

ROSWELL FIRE DEPARTMENT  
ROSEWELL, GEORGA  
HEAVY RESCUE, SVI #1081  
Production Specification

Contract Administrator: Jackie Sipes  
Sales Administrator: Rafe Bridges



**ROCK SOLID QUALITY**

# Roswell Fire Department

Heavy Rescue, SVI #1081

## **INTERNET IN-PROCESS SITE**

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

## **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

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- f) Type of fuel and fuel tank capacity
  - g) Electrical system voltage and alternator output in amps
  - h) Battery make, model, and capacity in cold cranking amps (CCA)
  - i) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
- 4) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
  - 5) Pump transmission make, model, serial number, and gear ratio
  - 6) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
  - 7) Water and Foam tank certified capacity in gallons or liters
  - 8) Paint manufacturer and paint number(s)
  - 9) Company name and signature of responsible company representative
  - 10) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
  - 11) Certification of compliance of the optical warning system
  - 12) Siren manufacturer's certification of the siren
  - 13) Written load analysis and results of the electrical system performance tests
  - 14) Certification of slip resistance of all stepping, standing, and walking surfaces
  - 15) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
  - 16) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
  - 17) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
  - 18) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
  - 19) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
  - 20) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
  - 21) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
  - 22) When the apparatus is equipped with a water tank, the certification of water tank capacity
  - 23) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
  - 24) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus
  - 25) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
  - 26) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
  - 27) If the apparatus has a line voltage power source, the certification of the test for the power source
  - 28) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
  - 29) Any other required manufacturer test data or reports.

### **OPERATIONS AND SERVICE DOCUMENTATION**

The Contractor shall deliver with the fire apparatus at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted.

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

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

- 1) Manufacturer's name and address
- 2) Country of manufacture
- 3) Source for service and technical information
- 4) Parts replacement information
- 5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)

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

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

### **NFPA REQUIRED DOCUMENTATION FORMAT - DIGITAL**

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

### **STATEMENT OF EXCEPTIONS**

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

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

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

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

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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.

### **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.

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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.

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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 tested and certified by Underwriters Laboratories, to perform as listed below;

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

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

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

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

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

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

### **DOCUMENTATION**

The 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.



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## **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 Roswell Fire Department on all warranty work.

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

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

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

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

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

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

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

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

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

## **GRAPHICS LIMITED WARRANTY**

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

## **CONSTRUCTION PERIOD**

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

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

## **SHOP NOTE**

\$100/day

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## **OVERALL HEIGHT**

The overall height (OAH) of the vehicle shall be approximately 140" (11' - 8") 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 412" (34' - 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").

## **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

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

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

The label shall show the height of the completed fire apparatus in feet and inches, the length of the completed fire apparatus in feet and inches and the GVWR in pounds.

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

## **ACCIDENT PREVENTION**

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

## **PERSONNEL CAPACITY**

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

## **ACCIDENT PREVENTION**

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

## **WEARING HELMET WARNING**

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

## **FRONT BUMPER**

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

## **EXHAUST SYSTEM (VERTICAL)**

The existing exhaust tailpipe shall be modified to a vertical exhaust pipe, extending above the body height.

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

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

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

SHOP NOTE: Turn out exhaust to the curbside

## **MUDFLAPS**

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

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## **CHASSIS AIR TANK VALVES**

The cab/chassis air brake system tank drains shall be extended to Class 1 brass petcock valves with chrome plated zinc handle located on forward streetside lower body. Each air tank and valve shall be inter-piped with color coded reinforced nylon tubing. Brass compression type fittings shall be used on the nylon tubing, meeting all DOT requirements where applicable.

Each handle shall be properly labeled with colored tag to identify each tank.

## **FUEL FILL**

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

## **BODY DESIGN**

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

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

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

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

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

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

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## **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.

## **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.

## **WALKWAY/ROOF COMPARTMENT SUPPORT**

The upper body floor structure shall be integral with the body sheet metal construction and shall be an all welded assembly. Bolted or glued assemblies shall not be accepted, .

All seams in roof material shall be fully and continuously welded to prevent entry of moisture.

There shall be a total of four (4) 2" x 2" x 1/4" 6061-T6 alloy aluminum "C" channels running the length of body, two (2) on each outboard side. These "C" channels shall be used for roof support and in addition shall be used for mounting of any specified reels. This open "C" channel design along with special reel mounting clips allows for a universal location of any specified reels within each compartment.

In between the two (2) center "C" channels running the length of body shall be 2" x 2" x 1/4" 6061-T6 alloy aluminum tubing running perpendicular to walkway and welded in place on approximate 16" centers to support roof and/or walkway structure specified. Spacing greater than 16" that can allow oil canning of walkway shall not be allowed, .

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A 2" formed radius shall be provided along the body sides and utilized as a wiring trough. The use of aluminum extrusions in this area shall not be acceptable, .

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

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

### **12" REAR STEP BUMPER**

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with Bustin Steel 19W4 grating or equal tread plate with 4" CTC bar spacing and finished with aluminum diamond plate on the edges. The bumper shall extend from the rear vertical body panel 12" and provide a rear step with a minimum of 1/2" space at body for water drainage.

### **REAR TOW EYES**

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below body. The tow eyes shall be fabricated from 3/4" thick steel plate with a 3" diameter opening. Tow eyes shall be **painted to match frame color**.

