

# Fort St. John Fire Department

## Heavy Rescue

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# Fort St. John Fire Department

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### Build Specification

#### **INTERNET IN-PROCESS SITE**

The Bidder shall post and maintain a website where the Fort St. John 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.

#### **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 delivery, 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

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- (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 with the fire apparatus 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.

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#### **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.

#### **STATEMENT OF 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 Body 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.

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The Body 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 Body 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.

Apparatus Type	Equipt. Storage Area	Apparatus Size	Equipment Allowance	
			lb.	kg.
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700

#### **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.

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#### **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.

#### **LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

##### **DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

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



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#### **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 % of the continuous rated wattage stated on the power source specification label. Testing with a resistive load bank shall be permitted.

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

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

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

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

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

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

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

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

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

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

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

#### **DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

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

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#### **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.

#### **WARRANTY**

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

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

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

#### **GENERAL LIMITED WARRANTY - ONE (1) YEAR**

The vehicle shall be free of defects in material and workmanship for a period of one (1) year or 12,000 miles, whichever occurs first starting thirty (30) days after the original invoice date.

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

#### **LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS**

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

#### **STRUCTURAL WARRANTY - TEN (10) YEARS**

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

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#### **PAINT LIMITED WARRANTY - TEN (10) YEARS**

The body shall be free of bubbling, or peeling as a result of a defect in the method of manufacture for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

#### **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 Fort St. John Fire Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

#### **OVERALL HEIGHT**

The overall height (OAH) of the vehicle shall be approximately 130" (10' - 10") 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 422" (35' - 2").

#### **INSPECTION TRIPS**

The Bidder shall provide one (1) individual inspection trip(s) to the factory. The quantity of people and number of trips can be configured to meet the needs of the Fort St. John Fire Department. The cost of transportation, food, and lodging shall be borne by the Bidder.

If the Fort St. John Fire Department is more than 250 miles from factory than the transportation shall be by commercial airline.

The description of these factory trips must be included in Bid. If nothing is described or mentioned in the Bid pertaining to inspection trips, then it is assumed that the Bidder is taking exception to inspection trips required, and bid shall be rejected.

#### **DELIVERY AND DEMONSTRATION**

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

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

After delivery of the apparatus, the Fort St. John 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*.

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#### **MODEL**

The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. This chassis shall be manufactured for heavy duty service with strength and capacity for a duty rating of one hundred (100) percent loaded full 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 4 X 2 axle configuration consisting of a single rear drive axle 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 27,000 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.

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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 inches wide with a minimum interior width of 90 inches.

The cab overall length shall be 150.38.00 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 75.00 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 34.00 inches wide X 84.00 inches high. This style of cab shall also include a crew area offering up to ten (10) seating positions.

The cab shall incorporate a (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.

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#### **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 ENGINE TUNNEL**

The cab interior shall include a fixed type engine tunnel cover sized to accommodate an engine with a small or medium block. The engine tunnel shall be an integral part of the cab constructed of 5052-H32 Marine Grade, .190 of an inch thick, one hundred percent primary aluminum plate. The tunnel shall be a maximum of 41.50 inches wide X 23.00 inches high.

The engine tunnel shall be insulated with multi-layer insulating material, consisting of foam, a sound barrier of 1.00 pounds per square foot with a facing which resists heat transfer. This insulation shall be held in place by adhesive, aluminum stick pins and retention caps. Any exposed insulation seams and edges shall be sealed reducing moisture and debris.

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#### **CAB ENTRY DOORS**

The cab shall include a driver and officer area with two cab door openings which offer a clear door opening of 40.75 inches wide.

The doors shall be 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 four (4) entry doors as high as possible for ease of entering and egress when outfitted with an SCBA.

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 entry doors shall be of a flush, full height design and shall be located on the sides of the cab.

#### **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 a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

Access shall be provided to the under seat storage areas through the exterior compartment. The height of the upper storage area will be 12.00 inches and depth will depend on the seat box. An individual outboard seat box shall provide an additional compartment on the left side of the cab; an enclosed full width seat bench shall provide a compartment which is also accessible through the interior of the cab.

#### **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.



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#### **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 a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

Access shall be provided to the under seat storage areas through the exterior compartment. The height of the upper storage area will be 12.00 inches and depth will depend on the seat box. An individual outboard seat box shall provide an additional compartment on the left side of the cab; an enclosed full width seat bench shall provide a compartment which is also accessible through the interior of the cab.

#### **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.

#### **CAB STRUCTURAL WARRANTY**

The cab structure shall be warranted for a period of ten (10) years. 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 upper and lower colors specifically designated by the customer with a minimum thickness of two 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 71096 ALT Red.

#### **CAB PAINT SECONDARY/UPPER CAB COLOR**

The upper paint color shall be PPG FBCH 2185 White.

#### **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a break line on the cab which shall fall approximately 1.00 inch under the door windows and above the door handles. The break line shall extend in a straight line and fall approximately 3.50 inches under the windshield and above the windshield wipers on the front of the cab.

#### **CAB PAINT PINSTRIPE**

Where the upper and lower paint colors meet a temporary 0.50 inch black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

#### **CAB PAINT WARRANTY**

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

#### **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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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.

#### **VEHICLE DATA RECORDER**

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.

#### **AUXILIARY POWER & GROUND STUD**

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be .375 inch diameter and capable of carrying up to a 40 amp battery direct load.

#### **EXTERIOR ELECTRICAL TERMINAL COATING**

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

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## Heavy Rescue

### Build Specification

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## Heavy Rescue

### Build Specification

#### **ENGINE**

The power plant for the vehicle shall offer a high pressure performance, turbo charged engine which shall feature a high pressure common rail fuel system. This system shall be coupled with a proven Holset turbo which delivers outstanding performance at ratings up to 425 HP. The Cummins ISL engine shall include replaceable mid-stop cylinder liners plus heavy duty roller followers, targeted piston cooling and 30% more efficient oil cooling for improved durability and reliability. The heavy duty design shall also feature stronger braking capacity.

The engine shall be EPA certified to meet the very latest emissions standards without compromising performance, reliability or durability. The Cummins ISL 425 engine shall feature an air charge cooled engine which consists of an in line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 425 horse power at 2000 RPM which shall be governed at 2200 RPM. The torque rating shall feature 1200 foot pounds of torque at 1300 RPM with 543 cubic inches of displacement. The Cummins ISL 425 engine shall feature an electronic governor.

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 an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. 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.

#### **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

#### **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 programming which governs the top speed of the vehicle shall be disabled.

#### **AUXILIARY ENGINE BRAKE**

A Jacobs engine compression brake, for the six (6) cylinder engine shall be provided. The engine compression brake shall actuate the vehicles brake lights when engaged. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine brake shall activate upon 0% accelerator when in operation mode.

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## Heavy Rescue

### Build Specification

#### **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected: a valid gear ratio is detected; the driver has requested or enabled engine compression brake operation; the throttle is at a minimum engine speed position; and the electronic controller is not presently attempting to execute an electronically controlled final drive gear shift. The compression brake shall be controlled via an off/low/high virtual button through the Vista display.

#### **FLUID FILLS**

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

#### **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 WARRANTY**

The Cummins 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) discrete wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discrete 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. A switch on the dash shall be provided to turn the fan clutch on and off manually. The switch shall not function to turn off the fan when the fan is activated due to high coolant temperature.

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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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.

Proposals unable to offer a stacked single depth cooling package shall not be considered.

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 not protrude below the frame of the vehicle by more than 1.1 inch. This feature shall improve the 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 627 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 390 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.

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## Heavy Rescue

### Build Specification

#### **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 completely disposable dry type filter shall ensure containment of 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 increased capacity and lower 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 which shall activate when the air cleaner element requires replacement.

The charge air cooler hose shall be formed from aluminized steel tubing and include silicone hump hose with stainless expansion rings and stainless steel "constant torque" style clamps meeting the engine manufactures requirements.

Proposals shall include an indication light representative of the need for replacement of the air intake filter and shall be located at the front of the vehicle.

#### **AIR INTAKE SKIDPLATE**

A skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall be bolted to the bottom flange of the right side frame rail to provide additional protection for the air intake system.



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## Heavy Rescue

### Build Specification

#### **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 Neiderman 45 degree exhaust extraction system.

#### **TRANSMISSION**

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and 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:

1<sup>st</sup>- 3.49:1; 2<sup>nd</sup>- 1.86 to 1; 3<sup>rd</sup>- 1.41 to 1; 4<sup>th</sup>- 1.00 to 1; 5<sup>th</sup>- 0.75 to 1; 6<sup>th</sup>-0.64 to 1 (if applicable); Rev- 5.03 to 1.

#### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will select five (5) speeds of operation. The sixth 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 8 pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission tcm.

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

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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 will provide a prognostic indicator (wrench symbol) between the selected and attained indicators.

#### **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 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.

#### **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 cooling system shall feature a circuit provision located within the hydraulic transmission oil which shall provide for rapid warm up to the optimum transmission operating temperature.

Proposals offering water to oil style transmission cooling systems shall not be accepted.

#### **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-XMFJP-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 9:00 oclock position.

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## Heavy Rescue

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#### **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 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. A splined slip joint shall be provided in each driveshaft and shall be coated with Glide coat<sup>®</sup>.

#### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

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

#### **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**

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second 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.

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## Heavy Rescue

### Build Specification

#### **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 Corisol™ 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 clear 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 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 nine (9), 54.00 inch long and 4.00 inches wide taper leaf springs with 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.

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## Heavy Rescue

### Build Specification

#### **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 TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

#### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

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

#### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

#### **CHASSIS ALIGNMENT**

The chassis frame rails shall be cross checked to insure the length and to make sure each is square. The front and rear axles shall be laser aligned, additionally the tires and wheels shall be aligned and toe-in set on the front tires. The completed apparatus shall be rechecked for proper alignment once the chassis has been fully loaded.

#### **REAR AXLE**

The rear axle shall be a Meritor model RS-25-160. The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the industrys demands. The axle shall include rectangular shaped, hot-formed housings for extra strength and rigidity. The axles shall also include torsion flow axle shafts that feature a surface hardness which resists fatigue and a resilient core which absorbs shock. There shall be unitized pinion seals within the axle helping to prevent leakage and harmful road contaminants from entering the axle components. The axle shall include a rigid differential case for high axle strength and reduced maintenance.

