Olathe Fire Department
Olathe, KS
Light Rescue- SVI#1312
Production Specification

Customer Approval:_____

Date:_____

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

TEST SEQUENCE

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

1. RESERVE CAPACITY TEST

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

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

2. ALTERNATOR PERFORMANCE TEST

TEST AT IDLE

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

TEST AT FULL LOAD

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

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

3. LOW VOLTAGE ALARM TEST

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

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

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

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

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

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

UL 120/240 VAC CERTIFICATION

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

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

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

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

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

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

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

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

1) Altitude
2) Barometric pressure
3) Relative humidity

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

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

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

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

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

DOCUMENTATION

The 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 Olathe Fire Dept on all warranty work.

GENERAL LIMITED WARRANTY - TWO (2) YEARS

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

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

LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS

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

STRUCTURAL WARRANTY - TEN (10) YEARS

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

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.**

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 six hundred twenty (620) days after pre-construction meeting and receipt and approval of any signed change orders from Olathe Fire Dept.

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 written notice to Olathe Fire Dept as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

DEALER MAKE READY PERIOD

The completed vehicle shall be delivered after fourteen (14) days for dealer preparation after completed apparatus delivered to dealer location.

OVERALL HEIGHT REQUIREMENT

There is no overall height (OAH) restriction for this vehicle.

OVERALL LENGTH REQUIREMENT

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

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.

ENGINEERING SUPPORT AT PRE-CONSTRUCTION MEETING

The Contractor shall provide an engineer to be present at the pre-construction meeting held at the factory location. The engineer will address all engineering related questions for the truck as purchased and for all proposed changes.

The engineer will have the 2D and/or 3D AutoCAD electronic drawings projected on screen and be able to provide dimensional data for proposed changes and proposed layouts. This will help ensure that the final design matches the Olathe Fire Dept intentions to the maximum extent possible.

DELIVERY AND DEMONSTRATION

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

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Olathe Fire Dept.

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

CAB CHASSIS SPECIFICATIONS

2024 F-550 Chassis 4x4 SD Super Cab 168" WB DRW XL (X5H)

As Configured Vehicle

Code Description

Base Vehicle

X5H Base Vehicle Price (X5H)

Packages

660A Order Code 660A

Includes:
- Transmission: TorqShift 10-Speed Automatic 10R140 with neutral idle. Includes SelectShift and selectable drive modes: normal, tow/haul, eco, slippery roads and off-road.
- Wheels: 19.5" x 6" Argent Painted Steel Hub covers/center ornaments not included.
- Radio: AM/FM Stereo w/MP3 Player Includes 6 speakers.
- SYNC 4 Communications & Entertainment System Includes enhanced voice recognition, 911 Assist, 8" LCD center stack screen, AppLink, 1 smart-charging USB port and trailer brake controller.

Powertrain

99T Engine: 6.7L 4V OHV Power Stroke V8 Turbo Diesel B20

Includes Operator Commanded Regeneration (OCR), Diesel Exhaust Fluid (DEF) tank, intelligent oil-life monitor and manual push-button engine-exhaust braking.
Includes:
- Dual 68 AH/65 AGM Battery

44G Transmission: TorqShift 10-Speed Automatic

10R140 with neutral idle. Includes SelectShift and selectable drive modes: normal, tow/haul, eco, slippery roads and off-road.

X4L Limited Slip w/4.30 Axle Ratio

68M GVWR: 19,500 lb Payload Plus Upgrade Package

Includes upgraded frame, rear-axle and low deflection/high capacity rear springs. Increases max RGAWR to 14,706 lbs. Note: See Order Guide Supplemental Reference for further details on GVWR.

Wheels & Tires

TGK Tires: 225/70Rx19.5G BSW Traction (TGK)

Includes 4 traction tires on the rear and 2 traction tires on the front. Not recommended for over the road applications; could incur irregular front tire wear and/or NVH.

64Z Wheels: 19.5" x 6" Argent Painted Steel

Hub covers/center ornaments not included.

Seats & Seat Trim

Code Description

4 Cloth 40/Mini-Console/40 Front Seat

Includes driver's side manual lumbar.

Other Options

PAINT Monotone Paint Application

168WB 168" Wheelbase

STDRD Radio: AM/FM Stereo w/MP3 Player

Includes 6 speakers.
Includes:
- SYNC 4 Communications & Entertainment System

Includes enhanced voice recognition, 911 Assist, 8" LCD center stack screen, AppLink, 1 smart-charging USB port and trailer brake controller.

96V XL Chrome Package

Includes:
- Chrome Front Bumper
- Bright Grille
- Power Sliding Rear Glass
- Rear Window Defroster
- Remote Start
- Halogen Fog Lamps

67P Extra Heavy-Duty Front End Suspension - 7,500 GAWR

Includes upgraded front axle and max 7,500 lbs. Front springs/GAWR rating for configuration selected. Incomplete vehicle package - requires further manufacture and certification by a final stage manufacturer.

535 High Capacity Trailer Tow Package

Includes trailer brake wiring kit and upgraded rear axle. Increases GCW from 32,500 lbs. to 40,000 lbs. Note: Salesperson's Portfolio or Trailer Towing Guide should be consulted for specific trailer towing or camper limits and corresponding required equipment, axle ratios and model availability. See Supplemental Reference for vehicle height consideration.

41H Engine Block Heater

41P Transfer Case Skid Plates

61J 6-Ton Hydraulic Jack

86M Dual 68 AH/65 AGM Battery

67B 410 Amp Dual Alternators

Includes 250 Amp + 160 Amp.

153 Front License Plate Bracket

Standard in states requiring 2 license plates and optional to all others.

872 Rear View Camera & Prep Kit

Pre-installed content includes cab wiring and frame wiring to the rear most cross member. Upfitters kit includes camera with mounting bracket, 20' jumper wire and camera mounting/aiming instructions.

41A Rapid-Heat Supplemental Cab Heater

Includes:
- 410 Amp Dual Alternators
Includes 250 Amp + 160 Amp.

43C 110V/400W Outlet

Includes 1 in-dash mounted outlet and 2nd outlet in the console.

76C Exterior Backup Alarm (Pre-Installed)

61L Front Wheel Well Liners (Pre-Installed)

Fleet Options

47J Fire/Rescue Prep Pkg w/EPA Special Emissions (LPO)

Requires valid FIN code.

Includes upgraded front springs/GAWR rating, please see Supplemental Order Guide or visit fordbbas.com for complete details. Incomplete vehicle package - requires further manufacture and certification by a final stage manufacturer. Ford urges Fire/Rescue vehicle manufacturers to follow the recommendations of the Ford Incomplete Vehicle Manual and the Ford Truck Body Builders Layout Book (and pertinent supplements). Note 1: Stationary Elevated Idle Control (SEIC) has been integrated into the engine control module. Note 2: Engine calibration significantly reduces the possibility of depower mode when in stationary PTO operation. Note 3: Must meet the definition of an emergency vehicle, an Ambulance or Fire

Truck per 40 CFR 86.1803.01 in the federal register. Note 4: California Code of Regulations allows for the sale of federally certified emergency vehicles in California.
Includes:
- 410 Amp Dual Alternators
Includes 250 Amp + 160 Amp.

WARANT Fleet Customer Powertrain Limited Warranty
Requires valid FIN code.

Ford is increasing the 5-year 60,000-mile limited powertrain warranty to 5-years, 100,000 miles. Only Fleet purchasers with a valid Fleet Identification Number (FIN code) will receive the extended warranty. When the sale is entered into the sales reporting system with a sales type fleet along with a valid FIN code, the warranty extension will automatically be added to the vehicle. The extension will stay with the vehicle even if it is subsequently sold to a non-fleet customer before the expiration. This extension applies to both gas and diesel powertrains. Dealers can check for the warranty extension on eligible fleet vehicles in OASIS. Please refer to the Warranty and Policy Manual section 3.13.00 Gas Engine Commercial Warranty. This change will also be reflected in the printed Warranty Guided distributed with the purchase of every new vehicle.

