# Vancouver Police Service
# Command
## Production Specification

**Contents**

**INTERNET IN-PROCESS SITE**

The Bidder shall post and maintain a website where the Vancouver Police Department will be able to view digital images of their apparatus as its being manufactured. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of the apparatus.

**VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS**

The cab/chassis shall be equipped with a stability control system. The system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer and individual wheel brake controls.

**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
4) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
5) Certification of compliance of the optical warning system
6) Siren manufacturer's certification of the siren
7) Written load analysis and results of the electrical system performance tests
8) Certification of slip resistance of all stepping, standing, and walking surfaces
9) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
10) 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
11) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
12) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
13) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
14) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
15) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
16) When the apparatus is equipped with a water tank, the certification of water tank capacity
17) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
18) 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
19) 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
20) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
21) If the apparatus has a line voltage power source, the certification of the test for the power source
22) 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
23) 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
24) Overall apparatus operating instructions
11) Safety considerations
12) Limitations of use
13) Inspection procedures
14) Recommended service procedures
15) Troubleshooting guide
16) Apparatus body, chassis and other component manufacturer's warranties
17) Special data required by this standard
18) 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.

There shall be three (3) printed copies of the manual provided with the apparatus.

**CUSTOM OPERATIONS MANUAL**

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

In addition to the manufacturers record of apparatus construction details, and the operations and service manuals, a custom operations manual shall be provided including the following information;

The operations manual shall be specific to the manufacture of the Vancouver Police Department vehicle shall be developed. The manual shall detail the steps needed to operate all of the components involved to utilize complete functionality of the vehicle. Each device will have the appropriate start/stop sequences detailed for correct usage. Also detailed will be the appropriate Cautions, Warnings, and Dangers that relate to operating the vehicle. The manual will be prepared in a letter size 8.5" x11" format and presented in a three-ring binder. Color photos and diagrams of key components will be included with the text.

Included will be tabloid sized 11" x 17" detailed flow charts for instruction on operating major components. The inventory of equipment belonging to Vancouver Police Department shall be detailed by compartment location. The manual shall be separated by section by tabs. The manual shall contain a table of contents and index.

A CD containing an Adobe Acrobat file (PDF) of the manual shall be supplied for use on the workstations in the vehicle and for printing additional copies.

**STATEMENTOF EXCEPTIONS**

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

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

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

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

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

**CARRYING CAPACITY**

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

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

### TEST SEQUENCE

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

### 1. RESERVE CAPACITY TEST

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

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

**2. ALTERNATOR PERFORMANCE TEST**

**TEST AT IDLE**

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

**TEST AT FULL LOAD**

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

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

**3. LOW VOLTAGE ALARM TEST**

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

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

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

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

**LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

**DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

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

**UL 120/240 VAC CERTIFICATION**

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

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

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

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

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

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

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

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

1) Altitude
2) Barometric pressure
3) Relative humidity

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

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

Voltage shall be maintained within ±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.

**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 Vancouver Police Department 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 sixty (360) 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 Vancouver Police Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

**OVERALL HEIGHT**

The overall height (OAH) of the vehicle shall be approximately 153“ (12' - 9") 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 400“ (33' - 4").

**OVERALL WIDTH**

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

**ENGINEERING SUPPORT AT PRE-CONSTRUCTION MEETING**

The Contractor shall provide an engineer to be present at the pre-construction meeting held at the Vancouver Police Department 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 AutoCAD electronic drawing on hand and be able to provide dimensional data for proposed changes and proposed layouts. This will help ensure that the final design matches the Vancouver Police Department 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 Vancouver Police Department regarding the operation, care and maintenance of the equipment supplied at Vancouver Police Department location. The Vancouver Police Department will be responsible for the integration and programming of any on-board vehicle systems with Vancouver Police Department land based systems.

The IT Engineer shall set delivery and instruction schedule with the person appointed by Vancouver Police Department.

After delivery of the apparatus, the Vancouver Police Department 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 Purchaser's location 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.

**PRE-PAINT CONFERENCE**

A pre-paint conference shall be required, at the Contractor's factory for two (2) personnel from the Vancouver Police Department 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 three (3) personnel from the Vancouver Police Department 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 Vancouver Police Department'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 Vancouver Police Department regarding the operation, care and maintenance of the apparatus and equipment supplied at Vancouver Police Department location.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Vancouver Police Department.

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

# Vancouver Police Service
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## Production Specification

**CAB/CHASSIS SPECIFICATION**

| Data Code | Description | Weight Front | Weight Rear |
|---|---|---|---|
| **Price Level** | | | |
| PRL-03M | M2 PRL-03M (EFF:01/25/12) | | |
| **Data Version** | | | |
| DRL-032 | SPECPRO21 DATA RELEASE VER 032 | | |
| **Vehicle Configuration** | | | |
| 001-172 | M2 106 CONVENTIONAL CHASSIS | 5,205 | 3,055 |
| 004-213 | 2013 MODEL YEAR SPECIFIED | | |
| 002-004 | SET BACK AXLE - TRUCK | | |
| 019-002 | STRAIGHT TRUCK PROVISION | | |
| 003-001 | LH PRIMARY STEERING LOCATION | | |
| **General Service** | | | |
| AA1-002 | TRUCK CONFIGURATION | | |
| AA6-003 | DOMICILED, CANADA (OTHER THAN QUEBEC) | | |
| RCE-00F | FIXED CANADIAN EXCHANGE | | |
| A85-006 | RESCUE AND EMERGENCY SERVICE | | |
| A84-1EV | EMERGENCY VEHICLES BUSINESS SEGMENT | | |
| AA4-011 | FIXED LOAD COMMODITY | | |
| AA5-002 | TERRAIN/DUTY: 100% (ALL) OF THE TIME, IN TRANSIT, IS SPENT ON PAVED ROADS | | |
| AB1-008 | MAXIMUM 8% EXPECTED GRADE | | |
| AB5-001 | SMOOTH CONCRETE OR ASPHALT PAVEMENT - MOST SEVERE IN-TRANSIT (BETWEEN SITES) ROAD SURFACE | | |
| 995-091 | MEDIUM TRUCK WARRANTY | | |
| A66-99D | EXPECTED FRONT AXLE(S) LOAD : 14000.0 lbs | | |
| A68-99D | EXPECTED REAR DRIVE AXLE(S) LOAD : 20000.0 lbs | | |
| A63-99D | EXPECTED GROSS VEHICLE WEIGHT CAPACITY : 34000.0 lbs | | |
| GVWR | RATED MAXIMUM VEHICLE CAPACITY - GVWR : 35350.0 lbs | | |

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|---|---|
| **Truck Service** | |
| AA3-025 | RESCUE - STRAIGHT (NON DROP) FRAME NO MAIN DRIVELINE DRIVEN SPLIT-SHAFT PTO |
| A88-99D | EXPECTED TRUCK BODY LENGTH : 22.5 ft |
| AF6-99D | EXP EMPTY BODY CG LOC FROM BODY FRT(A89) : 4.0 ft |
| A89-99D | BRAKING-EXPECTED CAB TO BODY CLEARANCE : 3.0 in |
| AF7-99D | EXPECTED BODY/PAYLOAD CG HEIGHT ABOVE FRAME "XX" INCHES : 32.0 in |
| **Engine** | |
| 101-2N7 | CUM ISB 6.7-300 300 HP @ 2600 RPM, 2600 GOV, 660 LB/FT @ 1600 RPM |
| **Electronic Parameters** | |
| 79A-060 | 60 MPH ROAD SPEED LIMIT |
| 79B-000 | CRUISE CONTROL SPEED LIMIT SAME AS ROAD SPEED LIMIT |
| 79F-004 | CUMMINS TRIP INFORMATION REPORTS ENABLED; LEVEL 1: 4 MPH, LEVEL 2: 7 MPH ABOVE ROAD SPEED LIMIT |
| 79K-007 | PTO MODE ENGINE RPM LIMIT - 1100 RPM |
| 79M-001 | PTO MODE BRAKE OVERRIDE - SERVICE BRAKE ONLY ENABLED |
| 79P-002 | PTO RPM WITH CRUISE SET SWITCH - 700 RPM |
| 79Q-003 | PTO RPM WITH CRUISE RESUME SWITCH - 800 RPM |
| 79S-001 | PTO MODE CANCEL VEHICLE SPEED - 5 MPH |
| 79U-007 | PTO GOVERNOR RAMP RATE - 250 RPM PER SECOND |
| 80G-004 | PTO MINIMUM RPM - 900 |
| 80J-002 | REGEN INHIBITIT SPEED THRESHOLD - 5 MPH |

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**Engine Equipment**

| | | | |
|---|---|---|---|
| 99C-010 | 2010 EPA/CARB EMISSION CERTIFICATION | | |
| 99D-010 | NO 2008 CARB EMISSION CERTIFICATION | | |
| 105-001 | ENGINE MOUNTED OIL CHECK AND FILL | | |
| 133-004 | ONE PIECE VALVE COVER | | |
| 014-099 | SIDE OF HOOD AIR INTAKE WITH FIREWALL MOUNTED DONALDSON AIR CLEANER | | |
| 124-1E7 | DR 12V 275 AMP 40-SI QUADRAMOUNT PAD ALTERNATOR WITH REMOTE BATTERY VOLTAGE SENSE | 10 | |
| 292-1D8 | (2) ALLIANCE MODEL 1131, GROUP 31, 12 VOLT MAINTENANCE FREE 1850 CCA THREADED STUD BATTERIES | | |
| 290-017 | BATTERY BOX FRAME MOUNTED | | |
| 282-001 | SINGLE BATTERY BOX FRAME MOUNTED LH SIDE UNDER CAB | | |
| 291-017 | WIRE GROUND RETURN FOR BATTERY CABLES WITH ADDITIONAL FRAME GROUND RETURN | | |
| 289-001 | NON-POLISHED BATTERY BOX COVER | | |
| 293-058 | POSITIVE LOAD DISCONNECT WITH CAB MOUNTED CONTROL SWITCH MOUNTED OUTBOARD DRIVER SEAT | 8 | |
| 107-032 | CUMMINS 18.7 CFM AIR COMPRESSOR WITH INTERNAL SAFETY VALVE | | |
| 108-002 | STANDARD AIR COMPRESSOR GOVERNOR | | |
| 131-013 | AIR COMPRESSOR DISCHARGE LINE | | |
| 152-039 | GVG, FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING | | |
| 128-076 | CUMMINS EXHAUST BRAKE INTEGRAL WITH VARIABLE GEOMETRY TURBO WITH ON/OFF DASH SWITCH | | |
| 016-1DE | RH OUTBOARD UNDER STEP MOUNTED HORIZONTAL AFTERTREATMENT SYSTEM ASSEMBLY WITH RH C-PILLAR MOUNTED VERTICAL TAILPIPE | 30 | 25 |
| 28F-007 | ENGINE AFTERTREATMENT DEVICE, AUTOMATIC OVER THE ROAD ACTIVE REGENERATION AND DASH MOUNTED SINGLE REGENERATION REQUEST/INHIBITIT SWITCH | | |
| 239-038 | 11 FOOT 06 INCH (138 INCH+0/-5 INCH) EXHAUST SYSTEM HEIGHT | | |

