Earleigh Heights Volunteer Fire Company
Severna, MD
Heavy Rescue- SVI #1180
Production Specification

ROCK SOLID QUALITY

LIABILITY INSURANCE

The manufacturer shall furnish with the bid a certificate of insurance for;

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

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

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

Excess Umbrella Liability coverage of $6,000,000.00 each occurrence, Aggregate of $6,000,000.00.
Garage Keepers Liability coverage of $6,000,000.00 combined limit.

All insurance policies must be;

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

INTERNET IN-PROCESS SITE

The manufacturer shall post and maintain a website where the Earleigh Heights Volunteer Fire Company will be able to view digital images of their apparatus as its being built. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of unit.

RESPONSIBILITY OF PURCHASER

It shall be the responsibility of the purchaser to specify the details of the apparatus in addition to the requirements in NFPA 1901 needed by the manufacturer to build the apparatus, including:

1) Requirements not uniquely specified in NFPA 1901, such as the type of apparatus desired.
2) Any features of the apparatus desired in addition to, or in excess of, the requirements in NFPA 1901.

After acceptance of the fire apparatus, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the apparatus and the associated equipment.

RESPONSIBILITY OF CONTRACTOR

The Contractor shall provide a detailed description of the apparatus, a list of equipment to be furnished, and other construction and performance details to which the apparatus shall conform. The detailed description of the apparatus shall include, but shall not be limited to,

1. Estimated In-Service Weight,
2. Wheelbase, Turning Clearance Radius,
3. Principal dimensions, Angle of Approach, Angle of Departure,
4. Transmission, Axle Ratios.

The Contractor’s detailed description shall include a statement specifically describing each aspect of the delivered apparatus that will not be fully compliant with the requirements of this standard.

The purpose of these Contractor specifications shall be to define what the contractor intends to furnish and deliver to the purchaser.

Responsibility for the apparatus and equipment shall remain with the contractor until they are accepted by the purchaser.

VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS

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

FIRE APPARATUS PERFORMANCE

The fire apparatus shall meet the requirements of this standard at elevations of 2000 ft (600 m) above sea level.

The fire apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The fire apparatus shall meet the requirements of this standard in ambient temperature conditions between 32°F (O°C) and 110°F (43°C).

HIGHWAY PERFORMANCE

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

1) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
2) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
3) Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (95 km/ hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

SERVICEABILITY

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

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

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

FIRE APPARATUS DOCUMENTATION

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

1) The manufacturers record of apparatus construction details, including the following documents:

    a) Owner's name and address
    b) Apparatus manufacturer, model, and serial number
    c) Chassis make, model, and serial number
    d) GAWR of front and rear axles and GVWR

e) Front tire size and total rated capacity in pounds (kilograms)
f) Rear tire size and total rated capacity in pounds (kilograms)
g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
h) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
i) Type of fuel and fuel tank capacity
j) Electrical system voltage and alternator output in amps
k) Battery make, model, and capacity in cold cranking amps (CCA)
l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
m) Ratios of all driving axles
n) Maximum governed road speed
o) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
p) Pump transmission make, model, serial number, and gear ratio
q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
r) Water tank certified capacity in gallons or liters
s) Foam tank (if provided) certified capacity in gallons (liters)
t) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
u) Paint manufacturer and paint number(s)
v) Company name and signature of responsible company representative
w) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)

2) Certification of compliance of the optical warning system *(see 13.8.16)*
3) Siren manufacturer's certification of the siren *(see 13.9.1.1)*
4) Written load analysis and results of the electrical system performance tests *(see 13.14.1 and Section 13.15)*
5) Certification of slip resistance of all stepping, standing, and walking surfaces *(see 15.7.4.5)*
6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability *(see 16.2.4.1)*
7) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions *(see 16.2.4.2)*
8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications *(see 16.3.1)*
9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed *(see 16.3.2.2)*
10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test *(see 16.5.2.2)*
11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 16.5.2.1, the pump manufacturer's certification of the hydrodynamic test
12) If the apparatus has a fire pump, the certification of inspection and test for the fire pump *(see 16.13.1.1.5 or 16.13.1.2.4 as applicable)*
13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test *(see Section 17.13)*
14) When the apparatus is equipped with a water tank, the certification of water tank capacity *(see Section 18.6)*
15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device *(see Section 19.24)*
16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911
17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy *(see 20.10.4.2)* and the final installer's certification the foam proportioning system meets this standard *(see 20.11.2)*
18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests *(see Section 21.9)*
19) If the apparatus has a line voltage power source, the certification of the test for the power source *(see 22.15.7.2)*
20) If the apparatus is equipped with an air system, air tank certificates *(see 24.5.1.2)*, the SCBA fill station certification *(see 24.9.6)*, and the results of the testing of the air system installation *(see 24.14.5 and 24.15.4)*
21) Any other required manufacturer test data or reports

OPERATIONS AND SERVICE DOCUMENTATION

The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

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

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

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

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

NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE

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

FIRE APPARATUS SAFETY GUIDE

A Fire Apparatus Safety Guide published by Fire Apparatus manufacturer's Association shall be provided with delivered vehicle. This manual includes essential safety information for fire fighters, fire chiefs, apparatus mechanics, and fire department safety officers. The guide is applicable to municipal, wildland, and airport fire fighting apparatus manufactured on either custom or commercial chassis.

STATEMENTOF EXCEPTIONS

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

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

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

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

CARRYING CAPACITY

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

The estimated in-service weight shall include the following:

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

The manufacturer shall engineer and design the fire apparatus such that the completed apparatus, when loaded to its estimated in-service weight, with all movable weights distributed as close as is practical to their intended in-service configuration, does not exceed the GVWR.

A final manufacturer's certification of the GVWR or GCWR, along with a certification of each GAWR, shall be supplied on a label affixed to the vehicle.

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

The label shall show the height of the completed unequipped fire apparatus in feet and inches (meters), the length of the completed fire apparatus in feet and inches (meters), and the GVWR in tons (metric tons).

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

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

TESTING

ROAD TEST

Each apparatus shall be tested by the manufacturer before delivery to verify that it meets the following criteria;

Tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws. Tests shall be conducted on a dry, level, paved surface that is free of loose material, oil, or grease. Tests shall be conducted with the water and foam tanks full (water or product).

The apparatus shall accelerate from 0 to 35 mph (55 km/hr) within 25 seconds. The apparatus shall attain a speed of 50 mph (80 km/ hr).

The auxiliary braking system, if so equipped, shall function as intended by the auxiliary braking system manufacturer.

The air service brakes shall bring the apparatus to a complete stop from a speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m).

The hydraulic service brakes shall bring the apparatus to a complete stop from a speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m).

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

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

TEST SEQUENCE

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

1. RESERVE CAPACITY TEST

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

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

2. ALTERNATOR PERFORMANCE TEST

TEST AT IDLE

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

TEST AT FULL LOAD

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

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

3. LOW VOLTAGE ALARM TEST

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

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

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

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

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

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

UL 120/240 VAC CERTIFICATION

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

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

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

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

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

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

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

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

1) Altitude
2) Barometric pressure
3) Relative humidity

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

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

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

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

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

DOCUMENTATION

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

DIELECTRIC VOLTAGE WITHSTAND TEST

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

The test shall be conducted as follows:

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

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

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

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

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

WARRANTY

A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials and the cost of labor.

The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source and will deal directly with the Earleigh Heights Volunteer Fire Company on all warranty work.

GENERAL LIMITED WARRANTY - TWO (2) YEARS

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

The Contractor must be the "single source" coordinator of all warranties on the vehicle.
Warranty will begin based on delivery mileage.

LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS

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

STRUCTURAL WARRANTY - TWENTY (20) YEARS

The body shall be free of structural or design failure or workmanship for a period of twenty (20) years or 150,000 miles (or 241,402 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.
Warranty will begin based on delivery mileage.

UNDERCOAT WARRANTY

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

PAINT LIMITED WARRANTY - TEN (10) YEARS

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

GRAPHICS LIMITED WARRANTY

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

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within four hundred thirty (430) days after receipt of a purchase order or contract.

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

OVERALL HEIGHT REQUIREMENT

The overall height (OAH) of the vehicle shall be maximum 128“ (10'-8 ") from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

OVERALL LENGTH REQUIREMENT

There is no overall length (OAL) restriction for this vehicle.

OVERALL WIDTH

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

ANGLE OF APPROACH

The angle of approach for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

ANGLE OF DEPARTURE

The angle of departure for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

CAB CHASSIS SPECIFICATION

One (1) REQUIRED CUSTOMER ORDER INFORMATION (in Tech Note) 00-03-1101

One (1) Contract "A" - COD Payment 00-03-110B

One (1) Payment Terms - "A" Pay in Full on Delivery 00-03-230B
PAYMENT TERMS

Terms are Net, Payment in Full upon Delivery. If the contract includes Dealer Furnished Equipment and services, the apparatus shall be delivered to the customer and payment made, less five (5) percent of the Contract Price that is held by the customer until all items and services are provided by the Dealer. The 5% Final Payment and Acceptance shall be made once the terms of the contract are satisfied by the Dealer.

One (1) Federal & State Regulations, NFPA Standards & Import Tariffs 00-04-0015
FEDERAL & STATE REGULATIONS, NFPA STANDARDS & IMPORT TARIFFS

In the event that any applicable Federal or State Regulations (DOT, FMVSS, EPA, etc.), National Fire Protection Association Standards or import tariffs which are enacted during the course of this contract, and which requires a change in the contract specifications and purchase price in order for the Apparatus and Equipment to comply with such regulation, the parties will execute a change order describing the change in the specifications and increasing the purchase price by an amount equal to the increase in the costs of producing the Apparatus and Equipment

One (1) Intent of Specifications 00-04-0120
INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the design, manufacture and delivery to the purchaser of a complete fire apparatus equipped as specified herein. These specifications include the general requirements of design, material content and construction as well as certain equipment that shall be provided by the contractor. Not all details of the design, material content and construction of the fire apparatus are herein specified. Any such design, material content and construction not specified herein are left to the sole discretion of the seller contractor.

One (1) Compliance with NFPA 1901 00-04-01A0
COMPLIANCE WITH NFPA 1901

The National Fire Protection Association Standard “NFPA 1901 - Standard for Automotive Fire Apparatus - Current Edition” (hereinafter referred to as NPFA 1901) in effect at the time of the purchase shall be used as a reference and its requirements shall be met by the apparatus manufacturer. The apparatus shall be constructed in accordance with federal and state laws at the

time of bid. Any federal, state or NFPA amended changes that shall affect the cost of producing said apparatus shall be charged to the purchaser. Mandatory minor apparatus equipment as stated in the applicable paragraphs of the NFPA standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

Any and all references to “NFPA 1901” within this document shall refer to the current edition of NFPA 1901 in effect at the time of the purchase.

One (1) Body Builder's NFPA 1901 Responsibilities 00-04-01A5
BODY BUILDER'S NFPA 1901 RESPONSIBILITIES

It shall be the responsibility of the body builder to perform the following testing and submit to the end user the testing certifications called out in the NFPA 1901 current edition. This list is not all inclusive of all required documentation.

Low Voltage Electrical Testing
Optical Warning Devices Compliance Testing

One (1) Purchaser's NFPA 1901 Responsibilities 00-04-01B0
PURCHASER’S NFPA 1901 RESPONSIBILITIES

In accordance with NFPA 1901, current edition, it shall be the responsibility of the purchaser to specify the following details of the apparatus:

- Its required performance, including where operations at or above elevations of 2000 ft. or on grades greater than 6 percent are required.
- The maximum number of firefighters to ride within the apparatus.
- Specific electrical loads that are to be part of the minimum continuous electrical load as defined in current edition of NFPA 1901 at the time of bid.
- Any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum requirements of the NFPA 1901 standard in effect at the time of the bid. Equipment weight and location on the apparatus are the responsibility of the purchaser as a prerequisite of defining the loaded vehicle’s vertical center of gravity for rollover stability calculations, when required.

One (1) Acquaintance with Specifications - meets Intent 00-04-023I
ACQUAINTANCE WITH SPECIFICATIONS

Seagrave Fire Apparatus LLC and its Sales Representatives have reviewed your bid specifications. It is our opinion that the fire apparatus as depicted in this proposal meets or exceeds the intent of the bid specifications. The purchaser is required to review our Contractor’s Specifications contained herein.
Because of the intricacies in fire apparatus design, engineering and manufacturing, the Contactor’s Specifications, along with any mutually approved changes, shall prevail in the event of a discrepancy between the purchaser’s original bid specifications and the contractor’s specifications.

One (1) Single Source Manufacturer - SFA Custom Chassis 00-04-0430
SINGLE SOURCE MANUFACTURER

Seagrave is a single source fire apparatus manufacturer. A single source manufacturer is defined as a manufacturer who designs, engineers and manufactures the entire apparatus in the factory of the bidder. The use of commonly incorporated components such as the diesel engine, the transmission, the pump, lighting fixtures, etc. is acceptable. However, calling the cab/chassis/drivetrain or the

outriggers/torque box/aerial device a “component” shall not be acceptable. Single source warranty and service provision from Seagrave Fire Apparatus, LLC and its distributors, sales representatives and service network shall be provided to insure parts availability and undivided warranty responsibility. There shall be no exceptions to these conditions.

One (1) Third Party Manufactured Products - Discontinuance Policy 00-04-1100
DISCONTINUANCE POLICY

The apparatus manufacturer furnishes and installs components which are manufactured by 3rd Party Vendors. From time to time, these products are either changed or discontinued by the manufacturer. The apparatus manufacturer reserves the right to replace a discontinued 3rd Party Vendor manufactured component with an equivalent model.

One (1) Standard Placement of Components 00-04-1110
STANDARD PLACEMENT OF COMPONENTS

Any deviation from the apparatus manufacturer's standard placement shall incur additional charges.

Two Hundred (200)
00-04-5710 Completion Date
COMPLETION DATE

Barring any significant change in our current backlog of orders, and delays due to strikes, war or international conflict, failures to obtain materials, or other causes beyond our control not preventing, the apparatus and equipment detailed in the attached specification shall be delivered to you within approximately **Two Hundred (200) Calendar Days** after receiving the complete order and signed approval drawing. It shall be understood and agreed that changes requested after the order placement and the resulting signed change orders and approval drawings, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1) Proposal Drawings 00-04-5910
PROPOSAL DRAWINGS

Included with our proposal are line drawings of the apparatus being proposed. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawings show five
(5) views of the vehicle: front, rear, both sides and top. The drawings show the wheelbase and overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning equipment, work lights, seating and other major items that are to be provided on the apparatus.

One (1) Approval Drawings 00-04-7000
APPROVAL DRAWINGS

Following the acceptance of a complete and approved order, three (3) sets of engineering, blueprint type drawings, specifically for this apparatus, shall be provided by the manufacturer and shall be approved by the Fire Department before construction begins. Both the Fire Department and the manufacturer's representative shall have a copy of this drawing. It shall become part of the total contract. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, final compartment sizes and features, booster tank position, the location of all emergency warning

equipment, work and scene lights.

One (1) Change Orders 00-04-7100
CHANGE ORDERS

To ensure the proper engineering and construction of the purchaser's custom fire apparatus in a timely manner, the contractor shall consider the order final and complete at placement of the order. Change orders requested after the order placement are discouraged. It shall be understood and agreed that any changes, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1) Pre-Construction Conference, Travel Not Included 00-04-811D

PRE-CONSTRUCTION CONFERENCE

One (1) "Pre-Construction" conference trip for representatives of the purchaser shall be included in the bid. The conference shall be held at a company facility or an authorized representative's facility during normal business hours, Monday - Friday. All cost of transportation, meals and lodging shall be the responsibility of the purchaser. A distributor or sales representative shall accompany the purchaser on the trip. The conference shall be held prior to the commencement of any work being done on the apparatus. Factory sales and engineering personnel shall participate in the conference as needed to ensure that the apparatus fulfills all the requirements of the accepted bid. Authorized representatives from both the purchaser and manufacturer shall approve and sign any changes made during these meetings prior to the commencement of any work being done on the apparatus.

It is understood and agreed that delays beyond thirty (30) days of contract approval for Pre-Construction conference changes in specifications shall be cause for delay in delivery.

Four (4) Number of Fire Depart Representatives Attending Pre-Construction Conference (Ea) 00-04-813Z
Four (4) fire department representatives shall attend the Pre-Construction Conference.

One (1) Final Inspection, Travel Not Included 00-04-831D
FINAL INSPECTION TRIP

One (1) "Final" inspection trip for representatives of the purchaser shall be included in the bid. The inspection shall take place at a Company facility or an authorized representative's facility of the Company's during normal business hours, Monday - Friday. The selection of the inspection location shall be done at the sole discretion of the Company. The cost of transportation, meals and lodging shall be the responsibility of the purchaser. An authorized distributor or manufacturer's sales representative may accompany the Purchaser on the inspection trip.

Four (4) Number of Fire Department Representatives Attending Final Inspection (Ea) 00-04-834Z
Four (4) fire department representatives shall attend the Final Inspection.

One (1) Final Inspection - Underside 00-04-8360
UNDERSIDE FINAL INSPECTION

During "Final" Inspection, the complete vehicle shall be raised, allowing the Fire Department Inspection team to walk under the apparatus to review the complete underside.

One (1) Pre-Delivery Road Trip and Final Factory Checklist 00-04-8400
PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST

Prior to delivery, the completed apparatus shall be thoroughly inspected by the factory. This inspection shall include a road test of the apparatus. During the factory inspections and road testing, a checklist shall be utilized by factory personnel to document the inspection and road test results. The checklist shall include:

- Documentation of the make, model and serial numbers of all major components such as the engine, transmission, pump, axles, etc.
- Complete, comprehensive operational check of all chassis/drive train components and fluid levels.
- A comprehensive review of the entire exterior and interior of the apparatus for fit and finish, checked against the customer's order specifications, and any ensuing change orders.
- A thorough test of all driving systems under actual highway and city driving conditions.

One (1) Final Delivery - Zone 6 00-04-8466

DELIVERY

The fire apparatus shall be delivered over the road and under its own power to insure proper break-in of all driving components while still under warranty. Rail or truck freight shipment of the apparatus is not acceptable.

Delivery shall be to an area located in Zone 6.

One (1) Familiarization - Pumpers/Rescues 00-04-8510

FAMILIARIZATION

An experienced and qualified distributor or sales representative shall familiarize Fire Department personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered.

The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus.

The familiarization period shall consist of three (3) sessions over a period of three (3) consecutive days, during the normal work week (Monday - Friday). The schedule of the instruction sessions shall be arranged by mutual agreement of the Fire Department and the delivering authority. The number, length and time of the sessions may vary due to the nature of the apparatus and availability of attendees and must be approved in advance. The balance of any time remaining in a session may be devoted to minor adjustments or corrections to the apparatus for items which may have developed while in transit from the factory.

One (1) General Design Requirements - S/S Custom Cab 00-05-011B

GENERAL DESIGN REQUIREMENTS

The specified apparatus shall be a custom cab type; designed, engineered and manufactured specifically for the fire service in North America. The apparatus meets or exceeds the requirements of the NFPA 1901, current edition, in all respects.

Seagrave’s deluxe custom cab chassis shall be provided. It incorporates an all steel cab for

strength, durability and safety. The cab sheet metal shall be constructed of stainless steel, no exception. The Seagrave cab incorporates a protective safety-cage design that totally surrounds and protects the seat belted driver, officer and crew. The safety-cage, composed of heavy gauge stainless steel, makes the Seagrave deluxe cab an extremely strong cab.

One (1) Gross Vehicle Weight - with Certificate at Delivery 00-05-0210
GROSS VEHICLE WEIGHT

The manufacturer shall be responsible for proper weight distribution upon the chassis and axles. The apparatus when loaded, shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. A certified weight certificate showing weights on the front axle, rear axle and total weight for the completed apparatus with the water and fuel tanks full, but without personnel, equipment and hose shall be provided at the time of delivery.

In accordance with NFPA 1901, it shall be the responsibility of the purchaser to notify the manufacturer in the purchaser's specification of any hose, ground ladders, or equipment to be carried by the apparatus that exceeds the minimum requirements of the NFPA 1901 standard in effect at the time of the bid.

One (1) Body Builder Declared Body Weight with Customer Equipment Installed 00-05-0300
The weight of the body and customer equipment shall be:

One (1) Vehicle Performance Analysis Report 00-05-0420
VEHICLE PERFORMANCE ANALYSIS

A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, gradeability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle, but shall be available prior to engineering of the vehicle.

One (1) General Construction, Quality and Workmanship 00-05-2000
GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment, including a filled water tank, full complement of personnel and fire hose shall be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices.

All welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society.

The apparatus shall be designed to conform to applicable ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook

– American Welding Society (AWS) - AWSO14.4-77 Classification and Application of Welded Joints for Machinery and Equipment
– American Society for Non-Destructive Testing (ASNT)

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

One (1) NFPA 1901 Stepping Surface Certification 00-05-2110
STEPPING SURFACE CERTIFICATION

A certification that all materials used for exterior surfaces designated as stepping, standing and walking areas, all interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA 1901 shall be provided with the delivery documentation.

One (1) Performance Requirements and Test - NFPA 00-05-4000
PERFORMANCE REQUIREMENTS AND TEST - NFPA

A road test shall be conducted with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a continuous run of ten (10) miles or more shall be made during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level highway without exceeding the maximum governed rpm of the engine.

The fully loaded vehicle shall be capable of obtaining a minimum top speed of 50 mph on a level highway with the engine not exceeding its governed rpm (full load).

The apparatus shall be able to maintain a speed of 20 mph on any grade up to and including 6%.

The service brakes shall be capable of stopping the fully loaded vehicle in 35 feet at 20 mph on a level highway.

The apparatus shall be tested and approved in accordance with NFPA standard practices.

One (1) == Cab/Chas - ATT Chassis - 0.000 ==

One (1) Attacker S/S Tilting Cab - Chassis Only 10-00-2110
GENERAL

Chassis shall be a new, heavy duty, custom fire apparatus design built expressly for the fire service. All standard components that have not been specified shall be provided.

Chassis shall be designed, engineered and built by the bidder and be the manufacturer's first line custom chassis.

The chassis shall be suitable for heavy duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.

One (1) Wheelbase 202.00"
10-00-9910

WHEELBASE

The wheelbase shall be: **202** inches

One (1) Rear Overhang 100.00"
10-00-9915

REAR OVERHANG

The rear frame overhang shall be: 100 inches

Two (2) Seating Capacity 10-00-9920
SEATING CAPACITY

The safe seating capacity of the cab for properly belted passengers shall be: Two (2)

One (1) Gross Vehicle Weight Ratings 10-00-9940
GROSS VEHICLE WEIGHT RATINGS

Front Vehicle Weight Rating shall be: [#22,800]

Rear Vehicle Weight Rating shall be: [#47,000]

Gross Vehicle Weight Rating shall be: [#69,800]

One (1) Frame - 10.25"/12.5" Vari Sect. Rail, 2.6016m RBM (180-219" Wheel Base) 10-10-1200
FRAME

The chassis frame shall be built with two variable section steel channels with a minimum of six (6) cross members. Pump shall not be counted as a cross member. The side rails shall be of heat treated steel with tapering measurements. Each rail shall have a section modulus of 21.7, a minimum elastic limit of 120,000 PSI and a minimum resisting bending moment of 2,601,600 inch pounds. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material. The frame and cross members shall be a bolted assembly utilizing 5/8" flange head grade eight bolts and Spiralock® flange nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. because of their ability to maintain a constant torque tension and prevent vibration loosening. Their design shall provide for an even thread load distribution over the bolt, increased fatigue strength and life, and clamping torque. All holes made must be used and any holes in the frame for options not required on this chassis are not acceptable.

Frame rails less than or equal to 480" in length shall receive a duo-coat primer: an E-coat followed by a powder coating. This duo-coat process meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480" in length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process meets 240 hours of salt spray testing per ASTM B117 test procedure.

One (1) Bumper - 10.25" High (NYC Style) Mitered Corners, Painted 10-10-5000
BUMPER

A heavy duty 10-1/4" high x 1/4" thick painted steel bumper shall be mounted to the front of the chassis and be fabricated in the factory of the bidder. The bumper shall be channel shaped with 2" flanges and its ends shall be angled 45 degrees for a distance of 5". The bumper shall be painted to match the lower cab color.

As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread plate gravel pan (deck) contoured to fit just below the front face of the cab and just below the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.