E4_02 Vermillion Red
Requires Valid FIN Code.

Emissions

425 50-State Emissions System

Interior Color

4S_02 Medium Dark Slate w/Cloth 40/Mini-Console/40 Front Seat

Dimensions

• Conventional Capacity: 18,500 lbs. *** GCWR: 43,000 lbs. * Fifth-wheel towing capacity: 33,500 lbs. * Gooseneck towing capacity: 33,600 lbs.** • Vehicle body length: 253.3" • Vehicle body width: 80.0" • Vehicle body height: 81.8" • Wheelbase: 168.0" • Front track: 74.8" • Rear track: 74.0" • Vehicle turning radius: 24.0' • Cab to axle: 60.0" • Rear tire outside width: 93.9" • Axle to end of frame: 47.2" • Frame section modulus: 12.7 cu.in. • Frame yield strength (psi): 50000.0 • Frame rail width: 34.2" • Front bumper to front axle: 38.3" • Front bumper to back of cab: 146.3" • Front brake diameter: 15.4" • Rear brake diameter: 15.8" • Interior rear cargo volume with seats folded: 31.6 cu.ft. • Max interior rear cargo volume: 31.6 cu.ft. • Total passenger volume: 116.0 cu.ft. • Headroom first-row: 40.8" • Headroom second-row: 40.3" • Leg room first-row: 43.9" • Leg room second-row: 33.5" • Shoulder room first-row: 66.7" • Shoulder room secondrow:
65.8" • Hip room first-row: 62.5" • Hip room second-row: 64.7"

Powertrain

*** Powerstroke 6.7L V-8 diesel direct injection, DEVCT intercooled turbo, diesel, engine with 330HP** • Engine cylinders: V-8 *** Compression ignition system * Horsepower: 330 HP@2200 RPM * Torque: 950 lb.-ft.@1800 RPM * Engine block heater** • Radiator • Auxiliary power take-off *** Engine retarder system** • 10-speed automatic • Part-time 4WD • Four-wheel drive *** Recommended fuel: diesel * Mechanical limited slip differential** • Driveline managed traction control • Auto locking hub control • Electronic transfer case shift

Fuel Economy and Emissions

*** Diesel secondary fuel type** • Federal emissions

Suspension and Handling

• Firm ride suspension • Heavy-duty front shock absorbers • Heavy-duty rear shock absorbers

Driveability

• 4-wheel disc brakes • Front and rear ventilated disc brakes • 4-wheel antilock (ABS) brakes • Four channel ABS brakes • Brake assist system • Hill Start Assist • Mono-beam rigid axle front suspension • Front anti-roll bar • Front coil springs * **Rigid axle rear suspension** • Leaf spring rear suspension • Rear anti-roll bar • Hydraulic power-assist steering system • Re-circulating ball steering • 2-wheel steering system

Body Exterior

• Trailer wiring harness • 4 doors • Clearcoat paint • Monotone paint • Black fender flares • Black side window trim • Black windshield trim • Black door handles * **Chrome front bumper** * **Body-coloured front bumper rub strip** • 2 front tow hooks * **Black grille with chrome accents** • Black door mirrors • Manual extendable trailer mirrors • Convex spotter in driver and passenger side door mirrors • Turn signal indicator in door mirrors • Reverse opening left rear passenger door • Reverse opening right rear passenger door * **LT225/70RS19.5 AT BSW front and rear tires** • 19.5 x 6-inch front and dual
rear argent steel wheels

Convenience

• Power door locks with 2 stage unlocking • Keyfob activated front door locks • All-in-one remote fob and ignition key • Cruise control with steering wheel mounted controls * **FordPass Connect smart device and keyfob vehicle start control** • Day/Night rearview mirror • Power first-row windows * **Partial floor console** * **Rear window defroster** * **Power rear windshield** • Illuminated locking glove box • Illuminated glove box • Front beverage holders • Rear beverage holders • 8 beverage holders • Instrument panel covered bin • Dashboard storage • Retained accessory power • PRND in IP • Trip computer • Upfitter switches • Over the air updates

Comfort

• Manual climate control • Cabin air filter • Rear under seat climate control ducts * **Additional in-cabin heater** • Cloth headliner material • Full headliner coverage • Full vinyl floor covering • Full floor coverage * **Cloth rear seat upholstery** • Carpet rear seatback upholstery • Manual tilting steering wheel • Manual telescopic steering wheel • Urethane steering wheel

Seats and Trim

* **Seating capacity: 5** * **Bucket front seats** • Driver seat with 4-way directional controls • Front passenger seat with 4-way directional controls • Height adjustable front seat head restraints • Manual front seat head restraint control • Manual reclining driver seat • Manual driver seat fore/aft control • Manual reclining passenger seat • Manual passenger seat fore/aft control • Fixed rear seats • Split-bench rear seat • Height adjustable rear seat head restraints • Manual driver seat lumbar * **Cloth front seat upholstery**

Entertainment Features

• 2 total number of 1st row displays • 8 inch primary LCD display • Primary touchscreen display • AM/FM stereo radio • Invehicle
audio • AM radio • FM radio • Seek scan • SYNC 4 external memory control • Speakers number: 6 • Standard
grade speakers • Steering wheel mounted audio controls • SYNC 4 voice activated audio controls • Speed sensitive volume • Wireless audio streaming • Fixed audio antenna

Lighting, Visibility and Instrumentation

• Digital/analog instrumentation display • Configurable instrumentation gauges • Trip odometer • In-radio display clock • Compass • Exterior temperature display • Driver information center • Gauge cluster display size (inches): 4.20 • Tachometer • Engine/electric motor temperature gauge * **Turbo/supercharger boost gauge** • Transmission fluid temperature gauge • Engine hour meter * **Diesel exhaust fluid (def) gauge** • Light tinted windows • Aero-composite headlights • Halogen headlights • Autolamp auto on/off headlight control • Multiple enclosed headlights • Delay-off headlights • DRL preference setting • Variable intermittent front windshield wipers • Front reading lights • Illuminated entry • Variable instrument panel light • Daytime running lights * **Front fog lights** • Cab clearance lights • Remote activated perimeter approach lighting • Fade interior courtesy lights

Technology and Telematics

• SYNC 4 911 Assist emergency SOS system via mobile device • SYNC 4 handsfree wireless device connectivity • AppLink/Apple CarPlay and Android Auto smart device wireless mirroring • FordPass Connect 4G mobile hotspot internet access • 2 USB ports

Safety and Security

• Driver front impact airbag • Seat mounted side impact driver airbag • Safety Canopy System curtain first and second-row overhead airbags • Cancellable front passenger air bag • Seat mounted side impact front passenger airbag • 6 airbags • Front height adjustable seatbelts • SecuriLock immobilizer • Remote panic alarm • Lane Departure Warning • Pre-Collision Assist with Automatic Emergency Braking (AEB) forward collision mitigation *** Rear mounted camera * Back-up alarm**

Wheels & Tires

Tires: 225/70Rx19.5G BSW Traction (TGK)

Includes 4 traction tires on the rear and 2 traction tires on the front. Not recommended for over the road applications; could incur irregular front tire wear and/or NVH.

Wheels: 19.5" Aluminum

Hub covers/center ornaments not included.

CAB TO AXLE DIMENSION

Cab to axle will be 60”.

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.

OEM FRONT BUMPER REPLACEMENT

An SVI Extreme Contoured one-piece, fully welded steel construction front bumper shall be bolted in place of the OEM bumper. Two (2) 3/4" steel tow eyes shall be provided on front with 3/4" opening.

Bumper shall have a two-stage finish using epoxy pre-coating and high-grade textured black powder coating for durability and long lasting corrosion resistance.

