DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

Contents

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

GENERAL CONSTRUCTION AND DESIGN

The design of the equipment shall be in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements which might cause injury to personnel or equipment. All components shall be designed and protected so that heavy rains or other adverse weather conditions will not interfere with normal servicing or operation.

All oil, hydraulic and air tubing lines, and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through frame connector is necessary.

The apparatus shall be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles so that all specified equipment including personnel will be carried without injury to the apparatus. All dimensions are approximate and subject to a plus or minus 1/4" tolerance.

The following specifications describe minimum requirements for an emergency services vehicle designed for severe duty applications.

The materials specified are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all Manufacturers. Since all custom Manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

Subletting any part of the fabrication, painting, or finishing of the apparatus will not be acceptable.

ACCESSIBILITY

Parts and components shall be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

Cover plates which must be removed for component adjustment or part removal should be equipped with quick disconnect fasteners or hinged panels.

Drains, filler plugs, grease fittings, hydraulic lines, bleeders, and check points for all components should be located so that they are readily accessible and do not require special tools for proper servicing. Design practices should minimize the number of tools required for maintenance.

MATERIALS

The materials specifications are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of specified type are available to all manufacturers. Since all manufacturers have the ability to shear, break and weld as these specifications require, all basic design requirements shall be complied with.

Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for purpose of commercial practice. Materials shall be free of all defects and imperfections that might affect the serviceability of finished product.

QUALITY AND WORKMANSHIP

The manufacturing process, including quality control, shall be consistent with present industry standards. All equipment, material, and articles required under these specifications are to be new or fabricated from new materials produced from recovered materials. The term "Recovered Materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this document. The term "Heavy Duty", as used to describe an item, shall mean in excess of the standard, quantity, quality, or capacity and represents the best, most durable, strongest, etc., part, component, system, etc., that is available. The District of Saanich or their designate shall be the sole judge of quality, construction and stability of the apparatus and equipment being offered.

Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the ready removal of any component part for service or repair. All steel and stainless steel welding shall be done to American Welding Society D1.1-83 recommendations for structural steel welding. All aluminum welding shall be done to American Welding Society and ANSI D1.2-83 requirements for structural welding of aluminum.

Defective components shall not be furnished. Parts, equipment, and assemblies, which have been repaired or modified to overcome deficiencies, shall not be furnished without the approval of the District of Saanich. Welded, bolted, and riveted construction utilized shall be in accordance with the highest standards of the industry. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances, and uniformity. General appearance of the vehicle shall not show any evidence of poor quality of work.

LIABILITY INSURANCE

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

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

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

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

Excess Umbrella Liability coverage of $4,000,000.00 each occurrence, Aggregate of $4,000,000.00.
Garage Keepers Liability coverage of $4,500,000.00 combined limit.

All insurance policies must be;

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

INTERNET IN-PROCESS SITE

The Bidder shall post and maintain a website where the District of Saanich 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.

COMPONENT PROTECTION

Hydraulic hose lines, air system tubing, control cords and electrical harnesses shall be mechanically attached to the frame or body structure of the apparatus with protective looms, grommets or other devices at each point where they pass through body panels or structural members or wherever they lie against a sharp metal edge.

A through-the-frame connector shall be permitted to be used in place of protective looms or grommets.

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.

WEIGHT DISTRIBUTION

When the fire apparatus is loaded to its estimated in-service weight, the front-to-rear weight distribution shall be within the limits set by the chassis manufacturer.

The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer under full load and all other loading conditions.

LOAD DISTRIBUTION

The apparatus manufacturer shall calculate the load distribution for the apparatus, and that load distribution plan shall be delivered with the fire apparatus.

The manufacturer shall engineer the fire apparatus to comply with the gross axle weight ratings (GAWR), the overall gross vehicle weight rating (GVWR), and the chassis manufacturer's load balance guidelines.

The fire apparatus, when loaded to its estimated in service weight, shall have a side-to-side tire load variation of no more than 7 percent of the total tire load for that axle.

Each tire shall be equipped with a visual indicator or monitoring system that indicates tire pressure.

ROADABILITY

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

1. From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road.
2. The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road.
3. The apparatus shall be able to maintain a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent.

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (85 km/ hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

SERVICEABILITY

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

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

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

CONSTRUCTION DOCUMENTATION

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

The manufacturers record of apparatus construction details, including the following information:

1. Owner's name and address
2. Apparatus manufacturer, model, and serial number
3. Chassis make, model, and serial number
    a. GAWR of front and rear axles and GVWR
    b. Front tire size and total rated capacity in pounds (kilograms)
    c. Rear tire size and total rated capacity in pounds (kilograms)
    d. Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
    e. 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
    f. Type of fuel and fuel tank capacity
    g. Electrical system voltage and alternator output in amps
    h. Battery make, model, and capacity in cold cranking amps (CCA)
    i. Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
4. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
5. Pump transmission make, model, serial number, and gear ratio
6. Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
7. Water and Foam tank certified capacity in gallons or liters
8. Paint manufacturer and paint number(s)
9. Company name and signature of responsible company representative
10. If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
11. Certification of compliance of the optical warning system
12. Siren manufacturer's certification of the siren
13. Written load analysis and results of the electrical system performance tests
14. Certification of slip resistance of all stepping, standing, and walking surfaces

15. If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
16. 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
17. If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
18. If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
19. If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
20. If the apparatus has a fire pump, the certification of inspection and test for the fire pump
21. If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
22. When the apparatus is equipped with a water tank, the certification of water tank capacity
23. If the apparatus has an aerial device, the certification of inspection and test for the aerial device
24. If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus
25. 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
26. If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
27. If the apparatus has a line voltage power source, the certification of the test for the power source
28. If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
29. 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 manufacturer's operations and service documents supplied with components and equipment that are installed or supplied by the Contractor.

NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM

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

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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

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.

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.

			Equipment Allowance	
Apparatus Type	**Equip. Storage Area**	**Apparatus Size**	**lb.**	**kg.**
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	10,000 lb to 15,000 lb (4,500 kg to 7,000 kg) GVWR	2,000	910
		15,001 lb to 20,000 lb (7,001 kg to 9,000 kg) GVWR	2,500	1,135
		20,001 lb to 30,000 lb (9,001 kg to 14,000 kg) GVWR	3,000	1,350
		30,001 lb to 40,000 lb (14,001 kg to 18,000 kg) GVWR	4,000	1,800
		40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700
		50,001 lb to 60,000 lb (23,001 kg to 27,000 kg) GVWR	8,000	3.600
		60,001 lb and up (27,001 kg) GVWR	10,000	4,500

TESTING

The completed rescue vehicle shall be third-party, independent, audit-certified through Underwriters Laboratory Canada (ULC) to the current edition of CAN/ULC S515 standards.

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 Body 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 third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901standard. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (–18°C and 43°C).

TEST SEQUENCE

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

1. RESERVE CAPACITY TEST

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

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

2. ALTERNATOR PERFORMANCE TEST

TEST AT IDLE

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

TEST AT FULL LOAD

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

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

3. LOW VOLTAGE ALARM TEST

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

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

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

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

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

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

UL 120/240 VAC CERTIFICATION

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

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

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

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

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

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

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

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

1. Altitude
2. Barometric pressure
3. Relative humidity

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

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

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

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

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

DOCUMENTATION

The Body Manufacturer shall deliver the following with the fire apparatus:

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

DIELECTRIC VOLTAGE WITHSTAND TEST

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

The test shall be conducted as follows:

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

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

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

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

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

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 District of Saanich on all warranty work.

GENERAL LIMITED WARRANTY - TWO (2) YEARS

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

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

LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS

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

STRUCTURAL WARRANTY - 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 (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

PAINT LIMITED WARRANTY - TEN (10) YEARS

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

GRAPHICS LIMITED WARRANTY

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

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within three hundred (300) 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 District of Saanich as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

OVERALL HEIGHT

The overall height (OAH) of the vehicle shall be approximately 153“ (12' -5 ") 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 486“(40' -6 ").

OVERALL WIDTH

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

SERVICE REQUIREMENTS

To insure the District of Saanich a source of service and parts over the anticipated life of the apparatus, the Bidder shall have established their permanency in the industry and include in the proposal a description of their service abilities and facilities.

The Manufacturer must stock a complete line of emergency equipment and parts for this apparatus. Location of manufacturing plant and nearest service facility must be outlined in bid, including a complete history of the manufacturer.

ENGINEERING SUPPORT AT PRE-CONSTRUCTION MEETING

The Contractor shall provide an engineer to be present at the pre-construction meeting held at the factory location. The engineer will address all engineering related questions for the truck as purchased and for all proposed changes.

The engineer will have the 2D and/or 3D AutoCAD electronic drawings projected on screen and be able to provide dimensional data for proposed changes and proposed layouts. This will help ensure that the final design matches the District of Saanich intentions to the maximum extent possible.

IT ENGINEER DEMONSTRATION

The Contractor shall provide an Information Technology (IT) engineer to be present at time of delivery and demonstration for three (3) consecutive days. The IT engineer will demonstrate all IT related components installed by Contractor and provide initial instruction to representatives of the District of Saanich regarding the operation, care and maintenance of the equipment supplied at District of Saanich location. The District of Saanich will be responsible for the integration and programming of any on-board vehicle systems with District of Saanich land based systems.

The IT Engineer shall set delivery and instruction schedule with the person appointed by District of Saanich.

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

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be required, at the Contractor's factory for five (5) personnel from the District of Saanich to finalize all construction details prior to manufacturing.
The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the pre-construction conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

PRE-PAINT CONFERENCE

A pre-paint conference shallbe required, at the Contractor's factory for five (5) personnel from the District of Saanich to inspect the vehicle and construction details prior to the painting process.

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

FINAL INSPECTION CONFERENCE

A final inspection conference shall be required, at the Contractor's factory for five (5) personnel from the District of Saanich to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

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

DELIVERY AND DEMONSTRATION

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

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by District of Saanich.

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

MODEL

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

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2013 model year.

COUNTRY OF SERVICE

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

The chassis will meet applicable Canadian Technical Standards Document per Canadian Motor Vehicle Safety Regulations as clarified in the incomplete vehicle document which accompanies each chassis. Spartan Chassis is not responsible for compliance to provincial, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

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 24,000 pounds.

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CAB STYLE

The cab shall be a custom, fully enclosed, ELFD model with a 24.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

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

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the “A” pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 151.10 inches with 74.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 79.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 69.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 71.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.50 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 approximately 11.50 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick 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 fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

CAB UNDERCOAT

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

CAB SIDE DRIP RAIL

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CAB PAINT EXTERIOR

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

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

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

The cab shall then be painted with the specific color designated by the customer with a minimum thickness of 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be PPG FBCH 2185 White.

CAB PAINT WARRANTY

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

CAB PAINT INTERIOR

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

CAB ENTRY DOORS

The cab shall include three (3) entry doors, two (2) front doors and one (1) crew on the right side of the cab designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

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 door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

CAB ENTRY DOOR TYPE

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

LH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a 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.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) On-Scene brand Night Stik LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 9.00 inches long and shall include six (6) bright white LEDs.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a Zolatone #20-71 onyx black texture finish.

RH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a 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.

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) On-Scene brand Night Stik LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 9.00 inches in length and shall include six (6) bright white LEDs.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a Zolatone #20-71 onyx black texture finish.

REAR CAB WALL CUTOUT

The rear wall of the cab shall include a cut out which measures 30.00 inches wide X 76.50 inches tall to accommodate a walk through application.

CAB STRUCTURAL WARRANTY

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

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

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

ELECTRICAL SYSTEM

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

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel 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 IV display which shall be located on the left side of the dash in the switch panel. The Vista IV shall feature a full color LCD display screen which includes a message bar displaying the time of day 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 eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screen shall be video ready for back-up cameras, thermal cameras, and DVD.

The Vista IV display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder (VDR) 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.

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

AUXILIARY ACCESSORY POWER

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 0.38 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 high visibility protective rubberized coating to prevent corrosion.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

ENGINE

The chassis engine shall be a Cummins ISL9 engine. The ISL9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liter) of displacement.

The ISL9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2010 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

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.

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.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

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 indicator on the Vista display and control screen for the high idle speed control.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

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

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

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.
- 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/medium/high virtual button on the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

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.

FLUID FILLS

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE DRAIN PLUG

The engine shall include an original equipment manufacturer installed oil drain plug.

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) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

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

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

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response 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 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 utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.
The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.

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 dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

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.
The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. 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 manufacturer’s requirements.

ENGINE COOLING SYSTEM PROTECTION

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris.

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 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

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

ENGINE COOLANT FILTER

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

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

ELECTRONIC COOLANT LEVEL INDICATOR

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

COOLANT HOSES

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

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 right hand 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 corrosion resistant 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 right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

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

AIR INTAKE PROTECTION

A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

ENGINE EXHAUST SYSTEM

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction catalyst (SCR) to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system through the decomposition tube between the DPF and SCR.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the inboard position with the SCR canister in line rearward of the DPF.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible through the lower left side of the three (3) door cab.

ENGINE EXHAUST ACCESSORIES

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

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

TRANSMISSION

The drive train shall include an Allison 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 transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

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

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

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

TRANSMISSION SHIFT SELECTOR

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

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 PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

The transmission shall include an original equipment manufacturer installed oil drain plug.