One (1) LINE-X Edge on Top Flange of Bumper 10-11-0095
LINE-X EDGE

Black LINE-X shall be applied to the top flange of the bumper and shall terminate 1" down on the front and sides of the extension.

One (1) Bumper Extension – 18”
10-12-0018

18" BUMPER EXTENSION

A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 18" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.

One (1) Bumper Extension shall be Liftable & Towable 10-12-00A0
LIFTABLE AND TOWABLE BUMPER EXTENSION

The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension.

One (1) Recessed Notch in Front Bumper - RS, Full, for Q2B 10-12-154F
RECESSED NOTCH IN FRONT BUMPER FOR RIGHT SIDE Q2B SIREN

A recessed notch shall be cut into the right side of the front bumper and gravel pan for a Q2B siren.

Recess to box Q2B siren in shall be made of painted steel to match the rest of the front bumper--this is inclusive of the 2" lips on top of the gravel pan.

One (1) Bumper Extension Not a Step - Sign, FAMA26 No-Step 10-12-8010
FAMA26 NO-STEP SIGN

In accordance with NFPA 1901 chapter 15.7.1.6, a FAMA26 "No-Step" sign shall be attached to the top of the gravel pan. The sign reads: "Fall Hazard-Railings NOT provided. Surface may be slippery - Not intended for stepping, standing or walking. Fall will injure or kill".

One (1) Front Tow Eyes - (2) Cut Plate, Chrome, Under Pan 10-20-0650
FRONT TOW EYES

Two (2) chrome plated "cut plate" type tow eyes shall be furnished. They shall be installed under the aluminum tread plate "gravel" pan, behind bumper, and securely attached to the bumper extension frame. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening.

One (1) Winch - Warn M15-S, 15K, 90' Wire Rope 10-22-2620
WINCH

A Warn Industries M15-S large frame model 47801 12-volt electric winch shall be provided. The winch shall include 90 feet of wire rope, which includes a roller fairlead. The winch shall have a 15,000 lb capacity. The winch shall be gray in color.

One (1) Winch Mount - Front, Permanent w/ Compartment & Cover 10-22-111P
WINCH PERMANENT MOUNT

A winch compartment shall be recessed in the bumper extension. It shall have a flush mounted top opening, a hinged (at rear) access cover secured with a flush mounted retaining latch. The winch compartment shall be equipped with a work light under the cover. There shall be a cutout in the front face of the bumper and a black four-way roller type fairlead cable guide shall be mounted in it.

One (1) Power Steering Installation 10-25-0100
STEERING

A heavy duty 18,000 lb. capacity power steering system shall be provided. The hydraulic pump shall be engine gear driven. The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It shall be a welded assembly constructed of 3/8" formed steel with a 3/4" face plate. Vertical gussets shall be provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is stationary.

One (1) Auxiliary Cylinder - Power Steering 10-25-1300
AUXILIARY CYLINDER FOR POWER STEERING

An auxiliary power assist cylinder shall be provided in the power steering system.

One (1) Chassis Alignment 10-25-2000
CHASSIS ALIGNMENT

The chassis frame rails shall be cross checked for length and square. Front and rear axles shall be laser aligned. The front axle shall be aligned at the manufacturer's facility.

One (1) Air System - Chassis, Three Axle 10-28-0200
AIR PIPING

The service brake system shall be full air type. The system is to meet or exceed current FMVSS-121 requirements. Other components or accessories shall be as follows:

Pressure protection
valve Quick build up

system
Engine mounted, gear driven air compressor
Bendix Model E-6 dual circuit brake treadle
valve
Two (2) air pressure gauges on cab dash with indicator light and
buzzer Air reservoirs with capacity to meet FMVSS-121

The Bendix SR-7 valve, in conjunction with the double check valve, shall enable modulation of the spring brakes in the event of a service brake air system failure to allow the vehicle to be stopped. Brake piping shall consist of SAE approved, DOT rated "Synflex" reinforced colored nylon tubing. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Braided hoses shall provide flexibility between axle and frame connections. Brake air lines shall be color-coded. Air inlet to air brake compressor shall be from the engine intake manifold, i.e. after transition through the engine air cleaner. A stainless braided Teflon hose and/or copper tubing shall be provided from the compressor to the air dryer. Fittings shall be brass.

All Air fittings are to be compression style. Press-on fittings are unacceptable.

The parking brake system is to be the spring set type operated by control valve on driver's console. A brake indicator light shall also be provided.

Two (2) Main Air System Drain Valve(s) - Cable Controlled 10-28-0410
MAIN AIR SYSTEM DRAIN VALVE(S)

The drain valve(s) on the main air system reservoirs shall be cable controlled. The pull cable shall be extended to the side of the truck with a loop provided at its end. It shall be labeled: Drain Daily.

One (1) Wet Tank 10-28-0600
WET TANK

A 1250 cubic inch wet air tank shall be provided with the air system.

One (1) Wet Tank Drain Valves - Cable & Bendix #DV2 Heated Moisture Ejector 10-28-0630
WET AIR RESERVOIR DRAIN CONTROL

A cable controlled drain valve and Bendix DV2 automatic heated moisture ejector shall be provided on the wet tank. The pull cable shall be extended to the side of the truck with a loop provided at its end. It shall be labeled: Drain Daily.

One (1) Isolated Air Reservoir - 1770 Cubic Inch, (Ea) 10-28-2900
ADDITIONAL AIR RESERVOIR

One (1) additional 1770 cubic inch air reservoir(s) shall be provided and installed. Each extra reservoir shall be isolated and be plumbed with an 85 PSI pressure protection valve on the reservoir supply side.

One (1) Isolated Air Tank Drain Valve(s) - Cable Controlled (Ea) 10-28-290Q
One (1) drain valve(s) on the isolated air reservoirs shall be cable controlled. The pull cable(s) shall be extended to the side of the truck with a loop provided at its end. They shall be labeled: Drain Daily.

One (1) Air Reservoir Tank Shall be Used for Air Horn & Air Outlet 10-28-2915
Air reservoir tank shall be used for air horn and air outlet.

One (1) Air Dryer - Bendix AD-9 10-28-3810
AIR DRYER

A Bendix AD-9 air dryer shall be installed in the air brake system. It shall be equipped with an automatic heated moisture ejector.

One (1) Aux Air Inlet - Manual, DS Step Well 10-28-56SW
AUXILIARY AIR INLET

There shall be an auxiliary air inlet installed on the front of the driver's side step well to maintain the chassis air pressure while the engine is not running. A check valve shall be installed in the line to prevent outflow of air pressure from the "wet" or "supply" tank.

One (1) Front Axle – Dana D2200 with Disc Brakes & 4" Spring Suspension 11-00-502A
FRONT AXLE

A Dana D2200 front axle with a 22,800 pound rating shall be provided.

DISC BRAKES

The front axle shall be provided with Bendix air disc brakes.

FRONT SEMI-ELLIPTICAL SPRING SUSPENSION, 4" X 52"

The front suspension shall be semi-elliptical 4" x 52" constant rate type springs with a military wrapped eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.

SHOCK ABSORBERS

Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.

One (1) Oil Seals - with Viewing Window, Front Axle 11-00-9500
FRONT AXLE OIL SEALS

The front axle shall be equipped with oil type seals with viewing windows.

One (1) Rear Axle – Dana D/R46-170H with Disc Brakes, 48,000# 11-10-504T
REAR AXLE

The rear tandem drive axle shall be a Dana model D/R46-170H with a capacity of 47,000 pounds at the hub. The rear axle shall be provided with Bendix air disc brakes.

An inter-axle differential control switch shall be provided on the cab dash, easily accessible

from the driver's seating position.

All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.

One (1) Axle Application Certification 11-10-9900
All axle applications must be certified by the axle manufacturer.

One (1) Rear Axle Ratio Shall be Set at Time of Order 11-10-9910
REAR AXLE RATIO

The rear axle ratio shall be determined at the time of order.

One (1) Top Road Speed 60 MPH 11-10-9998
ROAD SPEED

Per NFPA, the maximum top road speed shall be 60 mph. (Customer request apparatus to have a top speed of 72 MPH, road speed)

One (1) Anti-Lock Brakes (ABS) - 6 Channel 11-20-2500
ANTI-LOCK BRAKING SYSTEM (ABS)

The vehicle shall be equipped with a WABCO 6S6M anti-lock braking system (ABS). The ABS shall provide six (6) channel anti-lock-up braking control on the (2) front and (4) rear wheels. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the system when the vehicle is in motion. When any wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line.

An ABS warning light shall be installed in the warning light panel of the driver’s dash.

The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.

One (1) Warranty - Meritor Anti-Lock Braking System, (ABS), 3 Years/300,000 Miles 91-75-003A
WARRANTY

A three (3) year or 300,000 miles parts and labor warranty shall be provided by Meritor WABCO Vehicle Control Systems for the Anti-Lock Braking System (ABS).

One (1) Inter-Axle Differential Lock (IAD) 11-20-4000
INTER-AXLE DIFFERENTIAL LOCK

The rear tandem axle set shall be equipped with an air actuated primary traction device that allows for speed differences between the forward and rear tandem axles while providing equal pulling

power from each axle. When disengaged, one wheel set of the forward drive axle and the opposite side wheel set of the rear drive axle shall operate in drive action to minimize wear on drive components. When the IAD lock is engaged, both wheel sets of each tandem axle provides drive action and does so until one side encounters slip or the vehicle is turning, thereby maximizing traction without diminishing turn radius.

A dash mounted locking rocker switch shall engage and disengage the IAD lock. While the IAD lock may be engaged or disengaged at rest or at road speed, it should not be engaged whenever any drive wheel is slipping.

It is understood that the IAD should be unlocked for normal dry road condition operation to avoid premature ring gear, clutch and tire wear.

One (1) Warranty - Meritor Disc Brakes, 3 Yr, P&L 91-75-0020
WARRANTY

Meritor Corporation provides a three (3) year parts and labor warranty on the EX225H disc brakes.

One (1) Warranty - Meritor Rear Axle, 2 Yr, P&L 91-75-0025
WARRANTY

Meritor Corporation provides a two (2) year parts and labor warranty on the rear axle.

One (1) Electronic Roll Stability (ESC) - for Tandem Axle 11-20-2760
VEHICLE STABILITY COMPLIANCE – ELECTRONIC CONTROL

In compliance with NFPA 1901, current edition standard 4.13.1, the vehicle, as specified, shall be equipped with a Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.

SVI Trucks will be responsible for the calibration of the Electronic Stability Control upon the installation and completion of the body and components.

One (1) Automatic Traction Control w/ Deep Mud & Snow Switch 11-20-2795
AUTOMATIC TRACTION CONTROL WITH DEEP SNOW AND MUD SWITCH

Automatic Traction Control, working in concert with the ABS system, shall be provided which shall reduce wheel slip on acceleration on wet or slippery road conditions. A light shall illuminate on the driver's dash when the drive wheels slip during acceleration.

A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available traction on extra soft surfaces like snow, mud or gravel by slightly increasing the permissible wheel spin.

One (1) Driver Controlled Diff. Lock - Both Drive Axles of Tandem Set (DCDL-2) 11-20-4200
DRIVER CONTROLLED DIFFERENTIAL LOCK

The forward and rearward drive axles shall each be equipped with an air actuated supplemental traction device that locks the differential case gears and axle shafts via the clutch collar, maximizing

traction and control to both right and left side wheel sets in low speed operation. The lock position also shall protect against spinout damage to the differential. A dash mounted locking rocker switch, to prevent accidental activation, with an indicator “on” light shall engage and disengage the lock.

It is understood that the IAD (Inter-Axle Differential) shall be used as the primary traction enhancement, always to be used when wet road conditions exist and higher than 25 mph speeds may be required for long periods of time.

It is understood that the DCDL is a short time period traction enhancement and should only be engaged when very slippery road surface conditions exist; speeds under 25 mph can be employed, and that when engaged, the turning radius of the vehicle shall be increased.

The DCDL may be locked or unlocked if the vehicle is standing still, moving at a constant low speed (25 mph or less) and wheels are not slipping in ice, snow, sand or mud.

One (1) Rear Suspension - Air Ride, Neway AD-246, Tandem, 48,000# 11-30-1000
REAR SUSPENSION, NEWAY AIR RIDE #AD-246, TANDEM - 46,000#

A Neway AD-246 heavy duty 48,000 lb. capacity air ride suspension shall be used. The assembly utilizes air springs and a parallelogram framework design that reduces driveline wear and vibration while maintaining a constant pinion angle. The air ride offers a smoother ride with less stress on truck components. It eliminates tire hopping and helps provide superior traction to the wheels.

Two (2) Front Tires - GY/425/65R22.5/G296 MSA/On-Off Hwy 11,400/12,200# (Ea) 12-05-6250
FRONT TIRES

The two (2) front tires shall be Goodyear 425/65R22.5 G296 MSA, load range "L" with on-off highway tread. This tire has a nominal rating of 11,400 pounds at a top speed of 68 mph and an intermittent fire service rating of 12,200 pounds at a top speed of 68 mph.

Eight (8) Rear Tires - GY/12R22.5/G622/RSD 6,780/7,255# (Ea) 12-06-0600
REAR TIRES

The eight (8) rear tires shall be Goodyear 12R22.5 G622 RSD , load range "H". This tire has a nominal rating of 6,780 pounds with a top speed of 75 mph and an intermittent fire service rating of 7,255 pounds at a top speed of 75 mph.

One (1) Wheels - Aluminum Disc, Durabrite, on Tandem Rear Axles 12-50-1700
WHEELS

Wheels shall be Alcoa aluminum disc type and hub piloted. The wheels shall be coated with Durabrite. Chrome plated nut covers shall be furnished.

One (1) Hub Caps - (2) S/S, "Baby Moon", Front Axle w/ Front Axle Oil Seal Cutout 12-80-01C0
FRONT AXLE "BABY MOON" HUB CAPS

Stainless steel "Baby Moon" type hub caps shall be provided on the front axle. The hub caps shall be cut out for viewing of the front axle oil seals.

Two (2) Hub Caps - (2) S/S, "High Hat", Rear Axle 12-90-0200

REAR AXLE "HIGH HAT" HUB CAPS

Stainless steel "High Hat" type hub caps shall be provided on the rear axle(s).

One (1) Tire Pressure Indicators - Accu-Pressure H.D. Safety Caps, Single Axle 12-90-1010

TIRE PRESSURE INDICATORS

Tires shall have non-pressure indicators installed for shipment.

Accu-Pressure Heavy Duty Safety Caps shall be provided and shipped loose. This valve stem inflation pressure sensitive monitor shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes under inflated.

All inner wheels shall be equipped with a valve stem extension that shall allow the inner wheel to be filled without removing the outer wheel.

One (1) Tire Balance - Equal, Front Tires Only 12-90-1210

TIRE BALANCE

EQUAL Tire Performance Balancing Compound shall be inserted into the front tires to balance and maintain a vibration-free rotation.

One (1) Engine - Cummins X12, 500 HP, for Tandem Axle wo Water Pump, EPA17/OBD17 Cert. 13-00-5320

ENGINE

The chassis shall be powered by an EPA17/OBD17 certified and compliant Cummins X12 diesel engine, as described below:

Model	X12
Number of Cylinders	Six
Bore and Stroke	5.2 x 5.67 in
Displacement Liter (Cu. In.)	11.8 (720)
Rated BHP	500 @ 1800 RPM
Torque	1695 ft.lb. @ 1000 RPM
Governed RPM	2000
Oil Capacity / Type	10.5 gallons / SAE CK-4
Fuel Requirement	Ultra low sulfur diesel (15 ppm max.)

Standard equipment on the engine shall include the following:

Selective Catalytic Reduction (SCR) after treatment Cooled Exhaust Gas Recirculation system
Fan – 32”, 11 blade Charge air cooling
High pressure, common rail fuel system
Fuel filter with check valve and water separator Fuel strainer
Governor – electronic, interact system

Injectors – electronically controlled full authority injection
Lube oil cooler – integral
Lube oil filter – full flow
Turbocharger – variable geometry type
Air compressor – Wabco 26.0 CFM

The engine exhaust system shall be a horizontal design constructed from heavy-duty truck components. Flexible couplings shall be utilized to absorb the torque and vibration of the engine. The outlet shall be directed to the forward side of the rear wheels, exiting the right side, with a straight tip. A heat-absorbing sleeve shall be used on the exhaust pipe in the engine compartment area to reduce stored heat, providing protection for the alternator, and also to protect hands when checking or adding oil in the engine compartment.

ENGINE AND CHARGED AIR COOLING SYSTEMS

A serpentine core type radiator with continuous louvered copper fin design shall be provided. Radiator shall be fitted with formed steel side frames. The top tank shall have a built-in de-aeration system. A drain shall be located at the lowest point.

The engine charged air heat exchanger shall be located directly in front of the radiator and be bolted to its side rails. It shall be all aluminum-brazed construction. Air cooler shall be cross flow design with cast aluminum side tanks, horizontal inlet and outlet at top and aluminum louvered serpentine external air fins. Plastic tanks shall not be acceptable, no exceptions. Cooler tubers shall also be constructed of aluminum and have internal fins that eliminate laminar airflow.

The charge air cooler and the radiator shall be produced by the same manufacturer as a single assembly to provide continuity throughout the cooling system. This shall ensure a certified “balanced” package for the chassis engine air and fluid cooling systems.

The radiator and charger cooler shall be mounted to the chassis stub. Fabricated mounting bracket for the fans ring shall be attached to the front of the engine in a manner so that it “floats” with the engine and increases the fan’s efficiency by tightening the tip clearance. This mounting design eliminates engine fan and radiator shroud contact due to engine torque movement and promotes more efficient airflow. The radiator and charger cooler shall be held in place at the bottom by two (2) large bolts equipped with anti- stress rubber biscuits. The top of the radiator shall be supported by two (2). ¾” tubular braces, bolted to the chassis stub. Anti-vibration rubber biscuits shall be installed at the top threaded end of the braces where they attach to the radiator.

One (1) Engine Cooling Certification 13-00-7000
ENGINE COOLING CERTIFICATION

"EPQ" (End Product Questionnaire) certification shall be provided by the chassis manufacturer. Certification shall be documented with reference to each specific chassis model by the chassis manufacturer.

One (1) Fan Clutch for X12 Engine 13-00-7520
FAN CLUTCH

A fan clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating in the event of component or air line failure.
Manufacturer shall also wire the clutch so that it remains "on" in the pumping mode to prevent water pressure fluctuations.

One (1) Transmission - Allison, 4000-EVS 13-03-1200
TRANSMISSION

An Allison, Model 4000 - EVS, electronically controlled automatic transmission with integral fluid filter shall be provided. A transmission cooler shall be installed in the radiator bottom tank. A warning light and buzzer shall be provided on the cab dash to alert the driver should the transmission overheat.

The transmission shall include the following: an oil life monitor, a filter life monitor, and a transmission health monitor. The oil life monitor determines fluid life remaining by monitoring various operating parameters. The filter life monitor determines when fluid filter(s) need to be replaced. The transmission health monitor determines when clutch system inspection is required. The monitors send a message via a blink code to a special prognostic light on the shift pad. Also on the shift pad shall be installed a digital, double-digit display that identifies the level of transmission oil. The display shall identify the oil level as “Ok”, “Lo” or “Hi”, also indicating the number of quarts lo or hi.

The transmission shall include the following emergency vehicle specifications: Maximum gross

input power:	600 hp
Maximum gross input torque:	1850 ft.lb.
Input speed range:	1700 to 2300 rpm
Direct gear lock-up:	4th @ 1.00 to 1.00
Overdrive gear and ratio:	5th @ 0.74 to 1.00

Gear ratios shall be as follows:

1st	3.51 to 1
2nd	1.91 to 1
3rd	1.43 to 1
4th	1.00 to 1
5th	0.74 to 1
6th	0.64 to 1
Rev	-4.80 to 1

The transmission shall automatically shift into neutral whenever the chassis parking brake is applied.

One (1) Transmission Fluid - Synthetic SAE Standard Transynd for 4000-EVS 13-03-2015
TRANSMISSION FLUID

The Allison 4000-EVS transmission shall be delivered from the factory with a synthetic SAE standard ATF, Transynd.

One (1) Transmission Programming - Full 6 Speed Automatic 13-03-3300
TRANSMISSION PROGRAMMING

The transmission shall be programmed as a full 6-speed automatic.

One (1) Transmission Shift Control - Allison Touch Pad 13-03-4000

TOUCH PAD TRANSMISSION SHIFT CONTROL

Touch pad control shift module shall be mounted to the right of the driver on the console and be indirect lighted for after dark operation.

One (1) Warranty - Allison Transmission, 5 Yr, P & L 91-75-0065
WARRANTY

Allison provides a 5 year warranty on the EVS transmissions.

One (1) Driveline - Spicer 1810, for Tandem Axle, No Water Pump Selected 13-05-0240
DRIVELINE

Drivelines shall be built with heavy-duty metal tubes and utilize Spicer 1810 series or "Equal" mechanics type universal joints with "half round" end yokes. This quick disconnect strap and bolt design type end joint shall allow the driveline to be easily disassembled and dropped straight down for ease of service and maintenance. They also shall be dynamically balanced by the truck manufacturer before installation in the chassis. A splined slip joint is to be provided in each shaft assembly. A grease zerk shall be provided for lubrication of the slip joint.

One (1) Fuel Water Separator with Alarm & Heater - Fleetguard FH230/Davco FuelPro® 382 13-08-5690
FUEL WATER SEPARATOR WITH ALARM

A Fleetguard FH230 Series (Davco Fuel Pro® 382) top load 7 micron filter with fuel water separator, water sensor alarm and 12V fuel heater shall be mounted in a serviceable and accessible location, that the cab may need to be tilted for.

The filtering system shall be remote mounted on the chassis and shall include the check valve. The system shall have a drain valve and aluminum housing.

One (1) Engine Starter - Delco 39 MT-HD, 12 Volt 13-09-0020
ENGINE STARTER

A Delco, 12 volt, 39 MT-HD starter shall be installed.

One (1) Air Compressor - Wabco 26.0 cfm 13-11-0410
AIR COMPRESSOR

A Wabco 26.0 cfm air compressor shall be furnished. The air compressor shall be gear driven off the engine.

One (1) Exhaust - Single Module, DPF/SCR, Outboard of Frame Rail, X12 Engine Only 13-13-0008
EXHAUST

A single exhaust module containing an SCR chamber and a DPF chamber shall be installed on the right side of the vehicle, immediately behind the cab. The exhaust module shall ingest urea from a remote storage tank to remove NOx from the exhaust. The exhaust assembly shall be mounted outboard of the frame rail.

One (1) Tailpipe - Plymovent, Extended for Exhaust Evacuation System 13-13-0900
TAILPIPE EXTENSION

The tailpipe shall be provided to accommodate a Plymovent exhaust evacuation system. The tailpipe shall be mounted perpendicular to the side of the truck and be flush with the body. 12" of clearance between the pipe and the tire will be provided. The tailpipe mounting shall be straight out from the body.

It is understood that the engine exhausts can not be connected to exhaust evacuation systems when the Diesel Oxidation Catalyst and Diesel Particulate Filter on the engine are regenerating.

One (1) Engine Brake - Cummins X12 Engine 13-15-0800
ENGINE BRAKE

A Cummins engine brake shall be installed with controls within easy reach of the driver. Brake shall automatically be actuated when the accelerator pedal is released. The engine brake shall be wired in conjunction with the rear brake lights so that they are activated when the engine brake is engaged. It shall have a three position switch; "LOW", "MEDIUM" and "HIGH" along with an "OFF" and "ON" switch.

One (1) Aggressive Down Shift 13-15-1610
AGGRESSIVE DOWN SHIFT

An aggressive down shift shall be provided. This shall be tied to the auxiliary brake switch and the aggressive down shift shall only function when the auxiliary brake is ON. The auxiliary brake and aggressive down shift shall engage when you let off the accelerator and shall reset after the accelerator is applied.

One (1) Transmission Down Shifts to 2nd Gear 13-15-1612
The transmission shall down shift to 2nd gear.

One (1) Warranty - Cummins X12 Engine, 5 Year/100,000 Mile 91-75-004E
WARRANTY

Cummins provides a 5 year or 100,000 mile warranty on the X12 engine.

One (1) Coolant Overflow Reservoir - 6 QT, Attacker/Capitol 13-00-760S
COOLANT OVERFLOW RESERVOIR

A six (6) quart coolant overflow reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

One (1) Silicone Hoses - Coolant/Heater 13-01-2100
SILICONE HOSES

All hoses in the cooling system shall be silicone type with stainless steel constant torque Oetiker clamps.