MOTOR DRIVEN SIREN

There shall be a B&M model Super Chief motor driven rotary siren with chrome plated grill and housing, recess in the extended front bumper. The siren shall be wired through the master warning light switch, and properly wired with heavy copper cable for minimum voltage drop.

The siren shall be located at the center of the front bumper.

SIREN ACTIVATION

There shall be two (2) foot switches provided to activate the siren; one (1) for the driver, and one (1) for the officer. The switches shall be mounted on the floor in a location to prevent accidental activation.

The above siren shall have one (1) rocker switch(es) to shut off the siren. The rocker switch(es) shall be located in the cab within reach of the Driver on the center console.

FRONT WINCH

A front electric winch shall not be provided in bumper.

SIREN SPEAKER

One (1) Whelen model **SA315 100 watt composite**, 6.4" x 6.1" x 3.1" deep siren speaker shall be provided and located behind grille or front bumper.

The solid state siren speaker shall be vibration resistant. The **SA315** shall comply with California Title XIII, Class A, and SAE J1849 requirements and with OSHA 1910.95 Guidelines regarding “Permissible Noise Exposure”. All mounting hardware shall be stainless steel and covered by a two year factory warranty.

Siren Speaker will have a custom OFD cover .

The siren speaker shall be located on the streetside of front bumper.

FRONT LED DRIVING LIGHTS

Two (2) **Pioneer Nano NP6BB lights. These will be programmed to come on with scene lights and as a driving light with Wig Wag.**

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.

The Lights shall be controlled at the Switch Panel in Cab.

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the body builder. 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.

PLYMOVENT EXHAUST ADAPTER

A Plymovent 5" exhaust adapter flange for a Plymovent magnetic system shall be provided and installed with a 5" OD x 4"ID reducer to fit the 4" chassis engine exhaust tubing. The adapter shall be sized to attach to 5" exhaust tubing and terminates as a 9" diameter magnetic flange.

Customers current Plymovent to reference

Clarify: There will be a switch on switch panel of console to disable all white warning lights when in warning mode. This switch will be use for adverse weather conditions such as fog, rain, or snow. Should be called White Cut off or White Warning Off.

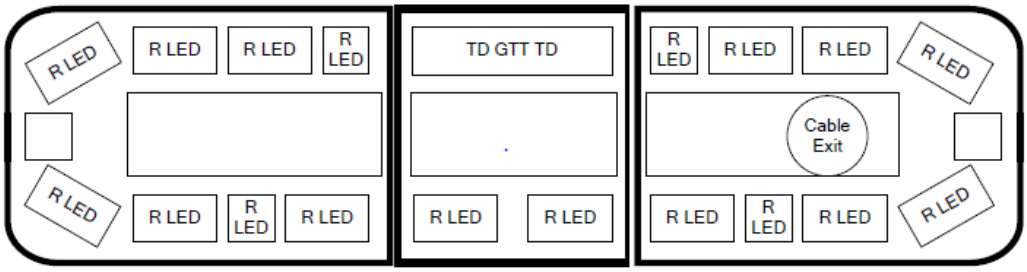
ZONE A - FRONT WARNING LIGHTS, UPPER

There shall be one (1) Whelen **Liberty II** LED Loaded **54**" lightbar permanently mounted to the cab roof.

The lightbar configuration shall be:

Liberty™ II WCX Light Bar Order Form/Worksheet

Configuration



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

(match provided lightbar layout; Clear Lens, Front facing Short Red Slots 4 & 6 should be wired Steady burn Red, Two (2) take downs in slot 5 should alternate flash warning respond mode, and should be wired to (DVI) flash with other warning lights.

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

GTT OPTICOM

A GTT Opticom model 795H Infrared LED emitter light with built-in power supply shall be provided inside the specified light bar. Adding the Opticom LED shall re-configure the standard light(s) in specified light bar. The LED technology uses less power, has a longer life, and non-visible to the human eye.

- Opticom shall be controlled by the lightbar switch and interlocked with the parking brake (transmission park positon) same as other clear warning.

Clarify: Add a switch for Opticom to be controlled separate, switch shall activate w/ emergency master for emergency response or alone without emergency master for non emergemcy response and interlock when vehicle is shifted into park gear with column gear shift.

Zone B D Front, Cab Fender Lights

Regular ION-T Not minis

There shall be two (2) Whelen surface mount ION ~~Mini~~ T-Series LED light(s) with wide angle optic provided, one (1) each side on the cab fenders. The ION T Lights shall utilize the Whelen ION T Wedge Mount TIONWEDG to allow leveling of the ION T light on the curve of the fender face.

Each light shall have:
- Blue LEDs
- Clear Lens
- Chrome Flange
- Wedge Mount

The ION T Wedge Mount light is to activate with backup lights, respective turn signal, park gear, and perimeter light switch.

ION T Blue Lights shall be in Phase II

The Lights shall be controlled at the Switch Panel in Cab.

ZONE A - FRONT WARNING LIGHTS

There shall be four (4) Whelen ION T-Series Low Power Red and Blue Super-LED lights, two (2) red and two (2) blue on each side. Each light shall have a clear lens and chrome flange.

Red ION T Lights shall be on Front Zone Phase I
Blue ION T Lights shall be on Front Zone Phase II
Shall Flash in an "X" Pattern

The Lights shall be controlled at the Switch Panel in Cab.

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

There shall be **two (2) Whelen M4 V-series** combination 180° red linear Super-LED warning lights with 45° perimeter scene lights **(M4V2RC**) provided, one (1) each side. Perimeter scene lights will be turned on with specified scene lighting. Each light shall have a clear lens over warning light and clear lens over perimeter light and chrome flange.

The puddle light is to activate with backup lights, respective turn signal, park gear, and perimeter light switch.

M4V2 Lights shall be Phase I

The Lights shall be controlled at the Switch Panel in Cab.

BACK-UP ALARM

The body manufacturer shall furnish and install one (1) 107 dB(A) electronic back-up alarm. Back-up alarm to actuate automatically when the transmission gear selector is placed in reverse.

CAB HAZARD WARNING LIGHT

A Truck-Lite red LED flashing light shall be provided and located in the driving compartment and be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

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

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

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

The hazard light shall be labeled; "Do not move apparatus when light is on."

In addition, label shall be in both English/French for units built for Canada; *"Ne pas deplacer l'engin lorsque la lumiere est allumee."*

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

INTERIOR CAB LIGHT, LED

One (1) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided on cab ceiling. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a 5 second delay after switching off.

CAB SPOTLIGHT

There shall be one (1) Whelen model ARG47BD spot light(s) provided and installed on completed vehicle.

Programmed with emergency master activation for warning mode. Lights will return to the home down position when blocking mode is activated by placing in park gear or blocking mode cut off switch activated. When controlled from console spotlight bale controls the lights will override the blocking mode in park gear and blocking mode cut off switch.

CAB SPOTLIGHT

There shall be one (1) Whelen model ARG47BP spot light(s) provided and installed on completed vehicle.

Programmed with emergency master activation for warning mode. Lights will return to the home down position when blocking mode is activated by placing in park gear or blocking mode cut off switch activated. When controlled from console spotlight bale controls the lights will override the blocking mode in park gear and blocking mode cut off switch.

RADIO ANTENNA INSTALLATION

Antenna #1 mounted and installed on the roof of the cab/chassis.

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

Note: Add one (1) antenna mount brass 3/4" New Motorola (NMO) style. Antenna mount and double shield coaxial cable soldered to the base, cable shall terminate in the cab console and have a minimum of 4' of additional cable. A protective rain cap shall be installed.

The end of antenna cable shall be routed to specified center console. Cable shall be labeled for .

Cable shall terminate in the cab console and have a minimum of 4' of additional cable.

Cab roof mounted antenna shall be located driver side of upper forward roof section.

