Johnson County ESD 1
Cleburne, TX
Air Light - SVI #1320
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 Johnson County ESD 1 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 - Online @ SVI Trucks . com

The vehicle construction details and the operations and service documentation as required per NFPA 1900 latest edition shall be provided online. These manuals shall be divided into sections for ease of reference and will include two (2) QR codes installed on the apparatus for accessibility, with an additional 2 QR codes shipped loose.

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 Johnson County ESD 1 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 nine hundred (900) days after pre-construction meeting and receipt and approval of any signed change orders from Johnson County ESD 1.

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 Johnson County ESD 1 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.

CAB CHASSIS SPECIFICATION

AXLE CONFIG: 4X2

APPLICATION: Rescue

MISSION: Requested GVWR: 19500. Calc. GVWR: 23500. Calc. GCWR: 26000
Calc. Start / Grade Ability: 44.08% / 4.01% @ 55 MPH Calc. Geared Speed: 102.5 MPH

DIMENSION: Wheelbase: 199.00, CA: 83.80, Axle to Frame: 49.00

ENGINE, DIESEL: {International 6.6} EPA 2024, 350HP @ 2500 RPM, 750 lb-ft Torque @ 1400 RPM, 2900 RPM Governed Speed, 350 Peak HP (Max)

TRANSMISSION, AUTOMATIC: {Allison 2700 EVS} 6th Generation Controls, Close Ratio, 6-Speed with Double Overdrive, with PTO Provision, Less Retarder, Includes Park Pawl, with 23,500-lb GVW and 26,000 GCW Max, On/Off Highway

AXLE, FRONT NON-DRIVING: {Dana Spicer D-800N} I-Beam Type, 8,000-lb Capacity

AXLE, REAR, SINGLE: {Dana Spicer S16-130} Single Reduction, 15,500-lb Capacity, 190 Wheel Ends Gear Ratio: 4.30

CAB: Conventional 6-Man Crew Cab

TIRE, FRONT: Michelin

TIRE, REAR: Michelin

SUSPENSION, REAR, SINGLE: 15,500-lb Capacity, Vari-Rate Springs

PAINT: FLNA32525 (NAV2810EY-Eone red) Approved 9/17

Base Chassis, Model CV515 SFA with 199.00 Wheelbase, 83.80 CA, and 49.00 Axle to Frame. 4671/2886 7557

TOW HOOK, FRONT (2) Frame Mounted 13/-1 12 AXLE CONFIGURATION {Navistar} 4x2
Notes
: Pricing may change if axle configuration is changed.

FRAME RAILS High Strength Low Alloy Steel (50,000 PSI Yield), Straight Top Flange with Contoured Bottom, Height Transitions from 7.375" (187.325mm) to 9.125" (231.775mm) to 7.625" (193.675mm); Width: 3.079" (78.21mm); Thickness: 0.3125" (7.94mm); 383.3" (9735.8mm) Max OAL

LICENSE PLATE HOLDER Includes Upper & Lower Mounting Plate Hardware, Mounted in Existing Holes in Front Bumper

BUMPER, FRONT Contoured, Steel, Painted Black

BUMPER EXTENSION, FRONT 4.0"

WHEELBASE RANGE 185" (470cm) Through and Including 236" (600cm)

AXLE, FRONT NON-DRIVING {Dana Spicer D-800N} I-Beam Type, 8,000-lb Capacity

SUSPENSION, FRONT, SPRING Parabolic Taper Leaf, Shackle Type, 8,000-lb Capacity, with Shock

Absorbers

STABILIZER BAR, FRONT

BRAKE SYSTEM, HYDRAULIC {Bosch} Split System, with Four Channel ABS, Traction Control, Electronic Stability Control, Hydromax Brake Booster with High Speed Master Cylinder and Trailer Sway Control

DUST SHIELDS, FRONT BRAKE for Hydraulic Brakes

DUST SHIELDS, REAR BRAKE for Hydraulic Brakes
BRAKE, PARKING {Bosch} DSSA Type, 12" x 3"; for Hydraulic Brake Chassis; Foot Operated in Cab; Differential Mounted

BRAKES, FRONT {Meritor Quadraulic} Hydraulic Disc Type, with Four 64mm Diameter Pistons, 8,000-lb Capacity

BRAKES, REAR {Meritor Quadraulic} Hydraulic Disc Type, with Four 64mm Diameter Pistons, 15,500-lb Capacity per Axle