One (1) Skid Plate - Painted To Match Frame Rails 13-01-2400
SKID PLATE

A radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails.

One (1) Fuel Tank - 65 Gallon, S/S, Rear Mount, with S/S Straps 13-08-270C
FUEL SYSTEM

The vehicle shall be furnished with a 65 gallon fuel tank mounted behind the rear axle and just below the frame rails using a stainless steel strap. The tank shall be constructed of stainless steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for rollover protection. A 2" diameter fill inlet shall be provided. Fuel cap shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing.

One (1) Shutoff Valve - Fuel Line 13-08-5100
FUEL LINE SHUTOFF VALVE

A fuel line shutoff valve shall be provided to prevent fuel from draining back while changing fuel filters.

One (1) Fuel Line Shutoff Valve Location - Near Fuel Water Separator, Input Side 13-08-5108
The fuel line shutoff valve shall be located near the fuel water separator on the input side.

One (1) Fuel Cooler - Engine, No Water Pump Present 13-08-5410
ENGINE FUEL COOLER

An engine fuel cooler shall be provided on the apparatus. The engine fuel cooler shall cool the returning fuel from the engine.

One (1) Fuel Pump - Electric, for Priming Only 13-08-5600
ELECTRIC FUEL PUMP

An auxiliary electric fuel pump shall be provided in the fuel line to assist in priming the fuel system. Switch for pump shall be located on cab instrument panel and labeled "For Priming Only".

One (1) Alternator - Delco, 430 Amp, Model 55SI 13-10-2500
ALTERNATOR

A 430 amp Delco alternator, model 55SI, shall be provided.

One (1) Air Cleaner - Racor Ecolite®, Attacker/Capitol 13-12-0510
AIR CLEANER

A Racor Ecolite® dry type engine air cleaner shall be provided. It shall be installed in a location above the chassis frame rails and no less than 40" above the ground. A visual inspection shall be possible without tilting the cab (No Exceptions). The air cleaner shall be serviceable through an access opening of no less than 30" wide by 13" high.

One (1) Air Restrict Indicator - Information Display Center 13-12-5500
AIR RESTRICTION INDICATOR IN INFORMATION DISPLAY CENTER

An electrical engine air restriction indicator shall be provided and installed in the cab information display center.

One (1) DPF Regeneration Process 13-13-0030
DPF REGENERATION PROCESS

NFPA 12.2.6.7.1 The regeneration process shall be activated by two methods:

1) Automatically by the engine system but only when the transmission is in gear and the speedometer indicates a speed above 5 mph (8km/hr) whether the apparatus is in motion or is operating in stationary pump mode with an engine rpm sufficient to register 5 mph (8 km/hr) on the speedometer.

2) Manually when initiated by activation of a switch located in the driver's area of the driving compartment.

There shall also be an inhibit switch placed near the driver to inhibit an automatic reburn.

One (1) Diesel Exhaust Fluid (DEF) & DEF Access, Attacker/Capitol 13-13-0055
DEF & DEF ACCESS

The urea mixture, a solution of 2/3 water and 1/3 urea which reacts with NOx to create nitrogen and water, shall be stored in a 10 gallon tank equipped with a level sensor and alarm to prevent run-out.

The filling or adding of DEF to the DEF tank shall be available without tilting the cab (No Exceptions). Access to the urea tank fill connections and level sensor shall be available without tilting the cab.

One (1) DEF Fill Access 13-13-0060
DEF FILL ACCESS DOOR

SVI Trucks shall be responsible for creating the DEF fill access as an incorporation into the body that is to be installed on the chassis.

One (1) Exhaust Heat Shielding 13-13-1130
EXHAUST HEAT SHIELDS

Heat shields shall be provided as needed to prevent damage to body and wiring from excessive exhaust temperatures. The exhaust pipe shall be wrapped in multi-layered insulation blankets, from just aft of the turbo down to inlet side of the DPF. Each blanket shall have a fiberglass inner layer and a silicone impregnated fiberglass cloth outer layer

The cab shall receive 1.25" thick foil back insulation blanket under the crew floor to reduce floor temperatures.

All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

One (1) Fast Idle - Switched on Dash 13-15-4100
FAST IDLE SWITCH

A fast idle switch shall activate an engine high idle. The circuit shall be wired through the neutral safety/parking brake interlock to prevent activation when the transmission is in the road mode. Fast idle shall be set at 1000 RPM's. A switch located inside the cab convenient to the driver shall be provided for this system.

One (1) Nameplate- Lubrication Capacity, On Driver's Door, Interior Face 13-15-5010
LUBRICATION NAMEPLATE

A nameplate shall be installed that specifies the quantity and type of the following fluids used in the vehicle and tire information:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump priming system fluid, if applicable
- Drive axle(s) lubrication fluid
- Air condition refrigerant
- Air conditioning lubrication fluid
- Power steering fluid
- Cab tilt mechanism fluid
- Transfer case fluid
- Fuel
- Diesel Exhaust Fluid
- Windshield Washer Fluid
- Auto Lubrication System lubricant, if applicable

- Equipment rack fluid, if applicable
- Foam system lubricant, if applicable
- Generator system lubricant, if applicable
- Aerial Hydraulic Fluid, if applicable
- Front tire size and cold pressure
- Inter tire size and cold pressure, if applicable
- Rear tire size and cold pressure
- Trailer tire size and cold pressure, if applicable
- Maximum tire speed ratings
- Ambient operating temperature
- Paint colors and codes

A layer of Velvet Polycarbonate shall overlay the lettering to protect it. The lubrication nameplate

shall be installed on the interior face of the driver's door, near the hinge and below the window controls.

One (1) Cab - S/S, Split Tilting, Attacker 20-00-5000

STAINLESS STEEL SPLIT TILTING ATTACKER CAB

The cab shall be designed specifically for the fire service and shall provide roll cage strength and safety. The cab shall be made in the factory of the bidder and must be the bidder's top-of-the-line stainless steel model. The cab shall be of the open interior design and must be split at the front axle centerline. The front portion of the cab shall tilt forward 45 degrees for engine access. In order to provide the strongest, safest cab design possible, no extrusions shall be used in the construction of the cab structure. No plastic or fiberglass shall be used in the construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof assembly.

FRONT CAB MOUNTING

A four point mounting system shall be provided for the front cab. The mounting system shall consist of two (2) front pivot mounts fabricated of steel connected to the chassis and two (2) rearward cab locks that are attached to the rear cab sub-structure. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock.

SUB-FRAME

The sub-frame shall be stainless steel reinforced welded safety-cage construction utilizing a 3” x 2” rectangular structural steel tube sub-frame. All joints shall have continuous welds; stitch welding shall not acceptable. The sub-frame shall be designed as a one-piece structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Pocketing of the sub-frame shall not be acceptable.

FRONT ASSEMBLY

The safety-cage section at the front of the cab shall be constructed of 1.25” stainless steel tubing and shall join the front door posts together with the main sub-frame. There shall be a 2.50” x 1.50” x .25” heavy wall lower cross tube that joins the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural member, although it shall help stiffen the cab front face.

The front cab door hinge mount (aka “A” pillar) shall be a 2” x 2” tube with a .19” thick

wall. CAB FLOORS

All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel. Cab floors shall be covered with a sound barrier mat with a heavy-duty wear surface.

SIDE WALL ASSEMBLIES

The safety-cage on the sides shall be constructed of 1.25” stainless steel tubing. Both side wall assemblies shall be joined to the sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to help stiffen side wall assemblies.

There shall be 1.25” of insulating foam between the exterior and interior side walls. The structure shall be reinforced for cab entry grab handle mountings.

The rear cab door hinge mount (aka “C” pillar) shall be equivalent to a 2.5mm formed channel with .19” thick tapping bar.

ROOF ASSEMBLY

The 1.25” stainless steel tubing used in the construction of the roof section of the safety-cage shall support 2 psi of loading across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize spun metal technology thus retaining the metal’s strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. The roof top outer wall shall not be an integral structural member, although it shall stiffen the roof. There shall be 1.25” of insulating foam between the exterior roof and interior ceiling.

One (1) Front Attacker Cab - 68" 20-00-5010
FRONT CAB DIMENSIONS

The front face of the forward cab shall measure 68" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96".

One (1) Cab Floor - Forward Cab, Pebble Finish Matting, Attacker/Capitol 20-25-4700
FORWARD CAB FLOOR

The forward cab floors shall be covered with a black mat that functions as a sound dampening barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.

One (1) Cab Entrance Doors - Barrier, Attacker 20-00-8320
CAB DOOR CONSTRUCTION - BARRIER CLEARING

The cab doors shall be **barrier clearing** and fabricated from stainless steel (No exceptions). The cab doors shall be 34.75" wide. The interior and exterior door handles to be flush mounted paddle style with a Trimark TM202 keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle. One (1) key per door shall be provided.

Six (6) inch wide strap style door checks shall be provided. The door check’s straps shall have a tensile strength of 120 lbs/in of width. The door’s latch locking mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction, with ¼ stainless steel pins and 0.090 gauge leaves with 2” joints and a 3” width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. The doors shall be designed so as to allow the windows to roll completely down.

Entrance step wells to the driver's and officer's positions shall be a minimum of 26" wide. Entrance steps will be made of expanded aluminum grating due to barrier style doors

One (1) Front Door Opening - Approximately 90 Degrees (NA with Aerialscope) 20-00-8425
The front cab doors shall open approximately 90 degrees.

One (1) Inner Cab Door Panels - S/S, Brushed 20-50-5200
INNER DOOR PANELS-BRUSHED STAINLESS STEEL

The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of brushed stainless steel.

One (1) Reflective Chevron on (2) Inner Cab Door Panels 20-50-6000
Both cab passenger compartment doors shall have at least 96 square inches of reflective material affixed to the inside of each door to alert traffic when the door is open. The reflective material shall be a chevron design that complies with NFPA requirements.

One (1) Cab Tilt Mechanism - S/S, Split Tilt, Attacker 20-00-850A
CAB TILT

The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty double acting cylinders. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure. All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards.

In addition to the velocity fuses, a secondary safety system shall be provided to hold cab in the fully raised position in the event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops over the extended rod of the right side hydraulic lift cylinder thereby preventing its retraction. The safety channel can only be released through an overt action made by the operator such as pulling a lever or cable from the right side of the apparatus, near the safety channel.
Automatic release of the safety system shall not be acceptable.

Manual Tilt handle to be stored in motor access area near the tilt pump.

The cab tilt system shall be remotely controlled utilizing a twelve foot cable with a hand held push button device which is hardwired into the fixed module aft of the tilting cab on the right side of the apparatus. It shall be housed in a weather resistane box compartment. (Ref attached image of right side motor access wing in the open position for placement concept)

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One (1) Rear Attacker Engine Access 20-00-5174

REAR ATTACKER ENGINE ACCESS

A motor access module shall be installed aft of the forward tilting cab. It shall measure approximately 28.00" from the centerline of the front axle to the back wall of the module.

The chassis components access area will be the standard design with the added upper cab roof radiused edge on the engine access doors. The access doors will be hinged to the rear and secured at the front nearest the centerline of the front axle with a "D" ring handle.

The area above the chassis component access area, shall have smooth aluminum hinged cover (full width) painted the same as the cab upper.

One (1) Rear Cab Wall Exterior Finish - Full ATP 20-00-68B1
ATP OVERLAY ON BACK OF CAB

An aluminum tread plate overlay shall be provided over the entire exterior rear wall of the cab.

One (1) Cab Grille - Front, Raised Bezel Surround, Vertical Bars 20-00-6910
CAB GRILLE - VERTICAL BARS AND RAISED BEZEL SURROUND

The cab front opening shall be covered with a custom made polished stainless steel grille that shall be fabricated in the bidder's factory. The grille shall have formed vertical bars spaced apart on 2" centers. The upper polished stainless steel grille shall have a matching lower counterpart to further facilitate engine cooling. The two (2) stainless grilles shall be housed in a custom, raised and chrome plated bezel.

One (1) Front Grille Script Nameplate - Mirror Finish,for Grille w/Raised Bezel Surround 20-00-SR10
FRONT GRILLE SCRIPT NAMEPLATE

A "Seagrave" nameplate, fabricated from AISI 304 stainless steel, with mirror finish, shall be located on the lower front engine cooling intake grille of the cab.

One (1) Engine Air Inlet Grille & Ember Separator, Attacker/Capitol 20-00-69MX
ENGINE AIR INTAKE GRILLE WITH WATER/EMBER SEPARATOR

A highly polished stainless steel removable grille for engine air intake shall be provided. The air intake grille shall contain the replaceable water and ember separator filter in an integral housing. The air intake grille and water/ember separator cartridge shall be located **on the driver's side just aft of the tilting portion of the cab in the motor access wing and above and to the rear of the driver's side steer axle.** The engine air intake grill shall be no less than 60" above the ground.

One (1) Cab Roof - S/S, Flat, Attacker/Capitol 20-00-741S
FLAT ROOF

A flat roof shall be provided with an interior floor to ceiling height of 59".

One (1) Exterior Cab Roof Finish - Paint 20-00-78A1
PAINTED CAB ROOF

The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document.

One (1) Inner Liners - Front, 304 S/S 20-05-2010
FRONT STAINLESS STEEL INNER LINERS

Semi-circular inner liners shall be provided in each front wheel housing. They shall be constructed of 304 stainless steel and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable.

The innerliners will be split into a "front" section and "rear" section. The "front" section will attach to the cab. The "rear" section will attach to the fenders below the hinged motor access wing panels. In addition to this it will also attach with brackets that attach to the access panel tube frames.

One (1) Fenderettes - Front, S/S 20-05-2110
FRONT FENDERETTE

Polished stainless steel fenderettes shall be installed in the front wheel openings. They shall be sufficiently wide to completely cover the front tire and reduce wheel splash along the sides of the cab. They shall be installed with 1/4" hex head bolts (self-tapping sheet metal screws are not acceptable) and have a full width rubber welt placed between the fenderette and body wheel well opening flange. Outside edge of welting shall form a "V" bead between fender and cab side face to prevent moisture from entering. Inside edge shall also have a small raised bead. Outside edge of fenderette, at the wheel opening shall be rolled inward to eliminate a sharp edge and avoid injury when cleaning apparatus.

One (1) Mud Flaps - Front, Rubber 20-07-010R
FRONT MUD FLAPS

Heavy duty mud flaps with the manufacturer's "script and flame logos" placed on the rear face shall be provided and installed to the rear of the front wheels. Flaps shall be 14" wide and be made of 0.38" heavy duty rubber material to prevent "sailing".

One (1) Mirror - Crossover, Stainless Steel, Approx 8" Dia 20-10-1800
CROSSOVER MIRRORS

An approximately 8" diameter mirror with polished stainless steel housing shall be provided on the right front of the cab above the windshield. The main adjustment bar shall be mounted to the cab roof.

One (1) Crossover Mirror Style - Convex 20-10-2050
The crossover mirror shall be convex.

One (1) Crossover Mirror Bracket Location - Outboard 20-10-2075
The crossover mirror bracket shall have an outboard location.

One (1) Mirrors - (2) Rosco Accustyle, Heated/Remote w/Convex, Chrome Finish 20-10-1600
MIRRORS

Two (2) Rosco Accustyle heated mirrors with remote shall be installed on the cab doors, one on each side of the cab. The flat upper mirror shall measure 7" x 14" and the lower convex section shall measure 6.5" x 6". The mirrors shall have a chrome finish.

One (1) Mirror Wiring - through Ignition 20-10-4900
The mirrors shall be wired through the ignition.

One (1) Windshield - Tinted 20-12-0300
WINDSHIELD

The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed.

One (1) Windshield Wipers & Washers, Attacker/Capitol 20-12-0308
WINDSHIELD WIPERS AND WASHERS

One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and optimum windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be provided and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed, and pushing it shall operate the washers. The wiper arms shall park in a low, horizontal position to provide an unobstructed view when not in use.

One (1) Windshield Washer Fluid Reservoir - 5 QT, Attacker/Capitol 20-12-031S
WINDSHIELD WASHER RESERVOIR

A five (5) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

One (1) Door Glass - Electric Power Windows, Tinted, Attacker/Capitol 20-12-271S
DOOR WINDOWS

A retractable window with automotive type laminated safety glass shall be provided in **both forward** hinged cab doors. All glass shall be tinted. Glass shall slide in stainless steel side channels with cloth/fiber liners. Rubberized fiber seals shall be located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding

Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12 volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided. Individual switches shall be provided so that the driver controls the left side forward door window, officer the right side and crew occupants the rear.

One (1) Driver's Door Glass Switch - on Driver's Dash 20-12-2792
DRIVER'S DOOR GLASS SWITCH

An individual switch for the driver's electric door window shall be provided on the driver's dash.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

One (1) Officer's Door Glass Switch - on Officer's Dash 20-12-2796
OFFICER'S DOOR GLASS SWITCH

An individual switch for the officer's electric door window shall be provided on the officer's dash.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

One (1) Additional Switches - (1) to Allow Driver to Operate all Power Windows 20-12-3000
ADDITIONAL SWITCHES

An additional switch shall also be provided to allow driver to operate officer's right hand side door window.

One (1) Cab Door Hinges - Polished Finish 20-16-9020
CAB DOOR HINGES

The following exterior cab door hinges shall be polished: passenger front left side, passenger front right side, and any cab side access doors present.

One (1) Cab Handrails & Grab Handles – Aluminum Knurled, Surface Mount, Attacker/Capitol 20-18-0305
CAB HANDRAILS AND GRAB HANDLES

Handrails shall be 1-1/4" diameter extruded aluminum, knurled with bright anodized finish.

Handrails shall be installed as follows:

Two (2) 17" handrails shall be installed in the side of the cab, one just to the rear of each cab door. Hansen back lit BLUE in color, straight to cab no reflector. Wired as step light.

Grab Handles shall be installed as follows:

Two (2) 6" chrome grab handles shall be provided, one on the inside of each front cab door.

Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.

One (1) Crash Test Report - Chassis and Cab 20-20-0100
CRASH TEST

The cab shall be certified for the following tests:
SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic Loading - Heavy Trucks SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks
ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle

Performance Measure:

1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions.
2. None of the doors shall open during the tests.
3. The cab attachments may be distorted or fractured, however, the cab shall remain attached to the vehicle frame in at least one attachment location.

One (1) Helmet Holder - Body 20-20-4015
HELMET HOLDER - BODY

The helmets shall be stored in the body in accordance with NFPA 1901 current

regulations: NFPA 14.1.8.4.1 A location for helmet storage shall be provided.

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

One (1) Helmet Caution Labels (for 4 door cabs) 20-20-4024
CAUTION LABELS

Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: “Do Not Wear Helmets While Seated”.

One (1) Headliner - Smooth Aluminum with Black LINE-X 20-25-08LX
HEADLINER

The cab shall be provided with a .125" smooth aluminum removable back liner that shall be covered with black LINE-X.

The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

One (1) Back Liner - Smooth Aluminum with Black LINE-X 20-25-093B
BACK LINER

The cab shall be provided with a .125" smooth aluminum removable back liner that shall be covered with black LINE-X. The back liner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

One (1) Engine Enclosure - Black LINE-X, Attacker/Capitol 20-25-102B
FRONT CAB ENGINE ENCLOSURE

The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.

Cab engine enclosure shall be provided with a lightly textured black Line-X finish.

ACCESSORY MOUNTING STRUCTURE

The top portion of the engine enclosure shall have a stainless steel channel frame located between the engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.

One (1) Forward Cab Center Tunnel Panels (DCCFD) 20-25-109B
FORWARD CAB CENTER TUNNEL PANELS

Forward cab center tunnel cover removable raised accessory panels (DCFD Style). Two (2) removable raised panels shall be provided on the engine tunnel between seating positions. Line-X finish to match engine tunnel.

Each removable panel shall be provided with a grab rail.

One (1) Steering Wheel - Tilt/Telescoping 20-25-3000
18" STEERING WHEEL WITH TILT/TELESCOPE

A padded 18" steering wheel with center horn ring shall be provided. The upper steering column shall be of the tilt and telescopic type. A self-canceling directional switch with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four way flash switch. The self- canceling directional switch shall be easily removable and replaceable without removing the steering wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between the cab interior and exterior.

One (1) Cab Dash Finish - Black LINE-X 20-25-400B
BLACK LINE-X FOR CAB DASH

The cab dash shall be sprayed with black LINE-X having a high resistance to abrasion and tearing. A vinyl cloth glued or laminated in some manner to a metal backing surface shall not be acceptable.

The LINE-X shall absorb impact without surface damage. The LINE-X shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties.

The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.

Cab dash shall be provided with a lightly textured black Line-X finish.

One (1) Overhead Dash - Black LINE-X Finish, Attacker/Capitol Only 20-25-407B
OVERHEAD DASH

The overhead dash shall have a black LINE-X finish.

Overhead dash shall be provided with a lightly textured black Line-X finish.

One (1) Forward Cab Center Overhead Dash Open Retention Strap (Attacker/Capitol) 20-25-4092
DASH RETENTION STRAP

A removable, replaceable limit strap assembly shall be provided to prevent contact with the lower center dash panel and to retain the center overhead dash assembly in an open position when open for inspection or when access to the upper center power distribution is required.

The strap assembly shall consist of a 2" wide, sewn, nylon strap with a steel footman loop inserted in each sewn looped end of the nylon strap. Each of the two (2) footman loops shall be anchored by two (2) 1/4 inch machine screws. The upper anchor assembly shall be attached to the cab roof structure and the lower anchor assembly shall be attached to the hinged power distribution access panel.

One (1) Cup Holder - Black LINE-X Finish 20-25-6010
CUP HOLDER

Two (2) cup holders shipped loose.

One (1) Sun Visors - (2) Vinyl Padded 20-25-520B
SUN VISORS

Two (2) approximately 8" x 28" black padded vinyl sun visors with locking adjustment shall be provided, one on the driver's side and one on the officer's side.

One (1) Cable Raceway - Line-X, Attacker/Capitol 20-26-120S
RACEWAY

A cable raceway shall be provided between the seat riser compartment under the officer's seat and the officer's side toe kick area below the dash. The raceway will run on top of the floor next to the engine tunnel. The raceway shall be LINE-X'd aluminum to match the lower cab dash/engine tunnel.

One (1) Seat - Driver's, Bostrom, Sierra, Air-100, Reclining (NA w RollTek) 21-00-B0AR
DRIVER'S SEAT

The driver's seat shall be an H.O. Bostrom Sierra Air-100 reclining high back seat with air suspension. This seat shall have 5” horizontal adjustment.

One (1) Seat Riser/Compt - Driver, 5" High, Not Available with RollTek, ATT/CAP 21-07-030D
The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 18" wide x 5" high x 17" deep, front to back at the top and 13.5" deep at the bottom. Access to this compartment shall be through one of the following doors:

One (1) Seat Riser/Compartment Door - Side Opening, 9"w x 3" h 21-07-092S
The seat riser/compartment shall have a drop down side opening door that measures 9" wide by 3" high.

One (1) Seat Belt - Driver's, 3 Point, Vertically Adjustable 21-12-700D
SEAT BELT

The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

One (1) Seat - Officer's, Bostrom, Tanker 450, SCBA (NA w RollTek) 21-01-BSFF
OFFICER'S SEAT

An H.O. Bostrom Tanker 450 SCBA seat shall be provided for the officer. This seat shall have 5” horizontal adjustment.

One (1) Seat Riser/Compt - Officer, 11" High, Short Depth, Not Avail w/ RollTek, ATT/CAP 21-07-041O
The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 18" wide x 11" high x 18" deep, front to back at the top and 10" deep front to back at the bottom. Access to this compartment shall be through a front drop-down door, measuring approximately 8.5" high and 14.5" wide.

One (1) SCBA Bracket - IMMI SmartDock Gen 2 (Ea) 21-08-0150
One (1) NFPA compliant IMMI SmartDock Gen 2 SCBA bracket shall be installed in the seat(s). The bracket shall utilize a locking mechanism that engages during deceleration. The bracket shall hold the cylinder in place while in transit and release using no straps, levers, buttons or switches.

One (1) Seat Belt - Officer's, 3 Point, Vertically Adjustable 21-12-701D
SEAT BELT

The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

Two (2) Upholstery - Seat, Bostrom, Vinyl Black (Ea) 21-12-7400
SEAT UPHOLSTERY

Two (2) cab seats shall be upholstered in black vinyl.