SEAT BELT COLOR AND MOUNTING

The seat belt webbing color requirement of 14.1.3.3 shall not apply to vehicles with a GVWR of 19,500 lb (8,845 kg) or less.

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 - COMMERCIAL CAB

The chassis seat belt web length as supplied by the commercial chassis manufacturer will not be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

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".

Per Olathe Fire Dept specification for a commercial chassis, this emergency vehicle may not have seat belts of this required length. These belts may not provide sufficient length for large firefighters in bunker gear. This specification for an emergency fire apparatus for these seat belts shall be non-compliant to NFPA 1901 standards, effective at the time of order.

SEAT BELT MONITORING SYSTEM - COMMERCIAL CAB

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

Section 14.1.3.9 of the NFPA 1901 Standards, requires that a seat belt warning system be provided. The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven.

IGNITION KEY

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

SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS

Each tire valve stem shall be equipped with an LED Tire Alert (or equal), heavy duty valve cap LED indicator that indicates proper tire pressure. The LED Tire Alert valve cap is self-calibrating. When the cap is mounted on the valve stem the first time, it will memorize that tire pressure, and can be set to recognize a drop in pressure as little as 6 psi. It can be checked for functionality and battery condition by simply unscrewing the cap. If it is in working condition, it will immediately start blinking.

HELMET STORAGE

HELMET STORAGE, DRIVER POSITION

Helmet storage shall be the responsibility of Olathe Fire Dept in specified cab 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.

HELMET STORAGE, OFFICER POSITION

Helmet storage shall be the responsibility of Olathe Fire Dept in specified cab 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 TESTING CERTIFICATION

Section 14.3.2 of the NFPA 1901 standards, 2009 edition, require the cabs on apparatus with a GVWR greater than 26,000 lb. (11,800 kg) shall meet the requirements of one of the following sets of standards:

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

Per Olathe Fire Dept specification for a commercial chassis, this emergency vehicle may not have a cab that has been tested to these standards. This specification for an emergency fire apparatus for the cab testing requirements shall be non-compliant to NFPA 1901 standards, effective at the time of the bid opening.

RE-PAINT CAB - ONE COLOR

The cab exterior (door jambs not painted unless specified otherwise) shall be re-painted with PPG Delfleet Evolution paint.

Exterior Color: ADD COLOR

Exterior Paint Number: ADD CODE

Sikkens Autocoat BTLV Basecoat FLNA 3048 (Pierce Dark Red 100)

PAINT DOOR JAMBS JOB COLOR

One (1) chassis door jambs will be painted to match the exterior color of the chassis.

CHASSIS PAINT WARRANTY

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

REFLECTIVE STRIPE - CAB DOOR INTERIOR

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

The inside of each cab door shall have 4" style 3M Scotchlite 680 series graphic film.

This reflective stripe shall red in color.

CAB INTERIOR COMPONENT PAINT COLOR, OEM SUPPLIED

Powder coat shall be hammertone silver/grey. Cardinal T064-GR05

CAB RUNNING BOARDS

The chassis shall be provided with running boards each side, below the cab doors. The running boards shall be constructed of aluminum 3003H-14 alloy NFPA nonskid compliant tread plate.

Running Boards to be mfg per Olathe FD supplied picture ILO of SVI standard.

Running Boards to have Chamfered corners on the front and rear of the running boards.

CAB STEP LIGHTS / GROUND LIGHTS

Four (4) (two each side) OnScene Solutions Rough-Service 9" white LED light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

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

All Ground Lights will operate with BackUp Lights, Respective Turn Signals and Perimeter Light Switch.

There shall be **four (4)** Whelen surface mount ION Mini T-Series LED light(s) with wide angle optic provided, **two (2)** each side **below the cab doors along the running boards. These Red LED's shall alternate wit the Blue ION Mini T Series.**

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

Programmed to have all Red flash then all Blue flash. Be a total of two Red & two Blue on each side.

Four ION T Red will be on Phase I on each side

The Lights shall be controlled at the Switch Panel in Cab.

There shall be **four (4)** Whelen surface mount ION Mini T-Series LED light(s) with wide angle optic provided, **two (2)** each side **below the cab doors along the running boards. These Blue LED's shall alternate wit the Red ION Mini T Series.**

Each light shall have:
- Blue LEDs
- Clear Lens
- Chrome Flange

Programmed to have all Red flash then all Blue flash. Be a total of two Red & two Blue on each side.

Four ION T Blue shall be on Phase II on each side

The Lights shall be controlled at the Switch Panel in Cab.

MUDFLAPS

There shall be 1/4" rubber mudflaps with **Department** logo provided and installed behind rear axle tires to prevent throwing road debris and lower road spray.

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.

FRONT CAB INTERIOR COMPONENTS

CAB CONSOLE

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

Console shall include;

The Center Console shall have integrated Arm Rests on each side for the Driver and Officer.

The Center Console shall extend to the rear Cabinet in the super cab area.

A 3D LAYOUT OF CONSOLE SHALL BE SUBMITTED FOR APPROVAL BY OLATHE FIRE.

- Forward section of cab console shall include;

ROCKER SWITCH PANEL

The control of the 12 volt equipment installed on chassis and body shall be centrally located in the cab. The individual rocker style switches shall be located on a separate electrical panel, complete with backlit name tags describing function of each individual switch. The back lighting shall have two (2) levels of intensity, low level lights activated when the vehicle lights or ignition switch is turned "On", and high level lights activated when individual switch is turned "On". An internally lighted rocker switch shall be furnished to the left of specified emergency lighting switches, and identified as "MASTER EMERGENCY SWITCH".

Switch circuitry shall be on a printed circuit board. The lights shall be solid state type and have a 100,000 hour life span.

A LAYOUT DRAWING OF THE SWITCH PANEL AND LABELS SHALL BE SENT TO OLATHE FIRE FOR APPROVAL.

- Forward section, driver side of cab console shall include;
  - One (1) open storage pocket(s) shall be provided in console.
- Forward section, officer side of cab console shall include;
  - No components provided at this position.
- Cab console, panel position forward shall include;

- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

ELECTRONIC SIREN

One (1) Whelen model **295SLSC1** electronic siren control with 200 watt output, hands-free operation, user selectable siren tones, park kill, and **removable microphone** shall be provided and installed in cab within easy reach of Driver. Siren power shall be wired through the master warning light switch.

- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.

The specified siren functions shall be controlled by siren mounted switches.

- Cab console, panel position center shall include;

RADIO INSTALLATION

There shall be one (1) Olathe Fire Dept supplied radio(s) installed in the cab center console within easy reach of driver and/or officer. The final location of radio shall be determined by the Olathe Fire Dept at the pre-construction meeting.

All required radio programming shall be responsibility of Olathe Fire Dept. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Olathe Fire Dept after delivery.

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

Harris XL-185M

- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.

- Cab console, panel position rearward shall include;

- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

- Cab console, rear position shall include;

Two (2) cup holder(s) shall be provided in console.

  - Two (2) 12 VDC cigarette style power port(s) shall be provided in cabinet with dust cover.

Components to be Blue Sea brand.

- Power port shall be wired battery direct.

  - Two (2) 12 VDC USB dual charger port(s) shall be provided in console with dust cover. Dual USB charging ports come with one USB-C port and one USB-A port.

Components to be Blue Sea Brand

- Power port shall be wired battery direct.
- Cab console, rear extension position shall include;

Extend to the SuperCab area Cabinet

  - No components provided at this position.

- There shall be one (1) Blue Sea Systems ST series blade type fuse block(s) with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits.
- The fuse block shall be protected by a 60 amp maxi fuse located at the source.
- Fuse block shall be wired battery direct.
- Fuse block shall be located in the **notched area of the rear console.**

  - One (1) 12 VDC cigarette style power port(s) shall be provided in the **notched area of the rear console.**.