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.

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. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a 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 supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

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.

FUEL TANK

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

The 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.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with “U” straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

FUEL TANK FILL PORT

The fuel tank fill ports shall be provided with two (2) left fill ports located one (1) in the forward position and one (1) in the middle position and the right fill port located in the rearward 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 AXLE WARRANTY

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

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

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

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

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

FRONT SUSPENSION

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

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver’s position. The steering wheel shall be covered with black polyurethane foam 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 an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

FRONT AXLE CRAMP ANGLE

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

POWER STEERING GEAR

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CHASSIS ALIGNMENT

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

REAR AXLE

The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 24,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

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.

SUSPENSION CONTROLS

The rear suspension shall incorporate a kneeling feature which, when activated, will deplete the air in the air bag to lower the chassis.

The kneeling system shall have a rocker switch temporarily mounted at the rear of the chassis with a park brake interlock and an instrument panel mounted red indicator lamp, which shall illuminate when the system is activated.

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 Michelin Tire Intermittent Service Rating load capacity shall be 24,400 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

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 rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 28,880 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

REAR AXLE RATIO

The rear axle ratio shall be 6.14:1.

TIRE PRESSURE INDICATOR

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

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

FRONT WHEEL

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

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL 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 activated by a locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if 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.

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. All air reservoirs provided on the chassis shall be labeled for identification.

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.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS 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.

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 (ESC) unit 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 vehicle’s motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle’s lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

The front brakes shall be Meritor 16.50 inch x 6.00 inch S-cam drum type.

REAR BRAKES

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

PARK BRAKE

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

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

PARK BRAKE CONTROL

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

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

FRONT BRAKE SLACK ADJUSTERS

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

REAR BRAKE SLACK ADJUSTERS

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

FRONT BRAKE DUST SHIELDS

The front axle shall be equipped with brake dust shields.

REAR BRAKE DUST SHIELDS

The rear brakes shall be equipped with brake dust shields.

AIR DRYER

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

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

The rear axle shall include a piston style MGM 30/30 long stroke brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn operates the foundational brake mechanism forcing the brake shoes against the brake drum.

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 mounted to the right frame rail.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

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

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

WHEELBASE

The chassis wheelbase shall be 264.50 inches.

REAR OVERHANG

The chassis rear overhang shall be 121.00 inches.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

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

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

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread 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 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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

FRAME WARRANTY

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

FRAME CLEAR AREA

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

FRAME PAINT

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

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

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 from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 6.00 inches ahead of the cab.

FRONT BUMPER EXTENSION FRAME WIDTH

The front bumper extension frame shall feature an overall width of 48.25 inches.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color.

FRONT BUMPER APRON

The 6.00 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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

AIR HORN

The chassis shall include two (2) Grover brand Stutter Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

AIR HORN LOCATION

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

AIR HORN RESERVOIR

One (1) air reservoir, with a 1200 cubic inch capacity, 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, 200 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 5.50 inches tall X 7.70 inches wide X 7.80 inches deep. The speaker shall include the classic Q-style grille which shall measure 9.87 inches in diameter.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the inboard position.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in a rearward position out of the approach angle area, bolted directly to the side of the chassis frame with grade 8 bolts.

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

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

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

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

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

A steel safety channel assembly, painted safety yellow 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 CONTROL RECEPTACLE

The cab tilt control cable 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 six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

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 manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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

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

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

GLASS TINT REAR DOOR RIGHT HAND

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

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

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

GLASS SIDE MID RH

The cab shall include a window on the right side behind the front and ahead of the crew door 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 RIGHT HAND

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

GLASS UPPER SIDE FRONT

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

GLASS TINT UPPER SIDE FRONT

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

GLASS UPPER SIDE MID

The middle section of the raised roof on the 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

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

GLASS TINT UPPER SIDE REAR DOOR

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

CLIMATE CONTROL

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

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

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

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

CLIMATE CONTROL DRAIN

The climate control system shall include a venturi pump for water management. The venturi pump drain shall remove condensation from the air conditioning system.

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be on the dash next to driver panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

HVAC OVERHEAD COVER PAINT

The overhead HVAC cover shall be painted with a Zolatone #20-71 onyx black texture finish.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the 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 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

CAB INSULATION

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

UNDER CAB INSULATION

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

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

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft² PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

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

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

INTERIOR TRIM FLOOR

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

INTERIOR TRIM VINYL

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with vinyl.

HEADER TRIM

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

TRIM CENTER DASH

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

TRIM LH DASH

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick 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 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

POWER POINT DASH MOUNT

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired to be live with the battery master switch.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

UNDER CAB ACCESS DOOR

The cab shall include two (2) under cab access doors. The lower rear left side of the three (3) door cab shall include one (1) access door to provide access to the diesel exhaust fluid fill with a push and turn latch. The left side cab access door shall be painted to match the lower exterior of the cab. One (1) access door shall be located in the right crew step riser painted to match the cab step riser with a push and turn latch. The right side under cab access door shall provide access to the battery box area under the cab.

INTERIOR DOOR TRIM

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.

DOOR TRIM CUSTOMER NAMEPLATE

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

CAB DOOR TRIM REFLECTIVE

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

INTERIOR GRAB HANDLE "A" PILLAR

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each “A” post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

INTERIOR GRAB HANDLE FRONT DOOR

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

INTERIOR GRAB HANDLE REAR DOOR

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

INTERIOR TRIM VINYL COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

CAB PAINT INTERIOR DOOR TRIM

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

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall be coated with Zolatone #20-71 onyx black texture finish.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with Zolatone #20-71 onyx black texture finish. Any accessory pods attached to the dash shall also be painted this color.

TRIM LEFT HAND DASH INTERIOR PAINT

The left hand dash shall be painted with Zolatone #20-71 onyx black texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall be painted with Zolatone #20-71 onyx black texture 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 backlighting provided.

SWITCHES LEFT PANEL

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

SWITCHES RIGHT PANEL

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

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

All seats supplied with the chassis shall be black in color. All seats shall include red seat belts.

SEAT BACK LOGO

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

SEAT DRIVER

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

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a 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 driver's 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 MOUNTING DRIVER

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom Firefighter model seat. The seat shall feature eight-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 three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

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

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

SEAT BACK OFFICER

The officer's 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 MOUNTING OFFICER

The officer's seat shall be installed in an ergonomic position in relation to the cab dash.

POWER SEAT WIRING

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

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall have a Zolatone #20-71 onyx black texture finish.

WINDSHIELD WIPER SYSTEM

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

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

DOOR LOCKS

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

When the doors are unlocked using the external keypad or the key fobs the interior dome lights shall illuminate and remain on for a period of twenty (20) seconds.

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

DOOR LOCK LH REAR CAB COMPARTMENT

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

DOOR LOCK RH REAR CAB COMPARTMENT

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

POWER DOOR LOCK COMPARTMENT ACTIVATION

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

GRAB HANDLES

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

REARVIEW MIRRORS

Ramco model 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 heat for the rearview mirrors shall be controlled through a virtual button on the Vista display and control screen.

TRIM LOWER SIDE

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

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner 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. The mud flaps shall extend from the outer edge of the wheel well to the inner edge of the wheel well to provide additional protection from road spray.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) for the front air intake grille and two (2) for the exterior sides of the cab shipped loose with the chassis for installation by the body manufacturer.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CAB EXTERIOR MODEL NAMEPLATE

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

IGNITION

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

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

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

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

BATTERY

The single start electrical system shall include six (6) Optima yellow top, 900 CCA batteries with a 155 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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

ALTERNATOR

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

ELECTRICAL INLET

A Kussmaul 30 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

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

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

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be pre-wired.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

FRONT TURN SIGNALS

The front fascia shall include two (2) Federal Signal Quadra Flare 4.00 inch X 6.00 inch programmable LED amber light heads which shall be installed outboard in polished aluminum castings above the outer warning lamps and headlights, below the windshield to act as turn signals.

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (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) LED cab 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.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

GROUND LIGHTS

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

STEP LIGHTS

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

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. The lights shall activate automatically when the cab is tilted.

SIDE SCENE LIGHTS

The side of the cab shall include two (2) Federal Signal QL97LEDSCENE model LED scene lights, one (1) each side which shall be surface mounted with a chrome bezel.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right 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 scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light, and by opening the respective side cab doors.

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section Weldon incandescent dome lamp with a red and clear 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 clear portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and clear portion can be activated by individual switches on each lamp.

An additional two-section Weldon incandescent red and clear lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

MAP LIGHTS

A Sunnex gooseneck style map light shall be provided. The light shall have a clear lens, shall be 20.00 inches tall, and shall have a control switch on the base. The light shall be shipped loose with the chassis.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red Whelen 500 Series 5mm LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be located centered left to right for greatest visibility.

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

MASTER WARNING SWITCH

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

HEADLIGHT FLASHER

An alternating high beam headlight flashing system shall be installed into the high beam headlight 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.

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a virtual button on the Vista display and control screen.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Federal Signal Quadra Flare LED front warning lights in the left and right inboard positions. The lights shall feature advanced Solaris technology and include a built in flasher capable of multiple flash patterns. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

INBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the inboard positions shall be red/blue with a clear lens.

OUTBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Federal Signal Quadra Flare LED front warning lights in the left and right outboard positions. The lights shall feature advanced Solaris technology and include a built in flasher capable of multiple flash patterns. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

OUTBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the outboard position shall be red/blue with a clear lens.

FRONT WARNING SWITCH

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

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Federal Signal Quadra Flare 6x4 LED intersection warning lights, one (1) each side. The lights shall feature advanced Solaris technology and a built in flasher with multiple flash patterns including steady burn.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red/blue with a clear lens.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the cab on the front radius.

SIDE WARNING LIGHTS

The cab sides shall include two (2) Federal Signal Quadra Flare LED warning lights, one (1) on each side. The lights shall feature advanced Solaris technology and include a built in flasher capable of multiple flash patterns. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the cab shall be red/blue with a 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 button on the Vista display and control screen. This button shall be clearly labeled for identification.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red 4.00 inch diameter Truck-Lite LED warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

SIREN CONTROL HEAD

A Federal EQ2B electronic siren control head shall be provided and installed in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, "Q" wail, yelp, air horn, PA, radio broadcast and "Q" brake. The siren shall include a noise cancelling microphone.

HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of the electric horn, the air horn, or the electronic siren from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in any position to meet FMCSA requirements.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button for the driver. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

ELECTRONIC SIREN AUXILIARY ACTIVATION

The electronic siren shall include activation by the steering wheel horn button.

BACK-UP ALARM

A Federal Signal model 258 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 160 KM/H, and the secondary scale on the speedometer shall read from 0 to 100 MPH.

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

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 kilometers. The trip odometer shall display 9,999.9 kilometers. The LCD shall display Transmission Temperature in degrees Celsius on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured data. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 40 to 120 degrees Celsius (C). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

RED LAMPS
Stop Engine-indicates critical engine fault
Air Filter Restricted-indicates excessive engine air intake restriction
Park Brake-indicates parking brake is set
Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened
Low Coolant-indicates engine coolant is required

AMBER LAMPS
MIL-indicates an engine emission control system fault
Check Engine-indicates engine fault
Check Trans-indicates transmission fault
High Transmission Temperature-indicates excessive transmission oil temperature
ABS-indicates anti-lock brake system fault
Wait to Start-indicates active engine air preheat cycle
HEST-indicates a high exhaust system temperature
Water in Fuel-indicates presence of water in fuel filter
DPF-indicates a restriction of the diesel particulate filter
Regen Inhibit-indicates regeneration has been postponed due to user interaction
Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.
SRS-indicates a problem in the RollTek supplemental restraint system
Check Message-Turn Signal On
Check Message-Door Ajar

Check Message-Cab Ajar
Check Message-ESC Active
Check Message-DPF Regen Active
Check Message-No Engine Data
Check Message-No Transmission Data
Check Message-No ABS Data
Check Message-No Data All Communication With Vehicle Systems Has Been Lost
Check Message-Check Engine Oil Level
Check Message-Check Washer Fluid Level
Check Message-Check Power Steering Fluid Level
Check Message-Low Transmission Fluid Level
Check Message-Check Coolant Level

GREEN LAMPS
Left and Right turn signal indicators
ATC-indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system
High Idle-indicates engine high idle is active.
Cruise Control-indicates cruise control is active
OK to Pump-indicates the pump engage conditions have been met
Pump Engaged-indicates the pump is currently in use
Auxiliary Brake-indicates secondary braking device is active

BLUE LAMPS
High Beam Indicator

CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE
High Trans Temp
High or Low Voltage
Seatbelt
Check Engine
Check Transmission
Stop Engine
Low Air Pressure
Fuel Low
Water in Fuel
ESC
High Coolant Temperature
Low Engine Oil Pressure
Low Coolant Level
Low DEF Level
Air Filter Restricted
Extended Left and Right Turn Remaining On
Cab Ajar
Door Ajar
ABS System Fault
SRS (Supplemental Restraint System) Fault

EXTERNAL AUDIBLE ALARMS

Air Filter
Cab Ajar
Door Ajar
Seatbelt
Check Engine
Stop Engine
Low Air Pressure
Water in Fuel
Low DEF
ABS System Fault
SRS (Supplemental Restraint System) Fault
High or Low Voltage

BACKLIGHTING COLOR

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

BRAKE APPLICATION PRESSURE GAUGE

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

CAMERA

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) box shaped camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle, a second box shaped camera shall be supplied on the officer side of the cab, and a third box shaped camera above the driver side door.

