophisticated flooring solution.

Loncoin II Flecks is composed of polyvinyl chloride (PVC) resin, plasticizers, fillers, and pigments. The co-calendared wear layer is formulated to provide maximum resistance to foot traffic and most commercial and healthcare chemicals.

The middle layer provides dimensional stability, sound-absorbing properties, and resiliency under foot. The backing layer provides strength and stability of the flooring and enhances the bonding strength of the adhesive.

The material shall be black in color (Loncoin-II Flecks - Onyx).

Lonseal, Inc. warrants that Lonseal flooring products shall be free from manufacturing defects for a period of one (1) year from the date of purchase and that, when properly installed and maintained, shall not wear through as a result of normal foot traffic for a period of 7 years from the date of installation.

INTERIOR SUB-FLOOR

Above the body subframe shall be an isolation sheet that shall prevent outside elements from permeating the full length sound and thermal barrier of 3/4" thick grade plywood. The sheet shall be fabricated from the same type of material as is used in the subframe. The isolation sheet shall be flanged on both sides with a 1" high vertical break.

AIR CONDITIONER - HEATER

Two (2) Dometic Penguin, model 620515, low profile, 120 VAC, 60 cycle, single phase air conditioner(s) shall be provided and installed on the body roof. 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 335/250 cfm air flow capacity.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 96 pounds. The opening in roof shall be properly reinforced to support the air conditioner and shall be supplied with a 1" rise to minimize moisture condensation under the unit.

ELECTRIC BASEBOARD HEAT

Four (4) Grainger model QMKC2576W (or equal), 240 volt, commercial electric baseboard heaters shall be provided as follows;

- One (1) in forward section of body
- One (1) in mid section of body
- Two (2) in rear section of body

Baseboard units shall be various lengths from 4' - 6' to fit specified areas. Heaters shall be controlled by wall mounted thermostat in each area as specified above.

EXHAUST FAN

The apparatus shall have three (3) 100 cfm, 12 volt exhaust fan(s) installed in the ceiling of the rescue truck body. Each fan shall be wired to an electrical rocker switch located at the entrance door, mounted on the side wall.

STREETSIDE INTERIOR AREA (IS1/IS2)

SLIDE-OUT EXTENSION

There shall be one (1) "slide-out" section(s) on the streetside which shall extend approximately 32" as measured from the outside of the body. The extendable module shall be approximately 94.5" in length (86.5" interior usable space) and the interior height shall be approximately 9" less than the interior height of the body walkway. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section shall utilize a 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 three-position, momentary type rocker switch shall be used to operate the slide-out wall system. A manual override shall be provided in the event of a system failure.

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.

Full width padded foam cushion head bumpers shall be provided in the slideout. Head bumpers shall be covered with matching interior vinyl.

There shall be two (2) flashing LED warning lights with red lenses, one 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 gear and rack mechanism.

The Command Center "Slide-out" 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 or slide-outs using light weight metal or fiberglass shall not be acceptable.

WINDOW(S)

There shall be two (2) 28" wide x 22" high horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

WINDOW(S)

There shall be two (2) 18" wide x 22" high non-sliding window(s) installed on the completed apparatus. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

INTERIOR CABINET - OVERHEAD

There shall be two (2) 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 . Each cabinet shall be approximately (insert actual dimensions).

- The above cabinet(s) shall have sliding Clear Lexan doors.

UNDER CABINET, RADIO MOUNTING CONSOLE

There shall be two (2) under cabinet mounted radio/communication console(s) provided in the interior. The radio cabinet shall provide mounting area for the radios specified.

The radio cabinet 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 or black. The front of the cabinet shall have standard bolt-on 8-1/2" x 3" black radio trim mounting plates. A hinged 3/16" aluminum drop down access cover shall be provided on the bottom to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. Ventilation louvers shall be provided for proper ventilation of radio equipment.

Each cabinet shall be a minimum of 4" high x 14" deep. The width of each cabinet shall be (insert actual dimensions) and located under overhead cabinets.

INTERIOR LIGHT FIXTURE

There shall be two (2) 120 volt interior, over counter, light fixture(s) installed above the desk/deck area. Fixture shall be provided with single bulb and switch on fixture.

3-DRAWER FILING CABINET

One (1) Hon 3-drawer Efficiency Pedestal cabinet(s) with "K" type pull handle shall be provided and installed. Each cabinet shall have a keyed lock and shall be painted charcoal. Each filing cabinet shall be 15" wide x 27" high x 20" deep. The bottom drawer of the cabinet shall be capable of storing 8-1/2" x 11" file folders.

SLIDE-OUT AREA - FLIP-UP DESK

The slide-out area shall be provided with a flip-up desk which shall be approximately 24" long by 24" wide by 30" tall and located in the center of the slide out area. The front edge of the desk top shall include a section approximately 24" long designed to flip upward and lock into place to increase the overall size of the desktop as needed. The desktop shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum. It shall have a 2" vertical downward edge along front to cover the 2" x 2" reinforcement. 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.

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 knurled thumb type latch in each corner.

- There shall be two (2) phones mounted in the front face of the component console
- There shall be two (2) data port(s) provided in the front face of the component console.
- There shall be two (2) 12V outlet(s) provided in the front face of the component console.
- There shall be two (2) 120 volt, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.
- Three (3) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R). Outlet(s) shall be located under command desk area and used to power the specified monitors.

INTERIOR STOOL TYPE SEAT

Two (2) Duraware fabric covered stool type seat(s) shall be provided on the completed apparatus. Each stool shall be mounted on a swivel style pedestal base and securely bolted to the reinforced floor structure. The stool(s) shall closely match the driver and officer seat colors.

STREETSIDE INTERIOR AREA (IS3)

INTERIOR CABINET - COUNTER HEIGHT

There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 70" W x 30" H x 30" D.

- One (1) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R).
- The above cabinet(s) shall have cargo netting over opening.
- There shall be four (4) vertically adjustable shelves in each of the above cabinets.

STREETSIDE INTERIOR AREA (IS4)

INTERIOR CABINET - COUNTER HEIGHT

There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately (insert actual dimensions).

- One (1) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R).
- The above cabinet(s) shall have cargo netting over openings.
- There shall be four (4) vertically adjustable shelves in each of the above cabinets.

STREETSIDE INTERIOR AREA (IS5)

SLIDE-OUT EXTENSION

There shall be one (1) "slide-out" section(s) on the streetside which shall extend approximately 32" as measured from the outside of the body. The extendable module shall be approximately 68.5" in length (60.5" interior usable space) and the interior height shall be approximately 9" less than the interior height of the body walkway. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section shall utilize a 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 three-position, momentary type rocker switch shall be used to operate the slide-out wall system. A manual override shall be provided in the event of a system failure.

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.

There shall be two (2) flashing LED warning lights with red lenses, one 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 gear and rack mechanism.

The Command Center "Slide-out" 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 or slide-outs using light weight metal or fiberglass shall not be acceptable.

WINDOW(S)

There shall be two (2) 18" wide x 22" high non-sliding window(s) installed on the completed apparatus. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

INTERIOR SCBA SEATS

Two (2) Bostrom Tanker 400CT ABTS F/U with SecureAll brackets SCBA seats with flip bottom shall be provided in the slide-out. Each seat shall be securely bolted to the reinforced floor structure. NO seat belts will be provided as these are not riding positions only SCBA donning/doffing and dressing area.

CURBSIDE INTERIOR AREA (IC1)

INTERIOR CABINET - FULL HEIGHT

There shall be one (1) full 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 51" L x 76" H x 22" D.

- There shall be one (1) vertical compartment partition located in center of cabinet.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Fourteen (14) 120 volt, 20 amp, duplex, straight-blade receptacles (NEMA 5-20R) located two (2) on each shelf of the cabinet, one (1) per side of the vertical partition. The outlets shall be wired to the inverter power supply.
- The above cabinet(s) shall have a Robinson roll-up door
- There shall be six (6) vertically adjustable shelves on each side of vertical partition of the above cabinets. The shelves shall be located at the folloing hieghts (from the top of the cabinet, and then shelf to shelf):
  - Left side: 10", 7", 8", 12", 13", and 12" (with 6" left between the bottom of the cabinet and the first shelf)
  - Right side: 11", 7", 9", 15", 7", and 9" (with 9" left between the bottom of the cabinet and the first shelf)

DATA RACK

A Middle Atlantic Products roll-out and rotating model # WR-37-32, with 37 rackspaces, shall be provided directly behind wall between central communications and rear conference area on streetside. Overall dimensions of rack shall be 76.6” H x 24” W x 32.8” D. Useable height shall be 64.7” rackspaces, useable depth shall be 26”. Rack shall be fully welded construction and provide a 750 lb. weight capacity with proper distribution.

Rack shall be constructed of steel and finished in a durable black powder coat paint. The WR shall have a solid locking rear door and have a removable rear electrical knockout panel installed in base, and removable rear electrical knockouts with BNC knockouts for UHF/VHF antennas installed in top. A 1/4-20 threaded grounding and bonding stud shall be installed in base of enclosure.

Rack shall be warranted to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product.

In addition the WR shall be provided with model #WRFD-37 reinforced 16-gauge solid steel front door, Integrated fan tops with proportional speed thermostatic fan control, and Vertical outlet strip model #PD-2415SC-NS. A minimum 37 amp UPS (uninterruptable power supplies) with surge protection shall be located in data rack.

CURBSIDE INTERIOR AREA (IC2)

LOAD CENTER

There shall be one (1) 120/240 VAC load center located on the interior wall.

GENERATOR MONITORING PANEL

There shall be one (1) FRC FROG-D generator gauge panel located on the interior wall.

There shall be a side entry door located in this area.

