



## **KME FIRE APPARATUS**

**Huntington Manor Fire Department**

**Quote # QUO0000004792 (Rev 9)**

**October 2, 2020**

**GSO# 11357**

**Prepared For:**

Huntington Manor Fire Department  
1650 New York Avenue  
82-34 268th street  
Huntington Station, New York 11746

Phone: 631-427-1669

Fax:

Vincent Bifano

**Presented By:**

KME  
One Industrial Complex  
Nesquehoning, PA 18240

Phone: 1-800-235-3928

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GSO# 11357 Huntington Manor Fire District, NY  
Specification: Final Production Release  
Contract Administrator: Mark Boyle

**PO00025823 - DESIGN CLAUSE**

QTY: 1.00

These specifications outline the components, installation methods, and operational characteristics KME is agreeing to provide in order to meet the purchaser's requirements. Subject to the terms of the purchase agreement, other construction details not explicitly listed in these specifications will be determined at the discretion of the builder. In the event the purchaser desires a different construction or installation not already described in these specifications, additional charges may apply, and quoted lead time commitments will be adjusted.

**PO00024632 - OVERALL APPARATUS LENGTH - 456"**

QTY: 1.00

**PO00024634 - OVERALL APPARATUS HEIGHT - 138"**

QTY: 1.00

**PO00011059 - PROPOSED BY - PROLINER RESCUE VEHICLE SALES AND SERVICE - STONE**

QTY: 1.00

ProLiner Rescue Vehicle Sales and Service is pleased to offer the proposed vehicle to meet the intent of the fire department specifications.

KME Fire Apparatus is a leading manufacturer in custom and commercial fire fighting vehicles.

Questions or concerns pertaining to this proposal can be answered by contacting the following KME representative:

Brian Stone  
Proliner Rescue Vehicle Sales and Service

18 Peconic Avenue  
Medford, New York 11763

Phone: (631) 447-9558  
Cell: (516) 644-6836  
Fax: (631) 447-9548

Email [prostone@optonline.net](mailto:prostone@optonline.net)  
Web [www.prolinerrescue.com](http://www.prolinerrescue.com)

**PO00011107 - PROPOSED SERVICE BY - PROLINER VEHICLE SALES AND SERVICE INC.**

QTY: 1.00

SERVICE CENTER AND PARTS DEPOT

Proliner Rescue Vehicle Sales and Service

18 Peconic Avenue  
Medford, New York 11763

Phone: (631) 447-9558  
Fax: (631) 447-9548

Email liproliner@optonline.net  
Web www.prolinerrescue.com

## KME FIRE APPARATUS SERVICE STATEMENT

The mission of the Proliner Rescue Vehicle dealership for every owner of KME Equipment is to be your advocate on any and all warranty issues, either service or parts related.

We encourage your service relationship and pledge to champion your issues with the KME factory in Nesquehoning, PA.

### Service Center Capabilities

- We do everything in house, mechanical repair, paint and collision, tool mounting and fabrication, remounts, lettering and striping, electrical wiring, custom command boxes, nets and harnesses, protective spray on coatings, parts and accessories.
- Our 20,000 square foot state of the art facility is located on Long Island, conveniently located just off exit 65 of the Long Island Expressway.

### **PO00011123 - INSPECTION TRIPS (4)**

QTY: 1.00

The successful bidder shall provide four (4) factory inspection to the apparatus manufacturer's facility.

Transportation, meals, lodging, and other requisite expenses shall be the bidder's responsibility.

### **PO00011134 - TRIP ONE (1) AT PRE CONSTRUCTION**

QTY: 1.00

Pre-construction / blueprint review.

### **PO00011141 - TRIP TWO (2) AT CUSTOM CHASSIS COMPLETION**

QTY: 1.00

Custom chassis completion.

### **PO00011148 - TRIP THREE (3) AT MID-POINT COMPLETION**

QTY: 1.00

Midpoint completion of entire apparatus.

### **PO00011153 - TRIP FOUR (4) AT FINAL COMPLETION**

QTY: 1.00

Final inspection upon completion.

### **PO00025825 - INSTRUCTION MANUALS - TWO (2) SETS - USB**

QTY: 1.00

In accordance with standard commercial practices, applicable to each vehicle (including body and special equipment) furnished under the contract, the following listed manuals and schematics, in the quantity specified, shall be provided at time of delivery of each vehicle.

The contractor shall supply at time of delivery, two (2) USB copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual shall contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device
- Wiring diagrams
- Lubrication charts
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems
- Instructions regarding the frequency and procedures recommended for maintenance
- Parts replacement information

**PO00010985 - STATE INSPECTION**

QTY: 1.00

The completed vehicle should include a safety inspection windshield sticker and/or the appropriate certification as required by the state Department of Transportation at time of delivery.

**PO00010997 - AMP DRAW REPORT**

QTY: 1.00

The bidder shall provide with their bid proposal and at the time of delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

A written load analysis, which shall include the following:

- The rating of the alternator.
- The minimum continuous load of each component that is specified per: Applicable NFPA-1901.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA-1901.

**PO00010998 - TURNING RADIUS REPORT REQUIRED**

QTY: 1.00

The Bid Proposal shall include a drawing of 11" x 17" showing the apparatus turning radius, wheel/tires and front bumper sweep radius with the specified front extension. No Exception.

**PO00010980 - DIGITAL PICTURES**

QTY: 1.00

KME will provide, on a weekly or as requested basis, from the time the chassis arrives/begins and construction of the body compartments begins, "digital" color photos of each phase of construction.

The digital photos shall be e-mailed or otherwise provided to the fire department..

The above specified digital photos shall include, but not be limited to: bare chassis (as it arrives from chassis factory), modifications to the chassis, installation of the fire pump and its related valves and piping (prior to being enclosed inside the fire pump cavity), water tank and foam tank (prior to their installation inside the apparatus body), fabricated apparatus body components (prior to their being assembled), assembly of the pump compartment fabrications, assembly of the compartmented body fabrications, installation of the water and foam tanks, interior compartment shelving arrangement, hose bed arrangement, and assembly of the fire pump control panel.

In addition to the specified photo shots, the purchaser shall have the right to request certain views of other features and accessories, during their manufacture and installation.

**PO00024990 - VEHICLE TRANSPORTATION - KME PROVIDED (ZONE 1 CLASS 2)**

QTY: 1.00

Transportation for the completed vehicle from KME Fire Apparatus in Nesquehoning, PA to the end user shall be provided by KME.

**PO00009791 - !!! CRITICAL OVERALL HEIGHT REQUIREMENT !!! - "YES" - 138"**

QTY: 1.00

This vehicle has a critical overall height restriction requirement due to fire station door height or obstruction within the fire department/district.

Maximum overall height of vehicle in the unloaded configuration cannot exceed: \_\_\_\_\_" (inches).

**PO00009793 - !!! CRITICAL OVERALL LENGTH REQUIREMENT !!! - "YES" - 456"**

QTY: 1.00

This vehicle has a critical overall length restriction requirement due to fire station length or obstruction within the fire department/district.

Maximum overall length of vehicle cannot exceed: \_\_\_\_\_" (inches).

**PO00010995 - NFPA CERTIFICATION**

QTY: 1.00

The proposed apparatus will be constructed to withstand the severe and continuous use encountered during emergency fire fighting services.

The apparatus will be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the fullest extent possible with the National Fire Protection Association Pamphlet No. 1901, latest edition, except as noted in the Statement-of-Exceptions.

KME will furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

**PO00011070 - GENERAL INFORMATION - NFPA 1901**

QTY: 1.00

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This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the fullest extent possible with the National Fire Protection Association Pamphlet No. 1901, latest edition, except as noted in the Statement-of-Exceptions.

KME will furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

**PO00010996 - NFPA TREADPLATE CERTIFICATION**

QTY: 1.00

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards.

Aluminum tread plate utilized for stepping, standing, and walking surfaces shall be Alcoa No-Slip type.

This material shall be a minimum 3/16 (0.1875") in thickness.

Upon request by the purchaser, the manufacturer shall supply proof of compliance with this requirement.

All vertical surfaces on the entire vehicle will also have NFPA treadplate in order to provide a consistent pattern.

**PO00011006 - "QUINT FIRE APPARATUS" NFPA 2016 CHAPTERS OF COMPLIANCE**

QTY: 1.00

The unit shall be designed to conform fully to the "Quint Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2016 Revision), which shall include the following required chapters as stated in this revision:

- Chapter 1 Administration
- Chapter 2 Referenced Publications
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 9 Quint Fire Apparatus
- Chapter 12 Chassis and Vehicle Components
- Chapter 13 Low Voltage Electrical Systems and Warning Devices
- Chapter 14 Driving and Crew Areas
- Chapter 15 Body, Compartments and Equipment Mounting
- Chapter 16 Fire Pumps and Associated Equipment
- Chapter 18 Water Tanks
- Chapter 19 Aerial Devices

**PO00011169 - NFPA "CHAPTER 16" FIRE PUMP REQUIREMENTS**

QTY: 1.00

Chapter 16 Fire Pump and Associated Equipment

**PO00011171 - NFPA "CHAPTER 18" {WATER TANKS} REQUIREMENTS - 2016**

QTY: 1.00

Chapter 18 Water Tanks

**PO00026150 - QUINT FIRE APPARATUS NFPA STATEMENT OF EXCEPTIONS**

QTY: 1.00

**NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT**

The following loose equipment as outlined in NFPA 1901, 2016 edition in accordance with the applicable requirements, will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

Section 9.7 Equipment

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

9.7.1 Ground Ladders.

9.7.1.1 The quint shall carry a minimum of 85 ft (26 m) of fire department ground ladders to include at least one extension ladder, one straight ladder equipped with roof hooks, and one folding ladder.

9.7.1.2 All fire department ground ladders carried on the apparatus shall meet the requirements of NFPA 1931, Standard for Manufacturer's Design of Fire Department Ground Ladders, except as permitted by 9.7.1.3 and 9.7.1.4.

9.7.1.3 Stepladders and other types of multipurpose ladders meeting ANSI A14.2, Ladders - Portable Metal- Safety Requirements, or ANSI A14.5, Ladders - Portable Reinforced Plastic Safety Requirements, with duty ratings of Type IA or IAA shall be permitted to be substituted for the folding ladder required in 9.7.1.1.

9.7.1.4 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 9.7.1.1 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

Section 9.7.2 Suction Hose or Supply Hose

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

9.7.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

9.7.2.1.1 Where suction hose is prodded, a suction strainer shall be furnished.

9.7.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1 (b) or Table 16.2.4.1(c).

9.7.2.1.3 Where supply hose is provided. It shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

9.7.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, Standard on Fire Hose.

Section 9.8 Minor Equipment

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

9.8.2 Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

- (1) 800 ft (240 m) of 2 1/2 in. (65 mm) or larger fire hose
- (2) 400 ft (120 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose
- (3) One hand line nozzle. 200 gpm (750 L/min) minimum
- (4) Two hand line nozzles. 95 gpm (360 L/min) minimum
- (5) One play pipe with shutoff and 1 in. (25 mm), 1 1/8 in. (29 mm), and 1 1/4 in. (32 mm) tips

9.8.3 Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

- (1) One 6 lb (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus
- (2) One 6 lb (2.7 kg) pick head axe mounted in a bracket fastened to the apparatus
- (3) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
- (4) One 8 ft (2.4 m) or longer pike pole mounted in a bracket fastened to the apparatus
- (5) Two portable hand lights mounted in brackets fastened to the apparatus
- (6) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus
- (7) One 2 1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
- (8) One self-contained breathing apparatus (SCBA) complying with NFPA 1981, Standard on Open-Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services, for each assigned seating position. But not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
- (9) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space

- (10) One spare SCBA cylinder for each SCBA carried
- (11) One first aid kit
- (12) Four combination spanner wrenches mounted in brackets fastened to the apparatus
- (13) Two hydrant wrenches mounted in brackets fastened to the apparatus
- (14) One double female 2 1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus
- (15) One double male 2 1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus
- (16) One rubber mallet, suitable for use on suction hose connections, mounted in a bracket fastened to the apparatus
- (17) Four salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m)
- (18) Four ladder belts meeting the requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services
- (19) One 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983
- (20) One 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983
- (21) Two or more wheel chocks. Mounted in readily accessible locations, that together will hold the apparatus. When loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (22) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
- (23) Five fluorescent. orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band
- (24) Five illuminated warning devices such as highway flares, unless the live fluorescent orange traffic cones have illuminating capabilities
- (25) One automatic external defibrillator (AED)

9.8.3.1 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

9.8.3.2 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

9.8.3.3 If the apparatus does not have a 2 1/2 in. intake with NH threads, an adapter from 2 1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

9.8.3.4 If the supply hose carried has other than 2 1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2 1/2 in. NH thread male discharge and to allow the hose to connect to a 2 1/2 in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

#### 14.1.8.4 Fire Helmet

It is the responsibility of the purchaser to ensure that "Fire helmets shall not be worn by persons riding in enclosed driving and crew areas any time the apparatus is placed in service.

14.1.8.4.1 A location for helmet storage shall be provided.

14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

#### 14.1.10 SCBA Mounting

It is the responsibility of the purchaser to ensure that any SCBA equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.



14.1.10.1 Where SCBA units are mounted within a driving or crew compartment, a positive latching mechanical means of holding the SCBA device in its stowed position shall be provided such that the SCBA unit cannot be retained in the mount unless the positive latch is engaged.

14.1.10.2 The bracket holding device and its mounting shall retain the SCBA unit when subjected to a 9 G force and shall be installed in accordance with the bracket manufacturer's requirements.

14.1.10.3 If the SCBA unit is mounted in a seat back, the release mechanism shall be accessible to the user while seated.

#### 14.1.11 Equipment Mounting

It is the responsibility of the purchaser to ensure that any equipment installed on the apparatus by them or their subcontractor meets the following requirements prior to placing it in service.

14.1.11.1 All equipment required to be used during an emergency response shall be securely fastened.

14.1.11.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 G force is applied in the longitudinal axis of the vehicle or a 9G force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.

#### Section 15.9.3 Reflective Striping

It is the responsibility of the purchaser to ensure that Reflective Striping has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

15.9.3.1 A retro reflective 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.

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

15.9.3.1.2 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.

#### 15.10 Hose Storage

It is the responsibility of the purchaser to ensure that any hose storage area includes a positive means to prevent unintentional deployment in order to achieve compliance with the standard prior to placing it in service.

15.10.7 Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, sides, front, and rear of the hose storage area while the apparatus is underway in normal operations.

#### **PO00025814 - THIRD PARTY TESTING**

QTY: 1.00

If required by the specific chapters of NFPA-1901, the proposed unit shall be tested and certified by independent third party inspectors.

All test work for fire pumps outlined in NFPA 1901, Edition shall be conducted.

The third party inspectors shall provide the manufacturer a complete written examination and test report for each inspection performed at the manufacturer's facility.

This report specifies the points of inspection and results of such examinations and tests.

The inspectors performing the test work on the units are certified to Level II in the required NDT methods, under the requirements outlined in ASNT document CP-189.

The actual person(s) performing the inspection shall present for review proof of Level II Certification in the required NDT methods.

The apparatus manufacturer shall designate, in writing, who is qualified to witness and certify these test results.

Prior to submittal to the automotive fire apparatus manufacturer, the final Report shall be reviewed by the Supervisor of Fire Equipment Services and a Registered Professional Engineer, both of whom are directly involved with the aerial device certification program.

When the unit successfully meets all the requirements outlined in NFPA 1901, current edition, the third party inspector shall issue a Certificate of Automotive Fire Apparatus Examination and Test stating the unit's compliance with NFPA- 1901.

**PO00010248 - PREDATOR CAB - BASE, 100" - NON S2020**

QTY: 1.00

The cab shall be a custom tilt style, built specifically for fire service.

The cab shall be a cab over engine design, with integral tilt mechanism and engine access from inside the cab.

Cab shall be designed, fabricated, assembled in its entirety, and installed on the frame rails in the manufacturer's factory.

This requirement will eliminate any split responsibility in warranty and service.

The cab interior shall be the "Open-Space" design with no wall, window or vertical support posts between the front and rear crew areas to allow direct communication, better visibility and air circulation in the cab.

**PO00001589 - PREDATOR CAB - BASE -ALUMINUM CONSTRUCTION**

QTY: 1.00

The cab shall be fabricated from 5052-H 32 aluminum alloy, utilizing the minimum material thickness as follows:

- Cab side panels 0.125 thick (1/8")
- Cab roof 0.125 thick (1/8")
- Forward cab front sheet 0.125 thick (1/8")
- Interior cab panels 0.125 thick (1/8")
- Other panels 0.125 thick (1/8")
- Cab doors 0.1875 thick (3/16")
- Engine enclosure side panels 0.250 thick (1/4")

Cab, sub-frame shall be a welded assembly, fabricated of 6063 structural aluminum alloy. This frame shall extend the full length and width of the cab and be secured to the chassis frame through two (2) rear, urethane, self centering load cushions, two (2) forward pivot brackets, and two (2) cab locks. The cab shall be of entirely welded construction.

The front cab wall shall be of double wall type construction, featuring an inner and outer panel. {No Exceptions}

**PO00010252 - PREDATOR 100" - CRASH TESTING**

QTY: 1.00

To ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided.

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The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

Furthermore, proof of testing and certification shall be provided that the cab, in accordance to SAE J2420 was front impact tested at 2.1 times the standard energy required in SAE J2420, thus exceeding the NFPA requirement.

This test shall be performed with no support immediately behind the cab, thus providing an authentic test result.

**PO00010254 - PREDATOR 100" - 120,000# ROOF & SIDE TESTING**

QTY: 1.00

The cab design will include additional third party testing to ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided.

The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

The manufacturer shall provide proof that third party testing has been conducted to prove a static roof and a static side-load test has been completed.

In these tests, a 120,000 pound static load was first applied to the roof.

This test was followed by applying the same 120,000 pound static load to the side of the cab.

These tests will be conducted per the SAE J2422, Cab Roof Strength Evaluation, protocol and the ECE R29,

Uniform provisions concerning the approval of vehicles with regard to the protection of occupants of the cab of a commercial vehicle, protocol.

During both tests, the cab will withstand these loads without encroachment into the occupant survivable space and all doors remained closed during the test.

The tests will be documented with photographs and real-time video in a report provided to the manufacturer.

**PO00001595 - PREDATOR 100" -LFD CAB LENGTH (DIM - 74 1/2")**

QTY: 1.00

Minimum Cab Dimensions:

- Overall width 100"
- Inside width across ceiling 92"
- Crew seat area width 92"
- Outer crew seat risers to rear wall 56-1/2"
- Centerline axle to rear wall 74-1/2"
- Centerline axle to front of cab 74

**PO00011674 - PREDATOR 100" - DIMENSIONS FRONT SEATING & ENGINE ENCLOSURE**

QTY: 1.00

- Top of front seat to ceiling 44" (depending upon seat type)
- Seat back to steering wheel 22" (depending upon seat type)
- Inside width (door to engine enclosure) 27" (driver's side, at floor)

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- Inside width (door to engine enclosure) 24" (officer's side, at floor)
- Floor to top of engine enclosure 27
- Front cab floor to top of center dash 34-3/4"

Glass Area Dimensions:

- Windshield (Contour) 3,422 sq. in.
- Front door window, retractable 743 sq. in. each
- Rear door window, retractable 875 sq. in. each
- Fixed side windows 620 sq. in. each (if applicable)

**PO00012639 - RM 10" RAISED W/13" ROOF NOTCH**

QTY: 1.00

Cab Entry Door Width Dimensions:

Forward door opening 40" wide  
Rear door opening 37" wide

Cab Entry Step Dimensions:

Forward door recessed step 30" wide x 9" deep  
Rear door recessed step 29" wide x 9" deep

Cab Entry Door Height Dimensions:

Forward door opening 74-1/4" high  
Rear door opening 84-1/4" high

The roof will be of a split level design with radius edges for an aesthetic, streamline appearance. The roof shall be constructed the same material as the main structure and shall be internally reinforced using framing which shall span the entire width and length of the cab for maximum structural integrity. This shall allow the roof to support personnel and roof mounted equipment without the need for additional reinforcement.

The cab roof over the rear crew area shall be raised ten (10) inches higher than the front driver and officer area. The front face of the raised roof section shall be sloped at a 45 degree angle, creating a streamlined interface with the standard, lower, forward roof section. This design shall allow for additional interior height in the rear crew area.

The rear crew area doors shall be "Vista-Style", extending full height to the radius edge of the raised roof.

Approximate dimensions:

Crew area floor to ceiling 61 1/2"  
Top of crew seat to ceiling 45" (depending upon seat type)

The 10" raised roof section over the crew area and center roof section over the forward seating area shall be notched for the aerial device. The forward roof shall be notched 3" lower than the roof over the driver and officer, the rear 10" raised roof shall be notched a total of 13". The notch shall be equipped with a chamfer on the bottom edge for interior headroom and comfort.

**PO00009790 - ALUMINUM TREAD PLATE OVERLAY ON CAB ROOF**

QTY: 1.00

A bright finish aluminum tread plate overlay shall be placed on the cab roof.

This overlay shall be placed on the raised roof section, or if a flat roof cab is being utilized, from the area of the "B" post area-rearward, and extending back to the end of the cab roof.

This tread plate overlay shall be sealed with caulking around the edges to prevent moisture from entering the area between the cab roof and the overlay.

**\*\*\*SHOP NOTE: SR00119228 - CLARIFICATION**

QTY: 1.00

*The caulking utilized around all aluminum tread plate overlays shall be silver silicone.*

**PO00010561 - CAB ROOF DRIP RAIL PREDATOR**

QTY: 1.00

For enhanced protection from inclement weather, an integral drip rail shall be furnished on each side of the cab roof. The drip rail shall extend the full length of the cab roof.

**PO00012134 - BATTERY ACCESS DOORS - REAR STEP WELLS, EACH SIDE**

QTY: 1.00

The battery access door(s) shall be 1/8" aluminum tread plate, drop down doors with thumb latches at each side rear cab step well.

**PO00010666 - CAST ANTI-SLIP ENTRY STEPS FOR FULL LENGTH DOORS**

QTY: 1.00

Each of the forward entrance steps shall be a minimum of 8-1/2" deep with the floor board recessed a minimum of 5" to avoid "shin knocking".

Each step shall be a bolt-in cast aluminum step.

The cab steps risers shall be overlaid with bright finish aluminum tread plate.

Each of the rear entrance steps shall be a minimum of 8-1/2" deep.

An intermediate step shall be provided between the lower entrance step and the crew area floor for ease of entry and egress.

Each upper section of the steps and respective step risers shall be constructed as an integral part of the cab construction and shall be overlaid with bright finish aluminum tread plate.

Each lower step shall be a bolt-in cast aluminum step.

**PO00024362 - CAB DOOR STEP TRIM**

QTY: 1.00

Cast aluminum wheel-a-brated cab step trim shall be included in the area of the cab where the floor meets the step transition area.

**PO00001621 - FULL LENGTH CAB DOORS - 100" PREDATOR "MFD, LFD & X-LFD"**

QTY: 1.00

Four (4) side-opening doors shall be provided. The cab doors shall be totally constructed of aluminum with an extruded aluminum frame and an aluminum outer door skin. The doors shall be full height from the step to the cab roof extrusion and enclose the step area when the doors are closed. The forward cab door opening shall be a minimum of 40" wide and the rear cab door opening shall be a minimum of 37" wide. The rearward cab doors shall have a radius cutout allowing the door opening to protrude forward

over the cab wheel well, while providing full access to the rear crew area. There shall be a heavy duty, piano type, stainless steel hinge on each door with a minimum pin diameter of 3/8". Hinges shall be slotted for ease of horizontal and vertical adjustment. There shall be a cab door seal and the doors shall close flush with the side of the cab. A heavy duty 6" wide belting material shall be utilized to prevent the cab doors from opening greater than 90 degrees.

**PO00010705 - CAB DOOR INSULATION - PREDATOR/SEVERE SERVICE**

QTY: 1.00

A 1/4" insulation panel shall be installed in each cab door. This insulation panel shall provide an additional acoustical barrier as well as help with heating/cooling properties of the apparatus.

**PO00010609 - PREDATOR DOOR LATCHES, HD LOOP STYLE LATCH - FULL LENGTH DOORS**

QTY: 1.00

A semi-recessed chrome plated pull handle, capable of operating with a gloved hand, shall be provided on the exterior of each cab door.

Heavy-duty, bright finish cast paddle latches shall be provided on the interior of each cab door.

Door latch mechanisms which utilize spring steel clamps shall not be considered due to their tendency to both rust and break.

The interior door latch cables/rods are to be designed to reduce adjustment or possible wear at the adjustment turnbuckles.

**PO00001649 - LOCKING CAB DOOR , OUT + IN, LOOP STYLE LATCH**

QTY: 1.00

Each exterior cab door shall be equipped with keyed locks. The cab doors shall be capable of being locked from the outside with a key and from the inside with a control in each interior paddle latch.

**PO00010611 - KEY MODEL #2001**

QTY: 1.00

The specified door lock cylinder/s shall be equipped with #2001 key/s.

**PO00001654 - ELECTRIC WINDOWS, FOUR (4) DOORS**

QTY: 1.00

Each side cab door shall have a tinted retractable window. The window track shall be designed into the door frame extrusion, which shall be extruded with a track groove to house a window track and seal. The window shall be capable of being removed from an access slot designed in the bottom of the door frame.

All side cab doors shall be equipped with electrically operated windows. Power window controls for all doors shall be provided on the driver's lower wing dash panel. The officer side power window control shall be on the officer's lower wing dash panel.

The control for each rear door shall be a rocker type, automotive style switch located on the inside door panel within easy reach.

**PO00010606 - DOOR WINDOW TRIM EXTRUSION, 4 DOOR**

QTY: 1.00

Each side cab door window shall be designed with a custom extruded trim plate, which shall conform to the perimeter of the window opening in each door.

The trim plate shall extend from the edge of the door skin to the window and shall have a silver anodized finish.

**PO00001667 - FULL HEIGHT INTERIOR DOOR PANELS - LINE-X, 4 DOOR**

QTY: 1.00

The cab door interior panels shall be covered with an aluminum panel at full height.

The panel shall be 1/8" aluminum and painted with Line-X and shall be designed to allow easy access to the inner door.

**PO00010940 - INNER DOOR PANEL TO BE THREE (3) PIECE DESIGN FOR ACCESS**

QTY: 1.00

The inner door panel shall be designed as a three (3) piece panel to allow easy access to the door latching mechanism, electrical components or the window mechanism without disassembling the entire door.

**PO00001672 - SCOTCHLITE MATERIAL ON INTERIOR OF DOOR PANEL**

QTY: 1.00

Each interior cab door panel shall be equipped with reflective ScotchLite material that shall cover at least 96 in.

**PO00010304 - WINDSHIELD, 100" CAB**

QTY: 1.00

A two piece, symmetrical, safety glass windshield shall be provided on the cab for the driver and officer providing a clear viewing area.

The windshields shall be full width to the center of the front cab support for each side and provide the occupants with a panoramic view.

To provide enhanced peripheral vision on each side of the cab, the windshield and cab structure shall be designed with radius corners, which provide a minimum of 8" of glass area, measured from the glass face to the side edge near the door post.

The windshield shall consist of three (3) layers; the outer light, the middle safety laminate and the inner light.

The thick outer light layer shall provide superior chip resistance, the middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage and the inner light shall provide yet another chip resistant layer.

The windshield will be a contour design with 3244 sq. in. of area for improved visibility and style.

The windshield glass shall be designed so it can be used on either the driver or officer side.

Single piece windshields that utilize epoxy or that are bonded to the cab structure shall not be acceptable.

**PO00010316 - WINDSHIELD WIPERS & WASHERS - 100"**

QTY: 1.00

Dual, electric operated, pantographic type windshield wipers shall be provided.

One (1) electric drive motor shall be provided for each wiper.

Wipers shall have "HI/LO" and "INTERMITTENT" operating speeds. "HI/LO" speeds shall be controlled by a steering column control, within the turn signal control stem.

"INTERMITTENT" operation shall be controlled by a twist switch within the control on the steering column.

The wipers shall be of the self-parking type.

Windshield washers shall be electric operated wet-arm type with a 1/2 gallon washer fluid reservoir, mounted behind a hinged access door in the officer side front cab step well area. The fluid level shall be visible through a cutout in the access door. This door shall be secured with two thumb latches.

The washer control shall be integral with the intermittent wiper control switch.

There shall be individual removable panels on the front face of the cab for access to the wiper motor assemblies.

Windshield wipers shall survive testing in excess of 3 million cycles in accordance with section 6.2 of SAE J198 "Windshield Wiper Systems – Trucks, Buses and Multipurpose Vehicles".

The bidder shall certify that the wiper system design has been "Third party tested" and that the wiper system has met this criteria.

**PO00010308 - SIDE VIEWING WINDOWS NON-SLIDING**

QTY: 1.00

A fixed, tinted window with 620 sq. in of glass area shall be provided on each side of the cab behind the forward cab doors.

This window will be the same height as the window in the rear cab door for maximum visibility.

**PO00001688 - DARK TINT WINDOWS, SIDE VIEWING, REAR DOORS & REAR WALL**

QTY: 1.00

The windshield and the forward cab door glass shall be provided with standard DOT, green automotive tint.

If provided, the side cab windows to the rear of the front doors, the rear cab door windows, and any rear viewing windows shall be equipped with a dark, automotive tint.

**PO00001699 - GRAB RAILS EXTERIOR, KNURLED ALUMINUM EXTRUSION**

QTY: 1.00

1-1/4" diameter x 28" long, knurled bright anodized aluminum handrails shall be provided.

There will be one (1) at each cab door entrance.

Grab rail stanchions shall be chrome plated and offset when necessary to prevent "hand-pinching" when opening or closing the doors.

Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

**PO00001703 - PREDATOR INTERIOR GRAB HANDLES - WHEELABRATED**

QTY: 1.00

Grab rails shall be provided to assist in entry and exiting of the cab. Each grab rail shall be a cast aluminum "D" style handle that shall have a wheelabrated finish and shall be located in the following locations:

- One (1) 12" long, vertically mounted on the officers side of the cab interior A post
- One (1) on each side of the cab interior on the C post in the crew area (not applicable when EMS compartments are selected)
- One (1) 11" long, horizontally mounted on each front cab door on the interior door panel
- One (1) 11" long, horizontally mounted on each rear cab door on the interior door panel



- One (1) 30" long, horizontally mounted on each rear cab door, located approximately 8" above the bottom of the window opening.

**PO00010621 - FRONT CAB GRILLE - FORMED STAINLESS STEEL**

QTY: 1.00

There shall be a mirror finished stainless steel, custom formed grille assembly for maximum air flow to the charge air cooler and the radiator. The top of the grille will have a form flat surface for the manufacturers emblem.

The grille shall be designed with an aesthetic look, with large horizontal louvers that will be reinforced to provide integrity.

The grill shall be a modular design to allow the sides or the individual louvers to be replaced if damaged.

**PO00010619 - FRONT CAB GRILLE SCREEN - AMERICAN FLAG**

QTY: 1.00

An American flag mesh bug screen shall be provided behind the front grill assembly to protect the radiator from bugs and other debris.

The screen shall be secured to the front of the cab by button snaps, behind the main grill.

**PO00010618 - SIDE CAB GRILLES -SHAPED POLISHED STAINLESS STEEL**

QTY: 1.00

Two (2) shaped, mirror finished stainless steel air inlets/outlets shall be provided horizontally above the wheel well opening, one on each side of the cab.

The grilles shall be equipped with a mesh screen to serve as a secondary ember separator.

The design shall permit proper ducting of air through the engine compartment and cooling system.

This system shall be such that particles larger than .039 inches (1 mm) in diameter cannot reach the air filter element.

**PO00010591 - ALUMINUM TREAD PLATE OVERLAY, EXTERIOR REAR WALL**

QTY: 1.00

A bright finish aluminum tread plate overlay shall be provided over the entire exterior rear cab wall.

The tread plate overlay shall be sealed with caulking around the edges to prevent moisture from getting between the cab and the overlay.

**PO00001718 - CAB WHEEL WELL LINERS**

QTY: 1.00

The front cab, wheel wells shall be equipped with fully removable bolt-in aluminum inner wheel well liners.

The liners shall extend full depth into the truck frame.

The completely washable wheel well liners shall be designed to protect the cab substructure, inner panels, and other miscellaneous installed components from road salts, debris, dirt accumulation and corrosion.

**PO00001721 - STAINLESS STEEL CAB FENDERETTES**

QTY: 1.00

The cab wheel well openings shall be trimmed with replaceable, bolt-in, polished stainless steel fenderettes.

The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well.

Dissimilar metal tape and black vinyl trim molding shall be used where the cab and fender meet.

**PO00010933 - FRONT MUD FLAPS**

QTY: 1.00

Heavy duty, black rubber type mud flaps shall be provided behind the front wheels.

**\*\*\*SPECIAL: SP00027196 - TRANSVERSE CAB COMPARTMENTS -TALL (PRED/PAN RAISED ROOF LFD)**

QTY: 1.00

*Two (2) compartments shall be provided, to the rear of the crew cab doors. These compartments shall be approximately 38" high, 10" wide and 27 3/4" deep in the lower area and transverse in the area above the frame rails. The transverse portion of the compartment shall be approximately 10" wide x 13" high. The transverse section shall be designed to be capable of being utilized for a seat riser. To make the compartment accessible from inside the crew area, the front wall of the transverse section shall be equipped with two (2) drop down flat panel doors.*

*The exposed section of the compartment in the rear crew area shall be painted with a textured paint to match the cab interior. The interior of the compartment shall be painted to match the color or material provided in the body compartments.*

*Compartment door shall have a 3/16" aluminum exterior skin door with a one (1) inch box pan and a stainless steel "D" ring handle. Door shall be hinged towards the rear of the cab with a stainless steel vertical piano hinge. The door shall be held in the open position by a gas shock stay arm. A brushed stainless steel edge guard will be provided on the latch side of the LFD cab extension compartments.*

*Each compartment shall contain a light for illumination of the compartment and shall be wired to a door jamb switch to automatically come on when the door is opened. The light shall be the same style that is used in the body compartments.*

**PO00001737 - LANG-MEKRA HEATED REMOTE CONTROLLED MIRRORS - WEST COAST STYLE**

QTY: 1.00

Two (2) Lang-Mekra 300 Series, West Coast style mirror assemblies shall be furnished one on each front cab door.

Each mirror assembly shall have a 17 x 6 shatterproof, flat glass head, mounted in a chrome plated housing and a 6-3/4 x 6-3/4 shatterproof, convex head mounted in its own chrome plated housing.

Each head will be electrically heated and motorized with controls on the driver's lower wing panel.

The upper, flat, glass portion shall be electrically controlled from the drivers seating position and the lower, convex sections shall be manually adjustable.

The mirror heads shall be installed on a one piece, break away style, stainless steel loop, mounted to the forward portion of the door with two (2) brackets forward of the windows.

**\*\*\*SHOP NOTE: SR00119229 - CLARIFICATION**

QTY: 1.00

*The door mounted mirrors will be mounted as far forward on the door as possible.*

**PO00001743 - VELVAC 8" EXTENDING CONVEX MIRROR ABOVE OFFICER SIDE WINDSHIELD CORNER**

QTY: 1.00

One (1) Velvac, 8" (minimum) convex mirror, 714721 extending mirror shall be provided and installed on the right hand side of the cab, extending forward off the cab roof. Supporting brackets shall be made of stainless steel material.

**PO00010306 - MIRROR CONTROL**

QTY: 1.00

In addition to the switches on the driver's lower wing panel, the mirror position and heat (if applicable) controls shall be programmed into the multiplex control screen.

**PO00024901 - REMOTE MIRROR CONTROLS –ON DASH- MANUAL – MULTIPLEX ELECTRICAL SYSTEM**

QTY: 1.00

Mirror controls shall be provided in the cab dash panel and shall consist of a heat on/off control (if applicable), a joy stick control with left/right selector, and a main mirror/convex selector switch (if applicable) for remote control adjustment.

These controls shall be provided in lieu of the multiplex screen controls for remote controlled mirrors.

**PO00010644 - INTERIOR TRIM, 100" PREDATOR**

QTY: 1.00

The cab interior shall be constructed to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The forward overhead panel shall be covered with a three (3) piece custom formed module, which shall have integrated windshield defroster/heat vents and four (4) comfort vents.

All panels, as well as all of the interior upholstery panels shall be medium gray in color.

The upholstered cab overhead and side wall portions shall utilize gray Durawear upholstery with padding underneath to provide additional insulation.

**PO00002964 - INTERIOR CAB WALL GRAY DURAWEAR UPHOLSTERY**

QTY: 1.00

The interior rear wall of the cab shall be covered with gray Durawear for durability and shall match the other upholstered areas of the cab.

**PO00010318 - BARYFOL FLOORING**

QTY: 1.00

The floor of the driver's compartment and the floor of the crew area shall be lined with Baryfol vinyl composite flooring to comply with NFPA noise and heat requirements.

**PO00010317 - 1" ACOUSTICAL INSULATION**

QTY: 1.00

One (1) inch thick acoustical insulation shall be provided on the cab roof, rear and side walls of the cab.

This material shall be fitted between the cab structural members and secured with adhesive to provide an insulation barrier for noise and heat.

**PO00011643 - ENGINE ENCLOSURE 100" PREDATOR FAB DASH (DURAWEAR W/ LINE-X PANELS)**

QTY: 1.00

The forward portion of the engine enclosure shall be covered with a Durawear material formed overlay to match the balance of the cab interior. This Durawear overlay shall provide superior cab insulation against noise as well as improved heating and air conditioning performance. The Durawear layer shall then be

overlaid with formed aluminum panels which shall be coated with Line-X to provide a rugged surface for this high wear area. Note: Cab interiors which feature the base aluminum structure painted with high impact resistant paint are not acceptable, the Durawear layer is required between the base structure and the impact panels to provide desired interior conditions. There will be no exceptions.

To allow maximum "elbow room" for the driver and officer, the forward portion of the engine enclosure shall feature a contour shape. The engine enclosure shall not significantly obstruct the driver's vision in any direction. The enclosure shall be an integral part of the cab structure, which shall be constructed from material providing adequate strength to support radio, map boxes, etc. The engine enclosure shall be insulated to protect from heat and sound. The noise insulation shall keep the DBA level within the limits stated in the current NFPA series 1901 pamphlet.

**\*\*\*SPECIAL: SP00027293 - NON-S2020 ENGINE ENCLOSURE ACCESS**

**QTY: 1.00**

***A padded, hinged access door shall be provided in the top rearward portion of the engine enclosure. The door shall allow access to the engine oil, transmission fluid, power steering fluid level dipsticks and the windshield washer fluid reservoir. The access door shall be provided with two (2) flush mounted latches and gas shock holders. There shall be a DURAWEAR material cover over the access door to give a cleaner look to the top of the engine enclosure and doghouse area.***

**PO00011645 - HD SOUNDPROOFING/ INSULATION PACKAGE UNDER ENGINE ENCLOSURE**

**QTY: 1.00**

Premium soundproofing/insulation material, Barymat BTRLAX3-14BY shall be installed in the engine enclosure. To ensure a clean, smooth surface, this material shall be retained by flat aluminum panels fastened to studs that are welded to cab as needed. These panels shall be removable. Any gaps in this insulation barrier shall be sealed with 3M #425 aluminized high temperature tape.