The axle shall include single reduction gearing and shall have a rated capacity of 27,000 pounds.

#### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

#### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **REAR AXLE DIFFERENTIAL CONTROL**

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the differential to be locked and unlocked when the vehicle is stationary to provide maximum wheel end traction. The 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 differential control.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.

#### **REAR SUSPENSION**

The single rear axle suspension shall feature a Neway AD-127 air suspension. The suspension shall include optimized air springs mounted to the equalizing beams and integral transverse beam. An adjustable torque rod and adjustable track bar shall also be included.

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 is run flat capable at reduced speeds.

The rear suspension capacity shall be rated at 24,000 to 27,000 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**

The rear dual tires shall include the 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **TIRE PRESSURE INDICATOR**

There shall be a pop up style tire pressure indicator at the front tire valve stem on the vehicle that shall indicate if there is insufficient pressure in the specific tire.

#### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch aluminum wheels with the Alcoa XBR Dura-Bright® wheel treatment as an integral part of the wheel. Alcoa XBR Dura-Bright® wheels keep their shine without polishing; the wheels shall come clean simply by spraying with soap and water. Brake dust, grime and dulling oxidation shall wash off with no scrubbing and no special chemicals required.

#### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with the Alcoa XBR Dura-Bright® wheel treatment as an integral part of the wheel. Alcoa XBR Dura-Bright® wheels keep their shine without polishing; the wheels shall come clean simply by spraying with soap and water. Brake dust, grime and dulling oxidation shall wash off with no scrubbing and no special chemicals required.

#### **WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons with cutouts for oil seal viewing (there shall be no cutout on front drive, IFS axles, or when the front wheel bearing lubrication is grease). The covers and baby moons shall feature a mirror shine finish and shall be shipped loose with the chassis for installation by the apparatus builder.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats, also in a mirror shine finish, which shall be shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand, and constructed of 304L grade, non-corrosive stainless steel meeting D.O.T. certification standards.

#### **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.

#### **TIRE CHAINS**

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 mph.

#### **TIRE CHAINS ACTIVATION**

The tire chain system shall be controlled through a virtual switch on the multiplex display. The virtual switch shall display "Active" when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage when the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **AUXILIARY LUBRICATION SYSTEM**

A Groeneveld (CPL) automatic lubrication system shall be installed on the chassis. The system shall be capable of lubricating up to twenty-six (26) grease points on the chassis. A park brake interlock is incorporated into the ignition system to keep the system from operating while parked.

#### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 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 four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and 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 single 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 EX225 Disc Plus disc brakes with 17" vented rotors.

#### **REAR BRAKES**

The rear brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.



# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 left hand dash to the right of the steering column within easy reach of the driver.

#### **AIR DRYER**

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 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 frame rail behind the officer step.

#### **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

#### **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 24/30 H.O.T. (High Output Technology) brake chambers 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 pads against the brake rotor.

#### **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

#### **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.

#### **MOISTURE EJECTORS**

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 222.00 inches.

#### **REAR OVERHANG**

The chassis rear overhang shall be 86.00 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 constructed of "C" channel, 10.25 inches high X 3.5 inches deep X .38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and .38 inches thick, 110,000 psi minimum yield high strength low alloy steel. Each 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 calculated by the radius method. 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 engine mounting, body mounting, pump mounting or bumpers shall not be considered as a cross member. The cross members shall be attached using grade 8 flanged head bolts and 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.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All holes for bolts shall be custom drilled into the frame rails, preventing fracture or fatigue. Each hole shall be placed relative to its component preventing unnecessary holes that present fatigue along each frame rail.

The frames proposed shall be custom drilled 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 lifetime warranty to the original purchaser.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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-cured pencil hardness of H-2H. The direct impact resistance, per ASTM D2794, shall have a direct 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**

The chassis shall be equipped with a severe duty front bumper constructed of ASTM A-36 steel; the bumper shall then be painted. The bumper shall include a .38 thick structural steel channel which shall measure 12.00 inches high and 101.00 inch wide, with angled front corners.

#### **FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended 18.00 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 PAINT**

The front bumper shall include a finish topcoat painted the same as the lower cab color.

#### **FRONT BUMPER WINCH**

The front bumper shall include a Ramsey model RE12000 electric winch with 12,000 pound rated line pull, 12 volt electric winch shall be installed in the center of the front bumper. The winch shall be equipped with 125.00 feet of 0.38 inch cable, clevis hook and a 4 way roller fairlead. The winch shall be operated through a 25.00 foot pendant with a hand held control. The winch shall include a spring applied hydraulic released disc brake and counterbalance valve. It shall feature an easy to use spring loaded clutch with clutch engagement indicator light.

#### **FRONT BUMPER APRON**

The 18.00 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **AIR HORN**

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 24.00 inches long with a 6.00 inch round flare. The air horn shall be a trumpet style and shall include a chrome finish on the inside and a black painted finish on the outside of the trumpet.

#### **AIR HORN LOCATION**

The two (2) air horns shall be shipped loose for the body manufacturer to install in the bumper. The body manufacturer shall cut all holes required in the bumper for the horn installation.

#### **AIR HORN SNOW SHIELDS**

The air horns shall include 6.00 inch 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 one (1) Federal Signal model BP200-Q speaker which shall be recess mounted within the bumper fascia and include the classic Q-style grille. The speaker shall feature 200 watts of power. The speaker shall measure approximately 5.50 inches high X 7.70 inches wide X 7.80 inches deep.

#### **ELECTRONIC SIREN SPEAKER LOCATION**

The electronic siren speaker shall be shipped loose for the body manufacturer to install in the face of the bumper. The body manufacturer shall cut all holes required for the installation.

#### **FRONT BUMPER TOW EYES**

The bumper shall include two (2) painted tow eyes which shall be installed below the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the eye shall be 2.00 inches and include a chamfered edge.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting 45 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" ball and be anchored to frame brackets with 1.25" 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 ALARM**

A Preco Matic model 1059 shall be installed and shall automatically activate when the cab tilt is actuated acting as a notification and warning.

#### **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 TILT LOCK DOWN INDICATOR**

The cab dash shall include a message located within the speedometer which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar and the parking brake is released.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### **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 rear left 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 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 SIDE MID LH**

The cab shall include a window on the drivers side behind the front door and ahead of the crew door and above the wheel well 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 LH**

The window located on the left 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 SIDE REAR RH**

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

#### **GLASS TINT SIDE REAR RH**

The window located on the rear wall on the right hand side 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 REAR LH**

The lower portion on the officer side towards the rear of the cab shall include a window which is 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space. The windows shall be oblong in shape and be mounted in a black rubberized frame.

#### **GLASS TINT SIDE REAR LH**

The window located on the rear wall on the right hand side of the cab behind the crew 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows 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**

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows 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 conditioning system shall be capable of lowering the cab interior temperature from 100 degrees to 70 degrees within thirty minutes, with a relative humidity of sixty percent.

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.



# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 heater fan controls shall be individual switches located in the rocker switch area of the dash.

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. 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.

#### **AUXILIARY CLIMATE CONTROL REAR UNDERSEAT**

One (1) 53,500 BTU heater shall be provided and installed in the rear section of the crew cab under the center forward facing seat riser. 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 CIRCULATION FANS FRONT**

The cab shall include two (2) individually switched all metal construction 6.00 inch windshield defogger fans which shall be installed in the front cab corners.

#### **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 include a foil facing which includes grid reinforcement. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **UNDER CAB INSULATION**

The exterior of the cab tunnel surrounding the engine shall include reinforced closed cell foam insulation. The insulation shall measure 1.00 inch thick and shall include a foil backing and grid reinforcement. The foam shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation under the tunnel shall act as a noise barrier absorbing noise from the engine as well as assisting in sustaining the desired climate within the cab interior.

Additionally, the entire underside of the cab shall include reinforced closed cell foam insulation. The insulation shall measure 1.00 inch thick and shall include a foil backing and grid reinforcement. The foam shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation under the cab floor shall act as a noise barrier absorbing noise from the road as well as assisting in sustaining the desired climate within the cab interior. An expanded aluminum overlay shall be installed to hold the insulation tight against the underside of the cab.

#### **INTERIOR TRIM FLOOR MAT**

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

#### **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.

#### **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 SUN VISOR**

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.

In addition to the padded sun visors, two (2) 7.00 inches high X 18.00 inches wide impact resistant, transparent acrylic polycarbonate sun visors with a smoke gray tint shall be provided and installed on the header above the driver and officer.

The see thru visors are designed for maximum flexibility of positioning utilizing an arm with virtually unlimited adjustability with 13.50 inch long lateral travel of the tinted visor at the end of the arm which can be locked in place by a thumbscrew.

The visors are easily adjusted and can be placed into a chosen position with one hand. The sun visors will help protect vehicle occupants from solar glare without obscuring their vision.

#### **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.

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## Heavy Rescue

### Build Specification

#### **TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick, one hundred percent primary aluminum plate.

#### **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.

#### **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 rubber and .06 inch thick non-slip pebble grain.

#### **POWER POINT DASH MOUNT**

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the dash dedicated as a power source for additional portable or mobile items. The receptacles shall be wired to be live with the battery master switch.

#### **STEP TRIM**

The cab steps shall include a 14 gauge 304 perforated stainless steel construction on the first step, the step closest to the ground. The stainless steel finish shall be a number 7 mirror. The step shall include a frame which is integral with the construction of the cab for rigidity and strength. The perforation shall allow water and other debris to flow through rather than becoming packed under the step. The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed aluminum tread plate which is 0.084 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.

#### **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.

#### **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**

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A reflective chevron sign shall be installed on the lowest portion of the inner door panel, one (1) on each door. A stripe of reflective tape shall be installed at the outer edge of each door.

#### **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 and provide ease of access and exiting the cab.

#### **INTERIOR GRAB HANDLE REAR DOOR**

A yellow powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door the full width of the door below the window glass and shall measure 30 inches in length. The handle shall assist personnel in exiting and entering the cab.