### **GROUND LIGHTS**

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

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

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## **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.

## **EXTINGUISHER COMPARTMENTS**

There shall be three (3) extinguisher storage compartments located, two (2) on the curbside, and one (1) on the streetside of rear wheel well area. Each compartment shall be capable of storing one (1) 2-1/2 gallon water can OR 20lb. dry chemical extinguisher. Each compartment shall have a vertical hinged stainless steel door with a positive catch latch. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

SHOP NOTE; No divider in compartments.

## **BODY PAINT SPECIFICATIONS**

### **BODY PAINT PREPARATION**

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

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

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

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## **PAINT PROCESS**

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

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

## **PAINT - ENVIRONMENTAL IMPACT**

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

## **FASTENERS**

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



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## **ELECTROLYSIS CORROSION CONTROL**

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

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

## **PAINT FINISH - SINGLE COLOR**

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

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

- Paint Color: Match cab/chassis supplied paint color.
- SHOP NOTE; Cab paint; Axata brand L0042 EW Red Imron Elite Transit.

## **PAINT WARRANTY**

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

## **COMPARTMENT INTERIOR FINISH**

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

## **REFLECTIVE STRIPE REQUIREMENTS**

### **Material**

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

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

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

### **Minimum Requirements**

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

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

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

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

## **GRAPHICS PROOF**

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

## **REFLECTIVE STRIPE - CAB SIDE**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe shall be white in color.

There shall be a 1" Scotchlite reflective stripe located 1" above and a second 1" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

## **REFLECTIVE STRIPE - CAB FRONT**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe shall be white in color.

There shall be a 1" Scotchlite reflective stripe located 1" above and a second 1" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

## **REFLECTIVE STRIPE - CAB DOOR INTERIOR**

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

The inside of each cab and crew doors shall have 4" Chevron style diamond grade reflective striping. The colors shall be red and fluorescent yellow-green.

## **REFLECTIVE STRIPE - BODY SIDES**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe shall be white in color.

There shall be a 1" Scotchlite reflective stripe located 1" above and a second 1" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

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

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## **CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS**

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

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

The stripe material shall be 3M Diamond Grade.

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

## **COMPANY IDENTIFICATION**

Any body and cab placards and labeling shall reflect Sutphen Corporation identification.

## **LETTERING**

### **GRAPHICS PROOF**

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

### **SIDE CAB DOOR LETTERING**

There shall be a Roswell Fire "RFD" scramble installed on each front cab door with "ROSWELL" arched over top and "Fire" curved below the scramble. (Photo and dimensions to be provided by chassis manufacturer), font to match Sutphen HS5849 exactly.

This lettering shall be 22k Gold Leaf with Black reflective outline/shadow. Font to match Sutphen HS5849 exactly.

### **UPPER BODY SIDE LETTERING**

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

Line 1 - ROSWELL FIRE  
Line 2 - HEAVY RESCUE

Font shall be Coolvetica in all CAPS

There shall be sixteen (16) 8" high reflective letters furnished and installed on body sides within reflective stripe line.

- CITY WIDE

- This reflective lettering color shall be gold IJ680 with black reflective outline/shadow.

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## **FRONT OF CAB LETTERING**

There shall be eleven (11) 5" high reflective letters furnished and installed on the upper raised cab face.

- This reflective lettering shall be gold in color with black reflective outline/shadow.

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

One (1) custom designed 12" - 18" 3M Scotchlite type retroreflective logo shall be provided and located on the completed vehicle. The exact design and/or artwork shall be provided by the Roswell Fire Department prior to construction.

One (1) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Roswell Fire Department.

## **US FLAG, 12" -18"**

Two (2) 12" - 18" wide waving type US flag(s) printed on 3M Scotchlite type retroreflective material shall be provided and located on the completed vehicle, location per Roswell Fire Department.

## **EXTERIOR COMPARTMENT DOORS**

### **ROLL-UP DOOR CONSTRUCTION - AMDOR**

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

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

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

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

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## **TWO (2) UPPER BODY COMPARTMENTS (INDIVIDUAL)**

There shall be two (2) compartments parallel to the sides of the body, one (1) on each side. Street side compartment shall be approximately 118.0" long x 32.0" wide x 29.5" deep and the curb side compartment shall be approximately 158.0" long x 28.0" wide x 29.5" deep. The curb side compartment shall be provided with two doors, open under each door sill to allow for long equipment. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

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

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

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

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

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

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

## **UPPER BODY WALKWAY**

A 30" wide, upper body walkway shall be provided at the center of body and recessed into the roof structure. The walkway shall be fabricated from NFPA compliant 3/16" aluminum tread plate with continuously welded cross seams to prevent moisture penetration into apparatus body, No Exceptions. The walkway shall be supported with 2" x 2" tubing on 14" - 22" centers.

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

## **WALKWAY/STEP LIGHTS**

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

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

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

There shall be (1) 30" FRC Man Saver Bar (Part #MSA110-A30) located on the upper body apparatus walkway. The Man Save Bar shall be mounted so the the base of the bar is located on the streetside f the upper body walkway.

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## **ACCESS LADDER**

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

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

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

Ladder shall be located on rear center of the body.