CURBSIDE INTERIOR AREA (IC3)

- One (1) Norcold, model DE-0041R, 12 VDC/120 VAC, refrigerator/freezer.
- One (1) 120 volt, 20 amp, straight blade outlet behind the refrigerator.

CURBSIDE INTERIOR AREA (IC4)

INTERIOR CABINET - COUNTER HEIGHT

There shall be two (2) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 40" W x 30" H x 30" D.

- There shall be two (2) 400 lbs. slide-out tray(s) approximately 30" deep located on right side, one (1) above the other.
- Two (2) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R).
- The above cabinet(s) shall have cargo netting over openings.
- There shall be four (4) vertically adjustable shelves in each of the above cabinets.

CURBSIDE INTERIOR AREA (IC5)

- Three (3) 120 volt, 20 amp, duplex, straight-blade receptacle (NEMA 5-20R) shall be provided on lower walls of donning/doffing room.
  - Two (2) receptacle shall be located on the front wall of the area
  - One (1) receptacle shall be located on the rear wall of the area

There shall be a side entry door located in this area.

- A sliding pocket door will be provided to close off the rear donning/doffing area from equipment area.

INTERIOR SCBA SEATS

Two (2) Bostrom Tanker 400CT ABTS F/U with SecureAll brackets SCBA seats with flip bottom shall be provided in the slide-out. Each seat shall be securely bolted to the reinforced floor structure. NO seat belts will be provided as these are not riding positions only SCBA donning/doffing and dressing area.

- Adjacent to each seating position in rear area shall be a wall mounted clothing hanger for duty gear. Hanger to be designed to hold 60 lbs. and not to damage gear in transport.

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 overcurrent protective devices. Such devices shall be readily accessible and protected against heat in excess of the overcurrent 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 MULTIPLEX CONTROL CENTER

The apparatus shall have a multiplexed 12 volt electrical system that will provide complete diagnostic capability. 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.

MULTIPLEX SYSTEM COLOR DISPLAY

The Weldon multiplex system display(s) shall be provided by the cab/chassis manufacturer. The display panel(s) shall be the point of interaction with the entire 12 volt electrical system. The display(s) shall respond with text and graphic images to provide fault and condition messages to the operator.

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.

A master load disconnect switch shall be provided between the starter solenoid(s) and the remainder of the electrical loads on the apparatus. The starter solenoids shall be connected directly to the batteries.

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 on" pilot light that is visible from the driver's position shall be provided.

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 five (5) seconds.

BATTERY SWITCH

One (1) battery "On/Off" switch in cab located within easy reach of Driver with green "BATTERY ON" pilot light that is visible from the driver's position shall be provided. The switch and pilot 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

One (1) Xantrex model XC5012 battery conditioner, with 120 VAC input, and 50 amp 12 VDC output shall be provided. This system shall have a multiplex charging mode which employs the 3-stage charging algorithm: Bulk, Absorption, and Float. During the Bulk stage the battery is accepting high current. In the Absorption stage the battery voltage is held constant and the current declines. Finally, in the Float stage, the charger continues to provide voltage at a lower level to maintain the battery in a fully charged state. If there is no load on the battery, it will typically draw very little current. The charger, however, is able to provide current to its full rating to power DC loads on the battery. In float, if batteries are very new or a battery is on the low end of the size range and if it is fully charged to the point where it will not accept any more current, then the charger will enter an adaptive float/no float behavior where it shall alternate between float charging (flo) and resting the battery (rdy).

A remote bar graph type indicator panel shall be provided for showing status of battery charger.

The charger shall have a EMC FCC Class B Approval, **NO EXCEPTIONS**.

BATTERY CHARGE INDICATOR

A Kussmaul 091-94-12E charge indicator display shall be provided and located near drivers door area. This single battery system indicator is a suppressed zero bar graph voltage display which may be installed in any 12 volt system.

ENGINE COMPARTMENT LIGHT

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

CAB HAZARD WARNING LIGHT

A red "HAZARD" warning light shall be supplied and installed by the cab/chassis manufacturer. Light shall illuminate automatically to warn the Driver of the following when the apparatus parking brake is not fully engaged:

- Any passenger or compartment door is open
- Equipment rack is not in stowed position
- Light tower is extended

The light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

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 camera shall be installed on the rear of the body.

DOOR BELL

A door bell shall be provided in body interior with push button switch located on curbside exterior adjacent to forward body entry door.

WALK-IN INTERIOR LIGHTS

There shall be six (6) 7" diameter halogen dome light(s) with clear lens provided with a switch at the entry door for body 12 VDC interior lighting.

WALK-IN INTERIOR LIGHTS

There shall be nine (9) 7" diameter halogen dome light(s) with red lens provided with a switch at the entry door for body 12 VDC interior lighting.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Whelen 900 Series 90A00TAR amber LED turn signal lights
- Two (2) Whelen 900 Series 90R00XRR red LED stop/tail lights
- Two (2) Whelen 900 Series 90J000CR halogen back-up lights with clear lens

Each of the lights above shall be mounted in a 9EFLANGE, chrome finish bezel.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen LED midship body clearance marker/turn signal lights (T0A00MAR) shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with the chassis clearance marker and turn signals.

MARKER LIGHTS

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

STEP LIGHTS / GROUND LIGHTS

There shall be four (4) OnScene Solutions 9" LED Nightstik light(s) installed on the apparatus 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 license plate light shall be installed on the rear of the apparatus 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.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

SIDE SCENE LIGHTS

Four (4) Tomar RECT79H (9" x 7") Scene lights and chrome flange shall be provided, two (2) each side of upper body.

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 switched at the Vista display in the cab.

REAR SCENE LIGHTS

Two (2) Tomar RECT79H (9" x 7") scene lights and chrome flange shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft × 10 ft (3 m × 3 m) square. Each light will have a 8-32 degree gradient lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

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

TRAFFIC DIRECTIONAL LIGHT

One (1) Whelen TA4437M Super LED eight (8) lights, split two-piece housing, traffic directional warning device with 30' control cable shall be located on upper rear body. The control head shall be located in the cab within easy reach of Driver.

- The traffic directional light shall be surface mounted on upper rear body.

INTERCOM SYSTEM - PELTOR Y2000

There shall be a Peltor Y2000 intercom system provided and installed as follows;

EDM-Y2000 intercom head set and radio equipment antenna installation spec information VERSION 1 July 07/08 - Please order directly from RW Communications and Consulting. Contact Rick Wagner 780-695-8366 or by e-mail rwcomm@shaw.ca

Install a Norhammer Peltor EDM-Y2000 Intercom head set system (no substitutes) with a Master station control box and communication/volume control stations for each of the two (2) seating positions in the vehicle cab.

Cab Layout;

One master station control box (part number MST) (no substitutes) to be mounted inside the dash electrical compartment.

Two (2) front positions; driver and passenger station volume control boxes (part number HS-03-XX-EDM) (no substitutes)

The drivers position - one volume control box (part number HS-03-XX-EDM) to be mounted above the drivers seat on the right side of the cab.

The passenger position - one volume control box (part number HS-03-XXEDM) to be mounted above the passengers seat on the left side of the cab.

Please label these two (2) cable runs at the master station as the drivers front position and the passenger front position. These two positions require the volume control boxes to be mounted as listed to keep the headset cable from lying across the user's chest. With the volume control box installed in this location it allows the users to dawn their SCBA tanks and not tangle the head set cable in the harness of the SCBA tanks.

Rear Cab Layout;

One (1) volume control box (part number HS-03-XX-EDM) to be mounted above the work desk. Please label this cable run at the master station as the rear cab work station position. Flush mount on top of desk.

Body Slide-out Layout;

One (1) volume control box (part number HS-03-XX-EDM) to be mounted above the work desk.

Please label this cable run at the master station as the slid out work station position. Note- The head sets and control boxes will require customization to link to The City of Edmonton radio system by the local radio system provider.

The master station control box is the link between the mobile radio and the EDM-Y2000 intercom head set station volume control boxes. It is set up with six ports for head set plug-in, one port for the mobile radio mating cable assembly, internal self resetting system fuse and an external master system volume control. All head set stations branch out from the master station control box which is supplied with mounting brackets and cable assemblies hardwired into the head set station volume control boxes with the mating plug on the other end. For ease of installation the system is designed so that any combination of head set stations can be plugged into the 6 master station ports i.e. the ports are not specific to head set model type.

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 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 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 separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One 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 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.

UPPER WARNING LIGHT SYSTEM

ZONE A - FRONT WARNING LIGHTS

One (1) Tomar 930L-7208 LED lightbar with red lens, with (2) forward facing clear model RECT37L-W lamps, permanently mounted to cab roof.

The lightbar shall be separately switched at the 12 volt control panel.

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

The lightbar shall be separately switched at the vista display in the cab.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Tomar RECT-79CLLW-R series (9" x 7") LED lights provided, one (1) on each side of the apparatus in the upper forward corners.

Each light shall have a red lens and chrome flange. The lights shall be switched at the 12 volt control panel in the cab.

The lights shall be switched at the Vista display in the cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange. The lights shall be switched at the 12 volt control panel in the cab.

The lights shall be switched at the Vista display in the cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Tomar RECT-79CLLW-R series (9" x 7") LED lights provided on the rear of the body, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

LOWER LEVEL WARNING LIGHTS

ZONE A - FRONT WARNING LIGHTS

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

The lights shall be switched at the Vista display in the cab.

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

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

The lights shall be switched at the Vista display in the cab.

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB SIDE)

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

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

There shall be two (2) Tomar RECT-37CLLWS-R (7" x 3") LED lights provided, one (1) each side. Each light shall have a red lens and chrome finished flange.