**PO00011647 - ENGINE ENCLOSURE MOUNTING PANEL**

**QTY: 1.00**

A 3/16" thickness brushed aluminum panel with 1" radius corners shall be provided and installed in the center - forward area of the engine enclosure.

The panel shall be as large as practical and shall include four (4) 1" high spacers raising the panel above the enclosure outline.

**PO00012473 - SUN VISORS, PREDATOR CAB, DARK POLYCARBONATE**

**QTY: 1.00**

To provide maximum protection for the driver and officer, two (2) dark polycarbonate sun visors shall be mounted in the cab overhead on each side.

**\*\*\*SPECIAL: SP00019661 - OVERHEAD PANEL, FLAT FACED, 100" PREDATOR**

**QTY: 1.00**

***An overhead console with a removable panel shall be provided on the cab interior overhead between the driver and officer to permit installation of cab stereo, intercom systems, arrow stick controls, etc.***

***The overhead console shall not obstruct the driver's vision through the officer's side window.***

**PO00012071 - SEAT AND SEAT BELT ANCHOR TESTING**

**QTY: 1.00**

Each seat belt anchor shall be tested to withstand 3,000lbs of pull on both the lap and shoulder belt in accordance with FMVSS 210 section 4.2.

Each seat mounting position shall be tested to withstand 20G's of force in accordance with FMVSS 207 section 4.2(c).

Both tests shall be performed and verified at a third party testing and evaluation center.

**PO00010677 - STORAGE COMPARTMENTS UNDER FRONT SEATS - 100"**

QTY: 1.00

There shall be a compartment provided under each front seat. Each compartment shall be accessible from the side of the seat riser when the door is opened.

**PO00010583 - TOP ROLLOVER PROTECTION SYSTEM W/SLAVE SENSOR - FIVE (5) OR MORE SEATS**

QTY: 1.00

The cab shall be equipped with advanced occupant restraint systems. This system shall function in the event of a side roll over and shall be compatible with occupants ranging from a 5th percentile female to 95th percentile male.

This system consists of a roll sensor, seat and occupant pretensioners; buckle pretensioners and inflatable side airbags. This system shall be functionally active while the truck is in operation.

A hybrid or pyrotechnic inflator shall inflate the side airbags. The bag should remain inflated to the extent of providing head cushioning for 10 seconds after inflation. Pretensioners should be compatible with either ABTS or body mounted seats and seat belts. Buckle pretensioners shall be used on static or power seats where there is no air suspension. The buckle pretensioners must be capable of stroking 125 mm.

The roll sensor continually monitors the roll rate and angle of the vehicle, and deploys safety devices when a roll event occurs. Deployment determination is made by a combination of vehicle angle and angular rate. Vehicle deployment angle shall never exceed 60 degrees.

The roll sensor performs self-diagnostics each time the vehicle is started. A dash-mounted light shall turn off after approximately 10 seconds if the sensor is functioning. During operation, the roll sensor monitors for proper connection to each safety device in the vehicle once per second. If improper connection is measured at any device or if an internal fault occurs, the roll sensor shall illuminate the dash-mounted light. The system shall continue to function in the event of non-critical faults. System diagnostics are on the SAE J1587 bus.

**PO00001752 - DRIVERS SEAT, BOSTROM SIERRA AIR SUSPENSION, ABTS - SIDE CURTAIN AIRBAG**

QTY: 1.00

The driver's seat shall be a H. O. Bostrom Sierra Air-50RX/HD/ABTS LH air suspension, fixed high back bucket with low profile seat cushion and Side Curtain Airbag.

The Side Air Curtain shall be mounted, integral to the outboard bolster of the seat back.

The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included.

When activated, the system shall pretension the seat belt then retract the seat to its lowest travel position.

The seat shall have a tapered and padded seat cushion with lumbar support.

The seat shall have a five inch, before and after adjustment, a three inch height adjustment with a recline seat back.

The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and an automatic retractor built into the seat assembly.

**PO00022632 - DRIVERS SEAT, BOSTROM HEAVY DUTY AIR RIDE SUSPENSION**

QTY: 1.00

The driver's seat shall be equipped with an H. O. Bostrom Heavy Duty air ride suspension.

**PO00001799 - OFFICERS SEAT, BOSTROM 450 SCBA, ABTS, FIXED - SIDE CURTAIN AIRBAG**

QTY: 1.00

The officer's seat shall be a H.O. Bostrom Tanker 450 ABTS RH series, fixed base SCBA seat with Side Curtain Airbag. The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position. A suspension seat safety system shall be included. When activated, the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall include a SCBA storage area with integral headrest. The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and an automatic retractor built into the seat assembly.

**\*\*\*SHOP NOTE: SR00119230 - CLARIFICATION**

QTY: 1.00

*The officers seat will be mounted as far rearward as practical.*

**PO00001852 - BOSTROM SECUREALL SCBA BRACKET - OFFICER SEAT**

QTY: 1.00

The officer's seat shall include a H.O. BOSTROM Secure All SCBA Locking System.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units.

The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity.

Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented, auto-locking system.

Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**PO00001855 - BOSTROM 450 SCBA ABTS REAR FACING, OUTBOARD, DRIVER SIDE - SIDE CURTAIN AIRBAG**

QTY: 1.00

The driver's side outboard rear facing crew seat shall be a H. O. Bostrom Tanker 450 ABTS RH series fixed base SCBA seat with Side Curtain Airbag.

The seat shall have a tapered and padded seat cushion with lumbar support.

The seat shall include a SCBA storage area with integral headrest.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back.

The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included.

When activated the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

**PO00001876 - BOSTROM SECUREALL SCBA BRACKET - OUTBOARD, DRIVER SIDE**

QTY: 1.00

The driver's side, rear facing, outboard seat shall include a H.O. BOSTROM Secure All SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**PO00001879 - BOSTROM 450 SCBA ABTS REAR FACING,OUTBOARD, OFFICER SIDE - SIDE CURTAIN AIRBAG**

QTY: 1.00

The officer's side outboard rear facing crew seat shall be a H. O. Bostrom Tanker 450 ABTS LH series fixed base SCBA seat with Side Curtain Airbag.

The seat shall have a tapered and padded seat cushion with lumbar support.

The seat shall include a SCBA storage area with integral headrest.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back.

The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included.

When activated the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

**\*\*\*SPECIAL: SP00014474 - REAR FACING SEAT MOUNTING**

QTY: 1.00

***The rear facing crew seats will be angled inward toward the doghouse 15 degrees.***

**PO00001900 - BOSTROM SECUREALL SCBA BRACKET - OUTBOARD, OFFICER SIDE**

QTY: 1.00

The officer's side rear facing outboard seat shall include a H. O. BOSTROM Secure All SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**PO00001937 - BOSTROM 450 SCBA ABTS FORWARD FACING, OUTBOARD, DRIVER SIDE - SIDE CURTAIN AIRBAG**

QTY: 1.00

The driver's side outboard forward facing crew seat shall be an H.O. Bostrom Tanker 450 ABTS LH series fixed SCBA seat with Side Curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back.

The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included.

When activated, the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall have a tapered and padded seat cushion with lumbar support.

The seat shall include an SCBA storage area with integral headrest.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

**PO00001955 - FLIP UP SEAT, FORWARD FACING, OUTBOARD, DRIVER SIDE**

QTY: 1.00

The driver's side outboard, forward facing, crew seat shall have a flip-up style seat.

**PO00001961 - BOSTROM SECUREALL SCBA BRACKET - OUTBOARD FORWARD,**

QTY: 1.00

The driver's side forward facing, outboard seat shall include a H.O. BOSTROM Secure All SCBA Locking System.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units.

The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity.

Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system.

Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**PO00001964 - BOSTROM 450 SCBA ABTS FORWARD FACING, OUTBOARD, OFFICER SIDE - SIDE CURTAIN AIRBAG**

QTY: 1.00

The officer's side outboard, forward facing, crew seat shall be an H.O. Bostrom Tanker 450 ABTS RH series fixed SCBA seat with Side Curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back.



The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included.

When activated, the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall have a tapered and padded seat cushion with lumbar support.

The seat shall include an SCBA storage area with integral headrest.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

**PO00001982 - FLIP UP SEAT, FORWARD FACING, OUTBOARD, OFFICER SIDE**

QTY: 1.00

The officer's side outboard forward facing crew seat shall have a flip-up style seat.

**PO00001988 - BOSTROM SECUREALL SCBA BRACKET - OUTBOARD FORWARD, OFFICER SIDE**

QTY: 1.00

The officer's side forward facing, outboard seat shall include a H.O. BOSTROM Secure All SCBA Locking System.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units.

The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity.

Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system.

Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**PO00008878 - BOSTROM SEATING MATERIAL, BLACK DURAWEAR**

QTY: 1.00

The seats shall be upholstered with heavy duty black Durawear material as provided by Bostrom.

**PO00024054 - SEAT ADJUSTMENT NOTICE**

QTY: 1.00

If equipped, adjustable seats may be limited by outside factors such as optional installed equipment (ie. ems compartments, battery chargers, SCBA cylinder brackets) and seat placement.

**PO00002027 - CLASS ONE VEHICLE DATA RECORDER**

QTY: 1.00

A Class 1 Vehicle Data Recorder (VDR) system shall be provided.

The system shall include an NFPA compliant, "Black Box" with reporting software that shall be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities shall include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports

The VDR data shall be downloadable by USB cable to a computer using either Microsoft or Apple operating systems.

**PO00002025 - CLASS ONE SEAT BELT WARNING SYSTEM - UP TO 10 POSITIONS - ULTRAVIEW DISP**

QTY: 1.00

The apparatus shall be equipped with a Class 1, seat belt warning system.

The system shall consist of a seat belt module and shall display the seating positions through the main, UltraView screen.

**PO00010780 - SIX (6) SEATING POSITIONS**

QTY: 1.00

Seat belt and seat cushion sensors shall be provided on the six (6) specified seating positions.

**PO00011687 - 4FRONT - FRONTAL AIR BAG PROTECTION SYSTEM**

QTY: 1.00

The cab will be equipped with a frontal impact protection system consisting of one (1) air bag in front of the driver in the steering wheel.

The steering wheel air bag shall be designed to protect the driver in the event of a frontal or oblique impact.

The driver seat shall be equipped with a S4 pretensioner for suspension seat (if required) and a seat belt pretensioner.

Frontal impact protection system consisting of one (1) knee bolster air bag, in front of the officer mounted in the firewall panel below the dash panel.

The officer seat will be equipped with a S4 pretensioner for a suspension seat (if required) and a seat belt pretensioner.

The officer side knee bolster air bag shall be designed to protect the legs of the occupant, when used in combination with the 3 point seat belt, in the event of a frontal or oblique impact.

**PO00011690 - 4FRONT - FRONTAL AIR BAG PROTECTION TESTING**

QTY: 1.00

The frontal air bag system shall be designed specifically for the cab configurations they are used in.

The cab and chassis design shall have been subjected, via third party test facility, to a 21 MPH crash impact during frontal and oblique impact testing.

Testing shall include all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspension components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts.

The testing shall provide configuration specific information used to optimize the timing for firing the air bags.

The driver side air bag shall be mounted in the steering wheel and will be designed to protect the head and upper torso of the occupant, when used in combination with the 3 point seat belt, in the event of a frontal or oblique impact.

The passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3 point seat belt, in the event of a frontal or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy air bag/s, and activate the following components integrated into seating position equipped with an air bag:

- Suspension seats will be retracted to lowest travel position. Seat belts will be pretensioned to firmly hold the occupants in place.

**\*\*\*SPECIAL: SP00027200 - CAB STORAGE COMPARTMENT**

QTY: 1.00

*An interior cab equipment storage compartment will be provided below the 13" ceiling notch against the rear cab wall. The compartment will be 36" wide x 18" deep x tall as possible. A locking roll up door will be provided. 2 adjustable shelves will be provided. Provide a Blue-Sea 6 circuit 12-volt power distribution module. 2 LED strip lights will be provided. The compartment will be fabricated from smooth aluminum and painted to match the cab interior.*

**\*\*\*SPECIAL: SP00027202 - CUSTOMER SUPPLIED SCANNER RADIO INSTALLATION**

QTY: 1.00

*A customer supplied scanner radio will be installed within the officers side center dash module. The cutout size for the scanner is 2.2" high x 7.2" wide x 5.9" deep.*

**PO00010640 - DRINK HOLDER - DRIVER AND OFFICER**

QTY: 1.00

A single drink holder shall be installed on each side of the engine enclosure, convenient to the driver and the officer.

**PO00010690 - COMPUTER TERMINAL IN FRONT OF OFFICER**

QTY: 1.00

There shall be a flat working surface area in front of the officer.

**\*\*\*SPECIAL: SP00027197 - HVAC CONTROLS**

QTY: 1.00

*The multiplex system control screen shall contain all controls for the cab HVAC control system.*

***For Clarification: The only controls for the HVAC will be thru the multiplex screen.***

**PO00025609 - HEATER/DEFROSTER & ACCESSORIES, RAISED ROOF**

QTY: 1.00

A climate-control system shall be provided for total cab environmental comfort as well as provide heat, cooling and defrost capabilities to various areas in the cab.

The system shall consist of a single evaporator unit, mounted in the center overhead of the cab.

The ceiling mounted external evaporator/heater unit shall include the following:

- Heavy-duty, high output blower.
- High efficiency coil that includes "rifled" tubing and oversized header tubes for maximum refrigerant distribution.
- Four (4) 2" diameter, adjustable louvers; two (2) each side of the cab overhead, facing the driver and officer seat positions.
- Six (6) larger louvers evenly spaced, forward of the overhead assembly, facing the windshield.
- Multi-vent defroster louvers positioned above the windshield will provide adequate airflow for windshield defrost.
- Four (4) lower vents shall be provided, one (1) below the driver and officer seat positions and one (1) under each outboard rear facing crew seat.
- Seven (7) vents shall be provided on the HVAC unit for crew comfort.
- Damper controls shall be pneumatically operated to provide air discharge to the windshield, front overhead air discharge louvers as required.
- An adjustable electric water valve to control the amount of heat.
- Housing shall be fully insulated and enclosed.
- BTU: 53,500 A/C
- BTU: 69,300 Heat
- CFM: 680 Heat as mounted in the cab
- CFM: 680 A/C as mounted in the cab

The ceiling mounted evaporator unit/s shall be designed with an ergonomically designed cover to provide maximum headroom and a pleasing appearance with a crinkle coat texture and include a deep well condensate collection pan, which shall be drained by a gravity system to the inside of the cab wheel well area.

Evaporator units shall be mounted on the cab roof, enclosed by aluminum panels painted white. The evaporator louvers and controls shall penetrate the cab roof into occupant compartments to the least extent practicable.

A serviceable foam intake filter shall be installed on the rear of the evaporator.

All defrost/heating systems will be plumbed with one (1) seasonal shut-off valve mounted in the officer side wheel well area.

A 12-volt roof top dual condenser shall be mounted on the cab roof. The condenser shall be designed with high performance, long life fan assemblies with sealed housings and shaft. The condenser and coil design shall include rifled tubing for maximum efficiency. Each coil shall be painted black. The condenser unit must include a receiver drier with a high and low pressure switch. The wire harness shall include necessary wiring for the clutch circuit as well as a separate power relay circuit.

Mounting design shall enable easy servicing of all components and unit replacement if necessary.

The system shall utilize one (1) Valeo TM-31 HD engine mounted compressor driven by a Poly "V" serpentine belt installed in accordance with the manufacturer's requirements. The system shall use R134a refrigerant. The air conditioner lines shall be EATON GH001 EverCool SAE J2064 Type E hose secured using EATON E-Z Clip system components.

Air conditioning hoses shall be #10 hose for discharge and #12 hose for suction with steel hose and end fittings provided at the compressor. The heater hose installation shall not incorporate a copper tube manifold.

The air conditioning system shall be configured to only operate when the vehicle's engine is running. The blowers, in both evaporators, shall be in operation whenever the air conditioning system is activated.

Heater-defroster shall have a three-speed electric fan with illuminated controls. The controls system shall actuate the air-distribution system with air cylinders, which are to be separated from the air brake system by an 85-90 psi pressure protection valve.

The 12-volt system for the air conditioners shall have first priority to be load managed.

The heater/defroster unit shall clear the windshield in half-the-time required by SAE standards.

**PO00002176 - PAINT ROOF MOUNTED AIR CONDITIONER UNIT**

QTY: 1.00

The roof mounted, air conditioning, condenser housing(s) shall be painted to match the cab roof color.

**PO00002179 - AUX. HEATERS UNDER REAR FACING, OUTER SEAT RISERS**

QTY: 1.00

Two (2) SGM H1352 9,850 BTU/H auxiliary heaters shall be provided, located one (1) under each rear facing, outboard seat riser.

Heater controls for each shall be provided.

A mechanical shut off valve shall be installed on each heater to manually shut down the coolant flow.

**\*\*\*SPECIAL: SP00027198 - TWO (2) 8" WINDSHIELD DEFOGGER FANS**

QTY: 1.00

***Two (2) eight (8) inch diameter, two-speed, defogger fans shall be provided in addition to the standard windshield defroster. The defogger fans will be located just outboard of the center overhead center dash, one (1) each side. (reference customer's current KME pumps)***

**PO00010681 - CAB TILT SYSTEM**

QTY: 1.00

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves.

The cab tilt mechanism shall be custom designed for ease of maintenance and consist of two (2) hydraulic cylinders connect to the cab and the frame assembly.

Hydraulic lines shall be rated at 20,000 PSI burst pressure.

The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

Hydraulic cylinders shall be detachable to allow removal of the engine for major service.

A remote cable operated mechanical cylinder stay bar and release shall be provided to insure a positive lock in the tilted position.

The two (2) rear cab latches shall be of the hydraulic pressure release, automatic re-latching type and provide an automatic positive lock when the cab is lowered.

The tilt pump shall be electric over hydraulic type, with a pressure rating of not less than 4,000 PSI. Additionally, the cab tilt device shall be both electrically and hydraulically interlocked to prevent inadvertent activation of the cab tilt system.

- A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.
- A dual switch control system shall be provided for the cab tilt, located on the passenger side of the vehicle or on the optional tether control. System shall consist of two (2) position toggle switch along with a rubber covered push button momentary switch, which must be activated for the cab to raise or lower.

**PO00002182 - AUXILIARY - MANUAL CAB LIFT BACKUP SYSTEM**

QTY: 1.00

An auxiliary, manual cab, lift backup system shall be furnished inside the passenger side of the pump enclosure or front compartment for use in the event of total electrical shutdown.

The removable handle shall be provided as loose equipment.

**PO00002185 - TETHER CONTROL FOR CAB TILT W/COMPARTMENT @ PUMP PANEL - LA COUNTY STYLE**

QTY: 1.00

A 8' tether control shall be provided for tilting the cab, providing the operator with a full view of the cab when tilting.

The control shall include a two (2) switch control in which both controls must be depressed for activation of the system.

The tether control shall be located in a recessed compartment at the top forward area of the right pump access panel.

The control switches shall have proper labeling, denoting the switch position for the stowed position of the cab.

**PO00002186 - CAB TILT SECONDARY SAFETY LOCK**

QTY: 1.00

A secondary, swing down, safety bar shall be applied to the driver side cab tilt cylinder with a manual lock to engage the lock, as required for extended service operations.

**PO00002189 - PARKING BRAKE/CAB TILT INTERLOCK**

QTY: 1.00

The cab tilt control shall be equipped with an interlock.

This shall disable the cab tilt system in the event the parking brake is not applied.

**PO00024080 - 110,000 PSI FRAME: AERIAL TRIPLE FRAME RAIL**

QTY: 1.00

The chassis frame shall be assembled in its entirety at the manufacturer's facility. This will prevent any split responsibility for warranty or service.

The frame shall consist of two (2) channels fastened together by cross members. All structural fasteners used in the frame shall be Grade 8 hardware. Hardened steel washers shall be used under all bolt heads and nuts to avoid stress concentrations. Top flange shall be free of bolt heads. All spring hangers shall be machined steel castings. Frame assemblies that are welded or assembled with "Huck" type fasteners are not acceptable.

Each main frame rail shall be 10-1/4" x 4" x 3/8", fabricated from Domex™ 110,000 PSI minimum yield steel, with a minimum section modulus of 18.396 cu in and a resisting bending moment (RBM) of 2,023,560 inch pounds. Frames are built for the specific apparatus under construction so that no unnecessary holes or modifications are made to the frame assembly.

A full length inner frame liner shall be installed. Total section modulus of each rail, with liner, shall be 33.555 cu in and the total resisting bending moment (RBM) shall be a minimum of 3,691,050 in-lbs, per rail.

A third inner frame liner shall be provided between the front and rear axle spring hangers. Total section modulus of each rail, with both liners, shall be 42.180 cu in and the total resisting bending moment (RBM) shall be 4,639,800 in-lbs, per rail.

The chassis frame assembly, consisting of frame rails, cross members, axles and steering gear(s), shall be finish painted before installation of any electrical wiring, fuel system components, or air system components. All components or brackets fastened to the frame rails shall be cleaned, primed and painted prior to being attached to the frame rails.

**PO00023914 - AERIAL TRAVEL SUPPORT**

QTY: 1.00

An aerial travel support for the aerial device shall be provided and located as close to the front axle as possible.

**PO00024146 - GALVANIZED TRIPLE FRAME RAILS**

QTY: 1.00

The chassis main frame rails and frame liners, will be hot dipped galvanized prior to chassis frame assembly. An epoxy primer will then be applied over the galvanized finish. The frame rails shall then be finish painted along with the rest of the frame components.

**PO00002194 - BUMPER 12" PAINTED STEEL BUMPER - ALL CABS**

QTY: 1.00

A 12" high, 101" wide, painted, steel, front bumper shall be provided. The bumper shall be constructed from a minimum of 10 gauge steel, which shall be designed with 45-degree welded corners and a 2" flange on the top and bottom.

The ends of the bumper shall be supported by horizontal channels, which shall extend from the frame rails to the sides of the bumper.

The color of the bumper shall match the cab and body base color.

**PO00002202 - 18" FRONT BUMPER EXTENSION WITH TREAD PLATE GRAVEL SHIELD**

QTY: 1.00

The bumper shall be extended 18" with a polished aluminum, tread plate, gravel shield enclosing the top and ends.

**PO00023875 - CENTER WELL**

QTY: 1.00

One (1) storage well constructed of 1/8" aluminum shall be installed in the gravel shield. This storage well shall be center mounted between the chassis frame rails. The bottom of the storage well shall have a minimum of four (4) drain holes.

**PO00002211 - TWO (2) VELCRO STRAPS ON CENTER WELL**

QTY: 1.00

The center, front bumper hose well shall be furnished with Velcro straps to secure the hose stored in the well.

The straps shall be attached to each side of the hose well with footman loops.

**PO00002223 - TURTLE TILE MATERIAL IN CENTER WELL**

QTY: 1.00

The center storage well shall be equipped with Turtle Tile material to provide drainage and ventilation of equipment in storage well.

**\*\*\*SHOP NOTE: SR00120371 - CLARIFICATION**

QTY: 1.00

*The turtle tile shall be black.*

**\*\*\*SPECIAL: SP00027199 - CENTER WELL - AS LARGE AS POSSIBLE**

QTY: 1.00

*The center well will be designed to be as large as possible. The chicksan swivel will be located on the drivers side of the center storage well.*

**PO00002309 - TWO (2) PAINTED TOW EYES, BELOW FRONT BUMPER**

QTY: 1.00

Two (2) painted steel tow eyes shall be fastened directly to the bumper support structure that extends below the bumper.

The tow eyes shall be fastened with grade 8 bolts and nuts.

**PO00002322 - FRONT BUMPER - BLACK LINE-X TRIM - TOP EDGE**

QTY: 1.00

The front bumper top flange and 1" of the front surface shall be sprayed with black Line-X to prevent any damage to the painted surface.

**PO00024470 - 24,000# FRONT AXLE STEERTEK, DISC BRAKES**

QTY: 1.00

The Steertek NXT front axle beam shall be rated to carry 24,000 lbs. and consist of a fabricated box cross section construction with 100ksi plate and a continuous beam architecture to minimize stress points for added durability.

The axle shall incorporate a removable kingpin feature for ease of kingpin serviceability. The knuckles shall allow for compatibility with disc brakes mounted at the 12 o'clock position and with drum brakes, and allow for wheel cut up to 45 degrees. They shall also utilize premium kingpin bushings and seals to provide enhanced protection from the elements to improve bushing life. Oil seals with viewing window shall be provided.



The suspension shall consist of multi-leaf parabolic springs rated at 24,000 lbs with double wrapped front eye that are packaged within an integrated clamp group that allows for ease of OEM assembly on to the axle beam and reduced part count. The clamp group bolts are tightened on the top of the clamp group opposed to the traditional U-bolt on the bottom making it easier to access with a torque wrench for servicing. The spring shall also include a lower shock attachment with an upturned eye. The springs will contain threaded pin bushings to allow simplification of spring alignment as well as long service life and improved ride quality. The suspension and spring geometry will be optimized to provide improved bump steer and Ackermann. Two ZF Sachs twin-tube shocks shall be provided with the front suspension assembly. The shocks shall be specially developed for parabolic leaf springs with a digressive characteristic curve using a patented piston system. The shocks shall feature multi-stage piston and base valves. The combination of valves shall achieve the desired damping characteristics that are ideal for the application.

Meritor EX-225 H, 17" disc brakes shall be provided for the front axle.

The front brakes shall be full air actuated with automatic, slack adjustment.

**PO00010598 - STEERING - DUAL SHEPPARD POWER STEERING GEARS**

QTY: 1.00

A dual power steering system shall be provided utilizing a Sheppard model #M110 main steering gear on the driver side of the chassis and a Sheppard model #M90 steering gear on the officer side of the chassis.

The power steering gear on the officer side of the chassis shall increase performance in turning the officer side wheel assembly, reducing loads and forces on the main gear and components.

The steering system shall be designed to maximize the turning capabilities of the front axle no matter the rating and tire size.

The use of a power assist cylinder on the officer side of the chassis is NOT ACCEPTABLE on front axles of this capacity.

The system shall be designed utilizing an engine driven hydraulic pump, with a maximum operating pressure of 2000 PSI.

Steering system components shall be mounted in accordance with the steering gear manufacturer's instructions.

**PO00010603 - STEERING COLUMN - CLOCK SPRING "NARROW"**

QTY: 1.00

The steering column shall be a "Douglas Autotech" tilt and telescope column.

A lever mounted on the side of the column shall control the tilt and telescope features.

The steering shaft from the column to the miter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

There shall be a ergonomically designed, self-canceling lever, that shall control the following functions:

- Left and right turn signals
- High beam activation
- Two speed with intermittent windshield wiper control
- Windshield washer control

**PO00010604 - 18" STEERING WHEEL - 4 SPOKE - "NARROW"**

QTY: 1.00

The steering wheel shall be a four (4) spoke, vinyl padded, minimum 18" diameter, with a center hub mounted horn button.

**PO00010605 - SMART WHEEL CONTROLS ON STEERING WHEEL**

QTY: 1.00

The steering wheel shall be equipped with "Smart Wheel" multiplexed control pods.

The "Smart Wheel" shall be designed so that the driver's hands never need to leave the steering wheel once the engine is running and the parking brake is released.

The "Smart Wheel" steering wheel shall include ten (10) multiplexed switches that control the following functions:

- Air Horn
- Q2B (If Equipped)
- Q2B Brake (If Equipped)
- Master Warning Switch
- Mic (Push to talk)
- Siren (If selected siren is compatible)
- Auxiliary Braking
- High Idle
- Throttle Up - High Idle Function
- Throttle Down - High Idle Function

The functions shall be multiplexed through a clock spring circuit board. Collector rings switch wiring is not acceptable!

In addition to the Smart Wheel switches the electric horn switch shall be located in the center of the steering wheel.

**PO00024624 - 35,000# REAR AXLE MERITOR RS-35-180**

QTY: 1.00

Rear axle shall be a single, Meritor RS-35-180 with a capacity of 35,000 lbs. (Minimum). Axle shall be a single reduction axle with hypoid gearing and oil-lubricated wheel bearings. Oil seals shall be provided as standard equipment.

**PO00002374 - 16.5" X 8.6" S-CAM BRAKES - MERITOR REAR AXLE, W/ AUTO SLACK ADJUSTERS**

QTY: 1.00

Brakes shall be "S" Cam, 16-1/2" x 8 5/8" size, and shall be full air actuated with automatic, slack adjusters.

**PO00023915 - VEHICLE TOP SPEED NFPA STATEMENT**

QTY: 1.00

The rear axle/s (will/shall) be geared for a vehicle top speed in accordance with NFPA sections 4.15.2 and 4.15.3.

Units with GVWR over 26,000 pounds (will/shall) be limited to 68 mph. If the combined tank capacity is over 1250 gallons of foam and water or the GVWR is over 50,000 pounds, the vehicle top speed (will/shall) be limited to 60 mph or the fire service rating of the tires, whichever is lower.

**PO00002397 - CHAIN SYSTEM FOR SINGLE REAR AXLE (ON-SPOT 6 STRAND)**

QTY: 1.00

The vehicles rear drive axle shall be equipped with an On-Spot, 6 strand tire chain system.

The system shall utilize the existing vehicle air compressor system.

A switch shall be provided in the drivers console area to control the activation of the chains.

The switch shall have a safety feature, which does not allow for inadvertent activation.

**PO00002412 - SPRING REAR SUSPENSION, SINGLE REAR AXLE (35,000#)**

QTY: 1.00

The rear suspension shall be a mechanical leaf type, variable rate with a 35,000 lb. rating. The main spring assembly shall consist of 12 leaves with the main spring measuring 60.5" L x 3" W, and 2 radius rod leaves for 14 total leaves.

Location of the suspension will be maintained with a single or double radius leaf" via a durable maintenance free rubber "pin" type bushing. The axle rating shall be designed to match or exceed the rear axle weight rating.

**PO00010590 - REAR SHOCK ABSORBERS - MONROE "MAGNUM" SERIES**

QTY: 1.00

The rear suspension system shall be equipped with Monroe, model "Magnum" model #74001, double acting hydraulic shock absorbers.

Shock absorbers to have a minimum bore of 1.38" and an outside diameter of approximately 3-1/4".

**PO00002489 - FRONT WHEELS, DURABRIGHT ALUMINUM, 22.5 X 12.25**

QTY: 1.00

The front wheels shall be 22.5" x 12.25" ten stud, hub piloted, DuraBright aluminum disc type.

**PO00002491 - FRONT WHEELS, LUG AND HUB TRIM (ALUMINUM WHEELS)**

QTY: 1.00

The front wheels shall be provided with bright, nut covers and hub caps.

**PO00002510 - FRONT, MICHELIN 425/65R22.5 L 24,396# XZY3 WB MIXED - 65MPH**

QTY: 1.00

The front tires shall be Michelin 425/65R22.5, "20 Ply", tubeless, radial XZY3, wide base mixed tread.

The tires shall be fire service rated up to 24,396 lbs and shall have a top speed of 65 mph when inflated to 120 psi.

**PO00002546 - REAR WHEELS, DURABRIGHT ALUMINUM, 22.5 X 9, SINGLE AXLE**

QTY: 1.00

The single, rear axle wheels shall be 22.5" x 9" ten stud, hub piloted, DuraBright aluminum disc type.

**PO00002553 - REAR WHEELS, LUG AND HUB TRIM, SA (ALUMINUM)**

QTY: 1.00

The single, rear axle aluminum disc wheels shall be provided with bright, nut covers and hub caps.

**PO00002592 - REAR, MICH 315/80R22.5 L 35,396# XDN2 GRIP TRAC. - 75MPH, SINGLE AXLE**

QTY: 1.00

The rear tires shall be Michelin 315/80R22.5, "20 Ply", tubeless, radial, XDN2 GRIP, traction tread.

The tires shall be fire service rated up to 35,396 lbs and shall have a top speed of 75 mph when inflated to 130 psi.

**PO00002625 - TIRE PRESSURE MONITORING - LED VALVE STEM CAPS - SIX TIRES**

QTY: 1.00

Each tire shall be equipped with an LED tire alert pressure management system (Vecsafe equal) that shall monitor tire pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi.

The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.

**PO00010774 - CROSSFIRE TIRE EQUALIZATION SYSTEM FOR SINGLE REAR**

QTY: 1.00

A Crossfire dual tire equalization system shall be provided for the single rear axle of the chassis.

**PO00010544 - BRAKE SYSTEM, SINGLE AXLE CHASSIS**

QTY: 1.00

A dual circuit, air operated braking system, meeting the design and performance requirements of FMVSS -121 and the operating test requirements of NFPA 1901 current edition shall be installed.

The air system shall provide a rapid air build-up feature and low-pressure protection valve with light and buzzer, designed to meet the requirements of NFPA 1901, current edition.

**PO00010546 - ABS BRAKING FOR SINGLE REAR AXLE CHASSIS**

QTY: 1.00

An Anti-Skid Braking System (ABS) shall be provided to improve braking control and reduce stopping distance. This braking system shall be fitted to all of the axles. All electrical connections shall be environmentally sealed, water, weatherproof, and vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel shall transmit wheel speed data to an electronic processor which shall sense approaching wheel lock causing instant brake pressure modulation up to 5 times per second in order to prevent wheel lockup. Each wheel shall be individually controlled.

To improve service trouble shooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started. A dash-mounted light shall go out once the vehicle has attained 4 mph after successful ABS start-up. A warning light shall signal malfunction to the operator. The system shall consist of a wheel mounted toothed ring, sensor, sensor clip, electronic control unit and solenoid control valve. The sensor clip shall hold the sensor in close proximity to the toothed ring.

The system shall also control application of the auxiliary engine exhaust or drive line brakes to prevent wheel lock.

**PO00002439 - AUTO TRACTION CONTROL (ATC) FOR ABS SYSTEM SINGLE REAR AXLE**

QTY: 1.00

To further improve vehicle drive characteristics the unit shall be fitted with automatic traction control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra, solenoid valve shall be added to the ABS system.

The system shall control the engine and brakes to ensure efficient acceleration.

The system shall be equipped with a dash-mounted light that shall come on when ATC is controlling drive wheel slip.

The system shall also include an "off road traction" dash mounted switch that will allow the operator to momentarily allow for more wheel slip when the unit is in deep mud or snow.

**PO00002441 - ELECTRONIC STABILITY CONTROL (ESC) WITH (ATC) - CUSTOM SA**

QTY: 1.00

An Electronic Stability Control (4 or 6 Channel) shall be provided as part of the Standard ABS system. The Electronic Stability Control system is capable of recognizing and assisting in both rollover and vehicle-under and over-steer situations through advanced monitoring of vehicle parameters and automatic and selective application of the chassis brakes. The ESC system monitors the vehicle response to turning and braking and adjusts or modulates the brake pressure at the wheel end to slow the vehicle in roll control, stabilize the vehicle when under or over steering, and modulate brake pressure when excessive wheel slip, or wheel lockup is detected. By these actions, the ESC system helps to maintain the vehicle's lateral and roll stability at all times, and improves braking and steer ability during heavy brake applications and during braking on slippery surfaces.

To further improve vehicle drive characteristics the unit shall be fitted with automatic traction control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra, solenoid valve shall be added to the ABS system.

The system shall control the engine and brakes to ensure efficient acceleration.

The system shall be equipped with a dash-mounted light that shall come on when ATC is controlling drive wheel slip.

The system shall also include an "off road traction" dash mounted switch that will allow the operator to momentarily allow for more wheel slip when the unit is in deep mud or snow.

**PO00002451 - AIR RESERVOIRS 4700 CUBIC INCH, SINGLE AXLE, W/1127 CUBIC INCH ADDITIONAL TANK - COLOR CODED**

QTY: 1.00

There shall be a minimum of three (3) air reservoirs installed in conformance with best automotive practices.

An additional 1127 cu. in. air reservoir shall be provided for an air manifold.

Reservoir capacity total shall be a minimum of 5820 cubic inches.

A pressure protection valve shall be installed to prevent the use of air horns or other air operated devices should the air system pressure drop below 80 psi (552 kPa).

The air reservoirs shall be color coded to match the air lines for easy identification, maintenance, and troubleshooting.

The reservoirs shall be painted the following colors:

- Wet Tank Black
- Primary Tank Green
- Secondary Tank Blue
- Auxiliary Tank(s) Yellow

**PO00010713 - HEATED AUTOMATIC MOISTURE EJECTORS - ALL TANKS**

QTY: 1.00

There shall be Haldex heated automatic moisture ejectors on all air tanks.

**PO00002460 - PULL CABLE DRAINS ON ALL AIR TANKS**

QTY: 1.00

For ease of daily maintenance, each air system reservoir shall be equipped with a pull cable type drain.

The drains shall be extended to the edge of the body or running board.

**PO00002464 - BENDIX AD-IS SYSTEM, AIR DRYER HEATED**

QTY: 1.00

A Bendix AD-IS heated air dryer system shall be furnished. The function of the AD-IS dryer reservoir module (DRM) is to provide an integrated vehicle air dryer, secondary reservoir, purge reservoir, governor, and a number of the charging valve components in a module. The DRM dryer module includes an integrated solution air dryer (AD-IS), a reservoir including a separate purge reservoir section, a governor, and four pressure protection valves which have been designed as an integrated, air supply system.

The function of the AD-IS air dryer is to collect and remove air system contaminants in solid, liquid and vapor form before they enter the brake system. It provides clean, dry air to the components of the brake system which increases the life of the system and reduces maintenance costs. Daily, manual, draining of the reservoirs is eliminated. The function of the pressure protection valves is to both control the order in which the components receive air from the AD-IS air dryer, as well as to protect each reservoir from a pressure loss in the other reservoir or a pressure loss in an air accessory.

An automatic, moisture ejector on the primary or wet tank shall also be furnished.

**PO00010319 - COLOR CODED SYNIFLEX BRAKE LINES W/QUICK RELEASE FITTINGS - SINGLE AXLE**

QTY: 1.00

The entire chassis air system shall be plumbed utilizing reinforced, Syniflex air lines, which shall be equipped with quick release type fittings.

All of the airlines shall be color coded to correspond with an air system schematic and shall be adequately protected from heat and chafing.

**PO00011823 - AIR COMPRESSOR -WABCO - ALL CUMMINS ENGINES**

QTY: 1.00

Air compressor shall be a Wabco brand, with a minimum of 18.7 cubic feet per minute capacity on L9 X15 models and 25.9 cubic feet per minute on X12 models.

Air brake system shall be the quick build up type.

The air compressor discharge line shall be stainless steel braid reinforced Teflon hose.

The chassis air system shall meet NFPA 1901, latest edition for rapid air pressure build-up within sixty (60) seconds from a completely discharged air system.

This 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 sixty (60) seconds build-up time.

**PO00011824 - BRAKE TREADLE VALVE**

QTY: 1.00

A Bendix dual brake treadle valve shall be mounted on the floor in front of the driver.

The brake control shall be positioned to provide unobstructed access and comfort for the driver.

**PO00002466 - PARKING BRAKE CONTROL - NEAR DRIVER - ALL WHEEL LOCK**

QTY: 1.00

Parking brake shall be of the spring-actuated type, mounted on the rear axle brake chambers. A red, indicator light shall be provided in the driver dash panel that shall illuminate when the parking brake is applied.