## **WALKWAY/STEP LIGHTS**

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

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

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

## **WALKWAY EXTENSION STEP**

A full walkway width x 8.5" deep, bolt-on type extension step shall be provided for safe transition from specified ladder to center walkway area. Step shall be fabricated from 3/16" NFPA compliant treadplate aluminum with side gusset supports to body. The specified center rear marker lights shall be located on rear facing edge. The underside of step shall have an 28" OnScene LED light to light the bumper or compartment area below.

## **BODY WIDTH DIMENSIONS**

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

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

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

The interior useable compartment width shall be approximately 64.5" wide.

The compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) Zico 1000 series KD-UH walkaway type SCBA air pack bracket(s) with high cycle coated spring clips and angled foot plate (no CRS strap inc.).
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay ECR1616-17-18 electric cable reel(s) capable of storing 150' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
  - The cable reel shall be equipped with 150' of 10/3 SEOW yellow cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

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- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, L5-20 single twist lock receptacle.
  - One (1) 120 VAC, L5-20 single twist lock receptacle.
  - One (1) 120 VAC, L5-20 single twist lock receptacle.
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Roswell Fire Department.
- The fairlead roller shall be mounted directly to the reel.
- One (1) Hannay EFH1514-17-18 high pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).
  - The hose reel shall be equipped with 200' of 3/16" Parker 6,000 PSI, high pressure air hose. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Gray in color with a red color coded end.
  - The fitting on the end of the high pressure air hose reel shall be a CGA-347 high pressure fitting.
  - The air supply shall be from the specified mobile breathing air system.
  - The air supply for specified reel(s) shall be from the on-board specified mobile breathing air system. The reel shut-off valve, pressure regulator, and gauge shall be provided at the specified breathing air control panel, not exceeding 72" from ground.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- The controls for the specified light tower(s).



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- Air storage shall consist of four (4) ASME 491 SCF @ 6,000 PSI, (does not require hydrostatic testing) shall be provided on completed vehicle complete with gauges and valves. Each cylinder shall measure 9.6" diameter x 55" long, and weigh 400 lbs.

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

Air tanks shall be marked with a label that reads;

"High Pressure 6,000 PSI Breathing Air" or "High Pressure 41,368 kPa Breathing Air."

- There will be a welded reinforcement below specified floodlight tower tub to carry specified DOT or ASME cylinders. The mounting of the cylinders will be with adjustable track and powder coated steel band straps to securely hold all cylinders in place.
- One (1) Resolve Specialty Space Saver model 100A vertical mobile filling station(s) designed for SCBA and SCUBA cylinders shall be provided. Fill station shall be capable of simultaneously filling (2) cylinders, with door safety interlocks. The fill enclosure shall meet NFPA 1901 testing certification, and shall be approx. 42.50" high (53" high with door open) x 13.00" wide x 23.00" deep and weigh 405 lbs. If a cascade air fill control panel is provided it will attach to either side of fill station or remotely.
- The Resolve Space Saver fill station shall be provided with a four (4) bank, manual control cascade air fill control panel with black non-glare control panel. Panel is designed with embedded color graphics to help assure proper operation in the field. All gauges are premium glycerin filled which have a 1.5% accuracy rating. Panel includes; shielded LED light, safety gauges, charge and bleed valves and pressure regulator for automatic SCBA filling. The panel housing swings open from the front to allow for easy access to gauges and valves in the event service is needed. A refill port for re-filling air storage with female fitting S252P with S44-2 dust cap is provided on front of panel. Panel shall be 42.50" x 9.75" x 18.00".
  - One (1) high pressure air hose reel gauge(s), adjustable regulator(s), and fill control(s) shall be provided on front panel with outlet port located on the rear of the fill station.
  - The fill station fill whip(s) shall terminate in a high pressure CGA-347 threaded connectors for 4,500 - 5,500 PSI air pack cylinders.
- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.

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

The interior useable compartment width shall be approximately 64.5" wide.

The compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) bolt-in vertical compartment partition providing a minimum 10" clear dimension from forward door jamb providing storage area for Roswell Fire Department supplied Little Giant Overhaul ladder forward of partition. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) transverse module fabricated from 3/16" (.188) 3003H-14 aluminum alloy smooth sheet. The module will be designed for the following long tools and equipment:
  - The list of items to be stored in the transverse module shall be determined at the pre-construction meeting.
  - One (1) Roswell Fire Department supplied stokes basket(s). Manufacturer, model number and dimensions of the stokes basket(s) shall be provided during the pre-construction meeting.
  - Two (2) Roswell Fire Department supplied backboard(s). Manufacturer, model number and dimensions of the backboard(s) shall be provided during the pre-construction meeting.
  - One (1) Roswell Fire Department supplied rescue tri-pod. Manufacturer, model number and dimensions of the rescue tri-pod shall be provided during the pre-construction meeting.

# Roswell Fire Department

## Heavy Rescue, SVI #1081

- There shall be three (3) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.
- There shall be three (3) OnScene Solutions Velcro cargo straps provided one (1) to secure specified ladder and two (2) to secure four (4) Roswell Fire Department Auto Crib-Its model AC-17 on aft side of specified partition.
  - Mountings shall be provided for Roswell Fire Department supplied jack hammer. Model of tools shall be provided prior to fabrication.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

# Roswell Fire Department

Heavy Rescue, SVI #1081

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

The interior useable compartment width shall be approximately 59.5" wide.