#### **INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be black in color.

#### **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.

#### **CAB PAINT INTERIOR**

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

#### **CAB PAINT INTERIOR DOOR TRIM**

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

#### **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.

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#### **SWITCHES LEFT PANEL**

The left dash panel shall include one (1) wiper switch which shall be located in the left hand side of the panel. All switch legends 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 chassis. 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 on the chassis shall be black in color. This material shall be semi- resistant to UV rays and from being saturated or contaminated by fluids.

#### **SEAT BACK LOGO**

The seat backs shall include the logo for SVI. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

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## Heavy Rescue

### Build Specification

#### **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. Botrom Firefighter model seat. The seat shall feature eight (8) way electric positioning. The eight (8) 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 officers seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

#### **POWER SEAT WIRING**

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

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the driver seat and one (1) located directly behind the officer seat.

#### **SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room and shall remain in the stored position until occupied.

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 and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

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 REAR FACING OUTER**

The rear facing outboard seat shall feature a Bostrom SecureAll™ SCBA locking system which shall store all U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable at all adjustment points with one tool.

The bracket system shall be free of straps, that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA bottle in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

#### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seat shall be mounted facing the rear of the cab.

#### **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 two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the driver side of the cab and one (1) located next to the outer wall on the officer side of the cab.



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### Build Specification

#### **SEAT CREW FORWARD FACING OUTER**

The crew area shall include a seat in the forward facing outer position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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 and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

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 seating shall include a seat back in the forward facing outboard position which shall be comprised of a standard seat back. The seat back shall feature an all belts to seat (ABTS) style safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seat back shall feature a contoured, adjustable head rest.

#### **SEAT MOUNTING FORWARD FACING OUTER**

The forward facing outer seat shall be mounted inboard from the side wall for additional clearance facing the front of the cab.

#### **ARMREST FORWARD FACING OUTER**

All forward facing outer crew seat positions shall include armrests on the inboard and outboard side of each seat. Each armrest shall be covered with black urethane material and shall be an integral part of the seat.

#### **SEAT FORWARD FACING CENTER LOCATION**

The crew area shall include one (1) forward facing center crew seat located directly behind the engine tunnel in the center of the cab.

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#### **SEAT CREW FORWARD FACING CENTER**

The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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 and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

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 CENTER**

The crew area seating shall include a seat back in the rear facing center position which shall be comprised of a standard seat back. The seat back shall feature an all belts to seat (ABTS) style safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seat back shall feature a contoured, adjustable head rest.

#### **SEAT MOUNTING FORWARD FACING CENTER**

The forward facing center seats shall be installed facing the front of the cab.

#### **ARMREST FOWARD FACING CENTER**

All forward facing center crew seat positions shall include armrests on the inboard and outboard side of each seat. Each armrest shall be covered with black urethane material and shall be an integral part of the seat.

#### **SEAT FRAME FORWARD FACING**

The forward facing center seating positions shall include a full width, enclosed style seat frame which is located and installed at the rear wall. The seat frame shall be open to the rear compartment offering interior access to this compartment. The seat frame shall measure 89.25 inches wide X 12.38 inches high X 22.00 inches deep and shall be transverse into the rear compartment. The seat frame shall be constructed of 5052-H32 Marine Grade, .190 inch thick, 100 percent primary smooth aluminum plate. The seat box lid shall be painted with the same color as the remaining interior.

#### **UNDER SEAT STORAGE AREA PARTITION**

There shall be two (2) partitions installed under the full width seat frame at the rear wall. The partitions shall create three separate compartments of the full width seat base with interior access by separating the center section under the seat frame from the exterior portions of the compartments. With these partitions the center section shall only be accessible from the access openings on the front face of the seat frame and the two (2) exterior compartments shall only be accessible through their respective side exterior doors.

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## Heavy Rescue

### Build Specification

#### **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 parallel 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 rod style 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) keypads, one (1) located on the drivers side next to the front grab handle and one (1) on the officers side next to the front grab handle. The electronic door locks shall feature Four (4) key fobs for activation with buttons for entry door lock and unlock, compartment door lock and unlock shall be provided. There shall be two (2) rocker switches provided, one (1) located on the inside of the drivers side front door and one (1) located on the officers side front door. The power door locks shall control all four (4) entry doors of the cab.

#### **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 up to eight (8) compartment doors featuring controls through the key fob and through a virtual switch on the multiplex display.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 CRM-310-1750-TPCHR bus style mirrors shall be provided. The mirror heads shall be injection molded chrome plated ABS plastic and shall measure 9.50 inches wide X 17.50 inches high. The mirrors shall be mounted one (1) on each the driver and officer doors of the cab with polished die-cast aluminum arms.

The mirrors shall feature an upper heated remote controlled convex glass with a lower heated remote controlled flat 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 heated 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 is even with 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 chassis shall include three (3) chassis manufacturers emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab above the wheel well.

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## Heavy Rescue

### Build Specification

#### **IGNITION**

The master battery system and a keyless start ignition system shall each be controlled by a ¼ turn Cole Hersee thumb switches which shall be mounted to the left of the steering wheel on the dash.

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

The chrome push type 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. It shall be located so it can be activated at the drivers discretion, 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) 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 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.

#### **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.

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## Heavy Rescue

### Build Specification

#### **BATTERY CONDITIONER**

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab behind the driver's seat.

#### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in front of the driver side door just below the windshield.

#### **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 20 amp super auto-eject electrical receptacle shall be connected to the battery conditioner and installed on the drivers side of the cab above the wheel well. It shall automatically eject the plug when the starter button is depressed.

*The U.L. maximum allowable amperage draw on receptacles is generally 80% of their listed rating, for example, the 20 amp receptacle should not carry more than 16 amp continuous load. When adding the different amperage draws of the components being installed on the chassis be sure to factor in whether the components will draw a continuous load or intermittent load.*

#### **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.

#### **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 chrome plastic bezels 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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.

#### **FOG LIGHTS**

The vehicle shall include clear Perlux fog lights. These lights shall be controlled by a virtual switch on the multiplex display.

#### **FOG LIGHT LOCATION**

The fog lights shall be recess mounted in the bumper on the driver and officer side of the cab in the inboard position.

#### **GROUND LIGHTS**

Each door shall include LED NFPA compliant light heads mounted to the under side of the cab. 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 through the Vista screen and by the opening of either door on the respective side of the cab as well as being activated when the parking brake is set.

#### **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.

#### **UNDER BUMPER LIGHTS**

There shall be two (2) LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The bumper ground lighting shall be interlocked with the park brake and the marker light activation.

#### **ENGINE COMPARTMENT LIGHT**

There shall be two (2) incandescent 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **FRONT SCENE LIGHTS**

The front of the cab shall include two (2) Whelen model Pioneer PFA2 contour roof mount lights installed on the brow of the cab.

Each lamp head shall have two (2) 12 volt high intensity LED banks at 75 watts total. Each light shall draw 6.0 amps and generate 5000 lumens. Each lamp head shall be adjustable up to 20 degrees. Each lamp head shall be no more than 4.65 inches in height X 16.00 inches in width. The lamp heads and brackets shall be powder coated white.

#### **FRONT SCENE LIGHTS ACTIVATION**

The front scene lights shall be activated by a virtual button on the MUX display.

#### **FRONT SCENE LIGHT LOCATION**

There shall be two (2) scene lights mounted to the front brow of the cab inboard of the outer front marker lights.

#### **SIDE SCENE LIGHTS**

The side of the cab shall include two (2) Whelen model 810 scene lights, one (1) each side which shall be surface mounted. The Whelen lights shall offer halogen lighting with 8 to 32 degree internal optics.

#### **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 incandescent dome lamp with a red and white lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The white portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and white portion can be activated by individual switches on each lamp.

An additional two-section incandescent red and white lamp shall be provided over the engine tunnel which can be activated by individual switches on 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 clear lamp shall be activated by the opening of the driver or officer door as well as an individual switch located on the side of the lamp. The red lamp shall be individually switched only.

#### **AUXILIARY DOME LIGHT FRONT CREW**

The cab headliner above the rear facing crew seats shall include two (2) 7.00 inch clear dome lamps. These lamps shall be activated by any cab door, a virtual button on the Vista display, as well as an individual switch located on the side of each lamp.



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#### **AUXILIARY DOME LIGHT REAR CREW**

The cab headliner above the forward facing crew seats shall include one (1) 7.00 inch red dome lamps centered. The lamp shall be activated by an individual switch located on the side of each lamp and by a button on the Vista display

#### **MAP LIGHTS**

One (1) each Sunnex brand gooseneck style instrument panel map light with a switch at the base shall be mounted to the air conditioning cover on the officers side.

#### **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, an audible alarm 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**

The optical warning system shall be controlled by a master switch which shall include all "ON" and all "OFF" capability via a virtual button within the MUX display. All warning lights which are "ON" when the master switch is activated shall also activate. This switch shall be clearly labeled for identification.

#### **HEADLIGHT FLASHER**

An alternating high beam headlamp flashing system shall be installed into the high beam headlamp circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

#### **ALTERNATING HEADLIGHT SWITCH**

The flashing headlights shall be activated through a virtual button on the MUX display.

#### **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. 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 front warning lights mounted on the fascia for the inboard position shall be red with a clear lens.

#### **OUTBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer 14 flash patterns plus a steady burn for solid colors and 20 flash patters plus a steady burn for split colors. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the outboard position.

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#### **OUTBOARD FRONT WARNING LIGHTS COLOR**

The front warning lights mounted on the fascia for the outboard position shall be red with a clear lens.

#### **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) Whelen series 600 Super LED intersection warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red with a clear lens.

#### **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 a Whelen series 600 Super LED 4"x6" warning light, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### **SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the chassis shall be red with clear lens.

#### **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.

#### **SIREN CONTROL HEAD**

A Federal EQ2B 200 watt electronic siren head shall be provided and installed in the switch panel with a location specific to the customers needs. The siren shall feature "Q" wail, yelp, air horn, PA, radio broadcast and "Q" brake. The siren shall produce 122 decibels at 10 feet away and shall include a noise cancelling microphone.

#### **AIR HORN ACTIVATION**

The air horn actuation shall be accomplished by a driver side mounted Linemaster model SP491-S81 foot switch and a black push button on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

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#### **ELECTRONIC SIREN AUXILIARY ACTIVATION**

The electronic siren actuation shall also be accomplished by a driver foot switch.