The parking brake will be equipped with all-wheel lock-up.

The parking brake control shall be mounted on the driver lower wing panel.

**PO00002469 - SECOND PARKING BRAKE CONTROL NEAR OFFICER**

QTY: 1.00

A secondary, parking brake control shall be provided and installed on the officer lower wing panel.

**PO00023950 - AUX. AIR INLET IN LH DOOR AREA**

QTY: 1.00

One (1) air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side lower step well of cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

This inlet shall allow a purchaser furnished external air supply to be connected to the chassis air system.

**\*\*\*SPECIAL: SP00027294 - VEHICLE AIR DISCHARGE CONNECTION - DS PUMP PANEL**

QTY: 1.00

*A quick disconnect air outlet connection will be provided on the driver's side pump panel to allow the chassis air system to be utilized for a discharge air source.*

**\*\*\*SPECIAL: SP00024017 - 50' AIR SUPPLY HOSE FOR AIR OUTLET**

QTY: 1.00

*A 50' section of air supply hose shall be provided with the vehicle to allow the fire department to utilize the air discharge on the driver side pump panel. The hose shall be provided with a male and female coupling that shall match the coupling on the cab.*

**\*\*\*SPECIAL: SP00027203 - KUSSMAUL 120 VAC, 125PSI, AIR COMPRESSOR**

QTY: 1.00

*Kussmaul model #091-9HP, 120 volt, air compressor shall be provided to help maintain the chassis air system when connected to the electrical shoreline.*

*The compressor shall be equipped with a 1/8, HP motor and capable building the chassis air system up to 125 psi. The compressor shall cut-in at 105 PSI and cut-out at 125 PSI.*

*The mounting location of the pump shall be to the rear of the driver's seat. In the event that this will not fit in this location, the auto pump will be located within the L-1 compartment. A vented aluminum protection cover will be provided.*

**PO00012306 - KUSSMAUL AUTO DRAIN ACHP - 120V**

QTY: 1.00

A Kussmaul # 091-9-090 Auto Drain ACHP shall be installed to protect the Auto Pump from built up moisture.

**PO00002668 - CUMMINS X12 500 HP @ 1800 RPM TQ 1695 LB-FT @ 1000 - PREDATOR NARROW**

QTY: 1.00

Engine shall be a Cummins, Model X12 500, diesel, turbo-charged, per the following specifications.:

- Max. Horsepower 500 HP @ 1800 RPM
- Governed Speed 2000 RPM
- Peak Torque 1695 lb. ft. @ 1000 RPM
- Cylinders Six (6)
- Operating Cycles Four (4)
- Bore Stroke 5.2 x 5.67 in.
- Displacement 720 cu. in.
- Compression Ratio 16.8:1
- Governor Type Limiting Speed

Engine oil filters shall be engine manufacturers branded or approved equal.

Engine oil filters shall be accessible for ease of service and replacement.

**PO00010716 - ENGINE IQA CERTIFICATION - X12**

QTY: 1.00

The Cummins X12 engine shall be certified by Cummins Power Systems for installation in the manufacturer's custom chassis.

**PO00002712 - SECONDARY BRAKING - ENGINE COMPRESSION BRAKE**

QTY: 1.00

An engine compression brake shall be furnished for increased braking capabilities.

Controls shall be as provided by the engine manufacturer and shall be activated by releasing the throttle pedal to the idle position.

The engine compression brake shall have dash mounted control switches to turn the brake on or off as well as to control the operational level of the brake.

The engine brake shall be wired in such a manner so as to illuminate the chassis brake lights when the engine brake is engaged and operating.

The engine brake shall be interlocked with the PTO operation and shall automatically disengage any time the apparatus is operating with the PTO active.

**PO00010493 - ENGINE AIR CLEANER**

QTY: 1.00

An engine air cleaner shall be provided. The air cleaner shall include a dry type element and shall be installed in accordance with the engine manufacturer's recommendations.

The air cleaner shall be located to the rear of the engine, with streamline air pipes and hump hose connections from the inlet to the air cleaner and from the air cleaner to the turbo.

The air cleaner shall be easily accessible when the cab is tilted.

The air cleaner shall be plumbed to the air intake system that shall include a self sealing connection between the cab and air cleaner assembly to allow the cab to be tilted.

To draw fresh clean air, the intake for the air cleaner shall be on the side of the cab on the driver's side.



The inlet shall be a minimum of 41" above the ground to allow the vehicle to navigate through water without any part of the air intake system being below the frame rail, preventing any type of water intake. There will be no exceptions.

**PO00010494 - EMBER SEPARATOR**

QTY: 1.00

An ember separator shall be installed in the chassis air intake system.

The ember separator housing must be easily accessible when the cab is tilted.

**PO00010495 - ACCELERATOR PEDAL - FLOOR MOUNT**

QTY: 1.00

A floor mount accelerator pedal shall be installed on the floor in front of the driver.

The pedal shall be positioned for comfort with ample space for fire boots and adequate clearance from the brake pedal control.

**PO00010496 - REMOTE THROTTLE & INTERLOCK HARNESS**

QTY: 1.00

An apparatus interface wiring harness for the engine shall be supplied with the chassis. If applicable, 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 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.

**PO00011675 - COOLING/RADIATOR, 100" PREDATOR - NARROW**

QTY: 1.00

Radiator shall be brass with bolted steel top and bottom tanks.

The cooling system shall be designed for a maximum of fifteen (15) PSI operation.

There shall be a sight glass in the radiator to check the coolant level without removing the radiator cap.

The core construction shall be tube and fin with three (3) tube rows, 273 total core tubes, and fourteen (14) fins per inch.

Extended life engine coolant shall provide anti-freeze protection to -30° F.

The mixture shall be per the engine manufacture's specifications.  
Core area be a minimum of 1375 square inches (39 H x 35.25W).

**PO00010649 - COOLING SYSTEM CRITERIA**

QTY: 1.00

The engine cooling system shall be certified by the engine manufacturer to meet cooling index requirements for a minimum ambient temperature or 110-degrees Fahrenheit.

**PO00010650 - TRANSMISSION COOLER**

QTY: 1.00

A shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.

The cooler shall have an aluminum shell and copper tubes.

The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil.

No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

**PO00010651 - RADIATOR CROSS MEMBER**

QTY: 1.00

The radiator installation shall include a radiator cross member for additional strength and durability.

This cross member shall be designed so the angle of approach is not affected.

**PO00011676 - CHARGED AIR COOLER (FRONT MOUNT)**

QTY: 1.00

The charge air cooler shall be constructed of aluminum with cast aluminum side tanks.

The cooler shall have a frontal core size of 957 square inches, seven (7) fins per inch, and forty eight (48) core tubes.

The charge air cooler shall be mounted directly ahead of the radiator and to the radiator headers.

Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

The connections between the engine and charged air cooler, shall be made using high temperature silicone hoses rated for use in temperature up to 500°F, and heavy duty constant tension T-Bolt spring hose clamps.

**PO00023913 - COOLANT FAN W/ CLUTCH CUMMINS X12**

QTY: 1.00

The engine cooling system shall incorporate a heavy-duty fan, installed on the engine and include a shroud.

The fan shall be equipped with an air-operated clutch fan, which shall activate at a pre-determined temperature range.

Recirculation shields shall be installed to ensure that air which has passed through the radiator is not drawn through it again.

**PO00002710 - HEATER AND COOLANT HOSES/PIPING**

QTY: 1.00

All coolant piping shall be powder coated steel tubing and formed hose barbs.

All engine enclosed connections between coolant pipes shall be made using silicone hoses rated from -60F to +500F.

The connections will use constant torque hose clamps. Continental Blue Xtreme blue heater hoses shall be furnished for the heater system.

**PO00010653 - HEATER AND COOLANT SHUT OFF VALVE**

QTY: 1.00

A mechanical shut off valve shall be installed on the engine to shut down the flow of coolant to the cab heating system.

**PO00023874 - LOW COOLANT INDICATOR**

QTY: 1.00

A low engine coolant indicator light located in the dash instrument panel shall be provided. An audible alarm shall be provided to warn of the low coolant condition.

**PO00002720 - ALLISON 4000EVS TRANSMISSION - COMPRESSION BRAKE**

QTY: 1.00

An Allison World Transmission, Model 4000 EVS electronically controlled, automatic transmission shall be provided.

Transmission specifications shall be as follows:

- Max. Gross Input Power 600 HP
- Max. Gross Input Torque 1850 lb. ft.
- Input Speed (Range) 1700- 2300 RPM
- Direct Gear (Pumping) 4th (Lock-up)

Transmission installation shall be in accordance with the transmission manufacturer's specification.

The transmission shall be readily and easily removable for repairs or replacement.

One (1) PTO opening shall be provided on both the left and right side of the converter housing (positions one (1) o'clock and eight (8) o'clock).

**PO00002732 - SIX (6) SPEED AUTOMATIC TRANSMISSION - 4000 SERIES**

QTY: 1.00

The transmission shall be calibrated for six (6) forward gears and one (1) reverse gear.

Each gear shall have the following ratios:

- First 3.51:1
- Second 1.91:1
- Third 1.43:1
- Fourth 1.00:1
- Fifth 0.74:1
- Sixth 0.64:1
- Reverse -4.80:1

**PO00002736 - ALLISON TRANSMISSIONS, ELECTRONIC TOUCH PAD SHIFTER IN CAB**

QTY: 1.00

An illuminated, touch-pad type, shift control shall be mounted in the cab on the driver's lower wing panel.

Shift control shall be approved by the transmission manufacturer.

**PO00023729 - MODE BUTTON PROGRAMMED 4TH START-UP/ 5TH-6TH MODE**

QTY: 1.00

The transmission, upon startup, shall select four (4) speed operation. By pressing the "mode" switch on the shift pad (mode on) provides access to the remaining forward gears in the transmission.

**PO00010553 - TRANSMISSION OIL LEVEL SENSOR**

QTY: 1.00

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level from the shift selector.

The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

**PO00010554 - ALLISON PARK TO NEUTRAL**

QTY: 1.00

The transmission, upon application of the parking brake, shall automatically shift into neutral.

**PO00010555 - ALLISON PRESELECT PROGRAMMING**

QTY: 1.00

The transmission shall have Allison Pre select enabled to automatically downshift when the secondary engine brake is active.

**PO00002741 - PRESELECT PROGRAMMED FOR 3RD GEAR**

QTY: 1.00

The transmission shall be programmed to automatically downshift to 3rd gear.

This feature shall be enabled/disabled with the main on/off switch for the engine brake.

**PO00023876 - TES 295 SYNTHETIC TRANS FLUID 4000 EVS**

QTY: 1.00

TES 295 transmission fluid shall be utilized to fill the 4000 EVS transmission.

**PO00010794 - TRANSMISSION LOCK-UP**

QTY: 1.00

The automatic transmission furnished in the chassis shall have a lock-up assembly which brings the transmission to direct drive and prevents the transmission from shifting gears while in the pumping mode.

A positive braking system shall be provided to prevent vehicle movement during pumping operations.

The air brakes furnished must satisfy this requirement.

**PO00010565 - DRIVE LINES DANA-SPICER #1810 SERIES**

QTY: 1.00

Drive lines shall be Dana (Spicer) 1810 heavy duty series or equal, with "glide coat" splines on all slip shafts.

The manufacturer shall utilize an electronic type balancing machine to statically and dynamically balance all drive shafts.

The manufacturer shall provide proof of compliance with all drive shaft manufacturer's standards and specifications. {No Exceptions}

Where applicable, the universal joints shall be the half loop style joints.

**PO00010566 - DRIVE LINE GUARDS**

QTY: 1.00

The drive lines shall be equipped with guard loop(s) to prevent the drive shaft(s) from dropping in the event of a universal joint failure.

**PO00002748 - 5 GALLON DEF TANK**

QTY: 1.00

A five (5) gallon diesel exhaust fluid (DEF) tank shall be provided and installed. The tank shall be mounted in the area of the battery box and shall be accessible through a door in the crew area step well.

The tank shall include an internal heater that will be fed by engine coolant directly from the engine block to ensure it is always kept at the proper temperature per EPA requirements. The tank shall include a temperature sensor to control the flow of the engine coolant from the heater valve to the DEF tank.

A DEF fluid level sensor shall be provided with the DEF tank and connected to the level gauge on the dashboard.

**PO00012469 - DIESEL EXHAUST FLUID LEVEL GAUGE**

QTY: 1.00

Diesel Exhaust Fluid level (E-1/2-F); low fuel level warning @ 1/8 tank

**PO00010556 - EXHAUST SYSTEM - DPF & SCR SYSTEM - INLINE SYSTEM**

QTY: 1.00

The exhaust system shall be installed in accordance with the engine manufacturer's requirements and meet all Environmental Protection Agency and State noise level requirements.

Exhaust system components shall be securely mounted and easily removable.

The diesel particulate filter/muffler shall be fabricated from stainless steel and of a size compatible with the engine exhaust discharge.

Exhaust tubing shall be a minimum of 16 gauge stainless steel from the turbocharger on the engine to the inlet of the diesel particulate filter. Any flexible exhaust tubing shall be HDT stainless steel type.

To minimize heat build-up, exhaust tubing within the engine compartment shall be wrapped with an insulating material. Exhaust shall be wrapped from the turbocharger to the entrance of the muffler. Material shall be held in place with worm gear type clamps.

An exhaust diffuser shall be provided to reduce the temperature of the exhaust as it exits the tailpipe.

If the electrical system is hardwired or V-Mux multiplex, separate "regeneration" enable and prohibit switches shall be provided under the dash board on the driver's side. Each switch shall be provided with a spring loaded protective cover and shall be clearly marked as to function. If the electrical system is Class-1 ES-key, the regeneration switches shall be incorporated into the ultra-view screen.

The vehicle shall be equipped with SCR technology that uses a urea based diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce oxides of nitrogen (NOx) emissions.

The SCR system shall reduce levels of NOx (oxides of nitrogen emitted from engines) by injecting small quantities of diesel exhaust fluid (DEF) into the exhaust upstream of a catalyst, where it vaporizes and decomposes to form ammonia and carbon dioxide.

**PO00010558 - STAINLESS STEEL EXHAUST TAILPIPE/OUTLET OS - DPF + SCR SYSTEM**

QTY: 1.00

The exhaust tailpipe extending from the SCR catalyst to the side of the vehicle shall be constructed from 16-gauge stainless steel tubing.

The exhaust discharge shall be on the officer side of the apparatus forward of the rear axle.

**PO00002762 - FUEL TANK - 65 GALLON, STEEL**

QTY: 1.00

Fuel tank shall be a minimum of sixty-five (65) gallon capacity. It shall have a minimum, fuel filler neck of 2" ID and 1/4 turn fill cap. A 1/2" minimum diameter drain plug shall be provided. The tank shall be fabricated from hot rolled, pickled and oiled steel. Provisions for an additional feed line and fuel level float shall be provided for future use. The fuel tank shall be installed behind the rear wheels between the frame

rails. The fuel tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume. The fuel tank shall be able to withstand a longitudinal acceleration of -23.0g at 0.166 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

**\*\*\*SPECIAL: SP00010824 - FUEL TANK - FINISH PAINTED BLACK LINE X**

**QTY: 1.00**

***The fuel tank shall be finish painted black Line X prior to assembly.***

**PO00010567 - STAINLESS STEEL FUEL TANK STRAPS**

**QTY: 1.00**

The straps supporting the diesel fuel tank shall be made of Type 304L stainless steel with grade 8, zinc coated steel hardware.

There will be no exceptions.

**PO00010568 - FUEL TANK MOUNTING STRAP ISOLATION MATERIAL**

**QTY: 1.00**

The fuel tank mounting straps shall utilize dense rubber between the straps and the fuel tank to prevent chaffing.

**PO00010569 - FUEL LINES - FIBER REINFORCED HOSE**

**QTY: 1.00**

Fuel lines shall be an Aeroquip FC332 AQP Series fiber reinforced hose. The lines shall be sized to meet engine manufacture's requirements, and shall be carefully routed and secured along the inside of the frame rails.

**PO00010576 - FUEL LINE SHUT-OFF VALVE**

**QTY: 1.00**

A fuel line shut-off valve shall be provided between the fuel tank and the primary fuel filter.

The valve shall be labeled "Fuel Tank Shut-Off".

No reserve feature shall be included in the tank.

**PO00010578 - FUEL TANK SERVICEABILITY PROVISIONS**

**QTY: 1.00**

An additional eight feet of fuel line shall be provided.

The line shall be coiled and secured above the fuel tank to improve serviceability of the tank.

**PO00010580 - DAVCO FUEL PRO 382 FUEL HEATER/WATER SEPARATOR**

**QTY: 1.00**

A Davco Fuel Pro 382 combination fuel heater/water separator and fuel filter shall be provided.

The fuel heater / water separator shall replace the secondary fuel filter on the engine.

The separator shall be installed between the fuel tank and the inlet of the fuel pump, the see through isoplast cover allows instant visual checking of the fuel filters condition.

A "water in fuel" indicator shall be provided on the dash.

**PO00010572 - FUEL PUMP ELECTRIC, REQ. ON 210" WB OR LONGER**

**QTY: 1.00**

An electric fuel pump for re-priming shall be furnished in the main fuel line.

A labeled control switch shall be provided on the main dash panel.

**PO00010573 - FUEL POCKET, DRIVER SIDE REAR WHEEL WELL PANEL**

QTY: 1.00

A fuel fill shall be provided in the driver side rear wheel well area.

A Cast Products heavy duty cast aluminum spring loaded hinged fill door shall be provided.

A label indicating "Ultra Low Sulfur Diesel Fuel Only" shall be provided adjacent to the fuel fill.

**PO00010721 - PUMPER BODY ELECTRICAL**

QTY: 1.00

**PO00011797 - CUSTOM CHASSIS ELECTRICAL SYSTEM**

QTY: 1.00

All electrical wiring in the chassis shall be GXL cross link insulated type. Wiring is to be color coded and include function codes every three (3) inches on both sides. Wiring harnesses shall be routed in protective, heat resistant loom, securely and neatly installed. Two (2) power distribution centers shall be provided in central locations for greater accessibility. The power distribution centers shall contain thermal automatic reset breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays shall have a capacity substantially greater than the expected load on the related circuit, thus ensuring long component life. Power distribution centers shall be composed of a system of interlocking plastic modules for ease in custom construction.

The power distribution centers are function oriented. The first is to control major truck function. The second shall control center to overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers will also have accessory breakers and relays for future installations. All harnesses and power distribution centers shall be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces shall be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points shall be mounted in accessible locations. Complete chassis wiring schematics shall be supplied with the apparatus.

**PO00022590 - 12 VOLT ELECTRICAL SYSTEM TESTING - ALL UNITS**

QTY: 1.00

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with the air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure.

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.

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of fewer than 11.7 volts DC for a 12-volt system, for more than 120 seconds, shall be considered a test failure.

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of fewer than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

At the time of delivery, documentation shall be provided with the following information:

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

#### **PO00011798 - CUSTOM CHASSIS WIRING INSTALLATION**

QTY: 1.00

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. Wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

The covering of harnesses shall be moisture resistant loom with a minimum rating of 289° Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable shall have a minimum rating of 289° Fahrenheit.

All circuits shall conform to SAEJ2202. All circuits must be provided with low voltage over current protective devices.

All exposed electrical connections will be coated with "Z-Guard" to prevent corrosion.

#### **PO00011799 - DIRECT BATTERY GROUNDING STRAP**

QTY: 1.00

Direct grounding straps shall be mounted to the following areas; frame to cab, frame to body and frame to pump enclosure.

All exposed electrical connections shall be coated with "Z-Guard 8000" to prevent corrosion.



**PO00011805 - SEQUENCER**

QTY: 1.00

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

**PO00009877 - CLASS-1 ES-KEY MULTI-PLEXED ELECTRICAL SYSTEM 100" PREDATOR**

QTY: 1.00

A Class 1 ES-Key Electrical Management System shall be utilized on the chassis for all functions applicable. The system shall consist of the following components: A modem with a RS232 computer interface and standard telephone jack used to not only program the multiplex system but also serve as a factory direct gateway into the vehicle from any Class 1 multiplex authorized service facility.

A Universal System Manager (USM), which acts as the main controlling component of the multiplexing system shall be provided and factory programmed to DOT, NFPA, SAE, the manufacturer and end user specifications. The programming shall be done by the manufacturer's engineering department. The ES-Key system installation shall comply with SAE J 551 requirements regarding Electromagnetic and Radio Frequency interference (EMI, RFI), as well as utilize components and wiring practices that insure the system is protected against corrosion, excessive temperatures, water, excessive physical, and vibration damage by any equipment installed on the vehicle at the time of delivery.

A series of Multiplexing Input/Output Modules shall be installed. The Input/Output modules shall permit the multiplexing system to reduce the amount of wiring and components used as compared to non-multiplexed apparatus. These modules shall vary in I/O configuration, be waterproof allowing installation outside of enclosed areas and shall possess individual output internal circuit protection. The modules shall also have three status indicators visible from a service persons vantage point that shall indicate the status of the module. In the event a load requires more than 7.5 AMPS of operating current, the module shall activate a simple relay circuit integral to any of the 3 dillblox assemblies installed in the cab

Diagnostic software shall be provided to download data from the on board ES-KEY system. This software shall have the ability to view system input/output (I/O) information, and include a connection from a computer to the vehicle.

**PO00002776 - ADDITIONAL CLASS-1 ES-KEY ULTRAVIEW 780 DISPLAY, OS OF CAB**

QTY: 1.00

An additional Class 1, UltraView, 700 display shall be provided and installed on the officer side of the cab.

The second display shall have the ability to perform and display all the same functions and information of the main display; located on the driver side of the cab.

**\*\*\*SPECIAL: SP00024774 - OFFICER SIDE SCREEN DIMMER**

QTY: 1.00

***A control switch shall be provided through the main screen to control the brightness of the auxiliary screen located on the officer's lower wing panel.***

***A seperate control on the auxiliary screen shall be provided to all control of the auxiliary screen brightness.***

**PO00024143 - AXIS SMART TRUCK VEHICLE MONITORING SYSTEM**

QTY: 1.00

The apparatus shall be equipped with a smart truck technology system designed specifically for first responder apparatus. The system shall interconnect major apparatus CAN networks including but not limited to the chassis J1939/OBD2 data, vehicle multiplex system, water pump pressure governor, electric valves and electric actuated deck gun. The system shall securely report real-time vehicle information from these systems via cellular data to a globally supported cloud computing service for storage and real time access via web dashboards. The dashboards shall be accessible by the department's computers, tablets and smartphones.

The smart truck technology installed on the apparatus shall provide real-time notification via text or e-mail when a check engine light is displayed. The notification shall include the fault code and brief explanation for the code to reduce down-time.

The system shall feature a truck down feature on the web-based user interface to allow instant notification of needed apparatus service to both the authorized dealership and OEM via text or e-mail.

The system shall provide remote diagnostics of vehicle subsystems such as VMUX, pressure governors, electric monitors and electric valves.

By use of the web based user interface, the system shall allow for over the air programming updates to various subsystems should the need arise.

The web-based user interface shall also provide the following:

- Fuel and DEF levels
- GPS tracking
- Data logging for apparatus multiplex system
- Easy access to the NFPA VDR data

The system shall be designed with an open architecture to incorporate future growth with new technology partners designed to enhance fire ground operations

The vehicle gateway module shall be rugged in construction using a durable cast aluminum enclosure designed for emergency vehicle applications. The module shall have sealed Deutsch connectors providing four (4) CAN network ports, one (1) RS-485 port, one (1) Ethernet RJ45 port, one (1) USB port, embedded cellular modem, Bluetooth and GPS capability. The Core Vehicle Gateway shall be capable of 2 way vehicle telemetry, supporting both remote diagnostics and remote over-the-air software updates.

A low profile cellular antennae shall be installed on the cab roof.

A 5 year data plan shall be provided with the initial vehicle purchase. At the end of the 5 year period the department shall be given the option to extend service.

**PO00011807 - INTER-LOCK MODULE FOR MULTIPLEX SYSTEM**

QTY: 1.00

A Vocation Module, which is the interface between the multiplexing system and the pump system shall be provided.

This module shall serve as the interface between the operator, engine, transmission and pumping system.

The module shall be installed under the driver's side dash, in a sealed enclosure that shall possess green indicating LEDs that shall indicate to service personnel the interlock state of the apparatus.

In the event of a multiplexing error involving pump operation can be activated to ensure reliable pumping operations at ALL times.

In addition to controlling pump function, this vocation module shall be able to provide automatic and/or manual activation of engine "Fast Idle", to maintain adequate alternator output and thus, chassis voltage.

There will be no exceptions.

**PO00002801 - DELCO REMY 55SI, 430 AMP BRUSHLESS ALTERNATOR**

QTY: 1.00

There shall be a Delco Remy Model 55SI, 430 amp brushless, serpentine belt, driven alternator.

The brushless design of the 55SI transfers magnetic fields between the rotor and stator air-gap without brushes.

The alternator installation shall be designed to provide maximum output at engine idle speed, by using Remote Sense in order to meet the minimum continuous electrical load of the apparatus as required.

The alternator shall carry a 3 Year/Unlimited Mile warranty.

**PO00002816 - BATTERIES - SIX (6) EXIDE GROUP 31, 1000CCA - 31XPD**

QTY: 1.00

Six (6) Exide # 31XPD, maintenance free batteries shall be provided.

Each battery shall be rated at 1000 CCA and shall have a reserve capacity of 200 minutes.

Wiring for the batteries shall be 4/0 welding type dual path starting cables for SAEJ541.

**PO00012456 - PREDATOR BATTERY STORAGE, STAINLESS, MFD, XMFD, LFD, XLFD**

QTY: 1.00

Batteries shall be securely mounted in fixed 3/16" stainless steel trays located on each side of the chassis frame.

Complete access shall be provided when the cab is fully tilted.

Batteries shall be mounted on non-corrosive matting material.

The battery tray shall be able to withstand a longitudinal acceleration of -46.5g at 0.246 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter.

Testing shall be performed at and verified by a third party testing and evaluation center.

**PO00012453 - COLE HERSEE BATTERY JUMPER STUDS, DS BATTERY BOX**

QTY: 1.00

A set of Cole Hersee battery jumper studs, model #46210-02 (red) and #46210-03 (black) shall be provided to allow the battery system to be jump started or charged from an external source.

The studs shall be located on the bottom of the battery box on the driver's side of the chassis.

Each stud shall be equipped with both a rubber protector cap and a 2" square non-conductive plate to prevent accidental shorting.

**PO00012461 - BATTERY DISCONNECT SWITCH, ALL UNITS**

QTY: 1.00

The chassis batteries shall be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty master disconnect switch.

The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab.

**PO00002836 - KUSSMAUL 120 VOLT 20 AMP SUPER AUTO EJECT FOR BATT CHARGER - CUSTOM**

QTY: 2.00

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a NEMA 5-20 P male receptacle, which shall automatically eject the shoreline when the vehicle starter is energized.

The mating connector shall be included with the auto eject and shall be provided as loose equipment.

A label shall be provided indicating voltage and amperage ratings.

**PO00024045 - RED COVER FOR KUSSMAUL AUTO-EJECT RECEPTACLE**

QTY: 2.00

The Kussmaul auto-eject connection shall be equipped with a Red weatherproof cover.

**\*\*\*SPECIAL: SP00024769 - SHORELINE LOCATION - EACH SIDE OF BUMPER EXTENSION**

QTY: 1.00

*The shoreline receptacles shall be located on each side of the bumper extension gravel shield in a pre determined location by KME.*

**PO00022630 - SHORELINE RECEPTACLE LABEL - NFPA**

QTY: 1.00

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following:

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

**PO00002856 - KUSSMAUL MODEL 1200, 40AMP, BATTERY CHARGER**

QTY: 1.00

A Kussmaul model # 091-187-12-REMOTE, "Auto Charge 1200" high output, fully automatic battery charger shall be provided for maintaining the vehicle battery system.

Unique electronic sensing circuits sense the true battery voltage while eliminating the need for external sense wires.

Output current shall be 40 amperes @ 12 volt DC.

**PO00012310 - KUSSMAUL SINGLE BAR-GRAPH VOLTAGE INDICATOR**

QTY: 1.00

A Kussmaul # 091-94-12 single bar-graph voltage indicator shall be installed to monitor the battery voltage.

**\*\*\*SPECIAL: SP00022018 - 120 VOLT SHORELINE RECEPTACLE L5 COMPARTMENT**

QTY: 1.00

***A 5-15R household receptacle wired to the shoreline receptacle will be provided in the L5 compartment mounted high on the rearward wall.***

**\*\*\*SHOP NOTE: SR00119234 - CLARIFICATION**

QTY: 1.00

***The Kussmaul single bar graph will be located on the drivers side front bumper flange.***

**\*\*\*SPECIAL: SP00010826 - SHORELINE LOCATIONS, DRIVER OFFICER SIDES OF BUMPER EXTENSION**

QTY: 1.00

***The shoreline receptacles shall be located, one (1) on the driver's side and one (1) on the officer's side of the front bumper extension.***

**\*\*\*SPECIAL: SP00010611 - 120 VOLT 5-15R RECEPT L1 BODY COMPART WIRED TO SHORELINE**

QTY: 1.00

***One (1) 120 volt 5-15 R household type receptacle will be located in the specified body compartment L1. The receptacle will be wired into the shoreline receptacle to provide a 120 volt power source for fire department equipment.***

**PO00010674 - PUMP SHIFT CONTROL ON LOWER LEFT DASH PANEL**

QTY: 1.00

The pump shift control and pump engaged indicator light shall be mounted in the driver's lower left knee panel.

**PO00011658 - CAB INSTRUMENTS AND CONTROLS - 100" PREDATOR FAB DASH (LINE-X)**

QTY: 1.00

Where standard features are controlled through physical switches they will be indicated as such in the appropriate part of this specification. All optional features that are controllable from the cab will be controllable through the display screen.

The dash consoles shall be custom formed overlaid aluminum housings to create an ergonomically designed interior that will be user friendly and functional for the driver and officer.

The cab instruments and controls will be labeled with international symbols and located in the following zones:

- **Driver Gauge Left:** Located to the left of the instrument panel, this zone houses the ignition, engine start, and fast idle switches.
- **Driver Gauge Right:** Located to the right of the instrument panel, this zone houses power take-off and ladder power switches when those features are specified.
- **Driver Knee Left:** Located at the driver's left knee area, this zone is the standard location for pump controls, and for the Engine Emergency Shut-Down when specified.
- **Driver Knee Right:** Located at the driver's right knee area, this zone houses optional chassis related switches such as the Fuel Priming Pump, Engine Fan Override, and ATC Disable.
- **Driver Lower Wing:** Located on the engine tunnel and angled toward the driver, this zone houses the majority of the controls that the driver may need to access while operating. Within the easiest reach of the driver are the park brake, transmission shift, Vehicle Information Display, and any optional retarder controls. Standard switching in this zone includes power window controls, hazard flasher, headlights, marker lights, and mirror adjustment. Also located in this zone will be switching for any optional features that are more likely to be used while driving such as auxiliary brakes, siren brake, drive axle locks, and automatic tire chains.

- **Center Lower:** Located on the engine tunnel between the driver and officer and parallel to the cab front, this zone houses the standard 12 volt sockets and USB chargers. It will also house any optional communications devices that are more likely to be accessed while driving such as an arrowhead controller or a stereo radio.
- **Driver Overhead:** Located in the overhead console directly above and facing the driver, this zone houses tactile switches (when specified) for control of emergency devices such as warning lights, scene lights, dump chute valves, and other emergency related items. If not specified these controls are available through the Vehicle Information Center.
- **Driver Overhead Wing:** Located in the overhead console and angled toward the driver, this zone houses the heating and air conditioning tactile switches provided as standard.
- **Center Overhead:** Located overhead between the driver and officer and parallel to the cab front, this zone houses any communications devices such as siren heads or two-way radios that cannot be fit in the Officer Lower Wing: Located on the engine tunnel and angled toward the officer, this zone houses optional feature switching as specified for control by the officer.
- **Officer Overhead Wing:** Located in the overhead console and angled toward the officer, this zone is houses optional switching or gauges that cannot be located in other zones and that is intended solely for use by the officer.
- **Officer Overhead:** Located in the overhead console directly above and facing the officer, this zone houses optional larger communications equipment that cannot be located in other zones, and that is practical for use solely by the officer.

Exact locations of each switch or control will be dictated by the Dash Layout document created during the design process and will adhere to these guidelines unless otherwise specified.

**\*\*\*SPECIAL: SP00027204 - STANDARD #MATM RADIO ANTENNA INSTALLED**

**QTY: 1.00**

***Four (4) antenna mounting base(s) model #MATM with 17' of coaxial cable shall be provided and installed on the lower cab roof, behind the light bar.***

***Each wire termination shall be labeled with a tag describing which antenna base it is associated with.***

***One (1) antenna wire(s) shall be run to the lower dash extension for the scanner. Three (3) antenna wires(s) shall be run to the rear of the officer's seating position.***

***The Fire Department is responsible to have the correct antenna whip installed once the apparatus is delivered.***

**PO00010552 - FAST IDLE CONTROL FOR ALL ELECTRONIC ENGINES**

**QTY: 1.00**

A fast idle for the electronic controlled engine shall be provided.

The fast idle shall be controlled by switches located on the smart wheel.

An electronic interlock system shall prevent the fast idle from operating unless the transmission is in "Neutral" and the parking brake is fully engaged.

If the fast idle control is used in conjunction with a specified engine/transmission driven component or accessory, the fast idle control shall be properly interlocked with the engagement of the specified component or accessory.

**PO00012297 - CONTROL SWITCHING THROUGH MULTIPLEX TOU**

QTY: 1.00

Switching for the emergency and auxiliary systems shall be performed through the multiplex control screen.

Switching shall be programmed through various menus that are accessible from the display buttons.

**PO00003390 - CONTROL SWITCH IN CAB FOR LIGHT(S) ABOVE WINDSHIELD**

QTY: 1.00

Controls shall be provided in the cab control system (or optional mechanical switch) to turn the light(s) above windshield on and off.

**PO00003232 - CONTROL SWITCHES IN CAB FOR BEHIND FRONT CAB DOOR LIGHTS**

QTY: 1.00

Controls shall be provided in the cab control system (or optional mechanical switch) to turn the lights at the cab doors on and off.

**PO00003234 - CONTROL SWITCH IN CAB FOR REAR OF BODY LIGHTS**

QTY: 1.00

Controls shall be provided in the cab control system (or optional mechanical switch) to turn the rear of body lights on and off.

**PO00012426 - SEPERATE SWITCH IN CAB FOR HULL REVERSE LIGHTS**

QTY: 1.00

The hull lights shall also be switched with a separate switch located in the cab.

**PO00022413 - INNER CAB DOOR FLASHER-MULTIPLEX**

QTY: 1.00

Inner door flashers shall be activated by the multiplex system.

**PO00002894 - WHELEN 6" ROUND WHITE/RED LED INTERIOR LIGHTS (4)**

QTY: 1.00

Four (4) Whelen # 60CREGCS, 6" round, interior LED combination red/white dome lights shall be furnished in the cab, with two (2) in the forward section and two (2) in the rear crew section.

Each dome light shall have individual switches to control the red or white LEDs.

Each dome light shall also activate when the respective, adjacent cab door is opened.

**PO00002910 - INNER CAB DOOR FLASHERS (LED), TECNIQ MODEL T40**

QTY: 1.00

One (1) flush mounted Tecniq model T40 LED flashing light with grommet mount shall be provided on the inside door panel of each cab door.

The light shall be recessed into the door's lower scuff plate and shall be activated when the respective door is opened.

Each light shall be furnished with a clear lens.

**\*\*\*SHOP NOTE: SR00119236 - CLARIFICATION**

QTY: 1.00

*The inner cab door panel warning lights to be red.*

**PO00011819 - ENGINE COMPARTMENT WORK LIGHTS - TECNIQ LED**

QTY: 1.00

GSO# 11357 Huntington Manor Fire District, NY  
Specification: Final Production Release  
Contract Administrator: Mark Boyle

Two (2) Tecniq model #E18 LED lights shall be provided inside the engine enclosure that will provide 800 lumens each.

Each light shall have their own independent switch incorporated into the light head.

**PO00025600 - BLUE SEA #4365 ACCESSORY PANEL**

QTY: 1.00

A Blue Sea model 4365 accessory panel will be provided. The accessory panel shall include one (1) 12-volt power port, Two (2) dual USB charging ports, along with a power switch with built in circuit breaker.

The accessory panel shall be mounted in the center dash panel.

**PO00012554 - ROUND USB CHARGING PORTS IN REAR CREW AREA - IN REAR FACING SEAT BASE**

QTY: 2.00

Two (2) round USB charging ports shall be installed in the cab of the truck for fire department accessory devices.

Each port shall have two (2) USB connections and shall have a 5 volt, 2.1 amp max output.

The ports shall be located in the rear crew area, one (1) in each rear facing seat base.

**PO00010730 - POWER AND GROUND STUD FOR ACCESSORIES IN DASH**

QTY: 1.00

One (1) dedicated circuit; 12 volt, 40 Amp, power and ground on 3/8 stud and fused at battery shall be provided in the cab dash.

The circuit shall be for future installation of radios or accessories.

**PO00012541 - 12 VOLT POWER AND GROUND CIRCUIT W/ IGNITION, BEHIND OFFICERS SEAT**

QTY: 1.00

One (1) dedicated circuit; 12 volt, 40 amp, power and ground on 3/8 stud and fused at battery shall be provided behind the officer seat.

An additional 12 volt, 20 amp, power stud shall be installed next to the studs above and shall be switched with the ignition circuit.

The circuit shall be for future installation of radios or accessories.

**PO00012544 - 12 VOLT POWER AND GROUND CIRCUIT, IN BODY COMPARTMENT**

QTY: 5.00

A dedicated 12 volt power and ground circuit shall be provided in the specified body compartment as required.

The circuit shall be for future installation of radios or accessories.

**\*\*\*SHOP NOTE: SR00119237 - CLARIFICATION**

QTY: 1.00

***12-volt power and ground studs to be located one (1) in each of the following compartments; L-1, L-2, L-3, R-1, R-2.***

**PO00012536 - BLUE SEA FUSE BLOCK - 12 CIRCUIT IN REAR CREW AREA**

QTY: 1.00

A Blue Sea 5026B, 12 circuit fuse block, shall be installed.



This block has a maximum amperage of 60 Amps per block and 30 Amps per circuit.

**\*\*\*SHOP NOTE: SR00119238 - CLARIFICATION**

**QTY: 1.00**

***The 12-volt Blue Sea 12-circuit fuse block listed above will be located within the EMS compartment.***

**PO00012534 - BLUE SEA FUSE BLOCK - 12 CIRCUIT BEHIND OFFICER SEAT**

**QTY: 1.00**

A Blue Sea 5026B, 12 circuit fuse block, shall be installed behind the officers seat.

This block has a maximum amperage of 60 Amps per block and 30 Amps per circuit.

**PO00010731 - MULTI - USE POWER POINT - REAR OF ENGINE ENCLOSURE**

**QTY: 1.00**

A Mobile Vision (Magnadyne DVU-3G2) multi-use power point with built in two (2) USB ports, and two (2) 12 volt sockets shall be installed in the rear of the cab on the back of the engine enclosure.

