

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **LIABILITY INSURANCE**

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

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

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

Personal Injury of \$1,000,000.00, Fire damage of \$50,000.00 and Medical expense of \$10,000.00. Automobile liability of \$1,000,000.00 combined single limit (each accident), including any auto, all owned autos, scheduled autos, hired autos, non-owned autos, and garage liability.

Excess Umbrella Liability coverage of \$2,000,000.00 each occurrence, Aggregate of \$2,000,000.00.

All insurance policies must be;

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

## **INTERNET IN-PROCESS SITE**

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

## **VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS**

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

## **WEIGHT DISTRIBUTION**

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

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

## **LOAD DISTRIBUTION**

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

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

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### **CONSTRUCTION DOCUMENTATION**

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

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

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



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27. If the apparatus has a line voltage power source, the certification of the test for the power source
28. If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
29. Any other required manufacturer test data or reports.

#### **OPERATIONS AND SERVICE DOCUMENTATION**

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

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

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

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

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

#### **NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM**

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

# SURPRISE FIRE DEPARTMENT

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#### **STATEMENT OF EXCEPTIONS**

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

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

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

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

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

#### **CARRYING CAPACITY**

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

The estimated in-service weight shall include the following:

1. The chassis, body and tank(s)
2. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
3. Full water and other agent tanks
4. \*250 lb (114 kg) in each seating position
5. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
6. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
7. An allowance for miscellaneous equipment that is the greatest of the values for type of vehicle per NFPA 1901, a Purchaser provided list of equipment to be carried with weights or a Purchaser specified miscellaneous equipment allowance.

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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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			Equipment Allowance	
Apparatus Type	Storage Areas	Apparatus Size	lb.	kg.
Pumper Fire Apparatus	Equip. minimum of 40 cu ft (1.1 cu mt) of enclosed compartmentation.	Less than 250 cu ft (7 cu mt) compartment space	2,000	910
	Hose minimum of 30 cu ft (0.8 cu mt) for 2 1/2" (65 mm) or larger fire hose.	250 cu ft (7 cu mt) or more of compartment space	2,500	1,135
	(2) areas for pre-connects each minimum of 3.5 cu.ft. (0.1 cu.mt.) for 1 1/2" (38 mm) or larger fire hose.			
Compartment space for pumpers is calculated based on the inside dimensions of the enclosed compartment.				

#### TESTING

#### ROAD TEST

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

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

The tests shall be conducted on dry, level, paved roads that are in good condition. The apparatus shall be loaded to its estimated in service weight.

The engine shall not operate in excess of the maximum governed speed. Acceleration tests shall consist of two runs in opposite directions over the same route. The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds. The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

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

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

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

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

#### **TEST SEQUENCE**

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

#### **1. RESERVE CAPACITY TEST**

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

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

#### **2. ALTERNATOR PERFORMANCE TEST**

##### **TEST AT IDLE**

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

##### **TEST AT FULL LOAD**

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

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

#### **3. LOW VOLTAGE ALARM TEST**

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

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

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

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

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **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:
3. The nameplate rating of the alternator
  - a. The alternator rating
  - b. Each of the component loads specified that make up the minimum continuous electrical load
  - c. Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
  - d. Each individual intermittent electrical load

### **UL PUMP CERTIFICATION**

The fire pump shall be tested and certified by Underwriters Laboratories, to perform as listed below;

- 100% of rated capacity at 150 psi (1,000 kPa) net pressure
- 70% of rated capacity at 200 psi (1,400 kPa) net pressure
- 50% of rated capacity at 250 psi (1700 kPa) net pressure

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi (3,400 kPa).

The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus 1901, latest edition.

The pump shall be capable of producing fire streams that are free from objectionable pulsation under all normal operating conditions.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **FOAM SYSTEM TEST**

The apparatus foam system shall be tested and certified by the manufacturer. The certification shall be delivered to the customer with the apparatus.

The test shall be performed with the air temperature between 0 degrees F and 100 degrees F.

The foam system will be tested to comply with requirements of NFPA 1901. The basis for the test is as follows:

A base calibration range is established using water and foam concentrate from the system to be tested. Two (2) standard solutions are made, a minimum allowable foam percent and a maximum allowable foam percent solution for each foam proportioning system foam percent setting to be tested. The minimum allowable and maximum allowable foam percent solution are determined using the criteria given in NFPA 1901, "Foam Proportioning System Accuracy".

After the standard foam solutions are thoroughly mixed the conductivity (a measure of a substances ability to conduct electricity) of each solution is measured. The conductivity of a solution is directly proportional to the percentage of foam in the solution. The reading is recorded on the certificate by the Testing Official. From these two (2) readings a range is established for that particular foam proportioning system's foam percent setting.

The foam system is then operated at the corresponding foam percent setting, flow rate, and pressure as recommended by the foam proportioning system manufacturer. A test sample is collected at an adequate distance downstream from the foam proportioner being tested. When the test sample has been collected its conductivity is measured and recorded by the Testing Official. The Testing Official then compares the conductivity reading of the test sample to the minimum and maximum allowable conductivity readings taken from the two (2) standard solutions. If it is greater than the minimum allowable conductivity, but less than the maximum allowable conductivity, the foam proportioning system is determined to be accurate at that foam percent setting.

The above procedure is performed at three foam proportioning system foam percent settings. The foam percent settings are:

- The minimum foam percent setting available.
- A mid-range foam percent setting, if available.
- The maximum foam percent setting available.

The foam proportioning system is certified to be accurate if all three foam percent settings produce conductivity, measurements in the range of conductivity' as determined by' the standard solutions for each foam percent setting. The Testing Official makes the final determination of the foam proportioning system accuracy as installed by' the apparatus manufacturer.

Criteria for the following systems:

- Class A foam - .1%, .5%, and 1.0% settings if available.
- Class B foam - 1.0%, 3.0%, and 6.0% settings if available.
- Class A and Class B foam - .1% and 1.0% using Class A foam and at 3.0% using Class B foam or at .1% using Class A foam and 3.0% and 6.0% using Class B foam.

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **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 Surprise 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 24,000 miles (or 38,624 kilometers), whichever occurs first starting thirty (30) days after the original invoice date.

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

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

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

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

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

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

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

## **GRAPHICS LIMITED WARRANTY**

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

## **WATEROUS FIVE YEAR PUMP WARRANTY**

The fire pump shall be warranted by Waterous for a period of five (5) years from the date of delivery to the Surprise Fire Department.

## **STAINLESS STEEL PLUMBING WARRANTY**

The stainless steel plumbing shall be free of defects in material and workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

The contractor shall supply details of their warranty information with their bid submission.

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **UPF POLY WATER TANK WARRANTY**

The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.

## **CONSTRUCTION PERIOD**

The completed vehicle shall be delivered within three hundred sixty five (365) days after receipt of a purchase order or contract.

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

## **OVERALL HEIGHT**

The overall height (OAH) of the vehicle shall not exceed 130.5" (10' - 10-1/2") from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

## **OVERALL LENGTH**

The overall length (OAL) of the vehicle shall be approximately 394" (32' - 10").

## **PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference shall be required, at the Contractor's factory for three (3) personnel from the Surprise Fire Department to finalize all construction details prior to manufacturing.

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

## **FINAL INSPECTION CONFERENCE**

A final inspection conference shall be required, at the Contractor's factory for three (3) personnel from the Surprise Fire Department to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

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

## **DELIVERY AND DEMONSTRATION**

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

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Surprise Fire Department. After delivery of the apparatus, the Surprise Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.



# SURPRISE FIRE DEPARTMENT

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#### **MODEL**

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

#### **MODEL YEAR**

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

#### **COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

#### **APPARATUS TYPE**

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

#### **VEHICLE TYPE**

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

#### **AXLE CONFIGURATION**

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

#### **GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

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

#### **GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### **PUMP PROVISION**

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

#### **CAB STYLE**

The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

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

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

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

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

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 63.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

# SURPRISE FIRE DEPARTMENT

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

The first step for the driver and officer area shall measure approximately 10.25 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.38 inches deep X 32.13 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 10.38 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.20 inches deep X 21.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

#### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

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

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

#### **FRONT GRILLE**

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

#### **CAB UNDERCOAT**

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

#### **CAB SIDE DRIP RAIL**

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

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **CAB PAINT EXTERIOR**

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

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

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

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

## **CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

## **CAB PAINT PRIMARY/LOWER COLOR**

The primary/lower paint color shall be PPG FBCH 77723 red.

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

The secondary/upper paint color shall be PPG FBCH 911645 white.

## **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

## **CAB PAINT PINSTRIPE**

A 0.50 inch wide gold reflective tape with black borders shall be applied on the break line between the two different colored surfaces.

## **CAB PAINT WARRANTY**

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

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **CAB PAINT INTERIOR**

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

## **CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

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

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

## **CAB ENTRY DOOR TYPE**

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened unhindered by most obstacles encountered, such as guard rails along interstate highways.

## **LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

## **LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

## **LH EXTERIOR COMPARTMENT INTERIOR FINISH**

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

## **RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

#### **RH EXTERIOR COMPARTMENT INTERIOR FINISH**

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

#### **CAB STRUCTURAL WARRANTY**

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

#### **CAB TEST INFORMATION**

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

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

#### **ELECTRICAL SYSTEM**

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

#### **APPARATUS WIRING PROVISION**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **MULTIPLEX DISPLAY**

The multiplex electrical system shall include two (2) Weldon Vista IV Touchscreen displays which shall be located one (1) on the left side dash in the switch panel and one (1) on the right side of the dash in the switch panel. The Touchscreen displays shall feature full color LCD display screens. The display shall include a message bar displaying the time of day, and important messages requiring acknowledgement by the user. There shall be virtual controls for the on-board diagnostics. The display screens shall be video ready for back- up cameras, thermal cameras, and DVD. A DIN type input connector ready for GPS interfacing shall be incorporated into the back of the display.

The Touchscreen displays shall measure approximately 6.25 inches wide x 3.38 inches in height. The displays shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

#### **DATA RECORDING SYSTEM**

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

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

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

#### **ACCESSORY POWER**

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

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **ENGINE**

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

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

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

#### **CAB ENGINE TUNNEL**

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

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

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

#### **ENGINE PROGRAMMING HIGH IDLE SPEED**

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

#### **ENGINE HIGH IDLE CONTROL**

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

#### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

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



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **AUXILIARY ENGINE BRAKE**

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

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

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

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

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

#### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

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

#### **FLUID FILLS**

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

#### **ENGINE DRAIN PLUG**

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

#### **ENGINE WARRANTY**

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

#### **REMOTE THROTTLE CONTROL**

A Class 1 "TPG" pressure governor pump panel control module and a pressure transducer shall be provided. Class 1 Total Pressure Governor is designed to control the engine fuel to maintain a desired pump pressure or engine speed setting along with displaying diagnostic information. The "TPG" has a pre-set button for selecting a predetermined pressure or RPM and an emergency return to idle button.

LED readouts shall display RPM, engine oil pressure, engine temperature and battery voltage. An audible alarm out put shall also be part of the system.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **REMOTE THROTTLE HARNESS**

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The midship harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The midship harness shall contain connectors for a Class 1 Total Pressure Governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall be designed for a side mount pump panel.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

#### **ENGINE PROGRAMMING REMOTE THROTTLE**

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

#### **ENGINE PROGRAMMING IDLE SPEED**

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

#### **ENGINE FAN DRIVE**

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **ENGINE COOLING SYSTEM**

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

The cooling system shall utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

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

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

#### **ENGINE COOLING SYSTEM PROTECTION**

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

#### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

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

#### **ENGINE COOLANT FILTER**

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **ELECTRONIC COOLANT LEVEL INDICATOR**

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

#### **ENGINE PUMP HEAT EXCHANGER**

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

#### **COOLANT HOSES**

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

#### **ENGINE AIR INTAKE**

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

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

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

#### **ENGINE EXHAUST SYSTEM**

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

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **DIESEL EXHAUST FLUID TANK**

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

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

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

#### **ENGINE EXHAUST ACCESSORIES**

Two (2) exhaust temperature mitigation devices shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation devices shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

#### **ENGINE EXHAUST WRAP**

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

#### **TRANSMISSION**

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

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

The transmission gear ratios shall be:

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

#### **TRANSMISSION MODE PROGRAMMING**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### **TRANSMISSION FEATURE PROGRAMMING**

The Allison Gen IV-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module. The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire assignment
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

#### **TRANSMISSION SHIFT SELECTOR**

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

#### **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

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

#### **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

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

#### **TRANSMISSION COOLING SYSTEM**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **TRANSMISSION DRAIN PLUG**

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

#### **TRANSMISSION WARRANTY**

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

#### **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

#### **MIDSHIP PUMP / GEARBOX**

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the mid-ship split shaft pump as specified by the apparatus manufacturer.

#### **MIDSHIP PUMP / GEARBOX MODEL**

The midship pump/gearbox provisions shall be for a Waterous CSUC20 pump.

#### **MIDSHIP PUMP RATIO**

The ratio for the midship pump shall be 2.27:1.

#### **MIDSHIP PUMP GEARBOX DROP**

The Waterous pump gearbox shall have a "C" (medium length) drop length.

#### **MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE**



The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 80.00 inches.