The compartment door opening shall be approximately 52.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 81 series aluminum tray base with 100% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - Tray shall be provided with mountings for Roswell Fire Department supplied saws. Saw brand and model shall be provided prior to fabrication.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.

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- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 150 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - Tray shall be provided with mountings for Roswell Fire Department supplied power tools. Tool brand and model shall be provided prior to fabrication.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.
- There shall be a transverse lumber storage module for 4" x 4"s in upper section of compartment. The module shall be fabricated from 3/16" (.188) 3003H-14 aluminum alloy sheet and shall have a OSS Velcro cargo strap to retain equipment.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.

# Roswell Fire Department

Heavy Rescue, SVI #1081

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

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

The compartment door opening shall be approximately 63.2" wide.

Lower right section of compartment below frame level, approximately 30" wide shall be transverse to exterior compartment C4.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be two (2) OnScene Solutions 81 series aluminum tray base with 100% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - Vertical partition(s) shall be provided on slide-out tray base dividing the tray into left and right sides. Each vertical partition shall be horizontally adjustable; mounted on aluminum Shelf Trac on tray floor. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.

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- Mountings shall be provided in specified trays for Roswell Fire Department Paratech Struts & Kits.
  - Paratech Interstate Vehicle Stabilization Kit #22-796855
  - Paratech MonoPod Pully Kit #22-796530
  - Paratech Hydra Fusion Pump w/10 & 16 Struts #'s 22-790020 22-79HA10 22-79HA16
  - Paratech BiPod Conversion Kit #22-796810
- Mountings shall be provided for Roswell Fire Department supplied long tools. Roswell Fire Department shall provide quantity and dimensions of long tools prior to fabrication design.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

# Roswell Fire Department

Heavy Rescue, SVI #1081

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

The interior useable compartment width shall be approximately 64.5" wide.

The compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) shelf/shelves approximately 16" deep bolted to back wall for Roswell Fire Department battery charger. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front edges.
  - The above component(s) shall have a smooth un-painted finish.
- 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.
  - One (1) Roswell Fire Department supplied gas powered hydraulic power unit(s) shall be mounted in tray.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.



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- There shall be two (2) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.
  - The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.
  - The above component(s) shall have a smooth un-painted finish.
  - Each tool board will be bolted to compartment floor.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on both sides of the tool board. The striping shall be 2" wide and red/yellow in color.
- One (1) module shall be provided to house Roswell Fire Department hoses and too accessories. Module shall be approximately 16" wide x 16" high x 24" deep with three equal horizontal storage bins.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay ECR1616-17-18 electric cable reel(s) capable of storing 150' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
  - The cable reel shall equipped with 150' of 10/3 SEOW yellow cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
    - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
    - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
    - One (1) 120 VAC, L5-20 single twist lock receptacle.
    - One (1) 120 VAC, L5-20 single twist lock receptacle.
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Roswell Fire Department.

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- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- The cab tilt control pendant.
- The generator gauge panel.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
  - 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.
- One (1) Roswell Fire Department supplied electric hydraulic power unit(s) shall be mounted in compartment. One (1) 240 VAC twist lock switched receptacle(s) shall be provided on back wall with switch(es) at door opening within easy reach of operator for turning the power unit(s) On/Off.

- Mount(s) shall be provided and installed for three (3) Roswell Fire Department supplied hydraulic ram(s).

SHOP NOTE;

(1) Make: Hurst eDraulic Model: \_\_\_\_\_

(2) Make: Hurst Model: \_\_\_\_\_

- Mounts will be supplied and installed for two (2) Roswell Fire Department supplied hydraulic cutter(s).

SHOP NOTE

(1) Make: Hurst eDraulic Model: \_\_\_\_\_

(1) Make: Hurst Model: \_\_\_\_\_

- Mounts will be supplied and installed for two (2) Roswell Fire Department supplied hydraulic spreader(s).

SHOP NOTE

(1) Make: Hurst eDraulic Model: \_\_\_\_\_

(1) Make: Hurst Model: \_\_\_\_\_

- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.

# Roswell Fire Department

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

The interior useable compartment width shall be approximately 64.5" wide.

The compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
- The specified portable winch shall be mounted in compartment using a heavy duty "U" shaped channel. Winch receiver tube and mounting pin shall be utilized to hold in place during travel.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.

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## Heavy Rescue, SVI #1081

- There shall be one (1) OnScene Solutions 81 series aluminum tray base with 100% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - There shall be a second tray pan secured approximately 9" above above slide-out tray. Upper pan shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flanges along the edges.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.
- There shall be a transverse storage module which extends from the opposite side of the body (specified in opposite side compartment).
  - Three (3) Roswell Fire Department supplied pike pole(s). Manufacturer, model number and dimensions of the pike pole(s) shall be provided during the pre-construction meeting.
  - There shall be three (3) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.
- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.
  - The SCBA cylinder module shall be capable of storing eight (8) SCBA cylinders up to 7.5" diameter.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

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Heavy Rescue, SVI #1081

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

The interior useable compartment width shall be approximately 59.5" wide.