This will be capable of supplying the USB ports with up to three (3) amps and have a 15 amp fuse for overall protection.

**PO00011661 - DRIVER'S DASHBOARD PANEL 100" PREDATOR - NARROW**

**QTY: 1.00**

The main instrument panel shall be centered in front of the driver and shall be mechanically fastened to the main dash assembly.

The panel shall contain the primary gauges, an instrument warning light cluster and the ignition and engine start switches.

Each gauge shall be designed with an integral red warning light with a pre-programmed warning point.

Gauges monitoring drive-train component status shall be of the direct data bus type capable of displaying information broadcast on the J 1939 data-link.

Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

Additional auxiliary control switches and instruments (if applicable) shall be located within the center or overhead panel located near the driver's position.

**PO00010654 - INDICATOR CLUSTER, 100" PREDATOR**

**QTY: 1.00**

The driver's dashboard panel shall consist of an Ametek instrument warning light cluster and a 16 item, dead front type alarm panel.

This display shall contain the system control unit that collects data from the vehicle data bus (J1939), analog sensors, and switches throughout the vehicle. This data shall be presented using gauges, telltales and the two (2) display panels. The warning light display shall include a 2 x 20 dot matrix display, 18 telltales and 2 buttons to navigate through the screen menus.

The LCD dot matrix display shall be a 2 line by 20-character display with each character being 7 dot by 5 dot configuration. FSTN technology shall be used on the display for wide viewing capability. The module shall be backlit with amber LEDs. The unit shall also be supplied with a heater to ensure proper operation over the entire 40 to +85 deg. C.

This display contains a series of two (2) screens to provide information about the vehicle. To control the display of that information, the screens are divided into two (2) menus; one that can be displayed while the vehicle is in motion and one that can only be accessed when the parking brake is set.

On the Road displays include:

- Two (2) configurable displays that can show any of the parameters the unit collects. This includes odometer, trip information, fuel economy information; all gauge data, and virtually any other data available on the vehicle that the display has access to, either through the data bus or via analog inputs.
- Two (2) trip displays for miles and hours that are capable of being reset.
- Two (2) fuel data screens: shall be provided; one for fuel remaining until empty and one for fuel economy. The fuel economy display shall be capable of being reset so that average economy over a predetermined period can be displayed.

The displays that can be accessed when the parking brake is set include:

- Engine hours as maintained by the engine ECU
- Service Alarm screens to report miles to next service or miles past required service. These screens shall allow the operator to choose the length of the service interval and shall have the ability to reset it.
- Message screens with warning messages the display has collected during the current ignition cycle. These screens shall be divided into configured warnings such as "Low Air Pressure" and the data bus faults reported by ECU's on the vehicle. Both lists shall allow the operator to review the last 12 events that occurred on the vehicle for maintenance and troubleshooting purposes.
- Diagnostic screens shall test the instrumentation system to verify it is working correctly.
- Setup screens shall be used to select either English or metric display. They shall also allow the operator to choose the data that shall be displayed by the configurable on-the-road screens.

The system shall be configured with user defined warning messages such as Low Air Pressure or High Coolant Temperature. When these events occur the warning message shall come up on the screen and can be accompanied by a buzzer. The messages shall be prioritized so the most important messages are always displayed. Whether the message can be dismissed by pressing a button shall be configurable. Messages that have been dismissed but are still active shall be retained in the message screens for review until the ignition is turned off. Listed below are the defined telltales and their indicators.

- "Right And Left Directional" arrows (green in color)
- "Ignition ON" Indicator (amber in color)
- "Hi Beam" indicator (blue in color)
- "Battery ON" indicator (green in color)
- "Parking Brake ON" indicator (red in color)
- "Check Transmission" indicator (amber in color)
- "Cab Not Latched" indicator (red in color)
- "Stop Engine" indicator (red in color)
- "Check Engine" indicator (amber in color)
- "ABS Warning" indicator (red in color)
- "Low Coolant Level" (red in color)
- "Fuel Restriction" indicator (amber in color)
- "Water In Fuel" indicator (amber in color)
- "Fasten Seat Belts" indicator (red in color)
- "Fast Idle" Indicator (amber in color)
- "Do Not Move Truck" indicator (red in color)
- "DPF Regeneration" (amber in color)

- "Exhaust High Temperature" (amber in color)
- "Engine Diagnostic Fault" (amber in color)
- "Retarder On" (green in color)

Listed below are indicators that may be included, depending upon the vehicle configuration:

- "Wait To Start" indicator (amber in color)
- "Exhaust System Fault" (amber in color)
- "Topps System Fault" (amber in color)
- "Lube System Active" (amber in color)
- "Jacks Not Stowed" (red in color)
- "PTO Engaged" (green in color)
- "Inter Axle Lock" (amber in color)
- "Driver Controlled Diff Lock" (green in color)
- "Ok to Pump" (green in color)
- "Auto Traction Control" (amber in color)
- "Retarder Active" (amber in color)
- "Auxiliary Brake Active" (amber in color)

**PO00024137 - DRIVER INDICATOR - INDICATOR CLUSTER BLACK GAUGES**

QTY: 1.00

Each gauge shall have a raised glass lens with a black matte finish trim ring and be backlit by integral white LEDs. Each gauge shall also possess an integral red warning light with a pre-programmed warning point. Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

The primary gauges shall consist of:

- Vehicle speedometer (0-80 mph)
- Engine tachometer (0-3000 rpm)
- Engine oil pressure (0-100 psi); low oil pressure warning
- Engine coolant temperature (100-250 °F); high engine temp warning (based on engine)
- Transmission oil temperature (100-350 °F); high transmission fluid temp warning
- Vehicle battery voltage (9-18 VDC); low voltage warning at 11.8 amps
- Front air system gauge (0-150 psi); low air pressure warning at 65 psi
- Rear air system gauge (0-150 psi); low air pressure warning at 65 psi
- Fuel level (E-1/2-F); low fuel level warning @ 1/8 tank
- Air cleaner restriction gauge (0 - 40), warning at 25" restriction.

**PO00025625 - THREE (3) ADDITIONAL SWITCHES - DRIVER LOWER WING ZONE**

QTY: 1.00

Three switches shall be provided in the driver lower wing zone.

**\*\*\*SHOP NOTE: SR00119235 - CLARIFICATION**

QTY: 1.00

**The three switches on the drivers right knee panel will be old style gaured toggle switches.**

**PO00010697 - ENGINE COMPRESSION BRAKE CONTROLS**

QTY: 1.00

Engine brake controls shall be provided on the dash within easy reach of the driver.

**PO00002774 - CLASS-1 ES-KEY ULTRAVIEW 780 DISPLAY**

QTY: 1.00

A 7 inch full color display shall located on the driver's lower wing panel. The display shall provide key information and control within easy sight and reach.

The screen shall be programmed with the following features:

- Chassis Instrument Display
- Back-up camera
- Seat Occupant Display
- Compartment open display
- HVAC Controls
- Power Mirror Controls
- DPF Filter Regeneration Controls
- Warning light controls
- Scene light controls
- Horn selector switch options
- Gauge back-light dimming
- Rocker switch back-light dimming
- Display screen dimming with day/night feature
- Multiplex system diagnostics
- Generator Controls

**PO00024140 - CAB DASH PANELS WITH CENTER EXTENSION MODULE**

QTY: 1.00

The apparatus cab shall be outfitted with backlit gradient dash and overhead panels. These gradient panels shall be utilized across the entire front of the cab dash and include the instrument cluster and brow panels. The panels shall be constructed from 3mm aluminum composite panels with second surface screen printed 15 mil Bayfol UV-1 polycarbonate graphic overlays, to provide scratch and UV protection. A carbon-graphite shaded graphic overlay shall be provided. All essential control and/or switch verbiage shall be flush with the panel surface.

**PO00025621 - THREE (3) ADDITIONAL SWITCHES - OFFICER LOWER WING ZONE**

QTY: 1.00

Three switches shall be provided in the officer lower wing zone.

**\*\*\*SPECIAL: SP00022008 - SAFETY VISION COLOR "LED" SYSTEM - TRIPLE CAMERAS**

QTY: 1.00

***A Safety Vision # SV-CLCD-70A camera system with audio shall be provided to allow the driver to visually see and hear at the rear, driver's and officer's side of the apparatus while in the cab. The system shall include a flat screen 7" color LCD monitor, and three (3) color cameras with microphone and LED illuminators, that shall be mounted one (1) at the rear of the vehicle, one (1) officer's side of the cab and one (1) driver's side of the cab.***

***Cameras: Color SV-810-KIT with microphone. 1/3 CCD Imager, 3.0mm Lens, 270,000 pixels, electronic shutter, LED illuminators, waterproof threaded pigtail.***

***Monitor: Color SV-LCD70A quad view, 7" LCD screen, speaker, audio and video adjustment controls, mirror/normal image switch, voltage 10VCD-26 VDC. The system shall also include a SV-LCD70A-CBQKT control box to allow any two (2) cameras to be displayed at the same time.***

***Included cabling is the improved waterproof threaded metallic connector with rubber o-ring seal.***

***NOTE: The system shall operate as follows:***

- ***Rear view camera active when truck is in reverse***
- ***Officer Side view camera active when right turn signal is active***

- **Driver Side view camera active when left turn signal is active**

**Once powered with the ignition circuit the rear view shall display as default and have precedent over the side view camera. The monitor viewing shall automatically follow the camera switching.**

**PO00010826 - REAR CAMERA GUARD**

QTY: 1.00

One (1) formed aluminum diamond plate shield shall be provided and mounted over the rear view camera to protect it from being damaged.

**PO00010824 - REAR VISION MONITOR MOUNTED ON CAB CEILING**

QTY: 1.00

The monitor for the rear vision system shall be mounted ceiling of the cab in easy view of the driver.

Note: This will be a separate screen, this will not be part of the ES-Key screen.

**PO00010733 - CUST PUMP/TANK/RES CHASSIS LED MARKER LIGHTS**

QTY: 1.00

DOT MARKER LIGHTS AND REFLECTORS

**PO00002988 - OPTRONICS LED MARKER LIGHTS @ FRONT ROOF EDGE OF CAB**

QTY: 1.00

Five (5) amber DOT approved, Optronics MCL13 Light Emitting Diode (LED) cab marker lamps shall be mounted on the front upper edge of the cab, above the windshield.

**PO00003068 - CAB STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES**

QTY: 4.00

Polished, stainless steel, TecNiq Eon, 3-LED, horizontal surface mounted chassis step lights shall be provided and controlled with marker light actuation.

Step lights shall be located to properly illuminate all chassis access steps and walkway areas and shall include a mounting gasket to provide a watertight seal.

**PO00002984 - DUAL MODULE W/ WHELEN C6 LED TURN SIGNAL & REQ WARN LIGHT**

QTY: 1.00

Two (2) Whelen C6T, arrow shaped, amber LED turn signals shall be provided, putting one (1) on each side of the dual light module above the headlights.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

**\*\*\*SHOP NOTE: SR00119803 - CLARIFICATION**

QTY: 1.00

***The additional Whelen C6 warning lights specified with the turn signals will be deleted.***

**PO00004075 - ALTERNATE FLASHING HEADLIGHT SYSTEM (WIG-WAGS)**

QTY: 1.00

An alternating flashing wig-wag system, wired to the apparatus headlights, shall be installed.

The wig-wag system shall be individually switched at the master light console.

The alternating flashing system shall be automatically disabled during the "Blocking Right of Way" mode.

**PO00004476 - DUAL HEADLIGHTS LED J W SPEAKER**

QTY: 1.00

Two (2) dual, J.W. Speaker LED headlight modules with a bright finish bezel shall be furnished, one (1) each side, on the front of the cab.

Each head light module shall incorporate an individual LED low beam and a LED high beam headlight.

High beam actuation shall be controlled on the turn signal lever.

**PO00010729 - DAYTIME RUNNING LIGHTS**

QTY: 1.00

The chassis head lights shall have integrated circuitry to actuate the low beam headlights whenever the chassis engine is running.

The daytime running lights shall be interlocked with the parking brake.

**PO00022855 - FRC EVOLUTION II LED 12V (2) ABOVE WINDSHIELD**

QTY: 1.00

Two (2) Fire Research Evolution II LED model FCA800-V20 contour roof mount lights shall be installed. The mounting brackets shall attach to the bottom of the lamphead and be machined to conform to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of each lamphead. Each lamphead shall have eight (8) ultra-bright white LED and shall operate at 12 volts DC, draw 13 amps, and generate 20,000 lumens. The lamp head shall direct 50 percent of the light onto the active area while providing 50 percent to illuminate the working area. Each lamp head shall incorporate heat-dissipating fins and be no more than 4" high by 11 1/2" wide. The lamp head and mounting arms shall be powder coated white. The floodlights shall be for fire service use. The Evolution brow mounted floodlights shall be located one (1) each side above the windshield.

**PO00003397 - WIRE UPGRADE FOR 12V HIGH AMP LIGHTS - (2) BROW LIGHTS**

QTY: 1.00

**PO00010755 - NFPA COMPLIANT WARNING LIGHT PACKAGE**

QTY: 1.00

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard.

The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

**PO00010757 - WARNING LIGHT FLASH PATTERN - NFPA FLASH PATTERN**

QTY: 1.00

All of the perimeter warning lights shall be set to a default NFPA compliant flash pattern as provided by the light manufacturer.

**PO00010756 - LIGHT PACKAGE ACTUATION/CONTROLS**

QTY: 1.00

The entire warning light package shall be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package shall engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

**PO00010759 - LIGHT PACKAGE NFPA CERTIFICATION**

QTY: 1.00

GSO# 11357 Huntington Manor Fire District, NY  
Specification: Final Production Release  
Contract Administrator: Mark Boyle

The warning light system(s) specified above shall not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way"

The warning light system(s) shall be certified by the light system manufacturer(s), to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications.

The NFPA required "Certificate of Compliance" shall be provided with the completed apparatus.

Any large truck as defined by NFPA shall have the lower zone warning lights mounted no higher than 62" to the optical center of the warning light from ground level. {No Exceptions}

**PO00003601 - A-UPPER, WHELEN LED F4NMINI, FREEDOM SERIES IV PAIR**

QTY: 1.00

A pair of Whelen #F4NMINI, LED cab roof warning light bars shall be furnished and rigidly mounted on top of the cab roof at no more than a 30 degree angle.

Each light bar shall be equipped with the following:

- Clear Lenses
- Two Corner Red Linear LEDs
- One End Red Linear LED
- Two White Front Linear LED

If equipped, the forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

**\*\*\*SHOP NOTE: SR00119240 - CLARIFICATION**

QTY: 1.00

*The cab roof lightbars will be mounted on a 30-degree angle.*

**PO00003639 - C-UPPER, WHELEN C9 SUPER LEDS**

QTY: 1.00

Two (2) Whelen, C9, super LED light heads shall be furnished and mounted one (1) on each side on the upper rear face of the body, facing rear.

**\*\*\*SPECIAL: SP00010822 - C-UPPER, WHELEN C9 SUPER LEDS**

QTY: 1.00

*Two (2) Whelen, C9, super LED light heads shall be furnished and mounted one (1) on each side on the upper rear face of the body, facing rear.*

*Each light head will be equipped with blue LEDs and a clear lens.*

*The lights will be installed with a chrome plated mounting flange.*

**PO00024574 - UPPER ZONE C WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The upper zone C warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024593 - UPPER ZONE C WARNING LIGHT BEZEL - CHROME**

QTY: 1.00

The upper zone C warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**\*\*\*SPECIAL: SP00027205 - B/D-UPPER FRONT, WHELEN C9 SUPER LEDES**

**QTY: 1.00**

***Two (2) Whelen, C9, super LED light heads shall be furnished and mounted one (1) on each side on the upper CAB EXTENSION, facing to each side of the unit.***

**PO00024576 - UPPER ZONE B/D FRONT WARNING LIGHT LENS - CLEAR**

**QTY: 1.00**

The upper zone B/D front warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024595 - UPPER ZONE B/D FRT WARNING LIGHT BEZEL - CHROME**

**QTY: 1.00**

The upper zone B/D front warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00003652 - B/D-UPPER REAR, WHELEN C9 SUPER LEDES**

**QTY: 1.00**

Two (2) Whelen, C9 super LED light heads shall be furnished and mounted one (1) on each side on the upper side face, towards the rear of the body, facing to each side of the unit.

The lights shall be installed with a chrome plated mounting flange.

**PO00024578 - UPPER ZONE B/D REAR WARNING LIGHT LENS - CLEAR**

**QTY: 1.00**

The upper zone B/D rear warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024597 - UPPER ZONE B/D REAR WARNING LIGHT BEZEL - CHROME**

**QTY: 1.00**

The upper zone B/D rear warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00012072 - A-LOWER FRONT MOUNTING, CUSTOM CHASSIS**

**QTY: 1.00**

The lower Zone A warning lights shall be mounted in the custom chassis headlight bezels.

**PO00003868 - A-LOWER FRONT, WHELEN C6 SUPER LEDES**

**QTY: 1.00**

Two (2) Whelen C6 super LED light heads shall be provided and installed one (1) each side.

**PO00024580 - LOWER ZONE A WARNING LIGHT LENS - CLEAR**

**QTY: 1.00**

The lower zone A warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024599 - LOWER ZONE A WARNING LIGHT BEZEL - CHROME**

**QTY: 1.00**

The lower zone A warning lights shall include red leds and a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00003878 - C-LOWER REAR, WHELEN C6 SUPER LEDES**

**QTY: 1.00**



Two (2) Whelen, C6, super LED light heads shall be provided and installed one (1) each side directly below the DOT stop, tail, turn and backup lights.

**PO00024582 - LOWER ZONE C WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The lower zone C warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00012074 - B/D-LOWER FRONT MOUNTING, CUSTOM CHASSIS**

QTY: 1.00

The lower Zone B D warning lights shall be mounted on the sides of the custom chassis front bumper.

**PO00003892 - B/D-LOWER FRONT, WHELEN C6 SUPER LEDES**

QTY: 1.00

Two (2) Whelen, C6 super LED light heads shall be provided and installed with one (1) on each side.

**PO00024584 - LOWER ZONE B/D FRONT WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The lower zone B/D front warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024603 - LOWER ZONE B/D FRONT WARNING LIGHT BEZEL - CHROME**

QTY: 1.00

The lower zone B/D front warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00003903 - B/D-LOWER MID, WHELEN C6 SUPER LEDES**

QTY: 1.00

Two (2) Whelen, C6 super LED light heads shall be provided and installed with one (1) on each side.

**PO00024586 - LOWER ZONE B/D MID WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The lower zone B/D mid warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024605 - LOWER ZONE B/D MID WARNING LIGHT BEZEL - CHROME**

QTY: 1.00

The lower zone B/D mid warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00003914 - B/D-LOWER SECONDARY MID, WHELEN C6 SUPER LEDES**

QTY: 1.00

Two (2) Whelen, C6 super LED light heads shall be provided and installed with one (1) on each side.

**PO00024590 - LOWER ZONE B/D MID SECONDARY WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The lower zone B/D mid secondary warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024609 - LOWER ZONE B/D MID SEC WARNING LIGHT BEZEL - CHROME**

QTY: 1.00

The lower zone B/D mid secondary warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**PO00003925 - B/D-LOWER REAR, WHELEN C6 SUPER LEDES**

QTY: 1.00

Two (2) Whelen C6 super LED light heads shall be provided and installed with one (1) on each side.

**PO00024588 - LOWER ZONE B/D REAR WARNING LIGHT LENS - CLEAR**

QTY: 1.00

The lower zone B/D rear warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

**PO00024607 - LOWER ZONE B/D REAR WARNING LIGHT BEZEL - CHROME**

QTY: 1.00

The lower zone B/D rear warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

**\*\*\*SPECIAL: SP00027206 - WHELEN STRIP-LITE PLUS WARNING LIGHTS, MOUNTED AS DIRECTED**

QTY: 1.00

*Whelen Strip-Lite Plus surface mount Super-LED lights will be provided and mounted above each compartment. The officers side will mirror the drivers side. A total of 10-lights will be provided. The sequence of colors on each side shall be as follows: Red, blue, white, blue, red*

**PO00004136 - 3M OPTICOM - PEDASTAL MOUNTED ON CAB ROOF**

QTY: 1.00

One (1) 3M Opticom system, which produces a flashing optical signal when in operation, shall be provided and mounted on cab roof, in an area forward of the light bar and situated so as not to interfere with the required light patterns of the NFPA Optical Warning Light System.

Controls for the system shall be provided independently of the Optical Warning Light System, with the wiring run through the Load Management System at the lowest available priority.

Additional circuitry shall be provided to automatically disable the Opticom System when the parking brake is engaged.

**PO00004142 - (1) MARS 888 LED TRAFFIC BREAKER WARN LT MTD FRT FACE CAB**

QTY: 1.00

There shall be one (1) pedestal mounted model TB8-L1-P/\* Mars 888 LED Traffic Breaker warning light mounted on the front center face of the cab below the windshield.

The light shall have a highly polished stainless steel housing and pedestal.

The light shall be supplied with a 850 lumen LED light.

The light shall have a current draw of 1.3 amps and shall operate at 12 volts.

The light shall be supplied with an on/off switch in the cab.

The light shall be supplied with clear lens and shall be wired to shut off when the apparatus parking brake is set, per NFPA 1901.

**PO00013260 - WHELEN C6, SUPER LED LIGHTS ON (4) OUTRIGGER PANELS**

QTY: 1.00

One (1) Whelen C6 super LED light shall be mounted on each of the outrigger cover panels, for a total of four (4).

Each light head shall be equipped with red LEDs and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

**PO00013270 - OUTRIGGER WARNING LIGHT ACTIVATION, PRIMARY WARNING**

QTY: 1.00

The outrigger warning lights shall be energized by the ladder power circuit.

The outrigger warning lights shall also be energized by the primary warning light switch.

**PO00003295 - NFPA (4) TECNIQ #E10 LED GROUND LIGHTS, BELOW CAB DOORS**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each side cab door entrance step, four (4) total.

The ground lights shall turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

Each light shall illuminate an area at a minimum 30" outward from the edge of the vehicle.

**PO00003296 - GROUND LIGHTS, 2 LED UNDER FRONT BUMPER FACING FORWARD - TECNIQ**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each side of the front bumper facing forward, two (2) total.

The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

**PO00003298 - GROUND LIGHTS, 2 LED BELOW PUMP PANEL RUNNING BOARD - TECNIQ**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each side pump panel running board, two (2) total.

The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

**PO00003299 - GROUND LIGHTS, 2 LED BELOW MID-SHIP COMPARTMENT - TECNIQ**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each mid ship compartment, two (2) total.

The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

**PO00003300 - GROUND LIGHTS, 2 LED BELOW FRONT BODY CORNERS - TECNIQ**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each front body corner, two (2) total.

The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

**PO00003301 - GROUND LIGHTS, 2 LED AT REAR BODY CORNERS - TECNIQ**

QTY: 1.00

One (1) TecNiq LED, 6" long ground light with stainless steel mounting bracket, shall be provided under each rear body corner, two (2) total.

The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

**\*\*\*SPECIAL: SP00024280 - CAB AND BODY GROUND LIGHTS - SWITCH @ IN CAB**

QTY: 1.00

***The cab and body ground lights shall be equipped with an activation switch in the cab and shall default to the on position.***

**PO00022750 - AERIAL LADDER, LADDER POWER SWITCH IN CAB**

QTY: 1.00

There shall be an aerial device power engagement switch located in the cab switch console. An aerial device PTO/hour meter shall be furnished. See ladder description for details.

**PO00011802 - CHASSIS DIAGNOSTICS SYSTEM**

QTY: 1.00

Diagnostic ports shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic system shall include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)

**PO00011803 - VOLTAGE MONITORING SYSTEM - 12 VOLT**

QTY: 1.00

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

**PO00011804 - INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM**

QTY: 1.00

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

**PO00011806 - ELECTRICAL HARNESS INSTALLATION - 12 VOLT**

QTY: 1.00

To ensure dependability, all 12-volt wiring harnesses installed by the manufacturer shall conform to the following specifications:

- SAE J 1128 - Low tension primary cable
- SAE J 1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J 163 - Low tension wiring and cable terminals and splice clips
- SAE J 2202 - Heavy duty wiring systems for on-highway trucks
- NFPA 1901 - Standard for automotive fire apparatus

- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
- SAE J 1939 - Serial communications protocol
- SAE J 2030 - Heavy-duty electrical connector performance standard
- SAE J 2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J 561 - Electrical terminals - Eyelet and spade type
- SAE J 928 - Electrical terminals - Pin and receptacle type A.

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes is never allowed at the manufacturer.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors shall be protected by a wire conduit to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

- All holes made in the roof shall be caulked with silicon. {No Exceptions} Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
- For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have protective coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
- Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
- All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

- SAE J 1127 - Battery Cable
- SAE J 561 - Electrical terminals, eyelets and spade type
- SAE J 562 - Nonmetallic loom
- SAE J 836 A - Automotive metallurgical joining
- SAE J 1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
- NFPA 1901 - Standard for automotive fire apparatus.

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

- Splices shall not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be marked red in color. All negative battery cables shall be black in color.
- For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.
- An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

**PO00012671 - AERIAL BODY ELECTRICAL SYSTEM**

QTY: 1.00

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service.

Flashers, heavy-duty solenoids and other major electrical controls shall be located in a central area near the circuit breakers.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram.

A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging.

Heavy duty loom shall be used for the entire length.

Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA-1901.

**PO00010753 - BODY ELECTRICAL HARNESS - ES-KEY**

QTY: 1.00

**PO00010754 - POWER DISTRIBUTION MODULES FOR CLASS ONE ES-KEY SYSTEM**

QTY: 1.00

Class 1 Power distribution modules shall be provided in strategic areas of the chassis to allow body harnesses to interface to multiplex system.

The Remote Power Modules (RPM) provide a method of controlling loads on the vehicle, outside the cab, without running individual wires from each switch to the load.

This electronic module distributes and controls power to various devices on the vehicle as commanded by the control system inside the cab.

The RPM is connected to the Electrical System Controller via the J1939 datalink.

Each module receives power from a power cable, protected by a fusible link to the main battery circuit.

The power distribution modules shall be mounted in a location to provide complete access for service or trouble shooting.

**PO00012441 - DOOR OPEN INDICATOR W/ INTEGRAL AUDIBLE ALARM**

QTY: 1.00

An indicator light with an audible alarm, shall be functionally located in the cab to signal when an unsafe condition is present such as an open cab door or body compartment door, an extended ladder rack, a deployed stabilizer, an extended light tower or any other device which is opened, extended or deployed which may cause damage to the apparatus if it is moved.

This light shall be activated through the parking brake switch to signal when the parking brake is released.

**PO00009693 - DUNNAGE AREA LIGHTING, TECNIQ EON 3 LED**

QTY: 1.00

Two (2) stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights shall be provided in the dunnage area to provide adequate illumination of this area.

These lights shall be switched in the same manner as the step lights.

**PO00003415 - COMPARTMENT LIGHTS, ROM LED V4 TRACK LIGHTING - DUAL**

QTY: 11.00

Each individual, equipment storage compartment shall be equipped with the ROM LED V4 lights on the forward and rear edge of each body door opening. The lights shall be mounted in an anodized aluminum track provided by ROM either as a stand alone unit or an integrated part of the roll up shutter door track. The lights shall be designed and manufactured to be water proof meeting the IPX7 industry standard and shall include a streamline optic lens and a fixed lumen output across 9-16vdc. Each LED module shall be of interlocking design and shall be able to be serviced/replaced without the removal of light assembly or shutter door. {No Exceptions}

**\*\*\*SPECIAL: SP00027207 - COMPARTMENT LIGHTS ACTIVATION**

QTY: 1.00

***The compartment lights will not be tied to individual door switches. The compartment lights will come on with park brake and will have a switch within the multiplex screen so that they can be turned off when necessary.***

**PO00010734 - CUST PUMP/TANK/RES BODY LED MARKER LIGHTS**

QTY: 1.00

**PO00002998 - OPTRONICS MARKER LIGHTS FORWARD OF FRONT CAB DOOR**

QTY: 1.00

Optronics MCL series amber LED marker lights with reflector shall be provided and mounted forward of the front cab door, one (1) each side.

**PO00002999 - OPTRONICS MARKER/TURN LIGHTS @ EA SIDE OF BODY**

QTY: 1.00

Optronics model MCL82RB, red, LED marker lights with integral reflectors shall be provided at the lower side rear, having one (1) on each side.

Optronics Model #STL71AMB, yellow, LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle that puts one (1) on each side, if the apparatus is 30' long or longer.

**PO00003003 - OPTRONICS MARKER LIGHTS @ REAR OF BODY**

QTY: 1.00

Optronics MCL65, red, LED clearance lights shall be provided on the apparatus rear upper having one (1) on each side at the outermost practical location.

Optronics MCL12, LED, 3-lamp identification bar will be provided on the apparatus rear center.

The lights shall be red in color.

**PO00003007 - TRUCK-LITE DOT AMBER REFLECTORS @ SIDE OF BODY**

QTY: 1.00

Truck-Lite # 98034Y, yellow reflectors shall be provided on the apparatus body lower side, as far forward and low as practical with one (1) on each side if the apparatus is 30' long or longer.

**PO00003008 - TRUCK-LITE DOT RED REFLECTORS @ REAR OF BODY**

QTY: 1.00

Truck-Lite # 98034R, red reflectors shall be provided on the apparatus rear with one (1) on each side at the outermost practical location.

**PO00010767 - TECNIQ #L10 LED LICENSE PLATE LIGHT @ DS REAR OF BODY**

QTY: 1.00

One (1) Tecniq model #L10 LED license plate light shall be provided above the mounting position of the license plate.

The light shall be clear in color and shall have a chrome finish.

**PO00003037 - WHELEN C6 LED BRAKE, REVERSE, TURN W/ QUAD HOUSING**

QTY: 1.00

Two (2) Whelen C6 series, 4-1/8" x 6-1/2", LED red combination tail and stop lights, shall be mounted one each side at the rear of the body.

Two (2) Whelen C6 series, 4-1/8" x 6-1/2", LED amber arrow turn signal lights, shall be mounted one each side, on a vertical plane with the tail/stop lights.

Two (2) Whelen C6 series, 4-1/8" x 6-1/2", LED white back-up lights, shall be mounted one each side on a vertical plane with the turn/tail/stop signals.

These lights shall activate when the transmission is placed in reverse gear.

Two (2) Whelen PLASC4V mounting flanges, installed one (1) on each side, shall be provided to mount the lights described above in one common mounting flange.



The fourth opening shall be for the lower rear warning lights.

The lights shall be mounted in order, from top to bottom, as described above.

**PO00003075 - BODY STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES**

QTY: 2.00

Polished, stainless steel, TecNiq Eon 3-LED, horizontal surface, mounted body step lights shall be provided and controlled with marker light actuation.

Step lights shall be located to properly illuminate all body access steps and walkway areas and shall include a mounting gasket to provide a watertight seal.

**PO00003402 - PUMP ENCLOSURE WORK LIGHTS - TECNIQ LED**

QTY: 1.00

Two (2) Tecniq, model #E18 lights shall be provided inside the pump enclosure, providing 800 lumens each.

Each light shall have their own independent switch incorporated into the light head.

**PO00015934 - AERIAL ACCESS LADDER ILLUMINATION - WHELEN 3" LED - RM BODY**

QTY: 1.00

Two (2) Whelen LED lights, #3SC0CDCR, with chrome housings, # 3FLANGEC, provided for each aerial turntable access ladder.

The step lights shall be actuated when the aerial access ladder is deployed.

**\*\*\*SPECIAL: SP00006919 - FRC SPECTRA 900 LED SCENE LIGHTS ABOVE CANOPY WINDOW**

QTY: 1.00

*Two (2) Fire Research Spectra 900, LED scene lights shall be provided, (1) one on each side of the cab, directly above the canopy window in a chrome plated flange.*

*Each light shall be 9 wide by 6 high by 1 deep, draw 6 amps, and produce 7,000 lumens.*

*The scene lights shall be wired through the load management system.*

**PO00003227 - FRC SPECTRA 900 LED SCENE LIGHTS ON REAR OF BODY**

QTY: 1.00

Two (2) Fire Research Spectra 900, LED scene lights shall be provided, (1) one on each side of the rear body panel in a chrome plated flange.

Each light shall be 9 wide by 6 high by 1 deep, draw 6 amps, and produce 7,000 lumens.

The scene lights shall be wired through the load management system.

**PO00003244 - CAB SCENE LIGHTS TO BE ACTIVATED BY CAB DOORS**

QTY: 1.00

In addition to the cab mounted switch for the cab scene lights, the driver and officer cab doors shall activate the respective light when a cab door is opened.

**PO00003245 - REAR SCENE LIGHTS TO BE ACTIVATED BY REVERSE LIGHTS**

QTY: 1.00

In addition to the cab mounted switch for the rear scene lights, the rear scene lights shall illuminate when the transmission is placed in reverse gear and the apparatus is operating as an emergency vehicle (Primary Warning switch on).

**PO00012423 - TECNIQ #E96 LED DOCKING LIGHTS IN REAR WHEELWELL PANELS**

QTY: 1.00

Two (2) Tecniq E96 LED docking lights shall be provided in the rear wheel well panels, one (1) each side.

The lights shall be surface mounted on the wheel well panel and shall be equipped with a stainless steel housing.

The lights shall be activated by the reverse light circuit when the apparatus is operating as an emergency vehicle (Primary Warning Switch On).

**PO00011814 - CHASSIS SINGLE ELECTRIC (DOT) HORN**

QTY: 1.00

A single electric horn activated by the steering wheel horn button shall be furnished.

**PO00004206 - PRECO, #1040, BACK-UP ALARM, SELF ADJUSTING - 87 DBA THRU 112 DBA**

QTY: 1.00

A Preco # 1040, self adjusting 87 thru 112dBA back-up alarm, shall be provided and installed at the rear of the apparatus under the tailboard.

The back-up alarm shall activate and automatically adjust to ambient noise levels when the transmission is placed in reverse gear and the ignition is "on."

**PO00024127 - DUAL CHROME AIR HORNS - GROVER**

QTY: 1.00

Two (2) chrome plated Grover air horns shall be at the front of the vehicle. The air horns shall be mounted in full compliance with NFPA-1901. The supply lines shall be dual 1/4" lines with equal distance from each horn.

**PO00002946 - DUAL AIR HORNS RECESSED IN FRONT BUMPER, 1-DS & 1-OS**

QTY: 1.00

Each air horn shall be recessed in the front bumper; one (1) on the driver's side and one (1) on the officer's side.

**PO00002955 - AIR HORN CONTROL - FOOT SWITCH FOR OFFICER & DRIVER**

QTY: 1.00

The air horn(s) shall be controlled by a floor mounted, foot switch on the officer and the driver's side.

**\*\*\*SPECIAL: SP00027201 - SIREN, WHELEN # 295HFS2, 100W - FLUSH MOUNT**

QTY: 1.00

***One (1) Whelen # 295HFS2, 100 watt electronic siren shall be provided featuring: flush mount remote control head located on the officer's side of the center dash module, "Si-Test" self diagnostic feature, six (6) function siren, radio repeat, and public address.***

***The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.***

**PO00004235 - ONE (1) WHELEN SP123BMC SPEAKER**

QTY: 1.00

One (1) Whelen, model # SP123BMC with chrome plated ABS outer flange, siren speakers shall be provided, recessed in the front bumper and wired to the electronic siren.

**\*\*\*SHOP NOTE: SR00119232 - CLARIFICATION**

QTY: 1.00

*The electronic siren speaker will be recess mounted on the drivers side of the bumper, outboard of one air horn.*

**PO00012247 - FEDERAL Q2B SIREN @ CAB FRONT**

QTY: 1.00

One (1) Federal Model #Q2B mechanical siren shall be provided to provide audible warning.

**PO00012255 - Q2B MOUNT - SEMI-RECESSED INTO OFFICER'S SIDE OF BUMPER**

QTY: 1.00

The Q2B siren shall be semi-recessed into the bumper on the officer's side.

The siren shall be recessed so the front grille portion of the siren is exposed and protruding beyond the bumper.

**\*\*\*SHOP NOTE: SR00119231 - CLARIFICATION**

QTY: 1.00

*The Q2B siren will be semi recess mounted on the officers side of the bumper, outboard of one air horn.*

**PO00012265 - SIREN CONTROL - FLOOR SWITCH, DRIVER AND OFFICER**

QTY: 1.00

Two (2) floor mounted foot switches shall be provided, one (1) for the officer and one (1) for the driver.

A siren brake button shall be provided near the driver's position.

**PO00012270 - ADDITIONAL SIREN BRAKE BUTTON NEAR OFFICER**

QTY: 1.00

A second push button siren brake switch shall be provided on the cab dash near the officers seating position.

**PO00004697 - HALE QMAX-200 2000 GPM SINGLE STAGE PUMP**

QTY: 1.00

- HALE QMAX-200
- 2000 G.P.M.

Single Stage The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 P.S.I. net pump pressure
- 100% of rated capacity at 165 P.S.I. net pump pressure
- 70% of rated capacity at 200 P.S.I. net pump pressure
- 50% of rated capacity at 250 P.S.I. net pump pressure.

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 2000 gallons per minute (U.S. GPM), NFPA-1901 rated performance.

The entire pump shall be manufactured and tested at the pump manufacturer's factory. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to performance specs as outlined by the latest NFPA-1901. Pump shall be free from objectionable pulsation and vibration. The pump body and related parts shall be of fine grain alloy cast iron with a minimum tensile strength of 30,000 PSI. All moving parts in contact with

water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable. Pump body shall be horizontally split, on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under packing with galvanic corrosion (zinc foil separators in packing) protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions) Pump impeller shall be hard, fine grained bronze of the mixed flow design, accurately machined, and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

#### **PO00010792 - PUMP RATIO**

QTY: 1.00

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

The manufacturer shall supply at time of delivery copies of the pump manufacturer's certification of hydrostatic testing, the engine manufacturer's current certified brake horsepower curve.

#### **PO00009802 - PUMP MOUNTS - MID-SHIP PUMPS**

QTY: 1.00

Extra heavy duty pump mounting brackets shall be furnished.

These shall be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the drive line joints shall be the same on each end of the drive shaft.

This shall assure full capacity performance with a minimum of vibration. Mounting hardware shall utilize Grade 8 bolts.

#### **PO00009138 - HALE MECHANICAL PUMP SEAL**

QTY: 1.00

The mid ship pump shall be equipped with a high quality, spring loaded, self-adjusting mechanical seal capable of providing a positive seal to atmosphere under all pumping conditions.

This positive seal to atmosphere must be achievable under vacuum conditions up to 26 Hg (draft) or positive suction pressures up to 250 PSI.

The mechanical seal assembly shall be 2 inches in diameter and consists of a carbon sealing ring, stainless steel coil spring,

Viton rubber boot, and a tungsten carbide seat with a Teflon backup seal provided.

Only one (1) mechanical seal shall be required, located on the first stage suction (inboard) side of the pump and be designed to be compatible with a one piece pump shaft.

A continuous cooling flow of water from the pump shall be directed through the seal chamber when the pump is in operation.

**PO00009105 - HALE PUMP DRIVE UNIT, ALL HALE FULL CAST PUMPS**

QTY: 1.00

The drive unit shall be completely assembled and tested at the pump manufacturer's factory.