#### **BACK-UP ALARM**

An Preco-Matic model 1059 dual function, dual sound backup alarm shall be installed at the rear of the chassis with an auto-adjusting output level of not less than 87 dB and up to 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

#### **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 system, secondary 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 indicator 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 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 160 to 250 degrees Fahrenheit (F). A red indicator light in the gauge shall indicate high coolant temperature. The scale on the transmission oil temperature gauge shall read from 100 to 300 degrees Fahrenheit (F). 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 Enunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

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#### 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 when a seat is occupied and corresponding seat belt 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 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 a 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 tractions control equipped vehicles, also indicates mud/snow mode is active for ATC system. (1) (5)  
OK to Pump - indicates the pump engage conditions have been met. (1)  
Pump Engaged - indicates the pump is currently in use. (1)

#### BLUE LAMPS

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:

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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 pre-heat 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.

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#### **RADIO**

A Jensen JHD3510 radio with weather band, AM/FM stereo receiver, CD player, rear iPod input pigtail connector, satellite radio capability, and a front panel mini stereo input jack, and four (4) speakers shall be installed in the cab. The CD player shall be compatible with CD-R, CD-RW and MP3 format discs. The receiver shall be installed in the right hand overhead position. The speakers shall also be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers in the upper rear corners of the cab.

#### **RADIO ANTENNA**

A small antenna shall be located on the officer side of the cab roof for AM/FM and weather band reception.

#### **CAMERA**

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) 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 shall be mounted on the officer side of the cab above the front door. The cameras shall be wired to a single Weldon Vista display located on the drivers side dash. The rear camera display shall activate when the vehicles transmission is placed in reverse. The side camera display shall activate when the respective side turn signal is activated. The camera system display can also be activated through the Vista display panel.

#### **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 one (1) complete set of wiring schematics and option wiring diagrams.

#### **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**

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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.

#### **CHASSIS MODIFICATIONS**

#### **LUBRICATION AND TIRE DATA PLATE**

A permanent label in the driving compartment shall specify the quantity (in US and Metric measurements) 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 (in US and Metric measurements)
- Paint Brand and Code(s)
- Sales Order Number

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#### **OVERALL HEIGHT, LENGTH DATA PLATE (METRIC)**

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 and length of the completed fire apparatus in US and Metric measurements.

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.

#### **BUMPER COMPARTMENTS**

The bumper extension shall have two (2) tool compartments each located outboard of the chassis frame rail and as large as possible. The compartment lids shall be 1/8" NFPA compliant aluminum tread plate with stainless steel hinges and single point lift/turn latches. Each compartment lid shall have a spring hold open device.

Rubber bumpers and chains shall be provided as required to prevent the doors from hitting the cab.

#### **AIR HORNS**

Two (2) chassis supplied chrome plated air horns shall be recess mounted in the front bumper, one (1) on each side outboard of the frame rails.

#### **FRONT WINCH**



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

#### **FRONT TOW PROVISIONS**

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

#### **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.

#### **RADIO/ANTENNA INSTALLATION**

There shall be one (1) Fort St. John Fire Department supplied Motorola 1250 radio(s) with antenna installed in the cab in the upper right quadrant of the center dash panel..

Radio shall be installed per manufacturers requirements and wired for proper 12 volt power and ground.

#### **SEAT BELT COLOR**

Section 14.1.3.4 of the NFPA 1901 Standards, 2009 edition, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

#### **SEAT BELT WEB LENGTH - CUSTOM CAB**

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, 2009 edition, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

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

#### **SEAT BELT / VDR SYSTEM - CUSTOM CAB**

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

#### **VIDEO RECORDER SYSTEM**

There shall be one (1) Martel Electronics MDE2 Mobile Digital Video System(s) provided and installed in the cab. The system shall provide forward looking video and audio recording and include touch screen controls, no moving parts, pre-event recording, and lawsuit protection.

#### **HELMET STORAGE**

No helmet storage is required in the in the cab driving or crew area.

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#### **CAB CRASH TEST CERTIFICATION**

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

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

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

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

#### **CAB MIRRORS, DRIVER ADJUSTABLE**

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

#### **ENGINE TUNNEL COVER**

There shall be one (1) engine tunnel cover/accessory mounting plate installed over the cab/chassis engine tunnel. The engine tunnel cover shall be constructed from 1/8" smooth plate aluminum powder coated a dark gray hammertone color and be designed to cover the full area of engine tunnel. The cover shall include two (2) 4" diameter cup holders (one (1) for driver, one (1) for officer), and a boxed in area approximately 40"W x 18"L x 3"H located at the rear of tunnel to hold misc items. Exact layout shall be determined by the approved sales drawing.

- There shall be one (1) 120 VAC outlet strip(s) approximately 2' long with straight blade household type outlets located on the rear wall of the boxed-in area. The outlet strip shall be wired to shore power and generator power.

#### **MUDFLAPS**

There shall be rubber mudflaps furnished and installed behind each set of tires.

#### **WINTER FRONT GRILL COVER**

There shall be a winter front cab grill cover provided with the apparatus. The cover design shall be similar in design to SMEAL apparatus as provided by the Fort St. John Fire Department.

#### **AIR BRAKE SYSTEM QUICK BUILD-UP**

The air brake quick build-up system shall be supplied from the specified automatic electric compressor in order to maintain full operating air pressure while the vehicle is not running.

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

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#### **REAR CAB AREA LAYOUT**

##### **CAB COMMAND DESK - MAP BOARD**

The rear portion of the cab shall be provided with a slanted & sliding command desk with storage below the writing surface. The desk top shall have a full length stainless steel .18" pin hinged top to gain access to the storage area below.

The storage cabinet shall be fabricated of .125" smooth aluminum. A lip shall be provided at the lower edge of the writing surface to prevent items from sliding off. The desk top shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

The desk size and layout shall be determined from the approved sales drawing.

- There shall be two (2) 12V outlet(s) provided in the forward top face of the desktop, one (1) on either side.
- There shall be one (1) 120 volt, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the top face of the desktop, centered between the 12V outlets.

##### **CAB REFRIGERATOR**

There shall be one (1) Norcold DE-0040 1.7 cu. ft. 120VAC/12VDC refrigerator/freezer(s) furnished and installed in the galley. The unit shall be a flush mount style box with Body Manufacturer fabricated custom enclosure. Each refrigerator shall operate from 12 volt or 120 volt power. The built-in dimensions are 20-1/2" high x 15-1/4" wide x 17-3/4" deep..

- One (1) 120 volt, 20 amp, straight blade outlet shall be provided behind the refrigerator.

##### **CAB COFFEE MAKER**

There shall be one (1) Contoure model CM1000 10 cup built-in coffee maker. The coffee maker shall operate from 120 volt power wired to the generator only. The built-in dimensions are 11" high x 12" wide x 9-1/2" deep..

- One (1) 120 volt, 20 amp, GFI straight blade outlet shall be provided behind the coffee maker.

##### **CAB 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 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.

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

##### **OVERHEAD CABINET MICROWAVE**

There shall be one (1) commercial grade microwave oven furnished and installed in the curbside upper storage compartment. The unit shall be a 1000-watt minimum with stainless steel cabinet. The built-in dimensions shall be 12" high x 20-1/2" wide x 16" deep.

- One (1) 120 volt, 20 amp, straight blade outlet behind the microwave.

##### **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".

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#### **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 Fort St. John 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 Fort St. John 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, will 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.

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## Heavy Rescue

### Build Specification

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

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

#### **ROOF CONSTRUCTION**

The roof shall be integral with the body and shall be all welded construction. The roof shall be reinforced with 2" x 2" tubing running the full width of the body. All seams in the roof area shall be welded prior to paint to prevent entry of moisture.

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

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

#### **10" 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 with additional grip strut material on the top stepping surface. The bumper shall extend from the rear vertical body panel 10" 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.

#### **GROUND LIGHTS**

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

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 a rubber gasket 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.

#### **ALUMINUM BODY PAINT SPECIFICATIONS**

##### **BODY PAINT PREPARATION**

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

The exterior body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion. If the compartment interior is to be painted the interior shall be acid etched as described above then primed with an epoxy primer and all seams caulked.

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

##### **PAINT PROCESS**

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

The body shall go through an eight-stage paint process;

1. Clean bare metal using a solvent base wax & grease remover.
2. Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
3. Re-clean bare metal using a solvent base wax & grease remover.
4. Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.
5. Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.
6. Basecoat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Basecoat. Apply 1.0-3.0 mills DFT of basecoat color to achieve full hiding.
7. Clearcoat PPG Delfleet® Evolution polyurethane premium quality clearcoat with improved mar resistant finish. The clearcoat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.

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## Heavy Rescue

### Build Specification

8. Curing process of the painted body shall go through a force dry/bake cycle process. The painted components shall be baked 180 degrees for 2 hours to achieve a complete coating cure on the finished product.

#### **MACHINE POLISHED**

After the force dry/bake cycle and ample cool down time, the coated surface shall be sanded using 1,000, 1,500, and or 3,000 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed then polished to an extra high gloss smooth finish. Total dry film thickness of paint will average between 8.0-12.0 mils.

#### **PAINT - ENVIRONMENTAL IMPACT**

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

#### **PAINT FINISH - SINGLE COLOR**

The body shall be painted with a single color of PPG Delfleet® Evolution paint as described above.

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

Touch-up paint shall be provided with completed vehicle.

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

#### **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.

#### **PAINT WARRANTY**

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle.

#### **COMPARTMENT INTERIOR FINISH**

The compartment interiors shall be treated with phosphoric acid and then sprayed with an epoxy primer applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.



# Fort St. John Fire Department

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#### **ROOF COMPARTMENT INTERIOR FINISH**

The roof compartments shall be treated with phosphoric acid and then sprayed with an epoxy primer will be applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.

#### **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 1" Scotchcal reflective stripe located 1" above and a second 1" Scotchcal reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold 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 1" Scotchcal reflective stripe located 1" above and a second 1" Scotchcal reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CHEVRON STRIPE - CAB BUMPER**

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 approximate 10" wide Chevron retroreflective stripe shall be affixed to at least 25 percent of the width of the front of the apparatus 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. 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 Scotchlite 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.