One (1) Attacker HD Interior Decor, Miscellaneous Items 21-13-1510
INTERIOR DÉCOR

The following components shall always be black in color: Floor matting and floor mat edging

Headliner trim Back liner trim
Crew heater, complete
assembly Electrical panels
Plastic snap plugs for wire access
holes Door seals
Seat risers
Under seat compartments Seat belt retractor cover.
Rubber covered grab handles Map desk, if present
Tilt control storage door

One (1) Sign - Seating Capacity 21-13-2500
CAPACITY SIGN

A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.

One (1) Customer Logos Only on Seats 21-13-8100
SEAGRAVE LOGOS ON SEATS

The Customer Logo shall be embroidered onto the following seat locations, unless specified differently: on the headrest if present, or the front of the seat back cushion if not, and one on each side of the seat cushions.

One (1) HVAC, Vent, Defrost - Forward Cab, 46,000 /33,000 BTU, ATT/CAP 21-23-071S
HEATER/DEFROSTER/AIR CONDITIONING-FORWARD CAB

A front cab heater / defroster / air conditioning unit shall be provided. The HVAC unit shall distribute filtered, heated or cooled, fresh and / or recirculated, air through ducting of the cab front dash panels.

Heating capacity shall be rated at 46,000 BTU

minimum. Cooling capacity shall be rated at 33,000

BTU minimum.

The HVAC unit shall be located in the cab RH firewall and have a variable speed 625 CFM blower assembly. The HVAC unit shall be designed for serviceability and be located behind a removable panel. Access to air intake filter, heater core, evaporator core, and fan assembly shall be provided without removing the HVAC housing from the installed location.

Intake air shall be filtered by a commercially available filter and can be mixed between fresh and recirculated for vent / defrost and heat / cool selections.

Output air can be distributed between the four (4) defroster vent located at the base of the windshield, four (4) rear facing dash vents, and two (2) lower rear facing vents.

Defrost function selection can provide heated or cooled output air, fresh or recirculated intake air, and utilizes the AC system for drying air to the windshield. Output air will be directed through six (6) vents. Four (4) fixed flow vents located at the base of the windshield positioned and designed to distribute the air up. Two (2) adjustable vents located, one (1) at the LH edge of the dash directed at the LH driver's door glass and one (1) at the RH edge of the RH passenger's door glass.

Vent function selection can provide heated or cooled output air, fresh or recirculated intake air. Output air shall be directed rearward through four (4) adjustable vents. Two (2) adjustable vents shall be located in the center dash panel with positioning optimized for LH driver and RH passenger air flow direction to the upper torso. Two (2) adjustable vents shall be located, one (1) each forward seating position, in the upper outboard area of each forward seating kick panel, below the dash.

The front HVAC unit shall utilize a dedicated condenser located on the forward cab roof. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include a white powder coated cover over the stacked condenser coils and a white painted protective cover over the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

One (1) Manual Coolant Shutoff Valve - Forward Cab HVAC Inflow (Inlet), ATT/CAP 21-23-0820
MANUAL COOLANT SHUTOFF VALVE - INLET

The forward cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Manual Coolant Shutoff Valve - Forward Cab HVAC Outflow (Return), ATT/CAP 21-23-0900
MANUAL COOLANT SHUTOFF VALVE - RETURN

The forward cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Manual Coolant Shutoff Valve - Body Heater Inflow (Inlet), Attacker/Capitol 21-23-3020
MANUAL COOLANT SHUTOFF VALVE - INLET

The body heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn

style with label for ease of identification.

Prep for SVI installed crew cab heater in the body

One (1) Manual Coolant Shutoff Valve - Body Heater Outflow (Return), ATT/CAP 21-23-3100
MANUAL SHUTOFF VALVE - RETURN

The body heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

Prep for SVI installed crew cab heater in the body

One (1) Auxiliary Fans Two (2) 21-23-5000
AUXILLARY FANS IN CAB

Two (2) auxiliary fans shall be installed in cab overhead one each side of center windshield.

One (1) HVAC Controls - Forward Cab, 4 Selectors, Dedicated AC, Attacker/Capitol 21-23-8020
HVAC CONTROL - FORWARD CAB

HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators. A single, lighted, AC engagement push switch shall be provided for engaging the AC system components as needed.

The HVAC panel shall have four (4) rotary control switches inline, from left to right, in the following order:

- Fan Speed (OFF, LOW, MEDIUM, HIGH)
- Water Temperature Blend Control (HEAT-COOL)
- Outlet Air Blend Control (DEFROST-VENT)
- Intake Air Blend Control (FRESH-RECIRC)

The HVAC panel shall have one (1) raised, “push to engage”, switch that illuminates when the air conditioning is engaged. This switch shall be centrally located on the control panel, between the second and third rotary control switches, along the top edge of the control panel.

The HVAC control panel shall allow the operator to make selections or adjustments to any one of the four
(4) selectors without resetting or disturbing the selections of other three (3) controls.

The HVAC control shall feature an override to engage the air conditioning system when the operator has selected 100% Defrost on the Outlet Air Blend Control.

One (1) == 12V Elec - ATT Chassis - 0.000 ==

One (1) Electrical Wiring - 12V General 22-00-0105
GENERAL 12-VOLT ELECTRICAL WIRING REQUIREMENTS 12-VOLT ELECTRICAL SYSTEM

The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.

GENERAL WIRING AND WIRE HARNESS CONSTRUCTION

Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 *Low Voltage Battery Cable* type SGX or STX, or SAE J1128 *Low Voltage Primary Cable* type SXL, GXL, or TXL.

Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected.

Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application.

The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures.

The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C) except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

CIRCUIT IDENTIFICATION

All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently identified by circuit number at all terminations.

WIRING CONNECTIONS

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. Secondary locks shall be utilized on all connectors that are secondary lock capable.

Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities.

All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat, excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors.

Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal and insulate splice joints.

WIRE AND CABLE ROUTING

Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet.

Wiring shall be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge the edge shall be covered with a protective shield.

Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or protected by a conduit.

Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields shall be utilized.

When wiring is routed between two members where relative motion can occur the wiring shall be secured to each member, with enough wire slack to allow flexing without damage to the wires.

Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture from being conducted into the device via the wire connection.

Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided, adequate clipping or protective shields shall protect the wires from stone and ice damage.

Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties.

Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the component to be pulled away from the mounting area for inspection and service work.

Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight enclosures.

SPARE WIRES

Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system.

ELECTRICAL SYSTEM COMPONENTS

Serviceable components shall be readily accessible. Switches, relays, terminals and connectors shall have a dc rating of 125% of the maximum current for which the circuit is protected.

A distributed power and signal system shall be utilized on the apparatus to minimize power supply voltage drops. Power and signal distribution areas in the cab shall be concentrated in five (5) areas.

A lower cab power and signal distribution center shall be located in the center forward portion of the cab "dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion.

An additional lower cab power and signal distribution center shall be located below the officer's dash behind the kick plate.

An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover.

A power and signal distribution area shall be located in the pump module, if applicable. Components in this area shall be permanently labeled and easily accessible.

A power and signal distribution area shall be located on the front of the forward body compartments. Components in these areas shall be permanently labeled and easily accessible.

All electrical components or devices installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture shall not accumulate in it.

CORROSION PROTECTION

Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

One (1) Main Battery and Starter Circuits 22-00-0110

MAIN BATTERY AND STARTER CIRCUITS

BATTERY POWER BUSS

All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt, if one is provided.

ENGINE STARTER AND INTERLOCK CIRCUITS

The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to prevent the operator from engaging the starter when the engine is running.

BATTERY GROUND BUSS AND SINGLE POINT GROUND SYSTEM

All negative (ground) cables from the batteries shall be connected directly to a battery negative buss bar located as close to the batteries as practical. Appropriately sized ground feeder cables shall be utilized to provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus.

APPARATUS GROUND BONDING

The battery negative buss bar shall be connected to the chassis frame. The cab shall be electrically bonded to the vehicle frame with braided copper grounding straps.

One (1) EMI/RFI Protection 22-00-0120

EMI/RFI PROTECTION

The apparatus electrical system and related devices shall have the ability to function in the severe electromagnetic environment typical of fire ground operations.

EMI/RFI EMISSIONS

State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause communication and navigation radio-reception interference. The electrical system and related components shall comply with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*

EMI/RFI SUSCEPTIBILITY

The apparatus electrical system shall incorporate immune circuit designs, filtering, shielding and twisted- pair wiring to control EMI/RFI susceptibility. Particular attention shall be given to harness and cable routing to minimize the potential for conducted and radiated signal susceptibility.

Electrical / electronic equipment on the apparatus shall not be susceptible to radiated and conducted EMI/RFI emissions from on-board radio transmitter(s) and shall comply with the requirements of SAE J551-12 *Vehicle Electromagnetic Immunity--On-Board Transmitter Simulation*.

One (1) Low Voltage Electrical System Performance Testing 22-00-0130
ELECTRICAL SYSTEM PERFORMANCE TESTING

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. The apparatus alternator shall be tested with the total continuous electrical load applied and engine running up to the engine manufacturer's governed speed for a minimum of 2 hours. Additionally, all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours). Activation of the load management system (if furnished) shall be permitted during this test. An alarm sounded by excessive battery discharge, as detected by the low voltage warning system, or a system voltage of less than 11.8 V dc at the battery for more than 120 seconds, shall be considered a test failure.

Seagrave will perform standard in house electrical Testing on the completed chassis.

*****SVI Trucks is responsible for performing the NFPA required testing on the completed vehicle and providing the end user with the correct paperwork.**

One (1) Cab Dash & Instruments 22-00-014A
CAB DASH AND INSTRUMENTS FOR 2013 EMISSIONS ENGINE

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum. Rocker switches that have integral lights shall be as follows when applicable: red indicator lights shall be provided for warning light and engine/mechanical functions, green indicator lights shall be provided for scene and auxiliary lighting and general functions; selection shall be at the manufacturer's discretion.

A system shall be provided that interacts with the engine electronics and eliminates redundant

senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250 degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display.

DRIVER'S INSTRUMENTATION

The following individually mounted gauges shall be provided: (all inclusive gauge clusters not allowed, no exceptions)

Main Gauges

3" Speedometer: 0-85 mph with built-in LCD display
Speedometer Mode Switch: Allows operator to select menu items in the display screen Speedometer Up Switch: Allows operator to scroll up through display menu items Speedometer Down Switch: Allows operator to scroll down through display menu items
3" Tachometer: 0-

4000 rpm Satellite Gauges

2" Fuel Level: Empty – full with low level warning indicator
2" Voltmeter: 10-16 VDC
2" Coolant Temperature: 100-240 Degrees Fahrenheit
2: Engine Oil Pressure: 0-80 psi
2" Transmission Oil Temp: 100-320 Degrees Fahrenheit 2" Front Air Pressure: 0-150 psi
2" Rear Air Pressure: 0-150 psi
2" DEF Level: Empty – full with low level warning indicator

DRIVER'S INDICATOR LIGHT MODULE

The following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation:

Battery Switch "On" green indicator light
Ignition Switch "On" indicator (Seagrave Flame Logo) Check Transmission amber indicator light
Check Engine amber indicator light
Stop Engine (Engine Warning) red indicator light
High Exhaust Temperature (HEST) amber indicator light (if applicable)
Diesel Particulate Filter Regeneration (DPF) amber indicator light (if applicable) Wait-to-Start amber indicator light (if applicable)
Malfunction Indicator Light (MIL) amber indicator light (if applicable) ABS warning amber indicator light
ATC/ESC activated amber indicator light
Spring (Parking) Brake "On" red indicator

light High Beam “On” blue indicator light
Low air pressure red indicator
light Left Turn signal green
indicator light Right Turn signal
green indicator light
General Warning red indicator light (if
applicable) DEF Level Indicator Light

AUDIBLE CAB ALARMS

Audible alarms shall be provided in the cab to alert the operator of conditions that require attention. The alarm device(s) shall be audible in the driving compartment and feature an adjustable volume control.

An intermittent audible tone shall sound when the following conditions are present and the parking brake is disengaged:

Active Hazard Warning –
(Do Not Move Apparatus; Door Open, Tower Raised, Ladder Rack Down,
etc.) Seat Belt Warning

A steady audible tone shall sound when the following conditions are present:

Stop Engine (includes High Engine Temperature and Low Engine Oil
Pressure) Low Voltage
Engine Air Filter Restriction
Jackknife Warning (if
applicable)
Tiller Cab Operator Not in Position (if applicable)

DRIVER'S AND OFFICER'S CONTROLS

The following rocker style control switches shall be identified and accessible to the driver while seated. Switches shall include integral indicator lights (where applicable) to advise that the switch has been energized and identification labels shall be illuminated for night driving.

Ignition switch with green indicator
light Engine Start switch
Headlight / Tail-Marker-ID light
switch Instrument Panel Dimmer
control rheostat

The following controls shall be stalk mounted on the steering column and identified and visible to the driver while seated:

Turn Signal Control and 4-Way Hazard Warning
switch High-beam headlight switch
Windshield wiper control
switch Windshield washer
control switch

The following controls shall be identified and accessible to the driver while

seated: Parking (Spring) Brake Control

High Idle control switch

Other controls (as defined elsewhere in this specification)

The following controls shall be identified and accessible to both the driver and officer while seated. Controls shall be identified and illuminated for night driving.

HVAC control panel

Other controls (as defined elsewhere in this specification)

One (1) Emergency & Work Light Switch Panel - Driver 22-00-015D
EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER'S SIDE

All emergency light and work area lighting control switches shall be mounted in a removable panel located in the overhead position on the driver's side of the cab. The light switches shall be "rocker" type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving.

A master warning light switch shall be provided for emergency lighting.

A momentary clear warning light switch shall be provided for clear emergency lighting control that shall default on.

Work lights are defined as ground, step, rear pick up, hose bed or dunnage area, if on the apparatus and specified.

One (1) Door Ajar/Hazard Warning Indicator - LED 22-00-0160
DOOR AJAR/HAZARD INDICATOR LIGHT (DO NOT MOVE APPARATUS)

A Whelen "T0" series 2" round red flashing LED light with chrome flange shall illuminate automatically whenever the apparatus parking brake is not fully engaged and any of the following conditions exist:

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

The hazard warning light shall be identified with a label that reads: “Do Not Move Apparatus When Light Is On.” The light shall be located on the ceiling between the driver and the officer.

One (1) Digital Clock - 24 Hour 22-00-017B
DIGITAL CLOCK

A 24 hour real-time digital clock shall be identified and visible to the driver while seated..

One (1) Electrical Wiring - 12V INTELEX™ PLUS, Attacker/Capitol Chassis Only 22-00-030D
ELECTRICAL WIRING REQUIREMENTS - INTELEX™ PLUS

The apparatus shall be equipped with an INTELEX™ PLUS management system for control

of the electrical system devices, where applicable.

CIRCUIT PROTECTION

Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire and component damage when subjected to extreme current overload.

SOLID STATE CIRCUIT PROTECTION

Intelex power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device, such as a ladder rack, shall remain in their previous state until communication is restored or the power is cycled.

NON-SOLID STATE CIRCUIT PROTECTION

Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.

POWER CONTROL RELAYS AND SOLENOIDS

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.

BUSSMANN MVEC RELAYS AND CIRCUIT PROTECTION

Manufactured as a hardened and weather tight module, the mVEC is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.

One (1) Information Center II - INTELEX™ PLUS 22-00-0310

INFORMATION CENTER II

A 5" color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date, time and ambient air temperature in Fahrenheit. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors. The display shall be dimmable with a Rheostat control on the dash and shall have an override button on the control to dim to ten (10) percent.

APPARATUS STATUS INDICATORS AND AUDIBLE ALARMS

If a monitored "Not Stowed" or "Warning" condition is active, the corresponding status indicator shall flash. In addition to visual indicators, audible alarms shall sound when designated conditions activate the “Not Stowed” and “Warning” status indicators.

WARNING INDICATOR

A flashing red triangle symbol shall alert the vehicle occupants of an active "WARNING" condition. This is defined as a situation or status on the vehicle that is of high priority or "mission critical" nature. The flashing red triangle shall be displayed on the Information Center and dash gauge panel in front of the driver. The following are typical "Warning" (high priority) conditions:

HYDRAULIC FILTER	LOAD MANAGE	LOW AIR PSI
CAB NOT LOCKED	LOW VOLTAGE	JACK KNIFE
AIR RESTRICTION	ABS FAULT	TRAILER ABS

NOT STOWED INDICATOR

A flashing Not Stowed indicator shall alert the vehicle occupants of an active "Not Stowed" condition. This is defined as a situation or status on the vehicle that is not of high priority or "mission critical" nature, but requires attention before the vehicle is put in motion. The following are typical “Not Stowed” (not high priority) conditions:

AERIAL RAISED	DECK GUN RAISED	JACKS EXTENDED

The following items are considered Not Stowed only when the parking brake is released.

LADDER UP	JACKS EXTENDED	Q2B TILTED
LIGHT TOWER UP	DECK GUN RAISED	DS TELE LIGHT UP
OUTRIGGERS	STEP DOWN	PS TELE LIGHT UP
DS HATCH OPEN	PS HATCH OPEN	PEDESTAL COVER UP

AUDIBLE ALARMS

The following conditions shall cause the audible alarm to sound “steady” (not an intermittent beep); signifying a “mission critical” condition exists that requires immediate attention.

STOP ENGINE	CAB NOT LATCHED	LOW VOLT
LOW AIR	ABS FAULT	
LOW COOLANT	LOW OIL PRESSURE	

Corresponding “Low Air”, “Stop Engine” visual indicators shall be located in the dash gauge panel in front of the driver.

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed.

ANY LIGHT NOT
STOWED ANY BODY
DOOR OPEN
ANY CAB OR CREW CAB DOOR OPEN

An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.

OPEN DOORS / DEPLOYED EQUIPMENT RACKS / EXTENDED STEPS

When a cab or compartment door is open, a step is extended, or equipment (i.e., ladder) rack is deployed, the “DOORS” indicator shall flash. Pressing the corresponding button shall display an overhead graphical representation of the apparatus. This image depicts the open cab door(s), open compartment door(s), deployed equipment rack(s), and/or extended step(s). The chime alarm shall also sound when the parking brake is released.

One (1) Customer Information on Display - Customer Name & City 22-00-031A
The customer's name and city shall display on the information display screen.

One (1) Load Management System - INTELEX™ PLUS 22-00-0320
AUTOMATED ELECTRICAL LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in NFPA 1901 as “minimum continuous” shall not be subject to automatic load management. Load prioritization shall be independently field programmable by authorized users.

If the load management system becomes active, the “LOAD MANAGE” indicator shall illuminate on the "Warnings" page of the INTELEX™ PLUS cab mounted display.

One (1) Load Sequencer - INTELEX™ PLUS 22-00-0330
LOAD SEQUENCER

A sequential switching device shall automatically energize the specified optical warning devices to minimize potentially damaging voltage fluctuations due to the sudden addition or removal of large current demands on the electrical system. Upon activation of the “EMERGENCY MASTER” warning switch and provided the individual optical warning device switches are also activated, the following loads shall be activated (or deactivated) in 0.5 second intervals:
Front Light Bar
Side Light Bar (if
applicable) Front and Rear
Flashing Lights Side
Warning
Rear Beacons
High Beam Headlight Flash

One (1) Vehicle Data Recorder & Seat Monitor - FRC #SBA200, INTELEX™ PLUS 22-00-0344
VEHICLE DATA RECORDER AND SEAT MONITOR DISPLAY

Fire Research series SBA200-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables.

The seat monitor display shall be programmable for up to twelve (12) seats and have a seatbelt icon for each. A message display, push buttons for navigating through programs, and vehicle system warning indicators shall be located on the front of the seat monitor display.

The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC datalink connectors.

The vehicle data recorder shall record the following data once per second and store it in a 48 hour loop:
Vehicle Speed
Acceleration Deceleration Engine Speed
Engine Throttle Position ABS Event
Seat Occupied Status Seat Belt Status
Master Optical Warning Device Switch Time Date

The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours:
Maximum Vehicle Speed Maximum Acceleration Maximum Deceleration Maximum Engine Speed
Maximum Engine Throttle Position ABS Event
Seat Occupied with Seat Belt Unbuckled Master Optical Warning Device Switch Time Date
The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and uploadable from the vehicle data recorder to a computer running FRC HAWK data management software. The HAWK software shall store, manage, provide graphic displays and produce formatted reports of the vehicle data recorder data.

One (1) Electrical System Diagnostics - INTELEX™ PLUS 22-00-0350
ELECTRICAL SYSTEM DIAGNOSTICS

The apparatus shall feature on-board electrical system diagnostics and provision for off-board diagnostic service equipment.

ON-BOARD DIAGNOSTICS

On-board diagnostic indicators shall be provided to support rapid troubleshooting of the INTELEX™ PLUS based electrical power and signal system. The input and output status of each INTELEX™ PLUS system module shall be easily determined through easy to use display pages.

Switches shall be provided in the cab to allow the operator or service personnel to obtain On-Board diagnostic information from the ABS system and Engine Controller.

A troubleshooting guide shall be provided with the vehicle to assist with interpretation of the diagnostic signals.

OFF-BOARD DIAGNOSTIC PROVISION

An interface port shall be provided for service access to the INTELEX™ PLUS data bus. The diagnostic port shall be mounted inside the cab on the driver side in a location that is accessible from the ground.

One (1) Power Studs - Overhead Switch Panel, (4) Stud Switched 22-00-0510
POWER STUDS (OVERHEAD SWITCH PANEL)

Four (4) studs shall be provided in the overhead switch panel to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) Power Studs - Cab Dash Area, (4) Stud Switched 22-00-0520
POWER STUDS (CAB DASH)

Four (4) studs shall be provided in the cab dash area to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) Buss Bar - Under Officer's Seat, (4) Stud Switched 22-00-0530
BUSS BAR (UNDER OFFICER'S SEAT)

A four (4) stud 30 Amp buss bar with protective cover shall be provided under the officer's seat to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) No Power Strip & Receptacle Required on Driver's Side Cab Interior Wall

22-00-0579

One (1) Buss Bar - Under Engine Tunnel Panel (Ea) 22-00-0540
BUSS BAR (UNDER ENGINE TUNNEL)

One (1) four (4) stud 30 Amp buss bar(s) shall be provided under the rear engine tunnel panel to

provide a 12 volt feed. The studs shall consist of two (2) 12 volt direct studs, switched battery stud, and grounding stud.

One (1) Dash Layout Drawing - Attacker, Split Tilt Cabs & Capital Full Tilt Cabs 22-00-06CP
DASH LAYOUT

The Manufacturer shall furnish a dash layout drawing to the Fire Department for their review and approval. The drawing shall detail the locations for installation of radios, sirens, light switches, gauges, etc. Due to the cab dash configuration and electrical wiring design, the components shall have designated locations that each will fit. The Fire Department shall review and approve the layout during the Engineering Conference.

One (1) Ammeter (IATS) 22-01-0600
AMMETER

A heavy duty ammeter shall be included with the cab dash gauges. The ammeter scale shall read from - 500 amps to +500 amps indicating charging status of the engine alternator.

One (1) 12V Power Point - Officer's Side Dash (Ea) 22-03-1300
12 VOLT PLUG(S) AND RECEPTACLE(S)

One (1) 12 volt power plug receptacle(s) and cover(s) shall be provided on the officer's side of the dash and shall be wired battery direct, with a fused circuit. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

The power point shall be located at the outboard lower corner of the center dash panel to the officer's side.

Three (3) USB Charger Port - Kussmaul Dual Port #091-219-5 (Ea) 22-03-14UQ
USB CHARGER PORT

Three (3) Kussmaul Electronics model 091-219-5 USB 2.4/2.4 Amp Dual Charger Ports shall be wired battery direct with a fused circuit and shall be located on the dash as follows:

Location of USB charger port shall be: Located at time of order

One (1) Stereo - Pioneer AM/FM/MP3/USB Stereo, w/ Stereo Antenna 22-0A-5030
STEREO

One (1) Pioneer digital media receiver with AM/FM stereo radio with four (4) 5.25" coaxial speakers shall be provided and installed. The unit shall have a MP3 player and have Bluetooth capability. It shall have USB direct control for iPod/iPhone. The stereo radio shall be centrally located in the overhead console, per the dash layout, and the speakers shall be located two (2) in the front of the cab behind driver and officer, and two (2) in the rear cab corners. A stereo antenna shall also be installed.