| | | |
|---|---|---|
| 237-1D0 | RH CURVED VERTICAL TAILPIPE C-PILLAR MOUNTED ROUTED FROM STEP | |
| 23U-001 | 6 GALLON DIESEL EXHAUST FLUID TANK | |
| 30N-003 | 100 PERCENT DIESEL EXHAUST FLUID FILL | |
| 23Y-001 | STANDARD DIESEL EXHAUST FLUID PUMP MOUNTING | |
| 43X-005 | LH UNDER CAB DIESEL EXHAUST FLUID TANK LOCATION | |
| 43Y-001 | STANDARD DIESEL EXHAUST FLUID TANK CAP | |
| 242-001 | STAINLESS STEEL AFTERTREATMENT DEVICE/MUFFLER/TAILPIPE SHIELD | |
| 273-035 | HORTON HT650 FRONTAL AIR ON/OFF ENGINE FAN CLUTCH | |
| 276-001 | AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH, NON ENGINE MOUNTED | |
| 110-003 | CUMMINS SPIN ON FUEL FILTER | |
| 118-001 | FULL FLOW OIL FILTER | |
| 266-078 | 950 SQUARE INCH ALUMINUM RADIATOR | |
| 103-004 | ANTIFREEZE TO -34F, NOAT EXTENDED LIFE COOLANT | |
| 171-007 | GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT | |
| 172-001 | CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES | |
| 270-016 | RADIATOR DRAIN VALVE | |
| 168-002 | LOWER RADIATOR GUARD | |
| 360-998 | NO FRONT ENGINE PTO | |
| 138-010 | PHILLIPS-TEMRO 750 WATT/115 VOLT BLOCK HEATER | 4 |
| 140-053 | BLACK PLASTIC ENGINE HEATER RECEPTACLE MOUNTED UNDER LH DOOR | |
| 134-001 | ALUMINUM FLYWHEEL HOUSING | |
| 132-004 | ELECTRIC GRID AIR INTAKE WARMER | |
| 155-057 | DELCO 12V 29MT STARTER WITH INTEGRATED MAGNETIC SWITCH | |

| | | | |
|---|---|---|---|
| **Transmission** | | | |
| 342-1KD | ALLISON 3000 EVS AUTOMATIC TRANSMISSION WITH PTO PROVISION | 200 | 60 |
| **Transmission Equipment** | | | |
| 352-998 | NO AUXILIARY TRANSMISSION | | |
| 343-1G0 | WTEC CALIBRATION - 5 SPEED EVS WITH AUTO NEUTRAL (PACKAGE 199) | | |
| 353-022 | VEHICLE INTERFACE WIRING WITH BODY BUILDER CONNECTOR MOUNTED BACK OF CAB | | |
| 34C-001 | ELECTRONIC TRANSMISSION CUSTOMER ACCESS CONNECTOR FIREWALL MOUNTED | | |
| 362-035 | CUSTOMER INSTALLED CHELSEA 277 SERIES PTO | | |
| 363-001 | PTO MOUNTING, LH SIDE OF MAIN TRANSMISSION | | |
| 341-018 | MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN | | |
| 345-003 | PUSH BUTTON ELECTRONIC SHIFT CONTROL, DASH MOUNTED | | |
| 97G-002 | TRANSMISSION PROGNOSTICS - DISABLED(N/A) | | |
| 370-015 | WATER TO OIL TRANSMISSION COOLER, IN RADIATOR END TANK | | |
| 346-003 | TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK | | |
| 35T-001 | SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT) | | |
| **Front Axle and Equipment** | | | |
| 400-1A8 | DETROIT DA-F-14.7-3 14,700# FF1 71.5 KPI/3.74 DROP SINGLE FRONT AXLE | 60 | |
| 402-083 | BENDIX ADB22X-V AIR DISC FRONT BRAKES | 100 | |
| 403-002 | NON-ASBESTOS FRONT BRAKE LINING | | |
| 419-004 | FRONT DISC BRAKE ROTORS | | |
| 409-021 | SKF SCOTSEAL PLUS XL FRONT OIL SEALS | | |
| 408-001 | VENTED FRONT HUB CAPS WITH WINDOW, CENTER AND SIDE PLUGS - OIL | | |
| 416-022 | STANDARD SPINDLE NUTS FOR ALL AXLES | | |
| 405-030 | FRONT AIR DISC BRAKE INTERNAL ADJUSTERS | | |
| 536-012 | TRW TAS-85 POWER STEERING | 50 | |
| 539-003 | POWER STEERING PUMP | | |
| 534-015 | 2 QUART SEE THROUGH POWER STEERING RESERVOIR | | |
| 40T-001 | ORGANIC SAE 80/90 FRONT AXLE LUBE | | |

# Vancouver Police Service
## Command
### Production Specification

| | | | |
|---|---|---|---|
| **Front Suspension** | | | |
| 620-010 | 14,600# TAPERLEAF FRONT SUSPENSION | 160 | |
| 619-005 | MAINTENANCE FREE RUBBER BUSHINGS - FRONT SUSPENSION | | |
| 410-001 | FRONT SHOCK ABSORBERS | | |
| **Rear Axle and Equipment** | | | |
| 420-265 | RS-23-161 24,000# R-SERIES FIRE/EMERGENCY SERVICE SINGLE REAR AXLE | | 360 |
| 421-643 | 6.43 REAR AXLE RATIO | | |
| 424-001 | IRON REAR AXLE CARRIER WITH STANDARD AXLE HOUSING | | |
| 386-076 | MXL 17N MERITOR EXTENDED LUBE MAIN DRIVELINE WITH FULL ROUND YOKES | 85 | 85 |
| 423-083 | BENDIX ADB22X-V AIR DISC REAR BRAKES | | 40 |
| 433-002 | NON-ASBESTOS REAR BRAKE LINING | | |
| 434-003 | STANDARD BRAKE CHAMBER LOCATION | | |
| 451-005 | REAR DISC BRAKE ROTORS | | |
| 440-021 | SKF SCOTSEAL PLUS XL REAR OIL SEALS | | |
| 426-1AH | AIR DISC LONGSTROKE 1-DRIVE AXLE SPRING PARKING CHAMBERS | | |
| 428-030 | REAR AIR DISC BRAKE INTERNAL ADJUSTERS | | |
| 41T-001 | ORGANIC SAE 80/90 REAR AXLE LUBE | | |
| **Rear Suspension** | | | |
| 622-216 | AIRLINER 23,000# REAR SUSPENSION WITH CHAIN CLEARANCE | | 220 |
| 621-007 | AIRLINER HIGH POSITION RIDE HEIGHT | | |
| 431-001 | STANDARD U-BOLT PAD | | |
| 888-047 | MANUAL DUMP VALVE FOR AIR SUSPENSION WITHOUT GAUGE | | |
| 87D-006 | INDICATOR LIGHT FOR EACH MODE SWITCH | | |
| 910-001 | SINGLE AIR REAR SUSPENSION LEVELING VALVE | | |
| 623-002 | TRANSVERSE CONTROL RODS | | |
| 439-004 | REAR SHOCK ABSORBERS - ONE AXLE (AIR RIDE SUSPENSION) | | |

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|---|---|---|---|
| **Brake System** | | | |
| 018-002 | AIR BRAKE PACKAGE | 80 | 140 |
| 490-101 | WABCO 4S/4M ABS WITH TRACTION CONTROL | | |
| 871-001 | REINFORCED NYLON, FABRIC BRAID AND WIRE BRAID CHASSIS AIR LINES | | |
| 904-001 | FIBER BRAID PARKING BRAKE HOSE | | |
| 412-001 | STANDARD BRAKE SYSTEM VALVES | | |
| 46D-002 | STANDARD AIR SYSTEM PRESSURE PROTECTION SYSTEM | | |
| 413-002 | STD U.S. FRONT BRAKE VALVE | | |
| 432-003 | RELAY VALVE WITH 5-8 PSI CRACK PRESSURE, NO REAR PROPORTIONING VALVE | | |
| 480-083 | WABCO SS-1200 PLUS AIR DRYER WITH INTEGRAL AIR GOVERNOR AND HEATER | 20 | |
| 479-015 | AIR DRYER FRAME MOUNTED | | |
| 460-008 | STEEL AIR BRAKE RESERVOIRS MOUNTED INSIDE RAIL | | |
| 46A-002 | (1) 1350 CUBIC INCH AUXILIARY AIR TANK, INLET CHECK VALVE | 20 | 20 |
| 477-006 | BW DV-2 AUTO DRAIN VALVE WITHOUT HEATER ON ALL TANK(S) | | |
| **Trailer Connections** | | | |
| 335-004 | UPGRADED CHASSIS MULTIPLEXING UNIT | | |
| 32A-002 | UPGRADED BULKHEAD MULTIPLEXING UNIT | | |

# Vancouver Police Service
# Command
## Production Specification

| | | | |
|---|---|---|---|
| **Wheelbase & Frame** | | | |
| 545-682 | 6825MM (269 INCH) WHEELBASE | | |
| 546-101 | 11/32X3-1/2X10-15/16 INCH STEEL FRAME (8.73MMX277.8MM/0.344X10.94 INCH) 120KSI | 660 | 170 |
| 547-001 | 1/4 INCH (6MM) C-CHANNEL INNER FRAME REINFORCEMENT | 220 | 430 |
| 552-059 | 2425MM (95 INCH) REAR FRAME OVERHANG | | |
| 55W-009 | FRAME OVERHANG RANGE: 91 INCH TO 100 INCH | -70 | 290 |
| AC8-99D | CALC'D BACK OF CAB TO REAR SUSP C/L (CA) : 177.86 in | | |
| AE8-99D | CALCULATED EFFECTIVE BACK OF CAB TO REAR SUSPENSION C/L (CA) : 174.86 in | | |
| AE4-99D | CALC'D FRAME LENGTH - OVERALL : 393.39 | | |
| AM6-99D | CALC'D SPACE AVAILABLE FOR DECKPLATE : 177.86 in | | |
| FSS-0LH | FRAME SPACE LH SIDE : 151.01 in | | |
| FSS-0RH | FRAME SPACE RH SIDE : 183.91 in | | |
| 553-001 | SQUARE END OF FRAME | | |
| 550-001 | FRONT CLOSING CROSSMEMBER | | |
| 559-001 | STANDARD WEIGHT ENGINE CROSSMEMBER | | |
| 562-001 | STANDARD MIDSHIP #1 CROSSMEMBER(S) | | |
| 572-001 | STANDARD REARMOST CROSSMEMBER | | |
| 565-002 | HEAVY DUTY SUSPENSION CROSSMEMBER | | |
| **Chassis Equipment** | | | |
| 556-1AR | THREE-PIECE 14 INCH CHROMED STEEL BUMPER WITH COLLAPSIBLE ENDS | 30 | |
| 558-001 | FRONT TOW HOOKS - FRAME MOUNTED | 15 | |
| 574-001 | BUMPER MOUNTING FOR SINGLE LICENSE PLATE | | |
| 585-998 | NO MUDFLAP BRACKETS | | |
| 590-998 | NO REAR MUDFLAPS | | |
| 586-024 | FENDER AND FRONT OF HOOD MOUNTED FRONT MUDFLAPS | | |
| 607-037 | CLEAR FRAME RAILS FROM TRANSMISSION PTO OPENING TO 36 INCHES BACK OF CAB OUTBOARD/INSIDE/BELOW BOTH RAILS | | |
| 551-007 | GRADE 8 THREADED HEX HEADED FRAME FASTENERS | | |