The cameras shall be wired to a single Weldon Vista display. The rear camera display shall activate when the vehicle's 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 safety triangle kit.

DOOR KEYS

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

WARRANTY

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 twenty-four (24) months, or the first 36,000 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.

CHASSIS OPERATION MANUAL

There shall be three (3) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

ENGINE SERVICE MANUALS

There shall be one (1) printed hard copy set of Cummins ISC/ISL engine service reference manuals which shall be provided with the chassis.

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

The cab and chassis shall include one (1) complete hard copy set of wiring schematics and option wiring diagrams.

PAINT CONFIRMATION

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

CAB TO AXLE DIMESION

Cab to axle will be 190.5”.

CAB/CHASSIS PREPAYMENT

The specified cab/chassis shall be prepaid by District of Saanich within 30 days of invoice. District of Saanich understands that if payment is made after 30 days, additional interest charges may apply.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CHASSIS MODIFICATIONS

LUBRICATION AND TIRE DATA PLATE

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

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

VEHICLE DATA PLATE

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

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

OVERALL HEIGHT, LENGTH DATA PLATE (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 of the completed fire apparatus in meters, the length of the completed fire apparatus in meters and the GVWR in kilograms.

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.
SHOP NOTES
Data Plates shall be in standard and metric (to 2 decimal places)

FRONT BUMPER

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

BUMPER GRAVELSHIELD

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

AIR HORN(S)

The air horn(s) shall be supplied and installed by the cab/chassis manufacturer.

FRONT TOW PROVISIONS

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

EXHAUST DIVERTER

An exhaust diverter valve shall be located in-line of exhaust tubing and controlled from driver's position to re-route exhaust discharge. Exhaust diverter valve shall be constructed from 14 gauge stainless steel material with air actuated control.

As a default, the exhaust shall always discharge to curbside just ahead of rear wheels, and when selected the exhaust shall discharge to streetside just ahead of rear wheels.

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.

MAP LIGHT LOCATION

The cab/chassis supplied map light shall be mounted on the center of the A/C cover to allow for more directional use.

CELLULAR PHONE ANTENNA INSTALLATION

There shall be one (1) cellular phone antenna mount provided and installed on the cab roof. The end of cellular antenna shall be routed to a location determined by the District of Saanich.

Due to multiple configurations of antenna whips, the Manufacturer shall provide the antenna base, and District of Saanich shall provide the whip.

RADIO/ANTENNA INSTALLATION

There shall be two (2) District of Saanich supplied radio(s) with antenna installed in the cab within easy reach of driver. The location of radio shall be determined by the District of Saanich at the pre-construction meeting.

Radio shall be installed per Manufacturer's requirements and wired for proper 12 volt power and ground.

SEVEN (7) POSITION ANTENNA RAIL

One (1) radio antenna rail(s) shall be provided and installed on roof of vehicle. Each rail shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Seven (7) antenna bases shall be provided and installed in each rail. Each antenna base shall include enough cable to reach radio location plus a service loop of at least 3' of LMR195 flexible communications cable. The antenna wiring shall enter the vehicle roof at a single point under the end of the rail. The end of each radio antenna shall be routed to radio mounting locations, or as determined by the District of Saanich.

Due to the various configurations of antenna whips, the contractor shall provide the antenna base only, and District of Saanich shall provide the antenna whip.

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.
SHOP NOTES
Available on Custom cab/chassis and only IH cab/chassis at this time. Must select an SVI installed system to meet NFPA, if available.

HELMET STORAGE

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

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.

MUDFLAPS

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

AIR BRAKE SYSTEM QUICK BUILD-UP

There shall be one (1) cab/chassis supplied Milton male quick connector type air shoreline inlet to provide air to the chassis air tanks from an external source compressed air shoreline hookup in order to maintain full operating air pressure while the vehicle is not running. Air inlet shall be located near driver's door. The female end of the connector shall be supplied by the District of Saanich.

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

ROAD EMERGENCY SAFETY KIT

One (1) set of three (3) dual faced triangular warning flares with fold away base complete with storage case per DOT requirements shall be provided with the completed apparatus.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket per DOT requirements shall be provided with the completed apparatus.

AUTOMATIC VEHICLE LEVELING SYSTEM

An HWH brand leveling system shall be installed on the unit designed for large heavy duty vehicles with a GVWR over 23,000 pounds. The system shall have four (4) mounting brackets bolted to the chassis frame rails, two (2) front and two (2) rear. Each jack shall bolt to the bracket attached to the chassis frame.

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

The system shall be provided with a one (1) year limited warranty.

The system controller shall be installed in the center cab dash.
SHOP NOTES
The system controller {will/shall} be installed in the center cab dash.

REAR CAB CABINET/DESK LAYOUT

REAR CAB DESK - "L" SHAPED

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

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

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

DESKTOP COMPONENT CONSOLE

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

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

There shall be two (2) phones mounted in the front face of the component console

There shall be four (4) data port(s) provided in the front face of the component console.

There shall be two (2) two-gang 12 VDC outlet(s) provided in the front face of the component console.

There shall be two (2) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.

CAB INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a dark gray hammer tone powder coat paint finish for a hard durable surface. Each cabinet shall be approximately 14" high x 14" deep x 26" wide.
SHOP NOTES
Only one (1) 26" cabinet on the curbside.

The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface. (NON-Magnetic)
SHOP NOTES
(NON-Magnetic)

OVERHEAD RADIO MOUNTING CONSOLE

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

The radio cabinet shall be constructed of 1/8" smooth finish aluminum and front of the cabinet shall have standard bolt-on 8-1/2" x 4" black radio trim mounting plates. A hinged 3/16" aluminum drop down access cover shall be provided on the bottom to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. Two (2) 12 volt cooling fans and 12 volt power and ground provisions shall be provided for proper installation and ventilation of radio equipment.

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

INTERIOR UNDER CABINET LED LIGHTS

One (1) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a 5 second delay after switching off.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

INTERIOR PEDESTAL SEAT

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

The seat(s) shall be provided with a 2-point type automotive lap seat belt and shall be red in color. The seat belt(s) shall be secured to the attachment points provided on each seat. Each seat shall be wired to the on-board seat belt indicator, and Vehicle Data Recorder (VDR) systems per NFPA 1901.

CAB INTERIOR CABINET - STREETSIDE OVERHEAD

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

The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.(NON-Magnetic)
SHOP NOTES
(NON-Magnetic)

OVERHEAD RADIO MOUNTING CONSOLE

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

The radio cabinet shall be constructed of 1/8" smooth finish aluminum and front of the cabinet shall have standard bolt-on 8-1/2" x 4" black radio trim mounting plates. A hinged 3/16" aluminum drop down access cover shall be provided on the bottom to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. One (1) 12 volt cooling fan and 12 volt power and ground provisions shall be provided for proper installation and ventilation of radio equipment.

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

INTERIOR UNDER CABINET LED LIGHTS

One (1) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a 5 second delay after switching off.

CAB INTERIOR CABINET - REAR CURBSIDE CORNER

There will/shall be one (1) custom built cabinet installed in the rear curbside corner of the cab. The cabinet shall be fabricated out of 1/8" smooth finish aluminum and painted with a dark gray hammer tone powder coat paint finish for a hard durable surface

- The above cabinet shall have a hinged door.
- One (1) vertically adjustable shelf.
- The specified printer/copier shall be mounted on top of the above cabinet.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CAB INTERIOR CABINET - CURBSIDE REAR CORNER HANGING

There will/shall be one (1) custom made hanging cabinet provided in the rear curbside corner of the cab. The cabinet shall be constructed of 1/8" smooth finish aluminum, painted with a dark gray hammer tone poser coat paint finish for a hard durable surface. Cabinet shall be mounted above the curbside rear corner cabinet

- Cabinet shall have a 120V 20A straightblade outlet (shore/gen)
- Cabinet shall have a 2' 120V 20A striaghtblade outlet strip (shore/gen)
- Cabinet shall be designed to house customer supplied portable radio chargers

MAGNETIC WHITEBOARD

There shall be one (1) magnetic whiteboard(s), approximately 30" wide x 36" tall located on wall, located on the rear wall streetside above the "L" shaped desk. Whiteboard shall be as large as possible.
SHOP NOTES
located on the rear wall streetside above the "L" shaped desk. Whiteboard shall be as large as possible.

PRINTER/COPIER/SCAN/FAX

One (1) HP OfficeJet 6600e (or equal) All-In-One printer/copier/scan with built-in wireless wifi shall be provided in rear cab command area, location per District of Saanich. Unit shall be 18.5" W x10" H x 17.6" D, and weigh 17 lbs.

Unit shall be complete and fully operational, including all required cabling, 120 volt AC wiring, and cable connections. All paperwork and software provided with purchased unit shall be provided in a plastic sleeve attached to unit when delivered.

Shall not have fax capabilities.
SHOP NOTES
Shall not have fax capabilities.

INTERIOR CAB WINDOW COVERS

An interior window cover shall be provided on six (6) windows in the cab.

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

INTERIOR CAB COMMAND CURTAIN

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

The curtain shall be of Cover Lite Select, 22 oz material. The curtain shall be rolled up in a trough when not in use.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

AIR CONDITIONER - HEATER

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

Each unit shall be rated at minimum of 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU.

A three-speed fan shall supply a maximum/minimum of 335/250 cfm air flow capacity.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 96 pounds.

FUEL FILL

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

BODY DESIGN

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

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

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

The fabrication of the body shall be formed sheet metal. Formed components shall allow the District of Saanich 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 District of Saanich 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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

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, No Exceptions.

The front and rear corners of body shall be formed as part of the front or rear body panels. This provides a stronger body corner and finished appearance. The use of extruded corners, or caps will not be acceptable, No Exceptions.

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 and caulked to prevent moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

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

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

DRIP RAILS

The body shall have drip rails over the side full height compartments. The drip rails shall be formed into the upper body panels providing a ridged lower panel and a flat upper body panel surface. The use of mechanically fastened, taped or glued on drip rails will not be acceptable, No Exceptions.

ROOF CONSTRUCTION

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BODY SUBFRAME

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

The body subframe shall be constructed from 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 cross members of 2" x 6" x 1/4" aluminum. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment.

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

BODY MOUNTING

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

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

18" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 18" and provide a rear step with a minimum of 1/2" space at body for water drainage.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below the apparatus body. The tow eyes shall be fabricated from 3/4" thick steel plate and shall have a black powder coat finish.

GROUND LIGHTS

There shall be two (2) OnScene 9" Premium LED light(s) installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel 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.

SPLASH SKIRT

Each wheel well liner (cab and body) shall be provided with a inner back skirt or panel to assist in preventing road slush from splashing on under body components.

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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

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 mils DFT after sanding.
6. Base coat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Base coat. Apply 1.0-3.0 mils DFT of base coat color to achieve full hiding.
7. Clear coat PPG Delfleet® Evolution polyurethane premium quality clear coat with improved mar resistant finish. The clear coat shall be applied to achieve a total dry film thickness of 2.0-3.0 mils.
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 per approved customer sprayout.

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 nutserts 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. PPG FBCH 2185 White

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BODY UNDERCOATING

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

UNDERCOAT WARRANTY

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

PAINT WARRANTY

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

COMPARTMENT INTERIOR FINISH

The 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.

REFLECTIVE STRIPE REQUIREMENTS

Material

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.

Minimum Requirements

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

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

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

GRAPHICS PROOF

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

REFLECTIVE STRIPE - CAB SIDE

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be black 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 black in color.

REFLECTIVE STRIPE - CAB FRONT

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be black 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 black in color.

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 fluorescent yellow-green in color.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

REFLECTIVE STRIPE - BODY SIDES

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be black 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 black 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. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panel shall have a minimum 10 year warranty for material failure, and colorfastness.

The stripe material shall be 3M Diamond Grade.

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

LETTERING

GRAPHICS PROOF

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

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

SIDE CAB DOOR LETTERING

There shall be fifty (50) 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 four (24) 10" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be gold in color.

REAR BODY LETTERING

There shall be NO lettering applied in this area.

FRONT OF CAB LETTERING

There shall be NO lettering applied in this area.

SUPPLIED DECALS

The bidder shall install two (2) District of Saanich supplied decal(s) on the vehicle, located on the front cab doors..

EXTERIOR COMPARTMENT DOORS

HINGED DOOR CONSTRUCTION

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

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

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

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

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

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

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

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	100.2"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Total Body Height	122.2"
D	Vertical Door Opening (Below Frame Compartment):	
	-with hinged door	19.0"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	20.0"
F	Compartment Height Below Frame	22.5"
G	Vertical Door Opening - (Below Frame Compartment):	
H	-with hinged door	16.5"

GENERAL

	Description	Dimension
I	Walk-in Interior Height	82.0" (min.)