One (1) Two-Way Radio Antenna Mount - Universal w/ Cable (Ea) 22-0A-5120
TWO-WAY RADIO ANTENNA MOUNT(S)

One (1) universal antenna mount(s), model MATM, with 17 feet of coax cable and weatherproof cap shall be provided for the two-way radio equipment. The mount(s) shall be installed in the cab roof, behind the lightbar, unless specified differently.

One (1) Antenna Lead - Terminates in the Officer's Seat Riser 22-0A-515C
The antenna lead shall terminate in the officer's seat riser. Any excess cable shall be secured in an accessible location.

One (1) Antenna Location Shall be Determined at Time of Order 22-0A-516A
The antenna location shall be determined at the time of order.

One (1) Install Dealer/Customer Furnished Antenna Mount (Ea) 22-0A-5130
RADIO ANTENNA

One (1) radio antenna(s) supplied by the fire department shall be mounted on the cab roof with wiring run to the radio box.

One (1) Customer Furnished MDT antenna shall be installed on the cab roof: Location and termination to be determined at time of order

One (1) Antenna Lead - Terminates in the Overhead Dash 22-0A-515A
The antenna lead shall terminate in the overhead dash. Any excess cable shall be secured in an accessible location.

One (1) Antenna Location Shall be Determined at Time of Order 22-0A-516A
The antenna location shall be determined at the time of order.

One (1) Camera System - (2) Zone Defense, 7" LCD, Rear & RS 22-0C-2270
REAR VIEW CAMERA SYSTEM

A Zone Defense ZD.323.1.4 rear view camera system shall be installed. Each camera shall have it's own trigger. The system shall consist of the following items:

- One (1) ZD.M.302 7" color LCD flat panel monitor with speaker, 7” wide x 4.75” high x 1” thick without back shield; 7.75” wide x 5.5” high x 1.25” thick with back shield. Monitor shall be rated for 10,000 hours.
- One (1) CAM.313C Color cameras with 1/3" Color CCD Sensor, High Tech, True Zero Light Night Vision with 18 infrared LEDs and a microphone.
- One (1) CAM.313MS Color cameras with 1/3" Color CCD Sensor, High Tech, True Zero Light Night Vision with 18 infrared LEDs and a microphone.
  - One (1) ASSC.402.302 remote control.
  - One (1) ASSC.400D Pana-vise mount shall be used to mount the monitor. Pana-vise mount shall be a T-bolt all-metal construction, pedestal mount with a 6" rise and adjustment knob
  - One (1) 65 foot cable.
  - One (1) 16 foot cable.
  - All required mounting hardware and instructions

Cameras shall be shipped loose and installed by body builder.
All wiring that is required within the cab shall also be supplied by Seagrave. The two (2)

camera shall be shipped loose. Seagrave to secure the balance of the 65 Ft. Camera Cables on top of the frame rails, to the rear of the cab.

One (1) Camera Monitor Shall be Hung from the Overhead Console, Zone 9 22-0C-3910
The camera monitor shall be hung from the overhead console in zone 9.

One (1) Rear View Camera Color - Black 22-0C-4030
The rear view camera color shall be black.

One (1) Side View Camera Color - Black 22-0C-4060
The side view camera color shall be black.

One (1) Batteries - (6) 12V, 950 CCA
22-10-0700

BATTERIES

Six (6) 12V Group 31 950 CCA batteries shall be installed three each side **of the cab motor access area over the frame.**

Heavy-duty battery cables shall be provided to maximize power available to the electrical system.

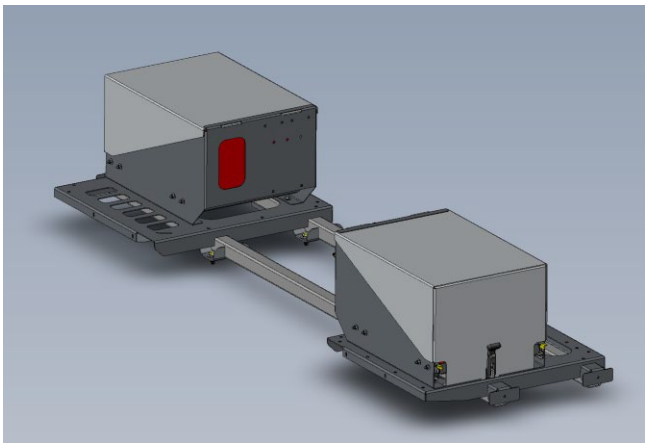
One (1) Jumper Cable Studs - Under Driver's Side Battery Box 22-10-5200
JUMPER CABLE STUDS

A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area.

One (1) Battery/Electrical Component Storage Areas 22-11-060S
BATTERY AND ELECTRICAL COMPONENT STORAGE AREAS

The batteries will be installed three (3) each side in the motor access area aft of the cab amounted above the front wheelweel. They shall be accessible from the Engine Access Doors.

The batteries shall be enclosed to protect them from road splash and shall be mounted on slide out trays to facilitate routine maintenance. Battery covers will be mill finish.



One (1) Battery Mats - Turtle Tile, Non-Corrosive 22-11-5100
BATTERY MATS

The batteries shall be installed on a non-corrosive Turtle Tile mat.

One (1) Battery Disconnect Switch - Blue Sea 350 Amp 22-15-1400
DISCONNECT SWITCH - BLUE SEA 9003

A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided.

One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power.

One (1) Air Comp/Bat. Charger - Kussmaul #52-23-1306 PumpPlus1200, w/091-55-234 Deluxe 22-15-485N

AIR COMPRESSOR/BATTERY CHARGER KIT

A Kussmaul Air Compressor and Battery Charger Kit model 52-23-1306 shall be provided.

AIR COMPRESSOR/BATTERY CHARGER

Included in the kit shall be one (1) Kussmaul model "Pump Plus 1200 PLC" battery charger and an Auto Pump shall be installed. The 12 volt compressor shall automatically replace air lost due to leakage in the brake system without any interference to engine mounted air compressor functions. The 12 volt automatic battery charger shall maintain a single battery bank with charging capabilities to 40 amps maximum output.

A selector switch shall be provided on the charger to operate the compressor either as a DC compressor or as an AC compressor. The switch shall be placed in the A. C. position.

AUTO EJECT AND DELUXE COVER

Also included in the kit shall be one (1) Kussmaul 120 VAC "Super Auto Eject" shoreline power connector. The shoreline power connector shall be provided with a spring loaded cover to prevent water from entering when the shoreline is not connected. A label shall be permanently affixed at the power inlet that indicates the line voltage in volts and the current rating in amps.

One (1) Super Auto Eject Deluxe Cover with Bar Graph Display, model 091-55-234 shall also be provided. The cover with lid shall open 180 degrees. The display shall have a ten (10) red LED bar graph to indicate battery status.

One (1) Charger/Compressor Location - Floor behind Driver's Seat 22-15-4LDF
The battery charger/compressor shall be located on the floor behind the driver's seat.
Air compressor will be mounted aft of the driver's seat on top of the battery charger cover.

One (1) Battery Charger/Air Compressor Cover 22-15-5000
BATTERY CHARGER/AIR COMPRESSOR COVER

A smooth aluminum cover shall be provided over the battery charger/air compressor. The outside finish shall match the cab interior finish.

One (1) Super Auto Eject Plug Amperage - 20 Amperes 22-15-5720
The Super Auto Eject plug shall be 20 amperes.

One (1) Shoreline Inlet Location - Behind Driver's Door on Cab's Side 22-20-5810
The Kussmaul Super Auto Eject Plug shall be located behind the driver's door on the cab's side.

One (1) Super Auto Eject Cover Color - White 22-20-58WH
The Super Auto Eject Cover shall be white.

One (1) Receptacle w/Plug & Cord - 120V, 20 Amp for Cab Interior, Shoreline Powered (Ea) 70-05-1928
120 VOLT SHORELINE POWERED RECEPTACLE(S) IN CAB INTERIOR

One (1) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the cab interior in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shorepower inlet and labeled accordingly.

A plug and cable assembly shall be installed, connecting the battery charger/compressor to the

receptacle. The receptacle(s) shall be located near the battery charger or compressor.

One (1) NEMA Rating - 5-20R (20 Amp) Non-Twist-Lock, Duplex 70-05-2535
NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Duplex.

One (1) Receptacle Cover - Stainless Steel Wallplate (Interior Use Only) (Ea) 70-05-2720
One (1) stainless steel wallplate(s) shall be installed.

One (1) Upper Raised Bezel Surrounds, with Panels, (2) 22-90-0025
UPPER RAISED BEZEL SURROUNDS, WITH PANELS

A custom raised and chrome plated bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness.

One (1) Headlights - Quad, HiViz, LED, with Dual Light Bezels 22-90-004N
HEADLIGHTS

Front headlights shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular HiViz FT-4X6, 12-volt LED with bright finished trim rings and bezels. The low beam headlights shall be located at the outer position.

HiViz LED headlights are provided with a lifetime warranty.

One (1) Halo Activation - with Low Beam Daytime Running Lights 22-90-004U
DAYTIME RUNNING LIGHTS

The VisionX LED Halo and the LED low beam daytime running lights shall be activated while the unit is running and the parking brake is released.

One (1) Headlight Position - Middle 22-90-004X
The headlights shall be in the middle position.

One (1) Headlights - Alternating, Flashing 22-90-0065
ALTERNATING FLASHING HEADLIGHTS

The chassis high beam headlights shall flash alternately controlled by a rocker switch.

One (1) Front Directional Dual Light Bezels, (2) 22-90-007A
FRONT DIRECTIONAL DUAL LIGHT BEZEL

The front directional lights shall be mounted in a chrome plated dual light bezel located on each side of the cab front face. The dual light bezel shall match the headlight housing.

One (1) Front Directional Light Bezels Position - Uppermost 22-90-007X
The front directional light bezels shall be in the uppermost position.

One (1) Front Directional Lights - (2) Whelen M6TC, LED, Amber Arrow, with Clear Lens 22-90-008H
FRONT DIRECTIONAL LIGHTS

There shall be one (1) Whelen M6TC LED amber arrow directional signal light installed on each side of the cab front face. The light shall have an amber arrow shape with black background and shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed. Lens color shall be clear.

One (1) Clearance Lights - (5) Built Into Front Brow Scnelight 22-90-0100
CLEARANCE LIGHTS

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and any National Fire Protection Association requirements in effect at the time of proposal.

Five amber LED type clearance and identification lights shall be integral to the Hi Viz front scene light

One (1) Marker Lights - TecNiq #34-C, (2) Amber LED/Clear Lens, Chassis Only 22-90-0135
MARKER LIGHTS

A TecNiq S34-C amber LED marker light with clear lens shall be recess mounted in a rubber sealing grommet placed in the lower front cab side, forward of the driver and officer door, on each side of the cab. The light body shall be urethane filled to ensure against moisture intrusion. These cowl mounted lights shall have 100,000 hour life and shall carry a manufacturer's 10 year warranty.

One (1) D.O.T. Reflectors for Cab Only 22-90-0510
D.O.T. REFLECTORS

Reflectors shall be placed on the cab as required by Federal standards. An amber reflector, Signal Stat, model 32ADB, shall be placed on each side of the cab. The reflectors shall be rectangular in shape.

One (1) D.O.T. Rear Chassis Travel Package, Incl Rear Mud Flaps (Chassis Only) 22-90-0900
CHASSIS D.O.T. REAR TRAVEL PACKAGE

The following items shall be attached to the rear of the chassis as required by Federal standards:

–Back up light
–Cluster of 3 rear identification lights
–Rear directional signals
–License plate bracket and light
–Rear mud flaps

One (1) Cab Side Directional Lights - (2) Weldon LED "Bug Eye" 23-02-9010
CAB SIDE DIRECTIONAL LIGHTS

Side directional lights shall be provided in addition to the front turn signals. They shall be Weldon model 9186-8580-20, LED "bug eye" type. One (1) light shall be mounted just above the front fender on each side of the cab. Lights shall have an amber polycarbonate lens and highly polished stainless steel mounting flange or bezel.

One (1) Light Activation - Step Lights 23-05-0010
LIGHT ACTIVATION

The cab step lights shall be activated with the cab door open switch.

The step lights on the body shall be activated with the parking brake in conjunction with the marker lights.

One (1) Step Lights - (4) Cab, Whelen TOCACCCR, LED (Attacker/Capitol) 23-05-0035
CAB STEP LIGHTS

Four (4) Whelen model TOCACCCR, LED step lights shall be provided, one (1) at each cab entrance door.

One (1) Light Activation - Ground Lights 23-05-2010
LIGHT ACTIVATION

The cab ground lights shall be activated with the cab door open switch.

The ground lights on the body shall be activated with the parking brake in conjunction with the marker lights.

One (1) Ground Lights - (4) Cab, TecNiq #E10 LED 23-05-2111
GROUND LIGHTS

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the cab, per NFPA requirements.

One (1) Work Lights - (2) Engine Compartment, Whelen 3SC0CDCR, ATT/CAP Only 23-05-302C
ENGINE COMPARTMENT WORK LIGHT

Two (2) Whelen 3SC0CDCR engine compartment work lights shall be provided. The lights shall illuminate the fluid dip sticks. The lights shall activate with the cab tilt or with the switch.

One (1) Cab Dome Lights - (2) Whelen #60CREGCS, Red/Clear LED (ATT/CAP Only) 23-11-110A
INTERIOR CAB DOME LIGHTS

Two (2) Whelen 60CREGCS 6" round red/clear LED lights with push buttons shall be mounted in the cab ceiling. Two (2) in front (driver & officer). All lights shall be controlled by a switch on the light head.

One (1) Door Switches - Dome Lights, Automatic 23-11-1410
AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the cab dome lights.

One (1) White Dome Light Activates with Automatic Door Switch 23-11-1450
The white dome light activates with the automatic door switch.

One (1) Lightbars - (2) Whelen #F4N MINI, 21.5", LED, Side Facing 24-10-WFE6
MINI LIGHTBAR

Two (2) Whelen model F4N MINI Mini Freedom™ IV LED 21.5" lightbars shall be provided and installed on the cab roof, facing outward to the sides. Each lightbar consist of two (2) Linear-LED® heads with two (2) clear LED located in the center forward facing and one (1) red LED to the outside facing the side. The lightbar shall also be equipped with two (2) red corner Linear-LED® lights in the front corners.

One (1) Side Facing Red LED Shall be Positioned Toward the Cab Rear 24-10-WFET
The one red LED on the side of the lightbar shall be positioned toward the cab rear.

One (1) Mini Lightbar Locations - on the Forward Cab Portion Centered above B Post 24-10-WFEZ
The mini lightbars shall be located on the forward portion of the cab centered above the B post.

Two (2) Lightbar Mount - Whelen MK8H, 5" high, on Mini Lightbars 24-15-3025
The Whelen mini lightbar shall be mounted using the Whelen mount model MK8H, with a dimension of approximately 5" high to the center of the lightbar.

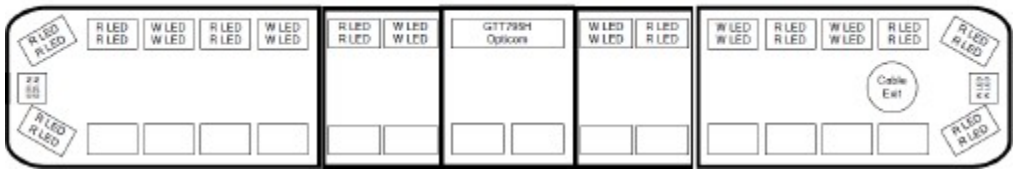
One (1) Lens Color - Clear 24-UN-LNCC
The lens color shall be clear.

One (1) Lightbar - Whelen Edge® Ultra Freedom IV LC series LED 81" 24-10-WFG5
LIGHTBAR

A Whelen Edge® Ultra Freedom™ IV LC series LED 81" lightbar shall be provided on the cab roof.

A GTT LED emitter assembly shall be installed in the center section on the front of the lightbar. The emitter shall provide intersection control for quick response and reduced risk of accidents. The emitter shall be programmed with high priority flash rate. Emitter shall be wired to E-Master and parking brake.

Configuration



One (1) Lightbar Mount - Whelen MK8H, 5" high, on Lightbars 24-15-3027
The Whelen lightbar shall be mounted using the Whelen mount model MK8H, with a dimension of approximately 5" high to the center of the lightbar.

One (1) Standard Perimeter Warning Light Locations - Custom Chassis Only 24-3L-0110
Location of each perimeter warning light shall be:

1 on each side of the cab front, inboard of the turn signal 1 on each side of the cab bumper extension
1 on each side of the cab, above the wheel well
1 on each side of the cab front face centered below the headlights

****SVI trucks is responsible for completing lighting certification paperwork and providing to end user on the completed vehicle**

One (1) Special Light - (2) Mars #888, TB8-L1, LED, Ped Mt, 1 Ea Side 24-40-ML83
MARS 888 FRONT WARNING LIGHTS

Two (2) Mars Model 888 Oscillating Figure "8" TB8-L1 warning LED lights with polished stainless steel "cone" style housings shall be provided. One light shall be mounted on a pedestal at each front corner of cab cowl. Brackets shall be constructed of formed 12 gauge hi-polished stainless steel, enclosed on the sides for a pleasing appearance, and open from the bottom for service access. It shall be securely mounted to a reinforcement plate welded into the cab structure, just below the windshield outer corners.

Both lights shall be controlled by an individual switch. If a clear light is present, both lights shall turn off when the parking brake is set.

One (1) Lens Color - Clear 24-UN-LNCC
The lens color shall be clear.

One (1) Special Light - Roto Ray #4000W, LED, 2 Red / 1White 24-40-RL4W
ROTO RAY LED LIGHT

A Roto Ray model 4000W LED light shall be provided and installed in the grille of the cab. The rotating light shall be mounted to the tubular framing (not the skin) of the cab structure to avoid vibration. The light shall be equipped with three (3) PAR46 LED bulbs, two (2) red and one white (clear). It shall be controlled by a cab dash mounted switch. Because of the one white LED, the Roto Ray shall be inoperative when the parking brake is set, in compliance with NFPA 1901.

Six (6) Perimeter - Whelen #M6D Super-LED®, Split White/Red (Ea) 24-30-WLLX
WARNING LIGHTS

Six (6) Whelen model M6D split white/red Super-LED® light(s) with chrome plated flange(s) and clear lens(es) shall be provided on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash, each side flashing independently of the other.

Two (2) Perimeter – Whelen #6RBRC Super-LED “Roto-Beam” 24-30-WL6X
PERIMETER WARNING LIGHTS

One (1) Standard Perimeter Warning Light Locations - Custom Chassis Only 24-3L-0110
Location of each perimeter warning light shall be:
1 on each side of the cab front, inboard of the turn signal
1 on each side of the cab bumper extension
1 on each side of the cab, above the wheel well
1 on each side of the cab front face centered below the headlights (Roto-Beam)

****SVI trucks is responsible for completing lighting certification paperwork and providing to end user on the completed vehicle**

One (1) Traffic Advisor Control Head 24-80-99PW
TRAFFIC ADVISOR CONTROL HEAD

Whelen TACTL5 traffic advisor control head provided and installed in the cab dash per dash layout, cable run to rear of apparatus.

One (1) Electric horn - Single 25-00-0100
AUDIBLE WARNING DEVICES

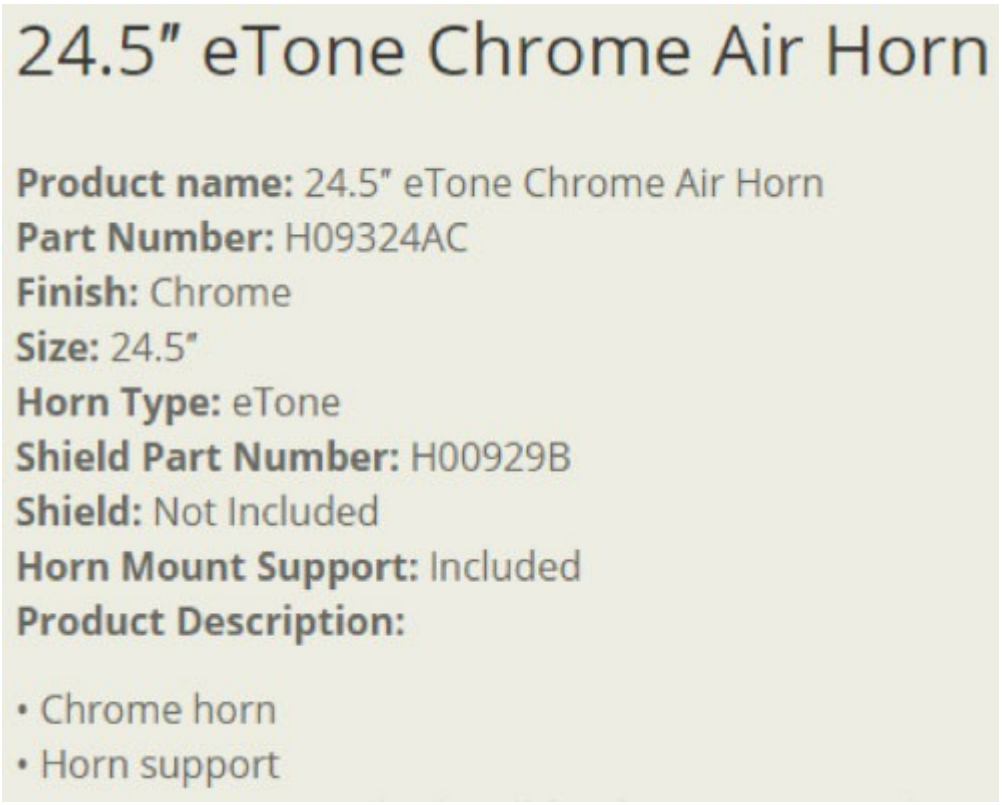
One (1) automotive electric horn controlled by the steering wheel horn button shall be provided.

One (1) Backup Alarm - Preco #LDA-50, 97DBA 25-01-0100
BACKUP ALARM

One (1) Preco Model LDA-50 backup alarm shall be provided and activated when the vehicle transmission is placed in reverse. Alarm output shall be a minimum of 97 DBA.

One (1) Air Horns - Dual, Hadley 26-00-0030
DUAL AIR HORNS

Two (2) Hadley eTone chrome air horns shall be furnished part number H09324AC. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system.



One (1) Air Horn Locations - Both on Left Side of Bumper 26-00-006L
Both of the air horns shall be located on the left side of bumper.

One (1) Air Horn Selector Switch 26-00-0110
AIR HORN SELECTOR SWITCH

An air/electric horn selector switch shall be provided which will allow either the electric or air horn to be actuated by the horn button on the steering wheel.

One (1) Air Horn Single Lanyard 26-00-0310
AIR HORN DUAL LANYARD

The air horn(s) **shall be activated by one lanyard pull cord, one for the officer side only**, terminating into one control valve, located between the driver and officer.

One (1) Air Horn Foot Switch - Linemaster® #491 (Ea) 26-00-0410
AIR HORN FOOT SWITCH

One (1) Linemaster® Model 491 momentary foot operated switch(es) to activate the air horn(s) shall be installed on the cab floor.

One (1) Foot Switch Shall Not be Deactivated When Parking Brake is Set 26-15-7010
The foot switch shall not be deactivated when the parking brake is set.

One (1) Foot Switch Location - Driver's Side OB, OB Position on Floor 26-15-7030
A foot switch shall be located on the driver's side, outboard of the steering column.

One (1) No Electronic Siren Required, Pre-Wire for Customer installed Siren 26-10-86ZZ
Pre-Wire For Customer Installed Siren

There shall be a 20amp fused circuit provided that is activated with the emergency master switch. The circuit shall be 1 (one) 12VDC power and 1 (ground). This circuit shall be located in the center lower dash behind zone 18, there shall be enough wire for the circuit to extend to behind officer seat. An on/off switch shall be provided in Zone 8 per the dash layout labeled SIREN.

Two (2) Siren Speaker - Whelen Projector #SA-315P w/ Flame Grille, In Bumper (Ea) 26-11-WS30
SIREN SPEAKER(S)

Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) with Seagrave "Flame" polished grille shall be recess mounted in the front bumper extension.

The speaker wires shall be bundled up with the power circuit for the customer installed siren and labeld left and right speaker. These shall be located behind officer seat.