#### **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 1" Scotchcal reflective stripe located 1" above and a second 1" Scotchcal reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

The stripe shall extend from the chassis to the body where it will angle up 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.

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## Heavy Rescue

### Build Specification

#### **LETTERING**

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

#### **SIDE CAB DOOR LETTERING**

There shall be sixty (60) 3" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be gold in color.

#### **UPPER BODY SIDE LETTERING**

There shall be twenty two (22) 10" high reflective letters furnished and installed on the vehicle.

"HEAVY RESCUE"

- This reflective lettering shall be gold in color.

#### **FRONT OF CAB LETTERING**

There shall be twelve (12) 3" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be gold in color.

#### **CUSTOM DECAL LOGO - 12" -18"**

Two (2) custom designed 12" - 18" Scotchcal type retroreflective logo(s) shall be provided on the completed vehicle, located on the. The exact layout shall be provided by the Fort St. John Fire Department prior to completion.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **EXTERIOR COMPARTMENT DOORS**

##### **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
- Slat are to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects
- Slat 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 .

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **BODY HEIGHT MEASUREMENTS**

The vertical body dimensions shall be as follows:

##### AHEAD OF REAR AXLE

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	84.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening	
	-with roll-up door	67.5"
	-with hinged door	71.5"

##### ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.0"

##### BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
E	Bottom of Subframe to Bottom of Body	20.0"
F	Vertical Door Opening	
	-with roll-up door	62.0"
	-with hinged door	66.0"

##### GENERAL

	<u>Description</u>	<u>Dimension</u>
G	Bottom of Drip Rail to Top of Body	33.5"

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

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **UPPER BODY COMPARTMENTS**

The forward transverse compartment shall be approximately 90.0" wide x 26.0" long x 30.0" deep. There shall be three (3) compartments parallel to the sides of the body, one (1) on the streetside, and two (2) on the curbside. The streetside compartment shall be approximately 101" wide x 26.0" long x 30.0" deep. Each of the curbside compartments shall be approximately 74.0" wide x 26.0" long x 30.0" deep. The compartments shall be separated by stationary vertical partitions located under each door sill. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

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

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

Each compartment shall have a horizontally mounted OnScene Solutions LED Night Stik on the underside of the door that will be automatically activated when the door is opened and wired to the NFPA required hazard warning light provided in cab.

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

#### **TRANSVERSE ROOF COMPARTMENT - SHELF TRAC**

There shall be one (1) roof compartment(s) provided with horizontally mounted Shelf Trac on front and rear walls for vertical partition installation.

#### **ROOF COMPARTMENT - VERTICAL PARTITION**

There shall be one (1) vertical partition(s) provided in the roof compartment(s). The partitions shall be designed for holding equipment in place during travel. Each partition shall be fabricated from 3/16" smooth aluminum and bolted to specified Shelf Trac for ease of adjustment.

#### **SIDE ROOF COMPARTMENT - SHELF TRAC**

There shall be one (1) roof compartment(s) provided with horizontally mounted Shelf Trac on front and rear walls for vertical partition installation.

#### **ROOF COMPARTMENT - VERTICAL PARTITION**

There shall be four (4) vertical partition(s) provided in the roof compartment(s). The partitions shall be designed for holding equipment in place during travel. Each partition shall be fabricated from 3/16" smooth aluminum and bolted to specified Shelf Trac for ease of adjustment.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **UPPER BODY WALKWAY**

A recessed walkway shall be provided recessed at the center of the roof area. The walkway shall be finished with NFPA compliant 3/16" aluminum tread plate with continuously welded seams to prevent moisture penetration into apparatus body. Drains shall be installed in the walkway to allow moisture to drain to the ground through flexible drain hose.

#### **WALKWAY LIGHTS**

There shall be Two (2) OnScene Solutions 9" LED Night Stik lights provided to illuminate the upper body walkway area. The lights shall be activated when the parking brake is set.

Each light shall be mounted in a polished cast aluminum housing to protect against damage from personnel or equipment.

#### **ROOF ACCESS STAIRWAY**

The rear of the body shall be provided with a recessed center stairway approximately 34" wide. Stairs treads shall be formed 3/16" NFPA compliant aluminum tread plate with additional grip strut material on the top walking surface and other reinforcement as necessary.

#### **STAIRWAY HANDRAILS**

There shall be two (2) handrails provided, one (1) on each side wall of recessed center stairway. The handrails shall be angled for optimum use during ingress or egress of the upper walkway area.

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

#### **WALKWAY LIGHTS**

There shall be Two (2) OnScene Solutions 9" LED Night Stik lights provided to illuminate the upper body walkway area. The lights shall be activated when the parking brake is set.

Each light shall be mounted in a polished cast aluminum housing to protect against damage from personnel or equipment.

#### **STEP COMPARTMENT(S) - LOWER**

There shall be one (1) compartment(s) located in the roof access stairway area. Each compartment shall have a horizontally hinged door with a D-ring handle. Each compartment shall be manufactured to prevent road debris, dirt and moisture from entering the enclosure. The compartment(s) shall be 26" wide x 8" high x the maximum appropriate dimensions based upon requirements for structural integrity of the body.

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



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## Heavy Rescue

### Build Specification

#### **STEP COMPARTMENT - UPPER**

There shall be one (1) upper compartment located in the roof access stairway area. The compartment shall have a horizontally hinged door with a D-ring handle. The compartment shall be manufactured to prevent road debris, dirt and moisture from entering the enclosure. The compartment shall be approximately 26" wide x 8" high x depth of equipment.

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

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

The compartment will be designed to store the following equipment:

- One (1) 24' 2-section ladder(s). Manufacturer, model number and size of the ladder(s) shall be provided in the equipment section of the specification.
- One (1) 14' roof ladder(s). Manufacturer, model number and size of the ladder(s) shall be provided in the equipment section of the specification.
- One (1) 12' folding ladder(s). Manufacturer, model number and size of the ladder(s) shall be provided in the equipment section of the specification.
- Two (2) pike pole(s). Manufacturer, model number and length of pike pole(s) to be provided in the equipment section of the specification.

#### **FOLD-DOWN STEP**

There shall be one (1) fold-down step located at the bottom of the roof access stairway to reduce the distance from the ground to the first step. The step shall manually fold up into the stairway during travel. The step shall activate the "Hazard Warning Light" in the cab when not in the stowed position. The step shall be constructed of formed 3/16" NFPA compliant aluminum tread plate with additional grip strut material on the top walking surface.

#### **REAR BODY HANDRAILS**

There shall be two (2) vertical handrails on the rear of the body. Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

#### **BODY WIDTH DIMENSIONS**

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

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

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

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **STREETSIDE COMPARTMENT - FRONT (S1)**

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.

- There shall be NO keyed lock on this roll-up compartment 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) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 94" deep and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails.
- There shall be one (1) backing plate attached to the center rear side of the 1,000 lbs. slide out tray. The backing plate shall be designed to secure one (1) Fort St. John Fire Department supplied Porta-Power kit standing on edge to the tray. Approximate dimensions of the kit are 33L x 11-1/2"W x 22H.
  - There shall be one (1) OnScene Solutions cargo straps provided to secure the Porta Power kit to the backing plate.
- There shall be one (1) transverse module(s) for the following long tools and equipment:
  - The following items shall be stored in the transverse module:
    - One (1) Fort St. John Fire Department supplied Stokes Basket(s) to be installed after delivery of completed apparatus. Approximate dimensions are 72L x 22-1/2"W x 8D.
    - Two (2) Fort St. John Fire Department supplied backboard(s) to be installed after delivery of completed apparatus. Approximate dimensions are 72L x 22-1/2"W x 2D.
    - There shall be two (2) OnScene Solutions cargo straps provided to secure the stored equipment.

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## Heavy Rescue

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- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- The traffic flow board control pendant.
- The controls for the specified light tower(s).
- There shall be one (1) underbody slide-out step.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)**

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.

- There shall be NO keyed lock on this roll-up compartment 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 one (1) OnScene Solutions heavy duty, slide-out vertical tool board(s).
  - The tool board material shall be .190 smooth aluminum sheet.
  - The tool board(s) will be horizontally adjustable mounted on shelf trac on compartment floor.
- There shall be two (2) vertical compartment partition(s) dividing the upper and lower compartment areas into left and right sides. Exact location shall be determined by the approved sales drawing.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Tri-Max 60, 60 gallon CAFS extinguisher.

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## Heavy Rescue

### Build Specification

- There shall be one (1) Hannay F32-19-21 aluminum booster hose reel discharge with electric rewind motor located on the lower compartment floor per the approved sales drawing. The booster reel shall have a capacity of 100' of 1" booster hose.

The Hannay booster reel shall be equipped with one (1) set(s) of FH-3 hose guide rollers.

One (1) 100' x 1" section(s) of Neidner "ReelTex" booster hose coupled with 1" NST pyrolite coupling shall be provided.

- One (1) Elkhart, 1-1/2" valve(s)
  - This valve shall be controlled with a lever directly attached to the valve.
- One (1) Class 1 automatic type drain valve(s).
  - One (1) Class 1 2-1/2" liquid filled gauge(s)
    - This gauge(s) shall have a white background with black text.
    - The above gauge shall have a range from 0 to 400 psi.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)**

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

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

- There shall be NO keyed lock on this roll-up compartment 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) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height.
  - There shall be one (1) air bag storage module for the following Holmatro airbags; (1) HLB 67, (1) HLB 32, (1) HLB 12, and (1) HLB 3.
- There shall be two (2) OnScene Solutions cargo straps provided to secure the stored equipment.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Air storage module consisting of three (3) 6,000 psi, ASME air storage cylinders.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **STREETSIDE COMPARTMENT - REAR (S4)**

The interior useable compartment width shall be approximately 64.0" wide.

The compartment door opening shall be approximately 57.0" wide.