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

BODY WIDTH DIMENSIONS

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

Area Description	Dimension
Transverse Area above Subframe	95.0"
Compartment Depth below Subframe	24.5"

STREETSIDE COMPARTMENT - FRONT (S1)

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

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

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

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

The compartment door opening shall be approximately 52.0" wide.

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

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

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.
- Location for specified inverter and deep cycle batteries. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S3) - LOWER

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

The compartment door opening shall be approximately 28.0" wide.

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

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

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - BEHIND REAR WHEEL (S4)

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

The compartment door opening shall be approximately 63.0" wide.

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

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

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

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- Two (2) OnScene 18" Premium LED compartment lights, vertically mounted.
- The diesel engine driven generator location.

CURBSIDE COMPARTMENT - FRONT (C1)

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

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

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.
- The cab tilt control pendant.
- One (1) 120/240 VAC load center.
- The generator gauge panel.
- A 100 ampere, 240 VAC, single phase shore power receptacle shall be located in this compartment.
- The controls for the specified light tower(s).

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2) - LOWER

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

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

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

COMPARTMENT LAYOUT

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.

- Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator’s standing position, and shall be marked with a label indicating its function.

- A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.

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

- One (1) Akron model EJB series, cast aluminum electrical power distribution box with yellow powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;

- A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:

- One (1) 5-20 duplex straight-blade receptacle

- One (1) 5-20 duplex straight-blade receptacle

- One (1) 5-20 duplex straight-blade receptacle

- One (1) 5-20 duplex straight-blade receptacle

- One (1) Akron EJB treadplate vertical apparatus mounting bracket shall be provided.

- The fairlead roller shall be mounted directly to the reel.

  - One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.

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

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEELS (C2) - UPPER

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

This door shall be a split door design.
SHOP NOTES
This door shall be split door design. And this compartment shall be the location for the specified electronic patch panel.

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

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

32" VIDEO MONITOR

One (1) Samsung LN-T325H (or equal) 32" multi-function flat panel monitors with built-in TV tuner shall be provided and located in upper compartment.

Monitor shall be installed on pivoting mount brackets with horizontal/vertical adjustment.

System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.

Monitor is capable of displaying up to four (4) separate video inputs. Video inputs for each monitor will be determined by purchaser. One (1) CATV inlet/outlet shall be provided at each monitor location.

The monitor for this compartment needs to be as large as possible.
SHOP NOTES
The monitor for this compartment needs to be as large as possible.

SIDE ENTRY DOOR

Access to the interior body compartment shall be provided through a side entry door. The door opening shall be approximately 29" wide x 94" high.

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

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

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

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

COMBINATION LOCK KEY PAD

There shall be a Trimark electric combination lock on the exterior of the door with a touch panel key pad.

ENTRY HANDRAILS

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

Handrails shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

WINDOW(S)

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

DO NOT ENTER LIGHT

There shall be one (1) red LED indicator light located adjacent to the side entry door on the exterior of the body. The purpose of this light is to indicate whether or not the vehicle can be entered. The light shall be controlled via a switch located on the inside of the body adjacent to the side entry door.

The switch shall be labeled "DO NOT ENTER LIGHT"

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

REAR BUMPER COMPARTMENT

There shall be one (1) rear bumper compartment constructed of smooth aluminum and painted to match the body color. The compartment shall have a slam door with a locking d-ring handle and hold open gas shocks.

The compartment shall be provided with one 54" OnScene compartment light.

The specified air mast cover shall be incorporated into the rear bumper compartment and the specified license plate light shall be mounted on the rear bumper compartment door.

ROLL-OUT AWNING - CURBSIDE

The front curbside slide-out shall be equipped with a box style Carefree Freedom wall mount awning. The box the awning is stored in is approximately 8’ wide x 5-3/8” high x 5” deep and white in color. The awning shall be 8’ wide with an extension length of 6-1/2'. The awning support arms are hidden inside the lead rail. The awning will be extended and retracted using a 12V motorized system with a manual override if power is lost.
The awning shall activate the door ajar warning system in the cab when not in the stowed position.

- The awning fabric color shall be ivory.

The specified awning above shall be surface mounted to upper body side. The awning shall add approximately 5.75" to body width.

AWNING HOUSING

The awnings standard Polar White vinyl housing color shall be re-painted to match upper body color.

ACCESS LADDER

The top of the body shall be accessible from the ground by a folding ladder. The ladder design shall have a main ladder section, bolt on upper hand rail section and a folding lower step section for better angle of departure. Ladder stores in a folded position and then pulls out to a comfortable climbing angle. The ladder shall be parallel to the body when in the stored position.

Each cast aluminum step shall be 4-1/2" deep x 16" wide. Hand railing shall be 2-1/8" oval shaped aluminum tubing with a ribbed gripping surface.

The ladder shall be wired to the door ajar warning light in cab to warn the driver that the ladder is in the down position. Ladder shall be mounted to body with stainless steel bolts.

Ladder shall be located on rear curbside of the body.

WALKWAY/STEP LIGHTS

There shall be two (2) OnScene Solutions 9" LED NightStik lights provided to illuminate the walkway or step area. The lights shall be activated when the parking brake is set.

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

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

ROOF ACCESS HANDRAIL

There shall be one (1) handrail incorporated in the supplied folding ladder. This handrail shall assist in roof access.
SHOP NOTES
Handrail shall be incorporated into the folding ladder ILO mounted on the roof of the body.

WALK-IN INTERIOR FINISH DETAILS

DESK, CABINET, CONSOLE FINISH

All specified interior desks, cabinets, overhead cabinets, or consoles shall be fabricated from formed 1/8" 3003 H14 alloy smooth aluminum. After fabrication is completed they shall be painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.
The use of wood materials or laminated surfaces in the construction of desks, cabinets, overhead cabinets, or consoles will not be allowed. There will be **No Exceptions** allowed on specified ruggedized finish.

CAB/BODY WALK-THROUGH CONNECTION

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

The front of the body shall be cut out to match the cab opening. Additional reinforcements with metal angle or tubing shall be provided to back of cab or front of body, if necessary so that the walk-through opening weakens neither the cab nor body integrity.
The connection shall be weather resistant, yet provide the cab and body to move independent of each other. A flexible 3” rubber weather strip shall be attached to a stainless steel sheet metal frame around the perimeter of the opening in the back wall of the cab. A drip rail shall be provided on front of body above the opening to channel water to both sides of opening. Stainless steel scuff panels shall be provided on back of cab were the rubber seal on body comes in contact with cab.

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

The base of the opening shall be covered with a 3/16" aluminum tread plate full width panel, which will overlap from the cab to body so that the rubber seal cannot be damaged.
Full width padded foam cushion head bumpers shall be provided on both sides of opening. Head bumpers shall be covered with matching interior vinyl and bolted to each side of walk-through.

CUT OUT IN REAR CAB WALL

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

SLIDING POCKET DOOR

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

SLIDING POCKET DOOR WINDOW

There shall be one (1) small non-sliding window provided on the pocket door.

INTERIOR BODY WINDOW COVERS

An interior window cover shall be provided on seven (7) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.
SHOP NOTES
The window covers shall be for the six (6) slide-out windows and the rear conference room pocket door window.

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

Following the sheet metal fabrication the roof area, upper exterior walls and the entry door of the apparatus body shall be insulated with 1-1/2" rigid polyurethane foam insulation. This insulation shall be the type that will not absorb moisture, move once in place or deteriorate. Mat type fiberglass or spray in foam insulation is not acceptable.

INTERIOR FINISH

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

The interior plywood panels shall be installed with sheet metal screws and the carpet will be glued to it using high bond adhesive.

The interior finish shall be medium texture gray.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

INTERIOR WALKWAY FLOOR

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

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

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

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

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

INTERIOR SUB-FLOOR

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

INTERIOR WATER SYSTEM

There shall be one (1) 20 gallon plastic fresh water holding tank(s) located below the apparatus body. A fresh water fill shall be provided at the exterior apparatus body with a household hose type connection. A 12 volt self priming, flow controlled water pump (minimum of 3 GPM) with built-in check valve shall be provided and plumbed to water system.

There shall be one (1) 40 gallon plastic holding tank(s) located below the apparatus body. There shall be an RV type waste water drain system installed using flexible tube. There shall be a valve located below the apparatus body to drain the retention tank.

AIR CONDITIONER - HEATER

Three (3) Dometic Penguin, model 641835 low profile, 120 VAC, 60 cycle, single phase air conditioner(s) shall be provided and installed on the body roof. The unit shall be a roof top contemporary contoured integral evaporator/condenser type with built-in heating elements.

Each unit shall be rated at minimum of 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU.

A three-speed fan shall supply a maximum/minimum of 335/250 cfm air flow capacity.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 96 pounds.
SHOP NOTES

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

Locate one (1) per body section. (Command, Galley/Lavatory, Conference)

ELECTRIC BASEBOARD HEAT

Five (5) Grainger model QMKC2576W (or equal), 240 volt, commercial electric baseboard heaters shall be provided;

- One (1) in Cab Command Area.
- Two (2) in forward section of body (one (1) each side)
- Two (2) in rear section of body (one (1) on curbside, and one (1) on rear wall)

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

FIRE EXTINGUISHERS

One (1) 3-A: 40-B: C 20 pound dry chemical fire extinguishers shall be provided. Extinguisher placement will provide for rapid access and will not impede vehicle entry or egress.

CARBON MONOXIDE & SMOKE ALARMS

Two (2) hardwired (with 9-volt battery backup) combination carbon monoxide and smoke alarms (separate units acceptable) shall be provided.
SHOP NOTES
20# ABC Fire Extinguisher

EXHAUST FAN

The vehicle shall be provided with one (1) 100 CFM, 12 VDC exhaust fan(s) for air circulation in body. Each fan shall be wired to a rocker style switch located on wall near entry door.

MAGNETIC WHITEBOARD

There shall be two (2) magnetic whiteboard(s), as large as possible located on the forward stationary walls of the body walk-in area. The whiteboards shall be hidden behind the slideouts when the slideouts are retracted.

SHOP NOTES
Located on the forward stationary walls behind the slideouts. To be as large as possible.

STREETSIDE INTERIOR AREA (IS1/IS2)

SLIDE-OUT ROOM EXTENSION

There shall be an HWH Space Maker universal level out (ULO) hydraulic room extension on the streetside which shall extend approximately 31" as measured from the outside of the body. The extendable module shall be approximately 110.5" in length (97.5" interior usable space) and the interior height shall be approximately 11" less than the specified interior height. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section utilizes the HWH "Universal Room" mechanism known for its strength and reliability, for rooms up to 4,000 pounds. The floor is suspended above main floor which eliminates the possibility of damage to floor coverings and when slide-out provides a flat floor. Four-point attachment of the HWH Universal Room Extension draws all four corners in for positive seal when room is extended or retracted.
Systems that don't provide a flat floor when fully extended will NOT BE ACCEPTABLE. A manual override shall be provided in the event of a system failure.

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

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

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

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

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

There shall be red/white conspicuity striping on the sides of the slideout.
SHOP NOTES
There shall be red/white conspicuity striping on the sides of the slideout.

WINDOW(S)

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

INTERIOR CABINET - OVERHEAD

There shall be three (3) 34" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface. (NON-Magnetic)

SHOP NOTES
(NON-Magnetic)

INTERIOR UNDER CABINET LED LIGHTS

Three (3) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

SLIDE-OUT AREA - FULL WIDTH DESK

The slide-out area shall be provided with a full width desk which shall be 24" deep and located approximately 30" from floor. The front edge of the desk top shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

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

DESKTOP COMPONENT CONSOLE

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

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

There shall be three (3) phones mounted in the front face of the component console

There shall be three (3) radio(s) mounted in the front face of the component console
SHOP NOTES
Radio base stations shall be mounted under the desktop and the radio head shall be mounted in the desktop console.

There shall be three (3) data port(s) provided in the front face of the component console.

There shall be three (3) two-gang 12 VDC outlet(s) provided in the front face of the component console.

There shall be three (3) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.

22" LCD MONITOR(S)

Three (3) Samsung 22" multiple input, flat panel LCD monitor(s) shall be provided in the following location(s).

System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.

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

INTERIOR ROLL-AROUND CHAIR TRAVEL PROVISIONS

There shall be travel provisions for three (3) customer supplied roll-around office chairs. The provisions shall include a bungee strap for each chair and a means to secure the strap to the underside of the desktop.

REMOVABLE CONFERENCE TABLE

The interior of apparatus shall be provided with a removable conference table which shall be approximately 48" long by 36" wide and be located approximately 30" from floor. The exterior edges of the conference table shall be reinforced in order to support a person sitting on the edge of the table.

The tabletop surface shall be fabricated of 3/16" smooth finish aluminum. The desk top shall be painted with a whiteboard type paint finish.

Storage shall be provided on curbside interior wall for table when not in use.
SHOP NOTES
Removable table design shall be reviewed at the pre-paint inspection.

STREETSIDE INTERIOR AREA (IS3)

GALLEY AREA

The apparatus interior shall be provided with a galley area. The galley shall be furnished with the following features as detailed below.