| | | | |
|---|---|---|---|
| 605-017 | LEVEL FRAME RAILS (+1%, -0%) WHEN CHASSIS IS LOADED TO FRONT AND REAR SUSPENSION RATINGS | | |
| **Fuel Tanks** | | | |
| 204-215 | 50 GALLON/189 LITER SHORT RECTANGULAR ALUMINUM FUEL TANK - LH | 20 | |
| 218-005 | RECTANGULAR FUEL TANK(S) | | |
| 215-005 | PLAIN ALUMINUM/PAINTED STEEL FUEL/HYDRAULIC TANK(S) WITH PAINTED BANDS | | |
| 212-007 | FUEL TANK(S) FORWARD | | |
| 664-001 | PLAIN STEP FINISH | | |
| 205-001 | FUEL TANK CAP(S) | | |
| 122-077 | ALLIANCE FUEL FILTER/WATER SEPARATOR WITH HEATED BOWL AND PRIMER PUMP | 15 | |
| 216-020 | EQUIFLO INBOARD FUEL SYSTEM | | |
| 202-016 | HIGH TEMPERATURE REINFORCED NYLON FUEL LINE | | |
| **Tires** | | | |
| 093-1G4 | MICHELIN XZE2 11R22.5 14 PLY RADIAL FRONT TIRES | 12 | |
| 094-0RA | MICHELIN XZY-3 11R22.5 14 PLY RADIAL REAR TIRES | | 88 |
| **Hubs** | | | |
| 418-045 | CONMET PRE-SET BEARING IRON FRONT HUBS | | |
| 450-018 | CONMET PRE-SET BEARING ALUMINUM REAR HUBS | | -30 |
| **Wheels** | | | |
| 502-1F7 | ACCURIDE 41644 ACCU-LITE 22.5X8.25 10-HUB PILOT ALUMINUM DISC FRONT WHEELS | -66 | |
| 505-1F7 | ACCURIDE 41644 ACCU-LITE 22.5X8.25 10-HUB PILOT ALUMINUM DISC REAR WHEELS | | -132 |
| 496-011 | FRONT WHEEL MOUNTING NUTS | | |
| 497-011 | REAR WHEEL MOUNTING NUTS | | |

# Vancouver Police Service
## Command
### Production Specification

**Cab Exterior**

| | | | |
|---|---|---|---|
| 829-075 | 132 INCH BBC HIGH-ROOF EXTENDED ALUMINUM CONVENTIONAL CAB | 200 | 50 |
| 650-008 | AIR CAB MOUNTS | | |
| 678-018 | LH AND RH EXTERIOR GRAB HANDLES WITH SINGLE RUBBER INSERT | | |
| 646-009 | PAINTED PLASTIC GRILLE | | |
| 65X-001 | ARGENT SILVER HOOD MOUNTED AIR INTAKE GRILLE | | |
| 644-004 | FIBERGLASS HOOD | | |
| 690-002 | TUNNEL/FIREWALL LINER | | |
| 727-036 | VALVE AND PLUMBING FOR CUSTOMER FURNISHED AIR HORN, PIPING CAPPED AT FIREWALL | | |
| 726-002 | DUAL ELECTRIC HORNS | | |
| 657-001 | DOOR LOCKS AND IGNITION SWITCH KEYED THE SAME | | |
| 575-001 | REAR LICENSE PLATE MOUNT END OF FRAME | | |
| 312-043 | INTEGRAL HEADLIGHT/MARKER ASSEMBLY | | |
| 302-047 | LED AERODYNAMIC MARKER LIGHTS | | |
| 311-001 | DAYTIME RUNNING LIGHTS | | |
| 294-046 | OMIT STOP/TAIL/BACKUP LIGHTS AND PROVIDE WIRING WITH SEPARATE STOP/TURN WIRES TO 4 FEET BEYOND END OF FRAME | | -5 |
| 300-015 | STANDARD FRONT TURN SIGNAL LAMPS | | |
| 744-1BC | DUAL WEST COAST BRIGHT FINISH HEATED MIRRORS WITH LH AND RH REMOTE | | |
| 797-001 | DOOR MOUNTED MIRRORS | | |
| 796-001 | 102 INCH EQUIPMENT WIDTH | | |
| 743-204 | LH AND RH 8" BRIGHT FINISH CONVEX MIRRORS MOUNTED UNDER PRIMARY MIRRORS | | |
| 729-001 | STANDARD SIDE/REAR REFLECTORS | | |
| 677-016 | DUAL LEVEL CAB ENTRY STEPS ON BOTH SIDES | | |
| 768-043 | 63X14 INCH TINTED REAR WINDOW | | |
| 661-003 | TINTED DOOR GLASS LH AND RH WITH TINTED NON-OPERATING WING WINDOWS | | |
| 654-011 | RH AND LH ELECTRIC POWERED WINDOWS | 4 | |
| 767-047 | 20X23 INCH LH AND RH TINTED SIDE WINDOWS | | |
| 663-013 | TINTED WINDSHIELD | | |
| 659-019 | 2 GALLON WINDSHIELD WASHER RESERVOIR WITHOUT FLUID LEVEL INDICATOR, FRAME MOUNTED | | |

# Vancouver Police Service
## Command
### Production Specification

**Cab Interior**

| | | |
|---|---|---|
| 707-1AM | OPAL GRAY CLOTH INTERIOR | |
| 706-026 | MOLDED PLASTIC DOOR PANEL WITHOUT VINYL INSERT WITH ALUMINUM KICKPLATE LOWER DOOR | |
| 708-026 | MOLDED PLASTIC DOOR PANEL WITHOUT VINYL INSERT WITH ALUMINUM KICKPLATE LOWER DOOR | |
| 772-006 | BLACK MATS WITH SINGLE INSULATION | |
| 691-008 | FORWARD ROOF MOUNTED CONSOLE WITH UPPER STORAGE COMPARTMENTS WITHOUT NETTING | |
| 694-010 | IN DASH STORAGE BIN | |
| 742-007 | (2) CUP HOLDERS LH AND RH DASH | |
| 680-006 | GRAY/CHARCOAL FLAT DASH | |
| 860-004 | SMART SWITCH EXPANSION MODULE | |
| 700-002 | HEATER, DEFROSTER AND AIR CONDITIONER | 70 |
| 701-001 | STANDARD HVAC DUCTING | |
| 703-005 | MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH | |
| 170-045 | STANDARD HEATER PLUMBING WITH BALL SHUTOFF VALVES AT SUPPLY LINES ONLY | |
| 130-033 | DENSO HEAVY DUTY AIR CONDITIONER COMPRESSOR | |
| 702-002 | BINARY CONTROL, R-134A | |
| 739-036 | PREMIUM INSULATION WITH ADDED FLOOR HEAT AND NOISE INSULATION | |
| 285-013 | SOLID-STATE CIRCUIT PROTECTION AND FUSES | |
| 280-007 | 12V NEGATIVE GROUND ELECTRICAL SYSTEM | |
| 324-046 | DOOR ACTIVATED DOME/RED MAP LIGHTS, FORWARD LH AND RH AND REAR CENTER | |
| 655-005 | LH AND RH ELECTRIC DOOR LOCKS | |
| 284-045 | (2) 12 VOLT POWER RECEPTACLES MOUNTED IN DASH | |
| 722-002 | TRIANGULAR REFLECTORS WITHOUT FLARES | 10 |
| 756-1E7 | SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR SUSPENSION DRIVER SEAT WITH NFPA 1901-2009 COMPLIANT SEAT SENSOR | 60 |
| 760-1E7 | SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR SUSPENSION PASSENGER SEAT WITH NFPA 1901-2009 COMPLIANT SEAT SENSOR | 65 |
| 711-004 | LH AND RH INTEGRAL DOOR PANEL ARMRESTS | |
| 758-014 | BLACK CORDURA PLUS CLOTH DRIVER SEAT COVER | |

| | | | |
|---|---|---|---|
| 761-014 | BLACK CORDURA PLUS CLOTH PASSENGER SEAT COVER | | |
| 763-074 | 3 POINT HIGH VISIBILITY ORANGE RETRACTOR DRIVER AND RH FRONT PASSENGER SEAT BELTS WITH NFPA 1901-2009 COMPLIANT SENSOR AND DASH HARNESS | | |
| 532-002 | ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN | 10 | |
| 540-015 | 4-SPOKE 18 INCH (450MM) STEERING WHEEL | | |
| 765-002 | DRIVER AND PASSENGER INTERIOR SUN VISORS | | |
| **Instruments & Controls** | | | |
| 732-004 | GRAY DRIVER INSTRUMENT PANEL | | |
| 734-004 | GRAY CENTER INSTRUMENT PANEL | | |
| 87L-003 | ENGINE REMOTE INTERFACE WITH PARK BRAKE AND NEUTRAL INTERLOCKS | | |
| 870-001 | BLACK GAUGE BEZELS | | |
| 486-001 | LOW AIR PRESSURE LIGHT AND BUZZER | | |
| 840-002 | 2 INCH PRIMARY AND SECONDARY AIR PRESSURE GAUGES | | |
| 198-025 | INTAKE MOUNTED AIR RESTRICTION INDICATOR WITHOUT GRADUATIONS | | |
| 721-003 | PRECO 1040 87 DB TO 112 DB AUTOMATIC SELF-ADJUSTING BACKUP ALARM | | 2 |
| 149-013 | ELECTRONIC CRUISE CONTROL WITH SWITCHES IN LH SWITCH PANEL | | |
| 156-020 | IGNITION SWITCH WITH NON REMOVABLE KEY | | |
| 811-011 | ODOMETER/TRIP/HOUR/DIAGNOSTIC/ VOLTAGE DISPLAY: 1X7 CHARACTER, 26 WARNING LAMPS, DATA LINKED, ICU3 | | |
| 160-025 | DIAGNOSTIC INTERFACE CONNECTOR, 9 PIN, SAE J1939, LOCATED BELOW DASH | | |
| 844-001 | 2 INCH ELECTRIC FUEL GAUGE | | |
| 148-074 | ENGINE REMOTE INTERFACE NOT CONFIGURED | | |
| 163-004 | ENGINE REMOTE INTERFACE CONNECTOR IN ENGINE COMPARTMENT | | |
| 856-001 | ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE | | |
| 864-001 | 2 INCH TRANSMISSION OIL TEMPERATURE GAUGE | | |
| 867-002 | PANASONIC INSIDE/OUTSIDE TEMPERATURE GAUGE WITH BLACK BEZEL AND LCD FAHRENHEIT DISPLAY | | |

| | | |
|---|---|---|
| 830-017 | ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY | |
| 49B-004 | ENHANCED STABILITY CONTROL | |
| 852-002 | ELECTRIC ENGINE OIL PRESSURE GAUGE | |
| 679-001 | OVERHEAD INSTRUMENT PANEL | |
| 746-1A2 | AM/FM/WB RADIO WITH FRONT AUXILIARY INPUT | 10 |
| 747-001 | DASH MOUNTED RADIO | |
| 750-002 | (2) RADIO SPEAKERS IN CAB | |
| 753-001 | AM/FM ANTENNA MOUNTED ON FORWARD LH ROOF | 2 |
| 810-028 | ELECTRONIC KPH SPEEDOMETER WITH SECONDARY MPH SCALE, WITHOUT ODOMETER | |
| 817-001 | STANDARD VEHICLE SPEED SENSOR | |
| 812-001 | ELECTRONIC 3000 RPM TACHOMETER | |
| 162-011 | IDLE LIMITER, ELECTRONIC ENGINE | |
| 836-015 | DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY | |
| 660-008 | SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY | |
| 304-001 | MARKER LIGHT SWITCH INTEGRAL WITH HEADLIGHT SWITCH | |
| 882-018 | ONE VALVE PARK BRAKE SYSTEM WITH DASH VALVE CONTROL AUTONEUTRAL AND WARNING INDICATOR | |
| 299-013 | SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, WASHER/WIPER AND HAZARD IN HANDLE | |
| 298-039 | INTEGRAL ELECTRONIC TURN SIGNAL FLASHER WITH HAZARD LAMPS OVERRIDING STOP LAMPS | |