- Power port shall be wired battery direct.

  - One (1) 12 VDC USB dual charger port(s) shall be provided in **notched area of the rear console** with dust cover. Dual USB charging ports come with USB-C port.
    These will be Blue Sea brand only.

- Power port shall be wired battery direct.

MED VAULT INSTALLATION

A Med Vault shall be provided by Olathe Fire Dept & installed in cab by OEM.

To be mounted in the notched area behind the cab console in the rear storage cabinets.

KNOX BOX KEY CONTROL

A Knox Box key control system shall be provided by Olathe Fire Dept & installed in cab by OEM.

To be mounted in the notched area behind the cab console in the rear storage cabinets.

MDT MOUNT, CENTER CONSOLE

An MDT mounting shall be provided on the officer side of specified center console. Mounting shall consist of following:

Installation of a Olathe Fire Department supplied "Lind Power Supply" for the MDT shall be provided.

- A Havis Docking Station shall be provided to support Olathe Fire Dept model Model # laptop.

Customer mounting a Panasonic CF33.

- A Havis model C-HDM-204 (or equal) telescopic pole with 4.75" adjustment shall be provide for MDT mounting.

Located on floor forward facing driver position shall be;

CREW CAB INTERIOR COMPONENTS

There shall be one (1) storage cabinet located in the drivers side rear cab area. The cabinet shall be fabricated from 1/8" smooth aluminum.

The cabinet shall be approximately (dimensions to be defined at pre-con). The cabinet will be designed to hold fire fighter gear items and/or EMS equipment. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

- The above cabinet(s) shall have an open front face (no door).

- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.

- There shall be one (1) OnScene Solutions 28" Access PRO LED light(s) mounted inside the cabinet.

To be mounted horizontally

- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.

- There shall be one (1) adjustable shelf/shelves in the above cabinet(s). Each shelf shall have a 1.25" vertical lip at front to contain items while vehicle is in motion.

- 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.

CAB, CAB DESK, CABINET - VDC COMPONENTS

- Two (2) 12 VDC cigarette style power port(s) shall be provided in cabinet with dust cover.

- Power port shall be wired battery direct.

- Power port shall be located in the top left interior corner.

- Two (2) 12 VDC USB dual charger port(s) shall be provided in cabinet with dust cover. Dual USB charging ports come with one USB-C port and one USB-A port.

- Power port shall be wired battery direct.

- Power port shall be located in the top left interior corner.

CAB, CAB DESK, CABINET - VDC COMPONENTS

Located on floor forward facing officer position shall be;

CREW CAB INTERIOR COMPONENTS

There shall be one (1) storage cabinet located in the officers side rear cab area. The cabinet shall be fabricated from 1/8" smooth aluminum.

The cabinet shall be approximately (dimensions to be defined at pre-con). The cabinet will be designed to hold fire fighter gear items and/or EMS equipment. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

- **There shall be one (1) customer supplied thermal imager mounted in specified crew area cabinet on the curbside.**
  - The above cabinet(s) shall have an open front face (no door).
- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.
- There shall be one (1) OnScene Solutions 28" Access PRO LED light(s) mounted inside the cabinet.

To be mounted horizontally.

- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- 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.

CAB, CAB DESK, CABINET - VDC COMPONENTS

- There shall be one (1) Blue Sea Systems ST series blade type fuse block(s) with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits.
- The fuse block shall be protected by a 60 amp maxi fuse located at the source.
- Fuse block shall be wired battery direct.
- Fuse block shall be located in the top left interior corner.

STREETSIDE 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 **and be painted job color**. There shall be a permanent label with the text **"UNLEADED FUEL ONLY"** located adjacent to the fuel fill access.

BODY DESIGN

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

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

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

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Olathe Fire Dept 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 Olathe Fire Dept 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 ALUMINUM BODY

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

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas, No Exceptions.

The front and rear corners of body shall be formed as part of the front or rear body panels. This provides a stronger body corner and finished appearance. The use of extruded corners, or caps will not be acceptable, No Exceptions.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.a
Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

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

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

DRIP RAILS

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

ROOF CONSTRUCTION

The roof structure shall be integral with the body sheet metal construction and shall be an all welded assembly. The body roof structure shall be overlaid with not less than 3/16" aluminum 3003H-14 alloy tread plate and welded to roof structure and body sheet metal. All seams in roof material shall be fully and continuously welded to resist entry of moisture.

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

In between the two (2) center "C" channels running the length of body shall be 2" x 2" x 1/4" 6061-T6 alloy aluminum tubing running in between and welded in place on approximate 16" centers to support roof and/or walkway structure if specified.

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

BODY SUBFRAME

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 4" x 1/4" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.

These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with one (1) 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 resist any corrosion. Each mounting assembly shall utilizing one (1) 3/4" diameter x 6" long grade 8 bolts and one (1) heavy duty spring. 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.

6" REAR BUMPER

The full width rear bumper shall be constructed from minimum 2" x 2" x 1/4" aluminum tubing and covered with 3/16" aluminum tread plate. The bumper shall extend from the rear vertical body panel **6"** with a minimum of 1/2" space between the body and bumper for water drainage.

Rear Bumper extension should match tow eye length.

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 chassis frame and mounted above the rear bumper. 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 2" Square 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.

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.

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. With the use of a "weight distribution" ball hitch the Class IV receiver shall have a capacity of 12,000 lbs. gross trailer weight and a maximum tongue weight of 1,200 lbs.

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 Solutions Rough-Service 9" 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.

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

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

All Ground Lights will operate with backup lights, respective turn signals and the Perimeter Light Switch.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 1/8" aluminum smooth plate.

STAINLESS STEEL BODY FENDERETTES

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

WHEEL WELL LINERS

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

SCBA CYLINDER COMPARTMENTS

There shall be three (3) SCBA cylinder storage compartments, two (2) on the curbside and one (1) on the streetside of the body in the rear wheel well area. Each compartment shall have a stainless steel hinge with brushed stainless steel door assembly **(painted to match Job Color)** with a positive catch latch. Each compartment shall have a 8" diameter tube behind the wheel well panel attached to the door assembly. 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.

Paint to match Job Color

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, an isolation tape, or gasket shall be used to prevent damage to the finish painted surfaces. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nutserts into body surface using stainless steel bolts to resist corrosion from dissimilar metals.

ELECTROLYSIS CORROSION CONTROL

The apparatus shall be assembled using ECK or similar corrosion control 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 paint per approved customer spray-out.

Touch-up paint shall be provided with completed vehicle.

- Paint Color: _____
- Paint Number: _____

Sikkens Autocoat BTLV Basecoat FLNA 3048 (Pierce Dark Red 100)

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 resist corrosion under the vehicle.

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 (Will match Signed Approval)

A color graphics proof of the reflective striping layout shall be provided for approval by Olathe Fire Dept prior to installation. The graphics proof shall be submitted to Olathe Fire Dept 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 6" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe shall be white in color.

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

- This reflective stripe shall be gold in color.

There shall be a 1/8" black pinstripe located on the top and bottom edges of the main stripe.

REFLECTIVE STRIPE NOT PROVIDED

REFLECTIVE STRIPE - BODY SIDES

The reflective stripe material shall be 6" wide, 3M Scotchlite 680 series graphic film.

- This reflective stripe shall be white in color.

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

- This reflective stripe shall be gold in color.

There shall be a 1/8" black pinstripe located on the top and bottom edges of the main stripe.

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 Stripe: Cab Bumper, Not Provided

CHEVRON REFLECTIVE STRIPE - REAR CENTER/SIDE 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 and center of the body shall have a chevron style reflective stripe, extending from bumper to full body height. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use.

The stripe material shall be 3M Scotchlite 680 series grpahic film.

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

Ruby Red and 71 Yellow

LETTERING

GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by Olathe Fire Dept prior to installation. The graphics proof shall be submitted to Olathe Fire Dept 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 thirty five (35) 6" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective laminate applied before installation.