GALLEY CABINET - COUNTER HEIGHT

There shall be one (1) interior counter height cabinet(s) provided in the galley. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

- The above cabinet(s) shall have a 4" x 4" toe kick area at the base to allow for the top surface to be used as a working surface.
- The above cabinet(s) shall have double vertically hinged aluminum door(s) and painted with a hammer tone powder coat paint finish to match cabinet color choice.
- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

INTERIOR CABINET - WORK SURFACE

There shall be a work surface (desk) installed above the multiple counter height cabinets. The work surface shall be fabricated with 1/8" thick smooth aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

GALLEY INTERIOR SINK

A stainless steel sink shall be provided in the galley compartment. The sink shall be provided with chrome plated faucet and individual control valves for hot or cold water. It shall be countertop recessed into custom built cabinetry as required by the design of the apparatus interior.

WATER HEATER

There shall be one (1) 120 volt electric "On-Demand" water heater(s) installed to supply heated water to the interior water system. The heater shall be a 3,000 watt, 25 amp, tankless water heater.

GALLEY REFRIGERATOR

There shall be one (1) Norcold DE-0041R 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 30-7/8" high x 23-1/4" wide x 23-1/2" deep.

There shall be one (1) drawer provided in the custom enclosure just above the refrigerator.
SHOP NOTES
There shall be a drawer provided in the refrigerator cabinet, just above the refrigerator.

INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided in the galley. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.

INTERIOR UNDER CABINET LED LIGHTS

One (1) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

GALLEY MICROWAVE

There shall be one (1) commercial grade microwave oven furnished and installed in the 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.

COFFEE/TEA 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..
SHOP NOTES
Coffee maker shall be same model as provided in Calgary SVI #842.

GALLEY OUTLETS

The following 120 volt outlets shall be provided in the galley area:

- One (1) 120 volt, 20 amp, straight blade outlet behind the microwave.
- One (1) 120 volt, 20 amp, straight blade outlet behind the refrigerator.
- One (1) 120 volt, 20 amp, GFI straight blade outlet on the counter backsplash.

STREETSIDE INTERIOR AREA (IS4)

LAVATORY COMPARTMENT

This vehicle shall be provided with an enclosed lavatory compartment with full height hinged door with powder coated paint finish. The compartment walls and ceiling shall be covered with gray pebble grain FRP panels. A 12 volt exhaust fan with exterior vent and 12 volt compartment lighting shall be provided at the ceiling area with a switch at the door. A toilet paper roll dispenser shall be provided in the compartment.
SHOP NOTES
Exhaust fan make shall be "Fantastic"

LAVATORY TOLIET

There shall be one (1) RV style, permanent toilet(s) installed in the lavatory compartment. The toilet shall be a porcelain base model. The toilet shall be plumbed to the water system, providing fresh water for the flush cycle and a gray water tank for disposal.

SLIDING POCKET DOOR

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

SLIDING POCKET DOOR WINDOW

There shall be one (1) small non-sliding window provided on the pocket door.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

STREETSIDE INTERIOR AREA (IS5)

INTERIOR BENCH SEAT

The interior streetside rear corner shall have a bench seat provided. The bench seat base shall be fabricated of 1/8" aluminum tread plate to form an open under seat storage compartment where possible. A 3" vertical lip will be provided on floor to hold stored equipment in place below seat while vehicle is in motion. No storage will be provided on streetside due to generator compartment below.

The seat shall be fabricated of 3/4" exterior grade plywood with 3" thick foam and heavy duty vinyl covering. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat. No seat belts are provided at this location.
SHOP NOTES
Shall not be an "L" shaped seat.

CURBSIDE INTERIOR AREA (IC1/IC2)

SLIDE-OUT ROOM EXTENSION

There shall be an HWH Space Maker universal level out (ULO) hydraulic room extension on the streetside which shall extend approximately 31" as measured from the outside of the body. The extendable module shall be approximately 110.5" in length (97.5" interior usable space) and the interior height shall be approximately 11" less than the specified interior height. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section utilizes the HWH "Universal Room" mechanism known for its strength and reliability, for rooms up to 4,000 pounds. The floor is suspended above main floor which eliminates the possibility of damage to floor coverings and when slide-out provides a flat floor. Four-point attachment of the HWH Universal Room Extension draws all four corners in for positive seal when room is extended or retracted.
Systems that don't provide a flat floor when fully extended will NOT BE ACCEPTABLE. A manual override shall be provided in the event of a system failure.

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

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

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

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

The slide-out room extension must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs or slide-outs using light weight metal or fiberglass shall not be acceptable.
There shall be red/white conspicuity striping on the sides of the slideout.
SHOP NOTES
There shall be red/white conspicuity striping on the sides of the slideout.

WINDOW(S)

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

INTERIOR CABINET - OVERHEAD

There shall be two (2) 34" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

These overhead cabinets shall be located in the forward and rearward corners of the slideout, leaving a space in the center for a monitor.
SHOP NOTES
Locate in the slideout corners.

- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface. (NON-Magnetic)

SHOP NOTES
(NON-Magnetic)

INTERIOR UNDER CABINET LED LIGHTS

Three (3) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

SLIDE-OUT AREA - FULL WIDTH DESK

The slide-out area shall be provided with a full width desk which shall be 24" deep and located approximately 30" from floor. The front edge of the desk top shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

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

DESKTOP COMPONENT CONSOLE

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

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

There shall be three (3) phones mounted in the front face of the component console

There shall be three (3) radio(s) mounted in the front face of the component console
SHOP NOTES
Radio base stations shall be mounted under the desktop and the radio head shall be mounted in the desktop console.

There shall be three (3) data port(s) provided in the front face of the component console.

There shall be three (3) two-gang 12 VDC outlet(s) provided in the front face of the component console.

There shall be three (3) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.

22" LCD MONITOR(S)

Two (2) Samsung 22” multiple input, flat panel LCD monitor(s) shall be provided in the following location(s).

System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.
SHOP NOTES
These monitors are for the slide-out corner workstations.

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

LCD VIDEO DISPLAYS

One (1) Samsung Class 5 (or equal) LED commercial grade, 32” multiple input, flat panel, multi-function display(s) shall be provided and installed on completed unit.

Display(s) shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.
SHOP NOTES
This monitor shall be located at the center workstation in the slide-out.

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

INTERIOR ROLL-AROUND CHAIR TRAVEL PROVISIONS

There shall be travel provisions for three (3) customer supplied roll-around office chairs. The provisions shall include a bungee strap for each chair and a means to secure the strap to the underside of the desktop.

SLIDING POCKET DOOR

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

SLIDING POCKET DOOR WINDOW

There shall be one (1) small non-sliding window provided on the pocket door.

CURBSIDE INTERIOR AREA (IC3)

There shall be a side entry door located in this area.

ENTRY DOOR FOLDING STAIR COVER

There shall be a folding stair cover provided at the body entry door stairs. Cover shall be fabricated out of tread-plate. Cover shall be designed and installed to be folded down covering the entry door stairs to allow for maintenance to be safely performed on the data racks.

CURBSIDE INTERIOR AREA (IC4)

DATA RACK

Location of specified 19" data racks.
SHOP NOTES
There shall be two (2) data racks installed in this location.

CURBSIDE INTERIOR AREA (IC5)

SLIDE-OUT ROOM EXTENSION

There shall be an HWH Space Maker universal level out (ULO) hydraulic room extension on the streetside which shall extend approximately 31" as measured from the outside of the body. The extendable module shall be approximately 84.5" in length (71.5" interior usable space) and the interior height shall be approximately 11" less than the specified interior height. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section utilizes the HWH "Universal Room" mechanism known for its strength and reliability, for rooms up to 4,000 pounds. The floor is suspended above main floor which eliminates the possibility of damage to floor coverings and when slide-out provides a flat floor. Four-point attachment of the HWH Universal Room Extension draws all four corners in for positive seal when room is extended or retracted.
Systems that don't provide a flat floor when fully extended will NOT BE ACCEPTABLE. A manual override shall be provided in the event of a system failure.

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

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

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

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

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

There shall be red/white conspicuity striping on the sides of the slideout.
SHOP NOTES
There shall be red/white conspicuity striping on the sides of the slideout.

WINDOW(S)

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

CONFERENCE TABLE

The interior rear of apparatus shall be provided with a two-piece removable and storable conference table which shall be approximately 48" x 54" and located approximately 30" from floor. The edge of the conference table shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The table surface shall be fabricated of 3/16" smooth finish aluminum. It shall have a 2" vertical downward edge along front to cover the 2" x 2" reinforcement. There shall be 2-1/2" diameter holes with plastic edge grommet provided at center of table for wiring of future equipment located on the desk top. The desk top shall be painted with a gray hammer tone powder coat paint finish for a hard and durable surface.

When table is removed floor will be flush in all areas with no protrusions.

DESKTOP COMPONENT CONSOLE

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

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

There shall be two (2) radio(s) mounted in the front face of the component console
SHOP NOTES
Radio base stations shall be mounted under the desktop and the radio head shall be mounted in the desktop console.

There shall be four (4) data port(s) provided in the front face of the component console.

There shall be two (2) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.
SHOP NOTES
Desktop console shall be mounted to the wall and the conference table shall remain removable.

INTERIOR ROLL-AROUND CHAIR TRAVEL PROVISIONS

There shall be travel provisions for two (2) customer supplied roll-around office chairs. The provisions shall include a bungee strap for each chair and a means to secure the strap to the underside of the desktop.

LCD VIDEO DISPLAYS

One (1) Samsung Class 5 (or equal) LED commercial grade, 32" multiple input, flat panel, multi-function display(s) shall be provided and installed on completed unit.

Display(s) shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.
SHOP NOTES
This monitor shall be located on the rear wall of the body walk-in above the rear conference table desktop console.

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

INTERIOR CABINET - OVERHEAD

There shall be one (1) 34" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

These overhead cabinets shall be located in the forward and rearward corners of the slideout, leaving a space in the center for a monitor.
SHOP NOTES
Locate on the rear wall above the 32" rear wall monitor.

- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface. (NON-Magnetic)

SHOP NOTES
(NON-Magnetic)

MAGNETIC WHITEBOARD

There shall be two (2) magnetic whiteboard surface(s), approximately 30" wide x 36" tall located on the rear wall of conference room area on either side of the rear wall monitor. Whiteboards shall be as large as possible.
SHOP NOTES
Located on either side of the rear wall monitor, as large as possible.

FLIP-UP SEAT

There shall be a flip-up seat sized for three (3) person/people. The seat bottom cushion shall be mounted to a spring loaded bracket system which shall return the cushion to vertical when not in use. The cushion shall be approximately 3" thick with a wood platform for stability. The cushion shall be covered with Duraware heavy duty fabric material. This seat shall not include seat belts and therefore will not be considered a riding position.

CONFERENCE MONITOR AND SMART BOARD

Location for the specified 40" LCD monitor and Smart Board.
SHOP NOTES
This shall just be a 40" monitor and no Smartboard overlay. The monitor shall be located above the bench seat in the curbside rear slide-out.

LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC

General

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

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

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

Wiring

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

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

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

Wiring and Wire Harness Construction

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

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

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

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

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

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

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

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

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

Power Supply

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

Minimum Continuous Electrical Load

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

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

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

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

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

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

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

Electromagnetic Interference

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

Wiring Diagram

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

Low Voltage Electrical System Performance Test

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

12 VOLT MULTIPLEX CONTROL CENTER

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

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

WELDON CERTIFICATION

A letter shall be provided with bid submittal that the Contractor has successfully completed the Weldon training requirements for Level 1 of the V-MUX Certified Supplier Program and is authorized to design, build, and service V-MUX electrical systems.

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.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BATTERY SYSTEM

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

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

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

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

A master load disconnect switch shall be provided between the starter solenoid(s) and the remainder of the electrical loads on the apparatus. The starter solenoids shall be connected directly to the batteries.

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

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

A green “battery on” pilot light that is visible from the driver’s position shall be provided.

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

BATTERY SWITCH

One (1) battery "On/Off" switch in cab located within easy reach of Driver with green "BATTERY ON" pilot light that is visible from the driver’s position shall be provided. The switch and pilot light shall be supplied and installed by the cab/chassis manufacturer.

BATTERY SOLENOID

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BATTERY CHARGER

One (1) Newmar model PT-80 battery charger shall be provided ideal for charging multiple battery bank systems. The Newmar Phase Three “Smart” battery charging technology provides significant benefits over traditional float chargers whose output voltage droops under heavy loads, and fails to attain proper voltage levels recommended by battery manufactures as part of a proper charge cycle. These issues are particular significant in Emergency Vehicle applications where rapid recharge is required while powering DC loads, and reliable service life of batteries is critical. PT Series chargers feature multiple isolated outputs to charge independent battery banks.

Features;

- “Smart” circuitry provides three stage charging—bulk, absorption, float
- Gel-Cell/Flooded Lead-acid/AGM battery type switch selects optimum charge/float voltages
- Multiple isolated outputs - charge independent battery banks*
- Optional sensor adjusts output voltage based on battery temperature*
- Current limiting - charges dead batteries without overload
- Use as a power supply; can power Radios/MDT’s without a battery in line
- Built to last—rugged stainless steel case with circuitry hardened for hostile environments
- Remote meter included

BATTERY CHARGE INDICATOR

A Kussmaul 091-94-12 charge indicator display shall be provided and located near drivers’ door area. This single battery system indicator is a suppressed zero bar graph voltage display which may be installed in any 12 volt system.