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

- There shall be NO keyed lock on this roll-up compartment 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 one (1) 400 lbs. slide-out tray(s) approximately 24" deep x 50" wide located on lower floor between tool boards.
- There shall be one (1) 750 lbs. slide-out tray(s) with an OnScene Solutions base approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails.
- There shall be one (1) vertical partition dividing the 750 lbs. tray into left and right sides located per the approved sales drawing.
- There shall be twelve (12) removable aluminum tool box(s) with handles provided in the 750 lbs. slide out tray. Each tool box shall measure approximately 9"x9"x8" and be arranged per the approved sales drawing.
- Mounting provisions for one (1) Fort St. John Fire Department supplied Paratech Stabilization Struts on the front face of the vertical partition. Strut dimensions are approximately 62-1/2" long by 4" in diameter including the air connection.
- Mounting provisions for one (1) Fort St. John Fire Department supplied Paratech Compact Vehicle Stabilization Kit on the front face of the vertical partition, adjacent to the long struts. The kit shall contain the following items:
  - Two (2) model 22-796025 Multi-Bases
  - One (1) model 22-796200 25"-36" Acme Thread Strut
  - One (1) model 22-796202 37"-58" Acme Thread Strut
  - One (1) model 22-796024 24" Strut Extension
  - One (1) model 22-796036 36" Strut Extension
  - Two (2) model 22-796150 6" x 6" Hinged Base Plates w/Anchor Rings
  - Two (2) model 22-890553 27' Ratchet Belts w/Finger Hooks
  - Two (2) model 22-796180C 12" x 12" Hinged Base Plates w/Anchor Rings
- Mounting provisions for four (4) Fort St. John Fire Department supplied 50' Holmatro CORE hydraulic hose sections. Hose sections shall be mounted on radiused hangers on the rear side of the vertical partition, opposite the Paratech strut equipment.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

- Mounting provisions for one (1) Rescue 42 model SRK-L 'Shark' collapsible step cribbing. Cribbing shall be mounted per approved sales drawing.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay 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 be equipped with 200' of 10/3 SEOOOW 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) L5-20 single twist lock receptacle
      - One (1) L5-20 single twist lock receptacle
      - One (1) 5-15 duplex straight-blade receptacle
      - One (1) 5-15 duplex straight-blade receptacle
  - One (1) EJB vertical apparatus mounting bracket - treadplate
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) Holmatro model DPU 60 E, 2 HP, 240 VAC hydraulic power unit(s) capable of operating two (2) Holmatro rescue tools simultaneously. One (1) 240 VAC twist lock receptacle with switch shall be provided on wall within easy reach of operator for turning the power unit ON/OFF.
- Mounting provisions for two (2) Fort St. John Fire Department supplied hydraulic ram(s) on the 750 lbs. slide out tray. Exact layout shall be per the approved sales drawing..
- Mounting provisions for one (1) Fort St. John Fire Department supplied hydraulic cutter(s) on the 400 lbs. slide out tray. Exact layout shall be per the approved sales drawing.
- Mounting provisions for one (1) Fort St. John Fire Department supplied hydraulic spreader(s) on the 400 lbs. slide out tray. Exact layout shall be per the approved sales drawing.



# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CURBSIDE COMPARTMENT - FRONT (C1)**

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.

- There shall be NO keyed lock on this roll-up compartment 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) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 94" deep and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. It shall be vertically adjustable in height.
- There shall be one (1) transverse module(s) for long tools and equipment which extends to the opposite side of the body. (Specified in opposite side compartment.)
  - There shall be two (2) OnScene Solutions cargo straps provided to secure the stored equipment.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- The cab tilt control pendant.
- One (1) 120/240 VAC load center.
- The FRC FROG-D generator gauge panel.
- There shall be one (1) underbody slide-out step.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)**

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.

- There shall be NO keyed lock on this roll-up compartment 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 24" deep.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits.
- There shall be one (1) vertical compartment partition dividing compartment into left and right sides located in compartment.
- There shall be one (1) spare SCBA cylinder rack(s). The rack shall be manufactured using 6" and 8" OD PVC tubing.
  - The SCBA bottle rack will be capable of storing ten (10) SCBA cylinders up to 6" diameter.
  - The SCBA bottle rack will be capable of storing four (4) SCBA cylinders up to 7.5" diameter.
- One (1) Lista Drawer Cabinet model ST-0300-03LM-NB-RG-LG-IDL.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

- 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 be equipped with 200' of 10/3 SEOW 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) L5-20 single twist lock receptacle
      - One (1) L5-20 single twist lock receptacle
      - One (1) 5-15 duplex straight-blade receptacle
      - One (1) 5-15 duplex straight-blade receptacle
  - One (1) EJB vertical apparatus mounting bracket - treadplate
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- There shall be one (1) underbody slide-out step.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)**

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

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

- There shall be NO keyed lock on this roll-up compartment 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) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **CURBSIDE COMPARTMENT - REAR (C4)**

The interior useable compartment width shall be approximately 64.0" wide.

The compartment door opening shall be approximately 57.0" wide.

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

- There shall be NO keyed lock on this roll-up compartment 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) slide-out smooth aluminum vertical tool board(s) approximately 24" deep located on left side of door opening.
  - The tool board(s) will be bolted to compartment floor.
- There shall be four (4) Zico ULLH walkaway type SCBA air pack bracket(s) provided with strap assembly. Brackets shall be located on the forward side of the specified toolboard.
- 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 EF1514-17-18 low pressure air hose reel(s) capable of storing 100' of low pressure air hose. The rewind button for each reel shall be located adjacent to the reel it controls.
  - The hose reel shall equipped with 100' of 3/8 low pressure air hose. Molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color.
  - The air supply shall be from the mobile breathing air system.
  - The air supply shall be from the mobile breathing air system. A reel shut-off valve, pressure regulator, and 0-150 psi gauge shall be provided at the air control panel.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) Eagle Sidewinder X2, two (2) position filling station(s) with cascade controls.
  - The fill station fill whip(s) shall terminate in a high pressure 4,500 psi, CGA-347 threaded SCBA connectors.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **ROOF ACCESS STAIRWAY**

The rear of the body shall be provided with a recessed center stairway approximately 34" wide. Stairs treads shall be formed 3/16" NFPA compliant aluminum tread plate with additional grip strut material on the top walking surface and other reinforcement as necessary.

#### **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:

	<u>STRAIGHT PULL</u>	<u>SAFETY FACTOR</u>
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 carabiner. A mounting bracket shall be provided to store each rope tie off accessory in a body compartment, location shall be determined by the Fort St. John Fire Department.
- 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) 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) rubber cover / plug for the receiver.
- There shall be one (1) receiver tube(s) located at the rear bumper for use with a portable winch or tie-off point accessory(s).
  - There shall be one (1) rubber cover / plug for the receiver.

#### **HOLMATRO CORE BULKHEAD FITTING - CURBSIDE**

There shall be two (2) Holmatro "CORE" bulkhead fitting, with cover, provided in the curbside wheelwell. There shall be a "CORE" hydraulic hose provided to connect the onboard HPU and the bulkhead fitting.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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.

#### **ROLL-OUT AWNING STREETSIDE**

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 18' 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, Crimson Red (88003).

#### **HEATER**

The apparatus shall be provided with one (1) 18,800 BTU Espar D5SL air heater(s) located in compartment S3/C3. The heater(s) shall be connected to the chassis diesel fuel tank with a thermostat controlled 12 volt blower. The heater shall be ducted in such a manner as to provide heat to compartments S2/C2, S3/C3, and S4/C4.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 - (1,000 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 OnScene Solutions 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 1,000 lbs.



# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 OnScene Solutions 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 70% EXTENSION EQUIPMENT SLIDE TRANSVERSE (1,000 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 OnScene Solutions 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 twenty (20) urethane rollers. Each roller shall contain two (2) precision roller bearings mounted in an aluminum hub with a molded on urethane cover.

Each slide shall have two (2) cable operated, spring loaded latches operated by two (2) large hand openings with red pull handles (Pull to Release). The slide shall lock in the closed and full extension position in two (2) directions. The slide shall be rated for a maximum distributed load of 1,000 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 OnScene Solutions 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.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **SLIDE-OUT TOOL BOARD (SMOOTH ALUMINUM)**

Slide-out tool board(s) shall be provided in the exterior compartment as indicated in the numbered compartment list.

Tool boards shall be fabricated of 3/16" (.188) aluminum 3003H-14 alloy smooth plate with double flange at the outer edge to provide an easy grip handle. The top and bottom of tool board shall be provided with Accuride 502 series slide tracks. The length shall be per numbered compartment list and the extension shall be 100% of the slide length. Slide tracks shall be constructed from formed steel with ball bearings in triple track rails. The board shall be rated for a maximum 200 lbs. evenly distributed load.

Tool board(s) shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

#### **HEAVY DUTY 100% EXTENSION TOOLBOARD - ALUMINUM**

Heavy duty aluminum toolboard shall be provided in exterior compartment as indicated in the numbered compartment list.

Toolboard shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. The toolboard shall be mounted on a OnScene Solutions 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 red "T" 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 1,000 lbs.

#### **COMPARTMENT PARTITIONS**

Vertical compartment partitions shall be provided as indicated in the numbered compartment list. Partitions shall be fabricated of 3/16" thick (.188) smooth aluminum with 1" "L" outer edge. Bolted angles shall be provided at top and bottom of partition to secure partition in place, but allow future removal without cutting of partition.

#### **AIR BAG MODULE**

An air bag module rack shall be supplied in the exterior compartment located as indicated in the numbered compartment list.

The module shall be fabricated of 1/8" (.125) smooth aluminum plate with individual sections for each air bag.

Circular notches shall be provided along the front edge for ease of removing air bags with gloved hand. Modules shall be large enough for specified air bag and matching plywood panels. Exact size and layout shall be approved prior to construction.

#### **SCBA CYLINDER RACK**

A spare SCBA cylinder storage rack shall be provided and located as indicated in the numbered compartment list.

The rack shall have a shell fabricated of 1/8" (.125) thick smooth aluminum. There shall be a 2" slope in the rack to keep the bottles from sliding out. The air bottle storage tubes shall be fabricated of PVC tube. There shall be rubber matting installed inside each storage tube for bottle protection.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 1901 standard. 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.

#### **REMOVABLE TOOL BOX - (ALUMINUM)**

Removable tool box(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

The tool box(s) shall be fabricated of 3/16" (.188) thick smooth aluminum and shall have a handhold cut-out at each end. Exact dimensions and layout of the tool box shall be approved prior to construction.