#### **PUMP SHIFT CONTROLS**

One (1) pump shift control panel shall be mounted on the Upper left section of the center dash panel. The following shall be provided on the panel: a three (3) position locking toggle switch; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline. One (1) label indicating pump instructions and the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the switch is in the up position and pump mode shall be selected when the switch is in the down position.

The center switch position shall exhaust air from both pump and road sides of the pump gear box shift cylinder

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **PUMP SHIFT CONTROL PLUMBING**

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

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

The fuel system shall have a Racor S3201T fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition.

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

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

#### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

#### **FUEL SHUTOFF VALVE**

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

#### **FUEL COOLER**

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located above the fuel tank.

#### **FUEL TANK**

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 20.00 inches in height X 24.00 inches in length. The increased height and reduced length allows for the use of a shorter rear frame overhang on the chassis. The baffled tank shall be made of 14 gauge aluminized steel. The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

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

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

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



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

#### **FUEL TANK SERVICEABILITY PROVISIONS**

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

#### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

#### **FRONT AXLE WARRANTY**

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

#### **FRONT WHEEL BEARING LUBRICATION**

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

#### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life. The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

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

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

#### **FRONT SUSPENSION**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, two (2) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

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

#### **POWER STEERING PUMP**

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

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

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

#### **FRONT AXLE CRAMP ANGLE**

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

#### **POWER STEERING GEAR**

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

#### **CHASSIS ALIGNMENT**

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

#### **REAR AXLE**

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **REAR AXLE WARRANTY**

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

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

The rear axle differential shall be lubricated with oil.

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

The rear axle wheel bearings shall be lubricated with oil.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

#### **REAR SUSPENSION**

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

Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The rear suspension is run flat capable at reduced speeds.

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

#### **REAR SHOCK ABSORBERS**

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

#### **FRONT TIRE**

The front tires shall be Michelin 365/70R-22.5 20PR "L" tubeless radial XZA highway tread.

The front tire stamped load capacity shall be 21,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 125 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 22,500 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **REAR TIRE**

The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XDN2 all-weather tread designed for exceptional traction and mileage.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 24,820 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

#### **REAR AXLE RATIO**

The rear axle ratio shall be 5.13:1.

#### **TIRE PRESSURE INDICATOR**

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

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

#### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 10.50 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

#### **REAR WHEEL**

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

#### **BALANCE WHEELS AND TIRES**

All of the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

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

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels lose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

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

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

#### **FRONT BRAKES**

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

#### **REAR BRAKES**

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

#### **PARK BRAKE**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **PARK BRAKE CONTROL**

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

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

#### **REAR BRAKE SLACK ADJUSTERS**

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

#### **AIR DRYER**

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

#### **FRONT BRAKE CHAMBERS**

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

#### **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 30/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE 30/30 H.O.T. chambers are designed to provide the same performance as 30/36 chambers in a smaller package.

#### **AIR COMPRESSOR**

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

#### **AIR GOVERNOR**

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

#### **MOISTURE EJECTORS**

Automatic moisture ejectors with a manual pet-cock type drain provision shall be installed on all reservoirs of the air supply system.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **AIR SUPPLY LINES**

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

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

#### **AIR INLET CONNECTION**

An air connection for the shoreline air inlet shall be supplied.

#### **AIR INLET LOCATION**

The air inlet shall be installed in the left hand side middle front step in the rearward position.

#### **PLUMBING AIR INLET CONNECTION**

The air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.

#### **AIR INLET/ OUTLET FITTING TYPE**

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

#### **AIR TANK SPACERS**

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

#### **WHEELBASE**

The chassis wheelbase shall be 193.50 inches.

#### **REAR OVERHANG**

The chassis rear overhang shall be 54.00 inches.



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **FRAME**

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

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

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

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

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

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

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

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

#### **FRAME WARRANTY**

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

#### **FRAME CLEAR AREA**

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

#### **FRAME PAINT**

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

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

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



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **FRONT BUMPER**

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

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

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

#### **FRONT BUMPER EXTENSION FRAME WIDTH**

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

#### **FRONT BUMPER APRON**

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

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

#### **FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a hose tray compartment in the bumper apron located in the center that shall measure 58.00 inches wide X 6.00 inches deep. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

#### **FRONT BUMPER COMPARTMENT COVER HARDWARE**

The front bumper compartment shall include a 7.00 inch stainless lift handle at the top center of the compartment lid. Gas cylinder stays shall hold the cover open. The cover shall held in the closed position via two (2) pull to release rubber "T" style hold down handles located one (1) at each end of the cover.

#### **MECHANICAL SIREN**

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep.

#### **MECHANICAL SIREN LOCATION**

The siren shall be pedestal mounted on the bumper apron on the furthest outboard section of the bumper on the driver side.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **AIR HORN**

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

#### **AIR HORN LOCATION**

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

#### **AIR HORN RESERVOIR**

One (1) air reservoir, with a 2084 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

#### **ELECTRONIC SIREN SPEAKER**

The bumper shall include two (2) Cast Products Inc. model SA4301, 100 watt speakers which shall be recess mounted within the bumper fascia. Each speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. Each speaker shall include a flat mounting flange which shall be polished aluminum.

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

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

#### **FRONT BUMPER TOW HOOKS**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **CAB TILT SYSTEM**

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

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

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

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

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

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

#### **CAB TILT LIMIT SWITCH**

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The final adjustment of the switch shall be performed by the apparatus manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc.

#### **CAB TILT CONTROL RECEPTACLE**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

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

#### **CAB WINDSHIELD**

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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

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

#### **GLASS TINT FRONT DOOR**

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

#### **GLASS REAR DOOR RH**

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

#### **GLASS TINT REAR DOOR RIGHT HAND**

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

#### **GLASS REAR DOOR LH**

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

#### **GLASS TINT REAR DOOR LEFT HAND**

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

#### **GLASS SIDE MID RH**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **GLASS TINT SIDE MID RIGHT HAND**

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

#### **GLASS SIDE MID LH**

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

#### **GLASS TINT SIDE MID LEFT HAND**

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

#### **CLIMATE CONTROL**

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

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

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

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

#### **CLIMATE CONTROL DRAIN**

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

#### **CLIMATE CONTROL ACTIVATION**

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

#### **HVAC OVERHEAD COVER PAINT**

The overhead HVAC cover shall be painted with a Zolatone #20-72 silver gray texture finish.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **A/C CONDENSER LOCATION**

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

#### **A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

#### **CAB INSULATION**

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

#### **UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments. In addition the insulation shall have an expanded aluminum overlay installed to assist in retaining the insulation tight against the engine tunnel surfaces and the underside of the cab floor.

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

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft<sup>2</sup> PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure 0.56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

#### **INTERIOR TRIM FLOOR**

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

#### **REAR WALL INTERIOR TRIM**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **HEADER TRIM**

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

#### **TRIM CENTER DASH**

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

#### **TRIM LH DASH**

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

#### **TRIM RH DASH**

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

#### **ENGINE TUNNEL TRIM**

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

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

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

#### **AUXILIARY POWER POINT ENGINE TUNNEL**

The cab interior shall include two (2) 12 volt cigarette lighter type receptacles to provide power sources for 12 volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacles shall be located on the rear of the engine tunnel near the top, one (1) near the left corner and one (1) near the right corner.

#### **STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

## **UNDER CAB ACCESS DOOR**

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

## **INTERIOR DOOR TRIM**

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

## **DOOR TRIM KICKPLATE**

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

## **DOOR TRIM CUSTOMER NAMEPLATE**

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

## **CAB DOOR TRIM REFLECTIVE**

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

## **INTERIOR GRAB HANDLE "A" PILLAR**

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

## **INTERIOR GRAB HANDLE FRONT DOOR**

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

## **INTERIOR GRAB HANDLE REAR DOOR**

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

## **INTERIOR TRIM VINYL COLOR**

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



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **INTERIOR TRIM SUNVISOR**

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

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

The cab interior floor mat shall be black in color.

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

The inner door panel surfaces shall be painted with Zolatone #20-72 silver gray texture finish.

#### **HEADER TRIM INTERIOR PAINT**

The metal surfaces in the header area shall be coated with Zolatone #20-72 silver gray texture finish.

#### **TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with Zolatone #20-72 silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

#### **TRIM LH DASH INTERIOR PAINT**

The left hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **TRIM RIGHT HAND DASH INTERIOR PAINT**

The right hand dash shall be painted with Zolatone #20-72 silver gray texture finish.

#### **DASH PANEL GROUP**

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

#### **SWITCHES CENTER PANEL**

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

#### **SWITCHES LEFT PANEL**

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

#### **SWITCHES RIGHT PANEL**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **SEAT BELT WARNING**

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

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

#### **SEAT MATERIAL**

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

#### **SEAT COLOR**

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

#### **SEAT BACK LOGO**

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

#### **SEAT DRIVER**

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

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

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

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

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

#### **SEAT BACK DRIVER**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **SEAT MOUNTING DRIVER**

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

#### **SEAT OFFICER**

The officer's seat shall be an H.O. Bostrom Firefighter model seat. The seat shall feature eight-way electric positioning. The eight (8) positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.

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

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

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

#### **SEAT BACK OFFICER**

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

#### **SEAT MOUNTING OFFICER**

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

#### **POWER SEAT WIRING**

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

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

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

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

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

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

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

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

#### **SEAT BACK REAR FACING OUTER**

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

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

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

#### **SEAT BELT ORIENTATION CREW**

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

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

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

#### **SEAT BACK FORWARD FACING CENTER**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

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

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

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

The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

#### **SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be two (2) access points to the storage area one (1) each side of the seat frame. Each access point shall be covered by a hinged door which measures 18.00 inches wide X 8.63 inches high to allow access for storage in the seat box. The access door hinges shall be at the rear edge of the doors.

#### **CAB FRONT UNDERSEAT STORAGE ACCESS**

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

#### **SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

#### **WINDSHIELD WIPER SYSTEM**

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

#### **ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

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

#### **CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

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

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **DOOR LOCKS**

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

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

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

#### **DOOR LOCK LH REAR CAB COMPARTMENT**

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

#### **DOOR LOCK RH REAR CAB COMPARTMENT**

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

#### **POWER DOOR LOCK COMPARTMENT ACTIVATION**

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

#### **GRAB HANDLES**

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

#### **REARVIEW MIRRORS**

Ramco model 6015-CCR bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 15.00 inch long polished cast aluminum arms.

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

#### **EXTERIOR TRIM REAR CORNER**

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **CAB FENDER**

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

#### **MUD FLAPS FRONT**

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

#### **CAB EXTERIOR FRONT & SIDE EMBLEMS**

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

#### **CAB EXTERIOR MODEL NAMEPLATE**

The "Metro Star" nameplates for the front driver and officer side doors shall be shipped loose with the chassis.

#### **IGNITION**

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

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

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

#### **BATTERY**

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

#### **BATTERY TRAY**

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

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

#### **BATTERY BOX COVER**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **BATTERY CABLE**

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

#### **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located rear face of the left hand battery tray. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

#### **ALTERNATOR**

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

#### **STARTER MOTOR**

The single start electrical system shall include a Prestolite brand starter motor.

#### **BATTERY CONDITIONER**

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

#### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

#### **AUXILIARY AIR COMPRESSOR**

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the driver's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

#### **ELECTRICAL INLET**

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

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

#### **Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps  
Kussmaul 1200 Charger - 10 Amps  
Kussmaul 35/10 Charger - 10 Amps  
1000W Engine Heater - 8.33 Amps  
1500W Engine Heater - 12.5 Amps  
120V Air Compressor - 4.2 Amps*



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of cab over the wheel well in the forward position 3" lower than the standard position.

#### **ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner.

#### **ELECTRICAL INLET COLOR**

The electrical inlet connection shall include a red cover.

#### **HEADLIGHTS**

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

#### **FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed in a chrome bezel outboard of the front warning and headlamps.

#### **HEADLIGHT LOCATION**

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

#### **SIDE TURN/MARKER LIGHTS**

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

#### **MARKER AND ICC LIGHTS**

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

#### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

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

#### **STEP LIGHTS**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **ENGINE COMPARTMENT LIGHT**

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

#### **SIDE SCENE LIGHTS**

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

#### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

#### **SIDE SCENE ACTIVATION**

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

#### **INTERIOR OVERHEAD LIGHTS**

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

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

#### **MAP LIGHTS**

A Sunnex swivel map light shall be provided. The light shall have a clear lens and a control switch on the base. The light shall be mounted on the overhead HVAC cover on the right hand side.

#### **CAB SPOTLIGHTS**

The cab shall include two (2) Unity 335 series LED spotlights. The spotlights shall be mounted one (1) on each side of the cab just above the outer end of the windshield. The spotlights shall feature a 12 volt, 30 watts LED lamp with 2,000 lumens output in a 6.00 inch diameter chrome plated plastic head and a rubber grip control handle.

#### **DO NOT MOVE APPARATUS LIGHT**

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

The flashing red light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be located centered left to right for greatest visibility. The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **MASTER WARNING SWITCH**

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

#### **HEADLIGHT FLASHER**

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

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

#### **HEADLIGHT FLASHER SWITCH**

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

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

The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

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

The warning lights mounted on the cab front fascia in the inboard positions shall be blue on the left and red on the right side.