# Vancouver Police Service
# Command
## Production Specification

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|---|---|---|
| **Design** | | |
| | 065-000 | PAINT: ONE SOLID COLOR |
| **Color** | | |
| | 980-5A1 | CAB COLOR A: L0001EB BLACK ELITE BC |
| | 986-020 | BLACK, HIGH SOLIDS POLYURETHANE CHASSIS PAINT |
| **Certification / Compliance** | | |
| | 996-002 | CANADA CMVSS CERTIFICATION |
| **Secondary Factory Options** | | |
| | 999-999 | SPECIAL NARRATIVE INSTRUCTIONS<br>NEED TO DELETE INTERIOR REAR VIEW MIRROR PLEASE |

**T O T A L  V E H I C L E  S U M M A R Y**

**Weight Summary**

| | Weight Front | Weight Rear | Total Weight |
|---|---|---|---|
| Factory Weight+ | 7299 LBS | 4868 LBS | 12167 LBS |
| Total Weight+ | 7299 LBS | 4868 LBS | 12167 LBS |

**I T E M S  N O T  I N C L U D E D  I N  A D J U S T E D  L I S T  P R I C E**

**Other Factory Charges**

DELIVERY & ORDER PROCESSING CHARGE

(+) Weights shown are estimates only.
If weight is critical, contact Customer Application Engineering.

**CAB TO AXLE DIMESION**

Cab to axle will be 176”.

**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.

**FRONT BUMPER**

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

**FRONT TOW PROVISIONS**

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

**EXHAUST**

The exhaust system shall be as provided by cab/chassis manufacturer. The tailpipe may require some modifications for proper ground clearances and fit with body.

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

Exhaust pipe discharge shall be directed away from any operator’s position or entry doors on body.

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

**RADIO/ANTENNA INSTALLATION**

There shall be one (1) Vancouver Police Department supplied Harris M7300 radio(s) with antenna installed in the cab console.

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

**CAB DOME LIGHT OVERRIDE SWITCH**

There shall be a switch provided in the multiplex display to allow the cab dome light to be disabled from actuating with the door opening.

**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 - COMMERCIAL 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 commercial chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

**SEAT BELT MONITORING SYSTEM - COMMERCIAL CAB**

Section 14.1.3.10 of the NFPA 1901 Standards, 2009 edition, requires that a seat belt warning system be provided. The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven.

Per Vancouver Police Department specification for a commercial chassis, this emergency vehicle may not have a seat belt monitoring system. Without this device, the driver must manually determine that all occupants are seated and belted before the apparatus is placed in motion. This specification for an emergency fire apparatus for the seat belt monitoring system shall be non-compliant to NFPA 1901 standards, effective at the time of the bid opening.

**IGNITION KEY**

If the vehicle is specified to have an ignition key it will be attached to steering column or dash with vinyl covered steel cable.

**SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS**

Each tire shall be equipped with a VECSAFE heavy duty valve cap (or equal) LED indicator that indicates proper tire pressure.

**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.

**RE-PAINT CAB - ONE COLOR**

The cab exterior (not including driver and passenger side doors) shall be re-painted with PPG Delfleet Evolution paint.

Exterior Color: Black

Exterior Paint Number: FBCH 9300

**PAINT DOOR JAMBS JOB COLOR**

Two (2) chassis door jambs will be painted to match the exterior color of the chassis.

**CHASSIS PAINT WARRANTY**

The portion of the cab re-painted shall be provided with a ten (10) year, non-prorated paint warranty to the original owner. The warranty shall be provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle.

**CAB STEP COVER AND BATTERY COMPARTMENT**

The stock chassis step and fuel tank brackets shall be overlaid with 1/8" aluminum tread plate covers. The stepping surface of the covers will be overlaid with a non-slip NFPA approved stepping surface. There will be a removable panel to access and replace the chassis batteries and a hinged fuel fill access door.

The following options will be cut into the step cover:

**BATTERY CHARGING RECEPTACLE LOCATION**

The specified battery charging receptacle and/or display panel shall be located on front face of specified cab step cover.

**BATTERY JUMPER STUDS**

Two (2) battery jumper studs, one (1) positive with a red weather cover, and one (1) negative with a black weather cover shall be provided in the lower front portion of the driver step area. Jumper studs shall be identified with color coded label.

These studs shall allow this vehicle to be jump started due to a battery failure, or to allow easy access to assist another vehicle.

**EXTENDED CAB MODIFICATION**

The extended cab area shall be modified to create an equipment storage area as follows;

- The rear cab window shall be removed and replaced with a painted panel that shall match the cab color. The painted panel shall be mounted in the cab sheet metal frame with window rubber moulding.
- The side cab windows shall be removed and the sheetmetal of extended cab area directly below cab windows shall be removed and a ROM Series III roll-up door shall be installed one (1) on each side of cab. Each door shall have a keyed lock. Each door shall be painted to match the color of the as cab/chassis.
- Each door shall have a drip pan installed below the door roll. Each drip pan shall drain to an area below the floor of the cab.
- Aluminum panels shall be bolted in place to divide the front crew area from the new equipment storage area. The aluminum panels shall be painted with a hammer tone powder coat paint finish for a hard durable surface. The paint color shall be gray.
- A total of eight sections of vertical aluminum shelf-trac shall be provided, four (4) on the front wall, and four on the rear wall of cab for specified component installation.
- Two (2) adjustable shelves shall be provided, one (1) on each side for storage of Vancouver Police Department equipment. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.

**MUD FLAPS**

There shall be rubber mud flaps with anti-sail bars furnished and installed behind each set of tires.

**AIR BRAKE SYSTEM QUICK BUILD-UP**

There shall be one (1) 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 Vancouver Police Department.

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.

**LEVELING SYSTEM JACK PAD(S)**

Four (4) Super Dolly Trailer/Bus leveling system pads shall be provided, one (1) for each jack. The pads shall be constructed from injection molded high density polypropylene plastic and measure 15" x 17" x 1". The pads shall be stored in mounting brackets under the apparatus body adjacent to each jack.

**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 Vancouver Police Department to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Vancouver Police Department from such repair and shall NOT be used.

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

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

**EXTERIOR ALUMINUM BODY**

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

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

**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.

**BOOT CLEANER**

There shall be one (1) nylon bristle type boot cleaner installed on the surface of the bumper, adjacent to the rear door opening.

**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.

**BODY PAINT SPECIFICATIONS**

**BODY PAINT PREPARATION**

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

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

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

**PAINT PROCESS**

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

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

1) Clean bare metal using a solvent base wax & grease remover.
2) Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
3) Re-clean bare metal using a solvent base wax & grease remover.
4) Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.
5) Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 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.

1) Paint Color: Black

2) Paint Number: FBCH 9300

**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.

**VEHICAL RUST PROOFING**

The exterior chassis and body components and all exposed electrical components shall be sprayed with Krown KL-73 automotive corrosion inhibitor. Krown shall cover all underside components of the body and chassis area to help prevent corrosion under the vehicle.

**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.

**GRAPHICS PROOF**

A color graphics proof of the reflective striping layout shall be provided for approval by Vancouver Police Department prior to installation. The graphics proof shall be submitted to Vancouver Police Department 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.

**NON NFPA COMPLIANT**

If a 4" minimum reflective stripe is added to front and sides, vehicle would meet NFPA requirements.

**LETTERING**

**GRAPHICS PROOF**

A color graphics proof of the lettering layout shall be provided for approval by Vancouver Police Department prior to installation. The graphics proof shall be submitted to Vancouver Police Department 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;

**UPPER BODY SIDE LETTERING**

There shall be thirty (30) 10" high reflective letters furnished and installed on the vehicle.

The lettering shall state: "Vancouver Police"

- This reflective lettering shall be white in color.

There shall be fifty four (54) 6" high reflective letters furnished and installed on the vehicle.

The lettering shall state: "Mulit-Purpose Command Vehicle"

- This reflective lettering shall be white in color.

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

Two (2) custom designed Vancouver Police Department Scotchcal type retroreflective logo shall be provided and installed on the chassis doors. The exact design and/or artwork shall be provided by the Vancouver Police Department prior to construction.

**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.

**BODY HEIGHT MEASUREMENTS**

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

| | Description | Dimension |
|---|---|---|
| A | Bottom of Subframe to Top of Body | 89.0" |
| B | Bottom of Subframe to Bottom of Body | 22.5" |
| C | Vertical Door Opening - (Full Height Compartment) | |
| | -with roll-up door | 67.5" |
| | -with hinged door | 71.5" |
| | Vertical Door Opening - (Short Compartment) | |
| | -with hinged door | 20.0" |

ABOVE REAR AXLE

| | Description | Dimension |
|---|---|---|
| D | Vertical Door Opening - Above Rear Wheel | |
| | -with roll-up door | 34.0" |
| | -with hinged door | 37.0" |

BEHIND REAR AXLE

| | Description | Dimension |
|---|---|---|
| E | Bottom of Subframe to Bottom of Body | 22.5" |
| F | Vertical Door Opening - (Full Height Compartment) | |
| | -with roll-up door | 62.0" |
| | -with hinged door | 66.0" |
| | Vertical Door Opening - (Short Compartment) | |
| | -with hinged door | 17.5" |

GENERAL

| | Description | Dimension |
|---|---|---|
| G | Bottom of Drip Rail to Top of Body | 38.5" |
| H | Walk-in Interior Height | 78.0" (min) |

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

**BODY WIDTH DIMENSIONS**

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

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

**STREETSIDE COMPARTMENT - FRONT (S1)**

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

The compartment door opening shall be approximately 63.0" wide.

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

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

- 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 the specified stainless steel slide-out tray with hold down provisions for mobile application.
- A 100 ampere, 240 VAC, single phase shore power receptacle shall be located in this compartment.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

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

The interior useable compartment 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 locking handle. 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.