The lights shall be switched at the Vista display in the cab.

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

There shall be two (2) Tomar RECT-37CLLWS-R (7" x 3") LED lights provided, one (1) each side. Each light shall have a red lens and chrome finished flange.

The lights shall be switched at the Vista display in the cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Tomar RECT-79CLLWS-R series (9" x 7") LED lights provided on the upper rear body corners, one (1) each side. Each light shall have a red lens and chrome finished flange.

The lights shall be switched at the Vista display in the cab.

LINE VOLTAGE ELECTRICAL SYSTEM

ONAN PTO GENERATOR

The apparatus shall be equipped with an Onan Protec PTO generator system with a capacity of 35,000 watts at 120/240 VAC, 291/145 amps, single phase. Current frequency shall be stable at 60 hertz.

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

The direct drive generator shall be mounted so that it does not change the ramp breakover angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

GENERATOR ENGAGEMENT

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An "OK to Operate Generator" indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator's panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Protec YDCR series PTO generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

GENERATOR SPLASH GUARD

A powder coat painted splash cover shall be installed to reduce the amount of road spray on the frame mounted PTO generator. A V-ring seal shall also be installed in the cover to provide additional protection against contaminates reaching the generator front seals.

GENERATOR MOUNTING

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

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.

POWER-TAKE-OFF GENERATOR DRIVE

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO by the cab chassis manufacturer. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

ENGINE SPEED CONTROL

An engine speed auxiliary control device (high idle switch or throttle) shall be installed to maintain a stable cycle output from generator when the apparatus is parked.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

GENERATOR MONITORING PANEL

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel.

This unit shall be manufactured by FRC model FROG-D and mounted next to the circuit breaker panel. This generator output display shall consolidate five (5) generator monitoring instruments into one device. The display case shall be waterproof and have dimensions not to exceed 4 1/4" high by 4 1/4" wide by 3 1/4" deep.

The following continuous displays shall be provided with super bright LED digits more than 1/2" high:

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

The program shall support the accumulation of elapsed generator hours and the monitoring of engine oil temperature. Generator hours and oil temperature shall be displayed at the push of a button.

LOADCENTER

The loadcenter shall be a Cutler Hammer, BR Series, specifically designed for protection and distribution of 120/240 volt AC, such as lighting and small motor branch circuits. The loadcenter enclosure shall be made of 16 gauge galvanized sheet steel. The galvanized coating provides corrosion protection and as such does not require paint. All trims used on the BR Loadcenter shall be chromate sealed and finished with electro disposition epoxy paint (ASA61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door shall be supplied.

The loadcenter shall be UL / CSA listed, **NO EXCEPTIONS** will be allowed.

SHORE POWER INLET - BATTERY CHARGER

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

- Shore power shall be wired to the engine block heater.

SHORE POWER INLET - INVERTER

One (1) Kussmaul 30 amp "Super Auto-Eject" shore power inlet shall be furnished and installed. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. The shore power inlet shall provide an external power source for apparatus electrical circuits. A matching 30 ampere plug shall be shipped with the apparatus for Edmonton Fire Department supplied external power source wiring.

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.

- The outlet cover shall be yellow.
- The shore power plug shall be located near the Driver door area.
- Shore power shall be wired to the specified 120 volt inverter.

SHORE POWER INLET - AIR CONDITIONER UNITS

One (1) Kussmaul 30 amp Super Auto-Eject shore power inlet shall be provided and wired to specified air conditioning units (maximum of two (2) units). The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. The shore power inlet shall provide an external power source for apparatus electrical circuits. A matching 30 ampere plug shall be shipped with the apparatus for Edmonton Fire Department supplied external power source wiring.

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.

- The outlet cover shall be blue.
- The shore power inlet shall be located on the streetside rear of the body.
- Shore power shall be wired to the specified 120 VAC air conditioning unit(s), (maximum of two (2) units).

SHORE POWER INLET - SPECIFIED CIRCUITS

One (1) Kussmaul 30 amp Super Auto-Eject shore power inlet shall be provided and wired to specified circuits below. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. The shore power inlet shall provide an external power source for apparatus electrical circuits. A matching 30 ampere plug shall be shipped with the apparatus for Edmonton Fire Department supplied external power source wiring.

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.

- The outlet cover shall be red.
- The shore power inlet shall be located on the streetside rear of the body.

Shore power inlet shall be wired to the following specified 120 VAC circuits;

- Shore power shall be wired to all primary 120 VAC, 20 ampere electrical outlets on apparatus (maximum of two (2) circuits). Circuits shall be provided with circuit breaker protection with either generator or shore power providing power.
- Shore power shall be wired to all primary interior 120 VAC, lights on apparatus (maximum of two (2) circuits). Circuits shall be provided with circuit breaker protection with either generator or shore power providing power.

OUTLETS AND CIRCUITS

The generator shall supply the 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 receptacle shall be 20 amp, straight-blade (NEMA 5-20R).
- Two (2) 120 volt exterior outlets, one (1) each side rear of body.
  - The receptacle shall be 20 amp, straight-blade (NEMA 5-20R).
- Two (2) 120 volt outlets, one (1) each side front corner of apparatus body.
  - The receptacle shall be 20 amp, twist-lock (NEMA L5-20R).

There shall be three (3) 120 volt outlet(s) located in the walk-in area of the body.

- The receptacle shall be 20 amp, straight-blade (NEMA 5-20R).
- The receptacle(s) shall be located at the Pre-Construction Meeting.

INTERIOR BODY 120 VOLT LIGHTING

There shall be ten (10) 120 volt light(s) installed in the walk-in area of the body. The fixtures shall be single bulb, 22 watt fluorescent lights with fully enclosed protective lens covers, and flush aluminum trim. Each light shall be recessed down the center of the walkway.

The operation of the lights shall be at the entry doorway area. The interior lights shall be wired to the generator system with a 15 amp circuit breaker protection.

INVERTER

The apparatus shall be equipped with a Xantrex model Prosine 3.0 inverter that provides 3,000 watt inverter, 50 A surge capability, 120 VAC, 60 cycle output from 12 VDC.

The alternator and/or battery system shall be adequate to provide power for continuous operation for a minimum of 2 hours at full output.

Prosine 3.0
- Power factor corrected multistage charger
- True sine wave output (crystal controlled)
- Built-in 30 A transfer switch automatically transfers between inverter power and incoming AC power
- Equalization mode conditions batteries for longer life
- Power sharing prevents tripping of shorepower breaker
- Compact, lightweight, and easy to install
- Includes remote panel and battery temperature sensor
- Two year warranty

Protection Features
- Over voltage and under voltage protection
- Over temperature protection and automatic overload protection
- Short circuit AC backfeed protection

Prosine 3.0 (ACS) Remote Panel (Included)
- Independent inverter and charger on/off controls
- Push button control of power sharing, equalizing, battery set-up
- Easy to read backlit digital display
- Single at-a -glance display of AC and DC system information
- Text message fault diagnostics

INVERTER BATTERY SUPPLY

There shall be three (3) deep cycle batteries provided as the 12volt 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 one (1) Voltage Sensitive Relay (VSR) provided with the deep cycle batteries. The VSR allows two batteries to be charged at the same time. When the engine is started and the start battery reaches 13.7 volts, the VSR engages, allowing two battery banks (start and inverter supply) to be charged simultaneously. When the voltage drops below 12.8 volts (e.g. the engine is stopped), the VSR disengages, separating the batteries. This system eliminates the possibility of draining the wrong battery and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes.

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 panelboard 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 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.

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 overcurrent 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 amperage rating and shall be sized to carry not less than 115 percent of the amperage 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).

Overcurrent Protection

Manually resettable overcurrent devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main overcurrent 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 overcurrent 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 overcurrent protection device, where so recommended by the power source manufacturer.

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

Branch Circuit Overcurrent Protection

Overcurrent 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 panelboard 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 overcurrent 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 panelboard 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 overcurrent devices.
(2) Only one circuit is hardwired to the power source, which is protected by an integrated overcurrent device.

The panel shall be visible and located so that there is unimpeded access to the panelboard controls. All panelboards 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 panelboard 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.

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

FRONT CAB-MOUNTED SCENE LIGHT(S)

One (1) quartz floodlight(s) shall be provided on the front of the cab by the cab/chassis manufacturer. Each light shall be mounted in a brow-style mounting flange. Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

The cab/chassis supplied brow light bulb shall be changed to a 1,000W, 120V bulb to match side and rear scene lighting.

- There shall be one (1) switch(es) to control the above scene lights. The switch(es) shall be located in the cab, within reach of the Driver and/or Officer.

SIDE UPPER RECESSED SCENE LIGHTS

Four (4) Fire Research Focus, model FCA200-M10, recessed light(s) shall be installed. They shall be equally divided between the curbside and streetside. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4 1/4" high by 16 1/8" wide. The lamphead shall protrude no more than 1 1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing.

The lamp head shall have one (1) quartz halogen 1000 watt 120 volt bulb. The bulb shall draw 8.3 amps and generate 22,000 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Lamphead and housing shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

- There shall be two (2) switch(es) to control the above scene lights. The switch(es) shall be located in the cab, within reach of the Driver and/or Officer.

REAR UPPER RECESSED SCENE LIGHTS

One (1) Fire Research Focus, model FCA200-M10, recessed light(s) shall be installed. They shall be equally divided between the curbside and streetside. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4 1/4" high by 16 1/8" wide. The lamphead shall protrude no more than 1 1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing.

The lamp head shall have one (1) quartz halogen 1000 watt 120 volt bulb. The bulb shall draw 8.3 amps and generate 22,000 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Lamphead and housing shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

- There shall be one (1) switch(es) to control the above scene lights. The switch(es) shall be located in the cab, within reach of the Driver and/or Officer.