#### **FRONT WARNING SWITCH**

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

#### **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

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

The intersection lights shall be red/blue vertical split with a clear lens. The intersection lights located on the left side shall be red forward and the intersection lights on the right side shall be blue forward.

#### **INTERSECTION WARNING LIGHTS LOCATION**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **SIDE WARNING LIGHTS**

The cab sides shall include two (2) Whelen 900 series Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

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

The warning lights located on the side of the cab shall be blue/blue on the left side and red/red on the right side.

#### **SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted above the "B" pillar in the highest available position.

#### **AUXILIARY SIDE WARNING LIGHTS**

The cab side shall include an auxiliary set of Whelen 600 series 4.00 inch tall X 6.00 inch wide Super LED warning lights, one (1) each side, which shall feature fourteen (14) flash patterns plus a steady burn for solid colors and twenty (20) flash patterns plus a steady burn for split colors. The lights shall be surface mounted within a chrome bezel.

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

The auxiliary warning lights located on the left hand side of the cab shall be red and the auxiliary warning lights located on the right hand side of the cab shall be blue.

#### **AUXILIARY SIDE WARNING LIGHTS LOCATION**

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

#### **SIDE AND INTERSECTION WARNING SWITCH**

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

#### **HORN BUTTON SELECTOR SWITCH**

A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

#### **AIR HORN ACTIVATION**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **MECHANICAL SIREN ACTIVATION**

The mechanical siren shall be actuated by a black push button in the switch panel on the dash. A black push button siren brake control shall be provided in the switch panel on the dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement.

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

A Preco-Matic model 270 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

#### **INSTRUMENTATION**

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

The instrument panel shall contain the following gauges:

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

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **RED LAMPS**

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

#### **AMBER LAMPS**

MIL-indicates an engine emission control system fault  
Check Engine-indicates engine fault  
Check Trans-indicates transmission fault  
High Transmission Temperature-indicates excessive transmission oil temperature  
ABS-indicates anti-lock brake system fault  
Wait to Start-indicates active engine air preheat cycle  
HEST-indicates a high exhaust system temperature  
Water in Fuel-indicates presence of water in fuel filter  
DPF-indicates a restriction of the diesel particulate filter  
Regen Inhibit-indicates regeneration has been postponed due to user interaction  
Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.  
SRS-indicates a problem in the RollTek supplemental restraint system  
Check Message-Turn Signal On  
Check Message-Door Ajar  
Check Message-Cab Ajar  
Check Message-ESC Active  
Check Message-DPF Regen Active  
Check Message-No Engine Data  
Check Message-No Transmission Data  
Check Message-No ABS Data  
Check Message-No Data All Communication With Vehicle Systems Has Been Lost  
Check Message-Check Engine Oil Level  
Check Message-Check Washer Fluid Level  
Check Message-Check Power Steering Fluid Level  
Check Message-Low Transmission Fluid Level  
Check Message-Check Coolant Level

#### **GREEN LAMPS**

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

#### **BLUE LAMPS**

High Beam Indicator

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE**

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

#### **EXTERNAL AUDIBLE ALARMS**

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

#### **BACKLIGHTING COLOR**

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

#### **RADIO**

A Panasonic radio with weather band, AM/FM stereo receiver, compact disc player, with and (4) speakers shall be installed in the cab. The radio shall be installed above the officer position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

#### **AM/FM ANTENNA**

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **CAMERA**

An Audiovox Voyager heavy duty rearview camera system shall be supplied. The system shall include one (1) box shaped camera shall be shipped loose for OEM installation in the body to afford the driver a clear view of the rear to the vehicle and one (1) teardrop shaped camera with a chrome plated plastic housing shall be mounted on the officer side of the cab below windshield ahead of the front door at approximately the same level as the cab door handle.

The cameras shall be wired to dual Weldon Vista displays which shall be located on the driver and officer sides of the dash. The rear camera shall activate when the transmission is placed in reverse and the right camera shall activate with the right side turn signal. Each camera shall also be activated by a button on the Vista displays.

#### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer. The rear wall shall also include a removable plastic film installed on the exterior surface of the cab to protect the finish during transport.

#### **FIRE EXTINGUISHER**

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

#### **DOOR KEYS**

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

#### **WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **CHASSIS OPERATION MANUAL**

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

#### **ENGINE AND TRANSMISSION OPERATION MANUALS**

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

#### **CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

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

#### **CAB TO AXLE DIMESION**

Cab to axle will be 126"



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **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 alteration or modifications are required.

The front bumper compartment will be capable of holding 100' of double jacketed hose, 1.5" nozzle and the chicksan swivel.

There will be a door ajar sensor in indicate if the lid is left open.

#### **SHOP NOTES**

Ensure there is an open door sensor on the compartment along with a compartment light.

#### **GROUND LIGHTS**

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

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

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **EXHAUST DIVERTER**

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

As a default, the exhaust shall always discharge to street side just ahead of rear wheels, and when the pump is engaged the exhaust shall discharge to curb side just ahead of rear wheels.

#### **SHOP NOTES**

Diverter to route exhaust to curb side when pump is engaged. When in normal driving operations exhaust will be routed to the street side

#### **12-VOLT TERMINAL BLOCK**

One (1) 12 volt terminal block installed to provide 12 VDC power for equipment supplied by the Surprise Fire Department.

The terminal will be wired battery direct.

The terminal block will be located on the rear edge of the engine tunnel under the mounting platform. Need to be located in such a manner that it is easy to access.

#### **RADIO ANTENNA INSTALLATION**

There shall be six (6) radio antenna mounts provided and installed on the roof of the cab/chassis. The end of each radio antenna shall be routed to a location determined by the Surprise Fire Department.

Layout shall be as follows:

From street side to curb side on cab roof – #1. MCT-AVL Puck routed down street side "B" pillar to behind driver's seat, #2. MCT-Antenna routed down street side "B" pillar to behind driver's seat, #3. Mobile 800 terminated at the center cab dash, #4. Mobile 150 terminated at the center cab dash, #5. AVL-Antenna to be routed down curb side "B" pillar to behind officer's seat, #6. AVL Puck to be routed down curb side "B" pillar to behind officer's seat. F.D. to provide the two (2) AVL Puck antennas.

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

#### **FLASHLIGHT INSTALLATION**

There shall be four (4) Streamlight Survivor flashlights installed in the cab. There shall be an additional six-position 12V terminal block inside the rear crew-cab forward facing seat box

The flashlight chargers shall be installed per Manufacturer's requirements and wired for proper 12 volt power and ground. The location of the lights is as follows:

- (1) drivers mid-step area
- (1) officer's mid-step area
- (1) rear street side crew area in the back corner
- (1) rear curb side crew area in back corner

**Kussmaul 430-1000-0 Inverter for FD Supplied MD**

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

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

There shall be four (4) OnScene Solutions 9" LED NightStik light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

#### **SEAT BELT COLOR**

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

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

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

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

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

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

#### **SHOP NOTES**

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

#### **ENGINE TUNNEL ACCESSORY PLATFORM**

There will be a 3/16" smooth aluminum deck painted gray with a hammer tone finish located on top of the engine tunnel. The platform will extend from the bottom edge of the center switch panel to the map box of the engine tunnel. The platform will be mounted to that it provides a level surface for FD supplied items.

The platform will feature two (2) cup holders, one each side within easy reach of the front seats.

The exact design of the platform will be discussed at the pre-construction conference.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **MAP BOX**

A map box shall be provided in the cab with an open top. The map box shall be securely fastened to the cab interior per NFPA 1901 standards. It shall be fabricated of 1/8" smooth aluminum and painted with a black or gray textured powder coat paint finish for durability and finished appearance.

The map box shall be designed to hold a minimum of eight (8) 3-ring binders of various sizes per the Surprise Fire Department. Exact design and location of map box shall be determined at the pre-construction meeting.

The mapbox will feature two (2) cup holders one each side and a small storage bin between the cup holders.

- There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.

#### **CUP HOLDERS**

There will be two (2) cup holder located at the rear forward facing seat area for the crew seats. They will be mounted one (1) outboard of each seat within easy reach while seated.

#### **CREW STORAGE BINS**

There will be two (2) storage bins located on the back wall of the cab, one (1) each side of the rear forward facing seats. The bottom of the bin will be even with the bottom of the rear wall vinyl cover.

The bins will be approximately 4" x 8" x 4". Each bin will be equally divided in two sections.

The bins will be fabricated from smooth aluminum and will be powder coated gray with a hammer tone finish.

#### **HELMET STORAGE**

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

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

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

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

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

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **REAR CREW A/C SYSTEM**

A BusAir 12V air conditioner will be added to the rear crew area of the cab. The unit will be mounted over the forward facing rear crew seats.

The system will be controlled from the rear crew area of the cab.

Additional vents to be added into the Spartan provided A/C plenum at the driver and officer positions.

#### **SHOP NOTES**

Contact Tony at Bus Air for components and to arrange for them to come and install the unit. Cost of unit was split with Spartan/FAS/FD

#### **MUDFLAPS**

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

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

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

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

#### **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.

#### **FUEL FILL**

There shall be one (1) fuel fill door located in the curbside 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.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **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 Surprise 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 Surprise Fire Department from such repair and shall NOT be used.

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

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

#### **EXTERIOR ALUMINUM BODY**

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

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

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Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

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

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

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

#### **DRIP RAILS**

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

#### **ROOF CONSTRUCTION**

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

All seams in the roof area shall be welded to the radius and supports prior to paint to prevent entry of moisture. All roof seams shall be continuously welded.

A 2" formed radius shall be provided along the body sides. The use of extruded radius will not be acceptable, No Exceptions.

#### **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 4" x 1/4" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.

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.



# **SURPRISE FIRE DEPARTMENT**

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#### **BODY MOUNTING**

The body subframe shall be fastened to the chassis frame with a minimum of four (4) 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.

#### **14" REAR STEP BUMPER**

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 14" and provide a rear step with a minimum of 1/2" space at body for water drainage.

#### **REAR TOW EYES**

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

#### **GROUND LIGHTS**

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

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

#### **WHEEL WELL EXTERIOR PANEL**

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

#### **STAINLESS STEEL BODY FENDERS**

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using a rubber gasket to reduce buildup of moisture and/or debris.

#### **WHEEL WELL LINERS**

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **SCBA CYLINDER COMPARTMENTS**

There shall be four (4) SCBA cylinder storage compartments located, two (2) on each side of body in the rear wheel well area. Each compartment shall be capable of storing two (2) SCBA cylinders (60 min cylinders). Each tube shall allow the storage of an SCBA cylinder up to 7-1/2" in diameter. Each compartment shall have a vertically hinged door with a positive catch latch installed and painted primary lower body color. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

Bottles are MSA H45 Low Profile model # 10127945

#### **SHOP NOTES**

Bottles are MSA H45 Low Profile # 10127945

#### **BODY PAINT SPECIFICATIONS**

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

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

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

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

#### **PAINT PROCESS**

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

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

1. Clean bare metal using a solvent base wax & grease remover.
2. Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
3. Re-clean bare metal using a solvent base wax & grease remover.
4. Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.
5. Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.
6. Base coat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Base coat. Apply 1.0-3.0 mills DFT of base coat color to achieve full hiding.
7. Clear coat PPG Delfleet® Evolution polyurethane premium quality clear coat with improved mar resistant finish. The clear coat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.
8. Curing process of the painted body shall go through a force dry/bake cycle process. The painted components shall be baked 180 degrees for 2 hours to achieve a complete coating cure on the finished product.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### **MACHINE POLISHED**

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

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

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

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

The body shall be painted with a single color of PPG Delfleet® Evolution paint per approved customer sprayout.

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

Touch-up paint shall be provided with completed vehicle.

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

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

#### **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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **REFLECTIVE STRIPE REQUIREMENTS**

##### **Material**

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

All retroreflective materials used that are colors not listed in ASTM D 4956, Section 6.1.1, shall have a minimum coefficient of retroreflection of 10 with observation angle of 0.2 degrees and entrance angle of -4 degrees.

Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D 4956, Section 6.1.1.

##### **Minimum Requirements**

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

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

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

#### **GRAPHICS PROOF**

A color graphics proof of the reflective striping layout shall be provided for approval by Surprise Fire Department prior to installation. The graphics proof shall be submitted to Surprise 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 Scotchcal 680 series.

- This reflective stripe shall be white in color.

The stripe shall extend from the chassis to the body where it will angle up and then extend straight back to the rear of the body.

#### **REFLECTIVE STRIPE - BODY SIDES**

The reflective stripe material shall be 5" wide, 3M Scotchcal 680 series to the "S" pattern, then 7" wide, 3M Scotchcal 680 series from the "S" pattern to the rear of the body.

- This reflective stripe shall be white in color.

The stripe shall extend straight back from the chassis and then, ahead of the rear wheels, it shall form an "S" and then extend straight back to the rear of the body. The "S" portion of the stripe shall remain a solid color.

# **SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856**

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

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

The rear side panels only of the body shall have a Chevron style reflective stripe layout, and cover as much of the rear side panels as possible. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panels shall have a minimum 10 year warranty for material failure, and colorfastness.

The stripe material shall be 3M Scotchcal 680 series.