The compartment door opening shall be approximately 52.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

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

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- There shall be one (1) air bag storage module(s). The module shall be fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. Circular notches shall be provided along the front edge to ease the access to the air bags. Each bay shall be sized to hold the air bag and a matching piece of 1/2" plywood (plywood not provided).
  - Roswell Fire Department Vedder air bags;

One (1) 13 x 13 x 1	Two (2) 14 x 14 x 1	One (1) 18 x 18 x 1	One (1) 13 x 41 x 1
Two (2) 21 x 25 x 1	One (1) 27 x 27 x 1	One (1) 31 x 28 x1	Two (2) 23" dia 30T
One (1) 35" dia 75T			
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.

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

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

The compartment door opening shall be approximately 63.2" wide.

Lower left section of compartment below frame level, approximately 30" wide shall be transverse to exterior compartment S4.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The Amdor door shall be equipped with a door ajar switch integrated into the lower door handle retainer block to signal open door.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be two (2) OnScene Solutions 81 series aluminum tray base with 100% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - Vertical partition(s) shall be provided on slide-out tray base dividing the tray into left and right sides. Each vertical partition shall be horizontally adjustable; mounted on aluminum Shelf Trac on tray floor. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/yellow in color.

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- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Night Axe LED, full height compartment lights, vertically mounted.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
  - 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.
- One (1) OnScene Solutions Rough-Service 9" LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

### **PLASTIC FLOOR AND SHELF TILE**

All compartment floors, shelves, and trays shall be covered with Turtle Tile plastic interlocking grating.

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



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## ROPE ANCHOR OR PORTABLE WINCH RECEIVERS

The completed unit shall have an integrated receiver or anchor system for use with removable rope anchor point and/or a portable electric winch, when specified.

Receivers or anchors installed at any location on the apparatus for use as removable winch anchors shall be designed and affixed to provide at least a 2.0 to 1 straight line pull no-yield safety factor over the load rating of the removable winch.

Receivers or anchors installed at any location on the apparatus for use with rope operations shall be designed and affixed to the apparatus to provide at least a 9,000 lbf (40,000 N) no-yield condition with a straight line pull.

A safety sign FAMA28 shall be located on or near each receiver or anchor stating the maximum straight line pull rating.

Side receiver(s) (if specified) shall have the following load rating:

	<u>STRAIGHT PULL</u>	<u>SAFETY FACTOR</u>
Rope Tie Off:	600 Lbs.	15:1
Winch:	5,000 Lbs.	2:1

Front and/or rear receiver(s) (if specified) shall have the following load rating:

	<u>STRAIGHT PULL</u>	<u>SAFETY FACTOR</u>
Rope Tie Off:	600 Lbs.	15:1
Winch:	Winch Load Rating (9,000 Lbs. Max)	2:1

The following items shall be provided to accomplish rope rescue and/or portable winch operation;

- Six (6) rope anchor point receiver(s) shall be provided and located on outboard edges of body roof area. The receiver(s) shall be manufactured using 2" x 2" x 1/4" wall steel trailer style receiver tube welded to 6" x 4" x 1/2" thick steel plate base and bolted to body structure. Anchor point will add 3-1/4" to body height and does not extend beyond body (without anchor point). The receiver assembly shall have a black hammertone powder coat paint finish. Each receiver location shall have a stainless steel scuff plate to protect paint on upper body. Reinforcements to body shall be added as necessary to increase the structural integrity and to provide a working weight rating of 600 lbs., with a 9,000 lbs. maximum load based upon using a 15:1 safety factor to match typical 1/2" rescue rope ratings.
- Two (2) removable rope anchor(s) shall be provided with completed vehicle. Each rope anchor shall be fabricated from 3/4" steel, 2" high x 11.5" long with a 3" OD/2" ID eyelet. Eyelet end shall have radiused edge to prevent damage to rope or carabineer. Each rope anchor shall have a black hammertone powder coat paint finish and a steel 5/8" hitch pin to lock it in place. An aluminum mounting bracket shall be provided to store rope anchor(s) inside a body compartment as close to receiver location as possible.
- One (1) Warn Zeon 10-S multi-mount, 10,000 lb. 12 VDC electric winch shall be provided with the completed unit. Winch shall be capable of being mounted to the vehicle by inserting the 2" tube of carrier into a properly rated receiver and pinned into place for use. Winch shall be supplied with 100' of 3/8" synthetic rope with pinned utility hook. A 12' remote control shall be provided that permits the operator to stand at a safe operating distance from the cable and winch. Winch shall have a black powder coat paint finish with a limited lifetime warranty.

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- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the streetside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).
  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.
  - The receiver(s) shall have one (1) rubber cover(s) provided.
- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the streetside of the body in the rearward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).
  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.
  - The receiver(s) shall have one (1) rubber cover(s) provided.
- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).
  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.
  - The receiver(s) shall have one (1) rubber cover(s) provided.
- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside of the body in the rearward portion of the wheel well panel for use with removable rope anchor and/or a portable electric winch (when specified).
  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.
  - The receiver(s) shall have one (1) rubber cover(s) provided.

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- There shall be three (3) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located at the rear bumper for use with removable rope anchor point and/or a portable electric winch (when specified).
  - There shall be three (3) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - The receiver(s) shall have three (3) rubber cover(s) provided.