REAR TRIPOD SCENE LIGHTS

Two (2) Fire Research Focus, model FCA600-S50, tripod telescopic light shall be provided. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall extend 40" and rotate 360 degrees. An internal brake shall slow the extension pole during lowering. The outer pole shall be a grooved aluminum extrusion. The folding legs shall be anodized aluminum tubing with plastic endcaps. The fully extended tripod system shall exceed a height of 11'. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamphead shall have one (1) quartz halogen 500 watt 120 volt bulb. The bulb shall draw 4.2 amps and generate 10,500 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

A weatherproof on-off toggle switch shall be mounted in a switchbox below the lamphead. A wire guard shall be furnished to protect the lamphead glass.

A tripod truck mount bracket set shall be provided for each light. Each set shall include a lower base plate, an upper lock with a quick release spring loaded locking pin, and a shim set.

COMMAND LIGHT TOWER WITH METAL HALIDE BULB OPTION AND LOWER BANK BACKLIGHT

The apparatus shall be equipped with one (1) all-electric Command Light(s). The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified.

The light bank shall have four (4) weatherproof, 1,500 watt, 240-volt quartz halogen lights and (2) two 1,000 watt metal halide lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. Power for light bank shall be transmitted through power collecting rings thus allowing 360+ degree continuous rotation in either direction

The lower pair of light heads shall be capable of being rotated about a horizontal axis to provide light down on the vehicle or to the opposite side of the vehicle.

Positioning of the light bank shall be accomplished with maintenance free, heavy-duty 12-volt linear actuators.

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

Light tower shall be controlled with a hand-held umbilical line remote control. Command Light to be equipped with "Auto-Park" automatic nesting feature.

Command Light controls shall feature:

- Three (3) switches, one (1) for each light bank
- One (1) light bank rotation switch
- One (1) switch for elevating lower stage
- One (1) switch for elevating upper stage
- One (1) light to indicate when light bank is out of roof nest position
- One (1) light to indicate when light bank is rotated to proper nest position

Command Light controls shall be located per itemized compartment list.

The light tower shall have a full extension of 10' - 6" from mounted position and shall extend from nested position to full upright in 20 seconds.

The overall size of the nested light tower shall be approximately 48" wide x 73" long x 15.1/4" high, and weigh approximately 350 lbs.

A flashing warning light signal shall be provided indicating when a light tower is not in nested position as required by NFPA 1901.

The operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated as required by NFPA 1901.

The Command Light shall be covered by a One Year limited warranty from defects in materials and workmanship.

The specified light tower(s) shall be mounted on the roof of the apparatus body.

FIVE (5) ANTENNAS - RAIL MOUNTED ROOF

There shall be one (1), radio antenna rail(s) provided and installed on the roof . The rails shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Total of five (5), antenna bases shall be provided and installed in each rail. The Larsen 17" RG58UD NO CONN bases shall include a minimum of 20' of LMR195 cable. The antenna wiring shall enter the roof at a single point under the end of the rail.

Antennas to be installed on the roof section of the cab as follows;

- Starting from the roof vent - 8" away from the vent is the Motorola VRM modem antenna then 10" away is the GPS antenna and the last antenna for the Officers position Tyco Electronics M7100-IP mobile radio is 24" away from the GPS antenna. These three (3) antenna cables all run down the door post on the passenger side of the unit between the front and back seats and extend out on the floor next to the checker plated floor plate.

- The Tyco Electronics M7100-IP mobile radio and the future install by ERD of the I/mobile CPU and VRM modem and are all mounted under the rear seat behind the Officers position seat. All three (3) antenna cables with the allowable slack are to left at this location for future installation by ERD.

- The other two (2) antenna kits are to be mounted on the roof of the rear section as close as possible to the Tyco Electronics M7100-IP mobile radios located in the cab rear work desk and the other in the forward slide-out work desk.

17" VIDEO MONITOR

Three (3) ViewSonic LSD1720HG (or equal) 17" multi-function flat panel monitors with built-in TV tuner shall be provided and located, one (1) in rear cab area, and one (1) at forward slide-out, and one (1) in rear dressing room. Monitors shall be installed on pivoting mount brackets with horizontal/vertical adjustment.

System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring and cable connections.

From each monitor location install two (2) RG6 video cables running back to the tech cabinet and allow ten feet of extra cable at either end of the run.

From each monitor location install two (2) CAT6 cables running back to the tech cabinet and allow ten feet of extra cable at either end of the run.

Each monitor is capable of displaying up to four (4) separate video inputs. Video inputs for each monitor will be determined by purchaser. One (1) CATV inlet/outlet shall be provided at each monitor location.

RADIO SYSTEM

Cab

Provide and install two (2) Tyco Electronics M7100-IP, 806-870 MHz, 35W mobile radios each the following system features; 800 system groups feature part number MAHG-PL3R, EDACS radio feature set part number MAHG-ED, Industry Canada option part number MAHG-EC1A. Radio system shall interface with the specified Peltor intercom system.

Each mobile radio position will require the following accessories one (1) palm mic part number MC101616VI R3A, one (1) mic clip part number 344A4678P1. No external speakers are required as they feedback with portable radio operation.

Officers Position

One (1) Tyco Electronics M7100-IP remote mount system control unit part number MAHG-CP7X and, one (1) Tyco Electronics M7100-IP, 806-870 MHz, 35W mobile radio transceiver part number MAHG-S8MXX.

The remote mount system control unit is to be mounted on the front dash area to be accessible to the Officer position. The mobile radio transceiver will be mounted under the cab desk position behind the Officer position.
Easy access shall be provided to the mobile radio transceiver for programming.

Rear Cab Desk Position

One (1) Tyco Electronics M7100-IP front mount system control unit part number MAHG-CP7V all in one with the mobile radio transceiver part number MAGH-S8MXX. The front mount system control unit is to be mounted above the desk in the rear of cab.

Body

Provide and install one (1) Tyco Electronics M7100-IP, 806-870 MHz, 35W mobile radio with the following system features 800 system groups feature part number MAHG-PL3R, EDACS radio feature set part number MAHG-ED, Industry Canada option part number MAHG-EC1A.

Front Body Desk Position

One (1) Tyco Electronics M7100-IP front mount system control unit part number MAHG-CP7V all in one with the mobile radio transceiver part number MAGH-S8MXX. The front mount system control unit is to be mounted above the desk in the rear of cab. Mount the front mount system control unit above the desk in front slide-out.

This mobile radio position will require the following accessories one (1) palm mic part number MC101616VI R3A, one (1) mic clip part number 344A4678P1. No external speakers are required as they feedback with portable operation.

ADVANCE TEC BATTERY CHARGER

Supply and install three (3) Advance Tec 4-port battery chargers (www.advancetec.com) part number AT42-0051FD for M/A Com P7200 battery ports part number AT2005PL with appropriate power source located on interior rear street side wall of cab, above desk and below overhead cabinets.

SATELLITE PHONE PRE-WIRE

There shall be a satellite phone wall jack connection for an Iridium system (www.iridium.com) located on the streetside "L" shaped desk in the rear cab area. The antenna shall be mounted on the roof and the cables shall be run to a TNC female chase mount connector mounted on the wall plate.

REAR DONNING AREA

Roof mount one (1) speaker and install two (2) six conductor shielded speaker cables running back to the tech cabinet and allow ten feet of cable at either end.

PUBLIC ADDRESS SYSTEM

An Inter-M PA9336, 360 watt, 120 VAC public address (PA) amplifier shall be provided and installed in Data Rack. Amplifier will be wired to two (2) Cast Products 100 watt roof top speakers for use with the amplifier. An evacuation Annunciator shall also be provided with system. Access to the PA system shall be provided from the exterior phone handset. An alarm switch for PA system speakers shall be provided at slide-out desk adjacent to existing PA switch.

ATOMIC CLOCKS WITH TEMPERATURE

Provide and install four (4) LED display Alpha Clocks from Kera Technologies Inc. (www.ledclocks.com). All four (4) clocks are to be located;

- One (1) above Officer seat, part number (black) HY(P)TX-6(U)L-4R super red, 2.3'' 6 digit clock, metal enclosure slant mount with option #725 twisted pair master/slave.
- One (1) on body side above walk thru to cab, part number (black) HY-6(U)-4R super red, 4'' 6 digit clock, metal enclosure slant mount with option #725 twisted pair master/slave. **This clock is to be set up as the master clock along with the in/out temperature monitor option #711.**
- One (1) in rear donning/doffing area, part number (black) HY-6(U)-4R super red, 4'' 6 digit clock, metal enclosure slant mount with option #725 twisted pair master/slave.
- One (1) cab command area, part number (black) HY-6(U)-4R super red, 4'' 6 digit clock, metal enclosure slant mount with option #725 twisted pair master/slave.

WEATHER STATION

A Columbia Systems Capricorn 2000 (or Climatronics) weather station and Weather View 32 Software shall be provided and installed similar to the previous Edmonton's Haz-Mat (SVI#524). The weather station shall include an aluminum tread plate cover with an electrical actuator to raise and lower the cover and antenna from inside the apparatus. The cover shall be wired into the vehicle door ajar system to alert the driver when the cover is not correctly stowed.

The wind speed and direction sensors use a solid state, infrared optical design to decrease wear and improve reliability. These rugged sensors, with a design incorporating years of experience and testing, are enclosed in a PVC housing surrounding stainless steel parts. These sensors operate in extreme temperature and wind conditions for years.