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

## **LETTERING GRAPHICS PROOF**

A color graphics proof of the lettering layout shall be provided for approval by Surprise Fire Department prior to installation. The graphics proof shall be submitted to Surprise 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 eight (8) 9" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

### **UPPER BODY SIDE LETTERING**

There shall be thirty four (34) 8" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

There shall be forty four (44) 5" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

### **REAR BODY LETTERING**

There shall be four (4) 6" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

### **FRONT OF CAB LETTERING**

There shall be one (1) 6" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

# SURPRISE FIRE DEPARTMENT

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#### **CAB ROOF LETTERING**

There shall be four (4) 22" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

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

Four (4) custom decals shall be provided and installed on the front cab doors. The decals will be the Surprise FD design.

#### **PARAMEDIC STAR OF LIFE DECAL**

There will be two (2) reflective star of life decals provided and install on the apparatus. The decal will have the lettering of "PARAMEDIC" within the center of the decal. The layout will match the current Fire Department units. The exact design and location will be approved by the Fire Department.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### EXTERIOR COMPARTMENT DOORS

#### ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

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

- Doors shall be front roll with drum positioned at upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment
- There shall be a non-abrasive side brush seals
- Every slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door
- Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal is not visible to detract from appearance of door
- Slat are to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects
- Slat to be double-wall extrusion 1.366" high by .315" thick. Exterior surface to be flat and interior surface to be concave to prevent loose equipment from interfering with door operation
- Latch system to be a full width one piece lift bar operable by one (1) hand
- A 2" wide finger pull integrated into the bottom rail extrusion for easy one (1) hand opening and closing
- Clip system that connects the curtain slats to the operator drum which allows for easy tension adjustment without tools
- Each roll-up door shall have a 4" diameter counterbalance operator drum to assist in lifting the door.
- Track shall be one-piece aluminum that has an attaching flange and finishing flange incorporated into its design
- Drip rail will have specially designed seal that prevents the seal from scratching the door
- Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door
- Bottom rail to have "V" shaped double seal to prevent water and debris from entering the compartment
- Standard replacement parts to be shipped from the United States and available in as little as 48 hours
- Will be free from manufacturing defects for a period of up to 7 years from date of purchase provided that the Product is used under conditions of normal use, that regular periodic maintenance and service is performed and that the product was installed in accordance with R•O•M's instructions.

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

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.

# SURPRISE FIRE DEPARTMENT RESCUE PUMPER PRODUCTION SPECIFICATION SVI #856

## BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

### AHEAD OF REAR AXLE

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	74.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening	
	-with roll-up door	67.5"
	-with hinged door	71.5"

### ABOVE REAR AXLE

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

### BEHIND REAR AXLE

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

### GENERAL

	<u>Description</u>	<u>Dimension</u>
G	Bottom of Drip Rail to Top of Body	23.5"

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



# SURPRISE FIRE DEPARTMENT

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#### **FOUR (4) UPPER BODY COMPARTMENTS (INDIVIDUAL)**

There shall be four (4) compartments parallel to the sides of the body, two (2) on each side. Each of these compartments shall be 79.0" long x 23.0" wide x 18.5" deep. The side compartments shall be 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 13/16" drain hole located in floor of compartment with a 1" flexible drain tube that terminates below body.

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.

Each compartment will have a locking D-handle on the top face of the door near the 7" chrome handle.

#### **SHOP NOTES**

Each compartment will have a locking D-handle on the top face of the door near the 7" chrome handle.

Each door will have a manual keyed style lock. They will be keyed to lock #1250.

#### **BODY WIDTH DIMENSIONS**

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

<u>Area Description</u>	<u>Dimension</u>
Compartment Depth	
• Above Frame	30" min. streetside, 12" min. curbside
• Below Frame	22" min.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

The interior useable compartment width shall be approximately 41.5" wide.

The compartment door opening shall be approximately 34.0" wide.

#### **SHOP NOTES**

41.5" WTW 34" door opening

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

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

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation located below the extended floor.
- There will be horizontally mounted aluminum shelf-trac in the gear area of the compartment to hold hooks for the gear. This trac will be a approximately 12" from the top of the compartment.

#### **SHOP NOTES**

Vertical Shelf trac below the extended floor only. Need three (3) horizontal pieces in the aft upper section approximately 12" from the top of the partition, back wall and S1/S2 wall. Used to attach hooks for gear.

- 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. Each tray shall be vertically adjustable. Each 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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

- There shall be one (1) 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.
  - Each tool board will be bolted to compartment floor.
- There shall be one (1) bolt-in vertical compartment partition dividing the compartment into left and right sides.

The partition will be located above the extended the frame rails centered in the compartment.

#### SHOP NOTES

Located centered in compartment above extended floor

- There will be three (3) "J" hooks provided an install on the horizontally mounted shelf-trac. There will be one (1) hook per each side of the gear portion of the compartment.
- 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 64" Access LED compartment lights, vertically mounted.
- One (1) 12 volt terminal block installed to provide 12 VDC power for equipment supplied by the Surprise Fire Department. The block will be located on the forward wall near the upper compartment just inside the door opening.

#### SHOP NOTES

Locate on forward wall

- The controls for the specified light tower will be mounted on the forward wall below the Streamlight Litebox.

#### SHOP NOTES

Mounted on forward wall below the LiteBox

- The Streamlight LightBox will be mounted on the forward wall above the Command Light controller and accessible from the ground.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)**

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

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

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

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 150 lbs. slide out and down tray with an OnScene Solutions base approximately 24" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. 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".

SHOP NOTES

24"D

- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 24" 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".

SHOP NOTES

24"D

- There shall be one (1) Zico KD-UN-6SFPHS walkaway type SCBA air pack brackets with "v" type clip and strap assembly to hold SCBA in place. The brackets will be mounted in the lower out/down tray evenly spaced.

SHOP NOTES

KD-UN-6SFPHS "V" clip mounted in lower out/down tray evenly spaced

- Two (2) OnScene 36" Access LED compartment lights, vertically mounted.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

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

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

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

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be three (3) adjustable shelf/shelves approximately 22" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges
- There shall be one (1) 400 lbs. slide-out tray 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 on the sides and rear to provide a 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 Lista Tool Cabinet will be mounted to the tray.

#### **SHOP NOTES**

Lista tool box mounted to tray. No front lip

- 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.
  - Each tool board shall be horizontally adjustable; mounted on aluminum shelf trac on compartment floor.
- There shall be one (1) bolt-in vertical compartment partition(s) dividing the compartment into left and right sides.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856



One (1) Lista drawer cabinet, model CL300 series shall be provided in compartment. The Lista cabinet shall be 22-1/4" wide x 16" high x 22-1/2" deep. Cabinet shall have three (3) individual locking drawers as follows; one (1) 2", one (1) 3 -1/8" and one (1) 4-1/8". The cabinet shall be red in color with light gray drawers.

#### SHOP NOTES

CL300 No base 16"h x 22.5"w x 22.5"d

(1) CL-RT Retainer Top with Mat

(1) CL75H Drawer

(1) CL100N Drawer

(1) CL125 Drawer

Color Red with Gray Drawers

IDL Drawer Locks

(1) CLDR206-75 Divider Sets

(1) CLDR316-100 Divider Set

- 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 64" Access LED compartment lights, vertically mounted.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 41.5.0" wide.

The compartment door opening shall be approximately 34.0" wide.

#### SHOP NOTES


41.5" WTW 34" door opening

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.


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

#### COMPARTMENT LAYOUT

-  There shall be vertically mounted aluminum shelf-trac 1" thick for specified component installation. The trac below the frame rail is to be bolted in to place for easy removal.

#### SHOP NOTES


1" thick Shelf-trac below the frame rail to be bolted in to place for easy removal.

-   There shall be one (1) fixed shelf approximately 14" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the rear edge.

- There will be an area notched under the drink cooler to allow for cups to be placed when dispensing water.

#### SHOP NOTES

14"D fixed shelf with No front lip on tray. There will be a notched area under the drink cooler to place a cup. See photo on server or in QW

-  There shall be one (1) OnScene Solutions cargo straps provided to secure the water cooler.

#### SHOP NOTES

Used to secure water cooler

- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

- There shall be one (1) Zico KD-UN-6SFPHS walkaway type SCBA air pack bracket with spring type clip and strap assembly to hold SCBA in place.

SHOP NOTES

Zico KD-UN-6SFPHS

- 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 64" Access LED compartment lights, vertically mounted.
- One (1) 12 volt terminal block installed to provide 12 VDC power for equipment supplied by the Surprise Fire Department.

- The block will be located on the C1/C2 wall above the 14"D fixed shelf.

SHOP NOTES

Locate on C1/C2 wall above the fixed 14"D shelf

- There will be room for two (2) Fire Department supplied and installed Medi-Reday drug coolers to be installed. The coolers will be located in the lower portion of the compartment.

SHOP NOTES

There will be room for two (2) Fire Department supplied and installed Medi-Reday drug coolers to be installed. The coolers will be located in the lower portion of the compartment.



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)**

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

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

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

#### **COMPARTMENT LAYOUT**

- There shall be horizontally mounted aluminum shelf-trac 1" thick for specified component installation.  
SHOP NOTES  
1" thick mount horizontally on back wall for Zico SCBA brackets
- There shall be two (2) Zico KD-UN-6SFPHS walkaway type SCBA air pack brackets with "V" type clip and strap assembly to hold SCBA in place.  
SHOP NOTES  
Ziamatic KD-UN-6SFPHS with "V" clip and strap
  - There will be one (1) Streamlight LiteBox mounted in the wall of C2/C1.  
SHOP NOTES  
Mounted on C2/C1 wall
- Two (2) OnScene 36" Access LED compartment lights, vertically mounted.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### CURBSIDE COMPARTMENT - REAR (C3)

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

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
  - The lock will be programmed to lock automatically at all times. There will be a switch located in the cab at the curb side rear wall below the crew storage bin. The switch shall unlock compartment (C3) for ten (10) seconds then re-lock automatically.

#### SHOP NOTES

The lock will be programmed to lock automatically at all times. There will be a switch located in the cab at the curb side rear wall below the crew storage bin. The switch shall unlock compartment (C3) for ten (10) seconds then re-lock automatically.

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

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

#### COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) adjustable shelf approximately 14" deep. The shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges and will be located in the upper compartment forward of the partition.

SHOP NOTES 14"D



- There shall be one (1) fixed shelf approximately 14" deep located just below the ladder module. The shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges and will be located in the upper compartment forward of the partition.

SHOP NOTES Fixed shelf 14"D located just below the ladder module

- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges
- 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 64" Access LED compartment lights, vertically mounted.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### REAR COMPARTMENT - CENTER (RC1)

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the bottom of the body and extend up to bottom of hose bed, and extend as deep as possible up to fuel tank allowing for body mounts.

The interior useable compartment width shall be approximately 41.0" wide.


The compartment door opening shall be approximately 34.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

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

#### COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
-  There shall be one (1) adjustable shelf/shelves approximately 30" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 30" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions
  - The tray to hold a FD supplied ventilation fan.
  - There will be thee (3) PVC tubes located behind the cones for FD supplied fire extinguishers. The PVC tube will be a minimum 7.5" in diameter and 8" tall.

#### SHOP NOTES

Tray to have a 1" lip to divider for storage of FD ventilation fan.  
there will be three (3) PVC tubes min 7.5" diameter to hold extinguishers

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856



- Two (2) backboards. The backboards will be located in the upper portion of the compartment towards the street side. They will extend partially in to the water tank area.



The backboards are NAJO Redi-Hold model #NB1100.

SHOP NOTES

Upper street side of compartment

Make: NAJO Redi-Hold Model NB1100

- Two (2) OnScene 42" Access LED compartment lights, vertically mounted.

SHOP NOTES

two (2) 42" lights

# SURPRISE FIRE DEPARTMENT


## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### UPPER BODY COMPARTMENT - CURB SIDE REAR

There will be a ladder storage compartment located on the curbside rear of the apparatus. The compartment will be located behind the upper portion of the curb side compartments.

Access to the compartment shall be from a rear facing inboard vertically hinged compartment door. The door shall be fabricated from 3/16" smooth aluminum with full length 14 gauge stainless steel hinge, with 1/4" stainless steel pin, **6" locking stainless steel locking "D" ring handle keyed to #1250**. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to prevent corrosion. Door shall overlap body surface to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

 Compartment shall have a flush mounted light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.

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

The compartment will be designed to store the following equipment:

#### SHOP NOTES

Ladders are to be stored on edge. Door is vertically hinged towards the inboard. There does not need to be any gas struts or door stays.

6" locking stainless steel locking "D" ring handle keyed to #1250.

- One (1) trash hook(s). Manufacturer, model number and size of the trash hook shall be provided in equipment section of specification or at pre-construction meeting.
- One (1) Duo-Safety 900-A aluminum 24' 2-section ladder (14' - 2-3/4" x 21-3/4" x 5-3/8", 72 lbs). Ladder shall be supplied by contractor with completed unit. See equipment section.
- One (1) Duo-Safety 775-A aluminum 14' roof ladder (14' - 2-1/4" x 19" x 2-3/4", 25 lbs.). Ladder shall be supplied by contractor with completed unit. See equipment section.
- One (1) Duo-Safety 585-A aluminum 10' folding ladder(s) (11' - 1-1/4" x 1-3/4" x 4-1/4", 16 lbs.). Ladder shall be supplied by contractor with completed unit. See equipment section.
- Two (2) FD supplied pike poles. One (1) Akron UT-6 and one (1) Akron UT-8.