UPPER BODY SIDE LETTERING

There shall be forty (40) 6" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective laminate applied before installation.

Provide details.

REAR BODY LETTERING

FRONT OF CAB LETTERING

CUSTOM DECAL LOGO - 12" -18"

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

Three (3) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Olathe Fire Dept.

SVI Manufacturer Badge

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. 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.

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.

HINGED DOOR REFLECTIVE STRIPING

1-1/2" x 12" lengths of 3M™ Diamond Grade™ conspicuity striping shall be provided on door edges facing outward on all vertical and horizontal hinged door(s), and 2" x 12" on interior door panels facing inward on vertically hinged door(s). The striping shall be red/white in color.

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	49.0"
B	Bottom of Subframe to Bottom of Body	18.0"
C	Vertical Door Opening	
	-with roll-up door	45.5"
	-with hinged door	49.0"

ABOVE REAR AXLE

	Description	Dimension

D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	22.0"
	-with hinged door	25.5"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	15.0"
F	Vertical Door Opening	
	-with roll-up door	43.0"
	-with hinged door	46.5"

GENERAL

	Description	Dimension
G	Bottom or Drip Rail to Top of Body	13.5"

(Dimensions are approximate and subject to change during construction or design process.)

BODY WIDTH DIMENSIONS

The body shall be 96.0" wide, and 98.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

Area Description	Dimension
Transverse above subframe	91.0"
Compartment depth below subframe	21.0"

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 32.0" 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 24.5" 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located above frame level:

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be two (2) 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.
  - Any equipment mounting on adjustable shelf shall be provided by Olathe Fire Dept after delivery.
  - The above component(s) shall have a smooth un-painted finish.

The following components shall be located at frame level:

- 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.

The following components shall be located at base of lower compartment:

- The 12 volt electrical distribution panel shall be located in the front lower compartment.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- The controls for the specified light tower(s).
- There shall be one (1) 120 VAC outlet(s) located in compartment.
  - The outlet receptacle(s) shall be **15 amp, straight-blade (NEMA 5-15R).**
  - Outlet(s) shall be powered through the on-board shore power system.
  - The outlet shall be located on rearward wall, upper right area.

Mount Horizontally

- 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.

All Ground Lights will operate with BackUp Lights, Respective Turn Signals, Placed in Park Gear and Perimeter Light Switch.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)

The interior useable compartment width shall be approximately 45.0" 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 36.3" 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located above frame level:

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) 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.

  - Any equipment mounting on adjustable shelf shall be provided by Olathe Fire Dept after delivery.

  - The above component(s) shall have a smooth un-painted finish.

- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - REAR (S3)

The interior useable compartment width shall be approximately 35.5" 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 27.5" wide.

Hinged Double Door

- 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

- There shall be one (1) SCBA cylinder storage module for 7-5/8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to resist damage or abrasion to cylinders. In addition there shall be rubber pad provided in the base of each storage tube for bottle protection and to resist slipping.

  - The SCBA cylinder module shall be capable of storing nine (9) SCBA cylinders up to 7-5/8" diameter.

  - **A customer supplied four (4) bank Dewalt Charger shall be installed below the SCBA Cylinder Storage Module in the S3 compartment.**

- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

- There shall be one (1) 120 VAC outlet(s) located in compartment.

  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

  - Outlet(s) shall be powered through the on-board shore power system.

  - Outlet(s) shall be powered through the on-board generator system.

  - The outlet shall be located on rear wall, lower center right area (below frame level).

Locate Below the Extended Floor Upper Right Corner as High as Possible.

- 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.

All Ground Lights will operate with BackUp Lights, Respective Turn Signals, Placed in Park Gear and Perimeter Light Switch.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 32.0" 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 24.5" 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located above frame level:

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) OnScene Solutions 81 series aluminum tray base with rating of 1,000 lbs. Slide-out tray(s) base shall be approximately **58"** deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails and shall be vertically adjustable in height. Slide base shall extend depth specified, less 4". 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 lock the tray in the closed and full extension positions.

- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray with an internal depth of approximately 3 ½".

58"D

  - The above component(s) shall have a smooth un-painted finish.

  - **One (1) bolt in storage module will be installed in the rearward portion of the the Slide Tray. Dimensions of module are 8"W x 22"H x 30"D. Refer to 2D Drawing.**

  - Any equipment mounting on slide tray shall be provided by Olathe Fire Dept after delivery.

- Reflective Scotchlite 2" wide stripe shall be provided on the front and side faces of the tray.

- This reflective stripe shall be red/white in color.

The following components shall be located at base of lower compartment:

- Two (2) OnScene Access PRO 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.

All Ground Lights will operate with BackUp Lights, Respective Turn Signals, Placed in Park Gear and Perimeter Light Switch.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)

The interior useable compartment width shall be approximately 45.0" 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 36.3" 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located above frame level:

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

The following components shall be located at frame level:

- There shall be one (1) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

To be Lock In Lock Out

  - 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.
    - Front side.
    - Rear side.
      - 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.
      - Each tool board shall be horizontally adjustable; mounted on aluminum shelf Trac on compartment floor.
    - Reflective Scotchlite stripe shall be provided on both sides of the tool board.

- This reflective stripe shall be red in color.

- There shall be one (1) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

To be Lock In Lock Out

  - 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.
    - Front side.
    - Rear side.

  - 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.
  - Each tool board shall be horizontally adjustable; mounted on aluminum shelf Trac on compartment floor.
- Reflective Scotchlite stripe shall be provided on both sides of the tool board.

- This reflective stripe shall be red in color.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- The controls for the specified light tower(s).
  Located in the top front of compartment.

CURBSIDE COMPARTMENT - REAR (C3)

The interior useable compartment width shall be approximately 35.5" 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 27.5" wide.

Hinged Double Door

- 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located at frame level:

- 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.

- There shall be one (1) SCBA cylinder storage module for 7-5/8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to resist damage or abrasion to cylinders. In addition there shall be rubber pad provided in the base of each storage tube for bottle protection and to resist slipping.

  - The SCBA cylinder module shall be capable of storing nine (9) SCBA cylinders up to 7-5/8" diameter.

A customer supplied four (4) bank Dewalt Charger shall be installed below the SCBA Cylinder Storage Module in the C3 compartment.

- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

- There shall be one (1) 120 VAC outlet(s) located in compartment.

  - The outlet receptacle(s) shall be **15 amp, straight-blade (NEMA 5-15R).**

  - Outlet(s) shall be powered through the on-board shore power system.

  - The outlet shall be located on rear wall, lower center right area (below frame level).

Locate Below the Extended Floor Upper Right Corner as High as Possible.

- 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.

All Ground Lights will operate with BackUp Lights, Respective Turn Signals, Placed in Park Gear and Perimeter Light Switch.

REAR COMPARTMENT - CENTER (RC1)

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the top of the body sub-frame and be as high as the side compartments, unless specified otherwise.

The interior useable compartment width shall be approximately 45.0" 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 40.3" 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 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.

Keyed CH751

There will/shall be spring loaded dust cover installed over key hole.

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly 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.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

The following components shall be located upper section of compartment:

- There shall be one (1) module fabricated from 3/16” (.188) 3003H-14 aluminum alloy smooth sheet. The module will be designed for the following long tools and equipment:

  – Two (2) ladder(s) listed in equipment section shall be provided by manufacturer for installation prior to delivery.

  Qty (1) Duo-Safety 701-14 14' Fresno - SVI Supplied in Equipment Section.
  Qty (1) Duo-Safety 750A series 6' aluminum wall ladder(s) with dual butt spurs - SVI Supplied in Equipment Section.