Wind direction in 16 compass points , Wind speed displays as low as 1 mph, Flexible sensor positioning (up to 1000 feet/305 meters from console), Quick-disconnect cable connector for easy sensor removal

Wind Speed Accuracy: ± 5% or better from 20 to 125 mph , ± 1 mph from 5 to 20 mph
Wind Speed Range: 0 to 125 mph; 200 km/h; 108 knots (higher gusts may be recorded)
Wind Speed Mechanical Threshold: 0.5 mph
Wind Direction Resolution: 16 compass points

Control Module with;

Clock (date and time of day), Dual on-board RS-232 interfaces; connect to modem and direct to computer at the same time, Uninterruptible modem access, Sensor high/low data memory, Data Logger (stores up to 511 records at user-defined intervals), Powered by +12 VDC (800 mAmp max) transformer suitable for battery or solar power, Calculated parameters and alarm functions through optional weather software and/or the optional Weather Display.

Software:

A professional grade weather monitoring software. This software package is designed for specialized markets that require robust weather calculations, interoperability with computer models, and data interfaces to other industrial systems. WeatherMaster 2000 utilizes Microsoft Access® database for easy data access and manipulation.

WeatherMaster 2000:

Displays current sensor values and calculated parameter values in the Current Conditions screen, displays the high and low values for all parameters for the day, displays a 24-hour trend graph for all parameters, displays a daily statistics report, calculate evapotranspiration for the day, calculates degree day temperatures, calculates density altitude, can export text and html data to web servers, has multiple alarm feature with email or pager notification methods, logs all measured and calculated parameters every minute to the database, is capable of monitoring multiple weather stations via a wireless network.

ENTRY LINK ANTENNA PRE-WIRE

There shall be a pre-wire provision in the data rack for the future connection of a Edmonton Fire Department supplied entry link camera. The pre-wire shall include a roof mounted antenna located directly above the data rack in a custom enclosure with electric actuator to raise and lower the enclosure cover and antenna from inside the apparatus. The cover shall be wired into the vehicle door ajar system to alert the driver when the cover is not correctly stowed.

LOCAL AREA NETWORK SWITCH

One (1) 3Com® Baseline Switch 2924-SFP Plus LAN switch shall be provided in data rack. The switch shall be a 24-port 10/100/1000BASE-T (RJ-45) Gigabit Ethernet model; managed through a web-based browser. The switch shall be rack-mountable with 4 dual-purpose ports for Gigabit copper or SFP slots for 1000BASE-SX or 1000BASE-FX fiber.

ENTRY LINK PRE-WIRE

There shall be a pre-wire provision provided in the data rack for the future connection of a Edmonton Fire Department supplied entry link camera. The pre-wire shall include a roof mounted antenna located directly above the data rack in a custom enclosure with electric actuator to raise and lower the enclosure cover and antenna from inside the apparatus. The cover shall be interlocked to the vehicle transmission to prevent the apparatus from moving when the cover is not in the stowed position. An additional indicator shall be provided in the vehicle door ajar system to alert the driver when the cover is not correctly stowed.

TIME LAPSE DVR (RECORDER)

Provide and install one (1) Digimerge (www.digimerge.com) D204 seriesnetwork MPEG4 DVR in the tech cabinet on a shelf under the local area network switch. The D204 series network MPEG4 DVR is a full featured high performance DVR and supports real time recording on all channels and can support up to 500 GB of internal data storage. Flexible video options include VGA, composite and S-Video. The D204 supports a variety of speed dome protocols.

- 4 channel pentaplex (view, record and playback locally and over the network)
- MPEG4 compression for efficient file storage and network transmission
- USB for critical image storage, firmware upgrade, external USB storage (HDDand optical drive)
- VGA, composite and S-Video output for flexible display
- Browser based remote application
- 160GB Seagate SV35.3 Series(tm) continuous duty Hard Drive
- Supports up to 500GB of internal data storage

PHONE SYSTEM

A Panasonic KX-TA824 Advanced Hybrid Telephone System shall be provided and installed on completed unit with eight (8) incoming (CO) telephone lines. This system is expressly designed to streamline office communications by organizing your phone lines into a cohesive system and making a host of advanced features available to each extension. The KX-TA824 offers a variety of options to enable customized solutions. You can assign specific lines to each phone, make office-to-office intercom calls, forward your calls to an outside location or your cell phone, page all system extensions, and much more. So you can tailor your telephone system to the varied needs of your office.

This powerful combination of flexibility, high performance and value has made Panasonic Communication Systems number one in Key Telephone/Hybrid Systems* Expand Your System as Your Needs Grow The KX-TA824 system works with standard telephone lines, so you don't need to upgrade your phone service.
It features a base configuration of three central office lines and eight stations. It can be easily expanded to up to eight central office (CO) lines and 24 stations with the addition of two plug-in cards (models KX-TA82470, KX-TA82483 and KX-TA82481).

A total of seven (7) interior phone jacks, and one (1) fax machine jack shall be provided at locations as follows;

- One (1) in cab area, near driver
- Two (2) in rear of cab
- One (1) in forward streetside slide-out, on left side
- One (1) in rear dressing room
- One (1) in outside Cast Products box outside rear entry door to dressing room
- One (1) at the fax machine located in rear of cab

The telephone system shall include the following hardware;

- Six (6) Panasonic KX-7736B programmable desktop phones with intercom and PA features at specified locations above. Each phone shall include a velcro strap to secure handset into the telephone cradle while vehicle is in motion.
- One (1) Panasonic KX-TA82491 Direct Inward System Access (DISA) / FAX detection card. (Note: If a FAX call is received and a CNG tone is detected during the outgoing message, the call will be automatically routed to the designated FAX extension eliminating the need for a dedicated land line and cell line. The card will also allow personnel to call "IN" and to dial and extension directly.)
- One (1) Panasonic KX-82491 Caller I.D. card.
- One (1) telephone patch panel in Cast Products door, with three (3) landline phone jacks in-coming landlines connected to Panasonic phone system.

WIRING CHANNEL

A 4" x 4" wiring channel directly below the desktops and along outside walls for computer, radio and communications wiring shall be provided. The wiring channel is to have an opening for future installation and access. The wiring channels are to run to the computer compartment with several cross-overs provided in roof structure for running wiring across body.

COMMAND CAMERA SYSTEM

There shall be one (1) Pelco ES31CBW24-5N infrared camera system(s) complete with pan & tilt drive system, enclosure with shield wiper, high quality camera and lens. The camera system shall be a high resolution unit with Lowlight color technology and a 176X zoom lens (22X optical, 8X electronic).

The camera control system shall contain one (1) KBD300A keyboard with joystick, and one (1) KDBKIT keyboard kit.

ELEVATED ANTENNAS

Three (3) NMO radio antennas shall be mounted on a custom bracket mounted on elevated mast. The antenna shall be mounted in such a way as to not interfere with the operation of camera system in any way. Antenna cables shall be run though Nycoil conduit with camera cable.

TELESCOPING PNEUMATIC MAST

The apparatus 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.

A red flashing warning light will be visible to the driver to warn when a light tower is out of roof nested position.

A pneumatic kit to raise and lower the mast shall include air control valve, 0-160 psig air gauge, regulator, 0-30 psig air gauge.

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 keyways 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 will 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 .

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.

NYCOIL WIRING (7-42)

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

MAST MOUNTING - EXTERNAL

The above telescoping mast shall be mounted using an external mounting kit. The mast shall be located on the rear of the body mounted to the rear bumper.

MAST COVER

There shall be a custom designed, 1/8" smooth aluminum cover (painted body color) provided to store control cables, air hoses, and to protect the mast from the elements. The cover shall be easily removed to allow access to mast for maintenance.

AUTOMATIC TOP MAST COVER

There shall be a custom designed, 1/8" smooth aluminum top mast cover (painted body color) provided. The cover shall be designed to cover the camera system and associated electronic components, control cables, and air hoses and protect them from the elements. The cover shall automatically open when the mast is raised and close when the mast is retracted.

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) NFPA approved 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.

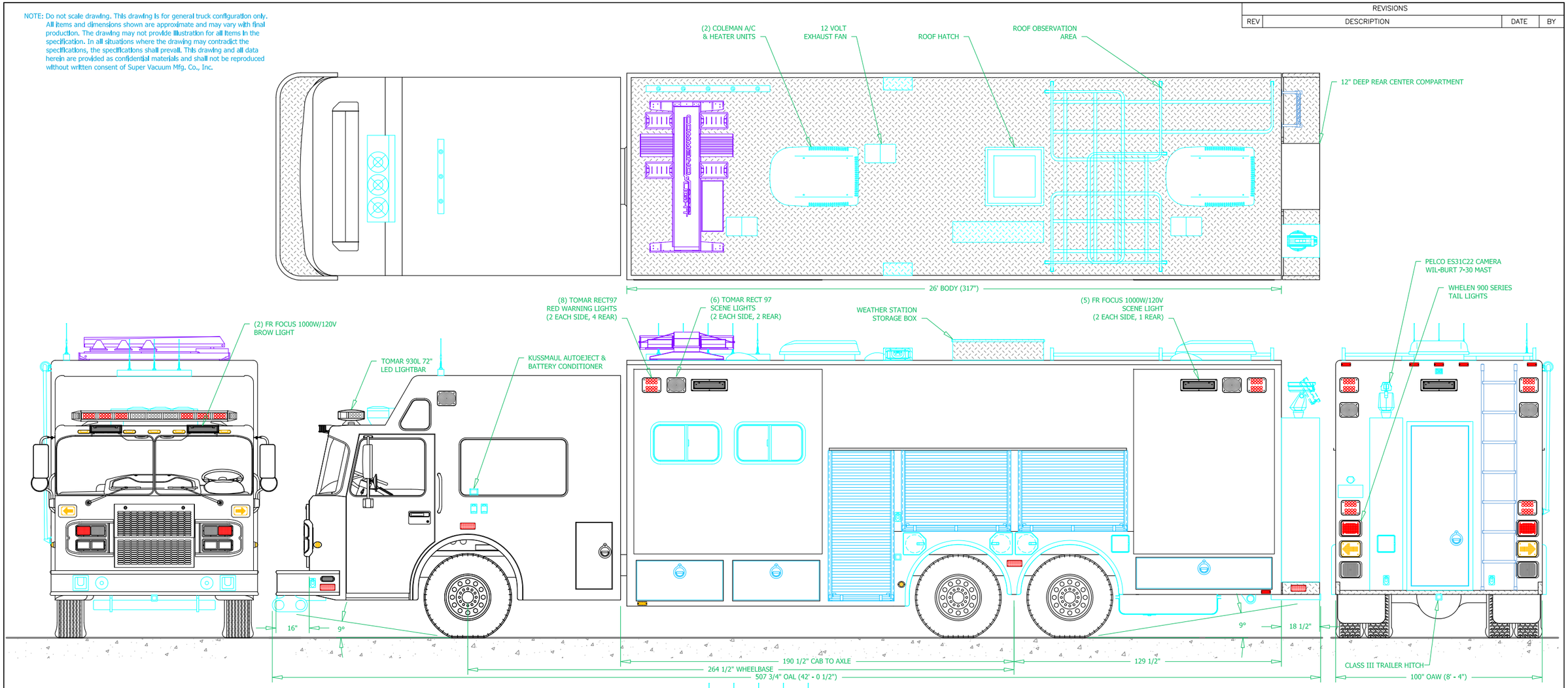
    - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.