### **LOWER SIDE BODY PROTECTION - RUB RAIL**

Rub rails shall be provided below the compartment door openings on both the streetside and curbside.

The rub rails shall be fabricated from ABS plastic, measuring approximately 2-3/4" high x 1-3/8" thick. 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 ABS plastic material shall be black in color.

### **UPPER SIDE BODY PROTECTION - RUB RAIL**

Rub rails shall be provided on upper body sides on both the streetside and curbside.

The rub rails shall be fabricated from ABS plastic, measuring approximately 2-3/4" high x 1-3/8" thick. 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 ABS plastic material shall be black in color.

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

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

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

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

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

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

- The awning fabric color shall be ivory.

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

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## **AWNING HOUSING COLOR**

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

## **ROLL-OUT AWNING CURBSIDE**

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

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

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

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

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

- The awning fabric color shall be ivory.

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

## **AWNING HOUSING COLOR**

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

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## WALK-IN INTERIOR FINISH DETAILS

### DESK, CABINET, CONSOLE FINISH

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

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

### CAB/BODY WALK-THROUGH CONNECTION

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

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

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

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

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

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

### CUT OUT IN REAR CAB WALL

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

## INTERIOR SPECIFICATIONS

### INTERIOR INSULATION

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

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## **INTERIOR FINISH**

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

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

The interior finish shall be pearl gray pebble grain FRP.

## **INTERIOR WALKWAY SIDE WALLS**

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

## **INTERIOR WALKWAY FLOOR**

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

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

## **INTERIOR SUB-FLOOR**

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

## **AIR CONDITIONER - HEATER**

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

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

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

## **TREE LIMB GUARD**

A front panel only tree limb guard shall be provided ahead of air conditioner unit, fabricated from 1/8" aluminum treadplate to provide protection to the specified roof mounted equipment from small tree branches.

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## **STREETSIDE INTERIOR AREA (IS1)**

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 40" wide.
- The 12 volt electrical distribution panel shall be located in the front cabinet.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.

## **INTERIOR BENCH SEAT**

The interior body walkway shall be provided with a squad bench seat along the side wall. The bench seat base shall be fabricated of 1/8" aluminum tread plate to form a under seat storage compartment. A hinged seat cushion shall be provided for access to storage area.

The seat cushion shall be approximately 3" thick with a 3/4" plywood platform for stability. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat cushion. The cushion and seat back shall be covered with Duraware heavy duty fabric material.  
SHOP NOTE; NO riding position.

## **STREETSIDE INTERIOR AREA (IS2)**

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 56" wide with 26" wide opening..
- Cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- 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.
- There shall be one (1) 120 VAC outlet(s) located inside cabinet against the back wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered through the on-board generator system.

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## **CURBSIDE INTERIOR AREA (IC1)**

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 40" wide.
- One (1) 120/240 VAC load center.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- There shall be one (1) 120 VAC outlet(s) located inside cabinet against the back wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered through the on-board generator system.

## **CURBSIDE INTERIOR AREA (IC2)**

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 26" wide.
- Cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- 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.

## **REAR INTERIOR AREA (IR1)**

- There shall be one (1) full height cabinet(s) provided on interior rear walk-in area. Cabinet shall be approximately 42" wide x 75" high x 28" deep.
- Cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- One (1) OnScene Night Axe LED, full height compartment light, vertically mounted.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- 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.



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## **LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC**

### General

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

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

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

### Wiring

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

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

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

### Wiring and Wire Harness Construction

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

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

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

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

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

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

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

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

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

### Power Supply

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

### Minimum Continuous Electrical Load

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

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

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

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

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

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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 DIAGNOSTIC RELAY CONTROL CENTER**

The 12 volt power distribution shall be conveniently located with easy access for service. All relays and circuit breakers shall be plug-in type allowing for removal for repairs without necessitating soldering or tools. The sockets mounts for both the relays and circuit breakers shall be of a design that permits the use of standard automotive type components.

The 12 volt distribution panel shall utilize printed circuit boards mounted in high strength enclosure. Each printed circuit board shall be provided with twelve (12) heavy duty independent switching relays. Each relay shall have the ability to be configured either normally open or normally closed and be protected by a 20 amp automatic reset breaker. Each circuit will be provided with a LED for visual diagnostic.

Power distribution panel shall be located in apparatus body within a protected enclosure with removable or hinged cover.

### **ROCKER SWITCH PANEL**

The 12 volt control switch panel shall be supplied and installed by the cab/chassis manufacturer.

### **ELECTRICAL SYSTEM MANAGER**

The chassis shall contain an electrical system manager for:

- Monitoring chassis battery voltage
- Shedding pre-determined electrical circuits
- Sequencing pre-determined electrical circuits
- Automatically controlling chassis engine fast-idle
- Monitor master switch and parking brake applications
- Automatically control warning light modes ("Calling-For" and "Blocking Right of Way")
- Provide low voltage alarm
- Programmable control circuits
- Remote system status indicator panel

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System manager shall perform all electrical functions required by current NFPA 1901 Standards.

The electrical system manager shall be supplied and installed by the cab/chassis manufacturer.