#### **LISTA DRAWER CABINET**

Lista Drawer Cabinet(s), model HS450-04LM, shall be provided in exterior compartment as indicated in the numbered compartment list.

The drawer cabinet(s) shall be 21 3/4" high x 40-1/4" wide x 22-1/2" deep. The cabinet shall have four (4) individual locking drawers. The drawers shall have usable heights as follows: one (1) 2", one (1) 3", one (1) 4", and one (1) 5". The cabinet shall be Light Gray in color.

#### **COMPARTMENT LIGHTING**

Each enclosed equipment compartment greater than 4 ft<sup>3</sup> (0.1 m<sup>3</sup>) in volume and having an opening greater than 144 in.<sup>2</sup> (92,900 mm<sup>2</sup>) shall have 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 shall be equipped with OnScene Nightstik LED lights with the following minimum light requirements;

- Full Height Compartments, 63" Section (42 LED's)
- Wheel well Compartments, 36" Section (24 LED's)
- Rear Rescue Compartment, 63" Section (42 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.

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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

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## Heavy Rescue

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#### **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.

#### **LOW PRESSURE AIR HOSE REEL**

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

Air reel(s) shall be Hannay, low pressure design, with electric rewind. The 12 volt electrical rewind circuit shall be directly wired to the chassis battery system with heavy duty stranded copper cable.

Reel shall be certified by Hannay for use at the maximum expected working pressure with a safety factor of at least 4:1. The air hose reel swivel joint, connecting feed hose, check valve, and air supply equipment shall be rated for the maximum working pressure with a safety factor of at least 4:1.

The air hose reel shall be designed to hold at least 110 % of the intended hose length with a minimum capacity of 100 ft (30 m).

#### **Size of Fluid Path**

The air hose reel shall have a full flow–style swivel joint and a hose connection designed and sized to match the hose intended to be used. The air hose reel shall have a fluid path sized for its intended flow and working pressure.

The reel shall be marked with a label to indicate its intended use and the following:

- (1) Utility air or breathing air
- (2) Operating pressure
- (3) Total hose length
- (4) Hose size (ID)

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#### Air Reel Installation

Reels installed in concealed locations shall be accessible for maintenance and servicing, hose access, and reel removal.

Each reel shall have Hannay 4-way roller assembly to prevent damage to the hose at the reel spool or compartment openings and to allow deployment and rewinding of the hose. **Plastic roller assemblies are not acceptable.** Reels shall be installed in such a manner so as not to expose the operator to the rewind components.

Switches for power rewind-type reels shall be located in a position that allows the operator to safely rewind the hose. The rewind control 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 activation.

#### Air Hose

All low pressure [gauge pressure not over 300 psi (2000 kPa)] air hose and couplings supplied shall comply with their intended application and shall have a pressure rating equal to or greater than the highest pressure expected to be encountered as input to the hose with a test safety factor of at least 3:1.

All high pressure [gauge pressure over 300 psi (2000 kPa)] air hose and couplings supplied shall comply with their intended application and shall have a pressure rating equal to or greater than the highest pressure expected to be encountered as input to the hose with a test safety factor of at least 4:1.

#### Discharge Ends

The discharge end of any breathing air hose shall have a threaded connection. If no other fittings are installed at the end of the hose, a temporary protective cap shall be installed to prevent internal contamination of the hose during shipping.

If the discharge end of hose will terminate with a threaded connection when in use, it shall be equipped with a slow-operating valve. If the threaded end of the hose terminates in a quick-connection fitting, a slow operating valve and protective cap shall not be required.

Air hose shall have a ball clamp located near end of hose.

#### Color Coding

The ends of the hose shall be color coded or marked with a label to designate the operating pressure of the hose. Color coding shall be as follows:

- (1) Blue for utility air hose up to a gauge pressure of 300 psi (2000 kPa)
- (2) White for breathing air hose up to a gauge pressure of 300 psi (2000 kPa)
- (3) Yellow for breathing air hose from a gauge pressure of 301 psi to 3000 psi (2001 kPa to 20,000 kPa)
- (4) Red for breathing air hose over a gauge pressure of 3000 psi (20,000 kPa)

#### HYDRAULIC POWER UNIT

Holmatro model DPU 60 E, 2 HP, 240 VAC electric hydraulic power(s) unit shall be provided and installed as noted under the individual compartment description section.

Each power unit shall be capable of simultaneous rescue tool operation of two (2) individual tools. Each power unit shall be mounted in compartment, but easily removable from the apparatus for maintenance purposes. Each power unit shall be approx. 17" W x 24" H x 21" D, and weight 120 lbs.

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#### **HYDRAULIC HOSE REEL**

Hydraulic hose reel shall be Hannay EF2220-17-18 high pressure, electric rewind, hydraulic hose reel with a capacity of 100' of single "CORE" hose.

The 12 volt electrical rewind circuit shall be directly wired to the chassis battery system with heavy duty stranded copper cable. The rewind button shall be located adjacent to the hose reel within easy access of 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.**

Hydraulic hose shall have a ball clamp located near end of hose.

#### **BREATHING AIR STORAGE SYSTEM**

Breathing air system shall be provided with a air storage module consisting of:

- Three (3) 6,000 psi, ASME air storage cylinders shall be provided which comply with 49 CFR 178.37, "Specification 3AA and 3AAX seamless steel cylinders," or 29 CFR 1910.169, "Air receivers". Each cylinder shall be permanently stamped or identified in accordance with DOT or ASME regulations.

Each cylinder shall have a working pressure of 6,000 psi with a 3:1 safety factor and nominal capacity of 491 cu. ft. at 6,000 psi.

If the air storage was cascaded the system would be capable of filling approximately thirty-two (32) 45 cu.ft. 2,216 psi, or nineteen (19) 45 cu.ft. 4,500 psi SCBA bottles (based on residual pressure of 500 psig).

There shall be a label which reads, "HIGH PRESSURE - 6,000 psi BREATHING AIR".

The air tank manufacturer shall provide a copy of either the U.S. Department of Transportation (DOT) certificate Report of Inspection of Gas Cylinders or the ASME certificate Manufacturers Data Report for Pressure Vessels, and the certificate shall be delivered with the fire apparatus.

Relief valves on transportable air tanks shall be of the ASME type on ASME cylinders and of the DOT type on DOT cylinders or equal for the rated pressure.

Valves installed on air tanks shall meet the requirements of the Compressed Gas Association regarding pressure and usage with compressed air.

If the installation utilizes cylinders that require periodic testing, a label shall be placed on or near the operators panel that provides the following:

- (1) The original cylinder test date stamped on the cylinders
- (2) The recommended testing interval
- (3) Five additional open spaces, appropriately labeled, for the user to enter actual retesting dates

The manufacturers test date (month and year) on each air tank shall be current within 12 months of the apparatus delivery date.

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### Build Specification

#### **Air Tank Mounting**

Air tanks shall be mounted in an arrangement that will hold the tanks in all types of mobile use.

A protective device(s) shall be provided to protect the air tank valve(s) and associated piping from damage as a result of accidental impact. The protective device(s) shall not prevent access for operation and inspection.

The air tank mounting shall facilitate removal of air tanks for inspection, testing, or service.

Air tanks shall be installed so that all air tanks, control valves, and associated piping are readily accessible.

Air tanks shall be mounted in such a fashion to permit visual inspection of external surfaces and emergency access to shutoff of tank valves.

The air tank location shall be away from any heat producing devices such as the generator engine or exhaust.

#### **MOBILE FILL STATION - EAGLE SIDEWINDER X2**

##### **GENERAL ARRANGEMENT**

The mobile fill station shall have the capacity for filling two (2) SCBA cylinders simultaneously or separately. The enclosure shall be designed to contain the impact of suddenly expanded high pressure air and all displaced fragments in the unlikely event of a cylinder or fill component rupture. The containment design shall feature a loading door that is trapped inside the fill enclosure cabinet frame when closed. The enclosure shall include an automatic, safety interlock to prevent filling unless the loading door is completely in the closed position and a safety relief valve to protect operators in the event that the SCBA fill pressure exceeds 4750 PSIG.

The external construction of the high pressure, breathing air fill station shall be appliance-like; using formed, fabricated steel structures and panels without visible welds, burrs or grinding marks.

##### **SCBA FILL ENCLOSURE AND ACCESS DOOR CONTROL**

The fill station must allow the complete fill process to be accomplished from the front and include an access door control that enhances the enclosure containment design, is simple to operate and requires minimal physical operator effort. Two (2) fill whips, each fitted with a cylinder fill adapter, shut-off valve and pressure bleed valve shall be located within the enclosure.

The access door assembly shall include two (2) integral, steel cylinder sleeves to secure the SCBA cylinders while being filled. The assembly shall include a handle permitting the operator to slide the access door clear of the enclosure frame and swing-out the cylinder sleeves towards the operator for loading and unloading cylinders with minimal effort.

The access door shall be supported on the enclosure frame with an adjustable bearing bushing on each side assuring a balanced and smooth rotation when opening and closing.



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### Build Specification

#### **SCBA CYLINDER FILL ENCLOSURE FLOW CONTROL SYSTEM**

The SCBA cylinder fill control system shall include an air control panel with all components, devices and piping arrangement necessary to direct compressed high pressure breathing air to the SCBA cylinders being filled. (A)

The SCBA cylinder fill control system shall include a regulated air control panel with all components, devices and piping arrangement necessary to direct supplied compressed high pressure breathing air to the SCBA cylinders being filled. Additionally, an inlet CGA connection and flow valve shall be provided to direct high pressure breathing air from an external source to the air storage system. (B)

A cascade control system shall be included for the number of banks specified below. The cascade control system shall permit drawing down each air storage cylinder, independently of each other, while filling SCBA cylinders (C)

All air flow components and indicators must be labeled and mounted on a steel control panel located above the fill enclosure. (A, B, C)

The panel shall be painted in a matte shade with a textured finish to eliminate glare and enhance the visibility of gauges and indicators. The control panel shall be illuminated. The panel shall be designed so that it can slide forward, out of the compartment, and tipped down so that all piping and components are accessible for maintenance.