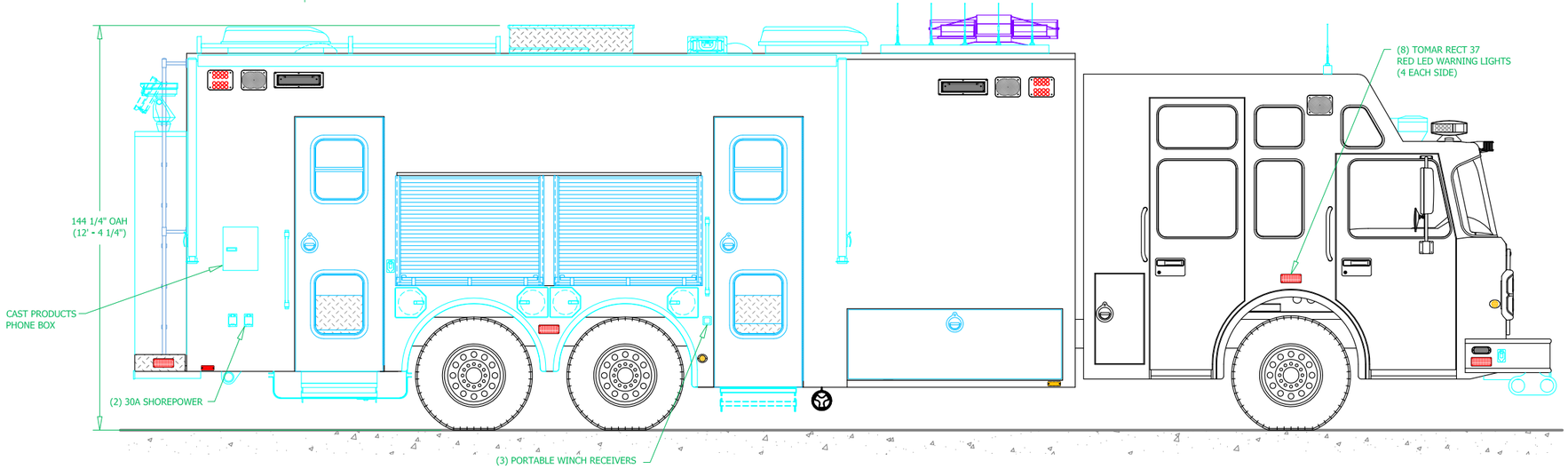
STEP LADDER

One (1) folding step ladder shall be provided for sky-light (weather station) access and stored ahead of technical cabinet with retention strap. Ladder shall be certified with a 225 lb. weight rating.

NOTE: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of Super Vacuum Mfg. Co., Inc.

REVISIONS			
REV	DESCRIPTION	DATE	BY



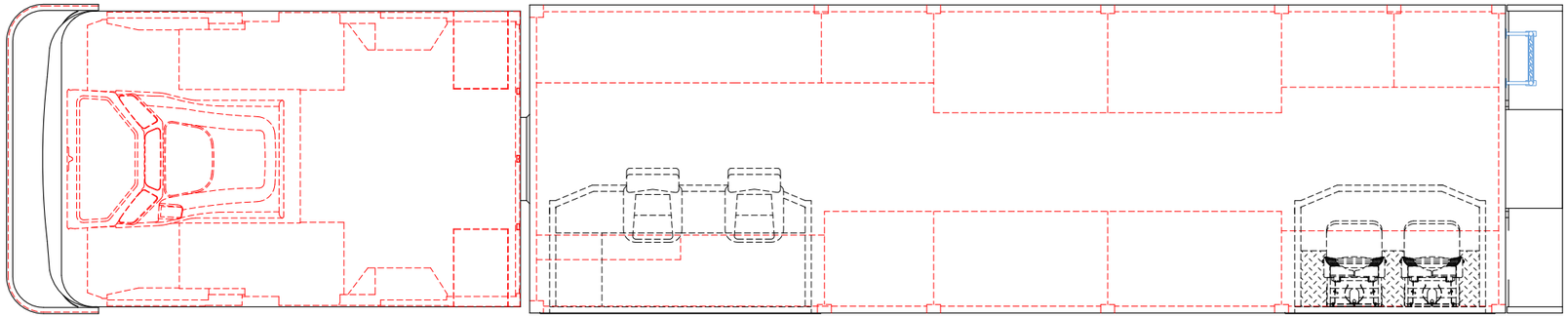


SVI FIRE & RESCUE TRUCKS
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

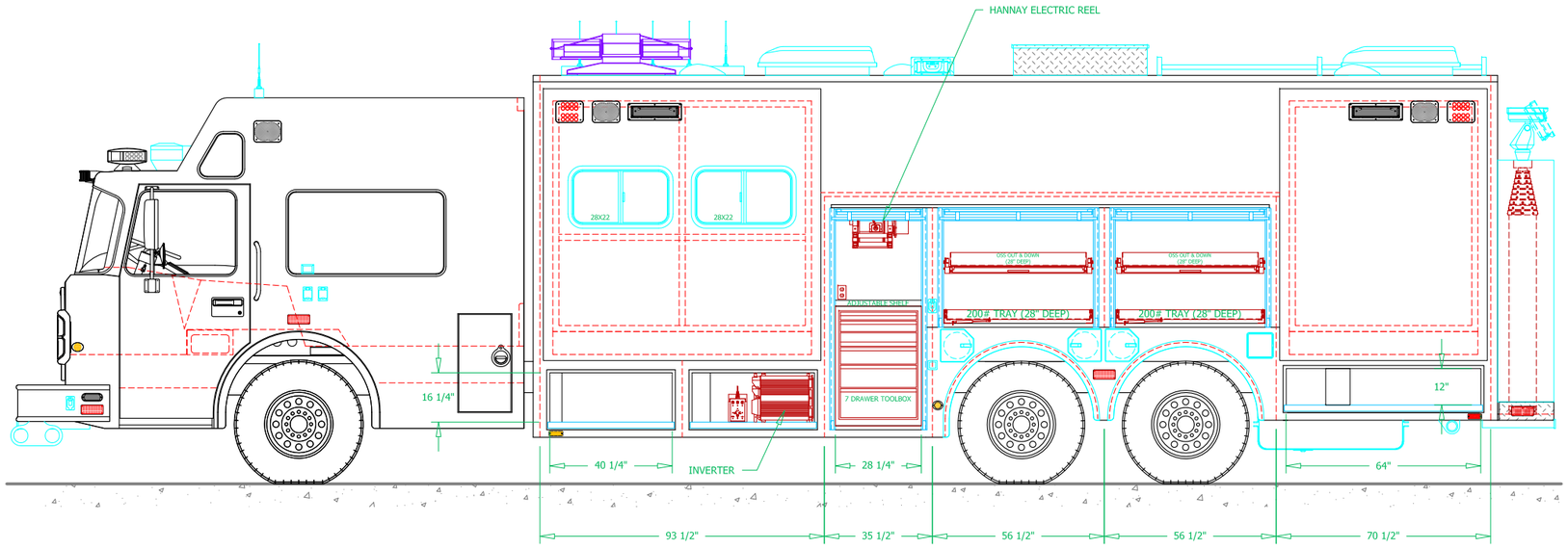
EDMONTON
DANGEROUS GOODS UNIT

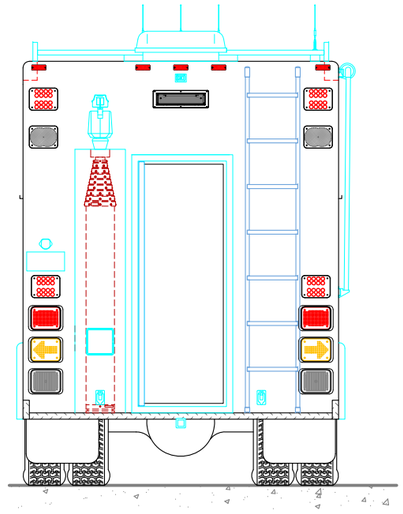
BODY SIZE:	26' TANDEM BODY	UNIT TYPE:	DANGEROUS GOODS
BODY MATERIAL:	3/16" ALUMINUM	TRUCK NO:	
CHASSIS TYPE:	SPARTAN GLADIATOR CLASSIC ELFD 3 DOOR 24"RR	WHEELBASE:	264 3/4"
		CAB TO AXLE:	190 1/2"
		OVERALL LENGTH (OAL):	42' – 0 1/2"
		OVERALL WIDTH (OAW):	8' – 4"
		OVERALL HEIGHT (OAH):	12' – 4 1/4"
DRAWN BY: HJR	DATE: MARCH 31, 2009	SCALE:	1/4" = 1' – 0"
DRAWING NO: EDMONTON_AB_WHZ_26_Prelim3.dwg		SHEET 1	OF 3