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

The following components shall be located above frame level:

- There shall be one (1) OnScene Solutions 81 series aluminum tray base with rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 64" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails and shall be vertically adjustable in height. Slide base shall extend depth specified, less 4". 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 lock the tray in the closed and full extension positions.

- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.

  – The above component(s) shall have a smooth un-painted finish.

    – 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.

  – Equipment mounting on slide tray shall be provided to mount/secure two Dealer supplied Super Vac PPV Fans.
  Also two (2) Command light Tripod Lights shall be mounted in tray. These are Dealer Supplied.

– Reflective Scotchlite 2" wide stripe shall be provided on the front and side faces of the tray.

- This reflective stripe shall be red/white in color.

- There shall be one (1) module fabricated from 3/16” (.188) 3003H-14 aluminum alloy smooth sheet. The module will be designed for the following long tools and equipment:

  – One (1) pike pole(s) listed in equipment section shall be provided by manufacturer for installation prior to delivery.
  One (1) 6' Fire Hooks Unlimited ALL metal (lay Flat) Arson Trash Hook w/D handle. (D-handle will lay flat with tool)

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

- Two (2) **Fire Hooks Unlimited 6' Roof Hook(s) RH-6** shall be provided with the completed unit.

  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) **Fire Hooks Unlimited 8' Roof Hook(s) RH-8** shall be provided with the completed unit.
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

BODY OPTIONS AND UPGRADES

NO Plastic Grating (LR, WA)

LOWER SIDE BODY PROTECTION - RUB RAIL

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

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

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

- Four (4) warning lights shall be provided in lower rub rail, evenly distributed per side of apparatus; Warning light models, colors and etc. are specified in warning lights section.

3M™ Diamond Grade™ striping shall be provided in the rub rail. The striping shall be white in color.

FRONT PROTECTION PANELS

To protect areas subject to intensive wear, scuffing or abuse, the protection panels shall be installed on the entire front vertical body panels and wrap around to the front compartment door opening. The protection panels shall be fabricated from 1/8" aluminum treadplate.

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.

12 VOLT MULTIPLEX CONTROL CENTER

The apparatus shall be equipped with a Weldon V-MUX multiplexed 12 volt electrical system that will provide complete diagnostic capability, No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

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

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

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

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

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

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

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

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

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

Auto-Throttle:

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

Displays:

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

System Network:

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

System Reliability:

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

WELDON CERTIFICATION

A letter shall be provided with bid submittal that the Contractor has successfully completed the Weldon training requirements for Level 1 of the V-MUX Certified Supplier Program and is authorized to design, build, and service V-MUX electrical systems.

BATTERY SYSTEM

Any body builder supplied battery connections 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.

If 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.

BATTERY SWITCH

The chassis ignition key shall activate a heavy duty relay to provide 12 volt battery power to the vehicle.

- A green "BATTERY ON" pilot light shall be visible from the driver’s position.

BATTERY SOLENOID

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

BATTERY CONDITIONER

One (1) Blue Sea model P12 battery charger with 120 VAC input, and 25 amp 12 VDC output shall be provided. The P12 is a four stage, three output, dry mount charger designed for use in harsh environments where reliability, ease of use, and high performance are of primary importance. Backed by a 5-year warranty.

Five Critical Features Extend Battery Life

- User Defined Charge Profiles for setting voltages to match the battery manufacturer's recommendations
- User Defined Absorption Stage Values determine when the charger should exit Absorption Stage in order to prevent overcharging
- Charge Coordination™ integrates with Blue Sea Systems' Automatic Charging Relays to separate battery banks while the P12 is operational
- PreFloat™ Stage prevents over charging by individually moving batteries out of Absorption Stage
- Battery Temperature Compensation adjusts charging voltage up (for colder batteries) or down (for warmer batteries) as recommended by battery manufacturers for proper battery performance

Additional Features

- Rugged finned aluminum case dissipates heat
- Universal line voltage 90–265V AC, 45–65 Hz for worldwide use
- Large bright full graphic control screen with user interface
- Plain-language text in English, French, Italian, German and Spanish
- Intuitive screens provide fault alerts and plain language diagnostics

BATTERY CHARGE INDICATOR

A Blue Sea EV battery charger display shall be provided and located near driver's door area. It can display a graphical representation of voltage with or without connection to a P12 battery charger. When connected to a P12 battery charger it can display the charger's summary screen, displaying voltage, current charging stage, and faults from the charger with other features as follows;

- Drop in replacement for traditional rectangular displays
- Automatically detects 1-3 battery banks
- AC charge indication verifies that power is connected and the battery charger is charging
- Plain language fault indication relays if there is a fault with the battery charger
- Dip switch selectable screen configuration allows the display to show voltage bar graphs or the P12 Battery Charger summary screen
- Displays voltage bar graphs even when AC power is not present
- Optional standby mode shuts off screen after 4 hours of inactivity
- Automatic ON based on motion with integrated knock sensor
- Bright, daylight readable, OLED display

- The charge indicator display shall be located on the streetside front of body, outboard of the cab.

SHORE POWER INLET

One (1) Blue Sea Sure Eject model 7851, 120 VAC, 20 amp shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. A matching keyed plug shall be shipped loose with completed vehicle.

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

- The outlet cover shall be red.

- The shore power inlet shall be located on the streetside front of body, outboard of the cab.

REAR VIEW CAMERA

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

- The camera image shall be displayed on chassis supplied display located within the driver's range of view.

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 specified lower Zone "C" warning lights **Locate on the Bottom**
- Two (2) Whelen M6 Series M6T amber LED turn signal lights **To include Arrows**
- Two (2) Whelen M6 Series M6BTT red LED stop/tail lights
- Two (2) Whelen M6 Series M6BUW LED back-up lights with clear lens

Each of the lights above shall be mounted in an M6FCV4, 4-light chrome finish bezels.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen OS model 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.

REAR BUMPER MARKER LIGHTS

Two (2) Britax Short # 428 Red/Amber dual face flexible mounted rear bumper markers shall be located, one (1) each side lower rear corner of body visible from driver mirrors.

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.

LIGHT TOWER

One (1) Command Light Shadow, SL 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 single-stage device with a lighting capable of 355 degree rotation. The light shall be elevated by an electric linear actuators, the actuator shall adjust the light bank angle from 0 to 110 degrees.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast 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 SL423D-H2 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Fire Tech
Number of lamp heads:	(2) FT-MB-2.27 Minibrow LED
Voltage:	12 volts DC
Watts of each lamp head:	270 watt
Total watts of light tower:	720 watts
Total lumens of light tower:	57,000
Configuration:	The light heads shall be mounted with two (2) on each side of the light tower, giving two (2) vertical lines when the lights are in the upright position.

Dimensions: 67" long x 11" wide x 8" high. Weight 65 pounds. 66" high extended height.

Light Tower Strobe Indicator

The floodlight tower shall have a strobe indicator located on the top of the upper section.

The lens color for the strobe light shall be red.

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 controlled with a hand-held 15 foot umbilical line remote control. The storage station for the remote control unit shallbe 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;

Two (2) switches, one (1) for each pair of lights.
One (1) switch for elevating /retracting the arm.
One (1) switch for rotation of the light bank.
One (1) switch to engage Auto-Park.
One (1) switch for optional strobe.
One (1) indicator light to indicate when light bank is out of the roof nest position.
One (1) indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

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

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

Where the light tower is to be mounted above a finished walk-in area; the roof backing plates and structure shall have threaded holes to allow removal of light tower without removal of the interior paneling.

Where the light tower is mounted in close proximity to other roof mounted Items (i.e. antennas, air conditioners, and weather stations) the light tower shall be orientated in order to help prevent a operator driven collision.

FRONT SCENE LIGHT(S)

The following front scene lights shall be mounted on chassis brow above windshield.