#### SHOP NOTES

One (1) Akron UT-6 and one (1) Akron UT-8.

#### 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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### ACCESS LADDER

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

There will be a clear area of 17" from the tailboard to the bottom part of the ladder.

##### SHOP NOTES

Ladder rails cannot extended down to the rear tailboard. Must have 18" of clear area form tailboard to ladder for FD supplied hose clamp that will be mounted under the ladder.



#### REAR BODY HANDRAILS

There shall be one (1) vertical handrails on the curb side rear of the body between the ladder compartment and RC1. The handrail shall be NFPA compliant 1-1/4" 304 knurled stainless steel with welded end stanchions.

##### SHOP NOTES

One located on curb side between ladder compartment and RC1

#### HOSEBED ACCESS HANDRAIL

There shall be two (2) handrail(s) mounted on the body to assist in access to hose bed area and dunnage areas. **The handrail shall be NFPA compliant 1-1/4" 304 knurled stainless steel with welded end stanchions.**

- Two (2) handrails shall be located on the upper hose bed doors.

##### SHOP NOTES

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

#### FOLDING STEP

There shall be one (1) NFPA approved folding step **furnished by the Fire Department and installed by SVI**. The step shall be cast aluminum with heavy duty stainless steel spring and textured step surface. The step will be located on the street side of the rear body panel above the hosebed access ladder adjacent to the hosebed.

##### SHOP NOTES

FD Supplied SVI installed. Street side rear above hosebed access ladder

#### STEP

There will be one (1) Cast Product SP2014-1-B fixed step located under the rear ladder storage compartment. The step will have a LED under light that is wired to the master battery switch.

##### SHOP NOTES

One (1) Cast Product SP2014-1-B fixed step located under the rear ladder storage compartment. The step will have a LED under light that is wired to the master battery switch.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### 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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

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

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

- SAE J156, *Fusible Links*
- SAE J553, *Circuit Breakers*
- 1) SAE J554, *Electric Fuses (Cartridge Type)*
- 2) SAE J1888, *High Current Time Lag Electric Fuses*
- 3) 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:

- 4) The propulsion engine and transmission
- 5) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
- 1) 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)
- 2) 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
- 3) The minimum optical warning system, where the apparatus is blocking the right-of way
- 4) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
- 5) 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.



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

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

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

#### Electromagnetic Interference

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

#### Wiring Diagram

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

#### Low Voltage Electrical System Performance Test

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

#### **12 VOLT MULTIPLEX CONTROL CENTER**

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

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

The main 12-volt electrical components will be located above the pump panel on the street side of the apparatus. They will be located inside a compartment with a removable access panel on the curb side. There will be a label on the outside of the panel stating "12-VOLT ELECTRICAL DISTRIBUTION"

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **WELDON CERTIFICATION**

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

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

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

The programming will match the template of the previous Surprise FD unit #758.

#### **SHOP NOTES**

Located on the streetside above the pump. Will be located behind a panel that is either bolted or screwed in to place. There will be a label on the outside station "12-VOLT ELECTRICAL DISTRIBUTION"

#### **BATTERY SYSTEM**

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

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

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

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

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

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

#### **BATTERY SWITCH**

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

#### **BATTERY SOLENOID**

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

#### **BATTERY CONDITIONER**

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

#### **CROSSLAY LIGHT**

There shall be one (1) OnScene Solutions 9" LED NightStik lights provided to illuminate the crosslay area. The light shall be activated when the parking brake is set.

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

##### **SHOP NOTES**

One light located to illuminate the crosslay hose area. Light will activate with park brake

#### **ENGINE COMPARTMENT LIGHT**

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

#### **SCENE LIGHT SWITCH**

There shall be a switch on the streetside rear body panel to turn on scene lights during night operations. The switch shall be of momentary style and shall be connected to a bi-stable relay, allowing the light to also be switched from the cab V-Mux screen. The scene/reverse lights shall automatically shut off when the parking brake is disengaged.

##### **SHOP NOTES**

Momentary switch for rear scene lights in addition to the V-Mux display

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

A red "HAZARD" warning light shall be supplied and installed by the cab/chassis manufacturer. Light shall illuminate automatically to warn the Driver of the following when the apparatus parking brake is not fully engaged:

1. Any passenger or compartment door is open
2. Equipment rack is not in stowed position
3. Light tower is extended

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

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



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

#### **TAIL LIGHTS**

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

- Two (2) Whelen amber LED 600 Series 60A00TAR turn signal lights
- Two (2) Whelen red LED 600 Series 60R00XRR stop/tail lights
- Two (2) Whelen LED 600 Series 60C00WCR maximum intensity back-up lights with clear lens

Each of the lights above shall be mounted in a 6EFLANGE, chrome finish bezel.

#### **MIDSHIP MARKER/TURN SIGNAL**

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

#### **MARKER LIGHTS**

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

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

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.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **REAR STEP LIGHT**

There will be one (1) OnScene 36" Access series light located under the hosebed step to illuminate the rear tailboard. The light will activate when the park break is set.

##### **SHOP NOTES**

There will be one (1) OnScene 36" Access series light located under the hosebed step to illuminate the rear tailboard. The light will activate when the park break is set.

#### **SIREN CONTROL HEAD**

A Federal Signal series electronic siren control head shall be provided. The siren head shall be a model Omega UM5000 and shall feature 100 and 200-watt output, six (6) siren tones, horn ring transfer, PA, flashing indicator lights, and a plug-in noise cancelling microphone. The siren shall to be mounted in the center panel of the cab dash in the lower left section of the panel.

The siren shall be operated through the Vista display to match previous unit.

##### **SHOP NOTES**

Omega UM5000 with PA mic, UMP90 amp, UCA90-4 cable. Need to match model of last Surprise unit SVI#758

A Unitrol noise canceling type microphone shall be provided for the PA system.

#### **SIREN SPEAKER**

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### COMMAND LIGHT – SHADOW - RT- LED

A Command Light, Shadow-RT, model SL442-RT-LED, light tower shall be provided for installation on the vehicle. The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The light tower shall extend 49-1/2" 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 48" long x 30" wide x 8-1/2" high and weigh approximately 75 pounds.

The electrically controlled unit shall not require usage of the vehicle 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 a single-stage device with a lighting capable of 355 degree rotation. The light shall be elevated by an electric linear actuators, the actuator shall adjust the light bank angle from 0 to 110 degrees.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast as required by NFPA1901. A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901.

The light tower shall be controlled with a hand-held 6 foot umbilical line remote control located in compartment per itemized compartment list. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The controls on the remote box shall be:

- Two (2) switches for each 2 light banks.
- One (1) switch for elevating /retracting the arm.
- One (1) switch for rotation of the light bank.
- One (1) switch to engage Auto-Park.
- One (1) light to indicate when light bank is out of roof nest position.
- One (1) light to indicate when light bank is rotated to proper nest position.

In addition to th wired controller the light will be able to be controlled though the V-Muc screen located in the cab. The V-Mux will feature auto-deploy position, standard controls and auto-park. The user will have the ability to switch control from wired controller and the V-Mux controls.

The Command Light shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Whelen Engineering		Total watts of light tower:	600 watts
Number of lamp heads:	Four (4) Pioneer Plus LED		Amperage per lamp head:	12.5 amps
Voltage:	12 volt		Total amperage of light tower:	50 amps
Watts of each lamp head:	150 watt		Total Lumens of light tower:	45,000 lumens

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

#### SHOP NOTES

V-Mux control in addition to wired controller

The light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.

#### **LIGHT TOWER TREE LIMB GUARD**

A 1/8" aluminum plate tree limb guard shall be provided for the specified light tower. The guard shall be painted upper cab color.

#### SHOP NOTES

Smooth aluminum guard to be painted upper cab color.

#### **DAVID CLARK INTERCOM SYSTEM**

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

- 1ea U3800 - Mater station
- 2ea U3815 - Radio interface/headset station
- 1ea U3806 - Dual headset intercom station
- 1ea U3805 - Radio cord junction module
- 3ea C3812 - Jumper cord 12'
- 2ea C3821 - Radio interface cord 21'
- 1ea C3820 - Power cord 20'
- 6ea H3442 - Headsets Behind-the-Head style
- 2ea 18352G-07 - MS Connector - 5 pin for remote PTT
- 2ea 18352G-17 - MS connector 6 socket for radio cords

#### SHOP NOTES

David Clark 3800 series system

#### **INTERCOM SYSTEM INSTALLATION**

The above listed intercom system shall be installed in the following locations in the cab:

- Driver's – Mounted above the right shoulder in-board position overhead.
- Officer's – Mounted above the left shoulder in-board position overhead.
- Driver's side rear facing – above the right shoulder out-board position outer wall.
- Officer's side rear facing – above the left shoulder on the wall or ceiling.
- Driver's side forward facing – above the right shoulder on the rear wall or ceiling.
- Officer's side forward facing – above the left shoulder on the rear wall or ceiling.

#### SHOP NOTES

Not headset jack locations in spec

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **SIDE SCENE LIGHTS**

There shall be four (4) Whelen 810 series (10" x 8") surface mounted Opti-Scene halogen lights (810CA0ZR) provided on the upper body. Light quantity shall be divided equally per side. Each light will have an 8-32 degree lens and chrome flange.

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

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

#### **REAR SCENE LIGHTS**

Two (2) Whelen 600 series (6" x 4") recess mounted Opti-Scene halogen lights (60K000XR) shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft x 10 ft (3 m x 3 m) square. Each light will have a 26 degree lens and chrome flange.

The lights shall be switched at the Vista display in the cab and with a switch located on the street side rear body panel between the rear warning light and taillights.

#### **SHOP NOTES**

Switched at the Vista display in the cab and with a switch located on the street side rear body panel between the rear warning light and taillights.

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



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **WARNING LIGHT PACKAGE**

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

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

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

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

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

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

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

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

Light controls are as follows: Position #1 All amber lights only, Position #2 All colored lights including position #1 lights, position #3 all warning lights, any white lights tied to parking brake per NFPA.

#### **SHOP NOTES**

Light controls are as follows: Position #1 All amber lights only, Position #2 All colored lights including position #1 lights, position #3 all warning lights any white lights tied to parking brake per NFPA.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### UPPER LEVEL OPTICAL WARNING DEVICES

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

#### ZONE A - FRONT WARNING LIGHTS

There shall be one (1) Whelen Edge FN72QLEDCUSTOM LED 72" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Red Linear LED - Side Facing	Clear
2	Red Corner LED	Clear
3	Blue Linear LED	Clear
4	Red Linear LED	Clear
5	Blue Liner LED	Clear
6	Red Linear LED	Clear
7	Opti-Com GTT795H	Clear
8	Opti-COm GTT795H	Clear
9	Blue Linear LED	Clear
10	Red Linear LED	Clear
11	Blue Linear LED	Clear
12	Red Linear LED	Clear
13	Blue Corner LED	Clear
14	Blue Linear LED - Side Facing	Clear

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

#### SHOP NOTES

Add MK8H lightbar mount on Wecad program if there is a brow light on cab

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

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

##### UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Linear Super-LED lights provided, one (1) each side. The driver side will be red with a red lens the officer side will be blue with a blue lens. Each light shall have a chrome flange.

##### SHOP NOTES

Driver side red officer side blue

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

##### UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens and the officer side will be red with a red lens. Each light shall have a red lens and chrome flange.

##### SHOP NOTES

Driver side blue officer side red

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

#### ZONE C - REAR WARNING LIGHTS

There shall be four (4) Whelen 600 series (6" x 4") red Linear Super-LED lights provided, two (2) each side. The upper two (2) lights above the scene lights will be amber with amber lens. The other two (2) lights below the scene lights with the driver side blue with a blue lens and the officer side red with a red lens. Each light shall have a chrome flange.

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

##### SHOP NOTES

Above scene lights amber with amber lens below scene light driver side blue with blue lens officer side red with red lens

#### LOWER LEVEL OPTICAL WARNING DEVICES

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

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### ZONE A - FRONT WARNING LIGHTS

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

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

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

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

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

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

There shall be two (2) Whelen 500 series (5" x 2") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens and the officer side will be red with a red lens. Each light shall have a chrome flange.

##### SHOP NOTES

Driver side blue officer side red

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

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

There shall be two (2) Whelen 500 series (5" x 2") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens the officer side will be red with a red lens. Each light shall have a chrome flange.

##### SHOP NOTES

Must order 5V series for vertical mounting

Driver side blue officer side red

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

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

There shall be two (2) Whelen 600 series (6" x 4") Linear Super-LED lights provided, one (1) each side. The street side light will be red with a red lens. The curb side light will be blue with a blue lens. Each light shall have a chrome flange.

##### SHOP NOTES

Street side red with red lens. Curb side blue with blue lens

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **WATEROUS CSU 1500GPM PUMP**

##### **A. Pump**

The pump shall be of single stage construction and shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association, NFPA No. 1901, and shall have a rated capacity of 1500 GPM. The Pump shall be free from objectionable pulsation and vibration under all normal operating conditions.