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

**STREETSIDE COMPARTMENT - REAR (S3)**

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

The compartment door opening shall be approximately 57.0" wide.

This compartment shall have a 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 locking handle. 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.

- 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 black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
- One (1) Akron model EJB, cast aluminum electrical power distribution box with yellow powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include:
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 5-20 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.

**UPPER VIDEO COMPARTMENT**

The interior useable compartment width shall be approximately 50.0" wide.

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have horizontally hinged box pan style doors fabricated of 1/8" thick smooth aluminum. The compartment doors shall be double hinged to allow the top door to fold up and the bottom door to fold down, permitting it to be used as a shelf. 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 locking handle. 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 upper hinged door shall have a pneumatic cylinder to hold door in the open and closed positions.

The lower hinged door 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.

- There shall be vertically mounted aluminum shelf-trac for specified 30" monitor mounting.
- One (1) OnScene 36" Premium LED compartment light, horizontally mounted at the top of the compartment toward the door opening.
- There shall be one (1) 120 volt outlet(s) located in this compartment on the forward wall unless noted otherwise.
- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
    - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.

**EXTERIOR PHONE**

There shall be one (1) phone connection provided in the exterior compartment.

**CVIP TYPE III PATCH PANEL**

There shall be one (1) CVIP Type III patch panel located on the slide-out side, adjacent to the exterior monitor compartment to allow for the connection of a CINT Commander Throw Phone to the vehicle phone network.

**CURBSIDE COMPARTMENT - FRONT (C1)**

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

The compartment door opening shall be approximately 63.0" wide.

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

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

- 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 WHEEL (C2)**

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

The compartment door opening shall be approximately 63.0" wide.

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

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  The tray shall be used to store the specified removable staircase and shall contain provisions for such.

- 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 WHEEL (C3)**

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

The compartment door opening shall be approximately 63.0" wide.

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

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

- 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.

Entry Door

**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 74" high.

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

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

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

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

**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 one (1) 18"wide x 22" high, double-paned insulated, vertical sliding window(s) installed in the entrance door. ***Each window shall have dark, reflective Limo type automotive type safety glass mounted in an extruded aluminum frame.*** The frame shall have a black anodized finish.

**REMOVABLE EXTERIOR STAIRCASE**

A folding/removable staircase fabricated from 3/16" NFPA approved treadplate shall be provided at the side entrance to the apparatus body. The staircase shall be designed to be quickly assembled without the use of special tools and stored in compartment C3 when not is use.

**CURBSIDE COMPARTMENT - REAR (C4)**

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

The compartment door opening shall be approximately 57.0" wide.

This compartment shall have a 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 locking handle. 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.

- One (1) OnScene 18" Premium LED compartment light, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

**REAR ENTRY DOOR**

Access to the interior body compartment shall be provided through a rear entry door. The door opening shall be approximately 32" wide x 77" high.

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

The door shall be hung on full height 14 gauge stainless steel hinges with 1/4" stainless steel pins. The hinge shall be bolted to the door and body with stainless steel machine screws at 5" offset 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.

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 the door frame.

The latch mechanism shall include a stainless steel paddle handle on the inside.

The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. 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.

**FOLD-DOWN STEP**

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

**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 one (1) 18"wide x 22" high, double-paned insulated, vertical sliding window(s) installed in the entrance door. ***Each window shall have dark, reflective Limo type automotive type safety glass mounted in an extruded aluminum frame.*** The frame shall have a black anodized finish.

**PLASTIC FLOOR AND SHELF TILE**

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

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

**SIDE BODY PROTECTION - RUB RAIL**

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

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

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

**ROLL-OUT AWNING CURBSIDE**

One (1) Girard G-2000 Automatic Retractable Lateral Arm Awning shall be mounted on the body side.

The cassette housing is made of corrosion-resistant, powder-coated extruded aluminum with components made of stainless steel. The housing box to be powder coated to match the upper body white.

The unit shall measure twelve (12) feet by 5-1/4" (deep), 7-3/8" (high). The awning shall project outward nine (9) feet nine (9) inches and will be mounted slightly lower in the rear to add in drainage.

The G-2000 will deploy and retract using a 110V AC motor with manual override (to retract awning in the event of a power failure) the power controls shall be located in compartments L-1 for a left awning and R-1 for a right awning.

The awning shall have a system to detect canopy motion. The awning shall automatically retract when the canopy reaches a certain level of movement. The G-2000 has a Limited Lifetime Warranty.

Awning controls shall be located inside the specified exterior monitor compartment.

- The awning fabric color shall be black.

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 vinyl housing color shall be the standard, Polar White and re-painted to match upper body color.

**WALK-IN INTERIOR FINISH DETAILS**

**DESK, CABINET, CONSOLE FINISH**

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

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

**LENEL DOOR ACCESS CONTROL**

There shall be one (1) Lenel Open Prox Card Reader provided on the rear entry door. The card reader shall be utilized to allow/restrict entry into the rear conference area of the body.

**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.

**MAGNETIC WHITEBOARD(S)**

The upper interior vertical walls in areas IS1/IS2, IS4, IC1/IC2, and IC4 shall include magnetic white board material securely attached to the wall surface. The white board(s) shall run the full width of the wall and from the desk/countertop height to the ceiling.

**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.

**UNDERFLOOR INSULATION**

The floor be area below the walk-in interior shall include an additional 2" layer of rigid polyurethane insulation. The insulation shall be located in all areas of the underbody exposed to the outside elements.

**AIR CONDITIONER - HEATER**

Two (2) 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.

**ELECTRIC BASEBOARD HEAT**

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

- One (1) one the front wall of the Command Room
- One (1) under the curbside slide-out desk
- One (1) under the streetside Negotiators desk
- One (1) under the curbside Negotiators desk

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

**EXHAUST FAN**

The apparatus shall have two (2) Fan-Tastic Vent model 6000 RBTA, 12 volt exhaust fan(s) installed in the ceiling of the body. Each fan shall be wired to an electrical rocker switch located at the entrance door, mounted on the side wall.

- One (1) fan shall be located in the Command Room
- One (1) fan shall be located in the Negotiator Room

The fan switch(es) shall be wired battery direct to allow the thermostatically controlled fans to operate while the apparatus is parked in storage.

**DO NOT ENTER LIGHTING/SIGNAGE**

There shall be two (2) non-flashing red LED lights (with supporting signage) provided to indicated when the negotiators are using the phone system (Truck-lite model 33 or equivalent with clear lens). The lights shall be located:

- One (1) on the exterior of the streetside body, adjacent the side entry door handle. The light shall be provided with a hooded enclosure to ensure the light is only viewable from the area immediately adjacent to the door opening.
- One (1) on the rear wall of the Command Room, adjacent to the Negotiator Room pocket door, and approximately 12” down from the ceiling.

The lights shall be tied into the phone at workstation 6 to automatically illuminate when the phone is off the hook.

**SMOKE/CO DETECTOR**

There shall be two (2) First Alert model SCO5B AA battery powered combination smoke/CO detector(s) provided in the walk in area(s) of the body. The detectors shall be located as follows:

- One (1) in the Command Room
- One (1) in th eNegotiator Room

**STREETSIDE INTERIOR AREA (IS1)**

**MAGNETIC SLIDING WHITEBOARD(S)**

There shall be three (3) magnetic whiteboard(s), approximately 44" wide x 30" tall, located on tracks running along the top surface of the street side lower cabinetry and the interior roof to support. The three (3) magnetic white boards shall be able to be positioned anywhere along the streetside wall of the Command Room from the equipment rack to the front wall.

**INTERIOR CABINET - COUNTER HEIGHT**

There shall be two (2) interior counter height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately 34"L x 34"W x 42"H.

- 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.

**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.

**INTERIOR ROLL-AROUND CHAIR**

There shall be three (3) Vecta Rocky 4 Star roll-around office chairs provided at the command desk area. The chairs shall include the following features:

- Four-prong Rocky nesting base: one piece, solid color glass-filled nylon in graphite only
- Hip pivoting springs for lumbar support
- Hard, dual-wheel casters for use on carpet: black plastic
- Upholstered seat and back molded urethane foam over injection-molded polypropylene inner shell(s)
- Folding seat with pneumatic self-aligning features
- Pneumatic height adjustment
- Zero front rise

The chairs shall be designed to nest together and include provisions to fully secure under the desk(s) when not in use and the apparatus is in motion.

**REMOVABLE CONFERENCE TABLE**

The interior of apparatus shall be provided with a conference table approximately 60" long by 36" wide located approximately 30" from the floor. ***The table shall be designed with a central panel and two (2) fold down sides to minimize the table area when not in use.*** The table sides shall be able to be lockable in either the folded or horizontal positions. 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.

There shall be a clear Lexan cover designed to overlay the table top surface. The cover shall be easily removable to allow maps and other documents to be stored between the table top and Lexan cover, or removed to use the table top as a writing surface.

***The floor beneath the conference table shall include a recessed covered enclosure.*** The enclosure shall be designed to hold the following components:

- There shall be one (1) VGA connection(s) with cable provided in the recessed center console. The connection shall be wired to the Smartboard VGA outlet 2.
- There shall be one (1) phone connection provided in the recessed center console.
- There shall be one (1) coax outlet(s) with RG6 cable provided in the recessed center console. The connection shall be wired to the specified audio/visual system.
- There shall be two (2) audio connection(s) with 22GA, two conductor cable provided in the recessed center console. The connection shall be wired to the specified audio/video system.
- There shall be two (2) data port(s) provided in the recessed component console. The cabling shall terminate at the equipment rack mount patch panel with 12" of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications shall be included with the completed apparatus.
- There shall be one (1) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the recessed component console.

**STREETSIDE INTERIOR AREA (IS2)**

**INTERIOR CABINET - COUNTER HEIGHT**

There shall be one (1) interior counter height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately 34"L x 34"W x 42"H.

- 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.

**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.

**INTERIOR CABINET - FULL HEIGHT**

There shall be one (1) full height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately 34"L x 34"W x 66"H.

The cabinet shall be used to store the specified printers and shall include the following items:

- There shall be two (2) data port(s) provided in the cabinet
- There shall be two (2) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided
- One (1) OnScene 63" premium LED compartment light, vertically mounted.
    - The above cabinet(s) shall have a ROM roll-up door, with un-painted finish.
- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
    - There shall be two (2) vertically adjustable shelves in each of the above cabinets.

**TRANSPARENCY FILM HOLDER**

There shall be one (1) transparency film holder provided on the Command Room ceiling directly adjacent to the specified equipment rack. The holder shall be designed to hold one (1) 44" x 100' roll of Inkpress Transparency Film. The holder shall include a mechanism to cut the film and prevent unwanted unrolling of film.

One (1) roll of transparency film shall be provided with the completed apparatus.

**STREETSIDE INTERIOR AREA (IS3)**

**MIDDLE ATLANTIC 40U DATA RACK**

There shall be one (1) Middle Atlantic Products model # MRK-4026, EIA compliant 19" gangable equipment rack(s), provided on completed vehicle.

Overall dimensions shall be 76.125"H x 22.0"W x 26.4"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.