Two (2) Two Speakers Locations - One on each Side of Bumper 26-11-Y02B
There shall be a speaker located one (1) each side of the bumper **one (1) each side of the bumper mounted winch fairlead.**

One (1) Mechanical Siren - Federal Signal Q2B®, Recessed in Bumper 26-15-4500
MECHANICAL SIREN

A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. There shall be an electric brake control installed in the cab, at the driver's switch panel, properly labeled.

The siren activation switches shall only be active when the emergency master is activated.

One (1) Q2B® Siren Location - Right Side of Bumper, Notched out & Flush 26-15-462A
The Q2B® siren shall be mounted on the right side of the bumper, notched out and flush.

Two (2) Mechanical Q2B® Foot Switch - Linemaster® #491 (Ea) 26-15-5980
MECHANICAL Q2B® FOOT SWITCH

Two (2) Linemaster® Model 491 momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.

Two (2) Foot Switch Shall be Deactivated When the Parking Brake is Set 26-15-7015
The foot switch shall be deactivated when the parking brake is set.

Two (2) Foot Switch Locations - Driver's Side OB & Officer's Side, OB Position on Floor 26-15-7036
A foot switch shall be located on the driver's side, outboard of specified air horn switch and on the officer's side floor, outboard position.

One (1) Q2B® Siren Brake Rocker Switch, Additional, for Officer 26-15-6010
ADDITIONAL Q2B® BRAKE ROCKER SWITCH

An additional siren brake rocker switch for the officer located in overhead per dash layout.

One (1) == Misc. Equipment - Chassis - 0.000 == One (1) PTO for ONAN PROTEC PTO
PTO For Onan Protec

There shall be a PTO installed on the transmission for an Onan Protec PTO generator. A switch shall be provided and installed in the cab dash, this switch shall be labeled Generator with indicator light on switch. The switch for the PTO shall have a parking brake interlock, this interlock shall prohibit the PTO from engaging unless the parking brake is set. This interlock shall also disengage the PTO upon release of the parking brake.

One (1) Cab 12V Frt Brow Mt Light - HiViz #FT-B-72-ML-W, Combo, White, w Marker Lts (Ea) 71-0V-A7MW

CAB 12V FRONT BROW MOUNT LIGHT(S)

One (1) FireTech HiViz LED combination pattern model FT-B-72-ML-W, 75.12” brow light(s) shall be mounted to the cab front brow. The light head shall have 59 LED and shall provide 28,512 raw lumen/19,958 effective lumens and draw 22.5 amps total. A combination spot, scene and flood pattern shall be provided, along with five (5) DOT marker lights. It shall operate at 12 volts DC.

The light head and mounting bracket shall be white.

One (1) Cab Front Brow Mount Location - Center 71-1Z-0009
The mount shall be on the center of the cab front brow.

One (1) 12V Light Switched at Cab Dash & 2nd Location with 3 Way Momentary Switch (Ea) 71-Y0-0025
One (1) 12 volt light(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

The second location for the switch shall be provided by body builder.

One (1) Cab Side 12V Roof Mt Light - (2) HiViz #FT-MB-18-TR-FT-W, Combo, White 71-2V-A21W
CAB 12V SIDE ROOF MOUNT LIGHTS

Two (2) FireTech HiViz LED combination pattern model FT-MB-18-TR-FT-W, 25.2” mini brow lights shall be trunnion mounted to the cab roof, one each side parallel to the edge. The light head shall have 18 LED and shall provide 9,504 raw lumen/6,660 effective lumens and draw 7.5 amps. It shall operate at 12 volts DC.

The light head and mounting bracket shall be white.

One (1) Cab Side Roof Light Location - Centered over Crew Cab Side Window 71-3Z-0040
The cab side roof lights shall be centered above the B post, one each side.

Two (2) 12V Light Switched at Cab Dash & 2nd Location with 3 Way Momentary Switch (Ea) 71-Y0-0025
Two (2) 12 volt light(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

The second location for the switch shall be: Officer overhead switch panel.

One (1) Light Shall Not Activate with Respective Cab Door 71-Y0-0410

The light shall not activate when a cab door on that side opens.

One (1) == Paint & Striping - Chassis - 0.000 ==

One (1) Paint - Preparation, Processes & Finish 91-00-1000
PROCESSES

The following processes shall be employed in the finishing of the apparatus:

Manual Surface preparation – All metal surfaces on all custom body and cabs shall be thoroughly cleaned and prepared for paint. Surfaces that shall not be painted include all chrome plated, polished stainless steel and bright aluminum tread plate. As required, weld seams and other areas shall be caulked to prevent water leaks or for appearance reasons. Each imperfection on the exterior metal surface shall be removed or filled and then sanded for a smooth flat appearance.

Chemical Cleaning and Treatment – All painted surfaces shall be washed with a chemical degreaser, cleaner and surface conditioner to allow for proper adherence of primer coat. Then they shall be washed with a neutralizer product. All products used are approved by paint supplier and applied under strict process control to meet performance requirements on corrosion prevention and chip resistance.

Primer/ Surface Coating for Top Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to surfaces inside and outside of cabs and bodies and all other parts of apparatus that shall receive a Top color coat to achieve required corrosion protection. After that a minimum of 2 coats of sealer shall be applied over the primer surface. The overall thickness of the primer/sealer coat shall be between 3 to 8 mils wet. Once dried and cured all surfaces that shall receive a top coat shall be hand sanded to achieve a flat and smooth surface to meet gloss and other paint quality standards. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Seagrave's Paint Quality Standard. The underside of the cab and body shall be finished with one coat of epoxy primer specifically designed for this application to prevent corrosion and provide chip resistance to typical paved road conditions.

Top Coat Application – Each Top Coat final color on the apparatus is applied using a two stage paint process. The unit shall be thoroughly hand cleaned to eliminate dust residues and to detect any imperfection in the surfaces to be painted. A fast drying 3.5 VOC polyurethane basecoat color shall be applied using a cross coat application technique. Additional coats may be applied as required until the coat thickness reaches 2.0 to 6.0 mils wet and a full hide appearance. If a second color is required, proper masking shall be applied to the unit and the basecoat application process shall be repeated for the second color. A slow drying low VOC High Build clear coat shall be applied using a cross coat application technique until a minimum of 5.0 mils wet is achieved. The unit is then properly heated to assure flash and cure of the paint before leaving the paint booth. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according to Seagrave's Paint Quality Standard.

Each batch of color topcoat shall be tested for precise color match following paint supplier color matching process. A visual color match shall be checked prior to paint using customer approved paint chips.

The cab and body shall be primed and finish painted prior to installation on the chassis to ensure paint coverage in all areas including the difficult to reach places. The exterior and interior of the cab shall be finish painted before the doors are installed or any assembly is started to ensure a finish painted surface beneath all trim items.

Primer/ Surface Coating for Single Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to all surfaces of the apparatus that shall receive a single color coat to achieve required corrosion protection. This is a wet coat process and it shall achieve a 3.0 to 8.0 mills wet thickness and complete coverage of all bare metal. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Seagrave's Paint Quality Standard.

Single Coat Application – A minimum of 2 coats of direct gloss paint shall be applied over all primed surface to achieve corrosion protection and appearance in accordance with Seagrave's Paint Quality Standard. This application shall be used for Gloss Black, Job Color and Color finishes in parts of the apparatus such as frame rails, outriggers, ladders and other aerial devices, suspension and other chassis parts, etc. as defined in the sales order.

Zolatone Coat Application – All areas to receive a Zolatone coat shall be primed following the primer/surface coating for top coat application. A high pressure coat of Zolatone paint shall be applied in a cross pattern technique to achieve smooth finished surface. A second low pressure coat of Zolatone paint shall be applied in a single pattern to achieve a textured appearance.

Zolatone Clear Coat Application – Starting with a completed and dry Zolatone coat application 2 to 3 coats of Zolatone clear coat shall be applied until a thickness of 5.0 mills wet is achieved.

PAINTERS

All painters shall be paint supplier certified. They shall be re-certified periodically in order to keep up to current standards and procedures required by the coatings manufacturer. This certification is performed independently by the paint supplier.

FACILITY

The finishing facility shall be certified independently by the paint supplier by meeting or exceeding its extensive and stringent requirements. The paint facility shall be audited quarterly by the paint supplier to ensure proper equipment, procedures and safety regulations are being used and adhered to in addition to the controls implemented by Seagrave to assure paint quality requirements are met in every job.

QUALITY STANDARDS

The finish quality and appearance shall be in accordance with the Seagrave's Paint Quality Standards for dirt, gloss, reflectivity, clarity and depth of image. The standard is available to the customer at any time upon request.

One (1) Seagrave FrameGard Extreme Corrosion Resistance - Tandem Axle 91-00-4900
FRAME & UNDERCARRIAGE FINISH

The chassis frame, bumper extension, suspension, axles, air tanks, fuel tank, battery boxes, etc., shall be matte black finish as supplied by the component manufacturer.

The following items will be furnished with the finish as provided by their respective manufacturer.

Engine, transmission and accessories. Exhaust system.
Retarder (when furnished).
PTO & hydraulic pump (when furnished). Cab lift cylinders & hydraulic pump.
Shock absorbers. Fuel filter.
Air drier and air cleaner. Electrical wiring and loom.
Air brake lines, valves and mounting brackets. SEAGRAVE FRAMEGARD

A corrosion barrier film shall be sprayed to all surfaces of the chassis frame rail(s) and cross members after frame assembly. Manual touch up shall be applied where/as necessary. The barrier shall be a corrosion inhibiting sealant which shall provide extreme resistance to abrasion and chemical deterioration. The sealant shall pass US Military spec MIL-C-0083933A for bend resistance, chip resistance and flexibility. It shall pass ASTM B117 (1000 hours corrosion resistance test standard).

One (1) Paint - Cab Interior, Black Zolatone Paint 91-00-5100
CAB INTERIOR PAINT FINISH

The inside of the cab shall be painted with black Zolatone paint following the Zolatone Coat application process.

The following components shall be painted:
Exposed interior surfaces of the cab structure
Exposed interior surfaces of the driver/officer/crew doors All interior "Metal" access/wire covers of the cab
Head bumper brackets
Miscellaneous brackets, if present: camera mounts, non-recessed radios, charger covers.

One (1) Paint - Cab Interior, Clear Coat (Split Tilt Cabs) 91-00-5500
PAINT INSIDE OF CAB

The inside of the split tilt cab shall be clear coated folowing the Zolatone Clear Coat application process in the same components that received a Zolatone application.

One (1) Paint - Cab Exterior, Triple Tone 91-00-6020
TRIPLE TONE CAB PAINT

The cab shall be triple tone painted. The paint shall follow the Top Coat application process for three colors. The paint breaks shall extend down the cab sides and the cab rear.

The upper tone shall include the roof and cab radius and include the inside of the drip rail. It shall extend in a straight line from the cab side to the top of the windshield.

The middle tone shall extend from the upper color down to the paint break just below the windshield.

Cab Upper Exterior Paint number is #TBD Color: White.

Cab Middle Exterior Paint number is #TBD_____Color:

Red.

Cab Lower Exterior Paint number is #TBD_____Color: White.

Note: Paint prices do not allow for metallic or pearlescent paint colors.

One (1) Cab Decorative Paint Break Molding - 5G Radius 91-00-A210
A decorative molding shall separate the two colors around the cab. The paint break shall be horizontal across the front of the cab above the wipers and taper down with a radius even with the outside corners of the grille.

One (1) Standard Finishes for Small Parts 91-02-4500
STANDARD FINISHES FOR SMALL PARTS, 2010 CUSTOM CAB

Definition: Mill Finish: as is from the manufacturer; no finish applied. It may have scratches, but it shall be shiny as a result of being cleaned through a deoxidization process. Parts with mill finish
may have been cleaned in a dipping process to deoxidize the part.

Definition: Etchfinish: The part(s) shall be cleaned and etched to a uniform bright finish.

CHASSIS

Chassis bracket: Painted same as cab

exterior CAB

Cab compartments, including cab side access compartments: Exterior Finish: Line-X.
Interior Finish: Mill finish (Upgrade available to DA or Paint)

Cab compartment shelves:
DA (Just the outside edge of the shelf shall be DA'd. All other surfaces shall be mill finish.)

CAB – BODY

Bumper / running board hose wells: Flange: DA
Interior & exterior walls: Mill finish
If the hose well sticks above the gravel pan: DA the

edges Inner liners: Mill finish

All steps, including pull downs & those on access ladders: DA outsides

Hat Section Bracket for Compartment, Ground or Step Lights: Mill finish. If compartment is painted, then the hat section brackets shall be painted.

Trim Rings: Mill finish

Patch plates: Brushed S/S (Upgrade available to polished or ATP) STD is No patch

plates Label backing plates: DA

Marker light guards: As purchased

Switch guards – S/S: Brushed

One (1) Graphics Files Formats 91-04-000A
GRAPHICS FILES FORMATS

In order to produce the desired lettering, seals and/or emblems, the customer shall provide graphics files of the lettering, seals and/or emblems in the following file formats:

- Vector images (Ai or EPS file types)
- Full Color (CMYK) version or
- Full color Pantone version, if exact color matching is required

The customer shall also provide the name and size of font for any graphics text, if specific font is desired.

One (1) Lettering Shall be Provided by Fire Department 91-04-000F

One (1) Apparatus Logos and Name Plaques 91-04-9900
APPARATUS LOGOS AND NAME PLAQUES

Logos and name plaques shall be shipped loose.

One (1) Seagrave Limited Warranty - 2 Years Parts & Labor, Chassis Only 91-50-012E
MANUFACTURER'S LIMITED WARRANTY

A Seagrave limited two (2) year warranty for parts and labor shall be provided.

One (1) Seagrave Limited Warranty - Cab, Structural - 15 Years 91-50-0205
CAB FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY

A Seagrave cab limited fifteen (15) year structural warranty shall be provided.

One (1) Seagrave Limited Lifetime Warranty - Frame Rail & Cross Members, Structural 91-50-0510
CHASSIS FRAME RAIL & CROSS MEMBER STRUCTURAL LIMITED LIFETIME WARRANTY

A Seagrave limited lifetime frame rail and cross members structural warranty shall be provided.

One (1) Seagrave Ltd Warranty - Paint & Corrosion, 6 Years, Pro-Rated, Chassis Only 91-50-0605
PAINT/CORROSION LIMITED WARRANTY

A Seagrave limited pro-rated paint six (6) year warranty shall be provided.

One (1) Weight analysis - Required if over Minimum NFPA Equipment 92-00-1000
WEIGHT ANALYSIS - LOOSE EQUIPMENT

It shall be the responsibility of the purchaser to specify the details of the apparatus; its required performance, including where operations at elevations above 2000 ft (610m) or on grades greater than 6 percent are required; the maximum number of fire fighters to ride within the apparatus; specific added continuous electrical loads which exceed the minimum of this standard; and any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum requirements of this standard.

One (1) Operation & Parts Manuals w/ Wiring Diagram - (2) Electronic Copies (Non-Aerial) 98-50-500C
ELECTRONIC OPERATOR'S & PARTS MANUAL

A binder shall be supplied that has electronic copies and paper documents as listed below.

The binder shall contain 2 duplicate electronic copies. Each electronic copy shall have:
- Operations & maintenance instructions for items on the vehicle, except all purchased components.
- Material Safety Data Sheets.
- Electrical diagrams including charts illustrating the individual wire color, number code, and function.
- Parts manuals.
- Parts drawings and an overall vehicle layout.
- Certificates
- Warranties

Printed documents shall include:
- Operations & maintenance instructions for items on the vehicle, not including the vendor literature
- Operations & maintenance instructions for engine.
- Certificates of independent test results.
- Warranty documents.
- Manufacturer's record of construction details and engine power curve.
- Vehicle final alignment report.
- Vendor literature provided by the manufacturer that arrives with the purchased component.

One (1) to two (2) manual electronic copies for the water pump shall be included, if there is a pump on the unit, and as provided by the pump manufacturer. Additional electronic copies, as provided by other equipment suppliers, shall also be included.

CAB TO AXLE DIMENSION

Cab to axle will be 175”.

CHASSIS MODIFICATIONS

LUBRICATION AND TIRE DATA PLATE

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

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

VEHICLE DATA PLATE

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

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

OVERALL HEIGHT, LENGTH DATA PLATE (US)

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

The label shall show the height of the completed unequipped vehicle in feet and inches (meters), the length of the completed vehicle in feet and inches (meters to nearest 1/10th), and the GVWR in tons (metric tons).

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

PERSONNEL CAPACITY

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

SEAT BELT WARNING - FAMA06/07

A safety sign FAMA06 shall be visible from each seat that is not equipped with occupant restraint and therefore not intended to be occupied while the vehicle is in motion.

A safety sign FAMA07, which warns of the importance of seat belt use, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

EQUIPMENT MOUNTING FAMA10

A safety sign FAMA10, which warns of the need to secure items in the cab, shall be visible inside the cab.

FIRE SERVICE TIRES - FAMA12

A safety sign FAMA12, which warns of the special requirements for fire service–rated tires, shall be visible to the driver entering the cab of any apparatus so equipped.

HELMET WARNING - FAMA15

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

CLIMBING METHOD - FAMA23

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

REAR STEP CROSSWALK WARNING - FAMA24

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION

A final stage manufacturer vehicle certification label shall be provided and installed in the driver cab door jamb area.

FRONT BUMPER

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

BUMPER GRAVELSHIELD

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

AIR HORN(S)

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

FRONT WINCH

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

GROUND LIGHTS

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

Light(s) shall be switchable but activated automatically when the park brake is set.

FRONT BUMPER RECIEVER, FRONT

Receiver tube(s) shall not be provided at front bumper.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer, if required by Earleigh Heights Volunteer Fire Company.

FRONT TOW PROVISIONS

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

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the customer cab/chassis manufacturer.

Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

The air inlet shall be equipped with a means of separating water and burning embers from the air intake system.

This requirement shall be permitted to be achieved by either of the following methods:

1. Provision of a device such that burning particulate matter larger than 0.039 in. (1.0 mm) in diameter cannot reach the air filter element.

2. Provision of a multi screen ember separator capable of meeting the test requirements defined in the Parker Hannafin, Racor Division, publication LF 1093-90, *Ember Separation Test Procedure*, or an equivalent test.

EXHAUST

The exhaust system shall be as provided by cab/chassis manufacturer.

SEAT BELT COLOR

Section 14.1.3.3 of the NFPA 1901 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

SEAT BELT WEB LENGTH - CUSTOM CAB

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

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

SEAT BELT / VDR SYSTEM - CUSTOM CAB

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

TIRE PRESSURE VISUAL INDICATORS

The tire pressure visual indicators shall be supplied by the cab and chassis manufacturer.

HELMET STORAGE

No helmet storage is required in the cab driving area. A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

CAB MIRRORS, DRIVER ADJUSTABLE

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

CAB PAINT

The finish paint and color as provided from the cab/chassis manufacturer shall be provided. Cab shall not be repainted.

(Note: Most departments do NOT find that the fleet paint finish from a commercial cab/chassis manufacturer is acceptable. The Body Builder will NOT be responsible for paint quality and finish issues.)

HUB AND NUT COVERS

The cab and chassis supplied front and rear wheels hub caps and wheel nut covers shall be installed prior to delivery of completed unit.

MUDFLAPS

There shall be a full width 1/4" rubber mudflap with no logo provided and installed behind rear set of tires to prevent throwing road debris and lower road spray.

A custom laser-cut design shall be cut from Aluminum and bolted to mudflap, design per Earleigh Heights Volunteer Fire Company.

Lettering on mud flap to be "RESCUE SQUAD" individual letters and powder coated blue with a white vinyl outline.

AIR BRAKE SYSTEM QUICK BUILD-UP

The air brake quick build-up system shall be supplied from the cab/chassis manufacturer.

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

ROAD EMERGENCY SAFETY KIT

The completed unit shall be supplied with one (1) set of three (3) dual faced reflective triangles, and three (3) warning flares complete with storage case per DOT requirements.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket per DOT requirements shall be provided and mounted inside cab area.

FUEL FILL

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

FUEL FILL

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

DEF FLUID FILL

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

BODY DESIGN

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

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

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

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

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

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

EXTERIOR STAINLESS STEEL BODY

The fabrication of the body shall be constructed from 12 gauge type #304 stainless steel. This shall include the compartment front panels, vertical side sheets, side upper roll-over panels, rear panels and compartment door frames.

The body exterior panels and compartment floors shall be constructed with not less than 12 gauge type #304 stainless steel. Interior compartment dividing walls shall be constructed with not less than 14 gauge type #304 stainless steel. Lighter gauge sheet metal will not be acceptable in these areas.

The compartment door frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, shall not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

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

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

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

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

ALUMINUM TREADPLATE ROOF OVERLAY

The roof shall be provided with aluminum 3003H-14 alloy tread plate overlay. Roof overlay shall be bolted to body roof with countersunk bolt heads properly caulked to prevent moisture penetration in to body. All stainless steel body components shall be painted and caulked with barrier material prior to assembly to prevent dissimilar material contact.

BODY SUBFRAME

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

The body subframe shall be constructed from stainless steel tubing. The subframe shall consist of two (2) 2" x 4" x 11 gauge type #304 stainless steel tubes running the full length of the body and spaced the same width as the chassis frame rails. Welded to the two (2) stringers shall be 2" x 4" x 11 gauge type #304 stainless steel tubing cross members. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of body, below compartment divider walls, and in front and rear of wheel well opening. Additional stainless steel cross members shall be located on 16" centers, or as necessary to support walkways or heavy equipment.

The compartment area behind the rear axle may be supported by a drop frame fabricated of the same 2" x 4" x 11 gauge stainless steel tube and the main stringers. Any such rear drop frame shall be constructed using a minimum of four (4) vertical drop tubes, welded to the main subframe. In areas where heavy equipment shall be mounted, drop frame support shall be constructed with 2" x 4" x 11 gauge stainless steel tube. All drop frame structures must be welded directly to the body subframe to allow the body to be a completely separate structure from the chassis.

To form the frame, the tubing shall be welded at each joint using a wire feed MIG welders with ER308 stainless steel welding wire.

BODY MOUNTING

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

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

10" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 11 gauge stainless steel tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 10" and provide a rear step with a minimum of 1/2" space at body for water drainage.

The corners of bumper shall have a 45 degree chamfer.

REAR TOW EYES

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

TRAILER HITCH

A Class IV weight carrying capacity rear hitch receiver shall be provided below the rear bumper. The receiver shall be attached to chassis frame with heavy duty steel frame work with a black hammertone powder coat paint finish.

The hitch shall be complete with a 2" square receiver. Without the use of a "weight distribution" ball hitch the Class IV receiver shall have a capacity of 10,000 lbs. gross trailer weight and a maximum tongue weight of 1,000 lbs.

A label shall be provided in a location in which it is visible to an operator making trailer connections. The label shall state the maximum GVWR and tongue weight of the trailer that can be safely towed with the hitch system.

Two (2) safety chain attachment points shall be provided near the hitch point for hitches designed to use safety chains, each designed with an ultimate strength of not less than the maximum GVWR specified on label.

TRAILER ELECTRICAL RECEPTACLE

For hydraulic brake equipped or electric brake equipped trailer towing capability, a primary electrical receptacle shall be provided near the hitch point and shall match the umbilical cable specified. Receptacle shall be a 7-Way Blade Type socket, the same as used on most Light Duty Trucks and RV’s.

TRAILER AUXILIARY ELECTRICAL RECEPTACLE

An auxiliary electrical receptacle shall be provided near the hitch point and shall match the umbilical cable specified for optical warning lights. Receptacle shall be a 7-Way Pin Type Socket, ISO3731 compliant with a reverse ground terminal.

RECEIVER WITH TRAILER BALL

No hitch receiver with trailer ball will be provided with completed unit.

GROUND LIGHTS

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

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

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel wells shall be constructed from not less than 14 gauge type #304 smooth stainless steel, bolted to the body and completely removable. The stainless steel panels shall be un-painted with a brushed finish.

RUBBER BODY FENDERETTES

The body wheel well openings shall be provided with round radius, rubber fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using stainless steel fasteners with plastic isolators to help prevent corrosion.

WHEEL WELL LINERS

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

SCBA CYLINDER COMPARTMENTS

There shall be four (4) SCBA cylinder storage compartments located, two (2) on curbside, and two (2) on streetside of rear tandem wheel well area. Each compartment shall have a brushed stainless door assembly with a positive catch. The forward compartment on each side shall store two (2) cylinders each, and center compartment each side shall store three (3) cylinders each. Each compartment shall allow the storage of an SCBA cylinder or a fire extinguisher up to 7-3/4" in diameter x 22" deep. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

BODY PAINT SPECIFICATIONS

BODY PAINT PREPARATION

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

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

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

PAINT PROCESS

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

1) Clean bare metal with a wax and grease remover using low lint rags.