SHORE POWER INLET

The shore power inlet for 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.

REAR VIEW CAMERA

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

INTERIOR LED LIGHTS

Twelve (12) OnScene Solution model #70156, 10" x 10" x 7/8", 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided throughout the vehicle. Each light shall be individually switched with a high/low intensity setting switchable at the entry door(s). In addition light(s) will be capable of a five (5) second delay after switching off.

TAIL LIGHTS

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

- Two (2) Federal amber LED QL97XF-A turn signal lights
- Two (2) Federal red LED QL97XF-R stop/tail lights
- Two (2) Federal white LED QL97XF-C back-up lights

Each of the lights above shall be mounted in a QL97MC, chrome finish bezel.

MIDSHIP MARKER/TURN SIGNAL

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

MIDSHIP TURN SIGNAL

There shall be two (2) Federal Signal 7x3 Amber LED turn signal lights provided in the rear wheel well area of the body. The lights shall be wired to the turn signal circuit.

MARKER LIGHTS

The body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

REAR BUMPER MARKER LIGHTS

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

CAB STEP LIGHTS / GROUND LIGHTS

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

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

LICENSE PLATE LIGHT

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

ELECTRONIC SIREN

The siren control head shall be supplied and installed by the cab/chassis manufacturer.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

SIDE SCENE LIGHTS

There shall be six (6) Federal QL97LEDSCENE, 9” x 7” recess mounted LED scene lights provided on the upper body. Light quantity shall be divided equally per side. Each light will have a clear lens and chrome bezel.

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

The lights shall be switched at the 12 volt control panel in the cab.

REAR SCENE LIGHTS

There shall be two (2) Federal QL97LEDSCENE, 9” x 7” surface mounted LED scene lights provided on the upper rear body. Each light will have a clear lens and chrome flange.
SHOP NOTES
LED rear scene lights.

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.

AWNING SCENE LIGHT

There shall be one (1) 7x3 LED side scene light provide on the curbside slide-out, just below the awning. The light shall offer lighting when the awning is deployed. The scene light shall be tied to the curbside scene light circuit.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

WARNING LIGHT PACKAGE

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

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

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

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

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

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

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

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

SPECIAL FIRE/POLICE WARNING LIGHT PROGRAMING

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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) Federal Signal Corporation ADX7205 AeroDynic Solaris LED lightbar permanently mounted to the cab roof. The lightbar shall include (4) 9R LED Solaris reflectors - red, (12) 6R LED Solaris reflectors - red, and (12) 6W LED Solaris LED reflectors - white.

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 12 volt control panel in the cab.

ZONE B & D - SIDE WARNING LIGHTS

There shall be four (4) Federal Signal QuadraFlare (9" x 7") LED lights (QL97SFC-RB) (Red/Blue) provided, two (2) on each side of the apparatus in the upper corners. Each light shall have a clear lens and chrome flange.

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Federal Signal QuadraFlare (9" x 7") LED lights (QL97SFC-RB) (Red/Blue) provided, one (1) on each side of the apparatus in the upper corners. Each light shall have a clear lens and chrome flange.

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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.
SHOP NOTES
There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

ZONE A - FRONT WARNING LIGHTS

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

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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

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

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

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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

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

There shall be two (2) Federal Signal QuadraFlare (6" x 4") LED lights (QL64SFC-RB) (Red/Blue) provided, one (1) on each side. Each light shall have a clear lens and chrome flange.

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

The lights shall be switched at the 12 volt control panel in the cab.

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

There shall be two (2) Federal Signal QuadraFlare (6" x 4") LED lights (QL64SFC-RB) (Red/Blue) provided, one (1) on each side. Each light shall have a clear lens and chrome flange.

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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) Federal Signal QuadraFlare (9" x 7") LED lights (QL97SFC-RB) (Red/Blue) provided, one (1) on each side. Each light shall have a clear lens and chrome flange.

There shall be programming for a "police mode" (activate red/blue lights) and programming for a "fire mode" (activate red side of lights only).

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

LINE VOLTAGE ELECTRICAL SYSTEM

DIESEL GENERATOR

An Onan model SD 20.0HDKAW-2008A, diesel driven generator shall be installed on the vehicle. The generator shall be installed so that fumes, vapors, heat, and vibrations do not enter the driving or crew compartment. The generator shall be rated at 20,000 watts continuous at 120/240 VAC, 166/83 amps, single phase. Current frequency shall be stable at 60 hertz.

Generator features shall include:

- 4-cylinder Kubota V2403-M diesel engine
- Brushless alternator
- Vibration isolated control box
- Muffler USDA approved spark arrestor
- Internal radiator
- Bottom mount radiator
- Intake silencer
- Replaceable element air cleaner
- Maintenance-free electronic governor
- Digital voltage regulation
- Regulated-voltage 30 A battery charging
- Hourmeter
- Instant one touch stop
- Electric fuel pump
- Vertically mounted fuel filter, spin on cartridge
- Full flow oil filter
- Automatic timed glow plugs for quick easy start
- Overvoltage, low oil pressure, overtemp, overspeed, overload, and AC alternator overtemp safeties

Overall size of generator shall 49" L x 24" W x 28" H and weigh 890 lbs.

Sound: 60 Hz (single phase) 81.9 dB(A) at 10 ft before installation, full load.

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

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

Permanently installed generators shall have readily accessible engine oil drain provisions or piping to a remote location for oil changing.

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

WARRANTY PERIOD

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

GENERATOR MOUNTING

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

FUEL SYSTEM

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

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

STARTING SYSTEM

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

EXHAUST SYSTEM

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

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

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

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

MANUALS AND SCHEMATICS

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

GENERATOR COMPARTMENT INSULATION

The generator compartment shall be provided with heavy duty sound insulation applied to walls and ceiling. Insulation shall have a high temperatures rating with a foil facing and attached to walls with a positive type fasteners, glue type adhesive shall not be acceptable.
SHOP NOTES
There must be an emphasis on "sound deadening" the generator compartment so there is as little noise as possible in the walk-in area.

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.

- 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.

GENERATOR CONTROLS

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

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

SHOP NOTES
Cab controls shall be via the VMUX ILO a rocker style switch.

GENERATOR CONTROLS

In addition to generator controls provided at the generator, there shall be controls provided in the interior walk-in area at the galley area. The following controls shall be provided:

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

SHOP NOTES
There shall be a low fuel light with the body walk-in controls at the galley area.

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 INLET - INVERTER

One (1) Kussmaul 30 amp "Super Auto-Eject" shore power inlet shall be furnished and installed. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. The shore power inlet shall provide an external power source for apparatus electrical circuits. A matching 30 ampere plug shall be shipped with the apparatus for District of Saanich supplied external power source wiring.

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

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

- The outlet cover shall be yellow.
- The shore power plug shall be located near the Driver door area.

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

SHORE POWER INLET - 100 AMP

A 100 ampere, 240 VAC, single phase shore power inlet shall be provided on the apparatus to provide an external power source for apparatus electrical circuits. A matching 100 ampere plug shall be shipped with the apparatus for District of Saanich supplied external power source wiring.

Shore power shall be wired to apparatus main circuit breaker in the circuit breaker distribution panel and feed all 120/240 electrical circuits on apparatus.

To protect both the generator and external power source from back feed, a manual switch shall be installed at the generator control panel, to cut off the connection between the apparatus circuits and the generator when the external power source plug is in use.

SHORE POWER DOOR

A Cast Products pass thru door assembly shall be provided and located on the floor of the compartment, adjacent to the shore power receptacle. The door shall have a spring-loaded hinged door with a rubber slotted gasket to minimize weather exposure when the door is in use. Door shall be wired to the "Hazard Warning Light" in cab to indicate that truck is connected to shore power system.

OUTLETS AND CIRCUITS

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

Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

Two (2) 120 volt exterior outlets, one (1) each side rear of body.

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

INVERTER

A Newmar model 430-3000-0 inverter shall be provided on vehicle that provides 3,000 continuous watts, 105 A battery charger rating, 120 VAC, 60 cycle output from 12 VDC. Inverter shall have a full function remote monitor/control panel. Unit shall be 10" H x 17" W x 16" H, and weigh 95 lbs.

An innovative new series of Inverter-Chargers called “Intelligence Plus” because of their multi-function capability to produce supplemental power for peak loads when running shore and generator sources and can limit its own AC power consumption when charging batteries, preventing AC system overloads. Integrated with a programmable smart 3-step high power charger, temperature compensation, alarms and other diagnostics, it has intelligence plus heavy duty electrical and mechanical design standards for high performance and survival in the rugged mobile environment.

The alternator and/or battery system shall be adequate to provide power for continuous operation for a minimum of 2 hours at full output.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

Features;

- Heavy Duty Grade design and construction
- Pure sine “Perfect Wave” output runs sensitive electronics
- High surge ratings for motor starting
- Programmable input and output to match user profile and power availability
- High amperage three stage charger recovers batteries quickly
- Fast Transfer from stand by to full power status provides AC back up as UPS
- Supplements shore or generator power for peak loads
- Digital display on unit and remote provides easy monitoring
- Versatile bulk head or horizontal mounting options
- Rated for continuous output to 70°C
- Produces true sine wave, with excellent voltage regulation, and frequency stabilization
- Programmable to supplement shore and generator sources for peak load sharing
- High surge current capability for motor starting

Battery Charging;

- High Amperage temperature compensated, 3 step charger for main and auxiliary battery banks
- Programmable voltage and timer settings for virtually any battery type
- Programmable input current limit prevents overload of AC input source when charging dead batteries.

INVERTER BATTERY SUPPLY

There shall be four (4) deep cycle batteries provided as the 12volt power source for the onboard inverter. The batteries shall incorporate Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.

INVERTER BATTERY SUPPLY - VSR

There shall be one (1) Voltage Sensitive Relay (VSR) provided with the deep cycle batteries. The VSR allows two batteries to be charged at the same time. When the engine is started and the start battery reaches 13.7 volts, the VSR engages, allowing two battery banks (start and inverter supply) to be charged simultaneously. When the voltage drops below 12.8 volts (e.g. the engine is stopped), the VSR disengages, separating the batteries. This system eliminates the possibility of draining the wrong battery and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes.

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

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

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

Conformance with National Electrical Code

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

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

Location Ratings

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

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

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

Grounding

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

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

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

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

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

Bonding

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

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

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

Ground Fault Circuit Interrupters

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

Power Source General Requirements

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

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

Power Source Rating

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

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

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

Instrumentation

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

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

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

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

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

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

Operation

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

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

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

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

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

Power Supply Assembly

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

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent 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 over current devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

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

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

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

Branch Circuit Overcurrent Protection

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

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

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

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

Panelboards

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

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

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

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

Wiring Methods

Fixed wiring systems shall be limited to the following:

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

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

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

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

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

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

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

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

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

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

Wiring Identification

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

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

Where 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*.

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;

1. Pictorial representations of circuit logic for all electrical components and wiring
2. Circuit identification
3. Connector pin identification
4. Zone location of electrical components
5. Safety interlocks
6. Alternator–battery power distribution circuits
7. Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

120/240 VAC SCENE LIGHTING

LIGHT TOWER

One (1) Command Light, CL Series light tower(s) shall be provided and installed on the completed unit. A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901.

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

The light tower shall extend 130" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light tower shall be approximately 40" wide x 73" long x 12" high and weigh approximately 310 pounds.

Light Tower Construction and Design

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

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

Light Tower Electrical System

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

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

Light Tower Floodlights

The Command Light CL605 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Command Light
Number of lamp heads:	Six (6)
Voltage:	120/240 volts
Watts of each lamp head:	500 watt
Total watts of light tower:	3,000 watts
Configuration:	The light heads shall be mounted with three (3) on each side of the light tower, giving two (2) vertical lines of three (3) when the lights are in the upright position.

Light Tower Backlight Option

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

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

Light Tower Paint

The light tower shall be electrostatically powder coated with a hammer tone gray color.

Light Tower Controls

The light tower shall be operated with a hand-held 12-foot umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The remote control shall be located per the itemized compartment list and include;

Three (3) switches, one (1) for each light bank.
One (1) light bank rotation switch.
One (1) switch for elevating lower and upper stage.
One (1) indicator light to indicate when light bank is out of the roof nesting position.
One (1) indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

The specified light tower(s) shall be mounted on the roof of the apparatus body.

INFORMATION TECHNOLOGY (IT) SYSTEMS

All information technology systems specified below shall be supplied, installed, and supported by the contractor including, but not limited to the design, inter-connecting wiring, and integration of all specified systems. Under no circumstances will the installation of these systems be subcontracted

The following information technology systems shall be provided and installed on completed unit as follows;

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

DATA RACK #1

MIDDLE ATLANTIC 40U DATA RACK

There shall be one (1) Middle Atlantic Products model # MRK-4031, EIA compliant 19” gangable equipment rack(s) provided and installed on completed vehicle.

Overall dimensions shall be 76.125” H x 22.0” W x 31” D. Useable height shall be 40 rack spaces, useable depth shall be 24”. Fully welded construction shall provide a static capacity of 10,000 lbs. and a UL Listed load capacity of 2,500 lbs.