Lightly smoked plexiglass front door with black textured powder coat finish and keylock. The door is 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.

The equipment shall be used to store the following components:

- Four (4) units of Cat 6 Ethernet patching (24 patches per unit). Horizontal cable management required above and below each unit.
- One (1) unit of video patches to support audio video control router components. Horizontal cable management required above and below each unit.
- One (1) microwave downlink receiver
- One (1) data satellite receiver
- Two (2) satellite TV receivers
- One (1) rack mount UPS
- One (1) VPD supplied integrated services router
- One (1) audio video recorder
- Four (4) units required to be maintained for installation of storage devices by VPD
- Minimum six (6) additional units required to be maintained for future equipment installations.
- Any additional units required for component, rack fans, heaters, power supply, etc. installation as required in this specification.

**STREETSIDE INTERIOR AREA (IS4)**

**ADDITIONAL SOUND INSULATION**

In additional to the insulation as specified, the interior area shall include additional sound deadening insulation between the interior walls to isolate the interior area from the balance of the apparatus.

**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.

***Additional sound proofing insulation material shall be included on the door interior to reduce ambient noise transfer between the Command and Negotiator rooms.***

**WINDOW(S)**

There shall be one (1) 22" wide x 36" high, double-paned insulated, sliding window(s) installed in the sliding pocket door. Each window shall have non-tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

**INTERIOR BODY WINDOW COVERS**

An interior window cover shall be provided on the sliding pocket door window, accessible from the negotiators area.

The window cover shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around the window.

**ROLLING FILE CABINET**

One (1) Hon 3-drawer rolling file cabinet(s) with two (2) 5-1/2" and one (1) 11-1/2" drawers shall be provided. Each cabinet shall have a keyed lock and shall be painted charcoal. Each filing cabinet shall be 15" wide x 28" high x 22" deep. The bottom drawer of the cabinet shall be capable of storing 8-1/2" x 11" file folders. Provisions for securing the file cabinet while the apparatus is in motion shall be provided.

**INTERIOR DESK**

The interior of apparatus shall be provided with a desk top 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 top shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

**WALL MOUNTED CONNECTION PANEL**

There shall be two (2) wall mounted connection panel(s) provided in the interior. Panel(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 or black.

Each panel shall contain the following items:

- There shall be two (2) phone connection(s) with wall plate provided in the front face of the connection panel.
- There shall be two (2) data port(s) provided in the front face of the connection panel(s). The cabling shall terminate at the equipment rack mount patch panel with 12" of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications shall be included with the completed apparatus.
- There shall be one (1) two-gang 12 VDC outlet(s) provided in the front face of the connection panel(s).
- There shall be one (1) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the connection panel(s).

**INTERIOR ROLL-AROUND CHAIR**

There shall be two (2) Vecta Rocky 4 Star roll-around office chairs provided at the command desk area. The chairs shall include the following features:

- Four-prong Rocky nesting base: one piece, solid color glass-filled nylon in graphite only
- Hip pivoting springs for lumbar support
- Hard, dual-wheel casters for use on carpet: black plastic
- Upholstered seat and back molded urethane foam over injection-molded polypropylene inner shell(s)
- Folding seat with pneumatic self-aligning features
- Pneumatic height adjustment
- Zero front rise

The chairs shall be designed to nest together and include provisions to fully secure under the desk(s) when not in use and the apparatus is in motion.

**DESKTOP COMPUTER(S)**

There shall be mounting provisions supplied for two (2) Vancouver Police Department supplied Lenovo M52p 3238 Tiny Form Factor (TFF) (or equivalent) desktop computers. Provisions to include under desk mounting brackets, any miscellaneous cabling, 120 volt AC wiring, and any cable connections.

**COMPUTER MONITOR(S)**

There shall be mounting and wiring provisions for two (2) Vancouver Police Department supplied View Sonic VG2436wm - LED (or equivalent) monitors. Monitors shall be wall mounted within the slide out on adjustable wall
mounts that are cable of being locked in place when vehicle is in motion to meet VESA mounting standards. The mounting method must protect desktop from day to day damage and be properly vented to prevent over-heating.

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

Each monitor shall include one (1) RG6 cable and two (2) 22GA 2 conductor audio cable wired to the audio/video routing system.

**SMART BOARD PRE-WIRE**

There shall be a SMART Board pre-wiring provision provided on the streetside wall between the specified monitors. The pre-wire provision shall include all cabling and power to allow for addition of a Vancouver Police Department supplied SMART Board and monitor to be installed after delivery of the apparatus.

**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 curbside which shall extend approximately 31" as measured from the outside of the body. The extendable module shall be approximately 131.5" in length (120.5" 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.

**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 dark, reflective Limo type automotive type safety glass mounted in an extruded aluminum frame.*** The frame shall have a black anodized finish.

**INTERIOR CABINET - OVERHEAD**

There shall be three (3) 26" wide 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.

**UNDER CABINET, RADIO MOUNTING CONSOLE**

There shall be three (3) under cabinet mounted radio/communication console(s) provided in the interior. The radio cabinet shall provide mounting area for the radios specified.

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

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

**INTERIOR 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.

**WALL MOUNTED CONNECTION PANEL**

There shall be three (3) wall mounted connection panel(s) provided in the interior. Panel(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 or black.

Unless otherwise noted, each panel shall contain the following items:

- There shall be one (1) USB outlet(s) and cable provided for position 1. The outlet shall be labeled and routed to the specified Smartboard overlay system.
- There shall be three (3) phone connection(s) with wall plate provided in the front face of the connection panel.
- There shall be six (6) RJ45 data port(s) with shielded CAT6 cabling provided in the front face of the connection panel(s). The cabling shall terminate at the equipment rack mount patch panel with 12" of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications shall be included with the completed apparatus.
- There shall be two (2) two-gang 12 VDC outlet(s) provided in the front face of the connection panel, one (1) in the foreward position, one (1) in the rearmost position.
- 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 connection panel(s).

**DESKTOP COMPUTER(S)**

There shall be mounting provisions supplied for three (3) Vancouver Police Department supplied Lenovo M52p 3238 Tiny Form Factor (TFF) (or equivalent) desktop computers. Provisions to include under desk mounting brackets, any miscellaneous cabling, 120 volt AC wiring, and any cable connections.

**COMPUTER MONITOR(S)**

There shall be mounting and wiring provisions for three (3) Vancouver Police Department supplied View Sonic VG2436wm - LED (or equivalent) monitors. Monitors shall be wall mounted within the slide out on adjustable wall mounts that are cable of being locked in place when vehicle is in motion to meet VESA mounting standards. The mounting method must protect desktop from day to day damage and be properly vented to prevent over-heating.

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

Each monitor shall include one (1) RG6 cable and two (2) 22GA 2 conductor audio cable wired to the audio/video routing system.

**CURBSIDE INTERIOR AREA (IC3)**

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

**WALL MOUNTED PHONE**

There shall be one (1) Vancouver Police Department supplied phone(s) mounted on the front face of the sliding pocket door stub wall. The phone system shall be programmed by the Vancouver Police Department to allow the extension to operate as an intercom between the Command and Negotiator area.

**CURBSIDE INTERIOR AREA (IC4)**

**ADDITIONAL SOUND INSULATION**

In additional to the insulation as specified, the interior area shall include additional sound deadening insulation between the interior walls to isolate the interior area from the balance of the apparatus.

**WALL MOUNTED PHONE**

There shall be one (1) Vancouver Police Department supplied phone(s) mounted on the rear face of the sliding pocket door stub wall. The phone system shall be programmed by the Vancouver Police Department to allow the extension to operate as an intercom between the Command and Negotiator area.

**INTERIOR DESK**

The interior of apparatus shall be provided with a desk top 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 top shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

**WALL MOUNTED CONNECTION PANEL**

There shall be two (2) wall mounted connection panel(s) provided in the interior. Panel(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 or black.

Unless otherwise noted, each panel shall contain the following items:

- There shall be two (2) phone connection(s) with wall plate provided in the front face of the connection panel.

There shall be two (2) data port(s) provided in the front face of the component console. The cabling shall terminate at the equipment rack mount patch panel with 12" of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications shall be included with the completed apparatus.

There shall be one (1) two-gang 12 VDC outlet(s) provided in the front face of the component console.

There shall be one (1) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in the front face of the component console.

**INTERIOR ROLL-AROUND CHAIR**

There shall be two (2) Vecta Rocky 4 Star roll-around office chairs provided at the command desk area. The chairs shall include the following features:

- Four-prong Rocky nesting base: one piece, solid color glass-filled nylon in graphite only
- Hip pivoting springs for lumbar support
- Hard, dual-wheel casters for use on carpet: black plastic
- Upholstered seat and back molded urethane foam over injection-molded polypropylene inner shell(s)
- Folding seat with pneumatic self-aligning features
- Pneumatic height adjustment
- Zero front rise

The chairs shall be designed to nest together and include provisions to fully secure under the desk(s) when not in use and the apparatus is in motion.

**DESKTOP COMPUTER(S)**

There shall be mounting provisions supplied for two (2) Vancouver Police Department supplied Lenovo M52p 3238 Tiny Form Factor (TFF) (or equivalent) desktop computers. Provisions to include under desk mounting brackets, any miscellaneous cabling, 120 volt AC wiring, and any cable connections.

**COMPUTER MONITOR(S)**

There shall be mounting and wiring provisions for two (2) Vancouver Police Department supplied View Sonic VG2436wm - LED (or equivalent) monitors. Monitors shall be wall mounted within the slide out on adjustable wall
mounts that are cable of being locked in place when vehicle is in motion to meet VESA mounting standards. The mounting method must protect desktop from day to day damage and be properly vented to prevent over-heating.

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

Each monitor shall include one (1) RG6 cable and two (2) 22GA 2 conductor audio cable wired to the audio/video routing system.

**LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC**

General

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

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

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

Wiring

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

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

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

Wiring and Wire Harness Construction

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

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

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

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

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

Circuits shall be provided with properly rated low voltage 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.

**Outputs:**
The outputs shall perform all the following items without added modules to perform any of the tasks;

1. Load Shedding: The system shall have the capability to load shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like load shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs.

2. Load Sequencing: The system shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system.

3. Output Device: The system shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than *100 times* that of a relay.

4. Flashing Outputs: The system shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, 160 or 200 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems or other unique idea you may come up with.

5. PWM: The modules shall have the ability to PWM at some outputs so that a headlight PWM module is not needed.

6. Diagnostics: An output should be able to detect either a short or open circuit. The system should be able report in “real time” a text based message that points the maintenance person to a specific output.

**Inputs:**

1. The inputs shall have the ability to switch by a ground or vbatt signal.

2. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

**Auto-Throttle:**

The multiplex system shall be able to perform automatic high idle via a network gateway or by using an existing output on a module to provide the proper signals to an OEM Engine ECU. This task should be handled with existing inputs and outputs.

**Displays:**

Displays shall be able to provide real time information regarding load shedding and system status, such as network traffic/errors or shorts and open circuits.