##### **1. Pump Body**

The pump body shall be close-grained, gray iron and must be horizontally split in two sections for easy removal of the entire impeller shaft assembly, and designed for complete servicing from the bottom of the truck without disturbing setting of the pump in the chassis or apparatus piping which is connected to the pump. Pump body halves shall be bolted together on a single horizontal face to minimize leakage and facilitate reassembly.

##### **2. Discharge Manifold**

The discharge manifold shall be cast as an integral part of the pump body assembly and shall provide at least three full 3-1/2 inch openings for ultimate flexibility in providing various discharge outlets for maximum efficiency, and shall be located as follows:

- One outlet on the right side of the pump body
- One outlet on the left side of the pump body
- One outlet directly on top of the pump discharge manifold

##### **3. Impeller**

The impeller shall be bronze with double suction inlets, accurately balanced (mechanically and hydraulically), of mixed flow design with reverse flow, labyrinth type, wear rings that resist water bypass and loss of efficiency due to wear.

##### **4. Wear Rings**

The wear rings shall be bronze, and shall be easily replaceable to restore original pump efficiency and eliminate the need for replacing the entire pump casing due to wear.

##### **5. Impeller Shaft**

The impeller shaft shall be stainless steel, accurately ground to size. The impeller shaft shall be of two-piece construction separable between the pump and pump transmission to allow true separation of the transmission from the pump without disassembly of either component.

##### **6. Anti-Friction Bearings**

The impeller shaft shall be supported at each end by oil or grease lubricated anti-friction ball bearings for rigid and precise support. Bearings shall be protected from water and sediment by suitable seal housings, flinger rings, and oil seals. No sleeve type bearings shall be used.

##### **7. Seal Housings**

The seal housings shall be equipped with two-piece glands to permit adjustment or replacement of packing without disturbing pump. Lantern rings shall be located at inner ends of seal housings so that all rings of packing can be removed without removal of the lantern rings. Water shall be fed into seal housing lantern rings for proper lubrication and cooling when the pump is operating.

##### **8. Pump Transmission**

The pump transmission shall be rigidly attached to the pump body assembly and be of latest design incorporating a high strength, involute tooth form Morse™ HV chain drive capable of operating at high speeds to provide smooth, quiet transfer of power. The shift engagement shall be accomplished by a free-sliding collar and shall incorporate an internal locking mechanism to insure that collar will be maintained in ROAD or PUMP position.

#### **WATEROUS FIVE YEAR PUMP WARRANTY**

The fire pump shall be warranted by Waterous for a period of five (5) years from the date of delivery to the Surprise Fire Department.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **UNDERWRITERS LABORATORIES FIRE PUMP TEST**

The pump shall undergo an Underwriters Laboratories Incorporated test per applicable sections of NFPA standards, prior to delivery of the completed apparatus.

The UL acceptance certificate shall be furnished with the apparatus on delivery.

#### **FIRE PUMP TEST LABEL**

A fire pump performance and rating label shall be installed on the fire apparatus pump panel. The label shall denote levels of pump performance and testing completed at factory. These shall include GPM at net pump pressure, RPM at such level, and other pertinent data as required by applicable NFPA standards. In addition, the pressure control device, tank to pump flow tests, and other required testing shall be completed.

In addition, the entire pump, suction and discharge passages shall be hydrostatically tested to a pressure as required by applicable NFPA standards. The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by applicable NFPA standards.

#### **UL PUMP CERTIFICATION**

The fire pump shall be tested and certified by Underwriters Laboratories, to perform as listed below:

- 100% of rated capacity at 150 psi, 1000 kPa net pressure.
- 70% of rated capacity at 200 psi, 1350 kPa net pressure.
- 50% of rated capacity at 250 psi, 1700 kPa net pressure.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI.

The pump shall be free from objectionable pulsation under all normal operating conditions.

#### **ALTITUDE REQUIREMENT**

The apparatus shall be designed to meet the specified rating at 7,000 feet altitude.

#### **AIR OPERATED PUMP SHIFT**

The pump shift actuating mechanism shall be air operated from a valve in the cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate.

#### **MANUAL OVERRIDE PUMP SHIFT**

A manual override system shall be supplied for the pump shift should a problem develop in the chassis air brake system. Controls for the override shall be located at the lower right hand corner of the left side pump panel. Full instructions shall be inscribed on a plate near the pump shift controls.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **PUMP SHIFT INDICATING LIGHTS**

There shall be two (2) green pump system shift indicator lights in the chassis cab. The first light shall become energized when the chassis parking brake has been set and the pump has completed its shift into pump gear and shall be labeled "Pump Engaged". The second light shall become energized and when the pump and the chassis transmissions have been shifted completely into the correct gears for pumping, this light shall be labeled "OK to Pump".

There shall be one (1) green pump system shift indicator light located on the operator's panel. This light shall only become engaged when the chassis parking brake has been set, and when the pump and the chassis transmissions have been completely shifted into the correct gears. The light shall be located adjacent to the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light Is On"

#### **MASTER DRAIN VALVE**

There shall be one (1) Watrous manifold type drain valve(s) installed in the pump compartment. All pump drains shall be connected to the master drain valve. The drain valve shall be controlled adjacent to the pump panel. The control shall be a hand wheel knob marked "open" and "closed". Each drain port shall be completely independent where the master drain valve will not allow water or air flow between any two (2) inlet ports.

#### **ELECTRIC PRIMING PUMP CONTROL AT PUMP PANEL**

The Watrous priming system shall include an oil-free rotary vane priming pump rigidly attached to the pump transmission and activated by a vacuum-activated priming (VAP) valve with a single push-button switch. Valve actuation may be accomplished while the main pump is in operation, if necessary to assure a complete prime.

The priming system shall be controlled at the pump operator's panel. The control shall be provided in the form of a momentary push button that is easily actuated with a gloved hand.

The primer shall be capable of priming the pump through a 20' section of suction hose with a 10' lift within 30 seconds for pumps less than 1,500 gpm, and 45 seconds for pumps 1,500 gpm and larger.

#### **SHOP NOTES**

Included in price of pump

#### **PRIMER CONTROL**

There primer shall be activated by an electric push button control valve.

#### **6" STEAMER SUCTION INLET(S)**

There shall be two (2) 6" male steamer inlet(s) provided with the pump. Each suction fittings shall include a removable die cast screen to provide cathodic protection for the pump thus reducing corrosion.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **TFT AB7NN-NX-PS 6" NSTF x 3.5" NSTF BALL INTAKE VALVE - STREETSIDE**

There shall be one (1) Task Force Tips AB7NN-NX-PS manually operated ball intake valve mounted on the streetside of the pump.

The Ball Intake and Jumbo Ball Intake Valves are ideally suited for high performance water flow with large water ways and limited loss at flows up to 3000 gpm. TFT's unique polymer ring coupling design prevents corrosion by elimination of issues of dissimilar metals. Models are available in either manual or remote control configurations for any apparatus application.

The Ball Intake and Jumbo Ball Intake Valves allow for multiple control configurations, as well as a top mounted control to allow ease of use on all apparatus pump panel designs. The stainless half ball design, as well as other internal stainless components and TFT's exclusive hard anodized and powder coated finish prevent unwanted corrosion.

The Ball Intake and Jumbo Ball Intake Valves incorporate a swiveling inlet to prevent unwanted kinking of supply lines for applications where space is critical, non-swiveling inlet models are available. All BIV models remain dry when in the shut position, and are available with a fast reacting, high volume field settable pressure relief valve.

#### **SHOP NOTES**

Task Force Tips #AB7NN-NX-PS

- The intake shall be provided with a 3.5" NSTM plug with hardcoat finish and retaining chain.

#### **TFT AX7NN-NX 6" NSTF x 3.5" NSTF BALL INTAKE VALVE - STREETSIDE**

There shall be one (1) Task Force Tips AX7NN-NX manually operated ball intake valve mounted on the streetside of the pump.

The Ball Intake and Jumbo Ball Intake Valves are ideally suited for high performance water flow with large water ways and limited loss at flows up to 3000 gpm. TFT's unique polymer ring coupling design prevents corrosion by elimination of issues of dissimilar metals. Models are available in either manual or remote control configurations for any apparatus application.

The Ball Intake and Jumbo Ball Intake Valves allow for multiple control configurations, as well as a top mounted control to allow ease of use on all apparatus pump panel designs. The stainless half ball design, as well as other internal stainless components and TFT's exclusive hard anodized and powder coated finish prevent unwanted corrosion.

The Ball Intake and Jumbo Ball Intake Valves incorporate a swiveling inlet to prevent unwanted kinking of supply lines for applications where space is critical, non-swiveling inlet models are available. All BIV models remain dry when in the shut position, and are available with a fast reacting, high volume field settable pressure relief valve.

- The intake shall be provided with a 3.5" NSTM plug with hardcoat finish and retaining chain.

#### **HEAT EXCHANGER**

A heat exchanger shall be provided on the pump driving engine cooling system that uses water from the discharge side of the pump to cool the engine coolant through the use of a closed heat exchanger. The water from the pump and the engine coolant shall not be intermixed. This cooling system shall be controlled by a valve on the pump operator's station.



# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **1/2" PUMP COOLER LINE**

There shall be one (1) 1/2" pump cooling/recirculation line from the pump that is connected directly into the booster tank. The cooler line shall be controlled with a quarter-turn ball valve on operator's panel, and it shall be labeled "Pump Cooler On/Off".

#### **PUMP COOLER CHECK VALVE**

There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

#### **FOAMPRO 2001 CLASS A FOAM SYSTEM**

The apparatus shall be equipped with a FoamPro 2001 Class A foam system. It will be an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a digital electronic control display suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flowmeter(s), while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

Paddlewheel-type flowmeter(s) shall be installed in the discharges specified to be "foam capable." When the use of more than one flowmeter is required, an interface electronics module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

Provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments

Show current flow-per-minute of water

Show total volume of water discharged during and after foam operations are completed

Show total amount of foam concentrate consumed

Simulate flow rates for manual operation

Perform setup and diagnostic functions for the computer control microprocessor

Flash a "low concentrate" warning when the foam concentrate tank(s) runs low

Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty

A 12 or 24-volt electric motor drive positive displacement foam concentrate pump, rated up to 2.5 gpm (9.5 L/min) @ 150 psi with operating pressures up to 400 psi (27.6 BAR), shall be installed in a suitable, accessible location.

The system will draw a maximum of 40 amps @ 12 VDC or 21 amps @ 24 VDC. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.40 Kw) electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

Full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

Components of the complete proportioning system shall include:

Operator control and display

Paddlewheel flowmeter(s)

Pump and electric motor/motor driver

Wiring harnesses

Low level tank switch

Multi-Flo electronic module (if more than one flowmeter is used)

Foam injection check valve

Main waterway check valve

An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a Certified FoamPro Dealer.

The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus.

Testing shall have been conducted in accordance to SAE standards.

The following discharges will be capable of foam:

**Two (2) 1.5" crosslays**

**Front 1.5" bumper line**

**Deckgun**

The foam discharge labels will be red with a white border.

SHOP NOTES

All foam label on discharges are to be red with white border

#### **PLUMBING SPECIFICATIONS**

The fire pump plumbing system shall be of rigid or flexible piping with stainless steel fittings. Victaulic couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or Victaulic connections.

The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards, with test results submit with the delivery documentation.

#### **STAINLESS STEEL INTAKE MANIFOLD**

The suction manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute.

The suction manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

#### **STAINLESS STEEL DISCHARGE MANIFOLD**

The discharge manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence into the discharge header.

The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible victaulic coupling.

# SURPRISE FIRE DEPARTMENT

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#### **STAINLESS STEEL PLUMBING WARRANTY**

The stainless steel plumbing shall be free of defects in material and workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

The contractor shall supply details of their warranty information with their bid submission.

#### **STAINLESS STEEL PLUMBING WARRANTY**

The stainless steel plumbing shall be free of defects in material and workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

The contractor shall supply details of their warranty information with their bid submission.

#### **INTAKES**

The pump shall have a sufficient number and size of intakes to perform the apparatus pump system certification test. The intakes shall have male National Hose Threads (NST) if the apparatus is to be used in the United States.

If the couplings on the suction hose carried on the apparatus are of a different size from that of the pump intake(s) or have means of hose attachment other than that provided on the intake(s), an adapter(s) shall be provided to allow connection of the suction hose to the pump intake(s).

A sign shall be provided on the pump operator's panel that states the following:

**WARNING:** Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

Each intake shall have a removable or accessible strainer inside the connection. The strainer(s) shall restrict spherical debris that is too large to pass through the pump.

At least one valved intake shall be provided that can be controlled from the pump operator's position. The valve and piping shall be a minimum 2-1/2 in. (65 mm) nominal size.

If the intake is 2-1/2 in. (65 mm) nominal size, the intake shall be equipped with a female swivel coupling with NH threads. Any 3 in. (75 mm) or larger intake valve except the tank-to-pump intake valve shall be a slow-operating valve.

Each valved intake shall be equipped with a bleeder valve having a minimum 3/4 in. (19 mm) pipe thread connection to bleed off air or water. The bleeder valve shall be operational without the operator having to get under the apparatus. If a valved appliance is attached to an intake, it shall be equipped with a 3/4 in. (19 mm) bleeder valve on each intake. Bleeder valves for valved intakes 4 in. (100 mm) and larger not located at the pump operator's panel shall be located where the bleeder valve controls are visible and operationally functional while the operator remains stationary at the valved intake position.