### **BATTERY SYSTEM**

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

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

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

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

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

One of the following master disconnect switches shall be provided:

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

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

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

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

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

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

### **BATTERY SWITCH**

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

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## **BATTERY SOLENOID**

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

## **BATTERY CONDITIONER**

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

## **ENGINE COMPARTMENT LIGHT**

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

## **CAB HAZARD WARNING LIGHT**

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

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

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

- The volume is less than or equal to 4 ft<sup>3</sup> (0.1 m<sup>3</sup>).
- The compartment has an opening less than or equal to 144 in.<sup>2</sup> (92,900 mm<sup>2</sup>).
- The open door does not extend sideways beyond the mirrors or up above the top of the fire apparatus.
- All equipment in the compartment is restrained so that nothing can fall out if the door is open while the apparatus is moving.
- Manually raised pole lights with an extension of less than 5 ft (1.5 m).

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

## **BACK-UP ALARM**

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

## **REAR VIEW CAMERA**

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

## **INTERIOR LED LIGHTS**

Three (3) Whelen model #60CREGCS, 6" diameter VDC, surface mount dual red and white LED light(s) with clear lens shall be provided throughout the vehicle walk-in area. The light(s) shall be at the entry door(s).

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## **TAIL LIGHTS**

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

- Two (2) Whelen M9 Series M9T amber LED turn signal lights
- Two (2) Whelen M9 Series M9BTTX red LED stop/tail lights
- Two (2) Whelen M9 Series M9BUW LED back-up lights with clear lens

Each of the lights above shall be mounted in a M9FC, chrome finish bezel.

## **MIDSHIP MARKER/TURN SIGNAL**

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

## **MARKER LIGHTS**

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

## **CAB STEP LIGHTS / GROUND LIGHTS**

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

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

## **LICENSE PLATE MOUNTING BRACKET**

There shall be one (1) Cast Products aluminum license plate mounting with chrome shielded license plate light mounted on the rear of the body.

## **ELECTRONIC SIREN**

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

## **SIREN SPEAKER**

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

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## **FRONT CAB MOUNTED SCENE LIGHT(S)**

Floodlight(s) shall be provided on the front of the cab by the cab/chassis manufacturer. Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

Each light shall be wired directly to the 12 VDC electrical system with stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

One (1) switch shall be provided for front scene lights.

## **SCENE LIGHTS**

The scene lighting shall be provided with specified upper side and/or rear warning lights.

## **SIDE LED SCENE LIGHTS**

There shall be two (2) Whelen Pioneer Plus model PCH2 dual combination Super LED flood/spot lights, on upper body sides with white powdercoat paint finish. Light quantity shall be divided equally per side. The PCH2 configuration shall consist of 36 white Super-LEDs with collimator/metalized redux spot/flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. Light(s) shall be 12 VDC, 13 amp, 75/75 watt, with 8,750/8,750 useable lumens each.

Each light shall be mounted in PBH203 mounting bracket, semi recessed into the apparatus body with chrome trim ring housing. The light mounts will provide either a straight out, 0 degree or a 15 degree downward angle.

The PCH2 is covered by a five year factory warranty.

Whelen scene lights located center upper body.

The lights shall be controlled at the switch panel in cab.

## **SCENE LIGHTS**

The scene lighting shall be provided with specified upper side and/or rear warning lights.

## **REAR SCENE LIGHTS SWITCHING**

There shall be a recessed switch on streetside rear of body to activate the rear scene lights and any specified rear step lighting. The switch shall be a momentary style and connected to a bi-stable relay, allowing multiple switching locations. The scene lights shall automatically shut-off when the parking brake is disengaged.

## **TRAFFIC ADVISOR LIGHTS**

Traffic advisor lights shall be comprised of eight (8) Whelen M4 series amber LED lights with clear lens. Lights shall be individually mounted with chrome bezels to the rear face of the vehicle and evenly distributed, if split by a hose bed, or walkway.

The lights shall be controlled by a Whelen TACTL5 control located in cab dash or center console area and provide; Left Arrow, Right Arrow, Center Out, and Wig-Wag patterns. The LED display on the control head shall replicate the Traffic Advisor's directional sequence. The TACTL5 shall have a rear panel dip switch for the ability to set eight additional Scan-Lock™ flash patterns. The wig-wag light pattern shall be activated with the E-Master and can be switched to the other patterns at any time through the control panel.

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## **WARNING LIGHT PACKAGE**

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

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

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

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

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

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

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

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

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

## **UPPER LEVEL OPTICAL WARNING DEVICES**

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

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

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

The lightbar(s) shall be separately controlled at switch panel in the cab.



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## ZONES B AND D - SIDE WARNING LIGHTS

### UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen M9 V-series combination 180° red linear Super-LED warning lights with 45° perimeter scene lights (M9V2R) provided, one (1) each side. Perimeter scene lights will be turned on with specified scene lighting. Each light shall have a red lens over warning light and clear lens over perimeter light and chrome flange.

The lights shall be controlled at the switch panel in cab.

### UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen M9 V-series combination 180° red linear Super-LED warning lights with 45° perimeter scene lights (M9V2R) provided, one (1) each side. Perimeter scene lights will be turned on with specified scene lighting. Each light shall have a red lens over warning light and clear lens over perimeter light and chrome flange.

The lights shall be controlled at the switch panel in cab.

## ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen M9 V-series combination 180° red linear Super-LED warning lights with 45° perimeter scene lights (M9V2R) provided, one (1) each side. Perimeter scene lights will be turned on with specified scene lighting. Each light shall have a red lens over warning light and clear lens over perimeter light and chrome flange.

The lights shall be controlled at the switch panel in cab.

## LOWER LEVEL OPTICAL WARNING DEVICES

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

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

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

## ZONE A - FRONT WARNING LIGHTS

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

The lights shall be controlled at the switch panel in cab.

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

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

The lights shall be controlled at the switch panel in cab.

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

There shall be two (2) Whelen M6 V-series combination 180° red linear Super-LED warning lights with 45° perimeter scene lights (M6V2R) provided, one (1) each side. Perimeter scene lights will be turned on with specified scene lighting. Each light shall have a red lens over warning light and clear lens over perimeter light and chrome flange.

Puddle lights to activate with parking brake.

The lights shall be controlled at the switch panel in cab.

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

There shall be two (2) Whelen M6 series Red/White split Linear Super-LED lights (M6D) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the switch panel in cab.

## ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen M6 series red linear Super-LED lights (M6R) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be controlled at the switch panel in cab.

## **LINE VOLTAGE ELECTRICAL SYSTEM**

### **ONAN PTO GENERATOR**

The vehicle shall be equipped with an Onan Protec PTO generator system with a capacity of 15,000 watts at 120/240 VAC, 125/62 amps, single phase. Current frequency shall be stable at 60 hertz.

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

The direct drive generator shall be mounted so that it does not change the ramp break-over angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

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## **GENERATOR BONDING**

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

## **GENERATOR ENGAGEMENT**

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An "OK to Operate Generator" indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator's panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

## **WARRANTY PERIOD**

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Protec YDCR series PTO generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

## **GENERATOR SPLASH GUARD**

A powder coat painted splash cover shall be installed to reduce the amount of road spray on the frame mounted PTO generator. A V-ring seal shall also be installed in the cover to provide additional protection against contaminants reaching the generator front seals.

## **GENERATOR CONTROL**

The generator shall be engaged at the switch panel in the cab.

## **GENERATOR MOUNTING**

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

## **MANUALS AND SCHEMATICS**

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

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## **POWER-TAKE-OFF GENERATOR DRIVE**

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO opening of the chassis. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO or via the V-Mux screen if so equipped.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

The installation of the engine, transmission, driven accessories (power takeoffs (PTO), etc.) shall meet the engine and transmission manufacturers' installation recommendations for the service intended.

Model part number shall be Chelsea 280 series.

Double check the model number and ratio with engineering before ordering the PTO on the chassis.

## **ENGINE SPEED CONTROL**

An engine speed auxiliary control device (high idle switch or throttle) shall be installed to maintain a stable cycle output from generator when the apparatus is parked.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

## **LOADCENTER**

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

## **GENERATOR MONITORING PANEL**

A Crompton Instruments Integra Ci3 digital meter package shall be provided to properly monitor the generator performance and load demand during operation. The electrical parameters can be viewed on a backlit LCD screen. The 15 screens are accessible via four buttons on the front panel allowing the user to scroll between various screens. The following shall be displayed full-time;

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

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

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## **SHORE POWER INLET - BATTERY CHARGER**

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

## **LINE VOLTAGE ELECTRICAL SYSTEM**

### **GENERAL REQUIREMENTS**

#### Stability

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

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

#### Conformance with National Electrical Code

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

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

#### Location Ratings

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

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

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

#### Grounding

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

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

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

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

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

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## Bonding

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

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

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

## Ground Fault Circuit Interrupters

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

## Power Source General Requirements

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

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

## Power Source Rating

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

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

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

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## Instrumentation

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

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

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

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

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

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

## Operation

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

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

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

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

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

## Power Supply Assembly

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

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

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

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## Over-current Protection

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

## Power Source Protection

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

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

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

## Branch Circuit Over-current Protection

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

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

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

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

## Panelboards

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

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

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

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



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## 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.

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## 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.

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## 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**

### **LIGHT TOWER**

One (1) Command Light Knight 2, KL Series light tower(s) shall be provided and installed on the completed unit.

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

The light tower shall extend 87-1/2" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light tower shall be approximately 26" wide x 47" long x 13" high and weigh approximately 165 pounds.

### Light Tower Construction and Design

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

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

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

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

### Light Tower Electrical System

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

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

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

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## Light Tower Floodlights

The Command Light model KL415A-W2 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Whelen Engineering
Number of lamp heads:	Six (6) Pioneer Plus PFP2AC LED
Voltage:	120 volts
Watts of each lamp head:	150 watt
Total watts of light tower:	900 watts
Total Lumens:	66,000
Configuration:	The light heads shall be mounted with three (3) on each side of the light tower, giving two (2) vertical lines of three (2) when the lights are in the upright position

## Light Tower Paint

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

## Light Tower Controls

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

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

One (1) switch for light bank rotation.

One (1) switch for elevating lower stage.

One (1) switch for elevating upper stage.

One (1) switch for optional light bank rotation.

One (1) switch for the optional strobe.

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

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

## Light Tower Mounting

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

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

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## **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 Roswell Fire 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 folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
  - The wheel chock(s) shall be mounted ahead of rear wheels, below body on streetside.

## **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 Roswell Fire Department.