Pump drive unit shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine in both road and pump operating conditions.

The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat treated chrome nickel steel and at least 2-3/4 inches in diameter on both the input and output drive shafts.

They shall withstand the full torque of the engine in both road and pump operating conditions.

All gears, both drive and pump, shall be of the highest quality electric furnace chrome nickel steel.

Bores shall be ground to size and teeth integrated, chrome-shaven and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability.

An accurately cut spur design shall be provided to eliminate all possible end thrust.

**PO00010793 - PUMP SHIFT MANUAL OVERRIDE**

QTY: 1.00

An emergency manual pump shift control shall be furnished on the left side pump panel which may be utilized if the air shift control does not operate. A transmission, manual lock-up switch shall be furnished in the cab to ensure positive lock-up of the transmission.

**PO00012078 - HALE PUMP SHIFT INDICATOR LIGHTS**

QTY: 1.00

For automatic transmissions, three (3) green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift for Road to Pump position.

Two (2) green lights to be located in the truck driving compartment and one (1) green light on pump operator's panel adjacent to the throttle control.

For manual transmissions, one (1) green warning light shall be provided for the driving compartment.

All lights to have appropriate identification/instruction plates.

**PO00011539 - HALE ANODE BLOCKS - ALLOY - 4 TOTAL**

QTY: 1.00

Four (4) Hale Alloy anode blocks shall be provided and located two (2) on the suction side and two (2) on the discharge side of the pump to protect the pump from corrosion.

The Anodes shall be painted Safety Yellow for identification purposes.

**PO00011549 - HALE THERMAL RELIEF VALVE**

QTY: 1.00

A Hale Model TRV120 Thermal Relief Valve shall be provided on the pump.

If water temperature in the pump exceeds 120 degrees Fahrenheit, the thermal relief valve shall automatically open and discharge pump water to the ground, through a 3/8" discharge line, routed below the pump module.

The thermal relief valve shall automatically close when the water temperature is lowered.

**PO00011551 - "OPEN" INDICATOR LIGHT FOR THERMAL RELIEF VALVE**

QTY: 1.00

An indicator light shall be provided on the operator's panel to illuminate when the thermal relief valve is activated.

**PO00011553 - AUDIBLE ALARM FOR THERMAL RELIEF VALVE**

QTY: 1.00

An audible alarm shall be provided on the operator's panel to alert the operator when the thermal relief valve is activated.

**PO00010750 - AUXILIARY ENGINE COOLER**

QTY: 1.00

An auxiliary cooler or heat exchanger shall be installed in the engine compartment between the engine and the chassis radiator.

The cooler shall permit the use of water from the pump for cooling the engine.

The cooling shall be done without mixing engine and pump water.

**\*\*\*SPECIAL: SP00027208 - FIRE RESEARCH "PRO-T" PRESSURE GOVERNOR**

QTY: 1.00

***Fire Research PRO-T series PRA301-D00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2" high by 10 1/2" wide by 2" deep. Inputs for monitored information and outputs for engine control shall be on the J1939 databus.***

***The following continuous displays shall be provided:***

***Pump discharge; shown with four daylight bright LED digits more than 1/2" high***

***Pump intake; shown with four daylight bright LED digits more than 1/2" high***

***Pump discharge and intake pressure gauge shall have an accuracy of  $\pm 3$  percent over the full scale.***

***Dot matrix message display***

***Throttle ready LED***

***Pressure / RPM setting display***

***Pressure and RPM operating mode LEDs***

***Engine RPM; shown with four daylight bright LED digits more than 1/2" high***

***Check engine and stop engine warning LEDs***

***Oil pressure; shown on a dual color (green/red) LED bar graph display***

***Engine coolant temperature; shown on a dual color (green/red) LED bar graph display***

***Transmission Temperature; shown on a dual color (green/red) LED bar graph display***

***Battery voltage; shown on a dual color (green/red) LED bar graph display.***

***The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.***

***The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:***

***High Battery Voltage***

***Low Battery Voltage (Engine Off)***

**Low Battery Voltage (Engine Running)**

**High Transmission Temperature**

**Low Engine Oil Pressure**

**High Engine Coolant Temperature**

**Out of Water (visual alarm only)**

**No Engine Response (visual alarm only).**

**The program features shall be accessed via push buttons located on the front of the control panel. There shall be an USB port located at the rear of the control module to upload future firmware enhancements.**

**Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.**

**The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.**

**The pressure governor, monitoring and master pressure display shall be programmed to interface with a Cummins engine.**

**PO00011412 - AKRON STYLE #59 INTAKE RELIEF VALVE**

QTY: 1.00

A 300 psi adjustable Akron Brass model 59 intake relief valve system shall be plumbed on the suction side of the pump to comply fully with NFPA-1901 requirements.

Excess pressures shall be plumbed to discharge water under the pump enclosure away from the pump operator.

**PO00009890 - TRIDENT "MANUAL" AIR PRIMING SYSTEM**

QTY: 1.00

The priming pump will be a Trident air primer system.

A push in primer handle will open the priming valve and prime the pump.

**PO00004825 - ROTARY MASTER DRAIN VALVE**

QTY: 1.00

A rotary type, 12 port, master drain valve shall be provided and controlled at the lower portion of the side pump panel.

The valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories.

Water shall be drained below the apparatus body and away from the pump operator.

**PO00004830 - DRAINS/BLEEDER "INNOVATIVE CONTROLS" LIFT UP @ ALL 1-1/2" OR LARGER**

QTY: 1.00

All lines shall drain through the master drain valve or shall be equipped with individual drain valves, easily accessible, and labeled.

One (1) individual "Innovative Control" lift up drain valve shall be furnished for each 1-1/2" or larger discharge port and each 2-1/2" gated auxiliary suction.

Drain/bleeder valves shall be located at the bottom of the side pump module panels. All drains and bleeders shall discharge below the running boards.

**PO0004840 - SYNIFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES**

QTY: 1.00

Small lines within the pump enclosure shall be constructed from Syniflex hose.

Uses include but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush, and air bleeder valves.

**PO00010965 - SUCTION INLETS - 6" INLETS**

QTY: 1.00

Two (2) 6" N.S.T. suction inlets shall be provided, one on the driver side and one on the officer side pump panel.

A removable strainer shall be installed on each inlet.

**PO00024018 - SHORT NECK MAIN PUMP SUCTION INLETS**

QTY: 1.00

The main pump suction inlets shall be furnished with a short suction end, terminating with only the suction threads protruding through the side panel to minimize the distance an exterior appliance protrudes beyond the pump panel.

**PO00012076 - BEHIND PANEL MOUNT**

QTY: 1.00

All side gated inlet valves shall be recess mounted behind the side pump panels or body panels. There will be no exceptions.

**PO00011278 - DELETE SUCTION INLET CAP DRIVER SIDE**

QTY: 1.00

The suction cap provided as standard equipment shall be deleted.

**\*\*\*SPECIAL: SP00027215 - 6" NH - 5" STORZ TFT JUMBO B.I.V. #AX1SX-NX-PS DRIVER SIDE INLET**

QTY: 1.00

*One (1) 6" NH x 5" Storz Jumbo Ball Intake Valve AX1SX-NX-PS 30° degree adapter and 5" storz cap shall be provided for the driver side main suction inlet.*

**PO00011279 - DELETE SUCTION INLET CAP OFFICER SIDE**

QTY: 1.00

The suction cap provided as standard equipment shall be deleted.

**\*\*\*SPECIAL: SP00027216 - 6" NH - 5" STORZ TFT JUMBO B.I.V. #AX1SX-NX-PS - OFFICER SIDE INLET**

QTY: 1.00

*One (1) 6" NH x 5" Storz Jumbo Ball Intake Valve AX1SX-NX-PS 30° degree adapter and 5" storz cap shall be provided for the officer side main suction inlet.*

**PO00011333 - 2-1/2" DRIVER SIDE AUX PRIMARY SUCTION INLET FORWARD OF MAIN**

QTY: 1.00

One (1) 2-1/2" auxiliary suction shall be provided at the driver side pump panel, to the front of the main inlet.



The 2-1/2" auxiliary suction shall terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

**PO00004969 - 2-1/2" AKRON #8800 S.S. BALL VALVE, DRIVER SIDE FRONT AUX SUCTION**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out Valve shall be provided for the driver's side front auxiliary suction.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00004984 - SWING CONTROL @ VALVE, DRIVER SIDE FRONT AUX SUCTION**

QTY: 1.00

A 1/4 turn swing control handle shall be provided on the driver side, front auxiliary suction valve.

**PO00011335 - 2-1/2" OFFICER SIDE AUX PRIMARY SUCTION INLET FORWARD OF MAIN**

QTY: 1.00

One (1) 2-1/2" auxiliary suction shall be provided at the officer side pump panel, to the front of the main inlet (if space and other components allow).

The 2-1/2" auxiliary suction shall terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

**PO00023917 - 2-1/2" AKRON #8800 S.S. BALL VALVE, OFFICER SIDE FRONT AUX SUCTION**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve (will/shall) be provided for the officer's side front auxiliary suction. The valve (will/shall) have an all-brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00009373 - SWING CONTROL @ VALVE, OFFICER SIDE AUX SUCTION**

QTY: 1.00

A 1/4 turn swing control handle shall be provided on the officer side auxiliary suction valve.

**PO00023881 - TANK TO PUMP 3" VALVE**

QTY: 1.00

One (1) 4" tank to pump line shall be piped into the tank sump. This line shall be plumbed directly into the rear of the pump suction manifold for maximum efficiency.

A check valve shall be provided to prevent accidental pressurization of the water tank through the pump connection. Connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

**PO00004999 - 3" AKRON #8800 SERIES - S.S. BALL, VALVE , TANK TO PUMP**

QTY: 1.00

An Akron Brass 3" Generation II Swing-Out Valve shall be provided between the pump suction manifold and the water tank.

The valve shall have an all brass body with flow optimizing, stainless steel ball and dual polymer seats.

**PO00010956 - 3" PUSH/PULL CONTROL FOR TANK TO PUMP**

QTY: 1.00

A push/pull control handle shall be located on the operator's panel with function plate.

**PO00010962 - TANK FILL LINE 2" FROM PUMP - SIDE MOUNT**

QTY: 1.00

GSO# 11357 Huntington Manor Fire District, NY  
Specification: Final Production Release  
Contract Administrator: Mark Boyle

One (1) 2" gated full flow pump to tank refill line controlled at the pump panel shall be provided. A deflector shield inside the tank shall be furnished. Tank fill plumbing shall utilize 2" high pressure hose for tank connection to accommodate flexing between components. There will be no exceptions.

**PO00005031 - 2" AKRON #8800 SERIES - S.S. BALL TANK FILL, SIDE MOUN**

QTY: 1.00

An Akron Brass 2" Generation II Swing-Out Valve shall be provided between the pump discharge manifold and the water tank.

The valve shall have an all brass body with flow optimizing, stainless steel ball, and dual polymer seats.

**PO00009815 - PUSH/PULL CONTROL FOR TANK FILL**

QTY: 1.00

A push/pull control handle shall be located on the operator's panel with function plate.

**PO00012083 - DRIVER SIDE MAIN DISCHARGE #1**

QTY: 1.00

A discharge shall be provided and located at the driver's side pump panel.

The driver's side discharges # 1 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

**PO00009226 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, DRIVER SIDE #1**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out Valve shall be provided for the driver's side #1 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00005054 - 2-1/2" NSTF X 1-1/2" NSTM REDUCER WITH CAP DRIVER SIDE DISCHARGE #1**

QTY: 1.00

A 2-1/2" NSTF X 1-1/2" NSTM reducer with cap shall be provided on the driver's side # 1 discharge.

**PO00005039 - DS #1 DISCHARGE - 2-1/2" STRAIGHT NST & 30-DEGREE NST ELBOW**

QTY: 1.00

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

**\*\*\*SHOP NOTE: SR00119261 - CLARIFICATION**

QTY: 1.00

*All 2.5" pump elbows will be 2.5" NST female x New York Corp. 3.00 x 8 male. The 2.5" x 1.5" reducers will be NYC female x NST male.*

**PO00005114 - AKRON HANDWHEEL GEAR VALVE CONTROL, DRIVER SIDE DISCHARGE #1**

QTY: 1.00

The driver's side # 1 discharge valve shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00005142 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - DRIVER SIDE DISCHARGE #1**

QTY: 1.00

The driver's side # 1 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum with bright red LCD digits to indicate flow and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**PO00012084 - DRIVER SIDE MAIN DISCHARGE #2**

QTY: 1.00

A discharge shall be provided and located at the driver's side pump panel.

The driver's side discharges # 2 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

**PO00009304 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, DRIVER SIDE #2**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out Valve shall be provided for the driver's side #2 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00005145 - DS #2 DISCHARGE - 2-1/2" STRAIGHT NST & 30-DEGREE NST ELBOW**

QTY: 1.00

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

**PO00005160 - 2-1/2" NSTF X 1-1/2" NSTM REDUCER WITH CAP DRIVER SIDE DISCHARGE #2**

QTY: 1.00

A 2-1/2" NSTF X 1-1/2" NSTM reducer with cap shall be provided on the driver's side # 2 discharge.

**PO00005215 - AKRON HANDWHEEL GEAR VALVE CONTROL, DRIVER SIDE DISCHARGE #2**

QTY: 1.00

The driver's side # 2 discharge valve shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00005244 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - DRIVER SIDE DISCHARGE #2**

QTY: 1.00

The driver's side # 2 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**PO00012086 - OFFICER SIDE MAIN DISCHARGE #1**

QTY: 1.00

A discharge shall be provided and located at the officer's side pump panel.

The officer's side discharges #1 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

**PO00005281 - 4" AKRON #8840 VALVE, OFFICER SIDE #1, SIDE MOUNT**

QTY: 1.00

An Akron Brass, 4" Heavy Duty, Swing-Out Valve shall be provided for the officer's side #1 discharge.

The valve shall have an all brass body with flow optimizing, flat ball, and dual polymer seats

**PO00005298 - OS #1 DISCHARGE - 4" STRAIGHT NST & 30-DEGREE NST ELBOW**

QTY: 1.00

The discharge valve shall be equipped with a straight, 4" NST adapter that shall be equipped with a 4" NST, 30-degree, chrome plated elbow.

**PO00005330 - 4" NSTF X 5" STORZ KOCHER S37S STRAIGHT ADAPTER WITH CAP OFFICER SIDE DISCHARGE #1**

QTY: 1.00

A 4" NSTF X 5" Storz Kocher, S37S straight adapter with cap shall be provided on the officer's side # 1 discharge.

**PO00005362 - AKRON HANDWHEEL GEAR VALVE CONTROL, OFFICER SIDE DISCHARGE #1**

QTY: 1.00

The officer's side # 1 discharge valve shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00005391 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - OFFICER SIDE DISCHARGE #1**

QTY: 1.00

The officer's side, # 1 discharge shall be equipped with a Fire Research "Insight", Ultimate Flow/Pressure Meter which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow and a bright, analog pointer to indicate pressure.

A flow sensor, paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**PO00012087 - OFFICER SIDE MAIN DISCHARGE #2**

QTY: 1.00

A discharge shall be provided and located at the officer's side pump panel.

The officer's side discharges #2 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

**PO00005393 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, OFFICER SIDE #2, SIDE MOUNT**

QTY: 1.00

An Akron Brass, 2 1/2" Generation II, Swing-Out Valve shall be provided for the officer's side #2 discharge.

The valve shall have an all brass body with flow optimizing, stainless steel ball, and dual polymer seats.

**PO00005403 - OS #2 DISCHARGE - 2-1/2" STRAIGHT NST & 30-DEGREE NST ELBOW**

QTY: 1.00

The discharge valve shall be equipped with a straight, 2 1/2" NST, adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

**PO00005418 - 2-1/2" NSTF X 1-1/2" NSTM REDUCER W/CAP OFFICER SIDE DISCHARGE #2**

QTY: 1.00

A 2-1/2" NSTF X 1-1/2" NSTM reducer w/ cap shall be provided on the officer's side #2 discharge.

**PO00005474 - AKRON HANDWHEEL GEAR VALVE CONTROL, OFFICER SIDE DISCHARGE #2**

QTY: 1.00

The officer's side, #2 discharge valve shall be gated with an Akron, Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated, hand wheel and mechanical valve position indicator.

**PO00005503 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - OFFICER SIDE DISCHARGE #2**

QTY: 1.00

The officer's side, #2 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow and a bright analog pointer to indicate pressure.

A flow sensor, paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**PO00012111 - #1 FRONT DISCHARGE #2-1/2"**

QTY: 1.00

A 2 1/2" front #1 discharge shall be plumbed to the front bumper of the vehicle.

**PO00006333 - 2-1/2" NST CHICKSAN SWIVEL @ TOP DRIVER SIDE FRONT BUMPER #1 DISCHARGE**

QTY: 1.00

The front #1 discharge shall terminate on the top driver's side of the front bumper extension gravel shield with a chrome 2 1/2" NST chicksan swivel adapter.

**PO00006352 - #1 FRONT DISCHARGE, PLUMBING, 2-1/2" STAINLESS STEEL PIPING**

QTY: 1.00

The front #1 discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping, flexible hosing, 45 degree elbows, and a limited number of 90 degree sweep elbows in an assembly from the pump to the front of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

Automatic discharge drains shall be provided at all low points in the plumbing.

**PO00006362 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, VALVE FRONT #1 DISCHARGE**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out Valve shall be provided for the front #1 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seat.

**PO00006402 - AKRON HANDWHEEL GEAR VALVE CONTROL, FRONT#1 DISCHARGE**

QTY: 1.00

The front #1 discharge shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00006438 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - FRONT #1 DISCHARGE**

QTY: 1.00

The front #1 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**\*\*\*SPECIAL: SP00024281 - FRC INSIGHT ULTIMATE FRONT DISCHARGE YELLOW BEZEL** QTY: 1.00

***A Fire Research –C04 option for yellow powder coat shall be applied to the front discharge flowmeter and pressure indicator bezel.***

**PO0000011 - CROSSLAY #1, 1-1/2" - PUMPER**

QTY: 1.00

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable and constructed from brushed finish, perforated aluminum material.

**PO0000014 - CROSSLAY #1 CAPACITY - 200 FEET OF 1-3/4" HOSE**

QTY: 1.00

Crosslay #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA - 1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

**PO0000022 - CROSSLAY #1 - DOUBLE STACK HOSE DESIGN**

QTY: 1.00

Crosslay #1 hose bed shall be designed to accommodate the fire hose in a double stack configuration.

**PO00006565 - 1-1/2" NST CHICKSAN SWIVEL - CROSSLAY #1**

QTY: 1.00

The crosslay discharge shall terminate below the hosebed floor with a 1 1/2" NSTM chicksan swivel adapter.

The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

**PO00006572 - CROSSLAY #1, PLUMBING, 2" STAINLESS STEEL PIPING**

QTY: 1.00

The crosslay #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

**PO00006578 - 2" AKRON #8800 SERIES - S.S. BALL, VALVE CROSSLAY #1, DISCHARGE**

QTY: 1.00

An Akron Brass 2" Generation II Swing-Out Valve shall be provided for the crosslay #1 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00006617 - AKRON HANDWHEEL GEAR VALVE CONTROL, CROSSLAY #1**

QTY: 1.00

The crosslay #1 discharge shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00006646 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - CROSSLAY #1**

QTY: 1.00

The crosslay #1 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**\*\*\*SPECIAL: SP00024282 - FRC INSIGHT ULTIMATE CROSSLAY 1 RED BEZEL**

QTY: 1.00

***A Fire Research –C02 option for red powder coat shall be applied to the crosslay #1 flowmeter and pressure indicator bezel.***

**PO00007712 - CROSSLAY #2 1-1/2"**

QTY: 1.00

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment.

The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

**PO00000024 - CROSSLAY #2 CAPACITY - 200 FEET OF 1-3/4" HOSE**

QTY: 1.00

Crosslay #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA - 1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

**PO00000032 - CROSSLAY #2 - DOUBLE STACK HOSE DESIGN**

QTY: 1.00

Crosslay #2 hose bed shall be designed to accommodate the fire hose in a double stack configuration.

**PO00024219 - 1-1/2" NST CHICKSAN SWIVEL - CROSSLAY #2**

QTY: 1.00

The crosslay discharge shall terminate below the hose bed floor with a 1 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor,



allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

**PO00006661 - CROSSLAY #2, PLUMBING, 2" STAINLESS STEEL PIPING**

QTY: 1.00

The crosslay #2 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

**PO00006667 - 2" AKRON #8800 SERIES - S.S. BALL, VALVE CROSSLAY #2,**

QTY: 1.00

An Akron Brass 2" Generation II Swing-Out Valve shall be provided for the crosslay #2 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00006706 - AKRON HANDWHEEL GEAR VALVE CONTROL, CROSSLAY #2**

QTY: 1.00

The crosslay #2 discharge shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00006733 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - CROSSLAY #2**

QTY: 1.00

The crosslay #2 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**\*\*\*SPECIAL: SP00024283 - FRC INSIGHT ULTIMATE CROSSLAY #2 BLUE BEZEL**

QTY: 1.00

***A Fire Research –C06 option for blue powder coat shall be applied to the crosslay #2 flowmeter and pressure indicator bezel.***

**PO00007716 - CROSSLAY #3 2-1/2"**

QTY: 1.00

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

**PO0000039 - CROSSLAY #3 CAPACITY - 250 FEET OF 2-1/2" HOSE**

QTY: 1.00

Crosslay #3 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA - 1901 to accommodate a minimum of 250 feet of 2 1/2" fire hose.

**PO0000042 - CROSSLAY #3 - DOUBLE STACK HOSE DESIGN**

QTY: 1.00

Crosslay #3 hose bed shall be designed to accommodate the fire hose in a double stack configuration.

**PO00006743 - 2-1/2" NST CHICKSAN SWIVEL - CROSSLAY #3**

QTY: 1.00

The crosslay discharge shall terminate below the hosebed floor with a 2 1/2" NSTM chicksan swivel adapter.

The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

**PO00006746 - CROSSLAY #3, PLUMBING, 2-1/2" STAINLESS STEEL PIPING**

QTY: 1.00

The crosslay #3 discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hosebed.

A minimum of one(1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

**PO00006775 - AKRON HANDWHEEL GEAR VALVE CONTROL, CROSSLAY #3**

QTY: 1.00

The crosslay #3 discharge shall be gated with an Akron Hand wheel controlled, inline valve.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00006804 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - CROSS #3**

QTY: 1.00

The crosslay #3 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**\*\*\*SPECIAL: SP00024284 - FRC INSIGHT ULTIMATE CROSSLAY 3 ORANGE BEZEL**

QTY: 1.00

***A Fire Research –C03 option for orange powder coat shall be applied to the crosslay #3 flowmeter and pressure indicator bezel.***

**PO00009198 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, VALVE CROSSLAY**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the crosslay #3 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00007719 - CROSSLAY #4 2-1/2"**

QTY: 1.00

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment.

The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

**PO00000049 - CROSSLAY #4 CAPACITY - 250 FEET OF 2-1/2" HOSE**

QTY: 1.00

Crosslay #4 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA - 1901 to accommodate a minimum of 250 feet of 2 1/2" fire hose.

**PO00000052 - CROSSLAY #4 - DOUBLE STACK HOSE DESIGN**

QTY: 1.00

Crosslay #4 hose bed shall be designed to accommodate the fire hose in a double stack configuration.

**PO00011408 - 2-1/2" NST CHICKSAN SWIVEL - CROSSLAY #4**

QTY: 1.00

The crosslay discharge shall terminate below the hosebed floor with a 2 1/2" NSTM chicksan swivel adapter.

The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

**PO00009212 - CROSSLAY #4, PLUMBING, 2-1/2" STAINLESS STEEL PIPING**

QTY: 1.00

The crosslay #4 discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hosebed.

A minimum of one(1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

**PO00006813 - 2-1/2" AKRON #8800 SERIES - S.S. BALL, VALVE CROSSLAY #4**

QTY: 1.00

An Akron Brass 2 1/2" Generation II Swing-Out Valve shall be provided for the crosslay #4 discharge.

The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

**PO00006848 - AKRON HANDWHEEL GEAR VALVE CONTROL, CROSSLAY #4**

QTY: 1.00

The crosslay #4 discharge shall be gated with an Akron Hand wheel controlled, inline valve. The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00006877 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - CROSSLAY #4**

QTY: 1.00

The crosslay #4 discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the specified line.

The display shall be backlit and capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge.

The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**\*\*\*SPECIAL: SP00024285 - FRC INSIGHT ULTIMATE CROSSLAY 4 GREEN BEZEL**

QTY: 1.00

***A Fire Research –C05 option for green powder coat shall be applied to the crosslay #4 flowmeter and pressure indicator bezel.***

**PO00011374 - VINYL CROSS LAY COVER**

QTY: 1.00

A vinyl cross lay cover shall be provided. It shall be securely fastened at the front with snaps and Velcro at the rear, with straps to secure each end flap.

**PO00011377 - CROSSLAY COVER BLACK IN COLOR**

QTY: 1.00

The crosslay cover shall be black in color.

**PO00012679 - AERIAL WATERWAY DISCHARGE - SA-RM AERIAL**

QTY: 1.00

The 4" aerial waterway discharge shall be gated at the pump by a full flow ball valve.

**\*\*\*SPECIAL: SP00027350 - WATERWAY DISCHARGE, PLUMBING, 4" STAINLESS STEEL - REAR MOUNT**

QTY: 1.00

***The piping shall be 4" minimum schedule 10 stainless steel pipe.***

***The pipe shall connect to the turntable waterway swivel and shall also extend to the officer's side pump panel and terminate in (NST) thread with a long handle chrome plated cap.***

***This connection shall serve as the aerial waterway inlet.***

***The piping shall be a minimum of heavy duty, schedule 10 piping which shall incorporate a minimum of two (2) grooved pipe clamps for easy removal.***

**\*\*\*SPECIAL: SP00027218 - 4" AKRON #8940 SERIES - S.S. BALL, VALVE WATERWAY**

**QTY: 1.00**

***An Akron Brass 4" Heavy Duty Swing-Out™ Valve shall be provided for the waterway The valve shall have an all brass body.***

**PO00012722 - AKRON HANDWHEEL GEAR VALVE CONTROL, WATERWAY**

**QTY: 1.00**

The waterway discharge shall be operated with an Akron Hand wheel controller.

The valve shall be controlled at the pump operator's panel with a chrome plated hand wheel and mechanical valve position indicator.

**PO00024077 - FIRE RESEARCH FLOW/PRESS METER, INSIGHT ULTIMATE LIGHTED - WATERWAY**

**QTY: 1.00**

The waterway discharge shall be equipped with a Fire Research "Insight" Ultimate Flow/Pressure Meter, which shall give the operator or engineer an indication of the actual volume of water (in gallons) being discharged through the specified line. The display shall also be capable of showing discharge pressure without the need of pushing any buttons.

An analog/digital display shall be mounted on the pump panel in place of a standard pressure gauge. The waterproof display case shall be constructed of aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp. A pressure transmitter (transducer) shall be mounted in the discharge piping to indicate pressure only when the valve is open.

**PO00010791 - PUMP INSTALLATION - CUSTOM**

**QTY: 1.00**

**PO00016062 - SIDE MOUNT PUMP MODULE, SA, RM AERIAL**

**QTY: 1.00**

The pump module shall be a self-supported structure mounted independently from the body and chassis cab.

The design must allow normal frame deflection without imposing stress on the pump module structure or side running boards.

The pump module shall be securely mounted to the chassis frame rails.

**PO00000005 - PUMP MODULE - STEEL CONSTRUCTION**

**QTY: 1.00**

The pump module shall be a welded frame work utilizing structural steel components properly braced to withstand the rigors of chassis frame flex.

**PO00012589 - SLIDE-OUT STEP @ DRIVER'S PUMP OPERATOR'S PANEL**

**QTY: 1.00**

A slide-out platform shall be located below the driver's side running board step.

The platform shall be constructed from 2" aluminum tubing with Grip-Strut material inserts the step shall have a minimum weight rating of 500 pounds.

Deployment of this platform shall be connected to the DO NOT MOVE TRUCK warning circuit.

The step shall slide on stainless steel pins fitted in a machined frame which shall mount to the pump house frame.

Drawer slides are not acceptable.

**PO00015375 - RUNNING BOARD STEPS (AERIALS ONLY)**

QTY: 1.00

The driver and officer running board steps shall be fabricated of 3/16" polished aluminum tread plate. The outside edge on each step shall be fabricated with a double break, return flange. The steps shall be rigidly reinforced with a heavy duty support structure. The running boards shall not form any part of the compartment design, and shall be bolted into place with a minimum 1/2" clearance gap between any panel to facilitate water runoff.

**PO00011607 - GRIP-STRUT INSERT IN DRIVER SIDE RUNNING BOARD STEP**

QTY: 1.00

Grip-Strut anti-slip material insert shall be installed in the driver side running board.

**PO00011572 - GRIP-STRUT INSERT IN OFFICER SIDE RUNNING BOARD STEP**

QTY: 1.00

Grip-Strut anti-slip material insert shall be installed in the officer's side running board.

**PO00016114 - SIDE MOUNT PUMP PANEL - RM AERIAL**

QTY: 1.00

The pump operator's control panel shall be located on the driver side of the apparatus.

The pump enclosure side panels shall be completely removable and designed for easy access and servicing.

**PO00000092 - SIDE MOUNT PANELS - 14 GAUGE BRUSHED STAINLESS STEEL**

QTY: 1.00

The left side operator's panel, gauge panel, right side pump panel, and right side access door shall be fabricated from 14-gauge 304L stainless steel with a #4 (150/180 grit) standard brushed finish.

**PO00000128 - VERTICALLY HINGED GAUGE PANEL - SIDE MOUNT**

QTY: 1.00

A full width, vertically hinged gauge access panel shall be provided at the operator's position.

Chrome plated positive locks shall be provided along with chain holders to prevent the front of the gauge panel from coming in contact with other panels when open.

**PO00000132 - OFFICER SIDE VERTICALLY HINGED PUMP ACCESS DOOR - SIDE MOUNT**

QTY: 1.00

The officer's side pump panel shall be split and vertically hinged to provide complete access to the pump and plumbing on the officer's side of the pump enclosure.

The panels shall be equipped with stainless steel hinges and secured with push type locks to hold the panels closed.

The drains located on the officer's side panel shall be fastened to the lower panel, which shall be stationary.

**PO00010829 - PANEL FASTENERS**

QTY: 1.00

Stainless steel machine screws and lock washers shall be used to hold these panels in position.

The panels shall be easily removable to provide complete access to the pump for major service.

**PO00010831 - CAPS AND ADAPTERS SAFETY TETHER - CABLES**

QTY: 1.00

All applicable discharge and suction caps, plugs and adapters shall be equipped with tether cables and secured to the vehicle.

**PO00010832 - PUMP PANEL DISCHARGE/SUCTION TRIM PLATES, HIGH POLISHED**

QTY: 1.00

A high polished trim plate shall be provided around each discharge port and suction inlet opening to allow accessibility to the respective valve for service and repairs.

**PO00010833 - DISCHARGE GAUGE TRIM BEZELS**

QTY: 1.00

Each individual discharge gauge shall be installed into a decorative chrome-plated mounting bezel that incorporates valve-identifying verbiage and color labels.

**\*\*\*SPECIAL: SP00027209 - IDENTIFICATION PLATES**

QTY: 1.00

*Color coded identification tags shall be provided for all gauges, controls, connections, switches, inlets and outlets.*

*The pre-connect discharges will be color coded as per specification. All other pump panel color coding will be as per NFPA recommendation, with no two colors duplicated.*

**PO00012156 - PUMP OPERATOR'S PANEL LIGHT SHIELD**

QTY: 1.00

The pump operator's panel shall be equipped with a light shield that shall be the full available width of the control panel, and shall be positioned to cover the lights and prevent glare. (Note: On apparatus with lowered style crosslays, the light shield shall be from the back of the crosslays to the rear of the pump house).

The light shield shall be equipped with the following lights:

**PO00012159 - AMDOR LUMA BAR H2O SUPER BRIGHT LED - LIGHT SHIELD**

QTY: 1.00

Two (2) 20" Amdor Luma Bar H2O super bright led strip lights.

One (1) light under the operator's panel light shield shall be actuated when fire pump is engaged in addition to the pump engaged light.

**PO00012176 - OFFICER SIDE PUMP PANEL LIGHT SHIELD**

QTY: 1.00

The officer side pump panel shall be equipped with a light shield that shall be full width of the control panel, and shall be positioned to cover the lights and prevent glare.

The light shield shall be equipped with the following lights:

**PO00012179 - AMDOR LUMA BAR H2O SUPER BRIGHT LED - LIGHT SHIELD**

QTY: 1.00

Two (2) 20" Amdor Luma Bar H2O super bright led strip lights.

The lights shall be switched with the operator panel lights.

**PO00012573 - AIR HORN CONTROL BUTTON ON PUMP PANEL**

QTY: 1.00

Pump panel air horn actuation button labeled "EVACUATION" in white letters with a red background.

**PO00012576 - 3/8" PUMP BY-PASS COOLER ON PUMP PANEL**

QTY: 1.00

3/8" Pump cooler (Bypass Line).

**PO00012579 - AIR INLET/OUTLET ON RIGHT SIDE PUMP PANEL**

QTY: 1.00

Air inlet/outlet chuck (right side panel).

**PO00012580 - SHUT-OFF VALVE FOR SPECIFIED AIR INLET/OUTLET**

QTY: 1.00

A quarter turn valve shall be provided for each air chuck.

**PO00011409 - PUMP PRESSURE & VACUUM TEST PORTS @ PANEL**

QTY: 1.00

The pump panel shall be equipped with Vacuum Pressure test plugs to allow for test equipment to monitor pump pressure and vacuum levels.

Chrome plugs and labels shall be provided for the test ports.

**PO00011425 - 4-1/2" CLASS ONE, LIGHTED, MASTER PRESS. AND COMPOUND GAUGES**

QTY: 1.00

One (1) 4-1/2" diameter pressure gauge (labeled: "PRESSURE") and one (1) 4-1/2" diameter compound vacuum gauge (labeled: "INTAKE") shall be provided.

The master gauges shall be Class One and shall be illuminated internally using light emitting diodes, which shall be wired through the pump panel light circuit.

The gauge face shall be white with black numerals.

**\*\*\*SPECIAL: SP00014926 - 4-1/2" RED BLUE ILLUMINATED GAUGES - CLASS ONE**

QTY: 1.00

***The PRESSURE gauge shall be illuminated Red, and the COMPOUND gauge shall be illuminated Blue.***

**PO00011442 - PRESSURE & COMPOUND GAUGE RANGES - SINGLE STAGE**

QTY: 1.00

All applicable pressure gauges shall have a range of 0 - 400 P.S.I., and the compound gauge shall have a range of -30" - 0 - 400 P.S.I.

**PO00025813 - PUMP THIRD PARTY CERTIFICATION - 750 GPM & UP**

QTY: 1.00

The pump shall be third party performance tested to meet the requirements of NFPA-1901. There will be no exceptions.



**PO00023886 - TANK DESCRIPTION AND MOUNT**

QTY: 1.00

The Poly water tank shall be constructed of PT3 polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 1/2" to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with a removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3 polypropylene. 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 interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique full floor design.

Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

The tank cover shall be constructed of 1/2" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowers shall accommodate the necessary lifting hardware.

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3 polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

The fill tower shall be fitted with an integral 4" I.D. schedule 40 P.V.C. combination overflow/vent pipe running from the fill tower through the tank to the exterior to allow water to overflow below the aerial body.

There shall be one (1) sump standard per tank. The sump is a minimum of 8" wide and 8" long with a 3/4" bottom, unless specified otherwise in special provisions. The sump shall have a threaded plug located at the bottom for a tank drain. An anti-swirl plate shall be mounted inside the sump approximately 1" off the floor of the sump.

There shall be two (2) standard tank outlets; one for tank-to-pump suction line and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

All tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight.

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam(s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

The tank shall be mounted within the body (aerial on torquebox) per NFPA and the manufacturers requirements. The tank mounting surface shall be insulated with a minimum of 3/8" nylon webbing or 1/2" rubber, 2-1/2" wide. The tank shall sit cradle-mounted using four (4) corner angles of 6 x 6 x 4 x 0.250 welded directly to the tank mounting surface. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. A tread plate enclosure on top of the tank shall secure the tank in the mounts.

**\*\*\*SHOP NOTE: SR00119339 - CLARIFICATION**

**QTY: 1.00**

***The water tank fill tower will be extended in height as tall as practical without impeding the rotation of the ladder. The contract administrator and KME engineering shall work together with the engineers at UPF and have them design additional baffles to reduce or prevent water from overflowing when the truck comes to a stop.***

**PO00016214 - UPF POLY III TANK, 500 GAL. - AERIAL**

**QTY: 1.00**

The water tank shall have a capacity of 500 gallons, constructed from UPF PolyIII.

**PO00007590 - FIRE RES - TANK VISION #WLA300-A00 LED WATER TANK GAUGE - PRIMARY**

**QTY: 1.00**

A Fire Research, model #WLA300-A00, "TANKVISION" gauge that shows the actual volume of water in the tank shall be provided on the pump operator's panel. The "TANKVISION" gauge is designed for both ease of operation and installation. The "TANKVISION" gauge utilizes ultra bright multi color LEDs for sunlight readability and also uses 2 specially designed wide-viewing lens for 180° of clear viewing. The "TANKVISION" gauge utilizes a pressure sender to measure the liquid volume. The gauge shall be equipped with a self-calibration feature that allows the LEDs TANKVISION gauge to be used on tanks of different shapes and sizes.

Features:

- Flashes warning when the volume is less than 25%. Rapid down scrolling LEDs alert the operator when the tank is almost empty. Remote audio warning available.
- One size fits all'. The self-calibration feature allows for easy calibration of any shape or size tank.
- Multiple displays are possible with a single sender through the FRC data bus.
- Rugged waterproof cast aluminum housing.
- No fitting needed for poly tank.
- Special fittings available for other tank materials.
- Connector disconnects at back of display.

**PO00007597 - FIRE RES WATER LEVEL - 1/4" NPT PRESS TRANS @ BOTTOM TANK**

**QTY: 1.00**

The gauge shall use a pressure transducer installed near the bottom of the water tank to determine the correct volume in the tank.

**PO00007599 - FIRE RES WATER LEVEL - WLA290 RELAY DRIVER FOR MONSTER LIGHT**

QTY: 1.00

A Fire Research model #WLA290, remote relay module shall be provided to provide outputs for large indicator lights on the side of the vehicle.

**PO00023597 - FIRE RESEARCH LED MAX VISION MONSTER LIGHT OPTION**

QTY: 1.00

**PO00007610 - MONSTER WATER LEVEL GAUGE, EA. SIDE OF CAB - FRC MAXVISION TYPICAL**

QTY: 1.00

A large light water level gauge system shall be provided on both sides of the cab. Each side shall have one (1) Fire Research MaxVision LED light mounted behind the rear crew door above the handrail. The light shall have a wide-angle diffusion lens in front of the LEDs.