As a minimum, the air control panel must include the following:

- Inlet pressure gauge. (A)
- SCBA/SCUBA cylinder(s) fill control valve. (A)
- SCBA/SCUBA cylinder(s) fill pressure gauge. (A)
- Panel lights on/off switch. (A)
- Adjustable, 0-6000 PSI self-relieving regulator. (B)
- Regulator outlet pressure gauge. (B)
- Air storage fill, CGA inlet fitting and flow control valve. (B)
- Four (4) bank cascade control with a single valve and gauge per bank. (C)

The Sidewinder X2 fill station with 4-bottle cascade air controls will be approximately 33" wide x 44" high x 23" deep and weight 700 pounds.

#### **UNDERBODY SLIDE-OUT STEP**

There shall be underbody slide-out step(s) furnished and installed. Each platform shall be constructed from 9" deep "Diamond Back" non-slip vented aluminum stair treads. Step slide shall be securely held in both out and stored position, utilizing a heavy duty pneumatic cylinder. Each pneumatic cylinder shall be designed to have an over center location which will assist the step in both extension and retraction. Each step shall be designed to hold 500 lbs., and reinforced to prevent flexing or damage.

#### **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.

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#### **COMPRESSED AIR FOAM (CAFS) UNIT**

A Tri-Max TM60-SKID, skid mounted compressed air foam unit will be permanently mounted in an exterior compartment as specified.

The agent tank shall hold 60 gallons of pre-mix foam and shall be manufactured in accordance with ASME standards. The tank fill shall include a fill funnel plus a garden hose adaptor to facilitate easy foam and water filling. The tank shall be coated with an epoxy polyurethane red paint.

A tubular steel framework shall support the agent tank and two (2) high-pressure air vessels and discharge hose. The unit shall incorporate a "roll bar" design to protect components from accidental damage. The frame and roll bar shall be coated with an epoxy polyurethane yellow paint.

Two (2) DOT 80 cu. ft., 3,000 psi high pressure air cylinders shall be provided. One (1) air cylinder is required to discharge the full agent tank at normal blend-air settings. High-pressure air hose and connections shall be rated for 6,000 psi. Two (2) high volume air regulators (87 cfm, 155 psi) shall be provided, matched to the discharge flow rating. All low pressure air hose shall be steel braided, ¼" 300 psi, 210 degrees F. All ball valves shall be rated for 400 psi. A pressure relief valve shall be provided, set at 200 psi. Pressure gauge(s) shall be provided to indicate system operating pressure(s).

The unit shall be capable of discharging up to 1,200 gpm of finished foam product. Duration time shall be from 1½ to 6 minutes depending on discharge rate. Foam coverage distance shall be 75 ft. or more.

The unit shall be compact and portable with a width of 25", height of 33", and length of 60".

#### **BOOSTER REEL**

The booster hose reel shall be a Hannay SBEF24-23-24-12-RT (27.75" W x 23" D x 23.5" H) aluminum fabricated booster hose reel discharge with electric rewind motor located per itemized compartment layout. Booster reel shall have a capacity of 100' of 1" booster hose. The reel shall have a 1-1/2" quarter turn ball valve controlled from operator's panel and piping connected with 1" flexible hose. An automatic brake and an auxiliary manual rewind crank shall be supplied.

The natural aluminum finish of the booster reel shall be left unpainted.

#### **BOOSTER REEL REWIND BUTTON(S)**

Booster hose reel shall have rubber covered push button switch(es) installed for the rewind control of the booster reel.

#### **BOOSTER REEL HOSE GUIDE ROLLERS**

The Hannay booster reel shall be equipped with FH-3 hose guide rollers.

#### **BOOSTER HOSE**

100' x 1" section(s) of Neidner "ReelTex" booster hose coupled with 1" NST pyrolite coupling shall be provided.

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### Build Specification

#### 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.

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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.

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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.

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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**

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

#### **ENGINE COMPARTMENT LIGHT**

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

#### **CAB HAZARD WARNING LIGHT**

A red "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.

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#### **REAR VIEW CAMERA**

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

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#### **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.

#### **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**

One (1) cab/chassis supplied siren speaker shall be provided and recess mounted behind the front bumper.

- The siren speaker shall be located on the streetside of front bumper.

#### **CAB SPOTLIGHT**

There shall be one (1) GOLIGHT model 2049 installed on the center top of the specified lightbar. The wireless controls shall be located on the officer side of the center dash panel area.

#### **SIDE SCENE LIGHTS**

There shall be four (4) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) provided on the upper body. Each light will have a 8-32 degree gradient lens and chrome flange. They will be equally divided between the curbside and streetside.

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.



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#### **REAR SCENE LIGHTS**

Two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) 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 x 10 ft (3 m x 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.

#### **SVI V5 TRAFFIC FLOW BOARD**

There shall be one (1) SVI V5 Traffic Flow Board (TFB) provided and installed adjacent to the rear streetside upper body compartment. The TFB shall elevate via electric actuation for quick positioning and does not require anyone to climb up on the apparatus. The TFB shall rotate up to 45 degrees in the vertical plane to allow the Board to directly face traffic when apparatus is used in an angled position or blocking mode. This angle shall be achieved via electric rotation in less than 15 seconds. The TFB shall be supplied with LED lighting to reduce 12 VDC AMP draw. The TFB shall include a full 5 year warranty.

#### **FIRECOM INTERCOM SYSTEM**

The following Firecom intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. System shall have the following major components as minimum;

1. One (1) 3010R intercom system (located in the lower right quadrant of the center dash panel)
2. Two (2) UH-10 headsets (intercom/ptt)
3. Five (5) UH-20 headsets (intercom)
4. Seven (7) HM-10 headset plugin module
5. Seven (7) headset hangers.

#### **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.

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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 LEVEL OPTICAL WARNING DEVICES**

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

#### **ZONE A - FRONT WARNING LIGHTS**

There shall be one (1) Whelen Edge FN72QLED LED 72" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Red Linear LED - Side Facing	Clear
2	Red Corner LED	Clear
3	Red Linear LED	Clear
4	Clear Linear LED	Clear
5	Red Linear LED	Clear
6	Red Linear LED	Clear
7	Clear Linear LED	Clear
8	Clear Linear LED	Clear
9	Red Linear LED	Clear
10	Red Linear LED	Clear
11	Clear Linear LED	Clear
12	Red Linear LED	Clear
13	Red Corner LED	Clear
14	Red Linear LED - Side Facing	Clear

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.

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#### ZONES B AND D - SIDE WARNING LIGHTS

##### UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") red Linear Super-LED lights (90CC5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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") red Linear Super-LED lights (90CC5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") red Linear Super-LED lights (90RR5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### LOWER LEVEL OPTICAL WARNING DEVICES

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

The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1220 mm) above level ground for small apparatus.

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

#### ZONE A - FRONT WARNING LIGHTS

The 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.

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

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FCR) provided, one (1) each side. Each light shall have a clear lens and chrome 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) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FCR) provided, one (1) each side. Each light shall have a clear lens and chrome 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) Whelen 900 series (9" x 7") red Linear Super-LED lights (90RR5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome 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 25,000 watts at 120/240 VAC, 208/104 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.

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#### **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 contaminants 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.

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#### **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. Generator hours 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 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.

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#### GENERAL REQUIREMENTS

##### Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz,  $\pm 3$  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  $\pm 10$  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.



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#### Bonding

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

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

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

#### Ground Fault Circuit Interrupters

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

#### Power Source General Requirements

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

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

#### Power Source Rating

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

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

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

#### Instrumentation

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

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

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

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

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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.

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#### 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.

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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 prewiring 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*.

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

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

#### Receptacle Label

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

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

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

#### Wiring Schematics

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

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

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#### **120/240 VAC SCENE LIGHTING**

##### **SIDE UPPER RECESSED SCENE LIGHTS**

Four (4) Fire Research Focus, model FCA200-M12, 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 240 volt bulb. The bulb shall draw 4.2 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.

- The above lights shall be controlled by two (2) switch(es) in the lower portion of compartment S1.

##### **REAR UPPER RECESSED SCENE LIGHTS**

Two (2) Fire Research Focus, model FCA200-S50, 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 9 3/4" 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 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. 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.

- The above lights shall be controlled by one (1) switch(es) in the lower portion of compartment S1.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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 recessed into the roof of the apparatus body so that no part of the light tower extends above the roof line. The recessed area shall have two (2) water drain holes (in opposite corners) with flexible 1" diameter hose routed to the area below the body.



# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

#### **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) Worden model 221003 rubber 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 shipped loose with the completed apparatus.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Fort St. John Fire Department.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Fort St. John Fire Department.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 585-A series 12' aluminum folding ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Fort St. John Fire Department.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 8' fiberglass pike pole(s) shall be provided with the completed unit, mounting to be specified by the Fort St. John Fire Department.

The above specified pike pole will not have a D handle attached

- The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 12' fiberglass pike pole(s) shall be provided with the completed unit, mounting to be specified by the Fort St. John Fire Department.

The above specified pike pole will not have a D handle attached

- The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) 10 LB. CO2 fire extinguisher(s) shall be provided with the completed apparatus.
  - The above specified fire extinguisher(s) shall be installed in compartment C1, aft of the 120/240V electrical panel.
- One (1) 00 Lb. ABC dry chemical fire extinguisher(s) shall be provided with the completed apparatus.
  - The above specified fire extinguisher(s) shall be installed in compartment C1, aft of the 120/240V electrical panel.

# Fort St. John Fire Department

## Heavy Rescue

### Build Specification

- Two (2) Streamlight LiteBox Vehicle Mounting Systems shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have a 20 watt spotlight style bulb and reflector. The flashlights shall be wired to batter direct unless otherwise specified by the customer.
  - The flashlight(s) shall be mounted in the cab, in a location determined by the Fort St. John Fire Department at the pre-paint inspection.
- Five (5) Streamlight Survivor, Division 2, model # 90064, portable rechargeable flashlight(s) and charger(s) shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a 12 volt DC fast charging station and mount. The flashlights shall be wired to battery direct unless otherwise specified by the customer.
  - The flashlight(s) shall be mounted in the cab, in a location determined by the Fort St. John Fire Department at the pre-paint inspection.