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

PAINT - ENVIRONMENTAL IMPACT

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

FASTENERS

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

ELECTROLYSIS CORROSION CONTROL

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

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

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution per Earleigh Heights Volunteer Fire Company approved paint spray out provided.

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

ADD PAINTED STRIPE TO BODY

The body shall have a stripe painted with a second color over the main color with PPG Delfleet Evolution paint per approved customer spray-out.

Touch-up paint shall be provided with completed vehicle.

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

BODY UNDERCOATING

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

UNDERCOAT WARRANTY

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

PAINT WARRANTY

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

COMPARTMENT INTERIOR FINISH

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

REFLECTIVE STRIPE REQUIREMENTS

Material

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

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

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

Minimum Requirements

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

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

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

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

GRAPHICS PROOF (Reference Signed approval)

A color graphics proof of the reflective striping layout shall be provided for approval by Earleigh Heights Volunteer Fire Company prior to installation. The graphics proof shall be submitted to Earleigh Heights Volunteer Fire Company on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details. **Note:** The graphics color proof may not reflect the correct paint break lines on the chassis and body please refer to the paint section of your specifications for correct paint break lines.

REFLECTIVE STRIPE - CAB SIDE

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.
Top of reflective stripe shall be located 6" below top edge of painted stripe.

- This reflective stripe shall be white in color.

REFLECTIVE STRIPE - CAB FRONT

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.
Top of reflective stripe shall be located 6" below top edge of painted stripe.

- This reflective stripe shall be white in color.

REFLECTIVE STRIPE - BODY SIDES

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.
Top of reflective stripe shall be located 6" below top edge of painted stripe.

- This reflective stripe shall be white in color.

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

CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS

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

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

The stripe material shall be 3M Diamond Grade.

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

LETTERING

GRAPHICS PROOF

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

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

SIDE CAB DOOR LETTERING

There shall be forty (40) 3" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

Final design and layout shall be determined prior to construction.

There shall be four (4) 10" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be white in color.

UPPER BODY SIDE LETTERING

There shall be ninety eight (98) 4.5" high reflective letters furnished and installed on the vehicle.

Earleigh Heights
Volunteer Fire Company
Severna Park,MD

- This reflective lettering color shall be printed.

There shall be sixty (60) 3.25" high reflective letters furnished and installed on the vehicle.

Dedicated to the community we serve

- This reflective lettering color shall be printed.

REAR BODY LETTERING

There shall be forty three (43) 3" high reflective letters furnished and installed on the vehicle.

Earleigh Heights
Volunteer
Fire Company
Est. 1918

This reflective lettering color shall be printed.

Two (2) approximately 22" high numerals shall be provided on back of apparatus, "1" on streetside and "2" on curbside. Numerals shall be fabricated utilizing signage technology and back lighted with blue LEDs. Final design and layout to be finalized at pre-construction meeting.

FRONT OF CAB LETTERING

There shall be eleven (11) 3" high reflective letters furnished and installed on the vehicle.

"RESCUE" above curbside windshield
"SQUAD" above streetside windshield.

- This reflective lettering color shall be printed.

There shall be two (2) 14" high aluminum digits with reflective covering furnished and installed on the vehicle front grill. Number "1" on curbside of RotoRay and number "2" on streetside.

- This reflective lettering shall be red in color.

CUSTOM DECAL LOGO - 12" -18"

Six (6) custom designed 12" - 18" 3M Scotchlite type retroreflective logo shall be provided and located on the completed vehicle.

"Rescue Squad 12" on upperbody rear of window

Flags 12" on froward part of upperbody.

Maltese Cross on cab door.

Six (6) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Earleigh Heights Volunteer Fire Company.

EXTERIOR COMPARTMENT DOORS

FLUSH FITTING HINGED DOOR CONSTRUCTION

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

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

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

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

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

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

Each door shall be capable of being opened or closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE.

Vertically hinged door openings up to 32" wide shall be single door construction. Door openings over 32" shall be double door construction with the forward first opening door overlapping the second opening door.

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	83.7"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Total Body Height	106.2"
D	Compartment Height Above Frame	48.0"
E	Compartment Height Below Frame	25.0"
F	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	65.0"
	-with hinged door	68.5"
G	Vertical Door Opening (Below Frame Compartment):	
	-with hinged door	19.0"

ABOVE REAR AXLE

	Description	Dimension
H	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.5"

BEHIND REAR AXLE

	Description	Dimension
I	Bottom of Subframe to Bottom of Body	20.0"
J	Compartment Height Above Frame	48.0"
K	Compartment Height Below Frame	22.5"
L	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	62.0"
	-with hinged door	65.5"
M	Vertical Door Opening - (Below Frame Compartment):	
N	-with hinged door	16.5"

GENERAL

	Description	Dimension
O	Bottom of Drip Rail to Top of Body	33.5"
P	Walk-in Interior Height	73.0" (min.)

(Dimensions are approximate and subject to change during construction or design process.)

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be two (2) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be full width (street/curb) and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.
  - Vertical partition(s) shall be provided on slide-out tray base dividing the tray into left and right sides. Each vertical partition shall be horizontally adjustable; mounted on aluminum Shelf Trac on tray floor. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
- There shall be one (1) Zico 1000 series KD-UH walkaway type SCBA air pack bracket(s) with high cycle coated spring clips and short foot plate.

  SCBA bracket will be located outward position on the rear side of the vertical partition in the forward tray.

  - The above component(s) shall have a smooth un-painted finish.

  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.

- Mounting shall be provided for Earleigh Heights Volunteer Fire Company supplied Paratech Struts on the forward side of the rearward tray divider.

- DEF tank cover in lower section of compartment shall be provided with a cutout to view fluid level. DEF tank enclosure shall not restrict tank fill.
- Customer will be storing drivers gear next to DEF cover.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- The controls for the specified light tower(s).

- The 12 VDC electrical distribution panel shall be located in compartment above the subframe.

Locate: upper center of S1/C1 compartments.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

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

Tray will be centered in compartment and only as wide as needed for Revolv-A-Tool leaving room for tilt and deploy brackets.

  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
  - A Revolv-A-Tool, rescue tool storage bracket(s) shall be provided on slide-out tray base. The rotating rescue tool storage bracket shall be constructed of aluminum, stainless steel, with bronze roller bearings to support the vertical column and base of the assembly. The vertical column shall have four (4) sides to provide mounting surfaces for up to four (4) rescue tools. The rotating base shall have four (4) latching locations to lock each tool in an easy to access position at front or sides of tray and allow for the tools to be rotated 360 degrees in either direction when the tray is deployed. The Revol-A-Tool shall be designed to store the following Earleigh Heights Volunteer Fire Company rescue tools;

- 1) Hurst E-Draulic SP777E2 Spreader
- 2) Hurst E-Draulic S799E2 Cutter
- 3) Hurst E-Draulic R421E2 Ram
- 4) Hurst E-Draulic R421E2 Ram

Revolv-A Tool shall be located in center of slide-out tray .

- Hose routing provision shall be provided between compartment S2 & C2 below body walk-in floor to allow HRT hoses routed from C2 mounted pump to S2 reels.
- Mounting shall be provided for Earleigh Heights Volunteer Fire Company Hurst battery charger bank.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) with painted finish capable of storing 100' of dual line hydraulic hose shall be provided. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position**.**
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- The hydraulic reel shall be equipped with 98' of Hurst high pressure 10,000 PSI hydraulic hose with Streamline couplings and a molded plastic ball clamp. The hose shall be blue and white with black guards. A set of color inserts will be shipped with each hose set to designate hose color set.
- The hydraulic reel shall connect to the hydraulic pump with one (1) 16' Hurst hydraulic hose(s) with Streamline couplings.
- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) with painted finish capable of storing 100' of dual line hydraulic hose shall be provided. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position**.**
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- The hydraulic reel shall be equipped with 98' of Hurst high pressure 10,000 PSI hydraulic hose with Streamline couplings and a molded plastic ball clamp. The hose shall be blue and white with black guards. A set of color inserts will be shipped with each hose set to designate hose color set.
- The hydraulic reel shall connect to the hydraulic pump with one (1) 16' Hurst hydraulic hose(s) with Streamline couplings.

- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- A Tilt and Deploy bracket for a Earleigh Heights Volunteer Fire Company Hurst S788 Cutter Model # HUR-S788E2-TM. Bracket shall be mounted to the left side of the Revolv-A- Tool and tray.
- A Tilt and Deploy bracket for a Earleigh Heights Volunteer Fire Company Hurst SP777 Spreader Model # HUR-SP777E2-TM. Bracket shall be mounted to the right side of the Revolv-A- Tool and tray.
- One (1) OnScene Solutions Rough-Service 9" white LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment. Light(s) shall be switchable but activated automatically when the park brake is set.
- Two (2) 4" diameter round stainless steel louvered vents shall be provided in lower compartment.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be one (1) bolted shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf(s). The striping shall be red/white in color.
- There shall be two (2) vertical compartment partition(s) provided dividing the compartment into fore and aft sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - Partition shall be horizontally adjustable utilizing aluminum shelf Trac top of partition and slots in shelf.
  - The above component(s) shall have a smooth un-painted finish.
- Cargo netting of 1" - 2" nylon webbing to help restrain equipment in upper compartment area.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S4)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
  - A saw storage module shall be provided on slide-out tray base. The saw storage module shall be constructed of aluminum. The module will provide storage for two (2) chainsaws and two (2) K12 saws. The module will be the size of the tray at the base and have four (4) sloped, lift-up doors (one (1) for each saw). This will provide for fuel, saw parts and tool storage below lift-up door. Inside the storage unit will be dividers to secure four (4) Trufuel Quarts, one (1) blade post, one (1) Quart of bar oil, and one (1) chain sharpener kit.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - REAR (S5)

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

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 56.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be three (3) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.

  Shelves will be located on left side of vertical partition.

  – The above component(s) shall have a smooth un-painted finish.

  – 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf(s). The striping shall be red/white in color.

- There shall be one (1) bolt-in vertical compartment partition(s) provided dividing the compartment into left and right sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.

Located to the left of the fill station.

  – The above component(s) shall have a smooth un-painted finish.

  - A module shall be provided on the floor of compartment 20" high at back and 2" high at front with chamfered outer corners and centered divider. Module to hold two (2) Earleigh Heights Volunteer Fire Company Blow hard Fans.

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

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

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

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

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

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

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

  - One (1) 120 VAC, L5-15 dual twist lock receptacles

  - One (1) 120 VAC, L5-20 single twist lock receptacle.

  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle

  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle

- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Earleigh Heights Volunteer Fire Company.

- The fairlead roller shall be mounted directly to the reel.
  Customer was told that cable will interfer with the fill station slide up door.

- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- One (1) Resolve Specialty Space Saver model 100A vertical mobile filling station(s) designed for SCBA and SCUBA cylinders shall be provided. Fill station shall be capable of simultaneously filling (2) cylinders, with door safety interlocks. The fill enclosure shall meet NFPA 1901 testing certification, and shall be approx. 42.50" high (53" high with door open) x 13.00" wide x 23.00" deep and weigh 405 lbs. If a cascade air fill control panel is provided it will attach to either side of fill station or remotely.

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

Located on right hand side of compartment.

- The Resolve Space Saver fill station shall be provided with a four (4) bank, manual control cascade air fill control panel with black non-glare control panel. Panel is designed with embedded color graphics to help assure proper operation in the field. All gauges are premium glycerin filled which have a 1.5% accuracy rating. Panel includes; safety gauges, charge and bleed valves and pressure regulator for automatic SCBA filling. The panel housing swings open from the front to allow for easy access to gauges and valves in the event service is needed. A refill port for re-filling air storage with female fitting S252P with S44-2 dust cap is provided on front of panel. Panel shall be 42.50" x 9.75" x 18.00".
  - The fill station fill whip(s) shall terminate in a high pressure CGA-347 threaded connectors for 4,500 - 5,500 PSI air pack cylinders.
- One (1) OnScene Solutions Rough-Service 9" white LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment. Light(s) shall be switchable but activated automatically when the park brake is set.
- Two (2) 4" diameter round stainless steel louvered vents shall be provided in lower compartment.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be two (2) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)
  - Vertical partition(s) shall be provided on slide-out tray base dividing the tray into left and right sides. Each vertical partition shall be horizontally adjustable; mounted on aluminum Shelf Trac on tray floor. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- One (1) Lista drawer cabinet, model ES450-NL-LILO-LG shall be provided at base of compartment. The Lista cabinet shall be x 34-1/4" wide x 21 5/8" high x 22-1/2" deep. Cabinet shall have four (4) individual locking drawers as follows; one (1) 2", one (1) 3", one (1) 4", and one (1) 5". The cabinet shall be Light Gray in color.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- 120/240 VAC load center location.
- **Located of front wall of compartment.**

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be two (2) removable plastic tool box(s) with hand holes for carrying. Each tool box shall be fabricated from ½" (.50) textured finish polypropylene sheet.
    - A module shall be provided on compartment floor. Lower section of module will house two specified removable poly boxes. Top of module to provided mounting area for Earleigh Heights Volunteer Fire Company HRT pump.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) with painted finish capable of storing 100' of dual line hydraulic hose shall be provided. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position**.**
    - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- The hydraulic reel shall be equipped with 98' of Hurst high pressure 10,000 PSI hydraulic hose with Streamline couplings and a molded plastic ball clamp. The hose shall be blue and white with black guards. A set of color inserts will be shipped with each hose set to designate hose color set.

- The hydraulic reel shall connect to the hydraulic pump with one (1) 16' Hurst hydraulic hose(s) with Streamline couplings.
- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) with painted finish capable of storing 100' of dual line hydraulic hose shall be provided. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position**.**
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- The hydraulic reel shall be equipped with 98' of Hurst high pressure 10,000 PSI hydraulic hose with Streamline couplings and a molded plastic ball clamp. The hose shall be blue and white with black guards. A set of color inserts will be shipped with each hose set to designate hose color set.
- The hydraulic reel shall connect to the hydraulic pump with one (1) 16' Hurst hydraulic hose(s) with Streamline couplings.
- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- One (1) Earleigh Heights Volunteer Fire Company supplied electric hydraulic power unit(s) shall be mounted in compartment. One (1) 240 VAC twist lock receptacle(s) shall be provided on back wall.
- Mount(s) shall be provided and installed for four (4) Earleigh Heights Volunteer Fire Company supplied ram(s).
- A Tilt and Deploy bracket for a Earleigh Heights Volunteer Fire Company Hurst Cutter. Bracket shall be mounted on left side of the compartment.
- A Tilt and Deploy bracket for a Earleigh Heights Volunteer Fire Company Hurst spreader. Bracket shall be mounted on left side of compartment.
- One (1) OnScene Solutions Rough-Service 9" white LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment. Light(s) shall be switchable but activated automatically when the park brake is set.
- Two (2) 4" diameter round stainless steel louvered vents shall be provided in lower compartment.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be one (1) bolted shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf(s). The striping shall be red/white in color.
- There shall be two (2) vertical compartment partition(s) provided dividing the compartment into fore and aft sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.
  - Partition shall be horizontally adjustable utilizing aluminum shelf Trac top of partition and slots in shelf.
  - The above component(s) shall have a smooth un-painted finish.
- Cargo netting of 1" - 2" nylon webbing to help restrain equipment in upper compartment area.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C4)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 48.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be one (1) bolted shelf/shelves approximately 24" deep at the top of compartment. Each shelf shall be fabricated from 1/4" aluminum sheet with a vertical flange along the rear edge.
  - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 150 lbs. Slide-out tray(s) base shall be approximately 30" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - REAR (C5)

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

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 56.0" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a rod and spring style device to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- There shall be vertically mounted stainless steel Uni-Strut welded to compartment walls for specified component installation.
- There shall be two (2) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.

  Shelves will be located on right side of vertical partition.

  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf(s). The striping shall be red/white in color.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  Tray will be located on right side of vertical partition.

  - The above component(s) shall have a smooth un-painted finish.

- 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front and side faces of the tray. The striping shall be 2" wide and red/white in color.

- There shall be two (2) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

  Tool boards will be located on left side of vertical partition.

  - The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.

  - The above component(s) shall have a smooth un-painted finish.

  - One (1) bolt-on shelf unit(s), 6" deep x width of tool board shall be provided on specified tool board(s). Each shelf shall have a 2" vertical lip with 45 degree side gussets for reinforcement.

    Shelf will be located on forward side of the forward tool board. Shelf and tray will store fire department supplied chains. (Not sending)

  - Each tool board shall be horizontally adjustable; mounted on aluminum shelf Trac on compartment floor.

- There shall be one (1) "J" style rope or equipment hook(s) for mounting of electrical extension cords or rescue ropes.

  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on both sides of the tool board. The striping shall be 2" wide and red/white in color.

- There shall be one (1) bolt-in vertical compartment partition(s) provided dividing the compartment into left and right sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.

  - The above component(s) shall have a smooth un-painted finish.

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

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

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

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

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

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, L5-15 dual twist lock receptacles
  - One (1) 120 VAC, L5-20 single twist lock receptacle.
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Earleigh Heights Volunteer Fire Company.
- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- One (1) Hannay EF1520-17-18 low pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator’s standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).
  - The hose reel shall equipped with 200' of 3/8" Parker Series 7092 GST II low pressure air hose rated for 300 PSI maximum pressure. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color with blue color coded end.
  - The air supply shall be from the utility air compressor.
  - A reel shut-off valve, 0 - 125 psi adjustable low pressure regulator, and 0 - 300 psi gauge shall be provided on an aluminum control panel with flow diagram graphic overlay near the air reel location, not exceeding 72" from ground.
- The fairlead roller shall be mounted directly to the reel.
- One (1) fairlead roller assembly shall be mounted to interior door pan with hinged bracket.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- One (1) OnScene Solutions Rough-Service 9" white LED light(s) shall be provided below the body. Each light shall be mounted in an extruded aluminum housing to protect against damage from personnel or equipment. Light(s) shall be switchable but activated automatically when the park brake is set.

- Two (2) 4" diameter round stainless steel louvered vents shall be provided in lower compartment.

REAR ENTRY DOORS

Access shall be provided to the interior through double doors with a clear door opening width of approximately 36" (without interior door handles) x full height.

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

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

Full width padded foam cushion head bumper shall be provided above door opening. The head bumper shall be covered with matching interior vinyl and bolted to interior of door way.

The active latching door shall overlap the non-latching door. The latch mechanism shall include a stainless steel paddle handle on the inside. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame complying with FMVSS requirements.

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

Note: D-ring and latches shall be on the right hand door.

ENTRY HANDRAILS

There shall be four (4) Hansen International 24" x 1-1/8" vertical handrails provided at entry door; two (2) 24" vertical on exterior of body, and two (2) 24" on inside of door. The interior handrails shall be angled for optimum use when entering or exiting the body interior area. Handrails shall be NFPA compliant formed from anodized aluminum with knurled anti-slip finish.

Each handrail shall be back-lit with a Safetylite, 12 VDC blue LED light tube. Lights shall be activated with headlight and park brake set circuits.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

WINDOW(S)

There shall be two (2) 12" wide x 22" high non-sliding window(s) installed. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

STEP COMPARTMENT

There shall be one (1) compartment(s) located below walk-in entry door. Compartment shall have a horizontally hinged brushed stainless steel door with a D-ring handle. Each compartment shall be manufactured to prevent road debris, dirt and moisture from entering the enclosure. Each compartment(s) shall be approximately 30" wide, incorporating two stair risers x maximum depth based on chassis mounted components and requirements for structural integrity of the body.

Each compartment shall have an OnScene LED light that shall automatically activate when the door is opened and wired to the NFPA required hazard warning light provided in the cab.

ROPE ANCHOR OR PORTABLE WINCH RECEIVERS

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

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

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

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

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

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

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

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

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

ROOF LOCATIONS

- Six (6) stainless steel swivel hoist rings #CL-29202-SHR-S rated for 3,500 lbs. each (or equal). Each ring shall be located in a open recessed polished stainless steel pocket with a sloped base to promote drainage. Anchor point(s) shall be provided and located as follows;
  - Two (2) streetside tie-off locations shall be adjacent to the IS1/IS2 and IS4/IS5 vertical jamb structure for maximum strength.
  - Two (2) curbside tie-off locations shall be adjacent to the IC1/IC2 and IC4/IC5 vertical jamb structure for maximum strength.

- Two (2) rear tie-offs location shall be outboard adjacent to the formed corner structure.

Anchor points shall be reinforced to provide **the maximum allowed by manufacturer's engineering** pound-force no-yield condition with a straight line pull per location. The Stainless Steel Swivel Hoist Rings shall serve as an anchor point for ropes used in a rope rescue situation and have a minimum inside diameter of 2.00".

ACCESSORIES

- Two (2) removable rope anchor(s) shall be provided for use with lower body specified receivers. Each rope anchor shall be fabricated from 3/4" steel, 2" high x 11.5" long with a 3" OD/2" ID eyelet. Eyelet end shall have radiused edge to prevent damage to rope or carabineer. Each rope anchor shall have a black powder coat paint finish.

- A steel 5/8" x 3" hitch pin shall lock the rope anchor into the receiver tube.

- An aluminum mounting bracket shall be provided to store rope anchor(s) inside a body compartment as close to receiver location as possible.

PORTABLE WINCH

- One (1) Warn Zeon 8 multi-mount, 8,000 lb. 12 VDC electric winch shall be provided with the completed unit. Winch shall be capable of being mounted to the vehicle by inserting the 2" tube of carrier into a properly rated receiver and pinned into place for use. Winch shall be supplied with 100' of 5/16" wire rope with pinned utility hook. A 12' remote control shall be provided that permits the operator to stand at a safe operating distance from the cable and winch. Winch shall have a black powder coat paint finish with a limited lifetime warranty.

STREETSIDE WHEEL WELL

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the streetside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).

  - The receiver(s) shall have one (1) rubber cover(s) provided.

STREETSIDE WHEEL WELL

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the streetside of the body in the rearward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).

  - The receiver(s) shall have one (1) rubber cover(s) provided.

STREETSIDE LOWER BODY

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on streetside below body centered under the streetside 5 compartment behind rear wheels for use with removable rope anchor and/or a portable electric winch (when specified).

  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.

  - **12 VDC plug will be located inside streetside 5 compartment for portable winch.**

  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.

  - The receiver(s) shall have one (1) rubber cover(s) provided.

CURBSIDE WHEEL WELL

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).

  - The receiver(s) shall have one (1) rubber cover(s) provided.

CURBSIDE WHEEL WELL

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside of the body in the rearward portion of the wheel well panel for use with removable rope anchor and/or a portable electric winch (when specified).

  - The receiver(s) shall have one (1) rubber cover(s) provided.

CURBSIDE LOWER BODY

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside below body centered under the curbside 5 compartment behind rear wheels for use with removable rope anchor and/or a portable electric winch (when specified).

  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.

  - **12 VDC plug will be located inside curbside 5 compartment for portable winch.**

  - One (1) 12" x 2" M x 2" F winch mounting adapter(s) shall be provided. Winch adapter will extend the specified portable winch 6" from receiver. An aluminum mounting bracket shall be provided to store winch adapter(s) inside a body compartment as close to receiver location as possible.

  - The receiver(s) shall have one (1) rubber cover(s) provided.

REAR BUMPER

- The specified rear trailer hitch shall be compatible with the removable rope anchor point and/or a portable electric winch (when specified).
  - There shall be one (1) 12 VDC plug(s) with quick connect provided to power a Warn portable winch. All 12 VDC cables to be sized according to Warn and installation for intended use.
  - The receiver(s) shall have one (1) rubber cover(s) provided.

LOWER SIDE BODY PROTECTION - RUB RAIL

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

The rub rails shall be fabricated from ABS plastic, measuring approximately 2-3/4" high x 1-3/8" thick. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body.

The ABS plastic material shall be black in color.

- Ten (10) warning lights shall be provided behind lower rub rail, machined cutouts shall be provided in rub rail for warning lights. Warning light models, colors and etc. are specified in warning lights section.

UPPER SIDE BODY PROTECTION - RUB RAIL

Upper body rub rails shall be provided one (1) high on upper body sides, and one (1) directly above side compartment doors on both the streetside and curbside.

The rub rails shall be fabricated from ABS plastic, measuring approximately 2-3/4" high x 1-3/8" thick. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body.