The light shall be mounted as to indicate the following water levels and shall be programmed to the "Typical View" to include the following colors to indicate the water level in 1/4 tank increments:

- Top light with green LEDs Full tank
- Second light with blue LEDs 3/4 tank
- Third light with amber LEDs 1/2 tank
- Fourth light with red LEDs 1/4 tank

The bottom LEDs shall flash red to indicate under 1/4 tank and shall show a down chasing pattern when the water level drops under 1/8 tank. To prevent distraction to drivers, this tank level gauge shall be wired to display only when the park brake is engaged.

**PO00023832 - BODY AND COMPARTMENT HEADER**

QTY: 1.00

**PO00023833 - GENERAL COMPARTMENT**

QTY: 1.00

Compartment tops shall be covered with polished aluminum tread plate on both sides of the body. The aluminum tread plate shall have a flange downward, over the top of compartments to serve as a drip rail above the compartment doors.

**ACCESS PANELS**

Removable access panels shall be provided in the lower running board compartments to access hydraulic components, electrical harnesses, and the rear body mounts.

All access panels shall be equipped with the same finish as the compartment interiors.

**COMPARTMENT VENTILATION**

Ventilation between compartments to atmosphere shall be provided and located in a position that avoids water entry into compartments.

### **COMPARTMENT DRIP MOLDING**

Compartment tops overall side compartments shall be equipped with a flanged edge to provide protection against water run-off. A secondary polished extruded aluminum drip molding shall be provided between lower compartments and auxiliary high side compartments.

### **BODY TRIM**

The body shall be protected and covered with bright finished polished aluminum tread plate. The tread plate shall be fastened with stainless steel hardware and shall be coated with rubber type undercoating between the body panel and tread plate to protect from moisture. All edges shall be sealed with silver, rubber caulking.

Aluminum tread plate shall be provided in the following areas:

- All surfaces of the compartments or on top of the body where personnel may walk or mount equipment
- Front of body
- Below aerial turntable decking
- Top of the pump enclosure (if applicable)  
Cover over the water tank (if applicable)
- Cover over hydraulic tank
- Top of mid-ship compartment (if applicable)

### **PO00016862 - GEN. 3/16" ALUM BODY DESCRIPTION FOR REAR MOUNT AERIALS 79 SINGLE AXLE**

QTY: 1.00

It is the intention of the fire department to purchase a completely modular body consisting of independent body modules or subassemblies bolted to an independent heavy duty support framework. The following body portions of these specifications outline the minimum standards of construction required by the fire department to meet this need. Bidders shall supply satisfactory evidence of their ability to build such a unit, including proof of the necessary tooling and fixtures required to produce parts in quantity to exacting tolerances and evidence of a comprehensive body parts stocking program.

To ensure the customer of soul source manufacturing, the body must be built by the same manufacturer of the entire chassis and aerial device. {No Exceptions}

### **COMPARTMENT FABRICATION 3/16" ALUMINUM**

All compartment panels and body side sheets shall be entirely 3/16" aluminum 5052-H32 alloy. Each side compartment assembly shall be both plug welded and stitch welded to ensure proper weld penetration on all panels while avoiding the distortion caused by a full seam weld. The side compartments shall be welded on a fixture to ensure true door and body dimensions. All compartments shall be of a modular design with sweep-out style floors.

The bottoms of each running board compartment shall be adequately braced to provide maximum loading without undue deflection. All seams shall be caulked prior to finish paint to ensure proper compartment seal.

Due to the ladder storage area and sweep out floors, the running board compartments of this style vehicle are of a split height, split depth, full width configuration. The referenced compartment sizes approximate the extreme outside compartment dimensions without deductions for the floor material thicknesses, flanges or ladder storage compartment headers.

The body side and compartment assemblies shall be designed and assembled to provide maximum strength and durability under all operating conditions.

Special attention shall be taken to minimize corrosion on all fabricated parts and structural members of the body. All bolt-on components shall be provided with a dissimilar metals isolation barrier to prevent electric corrosion.

The body shall be completely isolated from the cab and pump module structure.

### **QUADRANT BODY SUPPORT SYSTEM**

Due to the severe loading requirements of this aerial, a "quadrant" method of compartment body support suitable for the intended load will be provided. The structural component of the support system shall be the chassis frame rail, which is the strongest component of the chassis and is designed for supporting imposed loads.

A support system shall be used which will incorporate quadrant, under body support structures. This proven viability in vehicular applications, be of a failsafe design, and allow for all necessary movement in three (3) transitional and rotational modes. This shall result in a 500 pound equipment rating for each compartment of the body.

The compartments in front of the rear axle shall include a minimum of 3.00" steel support assemblies which are bolted to the chassis frame rails. A steel framework shall be mounted to the body above these support assemblies connected to the support assemblies with isolators. There shall be one support assembly mounted to each chassis frame rail.

The compartmentation behind the rear axle shall include a minimum of 3.00" steel support assemblies which are bolted to the chassis frame rails and extend underneath to the outside edge of the body. The support assembly shall be coated and a barrier tape installed to isolate the dissimilar metals before it is bolted to the body. There shall be one support assembly mounted to each chassis frame rail.

The body and support structure shall be created utilizing 3D modeling and be fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, stress coating and strain gauging have been performed with special attention given to fatigue life and structural integrity of the compartment body and substructure.

The body compartments are an integral assembly with the rear fenders. Fully enclosed rear wheel housings will be provided to prevent rust pockets and for ease of maintenance.

### **COATED FASTENERS - (NO EXCEPTIONS)**

All exterior fasteners shall be coated stainless steel screws. Screw threads shall be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads shall be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws shall only be provided as part of vendor supplied component installations.

NOTE: The use of aluminum pop rivets or self tapping screws as a trim fastener shall not be acceptable.

### **PO00009648 - FENDER WITH STORAGE OPTIONS (CUSTOM)**

QTY: 1.00

**PO00015438 - THREE (3) CYLINDER SLOTS, DRIVER FRONT FENDER**

QTY: 1.00

A storage compartment shall be inserted into the front driver side body fender. The compartment shall be sized large enough to store three (3) SCBA cylinders or fire extinguishers, with a maximum length of 26". The compartment shall have a non-abrasive lined floor area for the three (3) devices. The compartment shall be enclosed by a door painted to match the primary body color, with a single point latch and hinge. The back side of the door shall have a section of Nylatron installed to protect the door surface from the items stored in the compartment. This compartment shall be tied into the "Do Not Move Apparatus" warning system.

**PO00015439 - THREE (3) CYLINDER SLOTS, OFFICER FRONT FENDER**

QTY: 1.00

A storage compartment shall be inserted into the front officer side body fender. The compartment shall be sized large enough to store three (3) SCBA cylinders or fire extinguishers, with a maximum length of 26". The compartment shall have a non-abrasive floor area for the three (3) devices. The compartment shall be enclosed by a door painted to match the primary body color, with a single point latch and hinge. The back side of the door shall have a section of Nylatron installed to protect the door surface from the items stored in the compartment. This compartment shall be tied into the compartment door ajar/do not move apparatus warning system.

**PO00015442 - ONE (1) CYLINDER SLOT, DRIVER REAR FENDER**

QTY: 1.00

A storage compartment shall be inserted into the rear driver side body fender. The compartment shall be sized large enough to store one (1) SCBA cylinder or fire extinguisher, with a maximum length of 26". The compartment shall have a non-abrasive floor area for the device. The compartment shall be enclosed by a door painted to match the primary body color, with a single point latch and hinge. The back side of the door shall have a section of Nylatron installed to protect the door surface from the items stored in the compartment. This compartment shall be tied into the compartment door ajar/do not move apparatus warning system.

**PO00015450 - OPEN STORAGE - OFFICER REAR FENDER**

QTY: 1.00

A storage compartment shall be inserted into the rear officer side body fender. The compartment shall be an open storage area, sized as tall and wide as possible and a minimum of 26" deep. The compartment shall be enclosed by a door painted to match the primary body color, with a single point latch and hinge. The back side of the door shall have a section of Nylatron installed to protect the door surface from the items stored in the compartment. This compartment shall be tied into the compartment door ajar/do not move apparatus warning system. This compartment shall be capable of storing various devices including wheel chocks, salvage tarps, rope bags, etc.

**\*\*\*SPECIAL: SP00024331 - COMPARTMENTATION, 79 RML SA SS MID**

QTY: 1.00

**DRIVER SIDE COMPARTMENTATION**

***One roll up full height/split depth compartment shall be provided at the front of the body. The compartment dimensions shall be 24" wide x 77" tall x 25" deep in the lower 51" tall area, and 13" deep in the upper 25" tall area.***

***One roll up full height/split depth compartment shall be provided at forward of the rear wheels. The compartment dimensions shall be 46" wide x 77" tall x 25" deep in the lower 51" tall area, and 13" deep in the upper 25" tall area.***

*One roll up high side compartment shall be provided above the rear wheels. The compartment dimensions shall be 87" wide x 30" high x 22" deep. This compartment shall be provided with two (2) equally sized door openings.*

*One roll up full height/full depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be 26" wide x 60" tall x 22" deep.*

**OFFICER SIDE COMPARTMENTATION**

*One roll up full height/split depth compartment shall be provided at the front of the body. The compartment dimensions shall be 24" wide x 77" tall x 25" deep in the lower 51" tall area, and 13" deep in the upper 25" tall area.*

*One roll up full height/split depth compartment shall be provided at forward of the rear wheels. The compartment dimensions shall be 46" wide x 77" tall x 25" deep in the lower 51" tall area, and 13" deep in the upper 25" tall area.*

*One roll up low side compartment shall be provided behind the rear wheels. The compartment dimensions shall be 26" wide x 29" tall x 22" deep.*

**PO00023828 - LOCKER ABOVE DOWNRIGGER**

QTY: 1.00

A locker compartment shall be provided, one (1) each side, to the rear of the cab above the front downrigger, measuring approximately 12" wide x 40" high x 26" deep with a door opening of 10" wide x 36" high. The compartment shall be equipped with an aluminum tread plate door, which shall be equipped with an Eberhard "D" ring handle.

**PO00023834 - PAINTED TOP AND SIDE FRAME ROM**

QTY: 1.00

The top gutter and side frames shall be painted to match the required color of the fire department.

**PO00009734 - PAINTED ROLLUP DOORS - PAINTED CURTAIN, TOP GUTTER**

QTY: 8.00

The top gutter and side frames shall be painted to match the required color of the fire department.

**PO00009728 - PROTECTION PANELS FOR ROLL-UP DOORS, PAINTED ALUMINUM**

QTY: 8.00

**PO00015348 - COMPARTMENT FLOORS**

QTY: 1.00

Compartment floors shall be welded to the compartment walls and have a sweep out design for easy cleaning.

**PO00009797 - ALUMINUM WHEEL WELL LINERS**

QTY: 1.00

The body wheel wells shall be provided with fully removable bolt-in aluminum fender liners. The wheel well liners shall extend from the outer wheel well body panel into the truck frame. The completely washable wheel well liners shall be designed to protect the front and rear compartments and main body supports from road salts, dirt accumulation and corrosion.

**PO00009706 - POLISHED STAINLESS STEEL FENDERETTES, SINGLE AXLE**

QTY: 1.00

The rear fenders shall be equipped with easily replaceable bolt-in polished stainless steel fenderettes. The fenderettes shall be equipped with a rubber gasket molding between the body panel and the fender.

**PO00010934 - REAR MUD FLAPS**

QTY: 1.00

Heavy duty mud flaps shall be provided behind the rear wheels.

**PO00015383 - REAR MOUNT, TURNTABLE A-FRAME LADDER STEPS (HD)**

QTY: 1.00

Two (2) turntable access ladders, one on each side, shall be provided at the rear of the apparatus. The access ladders shall be bolted to the rear body module. A pull out drop down access ladder with a minimum of three (3) steps shall be provided and shall be fabricated from cast open grate material providing a non-slip surface on each step. The steps shall provide access or egress to and from the aerial device turntable.

A drop down step shall be provided at the bottom of each access ladder to keep stepping area to a minimum when the vehicle's outriggers are in operation. The step shall drop down into position and shall be fabricated from cast open grate material, which shall be bolted to framework fabricated from 1/2" aluminum. A safety latch shall be provided to secure the step in the stowed position. The drop down steps shall be incorporated in the "DO NOT MOVE TRUCK" warning circuit.

**\*\*\*SPECIAL: SP00010600 - MITERED REAR BODY CORNERS - AERIAL**

QTY: 1.00

*The rear body corners shall have tapered corners for improved clearance. The corners shall be oriented at a 45 degree mitered rear body design to reduce the rear tail swing.*

**PO00012482 - TREAD PLATE OVERLAY, FRONT OF SIDE COMPARTMENTS (NON-WRAP AROUND)**

QTY: 1.00

The front face of the side compartments, next to the driver and officer pump panels shall be overlaid with full height aluminum tread plate protection panels.

The overlays shall cover the front face of the compartments only, they shall not wrap around to the door opening.

**PO00015351 - PAINTED REAR BODY PANEL, RM**

QTY: 1.00

The entire rear of the body shall be overlaid with smooth aluminum painted job color, which shall extend the full width between body side compartments. The rear panel shall have an opening to access the ground ladder storage area. Each opening shall be equipped with roll-up or hinged doors as specified in the ground ladder storage section.

**PO00015359 - PAINTED 1/2 WIDTH OUTRIGGER COVER PANEL, TWO RIGGER**

QTY: 1.00

Each outrigger opening shall be covered by a painted panel mounted to the outrigger beam. The panels shall be fabricated from 14 gauge stainless steel and shall be painted to match the color of the apparatus. Each panel shall be adjustable up and down to help match the panel to the body lines. The outrigger covers shall be fabricated only as wide as the outrigger beam, to allow positioning of the outriggers between parked cars or in tight areas. The front downriggers shall be covered entirely with aluminum tread plate material.

**PO00000293 - BODY RUB RAILS - LOWER, POLY**



QTY: 1.00

Sacrificial, poly rub rails shall be mounted at the base of the body, extending outward from the body. The rub rails shall extend the full length of the main body. Rub rails shall be bolted to the body so it does not damage the body side panels on initial impact and provide easy replacement.

**PO00015394 - REAR-MOUNTS, "STRAIGHT SHOT" EXTRUDED ALUMINUM BODY HANDRAILS**

QTY: 1.00

All non-aerial device handrails are to be 1-1/4" diameter ribbed aluminum extruded tubing with chrome plated end brackets.

Locations shall be as follows:

Two (2) handrails attached to the each side of the rear body access ladder.  
One (1) on the body above the rear body access ladder.

**PO00015417 - REAR-MOUNT, HANDRAIL ABOVE PUMP PANEL, EACH SIDE, EXTRUDED ALUMINUM**

QTY: 1.00

Two (2) knurled aluminum handrails shall be mounted above each pump panel, (1) each side, to assist access from the running board steps to the top of the body.

**PO00015417 - REAR-MOUNT, HANDRAIL ABOVE PUMP PANEL, EACH SIDE, EXTRUDED ALUMINUM**

QTY: 1.00

Two (2) knurled aluminum handrails shall be mounted above each pump panel, (1) each side, to assist access from the running board steps to the top of the body.

**PO00011511 - INNOVATIVE CONTROLS LIGHTED STEP(S), BODY FRONT, DRIVER SIDE**

QTY: 1.00

Innovative Controls large lighted folding step(s), with a textured chrome plate finish, shall be provided on driver side body front to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

**PO00011517 - INNOVATIVE CONTROLS LIGHTED STEP(S), BODY FRONT, OFFICER SIDE**

QTY: 1.00

Innovative Controls large lighted folding step(s), with a textured chrome plate finish, shall be provided on officer side body front to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

**\*\*\*SPECIAL: SP00027351 - INNOVATIVE CONTROLS LIGHTED FOLDING STEP(S), BODY REAR OFFICER SIDE**

QTY: 1.00

*Innovative Controls large lighted folding step(s), with a textured chrome plate finish, shall be provided on officer side body rear ABOVE THE ACCESS LADDER to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).*

**PO00015454 - PAINTED REAR TOW EYES, BELOW BODY - REARMOUNT AERIAL**

QTY: 1.00

Two (2) painted tow eyes shall be furnished on the rear of the vehicle. The tow eyes shall be made from plate steel and shall be bolted or welded directly to the aerial torque box and shall extend below the body. The tow eyes shall be smooth and free from sharp edges, and have a minimum eyelet hole of 2-1/2".

**PO00015458 - HOSE BED, "STRAIGHT SHOT"**

QTY: 1.00

The "Straight Shot" hose bed shall be provided in the upper right section of the body, above the right side running board compartments. The hose bed shall be designed to allow the hose, without the need of hose chutes or slide out trays, to be deployed straight out of the rear of the vehicle. The hose bed shall also be designed so the ladder does not need to be raised to reload the hose bed.

All surfaces of the hose bed shall be free from all sharp objects such as bolts, nuts, etc., to avoid damage to fire hose.

**\*\*\*SHOP NOTE: SR00119262 - CLARIFICATION**

QTY: 1.00

*The hosebed shall have a capacity for up to 600' of 5" supply hose.*

**PO00015470 - ALUMINUM HOSE BED FLOORING - AERIAL**

QTY: 1.00

Flooring to be constructed from formed or extruded aluminum and be properly spaced for ventilation. The flooring shall be smooth and free from sharp edges to avoid hose damage. The hose bed floor shall be removable to provide access to inner body framework.

**PO00023837 - VINYL WITH QUARTER TURNS**

QTY: 1.00

A hose bed cover shall be provided and installed. The cover shall be made from 22 ounce; heavy-duty vinyl coated polyester fabric (TXN 226). The cover shall be sewn with ultraviolet-resistant thread and shall have 2" wide nylon webbing sewn around the perimeter to provide additional strength.

The cover shall be secured to the top front body flange with quarter-turn fasteners. The cover shall be secured to the side body flanges with quarter-turn fasteners. A weighted flap shall be furnished on the rear of the cover with two (2) bungee cords.

**PO00023842 - BLACK**

QTY: 1.00

he Hypalon material shall be black in color.

**PO00014874 - CENTER LADDER STORAGE, 79' SINGLE AXLE REAR MOUNT**

QTY: 1.00

All ground ladders (except as noted) shall be stored in the center of the aerial body. The ladders stored in the center of the body shall be fully enclosed.

**PO00014898 - ROLL-UP DOOR - PAINTED LADDER COMPARTMENT, REAR MOUNT ONLY**

QTY: 1.00

A painted roll-up door shall be provided for the ladders at the rear of the vehicle. If the body compartments are equipped with roll-up doors, the ladder storage door shall be the same brand. The color of the painted door shall match the color of the body or body doors.

**\*\*\*SPECIAL: SP00027210 - LADDER RETENTION BRACKET**

QTY: 1.00

*A stainless steel ladder retention bracket will be provided.*

**\*\*\*SPECIAL: SP00009988 - STOKES BASKET STORAGE SLOT WITHIN LADDER STORAGE AREA**

QTY: 1.00

*The ladder storage area shall be designed to accommodate storage for a stokes basket, the storage slot shall designed with a clear storage area of 25" wide x 8" high x 87" long.*

*The storage area shall have nylon material on the bottom surface to protect the stokes basket.*

**PO00021859 - ALCO-LITE PEL3-35 35' 3-SECTION EXTENSION LADDER (ALUMINUM)**

QTY: 1.00

Alco-Lite model PEL3-35; 35', aluminum, three (3) section extension ladder shall be provided.

**PO00021867 - ALCO-LITE PEL-24 24' 2-SECTION EXTENSION LADDER (ALUMINUM)**

QTY: 1.00

Alco-Lite model PEL-24; 24', aluminum, two (2) section extension ladder shall be provided.

**\*\*\*SPECIAL: SP00027224 - ALCO-LITE DRL-16 16' ROOF LADDER W/FOLDING HOOKS (ALUMINUM)**

QTY: 2.00

*Alco-Lite model DRL-16; 16', aluminum, straight roof ladder with dual folding hooks shall be provided.*

**PO00021931 - ALCO-LITE FL-10 10' FOLDING ATTIC LADDER (ALUMINUM)**

QTY: 1.00

Alco-Lite model FL-10; 10', folding, aluminum, attic ladder shall be provided.

**PO00022079 - LITTLE GIANT LADDER MODEL 17 (9'-15')**

QTY: 1.00

A Little Giant model 17 ladder system with mounting hardware shall be provided. This ladder has an extension height ranging from 9'-0" to 15'-0"

**PO00023728 - PIKE POLE TUBE(S) AERIALS**

QTY: 6.00

A pike pole tube(s) shall be provided. Each shall be an individual tube type holder, mounted in the ladder storage area (if space allows). Each pike pole holder shall be labeled to indicate the pike pole length.

**\*\*\*SPECIAL: SP00018760 - FIRE HOOKS UNLIMITED NY ROOF HOOK 2-6', 2-8', 2-10'**

QTY: 1.00

*Six (6) Fire Hooks Unlimited (NY) roof hooks shall be provided in the following configuration:*

- 2 - Six (6) foot pike poles, RH-6, with steel handle and chisel end*
- 2 - Eight (8) foot pike poles, RH-8, with steel handle and chisel end*
- 2 - Ten (10) foot pike poles, RH-10, with steel handle and chisel end*

**PO00022401 - REAR SENTRY OBSTACLE SENSING SYSTEM**

QTY: 1.00

REAR SENTRY OBSTACLE SENSING SYSTEM

The apparatus shall be equipped with a Rear Sentry rear obstacle sensing system. The system shall alert the driver of obstacles up to 12' behind the apparatus when in reverse.

**PO00019887 - ADJUSTABLE SHELF DESCRIPTION**

QTY: 1.00

Compartment shelving shall be constructed of 3/16" brush finish aluminum with a 2" upward bend at front and rear, and side supports. Shelving shall be vertically adjustable with spring nuts in aluminum strut channel.

Adjustable shelves shall be located as indicated at each compartment description.

**PO00019921 - ADJUSTABLE SHELF(S) LOCATED L-1**

QTY: 2.00

Located in the left side compartment #1

**PO00019922 - ADJUSTABLE SHELF(S) LOCATED L-2**

Located in the left side compartment #2 QTY: 2.00

**PO00019923 - ADJUSTABLE SHELF(S) LOCATED L-3**

Located in the left side compartment #3 QTY: 1.00

**PO00019924 - ADJUSTABLE SHELF(S) LOCATED L-4**

Located in the left side compartment #4 QTY: 1.00

**PO00019925 - ADJUSTABLE SHELF(S) LOCATED L-5**

Located in the left side compartment #5 QTY: 2.00

**PO00019928 - ADJUSTABLE SHELF(S) LOCATED R-1**

Located in the right side compartment #1 QTY: 2.00

**PO00019929 - ADJUSTABLE SHELF(S) LOCATED R-2**

Located in the right side compartment #2 QTY: 2.00

**PO00019930 - ADJUSTABLE SHELF(S) LOCATED R-3**

Located in the right side compartment #3 QTY: 1.00

**PO00020176 - 600#, FLOOR MOUNTED, ROLLOUT TRAY 100%**

Floor mounted roll-out trays shall consist of heavy duty, roller bearing slide tracks with a load rating of 600 pounds, securely fastened to the compartment floor. The slide shall have a pull type latch to secure the slide in the desired position. The slide tracks shall have a 100% extension.

The tray shall be fabricated from 3/16" brushed aluminum with a minimum 2" high flange on each of the four sides to assist in retaining the equipment stored on each tray.

The 600 pound floor mounted roll out trays shall be as indicated at each compartment description.

**PO00020196 - 600# SLIDEMASTER ROLLOUT TRAY, LOCATED L-2 - 100%**

Located in the left side compartment #2 QTY: 1.00

**PO00020203 - 600# SLIDEMASTER ROLLOUT TRAY, LOCATED R-2 - 100%**

Located in the right side compartment #2 QTY: 1.00

**PO00012864 - 79' AERIAL LADDER, SINGLE AXLE - 750# W/DOWNRIGGERS**

QTY: 1.00

**PO00012598 - PREDATOR - SINGLE AXLE - 79' RM**

QTY: 1.00

**PO00023716 - 136" PRED 79' REAR MOUNT LADDER**

QTY: 1.00

**PO00012904 - 79' AERIAL LADDER, GEN INFO, INTENT & DESIGN STANDARDS**

QTY: 1.00

The aerial ladder assembly shall be a three (3) section telescoping ladder constructed from high strength steel alloy, pre-piped waterway, steel turntable, torque box and outriggers.

The intent of these specifications is to describe a telescoping elevating ladder. It shall consist of the true steel truss ladder type.

The aerial ladder consists of three (3) steel ladder sections, a steel turntable, torque box and outriggers.

The height of the unit is 79' and the horizontal reach is 70'.

The device will meet all the requirements of the National Fire Protection Association's (NFPA) 1901 standard, in effect at time of purchase. This is a fire service proven piece of apparatus that shall be manufactured in the U.S.A.

It is not the intent of the fire department to deviate from this requirement; therefore, ladders attached to booms, whether solid or lattice, or articulating arms shall not be considered as meeting these specifications or the intent of these specifications.

The design criteria of the unit shall be to create a structure and system that emphasizes safety, product reliability, and ease of operation.

These criteria are:

The hydraulic system shall be designed so that if a failure of any component or assembly within the system occurs, a single point failure of the entire system shall not occur.

The minimum ultimate design condition at the ladder base shall be 6.8 million inch pounds.

All structure load supporting elements of the aerial ladder that are made of a ductile material, shall have a design stress of not more than 50 % of the minimum yield strength of the material based on the combination of the live load and the dead load.

This 2.5:1 structural safety factor meets the current National Fire Protection Association (NFPA) 1901 standard.

Design verification shall be accomplished with comprehensive Finite Element Analysis (FEA) and verified with extensive strain gauge testing.

An independent engineering firm employing a Registered

Professional Engineer shall verify the aerial safety factor.

The aerial device shall be capable of sustaining a static load one and one-half times it's rated tip load capacity (live load), in every position in which the aerial device can be placed when the vehicle is on a firm and level surface.

The aerial device shall be capable of sustaining a static load one and one-third times it's rated tip load capacity (live load) in every position in which the aerial devices can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

All welds in the aerial device shall be designed per the static and fatigue criteria of the American Welding Society No. D1.1.

All aluminum welds shall be designed per the static and fatigue criteria of the American Welding Society Standard No. D1.2.

To optimize strength versus weight, high strength steel shall be utilized for the construction of the aerial device

The aerial device shall be capable of operating with a rated tip load in the following conditions:

- Conditions of high wind up to 50 mph.
- Conditions of icing, up to a coating of .25" over the entire aerial structure.

All of the design criteria will be supported by the following information:

- Strain gauge testing of the complete aerial device.
- Analysis of deflection data taken while the aerial device was under test load.
- Accelerometer test to determine dynamic response during ladder operation.
- Accelerometer test to determine dynamic response during road travel.
- Hydraulic component operating and burst strength testing.

#### **PO00012928 - MOUNTING OF AERIAL, REAR MOUNTS**

QTY: 1.00

The elevating aerial ladder turntable shall be rear mounted thus providing the following vehicle benefits:

- Improved mobility vs. Mid ship mounted units.
- Greater position ability of the turntable for optimum reach at fire ground operations.
- Increased compartmentation, hose load, water capacity in body, resulting from ladder being raised to clear the cab.
- Shorter vehicle wheelbase.
- Shorter overall length of vehicle.

**PO00012933 - HEIGHT AND REACH, 79' AERIAL LADDER**

QTY: 1.00

The height of the unit shall be a minimum of 79' as measured by NFPA-1901 requirements, Section 19.2.2, which states, "The rated vertical height of an aerial ladder shall be at least 50 ft and shall be measured in a vertical plane with the ladder at maximum elevation and extension from the outermost rung of the outermost fly section to the ground."

The horizontal reach of the unit shall be a minimum of 70' as measured by NFPA-1901 requirements, Section 19.2.3, which states "The rated horizontal reach of an aerial ladder shall be measured in a horizontal plane from the centerline of the turntable rotation to the outermost rung on the outermost fly section with the aerial ladder extended to its maximum horizontal reach."

**PO00012952 - MATERIAL STANDARDS, ALL DEVICES**

QTY: 1.00

The following standards for materials are to be used in the design of the aerial device.

Materials are to be certified by the mill that manufactured the material.

Materials that are certified or recertified by vendors other than the mill shall not be accepted.

Material testing that is performed after the mill test shall be only for verification and not with the intent of "paper changing" the material classification.

**PO00012958 - 79' AERIAL LADDER, HYDRAULIC SYSTEM, 750#**

QTY: 1.00

The hydraulic system shall provide power to the entire aerial device as efficiently as possible without the use of a hydraulic cooler. There will be no exceptions.

A hydraulic system relief valve as well as individual circuit relief valves shall be provided to prevent damage to any function or circuit.

The relief valve shall have a stainless steel relief spring to ensure proper function and product reliability.

**PO00012981 - PARKER HOSE KIT - 4 JACK UNIT REARMOUNT**

QTY: 1.00

All hydraulic steel tubing, hydraulic rubber covered wire braided hoses, and hydraulic fittings/adapters shall have a minimum burst pressure rating of four times the operating pressure.

Hoses and tubing shall be properly sized to minimize heat buildup during extended periods of operation.

Hoses and tubing shall be properly sized to minimize flow restrictions.

GSO# 11357 Huntington Manor Fire District, NY  
Specification: Final Production Release  
Contract Administrator: Mark Boyle

All hydraulic hose shall have a tube and cover constructed of synthetic rubber and shall have a braided/spiral wire reinforcement capable of maintaining a 4:1 safety factor in all areas of the hydraulic system.

The hose shall meet the appropriate SAE performance specifications: 100R2, 100R19, J517, J1942, ISO 3862-1, USCG HF, DNV,ABS or 100R12.

The connector system was jointly designed by engineers from both the manufacturer and Parker Hannifin and incorporate the following design upgrades and advantages:

All hydraulic ports (manifolds, pumps, tank, etc) to elastomeric sealing technology

No pipe threads in the hydraulic system

Sealing to be done by O-rings with the mechanical holding power of straight threads

All tube and hose connections to Parker Seal-Lok, O-ring face seal technology

Sealing to be done by o-ring with the mechanical holding power of straight thread

Fittings rated up to 6000 psi

Drop-in design of Seal-Lok connectors to allow easier maintenance and assembly

Fitting resist 200% over torque, with optimum vibration resistance

Shaped fittings machined from forged bodies for compact design and strength

Fittings meet/exceed the performance and dimensional requirements of SAE J1453 and J1926

Minimized unnecessary fittings and adapters, streamlining the system

Increased connector accessibility, making assembly and maintenance easier  
Standardized the connector system on the aerial unit

Incorporated pressure diagnostic system with Parker PD diagnostic test points into the connector design

All fluid connector assemblers have been trained and certified in Dry Technology.

This training included: proper handling, installation, torque requirements, troubleshooting, and quality control procedures of the fluid connector products.

An exclusive three-year leak free guarantee shall warrant the Seal-Lok, O-ring face seal connections to be leak-free for a period of three (3) years.

**PO00012985 - HYDRAULIC PUMP - PRESSURE COMPENSATED**

QTY: 1.00

A load sense pressure compensated hydraulic axial piston pump shall be provided which shall be capable of operating under any rated aerial load condition and aerial device position at normal engine idle or governor controlled fast idle. The hydraulic pump shall be capable of generating sufficient flows to allow multiple aerial functions without significant loss of speed.

**PO00012988 - HYDRAULIC RESERVOIR - 40 GALLON**

QTY: 1.00



A 40 gallon hydraulic oil reservoir shall be provided to supply the needs of the hydraulic system. A 2" gated suction line shall be provided between the oil reservoir and the hydraulic pump. The tank fill shall be provided with a strainer screen and vent cap. Located near the fill cap shall be a dip-stick for checking fluid levels. The tank shall be mounted within the aerial travel support. The tank shall be constructed from aluminum, which shall be welded at all interior and exterior seams. Before adding fluid the tank must be cleaned and free from all contaminants. Suction and return ports will be designed to SAE Straight Thread O-ring Specifications. These ports will incorporate an o-ring seal rather than pipe threads.

**PO00012996 - HYDRAULIC OIL - REGULAR - A/W 46**

QTY: 1.00

The hydraulic oil reservoir shall be filled with A/W 46 grade Hydraulic Oil.

This oil provides superior anti wear properties, and is specially formulated with improved thermally stable additives.

These oils offer outstanding resistance to sludge formation, are chemically stable and exhibit excellent anti wear protection.

**PO00013004 - DIVERTER VALVE, REAR MOUNT DEVICES**

QTY: 1.00

There shall be an automatic electric over hydraulic three (3) position diverter valve located at the center rear of the apparatus.

This diverter valve shall divert hydraulic fluid to either the aerial ladder controls or the outrigger controls.

To prevent accidental operation of the ladder prior to the outriggers being properly set, the diverter valve shall only allow hydraulic fluid to the outriggers until the outriggers are set properly.

To prevent accidental operation of the outrigger system during the aerial ladder operation the diverter valve shall only allow hydraulic fluid to the ladder controls, when the aerial device is raised from the aerial travel support.

In the event of electrical failure the operator shall be able to manually move the diverter valve to the ladder or outrigger position for continuous uninterrupted operation.

NOTE: All safety controls are displaced when vehicle is in manual mode of operation.

**PO00013010 - OUTRIGGER HYDRAULIC CONTROL VALVE - 79 RM**

QTY: 1.00

The outrigger cylinder system shall be controlled by a pressure compensated, control valve that is designed for parallel hydraulic circuit operations.

The valve will be proportional type to provide the smoothest, precise operation of the outriggers.

This valve shall be modular in design so that individual sections can be replaced in the field, rather than complete valve assemblies, thus reducing maintenance costs.

The valve housings shall be made of high tensile cast iron for durability and the individual spools shall be hard, chrome plated for long life and resistance to corrosion.

Each valve shall be equipped with a heavy-duty electric solenoid for electric control of the outrigger from the remote operator's station.

**PO00013019 - ELECTRIC TURNTABLE HYDRAULIC CONTROL VALVE, RM LADDER**

QTY: 1.00

Three (3) ladder directional controllers shall be mounted on the turntable control console. They shall control extend/retract, rotation, and elevation. These controllers are part of the computer operated IQAN motion control system allowing safe operation of the ladder.

The main control valve shall be positioned at the turntable control console for direct manual over ride control of each aerial function. The controllers shall incorporate ICB; J-1939 can bus signaling, transmitted through two (2) J-1939 communication wires to reduce the chance of electrical failures since fewer wires and terminals shall be utilized. Additionally, voltage sensitivity is eliminated thus providing superior motion control. Adjustments and troubleshooting shall be accessible from the display at the turntable control station.

**PO00013031 - HYDRAULIC SYSTEM FILTRATION**

QTY: 1.00

The pressure filter shall be made of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic. The pressure filter shall have a bypass circuit protected by a check valve, which shall be installed around the pressure filter.

The pressure line filter shall be required even if a suction line filter is provided in the reservoir due to the suction line filter's inability to trap contaminants entering the system. The pressure filter cartridge shall have a sensor, which shall indicate the condition of the filter and provide an output for a warning light or message if the pressure filter is blocked or in the bypass mode. The pressure filter shall have an absolute rating of five (5) microns.

The return filter shall be made of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic. The return filter shall have a bypass circuit protected by a check valve, which shall be installed around the return filter.

The return filter shall have a bypass circuit protected by a check valve, which shall be installed around the return filter. The return filter cartridge shall have a sensor, which shall indicate the condition of the filter and provide an output for a warning light or message if the return filter is blocked or in the bypass mode. The return filter shall have an absolute rating of five (5) microns.

**PO00013065 - 79' AERIAL LADDER, EMERGENCY HYDRAULIC PUMP, EPU**

QTY: 1.00

In the event of failure of the main hydraulic pump or vehicle engine, the unit shall be equipped with an emergency hydraulic pump which shall be plumbed into the hydraulic system and be electrically driven from the chassis batteries. The emergency pump system shall be capable of limited functions of the ladder and outriggers to stow the unit. The pump shall be controlled from both the outrigger control box and turntable control stations with spring loaded momentary contact switches.

The pump shall have a separate hydraulic oil supply line, from the main supply line attached directly to the hydraulic oil reservoir. A shutoff valve for each line shall be provided and check valve shall be incorporated on the pressure side of the pump to ensure that one shall continue to operate the ladder in the event the other fails.

The pump shall have high tensile steel shafts and gears with the shafts supported by needle bearings. The cylinder plate and gears shall be ground as a set to ensure exacting tolerances. Clearance shall be maintained by a Mylar shim.

**PO00013087 - HOT SHIFT PTO W/CONTROLS IN CAB**

QTY: 1.00

The apparatus shall be equipped with a power shift PTO driven by the chassis transmission. An indicator light shall be located in the cab next to the PTO switch to show when the PTO is engaged. The PTO shall only engage with the parking brake applied and the transmission in neutral. If the unit is equipped with a pump, the PTO shall be active if the transmission is in "Drive", only if the fire pump is engaged. The PTO shall be a heavy duty pressure lubricated and cooled unit for extended operations.

A master 12 volt "Ladder Power" switch shall be provided adjacent to the PTO switch for control of all ladder 12 volt power, with the exception of the emergency pump circuits.

An aerial hour meter shall be installed in the cab adjacent to the ladder power and PTO control switches. The hour meter shall be wired to the aerial PTO circuit to record hours of operation for the aerial. The hour meter shall aid in scheduling preventative maintenance as outlined in the operator's manual.

**\*\*\*SHOP NOTE: SR00119233 - CLARIFICATION**

QTY: 1.00

***The ladder power switches and hour meter will be located within the drivers overhead panel.***

**PO00013091 - FAST IDLE CONTROL FOR ALL AERIAL DEVICES**

QTY: 1.00

The fast idle actuator shall be used to raise the engine RPM to a preset level for proper aerial operation.

The fast idle switches shall be located at the main outrigger control station and the aerial control station/s.

For the safety of personnel and equipment, the fast idle system shall not activate unless the transmission is in neutral. There will be no exceptions.

**PO00013038 - RM LADDER 2-OUTRIGGER, "IQAN" MOTION CONTROL SYSTEM - ELECTRIC CONTROLS @ TURNTABLE**

QTY: 1.00

The ladder, outrigger system and interlock systems shall be controlled with the computer operated and monitored hydraulic motion control system. The motion control system shall provide state of the art controls for the ladder, outriggers, auto-level and interlock systems as required. The motion control system must be an electro-hydraulic management system that monitors operator inputs from the control station(s) and converts this data to a usable electronic signal that controls hydraulic valve functions.

The turntable control station shall be equipped with a Master Display Module. The Master Display shall be a completely weather proof and shock resistant microprocessor which includes an LCD screen. The display shall contain programmed parameters for each aerial device function, which provide for proper machine operation and reduce the possibility of abusive operation. The CAN-bus modules shall be attached to each other using just two communication wires.

Each component of the IQAN motion control system shall be proven, off the shelf modules and parts, which are available throughout the world. Proprietary hardware designs are not acceptable at KME due to the lack of parts availability and support.

The display will have built-in troubleshooting and shall allow troubleshooting and function history monitoring for the entire motion control system. The memory function will allow a service technician to identify if these warnings were ignored or overridden.

The IQAN motion control system shall receive rotation information from an absolute encoder located on the rotation swivel. The encoder shall provide absolute position of the turntable at any given position from 0 degrees to 360 degrees of rotation.