**System Network:**

The multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for this type of unit. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk, **No Exceptions.**

**System Reliability:**

The multiplex system shall be able to perform in extreme temperature conditions, from 40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

**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 VISTA IV V-MUX COLOR DISPLAY**

One (1) Weldon V-MUX Vista IV shall be provided. The Vista IV shall have seven switches with custom legends and a wide temperature operating range. The four wires shall control all lighting and HVAC. The Vista IV shall have color changes for button status. The display shall be pre-programmable (OEM Level) and be colored. The auto climate control shall display temperature set point and outside temperatures. The Vista IV shall be ready for back-up camera, thermal cameras and DVDs. Virtual switches, GPS, on-board diagnostics, 6” and 9” Pana Vise options and large font size shall also be included.

The Vista IV allows for peer to peer networking. The Vista IV shall have the ability to automatically change screens based on a predetermined state or condition for warning message or status.

The V-Mux display shall be located in the cab center console for control of all master and emergency lights.

**CAB CONSOLE**

A center cab console shall be provided between the Driver's and Officer's seats. Console shall be as large as possible and fabricated of 1/8" smooth aluminum. A textured powder coat paint finish shall shall be provided for durability and finished appearance.

The rear portion of the console shall be provided with open top storage for notebooks or maps. Two (2) adjustable dividers shall be provided in the storage area. The forward portion of console shall be slanted for easy viewing of the V-Mux display screen, and any siren or radio equipment. The area shall be within easy access to both Driver and Officer.

The final design of console shall be determined by the Vancouver Police Department at the pre-construction meeting.

**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 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.

**BATTERY SOLENOID**

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

**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

**SHORE POWER INLET**

One (1) Kussmaul 120 VAC, 30 amp Super Auto-Eject shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

- The outlet cover shall be gray.

- The shore power plug shall be located near the generator door area.

**ENGINE COMPARTMENT LIGHT**

There shall be one (1) light(s) mounted in the engine compartment with integral switch with a light output of at least 20 candlepower (250 lumens). The engine compartment light(s) shall operate only when the master battery switch is turned "On".

**CAB HAZARD WARNING LIGHT**

A red flashing or rotating light, located in the driving compartment, shall be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

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

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

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

The hazard light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

An audible alarm shall be provided for the door ajar light.

**BACK-UP ALARM**

The body manufacturer shall furnish and install one (1) Brigade Electronics model BBS-107 self adjusting 87-107 dB(A) electronic white noise back-up alarm. Back-up alarm to actuate automatically when the transmission gear selector is placed in reverse.

**REAR/SIDE VIEW CAMERA SYSTEM**

There shall be one (1) Zone Defense rear/side observation camera system provided and installed on the apparatus. The system shall include the following components:

- One (1) model CAM.313.SH.4P color camera with IR, high speed shutter mechanism, and automatic heater installed on the rear the body.
- Two (2) model CAM.313.MS compact color cameras with IR installed on the left and right cab sides.

The camera feeds shall be viewable through the Vista Display when the apparatus is in motion, and the AMX system when the apparatus is parked.

**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 5 second delay after switching off.

- Eight (8) lights shall be located in the Command Room, evenly spaced
- Four (4) lights shall be located in the Negotiator Room, evenly spaced

**TAIL LIGHTS**

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Whelen 900 Series 90A00TAR amber LED turn signal lights
- Two (2) Whelen 900 Series 90R00XRR red LED stop/tail lights
- Two (2) Whelen 900 Series 90J000CR halogen back-up lights with clear lens

Each of the lights above shall be mounted in a 9EFLANGE, chrome finish bezel.

**MIDSHIP MARKER/TURN SIGNAL**

Two (2) Whelen LED midship body clearance marker/turn signal lights (T0A00MAR) shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with the chassis clearance marker and turn signals.

**MARKER LIGHTS**

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be 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.

**CAB STEP LIGHTS / GROUND LIGHTS**

There shall be two (2) OnScene Solutions 9" LED NightStik light(s) installed on the vehicle 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**

One (1) Tomar model 940N, 200 watt, remote control siren with microphone shall be provided in cab. The siren shall be installed in cab within easy access of Driver.

**SIREN SPEAKER**

Two (2) Cast Products Inc. model SA4311, 100 watt siren speaker shall be provided recessed in the front bumper, one (1) on the streetside and one (1) on the curbside.

**SIDE SCENE LIGHTS**

There shall be four (4) Whelen Super LED 900 series (9" x 7") recess mounted scene lights (9SC0ENZR) provided on the upper body. Light quantity shall be divided equally per side. Each light will have twenty-four LED diodes that draw a total of 4.0 amps, with 3,000 lumens. The light shall be an 8-32 degree gradient lens and chrome flange.

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

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

**REAR SCENE LIGHT**

One (1) Whelen Super LED 900 series (9" x 7") recess mounted scene lights (9SC0ENZR) shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft × 10 ft (3 m × 3 m) square. Each light will have twenty-four LED diodes that draw a total of 4.0 amps, with 3000 Lumens. The light shall be an 8-32 degree gradient lens and chrome flange.

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

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

**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.

**UPPER LEVEL OPTICAL WARNING DEVICES**

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

ZONE A - FRONT WARNING LIGHTS

There shall be one (1) Whelen Edge FN60QLED LED 60" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

| SECTION | INTERNAL COMPONENTS | LENS COLOR |
|---|---|---|
| 1 | Blue Side Linear LED | Clear |
| 2 | Blue Front Corner Linear LED | Clear |
| 3 | Clear Linear LED | Clear |
| 4 | Blue Linear LED | Clear |
| 5 | Blue Linear LED | Clear |
| 6 | Clear Linear LED (Opticom is specified) | Clear |
| 7 | Clear Linear LED (Opticom is specified) | Clear |
| 8 | Red Linear LED | Clear |
| 9 | Red Linear LED | Clear |
| 10 | Clear Linear LED | Clear |
| 11 | Red Front Corner Linear LED | Clear |
| 12 | Red Side Linear LED | Clear |

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

The lightbar shall be separately switched at the vista display in the cab.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red/Blue split Linear Super-LED lights (90RB5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red/Amber split Linear Super-LED lights (90RA5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red/Blue split Linear Super-LED lights (90RB5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

**LOWER LEVEL OPTICAL WARNING DEVICES**

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

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

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

ZONE A - FRONT WARNING LIGHTS

There shall be two (2) Whelen 600 series (6" x 4") Red/Blue split Linear Super-LED lights (60BR6FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

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

There shall be two (2) Whelen 600 series (6" x 4") Red/Blue split Linear Super-LED lights (60BR6FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

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

There shall be two (2) Whelen 600 series (6" x 4") Red/Blue split Linear Super-LED lights (60BR6FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

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

There shall be two (2) Whelen 600 series (6" x 4") Red/Blue split Linear Super-LED lights (60BR6FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen 900 series (9" x 7") Red/Blue split Linear Super-LED lights (90RB5FCR) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

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

**LINE VOLTAGE ELECTRICAL SYSTEM**

**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.

***A low fuel warning light shall be provided in the body of the apparatus, adjacent to the generator start/stop controls.***

**STARTING SYSTEM**

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

**COOLING**

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

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

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

**EXHAUST SYSTEM**

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

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

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

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

**MANUALS AND SCHEMATICS**

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

**GENERATOR COMPARTMENT INSULATION**

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

**GENERATOR CONTROLS**

In addition to generator controls provided at the generator and in the body, there shall be controls provided in the cab in the multiplex control center. 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.

**GENERATOR CONTROLS**

In addition to generator controls provided at the generator, there shall be controls provided in the interior walk-in area near the load center. 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.

**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.

**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.

**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 Vancouver Police Department supplied external power source wiring.

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

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

- The outlet cover shall be yellow.
- The shore power plug shall be located near the generator 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 Vancouver Police Department 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.

**INVERTER**

A Newmar model 12-3550ICIP inverter shall be provided on vehicle that provides 3,000 continuous watts, 140 A capability, 120 VAC, 60 cycle output from 12 VDC. Inverter shall have a full function remote monitor/control panel.

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.

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

**INVERTER BATTERY SUPPLY - VSR**

There shall be one (1) Voltage Sensitive Relay (VSR) provided with the deep cycle batteries. The VSR allows two batteries to be charged at the same time. When the engine is started and the start battery reaches 13.7 volts, the VSR engages, allowing two battery banks (start and inverter supply) to be charged simultaneously. When the voltage drops below 12.8 volts (e.g. the engine is stopped), the VSR disengages, separating the batteries. This system eliminates the possibility of draining the wrong battery and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes.

## 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:

- Voltmeter
- Current meters for each ungrounded leg
- Frequency (Hz) meter
- 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 pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

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

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

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

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

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

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

Receptacles and Inlet Devices

Wet and Dry Locations

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

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

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

Receptacle Label

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

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

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

Wiring Schematics

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

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

**120/240 VAC SCENE LIGHTING**

**COMMAND LIGHT - KNIGHT TOWER**

The apparatus shall be equipped with one (1) all-electric floodlight tower(s). The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified. NO EXCEPTIONS.

The light tower shall have six (6) weatherproof, 500 watt, 120 volt quartz halogen lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. The light tower shall have slip-rings for a full 360 degree rotation and capable of rotating either direction from a stowed position, NO EXCEPTIONS.

The light tower shall be capable of overhanging the side or back of the vehicle (depending on mounting location) to provide maximum illumination and a warming area adjacent to the vehicle, NO EXCEPTIONS. Positioning of the light bank shall be accomplished with maintenance free, heavy duty 12 volt linear actuators.

The light tower shall be all aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

Light tower shall be controlled with a hand-held umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature.

Command Light controls shall include:

- Three (3) switches, one (1) for each light bank.
- One (1) light bank rotation switch.
- One (1) switch for elevating lower stage.
- One (1) switch for elevating upper stage.
- One (1) light to indicate when light bank is out of roof nest position.
- One (1) light to indicate when light bank is rotated to proper nest position.
- One (1) "On/Off" switch for the top mounted strobe (optional)

The controls shall be located per the itemized compartment list. 

The light tower shall have a full extension over 7' from mounted position and extend from nest position to full upright in 15 seconds. The overall size of nested light tower shall be approximately 23" wide x 47" long x 11 3/4" high, and weight approximately 120 lbs.

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 operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated as required by NFPA 1901.

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

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;

**KEYSCAN ACCESS CONTROL SYSTEM**

There shall be a Keyscan Access Control System model CA-250 provided and installed on two (2) walk-in doors of the apparatus.

**SEVEN (7) 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 Vancouver Police Department.

Due to the various configurations of antenna whips, the contractor shall provide the antenna base only, and Vancouver Police Department shall provide the antenna whip.

**AM/FM/CD RADIO WITH WEATHERBAND**

There shall be one (1) Pyle PLCD16MRWB AM/FM/CD radio with weatherband to the specified data rack. The output shall be routed through the audio distribution system.

**CUSTOMER SUPPLIED RADIO INSTALLATION**

There shall be four (4) Vancouver Police Department supplied Harris M7300 800Mhz radio(s) installed in the walk-in body. The radio(s) shall be located as follows:

- One (1) in the cab.
- One (1) radio remote head(s) in the Negotiator Room
- Two (2) in the Command room, per under cabinet radio console(s).