Each valved intake having a connection size larger than 3 in. (75 mm) shall be equipped with an adjustable automatic pressure relief device installed on the supply side of the valve to bleed off pressure from a hose connected to the valved intake.

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## **RESCUE PUMPER**

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All intakes shall be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi (3400 kPa). Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs. Where adapters for special threads or other means for hose attachment are provided on the intakes, closures shall be provided for the adapters in lieu of caps or plugs. Caps or closures for intake connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.

If the suction inlets are to be equipped with a valve, siamese, or adapter that will remain in place while the apparatus is in motion, that valve, siamese, or adapter shall not project beyond the apparatus running board. The purchaser shall specify if any valve, siamese, or adapter is to be permanently installed on an intake and identify the brand and model of such item.

The completed apparatus shall have the following intake(s);

#### **STREETSIDE INTAKE**

There shall be one (1) 2-1/2" gated intake(s) located on the streetside of the apparatus. Each 2-1/2" intake shall terminate with a 2-1/2" NSTF chrome plated swivel adapter. There shall be one (1) 2-1/2" NSTM chrome plated plug and chain for each intake.

- There shall be a 2-1/2" NST chrome swivel adapter provided.
  - The specified adapter shall be provided with a 2-1/2" NPT x 2 1/2" NST chrome plated plug with chain.
- One (1) Akron Brass 8000 series, 2-1/2" valve(s)
  - Valve(s) shall be controlled with a handle for direct valve operation through panel.
- One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.

#### **TANK TO PUMP CHECK VALVE**

There shall be a check valve between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.

#### **TANK TO PUMP VALVE**

A 4" full flow ball valve shall be installed between the fire pump and the water tank. The connection between the tank and the pump shall be capable of the flow recommendations as set forth in the latest edition of NFPA 1901. The valve shall be flanged to bolt directly to the pump and shall incorporate a chromium plated bronze ball. The remaining internal moving parts shall be stainless steel for years of dependable service. A non collapsible flexible hose shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation.

The tank to pump valve shall be controlled from the pump operator's panel.

- Valve shall be controlled with a collar style locking handle with a air actuated valve. The control will be horizontally mounted with open to the left and closed to the right.

SHOP NOTES - Air actuated with same style control as the pump shift.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### **DISCHARGES**

A minimum of two 2-1/2 in. (65 mm) outlets shall be provided on any pump rated at 750 gpm (3000 L/min) or greater, and a minimum of one 2-1/2 in. (65 mm) outlet shall be provided on any pump rated at less than 750 gpm (3000 L/min).

All 1-1/2" (65 mm) or larger discharge outlet connections shall be equipped with male National Hose Threads (NST). Adapters with special threads or other means for hose attachment shall be permitted to be attached to any outlets.

The piping and valves supplying any preconnected 1-1/2 in. (38 mm), 1-3/4 in. (45 mm), or 2 in. (52 mm) hose line, including the piping to the preconnected hose storage areas shall be at least 2 in. (52 mm) in size.

All discharge outlet connections, except connections to which a hose will be preconnected, shall be equipped with caps or closures capable of withstanding a hydrostatic gauge pressure of 100 psi (700 kPa) over the maximum pump close-off pressure or 500 psi (3400 kPa), whichever is greater.

Where adapters are provided on the discharge outlet connections, the closures shall fit on the adapters.

Caps or closures for outlet connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.

Each discharge outlet shall be equipped with a valve that can be opened and closed smoothly at pump discharge gauge pressures of 250 psi (1700 kPa).

The flow-regulating element of each valve shall not change its position under any condition of operation that involves discharge pressures to the maximum pressure of the pump; the means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually or automatically controlled.

Any 3 in. (75 mm) or larger discharge valve shall be a slow-operating valve.

All 1-1/2 in. (38 mm) or larger discharge outlets shall be equipped with a drain or bleeder valve having a minimum 3.4 in. (19 mm) pipe thread connection for draining or bleeding off pressure from a hose connected to the outlet.

Any 2 in. (52 mm) or larger discharge outlet that is located more than 42 in. (1070 mm) off the ground to which hose is to be connected and that is not in a hose storage area shall be supplied with a sweep elbow of at least 30degrees downward.

The completed apparatus shall have the following discharge(s);

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

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#### CURBSIDE DISCHARGE

There shall be one (1) 2-1/2" gated discharge(s) located in this area. Each discharge shall include:

SHOP NOTES - Located between the two (2) 3.5" discharges

One (1) of the discharge(s) shall flow water only.

- One (1) Akron Brass 8000 series, 2-1/2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.
- There shall be a 2-1/2" NSTF x 2-1/2" NSTM chrome plated 30 degree downsweep elbow provided.
  - There shall be a 2 1/2" NSTF x 1 1/2" NSTM chrome plated adapter with chain.
  - The specified elbow shall be provided with a 1-1/2" NSTM chrome plated cap with chain.
- One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
  - One (1) Innovative Controls 2-1/2" liquid filled gauge(s)
  - This gauge(s) shall have a white background with black text.
  - The above gauge shall have a range from 0 to 400 psi.
- There shall be two (2) 3-1/2" gated discharge(s) located in this area. Each discharge shall include:
  - Two (2) of the discharge(s) shall flow water only.
- Two (2) Akron Brass 8000 series, 3-1/2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.
- There shall be a 3-1/2" NSTF x 3.5" NSTF chrome plated 30 degree downsweep elbow provided.
  - The specified elbow shall be provided with a 3.5" NSTF hard coated cap with chain.

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- Two (2) Innovative Controls model 3003000, ¾" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
- Two (2) Innovative Controls 2-1/2" liquid filled gauge(s)
  - This gauge(s) shall have a white background with black text.
  - The above gauge shall have a range from 0 to 400 psi.

#### **REAR HOSE BED DISCHARGES**

The discharges will be located inside the hosed bed at the front wall, one (1) on the street side one (1) on the curb side.

##### **SHOP NOTES**

Locate in hosebed at the front wall., One curb side one street side.

There shall be two (2) 2-1/2" gated discharge(s) located in this area. Each discharge shall include:

Two (2) of the discharge(s) shall flow water only.

- Two (2) Akron Brass 8000 series, 2-1/2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.
- Two (2) Innovative Controls model 3003000, ¾" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
- Two (2) Innovative Controls 2-1/2" liquid filled gauge(s)
  - This gauge(s) shall have a white background with black text.
  - The above gauge shall have a range from 0 to 400 psi.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **FRONT DISCHARGE**

There shall be one (1) 1-1/2" gated discharge located in this area. The swivel will be installed inside the hosewell on the curbside.

Each discharge shall include:

#### **SHOP NOTES**

The swivel will be installed inside the hosewell. The lid will be flush with the bumper apron.

One (1) of the discharge(s) shall flow water and foam.

- One (1) Akron Brass 8000 series, 2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.
- There shall be a 1-1/2" NSTF x 1-1/2" NSTM brass 30 degree downsweep elbow provided.  
**SHOP NOTES**  
Must be brass swivel and non-chrome
- Two (2) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
- One (1) drain control located at the pump operators panel and one (1) located at the front bumper.  
**SHOP NOTES**  
One (1) located at the pump panel and one (1) at the front pumper.
- One (1) Innovative Controls 2-1/2" liquid filled gauge(s)
- This gauge(s) shall have a white background with black text.
- The above gauge shall have a range from 0 to 400 psi.

#### **MISCELLANEOUS DISCHARGE**

#### **PUMP PANEL**

- One (1) of the discharge(s) shall flow water only.
- One (1) 1" valve that is 1/4-turn style and 1/4-turn control on panel. Shall terminate in 3/4" garden hose type fitting with chain and cap  
**SHOP NOTES**  
1/4-Turn style brass or stainless valve. Shall terminate in 3/4" garden hose type fitting with chain and cap



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### 1-1/2" CROSSLAY(S)

There shall be two (2) 1-1/2" cross lay(s) located per the itemized compartment list. The cross lays shall be transverse of the apparatus body with access from either side.

Each cross lay shall have a storage capacity of 200' of 1-3/4" double jacket hose and nozzle.

The crosslays will have a hinged aluminum diamond plate cover over the top with each end having a black nylon webbing style covers.

The covers will be mechanically fastened at the top of the aluminum cover and the bottom edges will be secured using elastic cord and shoulder bolts.

The aluminum cover will be hinged towards the front (cab).

There will be rubber bumpers on the edge of the cover to prevent damage to the cab when in the raised position.

#### SHOP NOTES

No removable trays.

Hinged aluminum cover to be hinged towards the cab

Rubber bumpers on edge of cave to protect the cab paint when in the open position

Ends of crosslay opening to have a black nylon webbing cover secured with elastic cord and shoulder bolts.

Two (2) of the discharge(s) shall flow water and foam.

- Two (2) Akron Brass 8000 series, 2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.
- There shall be a 2" NSTF x 1-1/2" NSTM brass 90 degree swivel elbow provided.

#### SHOP NOTES

Swivel brass non-chrome plated

- Two (2) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
- Two (2) Innovative Controls 2-1/2" liquid filled gauge(s)
- This gauge(s) shall have a white background with black text.
- The above gauge shall have a range from 0 to 400 psi.

# SURPRISE FIRE DEPARTMENT

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#### **DECK GUN**

There shall be one (1) 3" gated discharge located on the upper deck above the pump compartment. Piping shall rise high enough for a mounted deluge gun to be operated in a 360 degree circle to a lower angle of 15 degrees without being impeded by any part of the apparatus or equipment.

The discharge shall terminate with a 6-bolt flange with NSTM threads. The discharge shall include:

One (1) of the discharge(s) shall flow water and foam.

- Two (2) Akron Brass 8000 series, 3" valves. One valve will be controlled at the pump operators position and one will be controlled at the deckgun.

#### **SHOP NOTES**

One located at operators panel one located in dunnage area next to deck gun

- Both valves shall be controlled with a handwheel connected to the gear actuated valve. One (1) handwheel actuator with position indicator shall be located on the pump operator's pane and one handwheel control at the deckgun.

#### **SHOP NOTES**

One handle at the pump operators panel one at the deckgun

- One (1) Innovative Controls model 3003000, ¾" brass 90 degree ball type drain valve with lift handle fitting and color coded labels shall be provided for the above plumbing item. The valve shall be able to manually open the drain valve when the line is under pressure and will be located on pump panel and plumbed to drain the lowest point in the plumbing.
- One (1) Innovative Controls 2-1/2" liquid filled gauge(s)
- This gauge(s) shall have a white background with black text.
- The above gauge shall have a range from 0 to 400 psi.

#### **TFT EXTEND-A-GUN**

There will be one (1) TFT model XG18VL-PL 18" extension with victaulic inlet and a 3" NPT threaded outlet.

There will be a sensor wired to the "Do Not Move Apparatus" indicators and the V-Mux system to alert when driver when the waterway is in the raised position.

#### **SHOP NOTES**

TFT model XG18VL-PL 18" extension with victaulic inlet and a 3" NPT threaded outlet.

XGB-23 bracket

#### **DECK GUN**

There will be an Elkhart monitor package model #8297-35 3.5" inlet. The package will include a 282-A stream shaper, ST-194 stack tips and a 8298P top mount adapter.

#### **SHOP NOTES**

Elkhart Model 8297-35 stinger 3 1/2" nst swivel, portable base,

#282-A stream shaper,#ST-194 stack tip set Top mounted adaptor

#8298P shall be included with the monitor and be installed on 3" pipe thread.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **TANK REFILL**

There shall be a 2" pump to tank fill line.

- One (1) Akron Brass 8000 series, 2" valve(s)
  - Valve(s) shall be controlled with a handwheel connected to the gear actuated valve. The handwheel actuator with position indicator shall be located on the pump operator's panel.

#### **PUMP MODULE**

The side mount pump enclosure shall be removable and supported from the chassis frame rails with spring type body mounts. This enclosure will allow independent flexing of the pump enclosure from the body and allow for quick removal. The support structure shall be constructed of extruded aluminum tubing and angle.

All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.

The "master" gauges shall be suitably enclosed and mounted on a full pump compartment width "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. The individual gauges shall be mounted inline with the control handle or adjacent to the control handle. Panel is to include a stainless steel piano hinge, flush mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

The following controls and equipment shall be provided on the pump panel or within the pump enclosure:

- Electric primer.
- Pump and plumbing area service lights.
- Pressure control device and throttle control.
- Fire pump and engine instruments.
- Pump intakes and discharge controls.
- Master intake and discharge gauges.
- Tank fill control.
- Tank suction control.
- Water tank level gauge.
- Pump panel lights.

#### **PUMP MODULE DUNNAGE AREA**

There shall be an open dunnage area located directly above the pump panel compartment. The Dunnage area shall extend upward from the pump panel compartment approximately 10.50" and be used to store miscellaneous Surprise Fire Department supplied equipment. The dunnage area sides shall be constructed of smooth plate aluminum painted body color.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **LEFT SIDE RUNNING BOARD - SIDE MOUNT PANEL**

The left side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

#### **RIGHT SIDE RUNNING BOARD - SIDE MOUNT PANEL**

The right side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

#### **PUMP PANEL - SIDE MOUNT**

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of smooth plate aluminum powder coated black and be fastened to the pump enclosure with 1/4" stainless steel bolts.