STEERING COLUMN Tilting

STEERING WHEEL 4-Spoke; 15" Dia., Black

STEERING GEAR {Bosch S2 8014 Plus} Power

DRIVELINE SYSTEM {Dana Spicer} SPL100, for 4x2/6x2

EXHAUST SYSTEM Horizontal Dual Aftertreatment System, Frame Mounted Under Right Rail, for Single Horizontal Tail Pipe

ENGINE EXHAUST BRAKE for International 6.6 Engine

MANUAL REGEN Capability

ELECTRICAL SYSTEM 12-Volt for CV Model
Includes
: HAZARD SWITCH Push On/Push Off, Located on Top of Steering Column Cover
: HEADLIGHT DIMMER SWITCH Integral with Turn Signal Lever
: PARKING LIGHT PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light
: TURN SIGNALS, FRONT Includes Reflectors and Solid State Flashers; Flush Mounted
: WINDSHIELD WIPER SWITCH 2-Speed with Wash and Intermittent Feature, Integral with Turn Signal Lever

ALTERNATOR {Denso SC2} Brush Type, 12 Volt, 150 Amp Capacity

TRAILER BRAKE CONTROL Integrated

BODY BUILDER WIRING Rear of Frame; Includes One Sealed Connector for Separate Ground/Backup/ Left and Right Hand Turn, Left and Right Hand Tail/Stop/ Accessory Power and Combined for Left and Right Hand Stop/Turn

BATTERY SYSTEM {VARTA} Maintenance-Free, (2) 12-Volt 1300CCA Total, Top Threaded Stud

RADIO AM/FM/USB Input/Auxiliary Input/SD Card Slot, with 4.2" Color Touch Panel Display

SPEAKERS (6)

BACK-UP ALARM Electric, 102 dBA

TRAILER CONNECTION SOCKET Mounted at Rear of Frame, Wired for Turn Signals Combined with Stop, Compatible with Trailers with Combined Stop, Tail, Turn Lamps

STOP, TURN, TAIL & B/U LIGHTS Multi-Function, Sealed, Incandescent Stop, Turn and Tail Lights, Backup Lights with Rear Reflex Reflector, Includes License Plate Light

SPECIAL WIRING HARNESS, BODY to Connect to Instrument Panel Electrical Center (ICEM) Connector X7, Provides Blunt Cuts for Standard Terminals 8, 11, 7, 17, 10, 19 Signals, Optional Terminals 1, 4, 14, 20 Signals

HORN, ELECTRIC (1) Trumpet Style

BATTERY BOX Steel, with Plastic Cover, 2 Battery Capacity, Parallel to Rail, 28" Wide, Mounted Left Side Under Cab

JUMP START STUD Remote Mounted

FOG LIGHTS (2) Clear Lens, Halogen, Rectangular, with White Light Source

HEADLIGHTS Halogen, Composite Aero Design, Black Trim Bezel, with Daytime Running Lights

SWITCH, AUXILIARY 1 to 4 Latching Switches with 30-Amp Fuses

CLEARANCE/MARKER LIGHTS (5) Amber LED Lights, Flush Mounted on Cab

STARTING MOTOR 12 Volt

TOGGLE SWITCH, AUXILIARY (6) with 20-Amp Fuses, Maximum of 200 Amp. Load, Accessory Controlled, with Switches in Headliner

LOGOS EXTERIOR Model Badges

GRILLE Molded in Dark Gray

BUG SCREEN Mounted Behind Grille

FRONT END Tilting, Fiberglass, with Three Piece Construction

FENDER EXTENSIONS Painted

PAINT CLASS Premium Color

VEHICLE REGISTRATION IDENTITY ID for Other State

Notes
CANNOT BE REGISTERED IN CALIFORNIA. For vehicles that will be registered in States other than California.

GCWR RANGE GCWR Equal to or Less than 30,000-lb

GVWR WEIGHT CLASSIFICATION Class 6 (19,501-26,000 lbs)

ENGINE, DIESEL {International 6.6} EPA 2024, 350HP @ 2500 RPM, 750 lb-ft Torque @ 1400 RPM, 2900 RPM Governed Speed, 350 Peak HP (Max)

FAN DRIVE Viscous Type, Screw On, Rear Tether, Electronically Controlled

AIR CLEANER Single Element, with Water Separator

EMISSION, CALENDAR YEAR {International 6.6} EPA, OBD and GHG Certified for Calendar Year 2024

THROTTLE, HAND CONTROL Engine Speed Control for PTO; Electronic Controlled, On/Off Switch Mounted on Dash, with Steering Wheel Button Control

GOVERNOR Electronic Road Speed Type; with 75 MPH Default

CARB IDLE COMPLIANCE Low NOx Idle Engine, Complies with California Clean Air Regulations; Includes "Certified Clean Idle" Decal located on Driver Door