The ABS plastic material shall be black in color.

FRONT GRAVEL GUARDS

Gravel guards shall be provided on front lower body corners. Guards shall be 12" high, extend from behind cab or step and wrap around to the front compartment door opening fabricated from 20 gauge brushed stainless steel.

ROOF ACCESS HATCH COVER

A bolted roof access hatch cover shall be provided in the roof structure to allow for installation or removal of large equipment into the compartment area. The roof around the hatch opening shall be reinforced as necessary to prevent deflection in the roof area. The hatch cover shall overlap a 2" vertical lip on the body roof to prevent entry of moisture. It shall be sealed with automotive type rubber molding to provide a weather resistant seal.

WALK-IN INTERIOR FINISH DETAILS

DESK, CABINET, CONSOLE FINISH

All specified interior desks, cabinets, overhead cabinets, or consoles shall be fabricated from formed 1/8" 3003 H14 alloy smooth aluminum.

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

ROOF HATCH WITH SKYLIGHT

The roof of body shall be reinforced for the installation of a roof hatch with skylight. Per NFPA 1901, any interior area to be occupied by personnel shall have a minimum of two means of escape. The opening shall be a minimum of 24" x 24" in size, suitable for use as an escape hatch, for ventilation, and supplemental light in the interior. The roof hach shall have tinted glass, two (2) compression type door checks to hold door in open position, and a nylon strap to assist in closing hatch. Roof hatch shall be connected to the cab hazard warning light in cab to indicate when open.

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

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

INTERIOR FINISH

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

Interior finish shall be smooth aluminum above the top compartments and the ceiling.

INTERIOR WALKWAY SIDE WALLS

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

INTERIOR WALKWAY FLOOR

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

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

INTERIOR SUB-FLOOR

Above the body sub frame walk in areas shall be an isolation sheet to prevent outside elements from permeating the acoustic and thermal barrier. The isolation sheet shall be fabricated from the same type of material as is used in the subframe, and flanged on sides with a 1" high vertical break.

Plascore PP-30, 3/4" thick or similar material shall be placed between the isolation sheet and finished floor for its structural, acoustic and thermal values.

AIR CONDITIONER - HEATER

The completed unit shall be supplied with one (1) Red Dot model R-9759-1, air conditioning/heater unit(s) with a headliner mounted evaporator.

Unit shall have a rating of 25,000 BTU cooling and 30,000 BTU heat with air delivery of over 400 CFM through five outlets. Unit shall be 6.5" high x 27" wide x 17.6" length and weigh 40 lbs.

Red Dot A/C Heater unit will be located in IS2 above window, controls are on unit.

HEATER

The completed unit shall be provided with one (1) Red Dot 49,000 BTU hot water type heater(s). The heater(s) shall be connected to the chassis engine cooling system and have three-speed, 12 volt blower. The cooling system lines shall be insulated and be provided with 1/4 turn shut-off valves to isolate system, if required.

Locate the heater in the ladder/pike Pole storage module beneath the forward most pair of SCBA's. The Pike Poles shall be mounted above the heater. Controls to be mounted at rear entry door if remote is possible.

FRONT INTERIOR AREA (IF1)

- Air storage consisting of four (4) UN/ISO DOT, 510 SCF @ 6,000 PSI, (requires hydraulic pressure or ultrasonic examination test every 10 years) shall be provided on completed vehicle complete with gauges and valves. Each cylinder shall measure 9.4" diameter x 52" long, and weigh 202 lbs.

  A label shall be placed on or near the operator's panel that provides the following:

  1) The original cylinder test date stamped on the cylinders.
  2) The recommended testing interval.
  3) Five additional open spaces, appropriately labeled, for the user to enter actual retesting dates.

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

  Air tanks shall be marked with a label that reads;

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

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

  - There will be a welded reinforcement above the body frame to carry specified DOT or ASME cylinders. The mounting of the cylinders will be with adjustable track and powder coated steel band straps to securely hold all cylinders in place.

  - The front area of walk-in area shall have a bolted access panel for air storage cylinder access.

- The open area above specified breathing air cylinder enclosure shall be provided with cargo netting of 1" - 2" nylon webbing with automotive seatbelt style latches. There will be three (3) equal sized sections of cargo netting with two (2) bukcles for each section.

STREETSIDE INTERIOR AREA (IS2)

WINDOW(S)

There shall be one (1) 32" wide x 16" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

- The interior deck area over the top of the exterior side compartments shall be un-painted smooth aluminum.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.

Note: Lower left hand corner outer wall.

  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on interior area wall, above deck/desk left.

- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with five (5) 20 amp duplex outlets. Strip shall be approximately 56" long.

STREETSIDE INTERIOR AREA (IS3)

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 56.5".
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- One (1) OnScene Access white LED, full height compartment light, vertically mounted.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

STREETSIDE INTERIOR AREA (IS4)

- The interior deck area over the top of the exterior side compartments shall be un-painted smooth aluminum.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.
- Note: Locate in left hand corner outboard wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on interior area wall, above deck/desk left.
- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with five (5) 20 amp duplex outlets. Strip shall be approximately 56" long.

STREETSIDE INTERIOR AREA (IS5)

- One (1) Norcold 2.7 cu.ft model NR751BB, refrigerator/freezer shall be provided and installed. The unit shall be a flush mount style recessed into an enclosure. The refrigerator shall operate from both 12 VDC and 120 VAC power. The built-in dimensions are 20-1/2" high x 18-1/2" wide x 21" deep.

Note: Adjacent to IS4 window.

- A Sierra 9000A-2, 4,500 PSI electrically driven air booster shall be provided and integrated into the specified breathing air storage system. The Sierra A-2 booster is designed to re-fill both low pressure (2,216 PSI), and high pressure (4,500 PSI) air bottles with an automatic on/off switch that allows the booster to pump air until the maximum pressure level is reached, then automatically turns the system off. When a new bottle is introduced into the system, the system detects the low pressure and sends a signal to the booster to begin pumping again. Unit shall have a 220 VAC single phase, 12 amp electric motor, and be 35" wide x 16" high x 19" deep, and weigh 145 pounds.

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the hi

- There shall be a quick removal cover provided on interior above the interior deck surface. Cover will be provided with a hinged cover for access to booster controls, during normal operation.

INTERIOR BENCH SEAT

The interior body walkway shall be provided with a squad bench seat for six (6) personnel along the side wall. The seat cushion shall be approximately 3" thick with a 3/4" plywood platform for stability. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat cushion. The cushion and seat back shall be covered with Duraware heavy duty fabric material.

- There shall be three (3) Blue Sea 12 VDC USB dual port(s) provided in each of the three (3) SCBA storage towers.

The cushion and seat back shall be covered with vinyl heavy duty material.

Seat material color shall be black.

INTERIOR BENCH SEAT STORAGE

The bench seat base shall be fabricated of aluminum tread plate to form a under seat storage compartment.

A hinged door with single point "D"-ring handle and latch shall be provided at the rear of the seat compartment.

The seat base storage shall be for the following equipment;

- Eight (8) Earleigh Heights Volunteer Fire Company supplied pike pole(s) shall be installed after delivery.

Four (4) FHU NY Hooks on the inside of bench, and four (4) FHU Tri-State on the outside face.

- Three (3) Earleigh Heights Volunteer Fire Company supplied ladder(s) shall be installed after delivery.

One (1) 16' Roof
One (1) 24' 2-Section
One (1) 12' Fresno
Special order width for bench seat height.

The above specified seat(s) shall be provided with six (6) automotive type lap seat belt. The seat belt(s) shall be secured to the attachment point provided on the seat. The seatbelt(s) shall be red in color and comply with NFPA 1901

requirements. Seat(s) shall be connected into seat belt Occupant Restraint Indicator (ORI) and Vehicle Data Recorder (VDR).

Interior Seat: SCBA Bracket(s), Seat Back, Angle Mounted (Pair)

SEAT SCBA BRACKETS

There shall be six (6) IMMI SmartDock hands-free SCBA air pack bracket(s) that meet NFPA 1901 standards mounted in specified SCBA seat(s). No straps or levers are required. In a collision the top claws clamp-down preventing the SCBA from becoming a projectile.

CURBSIDE INTERIOR AREA (IC2)

WINDOW(S)

There shall be one (1) 32" wide x 16" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

- The interior deck area over the top of the exterior side compartments shall be un-painted smooth aluminum.
- A chassis stereo radio speaker shall be mounted on interior wall right side above window. Volume control for speaker shall be located curbside walkway wall adjacent to rear entry door.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on interior area wall, above deck/desk left.
- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with five (5) 20 amp duplex outlets. Strip shall be approximately 56" long.

CURBSIDE INTERIOR AREA (IC3)

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 56.5.
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- One (1) OnScene Access white LED, full height compartment light, vertically mounted.
- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.
- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

CURBSIDE INTERIOR AREA (IC4)

WINDOW(S)

There shall be one (1) 32" wide x 16" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

- The interior deck area over the top of the exterior side compartments shall be un-painted smooth aluminum.
- A communication radio speaker shall be mounted on interior wall right side above window. Volume control for speaker shall be located curbside walkway wall adjacent to rear entry door.
- A chassis stereo radio speaker shall be mounted on interior wall right side above window. Volume control for speaker shall be located curbside walkway wall adjacent to rear entry door.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on interior area wall, lower left area.
- There shall be one (1) 120 VAC, 20 amp custom fabricated outlet strip provided with five (5) 20 amp duplex outlets. Strip shall be approximately 56" long.

CURBSIDE INTERIOR AREA (IC5)

- Along curbside walkway side wall there shall be one (1) storage air bags. The module shall be fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. Circular notches shall be provided along the top edge to ease the access to the air bags. Each bay shall be sized to hold the air bag and a matching piece of 1/2" plywood (plywood not provided).

  The make, model, qty and exact dimensions (inc. nipple) of the Earleigh Heights Volunteer Fire Company supplied air bags shall be prior to pre-construction meeting.

- The specified utility air compressor shall be located above deck to the rear of walkway. An insulated removable cover shall be provided enclosing utility air compressor from interior walkway. Exterior ventilation and grated decking shall be provided into compartment C5 for maximum available air flow.

- Mounting shall be provided against utility air compressor cover for four (4) fire extinguisher utilizing positive restraint mountings.

- There shall be a recessed switch/control panel located in curbside walkway wall adjacent to rear entry door. Control shall be provided for;
  - Overhead interior lights white/blue.
  - Interior cabinets lights.
  - Push button for cab communication buzzer.
  - Rear scene light switch.
  - Volume controls for two-way radio & stereo speaker(s).
  - Heater controls if applicable.

- There shall be one (1) cabinet(s) provided on interior above the interior deck surface formed by exterior compartment ceilings. Cabinet(s) shall be framed in from the top of the interior deck surface to the ceiling of the walk-in area. Each cabinet shall be approximately 25" wide.

- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.

- One (1) OnScene Access white LED, full height compartment light, vertically mounted.

- Cargo netting of 2" nylon webbing shall be provided over cabinet opening with easy release dowel style securement at top.

- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC

General

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

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

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

Wiring

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

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

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

Wiring and Wire Harness Construction

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

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

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

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

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

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

If a mechanical-type device is used, it shall conform to one of the following SAE standards:
1) SAE J156, *Fusible Links*
2) SAE J553, *Circuit Breakers*
3) SAE J554, *Electric Fuses (Cartridge Type)*
4) SAE J1888, *High Current Time Lag Electric Fuses*
5) SAE J2077, *Miniature Blade Type Electrical Fuses*

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

Power Supply

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

Minimum Continuous Electrical Load

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

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

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

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

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

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

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

Electromagnetic Interference

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

Wiring Diagram

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

Low Voltage Electrical System Performance Test

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

INTELEX PLUS SYSTEM INTERFACE DISPLAY

BATTERY SYSTEM

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

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

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

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

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

One of the following master disconnect switches shall be provided:

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

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

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

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

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

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

BATTERY SWITCH

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

BATTERY SOLENOID

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

BATTERY CONDITIONER

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

REAR SCENE LIGHTS SWITCHING

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

BACK-UP ALARM

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

REAR VIEW CAMERA

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

FORWARD VIEW CAMERA WALKIN DISPLAY

There shall be one (1) ASA Voyager camera provided and installed in cab windshield area facing forward. The system shall include one (1) 15" minimum high resolution display installed on the forward walk-in body area.

INTERIOR LED LIGHTS

Eight (8) Whelen model #60CBEGC 6" round, surface mount split white/blue LED light(s) shall be provided throughout the vehicle.

The light(s) shall be switched with Innovative Controls black back-lit switch panel shall be provided to control specified lighting or other control switching located at rear entry, curbside

A 10 minute timer shall be provided interlocked with ignition switch circuit so that lights will not remain on with ignition off.

TAIL LIGHTS

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

- Two (2) Whelen M6 Series M6T amber LED turn lights
- Two (2) Whelen M6 Series M6BTT red LED stop/tail lights
- Two (2) Whelen M6 Series M6BUW clear LED back-up lights with clear lens

Each light above shall be mounted in a:

Each light shall have a chrome flange.

MIDSHIP MARKER/TURN SIGNAL

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

MARKER LIGHTS

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

REAR BUMPER MARKER LIGHTS

Two (2) Britax style dual face flexible mounted rear bumper markers shall be located, one (1) each side lower rear corner of body visible from driver mirrors.

CAB STEP LIGHTS / GROUND LIGHTS

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

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

LICENSE PLATE LIGHT

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

ELECTRONIC SIREN

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

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer, if required by Earleigh Heights Volunteer Fire Company.

FRONT CAB MOUNTED SCENE LIGHT(S)

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

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

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

SIDE LED SCENE LIGHTS

There shall be four (4) HiViz semi-reccessed model FT-MB-2.15-FT-W-CPREC 20.26" flood/spot LED scene light(s) provided on the upper body. Light quantity shall be divided equally per side. The semi-recessed series light shall have 11,880 useable lumens each. Each light shall have a white finish housing and chrome mounting flange. The scene light is covered by a FireTech limited life-time factory warranty.

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

The lights shall be controlled at the multiplex display(s) in the cab.

LIGHT TOWER

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

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

Light Tower Construction and Design

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

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

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

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

Light Tower Electrical System

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

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

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

Light Tower Floodlights

The Command Light model KL409HD-H4 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	HiViz
Number of lamp heads:	2 x 270 W DC Mini Brow LED 2 x 60 W DC Mini Brow LED
Voltage:	12 VDC
Total watts of light tower:	800 watts
Total lumens of light tower:	35,000
Configuration:	The light heads shall be mounted with two (2) on each side of the light tower, giving two (2) vertical lines of two (2) when the lights are in the upright position.

Light Tower Paint

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

Light Tower Controls

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

Three (3) switches; one (1) for each pair of lights.
One (1) switch for light bank rotation.
One (1) switch for elevating lower stage.
One (1) switch for elevating upper stage.
One (1) switch for optional light bank rotation.
One (1) switch for the optional strobe.
One (1) indicator light to indicate when light bank is out of the roof nesting position.
One (1) indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

The light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.

Where the Light Tower is to be mounted above a finished walk-in Area; The Roof, backing Plates and Structure shall have threaded holes. This will allow removal of Light Tower without removal of the Interior Paneling.

Where the Light Tower will be mounted in close proximity to other roof mounted Items (i.e. Antennas, Air Conditioners and Weather Stations) the Light Tower or other Items shall be orientated in order to help prevent a Operator driven Collision.

REAR LED SCENE LIGHTS

Two (2) HiViz semi-recessed model FT-MB-2.15-FT-W-CPREC 20.26" flood/spot LED scene light(s) provided on the upper body to light the work area immediately behind the vehicle. The semi-recessed series light shall have 11,880 useable lumens each. Each light shall have a white finish housing and chrome mounting flange. The scene light is covered by a FireTech limited life-time factory warranty.

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid with in a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

The lights shall be controlled at the multiplex display(s) in the cab.

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

TRAFFIC ADVISOR LIGHTS

A traffic advisor system shall be provided on rear of vehicle using;

- Six (6) Whelen Wide-angle ION series amber Super-LED lights with clear lens.
- Chrome flanges.
- Lights shall be individually mounted and evenly distributed.

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

DAVID CLARK INTERCOM SYSTEM

The following David Clark intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. System shall have the following major components as minimum;

- Intercom Master Station, 3800
- Radio interface unit model U3805 for single radio.

INTERCOM SYSTEM INSTALLATION

The above listed intercom system headset jascks shall be installed in the cab locations as follows;

- Driver's – Intercom & radio PTT provided at driver position.
  - Position provided with dual ear, flexible boom headset model H3442
  - Intercom headset jack shall be located overhead right shoulder.
    Remote PPT.
  - Headset hook provided overhead right shoulder.
- Officer's – Intercom & radio PTT provided at officer position.
  - Position provided with dual ear, flexible boom headset model H3442
  - Intercom headset jack shall be located overhead left shoulder.
    Remote PPT.
  - Headset hook provided overhead left shoulder.
- Body Walk-In Area - (4) Intercom position(s) provided in body walk-in area.
  - Position provided with dual ear, flexible boom headset model H3442
  - Intercom headset jack shall be located on center console/engine cover.
  - Headset hook provided overhead right shoulder.

WARNING LIGHT PACKAGE

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

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

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

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

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

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

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

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

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

UPPER LEVEL OPTICAL WARNING DEVICES

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

ZONE A - FRONT WARNING LIGHTS

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

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be four (4) Whelen M9 linear super-LED Light(s) with full-fill optic provided, two (2) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be COMETFLASH 75, On/Off, Phase 1

– No sync will be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be four (4) Whelen M9 linear super-LED Light(s) with full-fill optic provided, two (2) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be COMETFLASH 75, On/Off, Phase 1

– No sync will be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

ZONE C - REAR WARNING LIGHTS

There shall be four (4) Whelen M9 linear super-LED Light(s) with full-fill optic provided, two (2) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Clear Lens

Each light shall have a chrome flange.

– Amber Upper below Rota Beams, Red Lower below scene lights.

- Flash Pattern shall be COMETFLASH 75, On/Off, Phase 1

– No sync will be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

There shall be four (4) Whelen 600 Series Rota-Beam Super-LED lights (6RBRC) with 180° warning provided, two (2) each side of specified traffic direction lights.

Each light shall have:
- Red LED's
- Clear Lens

Each light shall have a chrome flange.

– Flash Pattern shall be Whelen Rotator 150, clockwise, Phase 1
Curbside Pair

– No sync will be provided for the above lighting group.

– Flash Pattern shall be Whelen Rotator 150, counter clockwise, Phase 1
Streetside pair

– No sync will be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

LOWER LEVEL OPTICAL WARNING DEVICES

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

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

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

ZONE A - FRONT WARNING LIGHTS

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

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

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

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB SIDE)

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

ZONES B AND D - BODY LIGHT (BODY AUXILLARY - RUBRAIL)

FIRST PAIR FRONT RUB-RAIL LIGHTS

- Centered under each door opening.

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

The lights shall be controlled at the multiplex display(s) in the cab.

SECOND PAIR FRONT RUB-RAIL LIGHTS

- Centered under compartment sill(s).

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

The lights shall be controlled at the multiplex display(s) in the cab.

THIRD PAIR FRONT RUB-RAIL LIGHTS

- Centered under each door opening.

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

The lights shall be controlled at the multiplex display(s) in the cab.

FIRST PAIR REAR RUB-RAIL LIGHTS

- Centered under forward door panels.

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

The lights shall be controlled at the multiplex display(s) in the cab.

SECOND PAIR REAR RUB-RAIL LIGHTS

- Centered under rearward door panel.

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

The lights shall be controlled at the multiplex display(s) in the cab.

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

There shall be six (6) Whelen M6 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, three (3) each side, one above each axle and one centered between each axle. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Clear Lens

Note: two (2) centered lower lights maybe deleted for three cylinder compartments.

Each light shall have a chrome flange.

- Flash Pattern shall be COMETFLASH 75, On/Off, Phase 1

– No sync will be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

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

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

Note: Recessed into rear bumper corner chamfers.

The lights shall be controlled at the multiplex display(s) in the cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen M6 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

– Flash Pattern shall be ACTION SF60/TF 120, On/Off

The lights shall be controlled at the multiplex display(s) in the cab.

There shall be two (2) Whelen surface mount TLIR Series LED light(s) with wide angle optic provided, one (1) each side. Component shall be covered by a five year Whelen factory warranty.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

Note: Recessed into bumper face.

The lights shall be controlled at the multiplex display(s) in the cab.

LINE VOLTAGE ELECTRICAL SYSTEM

ONAN PTO GENERATOR

The vehicle shall be equipped with an Onan Protec PTO generator system with a capacity of 30,000 watts at 120/240 VAC, 250/125 amps, single phase. Current frequency shall be stable at 60 hertz.

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

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

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

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

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

GENERATOR BONDING

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

GENERATOR ENGAGEMENT

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

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

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

WARRANTY PERIOD

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

GENERATOR SPLASH GUARD

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

GENERATOR CONTROL

The generator shall be engaged at the multiplex display(s) in the cab.

GENERATOR MOUNTING - ONAN PROTEC

The generator shall be mounted below the chassis frame rails. The generator mounting brackets shall be fabricated using steel plate and/or tubing and powder coat primed and painted black. The generator mounting shall be bolted to the side of the chassis frame rail and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

MANUALS AND SCHEMATICS

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

POWER-TAKE-OFF GENERATOR DRIVE

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

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO, or through the Weldon Vista screen, if specified.

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

ENGINE SPEED CONTROL

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

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

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

LOADCENTER

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

GENERATOR MONITORING PANEL

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

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

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

SHORE POWER INLET - BATTERY CHARGER

Shore power shall be wired to all primary 120 VAC, 20 ampere electrical outlets on apparatus (maximum of two (2) circuits). Circuits shall be provided with circuit breaker protection with either generator or shore power providing power.

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

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

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

Conformance with National Electrical Code

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

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

Location Ratings

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

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

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

Grounding

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

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

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

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

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

Bonding

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

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

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

Ground Fault Circuit Interrupters

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

Power Source General Requirements

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

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

Power Source Rating

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

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

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

Instrumentation

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

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

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

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

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

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

Operation

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

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

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

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

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

Power Supply Assembly

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

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

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

Over-current Protection

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

Power Source Protection

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

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

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

Branch Circuit Over-current Protection

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

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

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

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

Panelboards

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

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

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

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

Wiring Methods

Fixed wiring systems shall be limited to the following:

1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

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

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

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

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

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

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

Receptacles and Inlet Devices

Wet and Dry Locations

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

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

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

Receptacle Label

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

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

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

Wiring Schematics

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

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

UTILTY AIR COMPRESSOR

One (1) Speedaire model 1NNF7 or equal, 240 VAC, 3.1 HP electric powered air compressor with 20 gallon storage tank shall be provided on completed unit. Compressor shall be rated at 15.0 free air CFM @ 90 PSI, 10.20 free air CFM @ 135 PSI max. pressure.

One (1) 240 VAC twist lock receptacle with switch shall be provided for turning the compressor On/Off.

- On/Off controls for utility air compressor shall be located near the specified low pressure air hose reel(s).

- The utility air compressor shall be located in compartment.

Results of the NFPA required utility air system test shall be provided with delivered vehicle.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 10,000 lbs. of Earleigh Heights Volunteer Fire Company provided equipment based on a 60,001 pound and up gross vehicle weight rating.

EQUIPMENT

The following equipment shall be furnished with the completed special service vehicle;

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- There shall be two (2) Zico SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
  - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be located in specified ladder compartment.
- One (1) Duo-Safety 875-A series 16' aluminum roof ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be located in specified ladder compartment.
- One (1) Duo-Safety 701-12 12' aluminum attic ladder(s) shall be provided with completed unit.
  - The ladder(s) shall be located in specified ladder compartment.
- Eight (8) Streamlight Fire Vulcan C4 LED flashlight(s) with shoulder strap shall be provided with 80,000 candela and 3 hour run time. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an LED spotlight style bulbs and reflectors. The flashlight(s) shall be wired to battery direct unless otherwise specified by Earleigh Heights Volunteer Fire Company.
  - One (1) flashlight(s) shall be mounted in the cab on center console.
    - One (1) flashlight(s) shall be mounted on the completed unit in the lower area of compartment S1.
  - Six (6) flashlight(s) shall be mounted in the body walk-in interior adjacent to seating positions.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901 for special service vehicles, section 10.9.3 shall be supplied and mounted by Earleigh Heights Volunteer Fire Company before the unit is placed in emergency service.