An information center shall be provided at the turntable. The display shall allow the system to be

diagnosed and calibrated without the need for separate controllers or computers.

The turntable display shall indicate the following information from on-demand screen:

<b><u>PO00013051 - HYDRAULIC PUMP PRESSURE - DISPLAY</u></b>	QTY: 1.00
Hydraulic pump pressure.	
<b><u>PO00013052 - ELEVATION ANGLE OF LADDER - DISPLAY</u></b>	QTY: 1.00
Elevation angle of the ladder.	
<b><u>PO00013053 - VERTICAL HEIGHT OF LADDER - DISPLAY</u></b>	QTY: 1.00
Continuous ladder extension percentage.	
<b><u>PO00013054 - DEGREE OF ROTATION FROM VEHICLE CENTERLINE - DISPLAY</u></b>	QTY: 1.00
Degree of rotation from centerline of vehicle.	
<b><u>PO00013055 - E-ZONE CAB &amp; BODY AVOIDANCE WARNING - DISPLAY</u></b>	QTY: 1.00
E-Zone™ cab and body avoidance warning.	
<b><u>PO00013056 - E-ZONE SHORT JACK WARNING - DISPLAY</u></b>	QTY: 1.00
E-Zone™ short jack warning.	
<b><u>PO00013057 - CRADLE ALIGNMENT MESSAGE - DISPLAY</u></b>	QTY: 1.00
Cradle alignment message.	
<b><u>PO00013059 - DEVICE LOAD MONITORING - DISPLAY</u></b>	QTY: 1.00
Device tip moment load monitoring.	
<b><u>PO00013060 - E-SPEED LADDER TIP SPEED CONTROL - DISPLAY</u></b>	QTY: 1.00
E-Speed™ ladder tip speed control.	
<b><u>PO00013061 - E-CUSH RAMP CONTROL FOR ELEVATION - DISPLAY</u></b>	QTY: 1.00
E-Cush™ function ramping control for elevation.	
<b><u>PO00013062 - E-CUSH RAMP CONTROL FOR EXTENSION &amp; RETRACTION - DISPLAY</u></b>	QTY: 1.00
E-Cush™ function ramping control for extension and retraction.	
<b><u>PO00013063 - WARNING MESSAGES - TURNTABLE ONLY</u></b>	QTY: 1.00
The screen will also display warning/message screens to alert the operator to a potentially unsafe condition of the aerial device.	

**PO00013281 - 79' RM LADDER, BUTTON OUTRIGGER CONTROLS - SINGLE JACKS W/ DOWNSIGGERS**

QTY: 1.00

Two (2) illuminated electronic outrigger control stations shall be provided on the rear of the apparatus, one on each side of the body.

The controls shall be located such that the operator can see the outrigger he is operating.

The controls shall be designed with vibrant LED switches with integral indicator light within the control switches.

The control stations will include the following:

- Two (2) outrigger fully extended indicator lights integral to control switch
- Two (2) outrigger set indicator lights integral to control switch
- Two (2) downrigger set indicator lights integral to control switch
- Four (4) outrigger control switches
- One (1) Fast idle control
- One (1) Ladder Operation indicator light

Out and down outrigger control functions for each outrigger shall be operated independently, so that vehicle may be set up in restricted areas or on uneven terrain.

The diverter valve override control shall be mounted at the center rear hydraulic area behind the hinged outrigger control panel.

The diverter valve override control shall be mounted at the center rear hydraulic area behind the hinged outrigger control panel along with the override and EPU actuator switch.

A hinged panel shall be provided at the rear center of the body and shall allow the operator to access the diverter valve manual override control, outrigger manual override controls, the electrical system back-up switch, override switch and EPU controls and hydraulic filter indicator lights.

**PO00013584 - IQAN - INCLINOMETER**

QTY: 1.00

An inclinometer shall be provided on the base section of the aerial device to measure the relative angle of the ladder.

**PO00013585 - IQAN - MOMENT LOAD INDICATOR**

QTY: 1.00

A pressure switch shall be installed on the lift cylinder to indicate the amount of lifting force being imparted onto the aerial device.

**PO00013586 - IQAN - E-CUSH CONTROL, ELEVATION SYSTEM - LADDER**

QTY: 1.00

Controlled by the IQAN motion control system, the elevation system shall be design utilizing computer control technology to provide ramped, feathering cushioning for the elevation system at the end of cylinder stroke.

The system shall automatically feather the movement of the ladder when the ladder approaches full elevation, regardless of the input speed from the controller.

**PO00013640 - IQAN - "E-SPEED" SAFETY SYSTEM, LADDERS**

QTY: 1.00

The rotation system shall be controlled from the platform utilizing E-Speed™ technology, which shall automatically control ladder rotation speed, proportional to the extension and elevation of the ladder. The E-Speed™ safety system shall automatically maintain the rotation angular speed regardless of the degrees of elevation or extension of the ladder, providing safer low angle operation and precise positioning control. The E-Speed™ safety system shall be controlled by the IQAN control system.

**PO00013643 - IQAN - "E-ZONE" ROTATION SAFETY SYSTEM, 2-OUTRIGGERS**

QTY: 1.00

The E-Zone™ Rotation Safety System has been designed to aid the aerial device operator who has primary operational responsibility in preventing the rotation of the aerial device into an over turning mode.

Controlled by the IQAN system, the E-Zone™ Rotation Safety System senses outrigger extension and outrigger jack positioning in conjunction with the aerial device movement.

If the aerial device operator attempts to move the aerial device off vehicle center, and the outriggers are not fully extended on the direction of the rotation side, and all jacks in firm ground contact, the E-Zone™ Rotation Safety System shall sense this fault and shall audibly and visually warn the operator to return the aerial device to the center line position.

If the operator continues rotation into the short-jacked zone, the aerial device rotation shall stop.

When rotation is stopped, the E-Zone™ Rotation Safety System shall allow the operator to only rotate back to the fully jacked side of the vehicle.

**PO00013646 - IQAN - "E-ZONE" CAB & BODY PROXIMITY SYSTEM - LADDERS**

QTY: 1.00

Controlled by the IQAN system, a cab proximity system shall be provided utilizing E-Zone™ technology on the rotation and elevation systems to alert the aerial device operator when rotating left or right at low angles and or lowering the ladder, toward the vehicle cab.

The E-Zone™ system shall also automatically stop rotation or lowering functions when the device is in the defined zone regardless of the ladder rotation degree or elevation degree. When the E-Zone™ system stops rotation towards the cab, the operator shall only be capable of rotating in the opposite direction or elevate the ladder above the defined zone.

If the E-Zone™ system stops the lowering function when the ladder is in the defined zone over the cab, the operator shall only be capable of raising or rotating the ladder away from the cab. The E-Zone™ system shall sound an audible alarm and display a warning message in the display located at the control stations. The audible and visual warning message shall stay activated until the operator moves the device from the defined zone.

Controlled by the IQAN system, a body proximity system shall be provided utilizing E-Zone™ technology on the rotation and elevation systems to alert the aerial device operator when rotating left or right at low angles and or lowering the ladder, toward the body.

The E-Zone™ system shall also automatically stop rotation or lowering functions when the device is in the defined zone regardless of the ladder rotation degree or elevation degree. When the E-Zone™ system stops rotation towards the body, the operator shall only be capable of rotating in the opposite direction or elevate the ladder above the defined zone.

If the E-Zone™ system stops the lowering function when the ladder is in the defined zone over the body, the operator shall only be capable of raising or rotating the ladder away from the body. The E-Zone™ system shall sound an audible alarm and display a warning message in the display located at the control

stations. The audible and visual warning message shall stay activated until the operator moves the device from the defined zone.

**PO00013674 - IQAN - EXTENSION SYSTEM STRING POTENTIOMETER**

QTY: 1.00

An extension string potentiometer shall be provided on the aerial device to measure the relative extension of the aerial device.

**PO00013675 - IQAN - "E-CUSH" EXTENSION/RETRACTION SYSTEM - LADDER**

QTY: 1.00

Controlled by the IQAN system, extension/retraction system shall be designed utilizing E-Cush™ technology to provide feathering cushion for the extension and retraction at the end of cylinder stroke. The E-Cush™ system shall automatically feather the movement of the ladder when the ladder approaches full extension or full retraction, regardless of the input speed from the operator.

**PO00014230 - IQAN - AERIAL PUMP PANEL CONTROL STATION, 75' & 79 RM ONLY**

QTY: 1.00

A control panel shall be located at the pump operator's panel in addition to the rear of the vehicle to enable the operator to control the aerial ladder while standing on the pull-out step below the pump panel step.

The following components and controls shall be mounted on an illuminated control panel:

- Three (3) individual aerial ladder function control levers
- Three (3) individual nozzle control toggle switches
- Rung alignment indicator light
- Toggle switch for fast idle
- Load Chart
- Intercom control

**PO00013094 - 79' AERIAL LADDER, TORQUE BOX, SINGLE AXLE 750# W/ DOWNRIGGERS**

QTY: 1.00

The torque box shall connect the turntable to the outriggers and shall provide the rigidity needed for the aerial to be operated in any position.

The torque box is 44" inside width, 27" inside height with the back open for ground ladder storage.

There shall be a welded structural steel pedestal plate to support the turntable, secure the outriggers and torque box as one integral unit. The torque box structure shall transfer all aerial loads into the outriggers, thus preventing damage to the chassis frame and body.

The torque box shall be bolted to the chassis frame rails with twenty six (26) 3/4" SAE Grade 8 bolts and nuts. The mounting hardware is to be black milled or non-coated washer-head type bolts and nuts.

**PO00013554 - AERIAL TRAVEL SUPPORT, ALL DEVICES**

QTY: 1.00

A heavy duty rest shall be provided to support the aerial in the travel position.

Stainless steel bedding plates shall be attached to the aerial base section to protect the aerial when the unit is in the travel position.

**PO00013192 - IQAN - OUTRIGGER STRING POTENTIOMETER - TWO (2) OUTRIGGERS**

QTY: 1.00

An extension string potentiometer shall be provided on each outrigger to measure the relative extension of the outrigger

The potentiometer shall sense and provide a signal for full outrigger extension.

**PO00024052 - OUTRIGGERS NOT STOWED INDICATOR ON DASH**

QTY: 1.00

"Outrigger(s) Extended" indicator light

**PO00013120 - 79' AERIAL LADDER OUTRIGGERS, SINGLE AXLE 750# W/DOWNRIGGERS**

QTY: 1.00

Two (2) double box beam "H" type out and down outriggers shall be located behind the rear wheels to provide vehicle stability during aerial tower operation.

The rear outrigger shall be equipped with a 14' jack spread. There will be no exceptions.

Each outrigger assembly shall have 2 Nylatron slide pads with a total square area of 24 sq. in. to provide smooth operation and to extend the life of the outrigger.

Two (2) additional downriggers shall be provided to the rear of the cab to minimize the loads on the front axle and front suspension when the aerial device is in operation over the front of the vehicle.

The front downriggers shall also serve as a fore to aft leveling device when the apparatus is set-up on an incline.

The vertical jack cylinder rods shall be fully enclosed by a telescopic inner steel jack box that shall do the following:

- Protect the cylinder rods against damage which may occur while on the fire ground.
- Add lateral stability to the outrigger structure.

**PO00013145 - 79' AERIAL LADDER OUTRIGGERS, SA - HORIZONTAL CYLINDERS 750#**

QTY: 1.00

The extension of the rear horizontal outrigger beam shall be accomplished by a hydraulic cylinder which shall have a 3" bore and 2" rod and 38" stroke.

This cylinder shall have cushion porting to reduce shocks in stopping the cylinder at full extension and retraction.

**PO00013167 - 79' AERIAL LADDER OUTRIGGERS, SA - VERTICAL CYLINDERS 750#**

QTY: 1.00

Each jack cylinder shall have a 5" bore with a 3-3/4" rod and a 24" stroke.

The jack cylinders shall be equipped with integral (on the cylinder) holding valves, which shall hold the jack cylinder in either the stowed position or the deployed position should a hydraulic line be severed at any point within the hydraulic system.



Each jack cylinder shall also have a thermal relief system that shall prevent the cylinder fluid pressure from rising due to fluid temperature increase.

**PO00013194 - OUTRIGGER/JACK FOOT PADS, FOUR (4) JACK DEVICES**

QTY: 1.00

A permanently attached self-centering steel foot pad, 1/2" x 13.5" x 15.5" (209 sq. in.) shall be provided on each vertical jack beam.

Each foot pad shall swivel longitudinal and require no adjustment during outrigger set-up.

The outrigger pad shall be attached without the use of a bearing type swivel due to maintenance required on this design.

**PO00013203 - AUXILIARY JACK PADS, FOUR (4) 24" X 24" X 1" POLY**

QTY: 1.00

Four (4) auxiliary pads with handles shall be provided for additional load distribution on soft surfaces.

Their size shall be 24.00" x 24.00" and they will be constructed of a composite material.

The ground contact area for each stabilizer shall be such that a unit pressure not greater than 75 psi (500 kPa) shall be exerted over the ground contact area when the apparatus is loaded to its maximum in-service weight and the aerial device is carrying its rated capacity in every position.

The auxiliary pads shall be secured in mounts located below the body compartments.

**PO00013207 - OUTRIGGER INTERLOCK SYSTEM & ALARM, ALL DEVICES**

QTY: 1.00

An interlock system shall be provided between the outriggers and ladder that prevents the operation of the ladder until the operator places all jacks in the load supporting configuration. Each outrigger shall be equipped with a pressure sensitive switch that closes only when the jack is firmly in contact with the ground. Until all jack switches close, electrical power shall not be transmitted to the turntable (hence preventing ladder operation).

A momentary override switch shall be provided at the central outrigger control station for emergency override of the interlock system. A green indicator light shall be provided on the outrigger control panel to indicate the position of the foot pad. Illumination of the indicator light indicates firm ground contact.

An outrigger deployment warning device shall be provided to warn personnel in the vicinity of the apparatus that the outriggers are in motion. Whenever an outrigger control is utilized, the device shall produce a pulsing tone, separate and distinctive from that of other audible warning systems provided on the apparatus. When the outrigger control is released to its neutral position, the signal shall cease.

**PO00013277 - OUTRIGGER SCOTCHLITE - DIAMOND GRADE, RED/YELLOW CHEVRON**

QTY: 1.00

Red/Yellow "Diamond Grade" ScotchLite material in a Chevron pattern shall be furnished on both sides of the horizontal and vertical beams of the rear outriggers.

**PO00013305 - OUTRIGGER LEVEL SIDE TO SIDE, ALL REAR MOUNT DEVICES**

QTY: 1.00

One (1) bubble type side to side leveling device shall be provided at the rear of the apparatus to assist in the aerial device setup.

This device shall be mounted in the center of the rear body panel and shall be at eye level to the operator.

The leveling device shall be color coded indicating the following conditions:

- Green Safe operating zone.
- Yellow Caution operating zone.

**PO00013306 - OUTRIGGER LEVEL FORE & AFT, ALL REAR MOUNT DEVICES**

QTY: 1.00

In addition to the side to side level, a bubble type leveling device shall be provided at the rear of the apparatus to assist in fore and aft leveling of the device.

This device shall be mounted on the side of the turntable access ladder at the rear of the body and shall be at eye level to the operator.

**PO00013219 - AKRON LED OUTRIGGER LAMPS, 2-OUTRIGGERS**

QTY: 1.00

One (1) Akron model #9186-2366-10 double faced, 4" diameter, red flashing LED light mounted on the inside surface of each outrigger.

**PO00013225 - LED OUTRIGGER GROUND LIGHTS - GROTE WHITELIGHT, 2- OUTRIGGERS**

QTY: 1.00

One (1) adjustable, Grote 63611 WhiteLight, LED ground flood light mounted under the body, to illuminate each outrigger foot pad area.

Both the flashing lights and the foot pad illumination lights shall be energized by the ladder power circuit.

**PO00013311 - 79' AERIAL LADDER, TURNTABLE, SINGLE & TANDEM AXLE**

QTY: 1.00

The turntable shall be a fabricated steel weldment designed for the rotation and elevation of the ladder sections.

It shall consist of the following:

A 44.25" x 48.00" x 1" machined steel bearing plate and matching top plate that shall be machined to insure proper fit to the rotation bearing.

There will be no exceptions.

**PO00013334 - TURNTABLE DECK - ALUMINUM TREADPLATE**

QTY: 1.00

The turntable deck shall cover the entire turntable frame, providing a safe walking surface around the ladder.

It shall have a 1.5" downward flange on all sides.

The deck shall be constructed from aluminum tread plate to provide an anti-slip walking surface.

**PO00013342 - HEEL PIN STEP ON TURNTABLE, 79', 103', 109' & 123'**

QTY: 1.00

A two (2) step aluminum tread plate access step shall be mounted near the heel of the ladder to provide easy access to the ladder from the turntable deck. The step shall cover the rotation motor and brake assembly and shall easily removable for access to the drive assembly.

**PO00013345 - TURNTABLE HANDRAILS, KNURLED ALUMINUM, 3-SIDES**

QTY: 1.00

Turntable safety handrails shall be mounted at the rear and sides of the turntable.

The handrails shall be knurled bright anodized aluminum and the joining fittings shall be polished chrome plated tees and ells.

The handrails shall secure to the turntable deck with heavy duty coated steel stanchions.

All rails shall be a minimum of 42" high.

**PO00013351 - HEEL PINS**

QTY: 1.00

The turntable and ladder shall be designed with dual heel pins at the turntable/ladder pivot point.

The pins shall be solid steel extending the full width of the turntable vertical supports.

The heel pins shall be a minimum of 3" in diameter and is to be equipped with large pin journals in the ladder and turntable supports, which will reduce wear and distribute loads.

Due to the high load and wear on the ladder pivot points, the pin journals in the ladder base rail shall be designed to provide bearing surfaces utilizing ToughMet® 3 AT110 Temper Plate high strength alloy bearing material.

The journals shall have minimum yield strength of 110,000 psi.

Grease fittings shall be provided in bearing at the rear of the ladder section.

**PO00013363 - STAINLESS STEEL CRADLE ALIGNMENT ARROWS ON TURNTABLE**

QTY: 1.00

An alignment arrows and wond shall be provided on the turntable surface in view of the operator when standing at the turntable control station.

The indicator shall assist the operator in indicating the alignment of the aerial ladder with the ladder travel cradle.

The indicators shall be overlaid with ScotchLite material.

**PO00013365 - BUSTIN INSERTS IN TURNTABLE DECK, ALL DEVICES**

QTY: 1.00

"Grip-Strut" open grate anti-slip material inserts shall be furnished on the turntable deck.

The material shall be located in the interior walkway areas of the turntable deck.

**PO00013367 - SAFETY CHAINS BETWEEN TURNTABLE HANDRAIL, REAR MOUNT & TDA**

QTY: 1.00

Each turntable handrail opening shall be equipped with safety chains at the rear of the turntable.

**PO00013374 - 79' AERIAL LADDER, TURNTABLE SWIVEL, TANDEM & SINGLE AXLE**

QTY: 1.00

Hydraulic power to the turntable hydraulic circuits shall be provided through a three (3) port, high pressure, hydraulic swivel that permits 360 degrees of continuous turntable rotation.

Electrical power to the turntable electric circuits shall be provided by a collector ring assembly.

The collector rings shall be used for electrical ground, ladder control functions, and a 120 volt A.C. system during 360 degrees of continuous turntable rotation.

The collector ring assembly shall have a minimum of 32 circuits.

Water shall be transferred to the aerial waterway by means of a four (4) inch water swivel enabling 360 degree continuous rotation of the turntable (if applicable).

**PO00013403 - IQAN - SWIVEL ROTATION ENCODER**

QTY: 1.00

The swivel shall be designed with an integral absolute encoder to provide a continuous output indicating the position of the turntable at any given time.

The encoder shall be designed to indicate position of the turntable even if power interruption occurs.

The number of degrees of rotation shall be shown in a digital readout on the MD4 display.

**PO00013404 - 79' LADDER, LADDER CONSTRUCTION, SINGLE & TANDEM AXLE**

QTY: 1.00

The elevating ladder shall consist of three (3) steel ladder sections referred to as the base section, mid section and fly section.

Each section will be fabricated from 100,000 psi yield ultra high strength steel.

The design and construction criteria for these ladder sections shall be:

Each section shall be fabricated using high strength steel, welded together to form a structural unit.

All welding shall be done by welders that have been certified in accordance with the American Welding Society Standard specifications #D1.1.

Each ladder section shall be constructed in an assembly fixture to ensure uniformity and interchangeability.

K-bracing at each rung shall be utilized to minimize side deflection of the ladder.

All rungs shall be 1-1/8" in diameter, spaced at 14" centers. Rungs will be round. {No Exceptions}

All rungs, K-braces, and diagonals shall be positioned so that they are continuously welded to the ladder section.

All side rails shall be protected from interior corrosion by coating the interior of the rail with a corrosion preventative film.

Ladder handrails and diagonal material are to be constructed from square or rectangular tubing, which provide a larger welding surface area where the materials are attached to each other.

**PO00013430 - 79' SA/TA, LADDER DIMENSIONS**

QTY: 1.00

The aerial device shall be constructed with the following section dimensions:

Handrail  
Height  
Handrail  
Width  
Base Section  
26-5/8"  
36-1/4"

Mid Section  
23-7/8"  
31-1/4"  
Fly Section  
21-3/4"  
26"

Overlap surfaces between sections;

Base to Mid Section  
78"  
Mid to Fly Section  
78"

**PO00013468 - RUNG COVERS - PHOTOLUMINESCENT, ALL DEVICES**

QTY: 1.00

Each rung shall be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, non-slip coating.

The rung covers shall be secured to each rung utilizing a Silyl Modified Polymer (SMP) based adhesive and shall be easily replaceable should the rung cover become damaged.

Each rung shall have a minimum of 4" of photo luminescent coating in the center of the rung, two (2) 5" black sections on each side of the center photo luminescent and additional photo luminescent sections on the outside edge of each cover.

The covers shall provide an aggressive, non-slip coating and assist in providing a light source for each rung during low light conditions.

The photo luminescent coating shall remain visible for up to 20 hours after exposure to light.

The rung covers shall be covered by a ten (10) year warranty. A copy of the written warranty shall be provided.

There will be no exceptions.

**PO00013690 - LADDER, CABLE/HOSE/WIRE ROUTING, 79' LADDER**

QTY: 1.00

All lines to the ladder tip shall be enclosed and protected from the turntable to the ladder tip.

All lines shall be routed through extrusions and high flex energy chain systems.

**PO00013470 - SINGLE PAIR FOLDING STEPS @ LADDER TIP**

QTY: 1.00

A set of cast folding steps shall be conveniently located at the end portion of the fly section.

These shall be used for one person to place his feet so that he is positioned parallel to the ladder.

The steps shall fold into proper position for usage and fold toward the sides of the ladder when not in use to provide adequate clearance when the ladder is being climbed.

The steps shall be placed approximately 56" from the center of the last rung toward the base of the aerial.

**\*\*\*SPECIAL: SP00024268 - FHU AXE MOUNTED IN FLY SECTION, INCLUDES AXE**

**QTY: 1.00**

***There shall be a mount furnished for a flat head axe in the fly section of the ladder.***

***The axe mount shall include a receptacle that shall cover the entire axe head and a PAC #1004 bracket to secure the axe handle.***

***A Fire Hooks Unlimited Model FA-8AX axe shall be provided.***

**PO00013489 - AXE MOUNTED ON RIGHT SIDE OF FLY SECTION**

**QTY: 1.00**

The specified axe shall be mounted on the the right side of the fly section.

**PO00013502 - ROOF LADDER MOUNT WITHIN FLY SECTION; 3S-75-MM-HD**

**QTY: 1.00**

There shall be a mount furnished in the fly section of the aerial ladder.

The mounts shall include an aluminum receptacle box for the heel end of the ladder and a mechanical pin lock for the roof hook end of the ladder.

**PO00013519 - SPECIFIED ROOF LADDER MOUNTED ON LEFT SIDE OF FLY**

**QTY: 1.00**

The specified roof ladder shall be mounted on the left side of the fly section.

**PO00013429 - STAINLESS STEEL EGRESS W/TIP SKID GUARDS**

**QTY: 1.00**

The tip of the fly section be equipped with a bolt-on egress section. The egress shall extend from the end of the fly and be constructed of 1.25" round knurled stainless steel. The knurled construction shall allow for easy grip during exit and entry off and on the ladder tip. The egress shall be designed to fully support the rated capacity of the ladder. Each end of the egress base rail shall be designed with rounded "Ladder Tip Skid Guard" to prevent ladder tip hang up if the ladder slides on a building surface.

**\*\*\*SPECIAL: SP00027211 - SAFETY YELLOW PAINTED EGRESS**

**QTY: 1.00**

***The egress of the fly section will be painted safety yellow. The last 4' of the the fly section will be overlaid with yellow scotchlite material.***

**PO00013546 - RESCUE EYELET ON LAST RUNG OF LADDER TIP**

**QTY: 1.00**

A lifting eye shall be provided at the end of the ladder fly section. The lifting eye shall give the fire department the capabilities to tie off or lift from the ladder fly section.

The lifting eye shall be third party tested and certified with the device for a minimum capacity of 250 pounds. The rating shall include a 2:1 safety factor.

**PO00013688 - LADDER LEVEL INDICATOR (BASE SECTION) - LIGHTED**

**QTY: 1.00**

One (1) Rieker 12 volt lighted, ladder angle indicator shall be provided on the base section of the ladder, near the turntable control console. The integrated light shall be activated with ladder power.

**PO00013562 - 79' AERIAL LADDER, ELEVATION SYSTEM**

**QTY: 1.00**

Two (2) double acting lift cylinders shall be attached between the turntable and the base section near the midpoint of the base section thus creating a better lifting geometry resulting in lower hydraulic operating pressures and improved load distribution on the base ladder section.

The cylinders shall function only to elevate the aerial device and not as a structural member to stabilize the ladder sideways. The lift cylinder rods shall be attached to the base section with self aligning swivel bearings which prevent side loading on the lift cylinders resulting in longer cylinder seal life.

They shall provide smooth precise elevation from -7 degrees below horizontal to +80 degrees above horizontal.

The lift cylinders shall have a 5-1/2" internal bore, a 3" diameter rod and 29-13/16" stroke.

The lift cylinders shall be equipped with integral (on the cylinder) holding valves which prevents the ladder from lowering should a hydraulic line be ruptured at any point within the hydraulic system.

They shall also have a manifold line with velocity fuses between the cylinders to prevent uneven cylinder lift.

They shall have both rod and piston hydraulic cushions. These cushions shall decelerate the cylinder near the end of its stroke creating a smooth stop at full stroke.

A limit switch at the aerial travel support shall be provided to prevent operation of the outriggers once the aerial has been elevated from the nested position. This system will prevent operation of the outriggers once the ladder has been elevated from the nested position.

**PO00013608 - 79' AERIAL LADDER, ROTATION SYSTEM, SA & TA**

QTY: 1.00

A 41" diameter external tooth monorace bearing shall be provided for 360 degree continuous rotation of the aerial device.

The bearing shall be bolted to the turntable and bolted to the pedestal bearing plate using forty (40) 3/4" diameter SAE Grade 8 bolts to secure the bearing to the turntable and forty (40) 3/4" diameter SAE Grade 8 bolts to secure the bearing to the pedestal bearing plate.

Both upper and lower bearing surfaces shall be milled to ensure a true mounting surface for the rotation bearing.

**PO00013632 - ROTATION MOTOR AND BRAKE - 41" EXTERNAL BEARINGS**

QTY: 1.00

A hydraulic driven planetary swing drive system shall provide smooth and precise rotation. A spring applied, hydraulically released, disc type brake shall be furnished on each gear box to provide positive braking of the turntable assembly against reactionary forces such as water and gravity.

**PO00013638 - SWING DRIVE ADJUSTMENT**

QTY: 1.00

The swing drive shall be designed with an adjustable mount. This shall allow the back lash to be set at assembly and provide the ability to re-adjust as components wear. This shall prevent the need to replace rotation components that may exceed manufacturer's allowable back lash in later aerial inspections. Units that do not allow adjustment shall not be acceptable.

**PO00013649 - 79' AERIAL LADDER, EXTENSION/RETRACTION SYSTEM, SINGLE & TANDEM**

QTY: 1.00

A full hydraulic powered extension and retraction system of the ladder shall be provided through dual hydraulic cylinders and cables, each capable of operating the ladder in the event of failure of one of the systems.

The extension cylinders shall have a 3.00" internal bore with a 2.00" rod. Both cylinders shall be equipped with two integral holding valves to protect both extension and retraction movement during water tower operations or to prevent the ladder from falling should a line be severed at any point within the hydraulic system.

Cables attached to the base and mid ladder sections shall be routed over sheave wheels on the base section and cylinder sheave mount. This cable arrangement shall act as a stroke multiplier to provide full ladder extension and retraction. The sheave wheel bearings shall be maintenance free and not require external lubrication.

Extension and retraction cables shall have a minimum safety factor of 5 :1 and shall be .50" diameter from the base to mid section cable and be .375" from the base to the fly section.. The minimum ratio of the diameter of wire rope to the sheave used shall be 1:12.

**PO00013669 - EXTENSION CYLINDERS PAINTED LADDER PAINT COLOR**

QTY: 1.00

The extension cylinders shall be painted to match the color of the ladder.

**PO00013680 - LADDER SLIDE PADS, 79' LADDER**

QTY: 1.00

Nylatron slide pads with a sliding coefficient of friction of .15 shall be used between the telescoping ladder sections.

Slides are required because of greater surface area for load transfer between the telescoping sections.

Slide pads shall also be used to control side play between the ladder sections.

The rear slide pads shall be held into place by a machined receiver, which is welded into the base rail of the extending sections.

Each slide pad shall be held in place with an easily removable keeper, allowing the pad to be removed from the rear of the ladder section.

To control movement side to side the receiver shall allow for adjustment of each pad.

**PO00013741 - DELETE LADDER TIP RECEPTACLE**

QTY: 1.00

**PO00013557 - CRADLE ILLUMINATION LIGHTS - FRC SOBRITE LED LIGHT**

QTY: 1.00

Two (2) 12 volt FRC SoBrite LED lights shall be mounted near the ladder travel support to illuminate this area during night time operation. The lights shall be wired and activated by the ladder power circuit.

**PO00013598 - (2) WHELEN L31, AMBER LED BEACONS @ BASE END FOR LOAD SYSTEM**

QTY: 1.00

Two (2) Whelen, L31H\*F self contained super LED beacons shall be provided at the end of the base section, one (1) each side and shall illuminate when the load sensing system is activated.



Each light shall have amber LEDs and a colored lens.

**PO00013783 - HEEL PIN STEP LIGHTS - TECNIQ EON 3 LED LIGHTS**

QTY: 1.00

Seven (7) polished stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights shall be provided and installed with a gasket at the base of the ladder in the turntable heel pin step area.

**PO00013789 - TURNTABLE CONTROL CONSOLE LIGHTING - LUMA BAR LED**

QTY: 1.00

A sealed 12" Amdor Lumabar LED H20 light shall be used to illuminate the turntable control console.

The light shall be mounted across the top of the control panel to assure proper illumination of all controls.

The light shall be wired to the ladder power circuit.

**PO00013791 - TURNTABLE CONSOLE STEP LIGHT - TECNIQ EON 3 LED**

QTY: 1.00

One (1) polished stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights shall be provided and installed with a gasket at the front face of the turntable console facing the operator, to illuminate the step area in front of the control console. The light shall be mounted no lower than 18" from the step deck.

**PO00013803 - TWO (2) FRC SOBRITE LED FLOOD LIGHTS @ LADDER BASE SECTION**

QTY: 1.00

Two (2) Fire Research Corp. SoBrite LED flood lights shall be mounted at the rear of the base ladder section, one on each handrail.

The lamphead shall have 22 ultra-bright white LEDs. It shall operate at 12 volts DC, draw 5 amps, and generate 7,000 lumens of light.

The lamphead shall weight less than 2 1/2 pounds and be powder coated.

The LED scene light shall be for fire service use.

**PO00013816 - TWO (2) FRC SOBRITE LED FLOOD LIGHTS @ LADDER TIP**

QTY: 1.00

Two (2) FRC SoBrite LED floodlights shall be mounted near the tip of the ladder, one on each side.

**PO00013836 - CUTOFF SWITCH FOR LADDER TIP 12 VOLT LIGHTS @ LOWER CONTROL**

QTY: 1.00

A switch shall be provided at the lower control console for the 12 volt light(s) located at the ladder tip.

The switch shall be wired to the light circuit to give the operator the capability to shut down the lights if the switch on the light head is in the on position.

**PO00013852 - BASE SECTION LIGHTS SWITCHES @ TURNTABLE CONSOLE**

QTY: 1.00

One (1) switch shall be provided at the turntable control console for the base aerial section lighting.

**\*\*\*SPECIAL: SP00027212 - SOUNDOFF UNIVERSAL UNDERCOVER AMBER LED ON LEFT SIDE OF LADDER TIP**

QTY: 1.00

***One (1) surface mounted SoundOff Signal Universal Undercover flashing light head shall be provided on the left side of the ladder tip.***

*The light shall give the operator at the turntable a visual indication of the ladder tip location, when the ladder is in smoke or steam.*

*The light shall be activated by the ladder power circuit.*

*The light shall be installed with a chrome plated mounting flange.*

*The light shall have amber LEDs and a clear lens.*

**\*\*\*SPECIAL: SP00027213 - SOUNDOFF UNIVERSAL UNDERCOVER AMBER LED ON RIGHT SIDE OF LADDER TIP**

**QTY: 1.00**

*One (1) surface mounted SoundOff Signal Universal Undercover flashing light head shall be provided on the right side of the ladder tip.*

*The light shall give the operator at the turntable a visual indication of the ladder tip location, when the ladder is in smoke or steam.*

*The light shall be activated by the ladder power circuit.*

*The light shall be installed with a chrome plated mounting flange.*

*The light shall have amber LEDs and a clear lens.*

**PO00013920 - LADDER WALKWAY ILLUMINATION LIGHTS, 3-SECT LADDER**

**QTY: 1.00**

The ladder sections shall be equipped with the Luma Bar Pathfinder™ aerial illumination system.

This system shall illuminate the rungs of the ladder to support night time operations.

The Luma Bar Pathfinder™ system shall consist of a continuous path of SMD LED lights spaced every 3/4" which shall offer a minimum viewing angle of 120 degrees.

The assembly shall be encapsulated within an enclosure which is resistant to UV and ozone and shall be terminated using sealed end caps with RTV silicone.

The complete assembly shall offer a minimum water proof rating of IP68.

This sealed enclosure shall be mounted within a clear anodized aluminum C-channel on the inside of the rung base rail, on each ladder section.

The Luma Bar Pathfinder™ assembly shall incorporate a UV stabilized high impact polycarbonate shield which is integral to the supplied aluminum C-channel.

The Luma Bar Pathfinder™ system shall be wired to the ladder power circuit with a disabling switch at the turntable control console.

**\*\*\*SHOP NOTE: SR00119332 - CLARIFICATION**

**QTY: 1.00**

*The LED pathfinder lights will be provided on both sides of the aerial device.*

**PO00013923 - RED - LADDER ILLUMINATION LIGHTS**

**QTY: 1.00**

The color of the ladder illumination light shall be RED.

**PO00025855 - IQAN MD4-7 DISPLAY TURNTABLE CONSOLE**

QTY: 1.00

The turntable console will be equipped with an IQAN-MD4 7" master display with touchscreen capability and video inputs.

The IQAN-MD4 master display has a rugged mechanical design with no moving parts and are completely sealed. The IQAN-MD4 7" display has full graphical, diagnostic and CAN gateway capability and is used with the easy-to-use IQAN programming tools.

**PO00014152 - LADDER, CONTROL STATION**

QTY: 1.00

There shall be a control station at the turntable.

All elevation, extension and rotation operational controls shall operate from this position.

These controls shall be arranged to permit the operator to regulate the speed of these operations within the safe limits as determined by the manufacturer.

Load instruction plates shall be located at the control station to show the recommended safe load of the ladder.

The control devices shall be clearly marked and suitably lighted.

**PO00014153 - RM LADDERS, CONSOLE LOCATED @ LH SIDE OF TURNTABLE**

QTY: 1.00

The turntable control station shall be located on the left side of the turntable such that the operator can easily observe the ladder tip while operating the controls.

**PO00014159 - PAINTED ALUMINUM TURNTABLE CONSOLE - MATCH LADDER**

QTY: 1.00

The control console shall be manufactured from aluminum material and designed to support the components mounted in and on the console.

The console shall be painted to match the ladder structure.

**PO00014161 - 79' AERIAL LADDER, TURNTABLE CONTROL STATION, SA & TA**

QTY: 1.00

The lower part of the console shall be angled away from the operator, to provide as much foot room as possible for the operator.

An access door shall be provided on the front of the console to provide complete access to the electrical and hydraulic components mounted inside the console.

The console shall be illuminated for night operations, and shall have the following controls/indicators:

The following items shall be clearly marked:

- Three (3) ladder control levers
- A foot operated "dead man switch"
- Master electrical power switch with emergency shutdown capabilities
- Rung alignment indicator light for ladder climbing operations
- Cradle alignment indicator light
- Engine fast idle control switch

- Emergency pump power switch
- 5,000 psi hydraulic oil pressure gauge (Liquid filled)
- Intercom controls
- Illuminated load chart on front of console
- Electric Monitor Controls

**PO00014192 - AIRHORN CONTROL BUTTON @ TURNTABLE CONTROL CONSOLE**

QTY: 1.00

Air Horn Control Button

**PO00014204 - LADDER TIP 12 VOLT LIGHTS SWITCH @ TURNTABLE CONSOLE**

QTY: 1.00

Cutoff switch for 12 volt light(s) @ the ladder tip

**PO00014215 - FIRE RESEARCH INSIGHT ULTIMATE @ TURNTABLE CONSOLE**

QTY: 1.00

The apparatus shall be equipped with a Fire Research flow and pressure meter "FPA400", at the turntable console which shall give the operator or engineer an indication of actual volume of water (in gallons) being discharged through the aerial waterway.

The display shall also be capable of showing discharge pressure without the need of pushing any buttons.

The display case shall be constructed on non-glare black anodized aluminum, with bright red LCD digits to indicate flow, and a bright analog pointer to indicate pressure.

A calibration slot shall be provided on the rear face of the display to make field calibration easy.

A flow sensor paddle wheel shall be installed on the discharge piping with a machined housing or clamp.

A pressure transmitter (transducer) mounted in the discharge piping.

The pressure transducer shall be installed downstream from the discharge valve to indicate pressure only when the valve is open.

**PO00014218 - TURNTABLE CONSOLE COVER - PAINTED**

QTY: 1.00

The turntable control console shall be designed with an aluminum cover to match the console.

The cover shall be designed with a rectangle shape that pivots over the top of the control panel and does not obstruct visibility for the operator when the ladder is operated at low angles.

**PO00014270 - LADDER, FRC ACT 3-WAY COMMUNICATION SYSTEM - LOWER CONTROLS**

QTY: 1.00

A Fire Research "ACT" communication system shall be furnished between the ladder tip, the rear operator's position and the pump operator's panel.

A master control at the turntable operator's console and pump operator's panel shall be provided, with a push-to-talk button and a volume control.