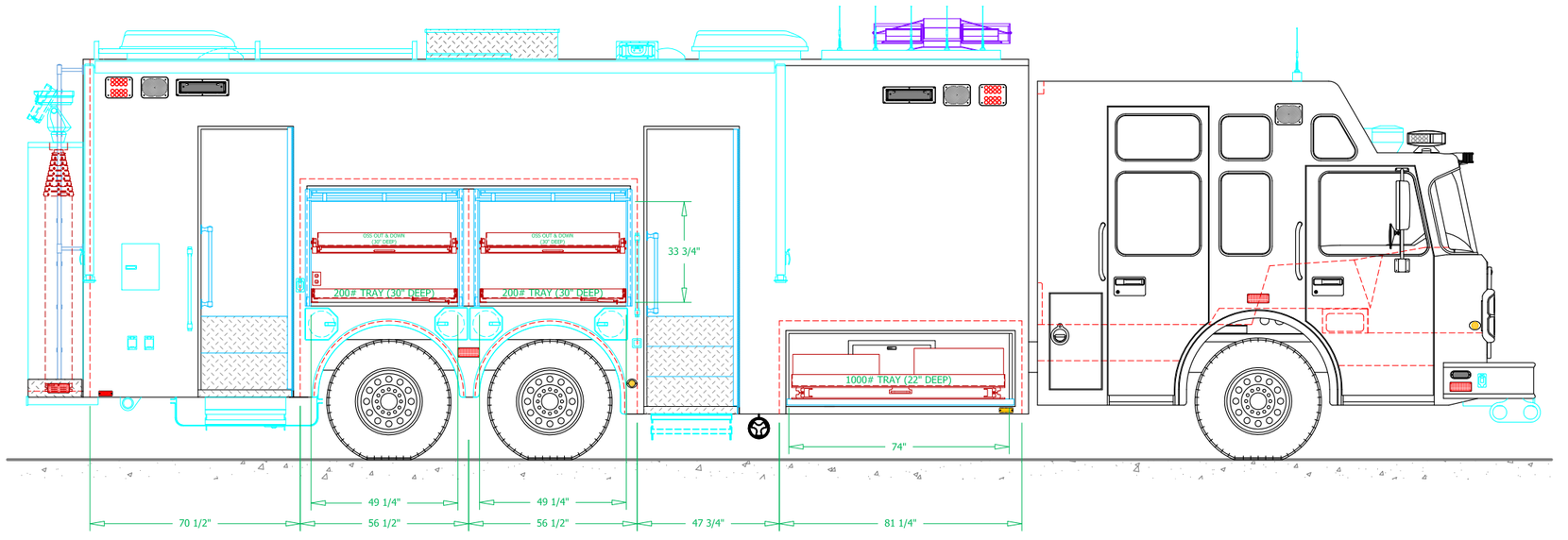
REVISIONS			
REV	DESCRIPTION	DATE	BY



NOTE: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of Super Vacuum Mfg. Co., Inc.







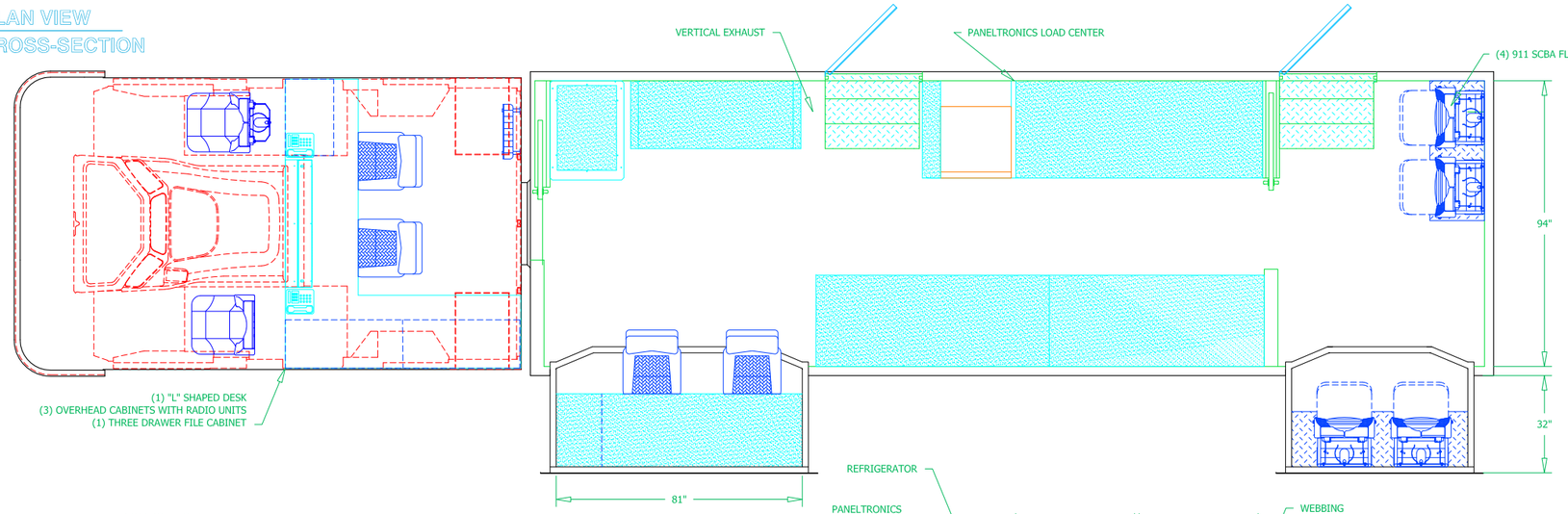
SVI FIRE & RESCUE TRUCKS
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

EDMONTON
DANGEROUS GOODS UNIT

DRAWN BY: HJR	DATE: MARCH 31, 2009	SCALE: 1/4" = 1' - 0"
DRAWING NO: EDMONTON_AB_WIHZ_26_Prelim1.DWG		SHEET 2 OF 3

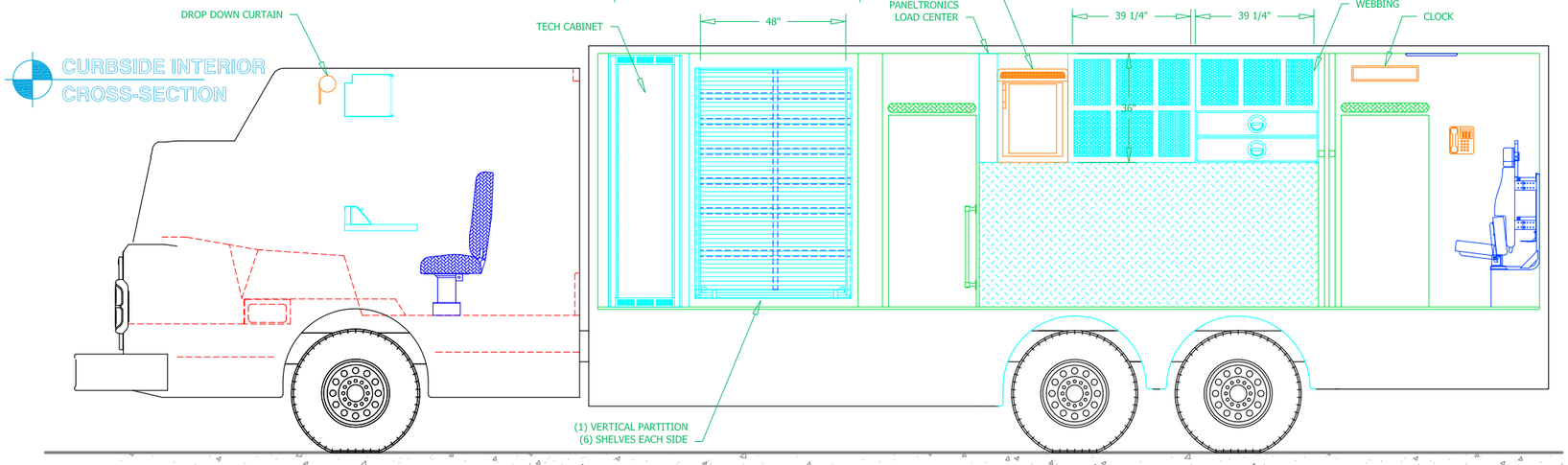
REVISIONS			
REV	DESCRIPTION	DATE	BY

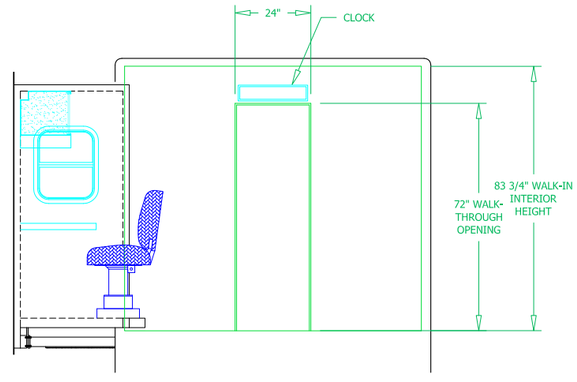
PLAN VIEW
CROSS-SECTION



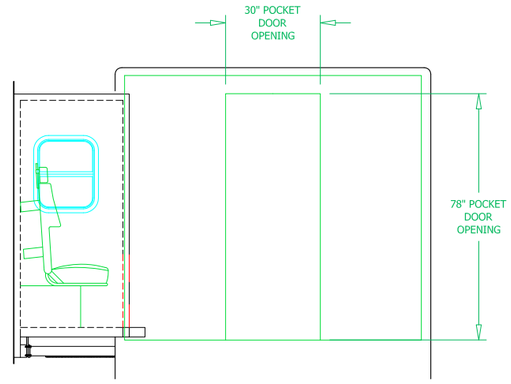
NOTE: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of Super Vacuum Mfg. Co., Inc.