Each radio shall be powered from the inverter battery supply and shall include soldered crimp on end connectors. The power cables shall be enclosed in protective convoluted tubing and function identified with labelled collared shrink-wrap. Power for the radios shall be controlled by a continuous duty switch actuated by the battery disconnect switch.

Each radiio shall be wired to a Vancouver Police Department supplied NMO style antenna using supplied antenna cabling, mounted in the roof mounted antenna raceway, with minimum 4’ spacing between the antenna bases.

**'ENGINEERING' RADIO INSTALLATION**

There shall be one (1) Vancouver Police Department supplied 'Engineering' radio(s) installed at workstation, 1 adjacent to the specified tactical radio.

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

**'VERTEX' VHF RADIO WITH GPS TRACKING**

There shall be one (1) 220MHz 'Vertex' VHF radio with GPS tracking provided and installed at workstation 1, next to the tactical radio. The installation shall include the antenna, wiring to antenna, and wiring to the headset switch.

**MARINE RADIO**

There shall be one (1) ICOM IC-M604B 5.0 watt marine radio (or Vancouver Police Department approved equivalent) provided and instald at workstation 2, next to the tactical radio. The installation shall include antenna, wiring to the antenna, and wiring to the headset switch.

**CB RADIO WITH WEATHERBAND**

There shall be one (1) Uniden PC68Elite (or Vancouver Police Department approved equivalent) 40 channel CB radio with Weatherband provided and installed at workstation 3, next to the tactical radio. The installation shall include antenna, wiring to the antenna, and wiring to the headset switch.

**HELICOPTER DOWNLINK**

There shall be one (1) Vislink HDR3000 digital microwave downlink receiver and antenna (or Vancouver Police Department approved equivalent) provided and installed. The receiver and control panel installation locations shall be determined at pre-build meeting.

**RADIO HEADSET(S)**

There shall be three (3) Signatronics (or equivalent) over the head headset with boom microphone and push to talk switch provided and installed. The headsetsshall be located at the following positions:

- Two (2) in the Command Room at the curbside slide-out desk work stations, one (1) per radio position.
- One (1) in the Negotiator Room, per radio position

Each headset in the Command Room slideout shall be wired to a switch to allow it to select which of the two workstation radios it will be receiving a signal from.

A belt clip Push-to-Talk button shall be provided for each headset.

**RADIO SPEAKER**

One (1) amplified speaker system, with independent volume control shall be provided and installed in the Command Room. The system shall be designed to allow the occupants of the front Command Room to monitor the telephone conversations in the Negotiator Room.

**CISCO ROUTER**

There shall be one (1) Vancouver Police Department supplied Cisco 3945 integrated services router installed in the specified equipment rack.

Router configuration shall be the responsibility of the Vancouver Police Department.

**PHONE SYSTEM**

There shall be one (1) Vancouver Police Department supplied Cisco 9971 phone system installed after delivery of the completed unit. Provisions shall be included with the apparatus to allow for ease of installation.

**TV SATELLITE ANTENNA**

One (1) KVH Trac Vision model R6DX "In-Motion" satellite receiver shall be provided on roof of apparatus body. This satellite receiver is designed exclusively for mobile users (RV's, boats, buses). The KVH Trac Vision R6DX is 14.5" H x 32" Dia, and weighs 33 pounds. The R6DX satellite 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 Vancouver Police Department

Two (2) satellite receivers shall be provided by Bell ExpressVu and located in the data rack. Receivers shall be wired to the AMX matrix system switcher.

**CLOCK SYSTEM**

There shall be two (2) BRG Precision Products ENM625R clocks provided and installed in completed unit. The display(s) shall be located as follows:

- One (1) on the front wall of the Command Room
- One (1) in the Negotiator Room, above the external door at the rear.

**AUDIO VIDEO ROUTING AND CONTROL SYSTEM**

One (1) AMX NI-3000 control station with RS323 control shall be used to operate and control the video system equipment.

Three (3) AMX NXD-500i, 5" color touch-panel interface units shall be provided and located;

- One (1) in the Command Room
- One (1) in the Negotiator Room
- One (1) in exterior curbside video compartment C1.

The interface units shall communicate with the NI-3000 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 from either 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 the optional Camera, and Satellite TV receivers, and display screens.

System shall be capable of routing all audio/video inputs (including Satellite TV, Divar outputs, camera system). Any input source can be displayed at any of the specified monitors.

**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.

**INTERIOR VIDEO MONITORING SYSTEM**

There shall be a audio/video monitoring system provided and installed in the Negotiator Room. The system shall include two (2) Panasonic WV-CF324 Metal Body Day-Night Fixed dome cameras and two (2) PZM Series PZM-11 Microphone Wall Plates. The components shall be fully installed with outputs wired to the specified Bosch DVR-650-16A200 Digital Video Recorde.

**Wi-Fi NETWORK – EXTERNAL/INTERNAL ACCESS POINT**

There shall be one (1) one (1) Cisco AIR-CAP1552E-A-K9 external access point and recommended three (3) antennas to provide wi-fi network access to the exterior of the vehicle.

The External Access Point system shall:

- Use Cisco certified antennas
- Have antennas placed to maximize access around the vehicle perimeter
- Have antennas wired to the external access point with loss on cabling calculated to comply with Industry Canada regulations
- Be wired to the integrated services router (Cisco NMEAIR-WLC6-K9 wireless controller will be installed in integrated services router by VPD)

**Wi-Fi NETWORK – INTERNAL ACCESS POINT**

There shall be one (1) one (1) Cisco AIR-CAP3502I-X-K9 internal access point and recommended antenna to provide wi-fi network access to the exterior of the vehicle.

The Internal Access Point system shall:

- Be mounted placed to maximize access in the vehicle interior. Roof mounting preferred.
- Be wired to the integrated services router (Cisco NMEAIR-WLC6-K9 wireless controller will be installed in integrated services router by VPD)

**CELLULAR ANTENNA**

There shall be one (1) cellular network antenna provided and installed for access to the Rogers cellular network and Cisco for Roger's LTE network (with 3G backward compatibility). The antenna shall be mounted to allow for best access and connected to the integrated services router.

One (1) Vancouver Police Department supplied Cellular LTE HWIC shall be supplied and installed in integrated services router.

**FLAT PANEL MONITOR(S)**

One (1) Commercial grade, 30" multiple input, flat panel LCD monitor(s) shall be provided in outside curbside video compartment. System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.

The monitor installation shall include an additional two (2) shielded CAT6 inlet/outlets.

**COLOR MULTIFUNCTION PRINTER**

There shall be one (1) Vancouver Police Department supplied Xerox 8860MFP (or equivalent) multi-function printer in the Command Room. The exact printer location shall be determined at the pre-build meeting.

The following shall be provided with the printer installation:

- Two (2) circuit labeled RJ-45 plugs with shielded CAT6 cabling that terminates at the rack mount patch panel with 12' of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications to be included.
- One (1) 120 VAC, 20 amp, duplex straight blade receptacle (NEMA 5-20R) circuit labeled outlet.

**PROPERTY TAG PRINTER**

There shall be one (1) Vancouver Police Department supplied Zebra GK420T (or equivalent) property tag printer in the Command Room. The exact printer location shall be determined at the pre-build meeting.

The following shall be provided with the printer installation:

- Two (2) circuit labeled RJ-45 plugs with shielded CAT6 cabling that terminates at the rack mount patch panel with 12' of slack per cable. A cable certification report confirming that all network wiring complies with CAT6 specifications to be included.
- One (1) 120 VAC, 20 amp, duplex straight blade receptacle (NEMA 5-20R) circuit labeled outlet.

**CONFERENCE MONITOR AND SMART BOARD**

A Samsung 52" LCD flat screen monitor shall be provided and wall mounted on forward curbside wall above cabinets over generator area.

A SMART Board 6052i interactive whiteboard overlay shall be provided over the flat screen monitor above. The protective overlay adds interactive whiteboard functionality to the liquid crystal display (LCD) panel. You simply touch the display to control any computer application or write in digital ink and then save all your work to print, e-mail or post online. Compatible with a broad range of flat-panel display sizes and brands, SMART Board for Flat-Panel Displays interactive whiteboards use DViT (Digital Vision Touch) technology to ensure touch precision without compromising image quality.

The server located in the data rack shall control the SMART Board. The server shall be accessed by one (1) wireless keyboard and one (1) wireless mouse.

Unit will be connected to matrix switcher and installed to view signals from all on-board audio/video equipment.

Provision will be made for connection of the unit and SMART Board overlay to be connected to the computer network system.

**SIDE EXTERIOR MESSAGE BOARD(S)**

One (1) BRG Precision Products model BRG16x240TC Multi-color Indoor Display message board (6"H x 74"L x 2.3"D) shall be provided. The display shall include a custom built enclosure which shall allow the display to be mounted on the exterior of the apparatus with a removable mount and ethernet connections. The mount shall be designed to allow attachment to either the curbside or streetside of the apparatus.

**REAR EXTERIOR MESSAGE BOARD(S)**

One (1) BRG Precision Products model BRG16x120TC Multi-color Indoor Display message board (6"H x 23"L x 2.3"D) shall be provided. The display shall include a custom built enclosure to allow the display to be mounted on the upper curbside rear exterior of the apparatus with a removable mount and ethernet connection.

**AGILE MESH PRE-WIRE**

There shall be a pre-wire for an Agile Mesh system included with the camera mast. The option shall include two (2) LMR400 antenna cables installed in the camera mast Nycoil and terminated near the specified data rack(s) to allow for future radio antenna installation.

**SATELLITE DISH PRE-WIRE**

There shall be a pre-wire provision on the body roof for the installation of a Vancouver Police Department supplied data satellite dish. The provision shall include open roof space for a 1.2M dish, roof re-enforcement for the additional weight, a roof mounted sealed junction box, and cable conduit to the specified data rack(s). All wiring between the data rack(s) and satellite dish shall be the responsibility of Vancouver Police Department.

**COMMAND CAMERA SYSTEM**

There shall be one (1) Bosch MIC400AL14636N with Pan-Tilt-Zoom and brushless motor technology provided and installed on the specified pneumatic mast. The camera system shall be a high resolution unit with Day/Night functionality and a 36x optical zoom lens.

**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.

**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).

**CAMERA ENCLOSURE DOOR**

The top of the mast enclosure shall have an air actuated door to prevent rain and snow from accumulating on camera while truck is traveling. The door will automatically raise with the mast raise controls.

**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 Vancouver Police Department 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.

- There shall be two (2) NFPA approved aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.

  - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.

- One (1) Little Giant model 1AA -17 "A" frame type aluminum combination ladder(s) shall be provided with the completed unit. Folded size is 55" x 25", and weighs 45 pounds.

  - The ladder(s) shall be mounted on vehicle, in compartment C2.

- One (1) 5 lb. ABC dry chemical aluminum fire extinguisher(s) shall be provided with the completed unit.

**REMAINING NFPA MINOR EQUIPMENT BY PURCHASER**

All other minor equipment not specified above, but required by NFPA 1901 before the unit is placed in service shall be supplied and mounted by Vancouver Police Department.