**PO00014271 - LADDER, FRC ACT 3-WAY COMMUNICATION SYSTEM - UPPER SPEAKER/MIC**

QTY: 1.00

A self-contained, hands-free speaker microphone shall be located at the ladder tip.

No operator action shall be required to transmit or receive messages at this speaker microphone.

**\*\*\*SPECIAL: SP00027352 - 79' AERIAL LADDER, LADDER WATERWAY SYSTEM, SINGLE TANDEM**

QTY: 1.00

*The aerial waterway system shall be capable of being supplied by both a mid ship mounted pump (if required) and an external water source with the inlet on the officers side pump panel.*

*The piping from the aerial discharge valve and the aerial inlet to the turntable swivel shall be 4" stainless steel pipe.*

*A 4" tee shall join the pump discharge line and the aerial inlet line.*

*A 4" water swivel shall be located in the riser pipe from the tee permitting 360 degree continuous rotation of the ladder.*

**PO00014369 - 79' AERIAL LADDER, LADDER, SINGLE & TANDEM WATERWAY**

QTY: 1.00

An anodized aluminum telescopic waterway shall be mounted beneath the center of the aerial ladder.

The waterway shall have a 4 1/2" base section tube, 4" mid-fly section tube, and a 3 1/2" fly section tube.

The waterway shall be secured to the ladder sections with cradle type mounts to provide a minimum of 1" of up and down movement in the waterway.

This design shall protect the waterway from bending if the ladder comes in contact with a building or a water hammer is imposed to the waterway discharge.

**PO00014392 - 4" HEEL PIN SWIVEL - 79' LADDER**

QTY: 1.00

A 4" heel pin swivel connection between the ladder waterway and the turntable swivel permitting water tower operations from -7 to +80 degrees shall be provided.

**PO00014404 - AUTOMATIC WATER DRAIN/VENT**

QTY: 1.00

An automatic drain shall be provided in aerial water way to automatically drain the system for freezing conditions.

This valve shall also act as a vacuum relief valve for the waterway when extending the aerial device with the discharges in the closed position.

**PO00014405 - ALL DEVICES, WATERWAY RELIEF VALVE**

QTY: 1.00

A relief valve preset at 225 psi shall be located beneath the turntable to protect the water system from excessive pressures.

**\*\*\*SPECIAL: SP00003859 - Rear Mount Aerial Waterway Drain, - 1-1/2" Valve**

QTY: 1.00

*A 1-1/2" Akron drain valve shall be installed and operated from the officer side pump panel of the apparatus.*

**\*\*\*SPECIAL: SP00003860 - Aerial Waterway Drain Control**

QTY: 1.00

*The waterway drain shall be controled from a pneumatic toggle style switch on the of the officer side pump panel near the water inlet.*

**\*\*\*SPECIAL: SP00027319 - 5" NSTF X 5" STORZ KOCHER SKE-R 30° ADAPTER FOR THE AERIAL INLET**

QTY: 1.00

*A Kocher 5" NSTF X 5" Storz SKE-R 30° adapter with cap shall be provided for the aerial inlet.*

**\*\*\*SPECIAL: SP00027320 - Class One 2-1/2" Lighted Gauge For Aerial Inlet, Rear Mounts**

QTY: 1.00

*NOTE: A 2.5" Class One pressure gauge shall be provided and located at the auxiliary waterway inlet located on the officers pump panel of the vehicle to indicate waterway pressure.*

*The gauge shall be silicone filled pressure gauge to help with pulse and vibration dampening.*

*To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem.*

*A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.*

**PO00014486 - CLASS ONE GREEN ILLUMINATED GAUGE**

QTY: 1.00

The pressure gauge shall be illuminated internally using Green light emitting diodes.

The gauge face shall be white with black numerals.

**\*\*\*SPECIAL: SP00027220 - ELECTRIC WATERWAY SHUT-DOWN VALVE**

QTY: 1.00

*A 4" Akron electrically controlled valve shall be provided for the officers side aerial waterway intake. An Akron model 9333 electric valve controller will be located on the drivers side pump panel. A Class-1 pressure gauge with green LED backlighting will be provided on both the drivers side and officers side pump panels. (total of 2) \*The addition of 2 gauges will allow a firefighter on the officers side of the truck to know if the valve is open and there is pressure behind the inlet cap. Having a gauge on the drivers side pump panel will allow the pump operator to know when the intake has been charged by the secondary water source IE engine 2.*

**PO00014503 - LADDER, AKRON #3480 "STREAMMASTER II" MONITOR**

QTY: 1.00

An Akron model #3480 "StreamMaster II" electrically controlled monitor shall be installed on the outer end of the telescoping aerial waterway.

The CAN based control system shall be attached to the monitor, and shall be easily accessible for service.

Vertical travel 45° below and 120° above horizontal

The monitor shall be equipped with a 3-1/2" outlet and a 4" inlet.

The monitor shall have a vertical sweep of 165°, and a horizontal sweep of 355°.

**PO00014508 - LADDER, AKRON #5178 NOZZLE**

QTY: 1.00

An Akron model #5178 "Akromatic" electrically controlled master stream nozzle shall be installed on the end of the monitor.

The model #5178 shall allow a maximum flow rate of 2000 gpm @ 80 psi.

**PO00014517 - LADDER, AKRON MONITOR CONTROLS W/ AUTO STOW**

QTY: 1.00

The monitor and nozzle functions shall be controlled from the tip of the fly section and from the aerial control console.

The monitor and nozzle controls at the tip and turntable shall consist of three (3) individual spring-loaded, self-centering, weather resistant toggle switches.

The monitor shall be capable of wireless remote operation.

The turntable operating position shall include an Akron SIT (switch interface transmitter) which shall allow for standard spring loaded toggle switches to be used as listed above.

The monitor and nozzle control functions shall be as follows:

UP / DOWN  
LEFT / RIGHT  
STRAIGHT STREAM / FOG

The monitor shall be equipped with an "Auto Stow" feature that shall automatically deploy the monitor and shall also place the monitor into its stowed position when actuated by a toggle switch.

**PO00014518 - LADDER, AKRON MONITOR CONTROLS - PUMP PANEL**

QTY: 1.00

The monitor and nozzle functions shall be controlled from the tip of the fly section, from the aerial control console, and at the pump panel.

The monitor shall be capable of wireless remote operation.

The pump panel controls shall consist of an OEM supplied pump panel control and wireless transmitter.

The monitor and nozzle control functions shall be as follows:

UP / DOWN  
LEFT / RIGHT  
STRAIGHT STREAM / FOG

**PO00014521 - LADDER, SELECTABLE WATERWAY TROLLEY, ALL LADDER DEVICES**

QTY: 1.00

The waterway monitor shall be "retractable", allowing the monitor to be secured at the tip of the fly section for water tower operations, or at the end of the upper section for rescue operations. An aluminum sliding monitor support assembly shall be installed at the end of the fly section waterway tube. This support assembly shall guide the monitor along the base rails of the aerial fly section. An electric actuator shall move the trolley lock to position the monitor to either the fly section or mid-section. An illuminated control switch shall be located on the monitor support assembly. The "monitor lock" shall be quickly movable and shall be easily accessible at the tip of the aerial, when the ladder is fully retracted. The lock assembly shall be constructed from stainless steel that is electropolished for smooth operation and to keep from corroding.

In "rescue mode", this feature shall allow the tip of the fly section to be placed very close to the edge of a building or window, minimizing the working and access heights "on" and "off" the ladder tip, without worrying about the monitor being damaged. Permanent monitor guards installed below the tip of the aerial are unacceptable.

To accommodate the movement of the "retractable" electric remote monitor, the monitor power/control cable for the electric monitor shall be equipped with a slide track to eliminate the need for plugs or reels.

Movable monitor designs that require a spring-rewind cord reel for the monitor power/control cord are unacceptable due to the additional cost, maintenance, weight and unattractive appearance associated with a cord reel permanently installed on the outside of the aerial base section.

**PO00014544 - LADDER MANUAL TFT VALVE UNDER MONITOR**

QTY: 1.00

Task Force Tips VUM, model # AKM13 \_ 111D manually controlled monitor valve shall be provided under the monitor.

The valve shall be controlled with an NFPA compliant slow-close hand wheel gear operator which can be configured for left or right hand operation.

A position indicator shall be provided to allow for quick visualization of the status of the valve in the open, closed or partial positions.

For maximum corrosion protection the aluminum casting shall be hardcoat anodized, with a silver powder coat internal and external finish.

The valve ball shall be stainless steel and have an automatic drain for draining waterway when valve is closed and unpressurized.

The manifold of the valve shall be equipped with the following hardware:

Port C2, C3, C4 shall be terminated with a blind plug, Port C1 as stated below.

**PO00014546 - 2.5" NH GATED ELBOW LEFT HAND - C1 - VALVE UNDER MONITOR**

QTY: 1.00

A 2.5" NH gated elbow left hand, with standard handle shall be installed on C1 port.

**PO00014551 - 2-1/2" X 1-1/2" REDUCER WITH CAP, FOR VALVE UNDER MONITOR**

QTY: 1.00

A 2-1/2" x 1-1/2" reducer with cap and lanyard shall be provided for the discharge on C1 port.

**PO00014552 - "STORE FRONT BLITZ" DESCRIPTION**

QTY: 1.00

The ladder waterway system shall be designed to provide "Store Front Blitz" feature. This feature shall allow the fire department to position the truck in front of a low structure and sweep the front of the building with a 1500-GPM master stream upward for initial interior attack!

Features shall include:

- High tip load while flowing water
- Waterway flow rate of 1500-GPM in any position
- High 1500-GPM flow in an upward direction
- 30-degrees above horizontal nozzle position
- 135-degrees below horizontal nozzle position



- 180-degree nozzle sweep.

The position of the aerial nozzle shall be monitored electronically at all times. Since the nozzle can be elevated to 35 degrees above horizontal when affixed to the tip of the fly section, the nozzle position monitor shall automatically prevent the nozzle from being raised above horizontal when the nozzle is affixed to the top of the outer mid section of the aerial in order to prevent damage to the nozzle or the device during extension and retraction operations.

**PO00014770 - 79' AERIAL LADDER, LADDER CAPACITIES, SINGLE AXLE,750#**

QTY: 1.00

The following capacities shall be based upon continuous 360 degrees of rotation and the aerial at full extension, on a single rear axle vehicle.

**LADDER CAPACITIES IN POUNDS  
 (50 MPH WIND and 1/4" ICE BUILD UP CONDITIONS / UNCHARGED WATERWAY)  
 DEGREES OF ELEVATION**

	-7 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 79'
Base Section	---	---	---	250	500	500	750	
Mid Section	---	---	---	---	250	250	500	
Fly Section	---	---	---	---	---	---	250	
Fly Tip	750	750	750	750	750	750	750	

The ladder and water system shall be designed to permit the following flows:

- 1500 GPM at 90 degrees to ladder centerline either side.
- 1500 GPM parallel to ladder centerline and as far below horizontal as nozzle design allows.
- 1500 GPM 30-degrees above ladder centerline.

Note: Tip capacity is reduced to 250 lbs when flowing water with the nozzle above waterway centerline.

**LADDER CAPACITIES IN POUNDS  
 (50 MPH WIND and 1/4" ICE BUILD UP CONDITIONS / CHARGED WATERWAY)  
 DEGREES OF ELEVATION**

	-7 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 79'
Base Section	500	500	500	500	500	750	750	1000
Mid Section	---	---	---	250	500	500	500	1000
Fly Section	---	---	---	---	---	---	500	750
Fly Tip	500	500	500	500	500	500	500	500

The aerial unit can be operated in any plane up to 3.5 degrees out of level at full capacities. Operation beyond this limit shall be at operator's discretion.

**PO00014821 - AERIAL LADDER, MANUALS, TWO (2) SETS**

QTY: 1.00

The aerial manufacturer shall provide the following manuals pertaining to the aerial device:

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- Two (2) Operator's manuals
- Two (2) Parts manuals
- Two (2) Complete Electrical and Hydraulic Diagrams

**PO00014804 - FIRE DEPT AERIAL FAMILIARIZATION - PROVIDED BY FACTORY**

QTY: 1.00

An on-site program for familiarization of Fire Department personnel shall be provided.

This program shall be designed to assure complete understanding of all aspects of the aerial device in the operating environment.

The familiarization shall cover all applicable required items in NFPA 1901 code, and be performed by a qualified person per the code.

The familiarization program shall be designed to instruct the individual who has never utilized an aerial device of this type before.

The individual shall receive thorough instructions on operation of the device including hands-on operations for personnel.

The training shall include at a minimum:

Location and operation of all gauges and indicators, as well as fluid level checks.

How to tilt the cab (if a tilt cab is provided), or how to locate all required maintenance areas.

Explanation of all cab controls, instruments, mirrors, safety devices or alarms, brake operations, transmission control, pump controls (if equipped), exhaust regeneration (if provided), seat adjustments, warning light engagement, and other operational equipment.

Familiarization of the aerial device engagement, operations, emergency overrides, safety devices, and maintenance systems.

If the unit is equipped with a fire pump, familiarization of the complete pumping system components, engagement, operations, etc.

If the unit is equipped with a generator, familiarization of the generator system engagement and operations.

If the unit is equipped with a foam system, familiarization of the foam system engagement and operations.

**PO00014849 - 79' AERIAL LADDER, SINGLE AXLE, CERTIFICATION & TESTING, 750#**

QTY: 1.00

The aerial device shall be tested in compliance with the National Fire Protection Association's Standard #1911 (latest edition).

Ongoing structural and physical property testing during construction shall also be done.

The following tests shall be conducted by personnel holding a Level II certification to detect defects and improperly secured components:

Magnetic particle inspection shall be conducted on all ferrous welds to assure the integrity of the weldments and also detect any flaws or weaknesses. Reference AWS B1.10 Guide for the Non-Destructive Examination of Welds

These tests shall be performed prior to paint or assembly.

Dye penetrant testing shall be conducted on all structural aluminum welds.

Ultrasonic inspection shall be used to detect any flaws in pins, bolts and other critical mounting components.

The bolts shall be tested after any torquing to ensure the bolt was not damaged.

All extension/retraction cables shall be proof load tested, serialized, and certified by the cable vendor.

All cable ends shall be dye penetrant tested to find any cracks, imperfections, etc.

Functional tests, load tests, stability tests and visual structural examination shall be performed.

These tests shall determine any unusual deflection, vibration, or instability characteristic of the unit.

Hydraulic oil sample test prior to delivery.

Additionally, a waterway pressure test shall be performed

Upon completion of the preceding inspections, the independent testing company shall issue a Certificate of Inspection indicating that all specified standards have been satisfied.

Aerial manufacturers not utilizing third party, independent testing companies shall not be acceptable.

The following test shall be conducted to the aerial device prior to delivery.

The manufacturer of the aerial device is required to provide a written statement signed by the Chief Engineer certifying the aerial's ability to perform the following tests:

#### 1-1/2:1 DYNAMIC STABILITY AND LIFT TEST

A test of the apparatus shall be performed that the ladder sections are so designed and powered to support a load representing 150% of the manufacturer's rated payload capacity at maximum horizontal reach on level ground. Since this is a dynamic test, the load will be raised, lowered and rotated without evidence of instability. Specifically, 1125 pounds at the ladder tip with the ladder fully extended at zero degrees shall be rotated 360°.

#### 1-1/3:1 DYNAMIC STABILITY AND LIFT TEST

A test of the apparatus shall be performed that the tip and ladder sections are so designed and powered to support a load representing 133% of the manufacturer's rated payload capacity at maximum horizontal reach on a five (5) degree slope. Since this is a dynamic test, the load will be raised, lowered and rotated

without evidence of instability. Specifically, 999 pounds at the ladder tip with the ladder fully extended at zero degrees shall be rotated 360°.

#### TIME TEST

A test of the apparatus shall be performed to raise the ladder from a bedded position extended to full height and rotated through a 90° turn smoothly and without undue vibration in not over 120 seconds.

#### WATER TOWER TEST #1

A test of the apparatus shall be performed to test its ability to discharge 1500 gallons per minute parallel to the ladder with the unit at full extension and zero degree elevation and through a 360° rotation. The unit shall be capable of performing this test with a rated tip load of 500 pounds at the ladder tip.

#### WATER TOWER TEST #2

A test of the apparatus shall be performed to test the ability to discharge 1500 gallons per minute, 90° to the ladder with the ladder at full extension, zero degree elevation and through 360° of rotation. The unit shall be capable of performing this test with a rated tip load of 500 pounds at the ladder tip.

#### WATER TEST #3

A test of the apparatus shall be performed to test the ability to discharge 1500 GPM above the ladder centerline and as many degrees above 0° as the deck gun design allows. This test shall also be performed with the ladder fully extended at 0 degree elevation and through 360° of rotation with a rated tip load of 500 pounds.

Bidders must state their ability to comply with all of the above tests.

Failure to do so shall be grounds for rejection of their bid.

#### **PO00014807 - FACTORY FAMILIARIZATION - THREE (3) DAYS**

QTY: 1.00

After the unit has been accepted, a factory qualified person shall be provided for a minimum of three (3) days of familiarization.

#### **PO00014819 - AERIAL SERVICE, ALL DEVICES**

QTY: 1.00

Due to the importance of keeping this vital piece of firefighting apparatus in service with a minimum of downtime, the bidder maintains a network of service centers with factory trained personnel.

The bidder shall have a separate facility for service of units so they do not conflict with production units.

The service facility carries an inventory of parts, separate from production parts.

#### **PO00014820 - WARNING DECALS, ALL DEVICES**

QTY: 1.00

Warning decals shall be provided in appropriate locations to alert the operator of potential hazards and operating instructions.

All warning labels shall be in general compliance with ANSI Z34.1 recommendations.

**PO00010847 - GENERAL PAINT DESCRIPTION**

QTY: 1.00

The apparatus body shall be painted with Sikkens paint product. The paint process shall meet or exceed current state regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Contractor shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces of the body. Any vertically or horizontally hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on body, door jambs and door edges.

Paint process shall feature Sikkens high solid LV products and be performed in the following steps:

- Corrosion Prevention - all aluminum surfaces shall be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.
- Sikkens Sealer/Primer LV - acrylic urethane sealer/primer shall be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.
- Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat shall be applied, providing excellent coverage and durability. A minimum of two (2) coats shall be applied.
- Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat shall be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats shall be applied.

Any location where the material is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment shall be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting pre-treatment.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20 degree gloss meter. Coating thickness shall be measured with a digital MIL gauge and the orange peel with a digital wave scan device.

**PO00014914 - GENERAL PRIMER & PREP DESCRIPTION - LADDER/PLATFOR**

QTY: 1.00

All exposed welds shall be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

**PO00014917 - GENERAL FINISH PAINT DESCRIPTION - LADDER/PLATFORM**

QTY: 1.00

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the body shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

**PO00010852 - CUSTOM FINISH PAINT & PREP**

QTY: 1.00

The applicable areas of the cab shall be finish sanded and prepared for final paint.

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Upon completion of final preparation, the cab shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint.

Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

**PO00010851 - CUSTOM CAB PRIMER & PREP**

QTY: 1.00

The cab primer shall be a two (2) stage process.

First stage shall be a coating with a two part component, self etching, and corrosion resistant primer to chemically bond the surface of the metal for increased adhesion.

Second stage shall be multiple coats of a catalyzed, two component, polyurethane primer applied for leveling of small imperfections and top coat sealing.

**PO00011729 - CUSTOM CAB UNDERSIDE PAINT - BLACK**

QTY: 1.00

The exposed areas under the cab shall be painted with a black urethane paint/primer.

**PO00023873 - CUSTOM CAB EXTENSION PAINT**

QTY: 1.00

**PO00010853 - CUSTOM CAB BUFFING & FINISH**

QTY: 1.00

The exposed exterior finish of the cab shall be buffed and detailed.

**PO00022372 - CUSTOM CAB INTERIOR PAINT - DARK GRAY LINE-X**

QTY: 1.00

The interior metal surfaces of the cab shall be painted using dark gray Line-X material.

**PO00014920 - BODY BUFFING & FINISH - LADDER/PLATFORM**

QTY: 1.00

The visible and exposed areas of the body shall be buffed and detailed.

**PO00022128 - INSIDE/UNDERSIDE BODY PAINTED BLACK - LADDER/PLATFORM**

QTY: 1.00

The inside and underside of the complete body assembly shall be painted job color using a Sikkens paint system, prior to installation of the body on the chassis or torque box.

**PO00022153 - JOB COLOR COMPARTMENT INT W/SPATTER PAINT - LADDER**

QTY: 1.00

The interior of the compartments shall be finish painted job color with a scuff resistant webbing type paint of a contrasting color applied over the painted surfaces.

**PO00004559 - FENDER COMPARTMENT INTERIOR - JOB COLOR**

QTY: 1.00

The interior of the fender storage compartments (if fender compartments are specified) shall be finish painted job color.

**PO00004566 - SINGLE COLOR CUSTOM CAB PAINT SCHEME - SIKKENS 32031**

QTY: 1.00

The cab exterior shall be finish painted with Sikkens paint system, single color, to match purchaser's furnished paint code.

**PO00022251 - PUMPHOUSE & PLUMBING PAINTED BLACK - LADDER/PLATFORM**

QTY: 1.00

The pump enclosure and pump/plumbing within the pump enclosure shall be painted black.

**PO00014945 - SINGLE COLOR BODY PAINT SCHEME - LADDER/PLATFORM**

QTY: 1.00

The body paint finish shall be Sikkens paint system in a single color, to match customer furnished paint codes and requirements.

**PO00010938 - "TUF-KOTE" UNDER SEAL - SINGLE AXLE UP TO 210" WHEEL BASE**

QTY: 1.00

The under side of the apparatus shall have Tectyl # 518 film applied to retard rust and the corrosion process.

The product shall meet military Specification A-A-59295 Type 1.

The amber, semi-firm wax film shall be applied by air spray method.

The cure time is 24 hours.

The film shall be applied to the chassis major components such as: chassis frame rails and cross members, axles, springs, drive line components, lower radiator supports, fuel tank, air tanks, running boards, bumper apron and other related components.

The under side of the cab and body shall have the film applied to the following areas: cab steps, front gravel shield and underside of battery box, body substructure, underside of all body compartments, running board supports and rear step supports.

No film shall be applied to the exhaust system or cab wheel wells, or body rear wheel wells.

NOTE: The film shall remain semi-firm to promote self-sealing.

The film may leave a light amber cast to those areas treated.

**PO00023890 - LADDER RUST INHIBITOR - ALL DEVICES**

QTY: 1.00

All internal surfaces of the ladder exposed to the atmosphere, i.e., inside base, mid and fly section side rails shall be undercoated prior to ladder assembly using Procyon Corrosion Inhibitor to prevent internal corrosion. The corrosion inhibitor will meet the Boeing BMS-3-29 specification and meet a 1500-hour salt spray test. Manufacturers that do not rustproof the interiors of the ladder sections shall not be considered. (No Exceptions)

**PO00010855 - PINT OF TOUCH-UP PAINT**

QTY: 1.00

One (1) pint of each exterior color paint for touch-up purposes shall be supplied when the apparatus is delivered to the end user.

**PO00014988 - FINALIZATION & DETAILING - LADDER/PLATFORM**

QTY: 1.00

Prior to delivery of the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing shall include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

**PO00004576 - CUSTOM CHASSIS GLOSS BLACK COLOR FRAME RAILS**

QTY: 1.00

The chassis frame rails, suspension, axles, and drivelines (with the exception of any PTO drivelines which shall be safety yellow) shall be painted black with a polyurethane base paint prior to installation of any air lines or electric systems to ensure proper serviceability.

**PO00010856 - WHEEL AND HUB PAINT WITH SILVER TRIM - SINGLE AXLE**

QTY: 1.00

The chassis wheels, (except aluminum wheels) shall be painted job color with silver trim around the perimeter.

All outer wheels on the rear axle shall be job color with the inner being a color selected by the wheel manufacturer suitable for inner wheel use.

**PO00024543 - LADDER, PAINTING, ALL DEVICES, BLACK #FLNA41532**

QTY: 1.00

Prior to any painting, all weldments such as the outrigger beams, torque box, turntable, and ladder sections shall be sand blasted, cleaned and inspected to insure the removal of any surface imperfections and to insure superior paint adhesion to the metal.

The entire painting system shall utilize a single manufacturer's paint for compatibility between primers and finished coats. All painting shall be done in atmosphere controlled spray booths. The weldments shall then be primed with Sikkens primer. All seams between adjoining pieces that are not continuously welded shall be caulked to inhibit corrosion.

Before assembly, in preparation for final painting, the aerial unit shall be thoroughly cleaned, conforming to good painting practices.

The aerial components shall then be sprayed with Sikkens Polyurethane primer sealer. Finished paint used on the turntable, lift cylinder, and ladder sections shall be painted Sikkens FLNA41532 black.

**\*\*\*SHOP NOTE: SR00120373 - CLARIFICATION**

QTY: 1.00

*High wear areas on the ladder will be painted with silver Urethabond paint.*

**PO00014958 - EXTENSION CYLINDERS PAINTED TO MATCH LADDER COLOR**

QTY: 1.00

The extension cylinders shall be painted to match the color of the ladder.

**PO00014964 - TORQUEBOX PAINT - BLACK**

QTY: 1.00

The torque box shall be painted black, allowing easy touch-up after extended use.

**PO00014966 - OUTRIGGER PAINT - SILVER URETHABOND 104**

QTY: 1.00

The outrigger beams and the vertical jack shall be painted with Silver Urethabond 104 non-leafing aluminum urethane primer/finish, allowing easy touch-up after extended use.

**PO00014968 - TURNTABLE PAINT - LADDER COLOR**

QTY: 1.00

The turntable shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.

**PO00014970 - TURNTABLE CONSOLE PAINT - LADDER COLOR**

QTY: 1.00

The turntable console shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.



**PO00014972 - LIFT CYLINDERS PAINT - LADDER COLOR**

QTY: 1.00

The aerial lift cylinders shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.

**PO00009524 - REFLECTIVE RED/WHITE STRIPING ON SHELVES, TRAYS, ETC.**

QTY: 1.00

Up to twenty (20) 1" wide reflective stripes be installed on each side and front of the body pullout trays, shelves and the ladder rack support arms (if applicable).

Material to be Reflective with alternating RED – WHITE.

NOTE: Approx. 60' of striping.

**PO00009536 - REAR CHEVRON STRIPING**

QTY: 1.00

REAR CHEVRON STRIPING

**PO00012449 - 50% VERTICAL SURFACE**

QTY: 1.00

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping.

**PO00009540 - 6" FULL REAR ORALITE CHEVRON STRIPING**

QTY: 1.00

The striping shall be 6" Oralite reflective striping.

**\*\*\*SHOP NOTE: SR00119333 - CLARIFICATION**

QTY: 1.00

*The entire rear of the body with the exception of the roll up door will be overlaid with chevron striping.*

**PO00009547 - RUBY RED & LEMON YELLOW SCOTCH-LITE**

QTY: 1.00

The Scotch-Lite shall be Ruby Red and Lemon Yellow in color.

**PO00011822 - ROAD SAFETY KITS**

QTY: 1.00

A road safety kit shall be furnished with the following equipment:

- 2 1/2 lb. B-C fire extinguisher
- Triangle safety reflectors.

**PO00009918 - NY ROOF HOOK**

QTY: 4.00

A Six (6) foot NY roof hooks with mounting brackets.

**\*\*\*SHOP NOTE: SR00119334 - CLARIFICATION**

QTY: 1.00

*Two (2) New York Roof Hooks will be mounted on the side wall of the locker/front downrigger assembly. \*The customer is to provide photos or drawing of their existing storage brackets for reference.*

**\*\*\*SHOP NOTE: SR00119802 - CLARIFICATION**

**QTY: 1.00**

***The dealer shall supply and install seven (7) rechargeable hand lights after delivery.***

**PO00000521 - TWO (2) ZICO #SAC-44 FOLDING WHEEL CHOCKS, (2) MTD DRIVER SIDE**

**QTY: 1.00**

Two (2) ZICO #SAC-44 folding wheel chocks shall be mounted forward of the rear wheels on the driver side below the side running board compartments.

**PO00022926 - 2-1/2" NSTM X NY CORP THREAD SWIVEL ADAPTOR - 2.5" AUX. INTAKE O/S**

**QTY: 1.00**

A 2 1/2" NSTM x 2 1/2" X 3.00X8TPI Female NEW YORK CORP, chrome plated, swivel with screen shall be provided on the following 2 1/2" suction(s):

**PO00022927 - 2-1/2" NY CORP PLUG ADAPTOR - 2.5" AUX. INTAKE O/S**

**QTY: 2.00**

A 2 1/2" X 3.00X8TPI NEW YORK CORP, chrome plated, plug(s), shall be provided on the following 2 1/2" suction(s):

**PO00022928 - 2-1/2" NSTF X NY CORP MALE STRAIGHT ADAPTOR - CROSSLAY #3 & #4**

**QTY: 2.00**

A 2 1/2" NSTF X 2 1/2" X 3.00X8TPI NEW YORK CORP, chrome plated, rocker lug adapter(s), shall be provided on the following 2 1/2" discharge(s):

**PO00022931 - NY CORP FEMALE X 1-1/2" NSTM STRAIGHT ADAPTOR - NST 1.5" 2 D/S DISCH, 1 O/S DISCH, 1 FRONT BUMPER DISCH**

**QTY: 4.00**

A NEW YORK CORP 2 1/2" X 3.00X8TPI female X 1 1/2" NSTM rocker lug adapter(s), shall be provided on the following 2 1/2" discharge(s):

**\*\*\*SPECIAL: SP00027353 - 2-1/2" NSTF X NY CORP SWIVEL ADAPTOR - NYC 2.5" 2 D/S DISCH, 1 O/S DISCH, 1 FRONT BUMPER DISCH**

**QTY: 5.00**

***A 2 1/2" NSTF X 2 1/2" X 3.00X8TPI Male NEW YORK CORP MALE, chrome plated, swivel(s), shall be provided on the following 2 1/2" discharge(s):***

**PO00023664 - KME WARRANTY, STARTING ON IN-SERVICE DATE**

**QTY: 1.00**

Warranty coverage by KME will begin when the customer places the unit in service. This date may not exceed 60 days from the date of delivery to the customer.

The Customer must email kmeservice@kmeffire.com within 60 days of delivery, or the warranty start date will default to the original delivery date.

**\*\*\*SPECIAL: SP00027214 - 1 YEAR WARRANTY - BASE WITH CUSTOM CHASSIS**

**QTY: 1.00**

***The proposed vehicle includes a one (1) year new vehicle warranty, that begins upon the day of acceptance of the vehicle by the fire department. The warranty will ensure that the vehicle has been manufactured to the proposed contract specifications and will be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the original purchaser of the vehicle.***

***The warranty will not apply to tires, batteries, or other parts or components that are warranted directly by their manufacturers. The warranty will not apply to routine maintenance requirements as described in the service and operators manual. No warranty whether express, implied,***

***statutory or otherwise including, but not limited to any warranty of merchantability or fitness for purpose will be imposed.***

***All components and parts of the vehicle are warranted for a period of one (1) year from acceptance of the vehicle unless excluded elsewhere in this warranty or described as having longer time limitations.***

***For Clarification: All warranties will go into effect on the day of acceptance by fire department.***

**PO00022661 - 5 YEAR CUMMINS BASE WARRANTY**

QTY: 1.00

The proposed unit will be equipped with a Fire Service rated engine, which will come furnished with a five (5) year Engine Manufacturer's warranty. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

**PO00022665 - 5 YEAR ALLISON EVS TRANSMISSION WARRANTY**

QTY: 1.00

The proposed Allison transmission will be provided with a five (5) year warranty. A copy of the Allison transmission warranty will be supplied to the purchaser to define additional details of the warranty provisions.

**PO00022980 - 3 YEAR COOLING SYSTEM WARRANTY - CUSTOM**

QTY: 1.00

Kovatch Mobile Equipment (KME) warrants all Cooling System Equipment components used in the construction of KME Fire Apparatus against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of three (3) years from the date of delivery/acceptance to the original user-purchaser, whichever occurs first.

This warranty applies to both purchased and fabricated, manufacturer supplied coolant system components and is not provided in lieu of any Vendor provided warranties. All coolant system components provided by the engine manufacturer are covered by the engine manufacturer's warranty only.

**PO00022669 - LIFETIME FRAMERAIL WARRANTY**

QTY: 1.00

The proposed KME custom chassis frame and cross members will be warranted to the original purchaser for the life of the vehicle. A copy of KME's frame rail warranty will be supplied to define additional details of the warranty provisions.

**PO00022978 - SHEPPARD STEERING GEAR STANDARD - THREE YEAR WARRANTY**

QTY: 1.00

The proposed Sheppard steering gear will be warranted for a period of three (3) years from the first date of service or 150,000 miles (241,401 kilometers), whichever occurs first. The product will be free from defects in material and workmanship under normal use in applications approved in advance by Sheppard.

**PO00022675 - 5 YEAR MERITOR FRONT AXLE - WARRANTY**

QTY: 1.00

The Meritor axle shall be provided with a five (5) year parts and labor warranty. The wheel seals, gaskets and wheel bearings shall have a one (1) year warranty. A copy of Meritor's warranty shall be supplied to define additional details of the warranty provisions.

**PO00022678 - 5 YEAR MERITOR SINGLE AXLE REAR - WARRANTY**

QTY: 1.00

The Meritor axle/s shall be furnished with a five (5) year warranty; the first two (2) years shall be parts and labor, the remaining three (3) years shall be parts only. Wheel seals, gaskets and wheel bearings shall be covered for one (1) year providing that Meritor supplies and assembles the wheel end equipment. A copy of the warranty from Meritor shall be supplied to define additional details of the warranty provisions. For vehicles that operate full or part-time outside of the United States and Canada, a one (1) year parts only warranty shall apply.

**PO00022681 - 3 YEAR MERITOR ABS - WARRANTY**

QTY: 1.00

The Meritor ABS shall be provided with a three (3) year warranty, parts and labor. A copy of Meritor's warranty shall be supplied to define additional details of the warranty provisions. Vehicles that operate full or part-time outside the United States and Canada shall have a one (1) year, parts only warranty.

**PO00022979 - 10 YEAR CAB STRUCTURAL WARRANTY**

QTY: 1.00

The proposed cab will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

**PO00022695 - 10 YEAR BODY STRUCTURAL WARRANTY**

QTY: 1.00

The proposed body will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

**PO00022698 - 10 YEAR CAB & BODY CORROSION WARRANTY**

QTY: 1.00

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

**PO00022701 - PAINT FINISH WARRANTY, TEN (10) YEAR**

QTY: 1.00

The proposed paint finish will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

**PO00022702 - 5 YEAR LETTERING WARRANTY**

QTY: 1.00

The apparatus manufacturer will provide a five (5) year warranty against defects in material and workmanship for all graphics processes. Any valid claims must be made in writing within 15 days of the determination of any defects to the manufacturer's fire apparatus. The manufacturer will at its option make any necessary repairs either at a local authorized service center or at the factory if required. The manufacturer will make the final decision as to where the repairs are to be made and any transportation cost is the owner's responsibility. The manufacturer will at its option, repair or replace any verified defects in workmanship or materials at no cost to the owner provided all the requirements of this warranty have been met.

The manufacturer will not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, downtime, loss of use or inconvenience. THE COMPANY MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND SPECIFICALLY, DISCLAIMS ANY IMPLIED WARRANTY INCLUDING THE WARRANTY OF MERCHANTABILITY.

The manufacturer continually strives to improve its products and therefore, reserves the right to make improvements or changes without incurring any obligations to make such changes or additions to equipment previously sold.

**PO00022703 - 1 YEAR BRIGHTWORK WARRANTY**

QTY: 1.00

KME Fire Apparatus (KME) warrants all bright finish components used in the construction of KME Fire Apparatus against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of one (1) year from the date of delivery/acceptance to the original user-purchaser, whichever occurs first.

The expressed warranty excludes corrosion or degradation of bright finished components caused by damage to the component.

**PO00022981 - 10 YEAR STAINLESS STEEL PIPING WARRANTY**

QTY: 1.00

The proposed stainless steel plumbing will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

**PO00023668 - REAR SUSPENSION - LEAF SPRING - 1 YEAR WARRANTY**

QTY: 1.00

KME hereby warrants to the original Buyer, that leaf spring products installed will be free of defects in material and workmanship for one (1) year. The "Warranty Period" commences on the date the original Buyer takes delivery of the product from the manufacturer.

**PO00022722 - 20 YEAR AERIAL LADDER WARRANTY**

QTY: 1.00

The aerial device weldment, including outriggers, torque box, turntable and ladder sections shall be warranted against loss of integrity or failure due to defects in material or workmanship for a period of twenty (20) years from the date of acceptance of the unit.

**PO00022725 - FIVE (5) YEAR AERIAL WATERWAY SWIVEL WARRANTY**

QTY: 1.00

The aerial waterway swivel shall be covered by a five (5) year warranty to cover the waterway seals and individual tube assemblies. A copy of this warranty shall be provided to the end user.

**PO00022727 - TEN 10 YEAR AERIAL WATERWAY WARRANTY**

QTY: 1.00

The water tank shall be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

**PO00022973 - LIFETIME POLY TANK WARRANTY - ALL TANKS**

QTY: 1.00

The proposed water tank will be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

**PO00022734 - HALE FIRE PUMP LIMITED STANDARD WARRANTY**

QTY: 1.00

Hale Products, Incorporated ("Hale") hereby warrants to the original buyer that products manufactured by Hale shall be free of defects in material and workmanship for a period of five (5) years from the date product is first placed into service or five and one-half (5 1/2) years from date of shipment by Hale, whichever period shall be first to expire. Within this warranty period, Hale will cover parts and labor for the first two (2) years and parts only for years three (3) through five (5).

**PO00022761 - AKRON HEAVY DUTY VALVE - 10 YEAR WARRANTY**

QTY: 1.00

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass shall repair or replace any Heavy Duty Swing Out Valve which fails to satisfy this warranty.

**PO00022983 - CLASS 1 - ELECTRICAL PRODUCT WARRANTY - 2 YEAR**

QTY: 1.00

Class 1 warrants that any equipment of our own manufacture (or manufactured for us pursuant to our specifications) found to have defects in material or workmanship during normal use and service, will be repaired or replaced (at our option) free of charge, provided that written notice of such defect is received by us within two years (three for liquid-filled gauges) after initial shipment.

All equipment requiring repair or replacement under this warranty will be returned prepaid to Class 1. Such returned equipment will be examined by us and, if found to be defective as a result of materials failure or workmanship, will be repaired or replaced at no charge.

**PO00022985 - BOSTROM SEATING 5 YEAR LIMITED WARRANTY**

QTY: 1.00

H.O. Bostrom will warrant each new seat manufactured, to be free from defects in materials and workmanship when delivered to the original purchaser for a period of five (5) years. Labor to remove or reinstall and transportation of defective items will not be covered by, or any allowance made for the said cost under this warranty.

**PO00024053 - ADDITIONAL ITEMS SHIPPED WITH VEHICLE**

QTY: 1.00

- 1 - Pint of touch up paint for each color
- 1 - Bag of assorted stainless steel nuts and bolts
- 1 - Complete set of hydraulic filters for the pressure filter and the return line filter

**PO00024715 - VEHICLE CLASS TIER 0**

QTY: 1.00