There shall be one (1) Whelen Pioneer Summit model S30MB with eight Proclera™ silicone optics and a clear non-optic polycarbonate lens LED flood/spot light(s). Extruded aluminum housing with powder coated finish. Light quantity shall be divided equally per side. Lights shall be 12 VDC, 7.2 amp, 95 watts, 12,960 lumens. Lighthead dimensions 30" wide x 2.48" high x 2.15" deep.

To be located/mounted below the Lightbar

The Lights shall be controlled at the Switch Panel in Cab.

- Scene light housing color to be black.

SIDE LED SCENE LIGHTS

Four (4) Whelen Pioneer Plus model PCPSM1C single panel Super LED flood/spot light(s) shall be provided on the upper side body, evenly distributed each side of body with powder coat finish and chrome mounting flange. Lights shall be 12 VDC, 6amp, 75 watt, with 8,875 useable lumens each.

The Lights shall be controlled at the Switch Panel in Cab.

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

REAR LED SCENE LIGHTS

Two (2) Whelen Pioneer Plus model PCPSM1C single panel Super LED flood/spot light(s) shall be installed on the upper rear body, one each side. Lights shall be 12 VDC, 6amp, 75 watt, with 8,875 useable lumens each.

The Lights shall be controlled at the Switch Panel in 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.

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

See Chassis Modification section for cab mounted warning lights.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen M6 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.

Each Light shall have:
- Red LEDs
- Clear Lens

Red Whelen M6 Upper Rear Body Sides shall be on Phase II

Each light shall have a chrome flange.

- Flash Pattern shall be SIGNALALERT 75, On/Off, Phase 1
- The above group of lights shall be sync'd and be on opposing phases, creating an "X" pattern.
- The Lo Power option will be provided for the above lighting group.
    - Flash Pattern shall be DVI Single Flash 75 Lo Intensity all on (default)

The Lights shall be controlled at the Switch Panel in Cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen M6 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.

Each Light shall have:
- Red LEDs
- Clear Lens

Red Whelen M6's Upper Front Body Sides shall be on Phase I

Each light shall have a chrome flange.

- Flash Pattern shall be SIGNALALERT 75, On/Off, Phase 1
- The above group of lights shall be sync'd and be on opposing phases, creating an "X" pattern.
- The Lo Power option will be provided for the above lighting group.
    - Flash Pattern shall be DVI Single Flash 75 Lo Intensity all on (default)

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 600 Series Rota-Beam Super-LED lights (6RBRC) with 180° warning provided, one (1) each side.

Each light shall have:
- Red LED's
- Clear Lens

Each light shall have a chrome flange.

– Flash Pattern shall be Whelen Rotator 75, clockwise, Phase 1

Will be an In/Out Flash Pattern

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen M6 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.

Each Light shall have:
- Amber LEDs
- Clear Lens

Zone C shall be in a "X" pattern program.

Should alternate Streetside Amber & Curbside Blue on together alternate "X" pattern with Curbside Amber & Streetside Red.

Streetside M6 Amber shall be on Phase II
Curbside M6 Amber shall be on Phase I

Each light shall have a chrome flange.

– Flash Pattern shall be SIGNALALERT 75, On/Off, Phase 1

– The above group of lights shall be sync'd and be on opposing phases, creating an "X" pattern.

- The Lo Power option will be provided for the above lighting group.
    - Flash Pattern shall be DVI Single Flash 75 Lo Intensity all on (default)

The Lights shall be controlled at the Switch Panel in Cab.
There shall be a separate switch for these Amber warning lights on console. Labeled "REAR AMBER"

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.

All Lower Level Warning Lights Shall Alternate All Blue then All Red

ZONE A - FRONT WARNING LIGHTS, LOWER

See Chassis Modification section for cab mounted warning lights.

ZONES B AND D - BODY LIGHT (BODY AUXILLARY - RUBRAIL)

FIRST PAIR FRONT RUB-RAIL LIGHTS

- So as to divide the length of the rub rail(s) evenly.

There shall be two (2) Whelen surface mount **LINV2R** Series LED light(s) with wide angle optic provided, one (1) each side.

Each light shall have:
- **RED** LEDs
- Clear Lens
- Chrome Flange

First Pair Front Rub Rail Lights Whelen Red LINV2R (One each side) shall be on Phase I.

The Lights shall be controlled at the Switch Panel in Cab.

FIRST PAIR REAR RUB-RAIL LIGHTS

- Centered under each door opening.

There shall be two (2) Whelen surface mount **LINV2R** Series LED light(s) with wide angle optic provided, one (1) each side.

Each light shall have:
- Red LEDs
- Clear Lens
- Chrome Flange

First Pair Rear Rub Rail Whelen Red LINV2R (One each side) shall be on Phase I.

The Lights shall be controlled at the Switch Panel in Cab.

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

There shall be two (2) Whelen surface mount ION T-Series LED light(s) with wide angle optic provided, one (1) each side.

Each light shall have:
- Blue LEDs
- Clear Lens
- Chrome Flange

Wheel Well Blue ION T Lights (One each side) shall be on Phase II.

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be one (1) Whelen M6 linear super-LED Light(s) with full-fill optic provided. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:
- Red LEDs
- Clear Lens

Locate on Streetside Rear

Streetside Rear Whelen M6 Red shall be on Phase I.
Shall flash in an X Pattern.

Each light shall have a chrome flange.

- Flash Pattern shall be SIGNALALERT 75, On/Off, Phase 1
- The above group of lights shall be sync'd and be on opposing phases, creating an "X" pattern.

- The Low Power option will be provided for the above lighting group.

- Flash Pattern shall be DVI Single Flash 75 Lo Intensity all on (default)

The Lights shall be controlled at the Switch Panel in Cab.

There shall be one (1) Whelen M6 linear super-LED Light(s) with full-fill optic provided. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:
- Blue LEDs
- Clear Lens

Locate on Curbside Rear

Curbside Rear Whelen M6 Blue shall be on Phase II.
Shall flash in an X pattern.

Each light shall have a chrome flange.

– Flash Pattern shall be SIGNALALERT 75, On/Off, Phase 1

– The above group of lights shall be sync'd and be on opposing phases, creating an "X" pattern.

- The Low Power option will be provided for the above lighting group.
    - Flash Pattern shall be DVI Single Flash 75 Lo Intensity all on (default)

The Lights shall be controlled at the Switch Panel in Cab.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 4,000 lbs. of Olathe Fire Dept provided equipment based on a 30,001 - 40,000 pound gross vehicle weight rating.

EQUIPMENT

The following equipment shall be furnished with the completed special service vehicle;

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- There shall be two (2) Zico AC-32, NFPA approved aluminum wheel chocks provided for 32" 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 750A series 6' aluminum wall ladder(s) with dual butt spurs** shall be provided with the completed unit.
  - The ladder(s) shall be located in specified ladder compartment.
- One (1) **Duo-Safety 701-14 14' Fresno** aluminum attic ladder(s) shall be provided with completed unit.
  - The ladder(s) shall be located in specified ladder compartment.
- Two (2) **Fire Hooks Unlimited** 6' Roof Hook (s) RH-6 shall be provided with the completed unit.
  - The above specified pike pole will not have a D handle attached
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) **Fire Hooks Unlimited 8' Roof Hook (s) RH-8** pike pole(s) shall be provided with the completed unit.
  - The above specified pike pole will not have a D handle attached
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) **Fire Hooks Unlimited All Metal (lay Flat) Arson Trash Hook w/ D-handle** shall be provided with the completed unit.
  - The above specified pike pole will have a D handle attached
  - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.

- Olathe Fire Dept supplied NFPA required flashlight(s) shall be installed on completed unit
  - **Two (2) customer supplied Streamlight Fire Vulcan 180 LED Flashlight(s) shall be mounted in the rear cab area on the side of the rear cabinet, one on the drivers side and one on the passengers side.**
  - **Wired Battery Direct**

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 Olathe Fire Dept before the unit is placed in emergency service.