Rack shall be constructed of the following materials: top and bottom shall be 14-gauge steel, horizontal braces shall be 16-gauge steel, rear door shall be 18-gauge steel and all structural elements shall be finished in a durable black powder coat.

Rack shall come equipped with two pairs of 11-gauge steel rack rail with tapped 10-32 mounting holes in universal EIA spacing, black e-coat finish and numbered rack spaces.

Rack shall have removable split rear knockout panels with 1/2”, 3/4”, 1” and 1-1/2” electrical knockouts and top BNC knockouts for UHF/VHF antenna.

A lightly smoked Plexiglas front door shall be provided with black textured powder coat finish and key lock. The doorshall be capable of hinging on either the left or the right of the rack.

Integrated fan top includes 4.5" fans, fan guards and proportional speed thermostatic fan controller.

The PD-920R-NS rack mount power distribution unit is equipped with 8 circuit breaker protected rear outlets (NEMA 5-20R), and one front outlet (NEMA 5-15R). An illuminated combination power switch/circuit breaker is located on the front panel. UL listed in the US and Canada. Occupies one rack space.

The APC Uninterruptible Power Supply (UPS) provides protection for electronic equipment from utility power blackouts, brownouts, sags and surges. The UPS filters small utility line fluctuations and isolates electronic equipment from large disturbances by internally disconnecting from utility line power. The UPS provides continuous power from the batteries until utility power returns to safe levels or the batteries are fully discharged.

RACK MOUNT MONITOR AND KEYBOARD

A monitor and keyboard shall not be required in specified data rack.

UN-MANAGED DATA RACK SWITCH

One (1) Cisco Small Business 100 Series (or equal) 24-port 10/100/1000 unmanaged rackmount Ethernet switch shall be provided and installed in specified data rack and connected to on-board network system with the following features;

The Cisco 100 Series unmanaged switches are part of the Cisco Small Business networking solutions, that provide wire-speed Fast Ethernet and Gigabit Ethernet connectivity to connect your small business. They use less power and provide the robust, reliable connectivity your business demands, as well as support for advanced features such as quality of service (QoS), all in a switch that you can set up yourself, in minutes. A business-class, affordable network solution, Cisco 100 Series switches bring the proven reliability and investment protection of Cisco networking solutions to your small business.

DATA RACK ROUTER

A data rack router shall not be required in specified data rack.

RACK MOUNT COMPUTER SERVER

A District of Saanich supplied rack mounted slide-out 1U space drawer and a server type computer and monitor including all necessary cabling shall be provided and installed by Contractor in specified 19" data rack and connected to network.

Wi-Fi NETWORK

A Cisco 1242AG Wi-Fi network shall be provided on the completed unit. System shall include one (1) internal antenna and one (1) external antenna to provide the apparatus with WIFI.

DATA RACK #2

MIDDLE ATLANTIC 40U DATA RACK

There shall be one (1) Middle Atlantic Products model # MRK-4031, EIA compliant 19” gangable equipment rack(s) provided and installed on completed vehicle.

Overall dimensions shall be 76.125” H x 22.0” W x 31” D. Useable height shall be 40 rack spaces, useable depth shall be 24”. Fully welded construction shall provide a static capacity of 10,000 lbs. and a UL Listed load capacity of 2,500 lbs.

Rack shall be constructed of the following materials: top and bottom shall be 14-gauge steel, horizontal braces shall be 16-gauge steel, rear door shall be 18-gauge steel and all structural elements shall be finished in a durable black powder coat.

Rack shall come equipped with two pairs of 11-gauge steel rack rail with tapped 10-32 mounting holes in universal EIA spacing, black e-coat finish and numbered rack spaces.

Rack shall have removable split rear knockout panels with 1/2”, 3/4”, 1” and 1-1/2” electrical knockouts and top BNC knockouts for UHF/VHF antenna.

A solid steel front door shall be provided with black textured powder coat finish and key lock. The door shall be capable of hinging on either the left or the right of the rack.

Integrated fan top includes 4.5" fans, fan guards and proportional speed thermostatic fan controller.

The PD-920R-NS rack mount power distribution unit is equipped with 8 circuit breaker protected rear outlets (NEMA 5-20R), and one front outlet (NEMA 5-15R). An illuminated combination power switch/circuit breaker is located on the front panel. UL listed in the US and Canada. Occupies one rack space.

The APC Uninterruptible Power Supply (UPS) provides protection for electronic equipment from utility power blackouts, brownouts, sags and surges. The UPS filters small utility line fluctuations and isolates electronic equipment from large disturbances by internally disconnecting from utility line power. The UPS provides continuous power from the batteries until utility power returns to safe levels or the batteries are fully discharged.

RACK MOUNT MONITOR AND KEYBOARD

A monitor and keyboard shall not be required in specified data rack.

UN-MANAGED DATA RACK SWITCH

One (1) Cisco Small Business 100 Series (or equal) 24-port 10/100/1000 unmanaged rackmount Ethernet switch shall be provided and installed in specified data rack and connected to on-board network system with the following features;

The Cisco 100 Series unmanaged switches are part of the Cisco Small Business networking solutions, that provide wire-speed Fast Ethernet and Gigabit Ethernet connectivity to connect your small business. They use less power and provide the robust, reliable connectivity your business demands, as well as support for advanced features such as quality of service (QoS), all in a switch that you can set up yourself, in minutes. A business-class, affordable network solution, Cisco 100 Series switches bring the proven reliability and investment protection of Cisco networking solutions to your small business.

DATA RACK ROUTER

A data rack router shall not be required in specified data rack.

RACK MOUNT COMPUTER SERVER

A server computer shall not be required in specified data rack.

RACK MOUNT MONITOR AND KEYBOARD

A monitor and keyboard shall not be required in specified data rack.

DATA SATELLITE PRE-WIRE

There shall be a pre-wire provided in the apparatus for a Data Satellite with NextGen Technology.

CELLULAR ROUTER

A WAAV AirBox X2 Cellular Router shall be provided and installed in data rack to allow broadband Internet connectivity over two (2) 3G cellular network connections.

- 2x Integrated Cellular Modems -- EVDO Rev A and/or HSPA
- 2x External Cellular FME Antenna Connectors
- 2x 10/100 Ethernet
- 802.11g/b WiFi w/ External RP-TNC Antenna Connector
- External GPS Ready
- Load Balancing
- Connection Persistence
- Dead-Link Detection
- VPN Passthrough
- DynDNS
- Web Configuration Interface
- Remote Configuration Optional
- Temp 0 - 60 C

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

COMPUTERS

No PC or desktop style computer(s) shall be required on completed unit.
SHOP NOTES
The computer provider (SVI/Customer) will be determined at the pre-paint inspection.

COMPUTERS

No laptop style computer(s) shall be required on completed unit.
SHOP NOTES
The computer provider (SVI/Customer) will be determined at the pre-paint inspection.

ELECTRONIC PATCH PANEL

An electronic patch panel shall be provided in the exterior compartment upper (C2). The followings audio/video input/outputs shall be properly labeled on panel and supplied as follows;

- One (1) pair RCA audio inputs
- One (1) pair RCA audio outputs
- One (1) RCA video inputs
- One (1) RCA video outputs
- Two (2) CAT 5 inputs
- Two (2) CAT 5 outputs
- Two (2) standard 2 pair phone jack inputs
- Two (2) standard 2 pair phone jack outputs
- Two (2) USB Inputs
- One (1) phone
- One (1) radio
- One (1) Data Port

All wiring shall terminate inside the specified data rack or cabinet.
SHOP NOTES
This patch panel shall be located in Upper (C2)

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

PHONE SYSTEM

A Panasonic KX-TA824 Advanced Hybrid Telephone System shall be provided and installed on completed unit. System is expressly designed to streamline communications by organizing your phone lines into a cohesive system and making a host of advanced features available to each extension. The KX-TA824 offers a variety of options to enable customized solutions. You can assign specific lines to each phone, make office-to-office intercom calls, forward your calls to an outside location or your cell phone, page all system extensions, and much more. So you can tailor your telephone system to the varied needs of your office.

This powerful combination of flexibility, high performance and value has made Panasonic Communication Systems number one in Key Telephone/Hybrid Systems. You can expand your system as your needs grow. The KX-TA824 system works with standard telephone lines, so you don't need to upgrade your phone service. It features a base configuration of three central office lines and eight stations. It can be easily expanded to up to eight central office (CO) lines and 24 stations with the addition of two plug-in cards (models KX-TA82470, KX-TA82483 and KX-TA82481).

All telephone lines and cellular antenna cables shall be installed in ENT conduit.

The telephone system shall include the following hardware;

- One (1) Panasonic KX-TA824 3X8 control unit/PBX.
- One (1) Panasonic KX-TA82481 2X8 expansion card.
- One (1) Panasonic KX-TA82491 DISA expansion card.
- One (1) Panasonic KX-TA82483 3X8 expansion card.
- Three (3) Panasonic KX-TA82493 caller ID cards.
- Eleven (11) Panasonic KX-7731B programming telephone(s) with intercom and P/A features mounted on wall or desktop, location per District of Saanich.

SHOP NOTES

Phone locations as follows: one (1) in the front cab area on the engine tunnel, two (2) in the crew cab area (one at each work station), three (3) in the streetside slideout (one at each work station). three (3) in the curbside slideout (one at each work station), one (1) at the rear conference table and one (1) in the upper (C2) exterior compartment.

- One (1) of the above specified phone(s) shall be located in upper (C2) exterior compartment

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

PHONE SYSTEM CONNECTIVITY

Six (6) Telular SX5 Terminal(s) shall be provided and installed on completed unit. The SX5 is Telular's second generation solution for digital fixed cellular communications. Utilizing either the CDMA or GSM cellular networks, the SX5 provides exceptional voice quality, analog fax, packet data, circuit-switched data, and PC fax. It can be utilized in a number of different applications including wireline replacement, portable dial tone, least cost routing, and telemetry. The Telular SX5 Fixed Cellular Terminal is dual-band and can provide access to the Internet and email at rates as high as 144 Kbps.
Features/Benefits:

- Voice Communication
- CDMA2000 1XRTT or GPRS Packet Data (up to 144 Kbps)
- Group 3 Analog Fax*
- Circuit-Switched Data (up to 14.4 Kbps)
- PC Fax (up to 14.4 Kbps)*
- GPS/E-911 support
- Voicemail, caller ID, call-waiting, and call-forwarding*
- Immediate primary telephone access and availability of extra lines
- Flexible power supply and battery backup options to maximize performance
- 7 LEDs for signal strength, message alert and terminal status
- Automatic end-of-dialing (no SEND key)
- Dual-band CDMA (800/1900 MHz) and GSM (850/1900 MHz)

(*Carrier and network dependent).

The service fees shall be the responsibility of the District of Saanich.
SHOP NOTES
There shall be zero (0) fax system terminals.

- The above specified Telular unit(s) shall be mounted on shelf in specified data rack.

SATELITTE PHONE PRE-WIRE

There shall be a satellite phone pre-wire provided with the specified phone system. The pre-wire shall include the antenna and cabling.

EXTERIOR VIDEO SYSTEM

Two (2) Voyager VCMS series (or equal) fixed body mounted camera(s) shall be provided and located to monitor the perimeter of vehicle. If a back-up camera is specified, it shall also be fed into the exterior video monitoring system.

If a video recording system is specified, the camera(s) shall be wired into recording system.

EXTERIOR VIDEO SYSTEM

One (1) Bosch LTC1461/21 (or equal) camera(s) shall be provided on the air mast and positioned to monitor the exterior perimeter of the apparatus.

If a video recording system is specified, the camera(s) shall be wired into recording system.

INTERIOR VIDEO SYSTEM

No interior wall or ceiling mounted video monitoring system shall be required on completed unit.

TV SATELLITE ANTENNA

One (1) RF Mogul RFM-3100 (or equal) satellite receiver shall be provided on roof of body. This satellite receiver is designed exclusively for mobile users (RV's, boats, buses). The RF Mogul unit is 25 1/2" W x 20" H, and weighs 28 pounds. The receiver is equipped with an automatic controller so that the antenna automatically aims at the satellite. This automatic acquiring model is also designed to receive Bell ExpressVu programming.

The satellite shall be located so that it does not interfere with operation of other roof mounted equipment.

Satellite dish shall be provided with dual LNB capability and wired so that two (2) satellite receiver(s) can be used with system Bell ExpressVu. The service fees shall be the responsibility of the District of Saanich.

SATELLITE HD TV RECEIVERS

Two (2) Bell ExpressVu satellite HD TV receivers shall be provided and installed in data rack or cabinet on the completed unit.

Units shall be complete and fully operational, including all required cabling, 120 volt AC wiring, and cable connections. All paperwork and software provided with purchased unit shall be provided in a plastic sleeve attached to unit when delivered.

Receivers shall be wired to the audio/video control system, if specified.

LCD VIDEO DISPLAY

One (1) Samsung Series 6 (or equal) LED commercial grade, 40" multiple input, flat panel, multi-function display(s) shall be provided and installed on completed unit.

Display(s) shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.