The instrument area shall have a stainless steel continuous hinge that shall swing towards the front of the module for easy access to gauges.

#### **LEFT SIDE PUMP PANEL - BOLTED**

The pump panel installed on the left hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts and nuts.

#### **RIGHT SIDE PUMP PANEL - BOLTED**

The pump panel installed on the right hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts and nuts.

#### **LEFT SIDE STORAGE**

There will be a 12-Volt electrical compartment located above the pump on the right side. The compartment will be used to house the 12-volt electrical distribution components. The compartment will have a mechanically fastened access panel on the outside. The panel will have a label stating "12-VOLT ELECTRICAL DISTRIBUTION".

There will be a vertically hinged door with a locking push button latch or locking "D" handle keyed to 1250. The door will be hinged towards the front. The compartment will have one (1) LED light and open door sensor.

The door and frame will be painted to match the body.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **RIGHT SIDE STORAGE**

There will be a storage compartment located above the pump operator master control/gauge panel. The compartment will be approximately 21' wide x 11" high x 24" deep.

There will be a vertically hinged door with a locking push button latch or locking "D" handle keyed to 1250. The door will be hinged towards the front. The compartment will have one (1) LED light and open door sensor.

The door and frame will be painted to match the body.

The compartment will contain two (2) 7.5" PVC SCBA storage tubes.

#### **SHOP NOTES**

Need FD approval on panel color. Upper storage doors to have locking push button latch or locking "D" handle. Must be keyed to #1250.

#### **PUMP ACCESS PANEL**

The front of the pump module will have removable access cover panel. The panel will be painted to match the body.

#### **SHOP NOTES**

The front of the pump module will have removable access cover panel. The panel will be painted to match the body.

#### **LOW PRESSURE AIR OUTLET**

There shall be one (1) air outlet connection to supply low pressure air for general maintenance. The outlet shall terminate in a 1/4" NPT threaded port. Air outlet shall be located near driver's door. The connector shall be supplied by the Surprise Fire Department.

The outlet will be located in the lower rearward corner of the pump operators panel.

#### **SHOP NOTES**

The outlet will be located in the lower rearward corner of the pump operators panel.

#### **PRESSURE GOVERNOR and MONITORING DISPLAY**

A Class 1 Total Pressure Governor will be provided with the cab and will be installed at the pump operator's panel.

#### **SHOP NOTES**

Supplied by Spartan to be installed by SVI

#### **MASTER DISCHARGE GAUGE**

There shall be one (1) Innovative Controls 4" liquid filled gauge which shall display the Master Discharge Pressure.

#### **MASTER INTAKE GAUGE**

There shall be one (1) Innovative Controls 4" liquid filled gauge which shall display the Master Intake Pressure.

- This gauge(s) shall have a white background with black text.
- The above gauge(s) shall have a range from -30" to 600 psi.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **AUXILIARY FUEL LEVEL GAUGE**

There shall be one (1) auxiliary fuel gauge mounted to the left side pump operators panel to display the chassis fuel level.

#### **COLOR CODED LABELS**

The completed unit shall have color coded labels for each discharge, intake, master gauge, and drain. Labels shall be manufactured from an acrylic poly material with the text of each label engraved in the top surface.

#### **PUMP PANEL LIGHTING**

All gauges and controls on the pump operators' panel shall be adequately illuminated by a shielded light assembly with OnScene Solutions LED type lights. The lights shall be activated by a weather-proof type switch on the pump operators' panel. This switch shall also activate any area step lighting.

There will be two (2) OnScene 9" lights located on the pump operator's side and one (1) 9" light located on the curb side. The one light located over the main pump controls will activate when the pump is engaged. The remaining lights will activate with the light switch located at the pump operator's panel.

#### **SHOP NOTES**

There will be two (2) OnScene 9" lights located on the pump operator's side and one (1) 9" light located on the curb side. The one light located over the main pump controls will activate when the pump is engaged. The remaining lights will activate with the light switch located at the pump operator's panel.

#### **TEST TAPS**

Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **UPF POLY WATER TANK**

The water tank capacity shall be approximately 500 U.S. gallons. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

The UPF Poly-Tank ® IIE shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal.

The transverse swash partitions shall be manufactured of 3/8" PT2E™ polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

The tank lid shall be constructed of 1/2" thick PT2E™ polypropylene to incorporate a multi three-piece locking design that allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

The UPF Poly-Tank IIE shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both the front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

Although the tank shall be designed on a free floating suspension principle, it shall be required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **TANK FILL / VENT**

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter.

The tower shall be **located in the right front corner of the tank**. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe that is designed to run through the tank, and shall be piped behind the rear wheels so as to obtain maximum traction.

There shall be an auxiliary tank vent piped to the rear of the tank to void trapped air and allow filling the tank to the maximum when filling on un level surfaces.

#### **UPF TANK OVERFLOW**

The tank shall be equipped with an overflow / air vent pipe suitable to the tank capacity. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

##### SHOP NOTES

Fill tower located at right front corner

#### **WATER TANK LEVEL GAUGE**

There shall be one (1) Class 1 ITL-40B Tank Level Indicator accurately displays liquid volume for both water and foam tanks. The ITL-40 has a super bright blue LED display easily viewable from 180 degrees with a visual indicator at nine precise levels.

Features;

- Level indication (9 levels) easily discernable from a distance at varying angles and lighting conditions.
- Programmable night dimming feature.
- Robust system with minimal installation and no scheduled maintenance.
- Wide variety of LED color and label offerings.
- Similiar look to the "Total Pressure Governor" and "TPG Plus" for a cohesive pump panel appearance.
- Unsurpassed diagnostics (using built-in "text" based information).
- Custom "Marquee Style" boot sequences available.
- Calibrates to any size/shape tank.
- Uses industrial pressure transducer instead of probes.
- 12V and 24V DC compatible
- Compatible with other Class 1 tank level indicators and driver modules using serial or C.A.N. communications
- **The system will be programmed to the "dim" setting.**

##### SHOP NOTES

Model ITL40B

Program to the "dim" setting per mfg.



# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **CLASS A POLYPROPYLENE FOAM CELL**

There shall be one (1) 20 U.S. gallon polypropylene foam cell incorporated into the polypropylene water tank.

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter.

The tower shall be **located in the right front corner of the tank**. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover.

There shall be one (1) pressure/vacuum vent installed on the foam tank.

There shall be one (1) drain hose connected to the foam cell. The drain shall have a 1/4 turn valve installed inside the pump house and it shall drain below the frame rail of the chassis.

#### **SHOP NOTES**

Fill towers located adjacent to water tower.

#### **FOAM TANK LEVEL GAUGE**

There shall be one (1) Class 1 ITLF-40R Tank Level Indicator accurately displays liquid volume for both water and foam tanks. The ITLF-40R has a super bright red LED display easily viewable from 180 degrees with a visual indicator at nine precise levels.

#### **Features**

- Level indication (9 levels) easily discernable from a distance at varying angles and lighting conditions.
- Programmable night dimming feature.
- Robust system with minimal installation and no scheduled maintenance.
- Wide variety of LED color and label offerings.
- Similar look to the "Total Pressure Governor" and "TPG Plus" for a cohesive pump panel appearance.
- Unsurpassed diagnostics (using built-in "text" based information).
- Custom "Marquee Style" boot sequences available.
- Calibrates to any size/shape tank.
- Uses industrial pressure transducer instead of probes.
- 12V and 24V DC compatible
- Compatible with other Class 1 tank level indicators and driver modules using serial or C.A.N. communications
- **Will be programmed to the "dim" setting.**

#### **SHOP NOTES**

Model ITLF-40R

Program to the "dim" setting per mfg.

#### **UPF POLY WATER TANK WARRANTY**

The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.

# **SURPRISE FIRE DEPARTMENT**

## **RESCUE PUMPER**

### **PRODUCTION SPECIFICATION SVI #856**

#### **HOSE BED STORAGE AREA**

Hose bed storage area shall be located over water tank and body, and shall exit at the rear of the apparatus. The interior of storage area shall be free from all projections such as nuts, sharp angles, or brackets that may damage equipment.

Length of hose bed shall be approximately 96" deep. The bottom of hose bed shall be no more than 88" above road surface. All pre-connected hose line discharges shall be accessible just below the hose bed on the rear of the apparatus.

Hose bed shall be laid out as follows;

- Left Side: 200' of 2½" Double Jacket Structure Hose Pre-Connected
- Middle: 1,200' of 4" Rubber Jacket Supply Line
- Far Right: 200' of 2½" Double Jacket Structure Hose Pre-Connected

Additional hose storage will be as follows:

- Front Bumper: 100' of 1¾" in a flat or triple flat load
- Cross Lay #1: 150' of 1½" in a flat load
- Cross Lay #2: 150' of 1½" in a flat load
- Right Side Pump: 50' of 5" soft suction hose
- Left Side Pump: 50' of 5" soft suction hose

#### **ALUMINUM HOSE BED DECKING**

The hose bed deck shall be constructed from 3" x 3/4" hollow aluminum extrusions welded into a one-piece grid to allow ventilation and water drainage. The extrusions shall have an anodized radiused ribbed top surface. The deck will be completely removable for easy access to the booster tank. The booster tank fill tower shall be protected as necessary to prevent damage from equipment located in the storage area.

#### **INTERMEDIATE STEP**

There will be a stepping area located even with the bottom of the hose bed. The step will be made out of NFPA aluminum treadplate and will span the width of the hosebed.

The step will have a slot to allow for a single folded section of supply hose to pass-thru on edge.

##### **SHOP NOTES**

Hosebed to be 88" above the road surface and 67" above the tailboard.

#### **HOSE BED LIGHTS**

There shall be four (4) OnScene Solutions 9" LED NightStik lights provided to illuminate the hose bed area. The lights shall be activated when the parking brake is set.

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

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

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **HOSE BED DIVIDER(S)**

Two (2) adjustable aluminum hose bed partition(s) shall be provided in the hose storage area. The partition(s) shall be constructed from 3/16" smooth plate aluminum with split aluminum tubing welded to the top and rear edges. Hand holes shall be provided along the outer edge to assist with movement in the hose bed area.

Hose bed dividers shall be designed only tall enough to contain the expected load to allow for easier loading of the hose.

#### **ALUMINUM HOSE BED COVER**

A two-section hose bed cover shall be provided. Each door shall be fabricated from 1/8" NFPA aluminum treadplate with formed hat sections for bracing. Doors shall be hinged along each side of the hose body using stainless steel piano hinge. The top surface of each section shall slant down with the highest point in the center of the hose bed area and shall be supported from underneath by at least one (1) adjustable hose bed divider.

Each section shall be constructed to support the weight of a person (300 lbs).

Each section shall utilize pneumatic cylinders to assist with opening and closing. There shall be a chrome grab handle on each section at the rear of the hose body.

Each compartment shall have a horizontally mounted LED light stick on the underside of the door that will be automatically activated when the door is opened and wired to the compartment door ajar warning light provided in cab.

The opening at the end of the hosebed will be covered with a black nylon style webbing. It will be secured in place with bungee style cord on shoulder bolts.

#### **SHOP NOTES**

The opening at the end of the hosebed will be covered with a black nylon style webbing. It will be secured in place with bungee style cord on shoulder bolts.

#### **EQUIPMENT PAYLOAD WEIGHT ALLOWANCE**

In compliance with NFPA 1901 standards, the pumper shall be designed for an equipment loading allowance of 2,500 lbs. of Surprise Fire Department provided loose equipment based on the pumper body having more than 250 cu. ft. of storage space.

Surprise Fire Department has specified equipment weight of 4,500 pounds not inc. hose and ladders.

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

#### **EQUIPMENT**

The following equipment shall be furnished with the completed pumper 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.
- One (1) Rubbermaid water jug model #1683. Mounted in to compartment C1 per drawing.
- 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 behind rear wheels, below body on streetside.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 585-A 10' aluminum folding ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Nupla 8' Trash/Arson hook with fiberglass handle shall be provided with the completed unit.
  - The above specified pike pole will have a D handle attached
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) Akron UT-10 10' fiberglass pike pole(s) shall be provided with the completed unit.
  - The above specified pike pole will not have a D handle attached
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) Streamlight FireBox LED flashlights model #45865 shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. The flashlights shall be wired to battery direct unless otherwise specified by Surprise Fire Department.

The lights will be mounted in S1 and C1 as determined at the pre-construction meeting.

SHOP NOTES

Model 45865

# SURPRISE FIRE DEPARTMENT

## RESCUE PUMPER

### PRODUCTION SPECIFICATION SVI #856

- Four (4) Streamlight Survivor, LED flashlights model #90503 shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an LED spotlight style bulbs and reflectors. The flashlights shall be wired to battery direct unless otherwise specified by Surprise Fire Department.

The lights will be mounted in the rear crew area of the cab near the forward facing seats. The exact locations will be determined at the pre-construction conference.

SHOP NOTES

#90503

- Surprise Fire Department supplied NFPA required fire hose and nozzles shall be provided on completed unit before placing vehicle in service.

#### **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 Surprise Fire Department.