CURBSIDE INTERIOR
CROSS-SECTION

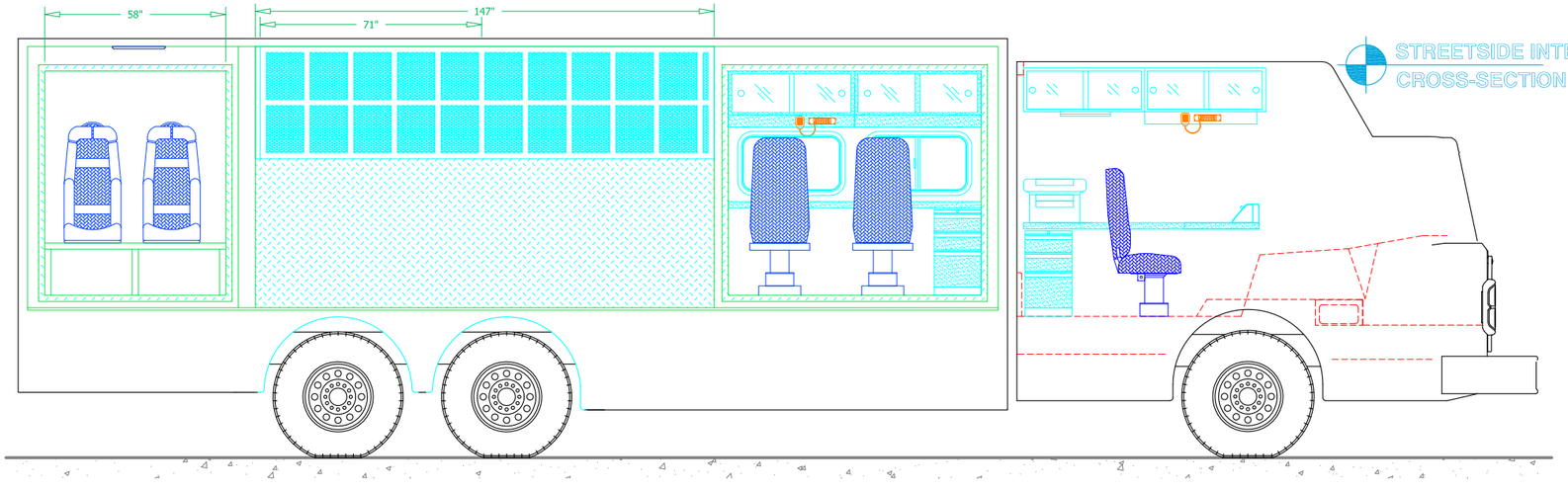




FRONT SLIDE-OUT CROSS SECTION



REAR SLIDEOUT CROSS SECTION



STREETSIDE INTERIOR
CROSS-SECTION

SVI FIRE & RESCUE TRUCKS
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

EDMONTON
DANGEROUS GOODS UNIT

DRAWN BY: HJR	DATE: MARCH 31, 2009	SCALE: 1/4" = 1' - 0"
DRAWING NO: EDMONTON_AB_WIHZ_26_Prelim1.dwg		SHEET 3 OF 3

Change Order #1

Customer: **Edmonton Fire Department** Date: 03/16/2010
Dealer: **Safetek Emergency Vehicles** SVI #: **729**

Change Order Description
Misc Changes from Design

Based on the following changes/modifications to the specification, (10) days will be added to the quoted delivery time.

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

Item #	Spec Section	Item Description	Unit Cost (In US $)	Change Accepted?
1	2-DRAWER FILING CABINET	Change the Hon 2-drawer Efficiency Pedestal file cabinet located in the cab command area to be a three (3) drawer model to match previous unit.	$0.00	☑ YES
2	MUD FLAPS	Clarify the specification to show that the horsehair type mudflaps will be located approximately 6" from the ground along the rear of the truck.	$0.00	☑ YES
3	ROOF OBSERVATION AREA	Change the roof observation area railings to be fabricated from steel tubing ILO aluminum tubing as originally specified due to strength considerations. The handrail is to be wired into the vehicles door ajar system and not interlocked to the transmission	$0.00	☑ YES
4	FRONT GRAVEL GUARDS	Clarify the specification to show that the front gravel guards will be 12" tall.	$0.00	☑ YES
5	BODY PROTECTION PANEL	Clarify the specification to show that the body protection panel will be located above the top rung of the ladder on the rear of the body, just below the roof. It will be designed to protect the paint between the apparatus roof and the toop ladder rung from personnel accessing the roof.	$0.00	☑ YES
6	ELECTRIC STEP	Change the electric fold out steps to be two (2) heavy duty, Ziamatic Quik-Step, 12 volt electric folding steps with an enclosure designed to protect the actuation mechanism from road spray	$4,240.00	☑ YES
7	ROLL-OUT AWNING CURBSIDE	Clarify the specifications to show that the awning controls will be located on the rear interior wall inside of the forward walk-in door, adjacent to the light switches.	$0.00	☑ YES
8	AIR CONDITIONER - HEATER / ELECTRIC BASEBOARD HEAT	Clarify the specification to show that the heater/AC controls will be located in locations as in previous unit.	$0.00	☑ YES

Change Order #1

Customer: **Edmonton Fire Department** Date: 03/16/2010
Dealer: **Safetek Emergency Vehicles** SVI #: **729**

Change Order Description
Misc Changes from Design

Based on the following changes/modifications to the specification, (10) days will be added to the quoted delivery time.

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

Item #	Spec Section	Item Description	Unit Cost (In US $)	Change Accepted?
9	INTERIOR CABINET - OVERHEAD	Clarify the specification to show that the two (2) overhead interior cabinets in the forward streetside slide-out will be located perpendicular to the slide out wall, above the specified desk. This change is being made to allow for sufficient headroom in the slide out after with change to desk layout as made at the pre-construction meeting	$0.00	☑ YES
10	3-DRAWER FILING CABINET	Delete one (1) Hon 3-drawer Efficiency Pedestal file cabinet from the foreward streetside slide-out area. Cabinet will not be possible in this area with changes to desk made at pre-construction meeting	($398.00)	☑ YES
11	DESKTOP COMPONENT CONSOLE	Delete one (1) desktop component console from the forward streetside slide-out. Desktop console will not be workable with desk layout and was not included in previous unit.	($1,152.00)	☑ YES
12	INTERIOR STOOL TYPE SEAT	Clarify the specification to show that the stool type seats located in the forward streetside slide-out will be fixed, swivel type bar seats.	$0.00	☑ YES
13	LOAD CENTER GENERATOR MONITORING PANEL	Change the mounting location of the load center and FROGG-D monitoring panel to be located in compartment C1 ILO the interior wall of the curbside area as orlginally specified.	$0.00	☑ YES
14	CURBSIDE INTERIOR AREA (IC4)	Change the layout of the counter hieght interior cabinets to include two (2) adjsutable shelves and two (2) pull out trays ILO four adjustable shelves as originally specified. The specified cargo netting will cover the area around the shelves only. Change made to match drawing as presented to the Edmonton Fire Department	$1,819.00	☑ YES
15	TRAFFIC DIRECTIONAL LIGHT	Change the traffic advisor to a single piece TAM65 Super LED advisor ILO a two (2) piece TA4437M Super LED advisor as originally specified.	($264.00)	☑ YES

Change Order #1

Customer: **Edmonton Fire Department** Date: 03/16/2010
Dealer: **Safetek Emergency Vehicles** SVI #: **729**

Change Order Description
Misc Changes from Design

Based on the following changes/modifications to the specification, (10) days will be added to the quoted delivery time.

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

Item #	Spec Section	Item Description	Unit Cost (In US $)	Change Accepted?
16	SIDE UPPER RECESSED SCENE LIGHTS	Clarify the specification to show that the 120V side scene lights will be located below the 12V scene and warning lights to allow for room to mount the electric roll out awning.	$0.00	☑ YES
17	ATOMIC CLOCKS WITH TEMPERATURE	Clarify the specification to show that the atomic clocks will be wired to the inverter power supply.	$0.00	☑ YES
18	TELESCOPING PNEUMATIC MAST	Clarify the specification to show that the controls for raising and lowering the mast will be located in the lower rear streetside compartment (S5) on the rear wall, just inside the door	$0.00	☑ YES
19	COMMAND CAMERA SYSTEM	Change the cammand camera system to a Bosch MIC400AL camera ILO a Pelco ES31CBW24-5N camera as originally specified. The Change is necessary due to automatic mast cover configuration.	$0.00	☑ YES
		Change Order Total:	**$4,245.00**	

Authorized Customer Signature:	Date Accepted: Apr. 19, 2010
Authorized Dealer Signature:	Date Accepted:
Authorized SVI Signature:	Date Accepted: 4/15/10

This change order is not valid until signed by all parties listed above.