SHOP NOTES

This display shall be used in place of the discontinued Smartboard. The display shall be wired to the specified Smart Technologies Wireless Slate. Monitor shall be mounted in the rear curbside slide-out above the bench seat.

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

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

WIRELESS SLATE

One (1) SMART Technologies WS200-1 wireless slate(s) shall be provided with specified interactive display(s) or TV monitor(s) with the following features;

- Size 10 3/8" W × 8 1/2" H × 1" D
- Software Includes SMART Product Drivers. Updates are available fromsmarttech.com/downloads.
- Operating system requirements Windows® operating systems and Mac OS X operating system software.
- Communication interface Bluetooth® wireless technology 2.1 with EDR (Enhanced Data Rate)
- Electro-magnetic resonance technology Enables you to rest your hand and write naturally on the workspace without interfering with the digital ink.
- Maximum report rate 133 points per second
- Bluetooth wireless adapter Class 2 adapter connects wirelessly with a range of 32' (10 m).
- Underlay and icon strip You can select from many common tools. The default tools are the pointer, eraser, four colors of digital ink, right-click, keyboard, screen capture and control panel. You can customize the icon strip to include the tools you use the most.
- Anti-slip feet Four anti-slip feet keep the wireless slate stable on flat surfaces.
- Buttons Three customizable buttons. The default button settings are Previous Page, start SMART Notebook and Next Page.
- Pen Battery-free pen. The wireless slate detects the pen from a distance of 4.5 mm. Pen accuracy is 0.5 mm.
- Power requirements 5V DC, USB. Draws 500 mA while charging.
- Cables USB charging cable
- Battery Rechargeable lithium ion battery provides at least 24 hours of continuous use per charge. 6.5 hours for a full recharge. 3.7V, 1800 mA
- Environmental compliance RoHS (Europe), EU WEEE
- Regulatory certifications FCC, CE, C-Tick, CB, IC
- Warranty Two-year limited warranty

BLU-RAY PLAYER

There shall be one (1) Samsung Smart Blu-Ray (or equal) player provided with the specified video system.

APPLE TV DEVICE

There shall be one (1) Apple TV Device provided with the specified video system.

VIDEO CONFERENCING PRE-WIRE

There shall be a video conferencing pre-wire provided on the apparatus.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

BOSCH AUDIO/VIDEO RECORDER

There shall be one (1) Bosch DVR-650-16A200 Digital Video Recorder with internal DVD writer, 16 channels, and 2 TB storage provided and installed on completed vehicle.

The Bosch 600 series offers high-quality, real-time digital recording on up to 16 channels. View and control cameras, handle alarms, and check device status all through one convenient interface. In addition, the the 600 series offers:

- Improved clarity for better recognition on recorded video
- Longer recording time
- An extended range of features
- Multiple interfacing options
- Powerful search functions
- Synchronous audio
- Remote configuration and management
- Low maintenance requirements
- Lower total cost of ownership

Image quality;
The image quality of the Bosch 600 series is excellent. Highly efficient MPEG-4 compression significantly reduces bandwidth and storage requirements compared to JPEG and wavelet technologies. Store more detail and extend retention periods while reducing overall storage costs.

The Bosch 600 series provides real-time recording in CIF resolution on all channels simultaneously. Use 4CIF to capture more detail in every scene for those applications where even greater clarity is needed.

Multiple control methods;
A variety of control methods contribute to an outstanding system with a high degree of operational flexibility. Bosch's IntuiKey keyboard places an easy-to-use system control at your fingertips. Alternatively, use the Bosch 600 series front panel control buttons and jog dial, IR remote control, or a standard mouse for quick access to the system.

In addition to these control options, use the intuitive PC based Divar MR Control Center software to easily manage multiple Bosch 600 series in your surveillance system. The Bosch 600 series Control Center provides complete remote management, including live viewing and control, playback, configuration, and remote alarm notification. With the Control Center, all operation and control is centralized to create a highly scalable video management solution.

VIDEO ENCODER

An Axis Communications model Q7401 video encoder shall be provided and integrated into video sytem to facilitate JPEG and MPEG video streaming.

The video encoder (also referred to as video server) digitizes analog video signals and sends digital images directly over an IP network, such as a LAN, intranet or Internet. It essentially turns an analog video system into a network video system and enables users to view live images using a Web browser or a video management software on any local or remote computer on a network.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

MATRIX SWITCHER - COMPOSITE

An Extron MAV Plus 1616 (or equal) AV matrix switcher shall be provided and integrated into the specified video system.

The Extron MAV Plus 1616 AV matrix switchers are designed to route composite video and stereo audio signals. Both 16x16 matrix switchers feature 150 MHz (-3 dB) video bandwidth, fully loaded, backlit I/O selection buttons, and Ethernet control technology.

Ethernet Control;
The MAV Plus Series is equipped with an integrated, high performance Web server that provides technical support personnel with the ability to receive service and failure messages through an e-mail-enabled cell phone, PDA, pager, or e-mail account. Utilizing Ethernet control, the help desk can also view embedded Web pages to manage, monitor, and troubleshoot the switcher for the following:

AV Resource Management;
- Remotely select input and output ties for audio only, video only, or audio and video
- Name and select global I/O presets
- Set audio input and output volume levels
- Upload firmware updates via the Internet

Operating Status and Diagnostics;
- Monitor power supply voltages
- Monitor internal product operating temperature
- Recall firmware revision and other data for improved Help Desk support
- Obtain immediate notification via e-mail for power supply failure, overheating, and other critical service information

MATRIX SWITCHER HD

There shall be one Extron DPX 88 HDMI Matrix Switcher provided and intergrated into the specified video system. The Extron DPX 88 will be supplied to allow the video system to be capable of high definition.

MESH SYSTEM PRE-WIRE

There shall be a Mesh System pre-wire provide with the specified video system.

HELECOPTER DOWNLINK PRE-WIRE

There shall be a Helecopter Downlink system pre-wire provided with the specified video system.
SHOP NOTES
Customer to clarify whether downlink will be for RCMP or Forestry.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

AUDIO VIDEO CONTROL AND AUTOMATION SYSTEM

One (1) AMX NI-3100 (or equal) control station with RS232/422/485 control shall be used to operate and control the on-board audio and video system equipment.

With the ability to integrate a large number of devices, the NI-3100 controls a wide variety of components including audio/video, projectors, DVD and Blu-Ray players, lights, thermostats and other electronic equipment. With these technology-driven environments, the NI-3100 also provides solutions for future expansion and enables the addition of more devices and control capabilities. Offers higher performance with an ultra-fast processor, 64MB of onboard RAM and is AMX Device Discovery enabled.

The NI-3100 unit is ideally suited to the requirements of larger areas or multiple rooms with advanced control and automation features. Standard features as follows;

- 7 Configurable RS-232 / RS-422 / RS-485 Serial ports
- 8 Relays
- 8 IR / Serial ports
- 8 Digital I/O ports
- 2 Communication Networks: AxLink and Ethernet (TCP/IP)
- 404 MIPS processor speed
- 64 MB RAM or 256 MB RAM
- 2 GB CompactFlash (upgradeable to 4 GB)
- 1 MB Non-Volatile Memory
- AMX Device Discovery enabled
- JITC Compliant

System shall be capable of routing all audio/video inputs (including Satellite TV, video recording outputs, and camera system). Any input source can be displayed at any of the specified monitors.

(Note: This eliminates the need for the Pelco matrix or keyboard/joystick, if specified).

Five (5) AMX NXD500i (or equal), 5" color touch-panel interface unit(s) shall be provided and located as follows;

- One (1) in the Cab Command console
- Two (2) in the forward Streetside Slide-out
- Two (2) in the forward Curbside Desk
- One (1) in the rear Conference Area
- One (1) in outside Curbside Compartment

The interface units shall communicate with the NI-3100 control station which shall in turn IR and RS-232 compatible components. The control shall be programmed with custom code to offer each interface unit with an interactive menu. The menus shall include screens to operate the camera system, if specified, and interface unit with the ability to assign one as the master and steal control at any time.

The control code shall also include signal instructions to allow the operators to interact with any specified audio and video systems, TV receivers, and display screens.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

SUPPLIED RADIOS

Eighteen (18) radios and all necessary face plates, cabling, and antennas shall be provided and installed by District of Saanich after delivery of completed unit.

Contractor shall provide only the proper 12 VDC power and grounding for each radio location.

Speaker shut-off swtiches shall be provided for all radio speakers.
SHOP NOTES
Radio locations shall be as follows: four (4) radios in the cab with a remote head for the driver and the exterior compartment upper (C2), six (6) radios per slide-out for a total of twelve (12) in the command area (two radios at each slide-out work station), two (2) radios at the rear conference room desktop console.

SIGTRONICS RADIO INTERFACE

There shall be eight (8) Sigtronics radio interface stations with headsets provided with the radio systems. Each user shall be capable of using a headset with their dedicated radio.

SEVEN (7) POSITION ANTENNA RAIL

Two (2) radio antenna rail(s) shall be provided and installed on roof of vehicle. Each rail shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Seven (7) antenna bases shall be provided and installed in each rail. Each antenna base shall include enough cable to reach radio location plus a service loop of at least 3' of LMR195 flexible communications cable. The antenna wiring shall enter the vehicle roof at a single point under the end of the rail. The end of each radio antenna shall be routed to radio mounting locations, or as determined by the District of Saanich.

Due to the various configurations of antenna whips, the contractor shall provide the antenna base only, and District of Saanich shall provide the antenna whip.
SHOP NOTES
Antenna routing locations shall be determined at the pre-paint inspection.

COMMAND CAMERA SYSTEM

There shall be one (1) Bosch MIC-550-ALB36N with Pan-Tilt-Zoom (PTZ), NTSC with integrated wiper and heater provided and installed on the specified mast. The camera system shall be a high resolution unit with Day/Night functionality and a 36x optical zoom lens.

DISTRICT OF SAANICH
COMMAND VEHICLE
PRODUCTION SPECIFICATION SVI #861

TELESCOPING PNEUMATIC MAST

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

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

A pneumatic kit to raise and lower the mast shall include air control valve, 0-160 psig air valve, regulator, 0-30 psig air gauge.

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

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

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

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

MODEL 7-42 SPECIFICATIONS

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

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

The elevating mast shall have one (1) strobe indicator located on the top of the upper section below camera.

The lens color for the strobe light shall be green.

MAST MOUNTING - EXTERNAL

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

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

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

MAST COVER

The mast enclosure shall be painted same as body color(s).
SHOP NOTES
The air mast cover shall be incorporated into the rear bumper compartment.

ATOMIC CLOCK SYSTEM

Three (3) Franklin Atomic single line atomic clock with date systems shall be provided on completed unit. Three (3) large red LED displays shall be provided as follows;

- One (1) in rear cab area
- One (1) in front section of body
- One (1) in rear section of body

PHONE AND NETWORK CABLING STANDARDS

If a telephone or fax machine is specified it will be connected to the central phone system from the RJ-11 wall jacks and wired through to the data rack or technical cabinet using yellow Category 6, 4 pair twisted copper cabling with yellow boot ends.

If a computer network is specified it will be connected to the network switch location, if specified from the RJ-45 wall jacks wired through to the data rack or technical cabinet using blue Category 6, 4 pair twisted copper cabling with blue boot ends. The pin pair assignments will be based on the T568B standard configuration. The termination ends in shall be RJ-45 male ends and connected to the network switch.
Only Category 6, 4 pair twisted copper cable shall be used for all computer cabling for improved transmission performance and superior immunity from external noise. All wiring shall be installed to Institute of Electrical and Electronics Engineers (IEEE) 802 standards.

All Category 6 cable must be properly installed and terminated to meet specifications. Incorrect installation practices include kinking or bending the cable too tightly will not be allowed. The cable bend radius should be no less than 4 times the outer diameter of the cable. Incorrect termination practices include untwisting the wire pairs or stripping the outer jacket back too far will not be allowed. When used for 10/100/1000 BASE-T, the maximum allowed length of a Category 6 cable is 100 meters (330 ft). All cabling shall be properly labeled at both termination ends for proper identification in future.

The running of Category 6 cabling in the same loom with any VAC wiring will not be allowed.

WIRING CHANNELS

Minimum 4" x 4" wiring channels shall be provided directly below the desk tops along the outside walls for computer, radio, and communications wiring. The top of desk tops shall have minimum 3" diameter openings that drop directly into wiring channel. The wiring channels shall have openings for future wiring installation and access. The wiring channels shall run as direct as possible to the data rack or technical cabinet location with several cross overs provided in roof structure for running wiring across body.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 4,000 lbs. of District of Saanich provided loose equipment based on a 30,001 - 40,000 pound gross vehicle weight rating.

EQUIPMENT

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

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.

- Two (2) Streamlight FireBox halogen flashlight(s) shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have a 8 watt halogen spotlight style bulb and reflector with 2 ultra-bright LED taillights. The flashlight(s) two (2) be wired to battery direct unless otherwise specified by District of Saanich.

  The flashlight(s) shall be mounted on the completed unit, the exact mounting location shall be determined at the pre-paint inspection.

SHOP NOTES
Locations determined at pre-paint.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901, section 10.5.1 shall be supplied and mounted by District of Saanich before the unit is placed in emergency service.