BLOCK HEATER, ENGINE 120V/800W

CARB EMISSION WARR COMPLIANCE for International 6.6 Engines

RADIATOR Aluminum, 3-Row, Down Flow, Front to Back System, 730 SqIn Louvered, with 578 SqIn Charge Air Cooler, Includes In-Tank Oil Cooler

TRANSMISSION, AUTOMATIC {Allison 2700 EVS} 6th Generation Controls, Close Ratio, 6-Speed with Double Overdrive, with PTO Provision, Less Retarder, Includes Park Pawl, with 23,500-lb GVW and 26,000 GCW Max, On/Off Highway

NEUTRAL AT STOP Allison Transmission Shifts to Neutral When Service Brake is Depressed and Vehicle is at Stop; Remains in Neutral Until Service Brake is Released

SHIFT CONTROL PARAMETERS {Allison} 1000 or 2000 Series Transmissions, Performance Programming

PTO LOCATION Customer Intends to Install PTO at Left Side of Transmission

AXLE, REAR, SINGLE {Dana Spicer S16-130} Single Reduction, 15,500-lb Capacity, 190 Wheel Ends . Gear Ratio: 4.30

SUSPENSION, REAR, SINGLE 15,500-lb Capacity, Vari-Rate Springs
SHOCK ABSORBERS, REAR (2)

AXLE, REAR, LUBE {EmGard FE-75W-90} Synthetic Oil; 1 thru 29.99 Pints

FUEL TANK Top Draw, Plastic, Rectangular, 17" Tank Depth, 40 US Gal (151L), Includes Auxiliary Draw Port and Fuel Filler Assembly, Mounted Between Frame Rails and Behind Rear Axle

DEF TANK 6.75 US Gal (26L) Capacity, Frame Mounted Outside Right Rail, Under Cab
CAB Conventional 6-Man Crew Cab 296/270 566
Includes
: CAB DOOR LOCKS Power Door Locks All Doors
: DOME LIGHT, CAB with OFF/DOOR/ON Settings; Located in Overhead Console
: READING LIGHT, CAB Located in Overhead Console
: STEP (4) One Step Per Door
: STORAGE POCKET, DOOR (2) Full Length, Driver and Passenger Door

MIRROR, INSIDE REAR VIEW Omit

GLASS, ALL WINDOWS Solar Absorbing, Tint

COLOR, INTERIOR Dark Ash

GAUGE CLUSTER English Speedometer, Includes English Odometer; Includes 3.5" Monochromatic Display with Personalization, Warning Messages and Vehicle Information

SEAT, DRIVER High Back with Integral Headrest, with Recline, Vinyl, Fixed Lumbar

SEAT, REAR BENCH, Vinyl

SEAT, TWO-MAN PASSENGER High Back with Integral Headrest in Outboard Position, Center Fold-Down Armrest with Storage, Vinyl, with Recline

MIRRORS (2) Manual Folding, Power Adjust, Heated, Black Heads and Arms, for 102" Load Width 18/4 22 SEAT BELT All Red; 4 to 6

CAB INTERIOR TRIM Classic, for Crew Cab
Includes
: SUN VISOR (2) Vinyl

AIR BAG, FRONT, DRIVER SIDE

AIR BAG, FRONT, PASSENGER SIDE

WINDOW, POWER (4) in Left and Right Doors, Front and Rear

AIR BAG, SIDE, DRIVER Seat Mounted, Outboard Side-Impact Airbag

AIR BAG, SIDE, PASSENGER Seat Mounted, Outboard Side-Impact Airbag

AIR BAG, SIDE CURTAIN Roof Mounted, for Front and Rear Outboard Seating Positions for Driver and Passenger Sides

AIR CONDITIONER with Heater, Single Zone

WHEELS, FRONT Aluminum

WHEELS, REAR Aluminum

(2) TIRE, FRONT 225/70R19.5 Load Range H HDR 5 (CONTINENTAL), 647 rev/mile, 87 MPH, Drive

(4) TIRE, REAR 225/70R19.5 Load Range H HDR 5 (CONTINENTAL), 647 rev/mile, 87 MPH, Drive

Services Section:

WARRANTY Standard for CV515, Effective with Vehicles Built December 3, 2018 or Later, CTS-3000A

CAB TO AXLE DIMENSION

Cab to axle will be 84”.

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.

Chassis Options: International CV515, 4-Door

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.

FRONT BUMPER HINGED PUSH BAR/GRILL GUARD

The front bumper shall be provided with a hinged steel push bar/grill guard combination bolted to the bumper structure. The push bar will have two hinge points on the front with overcenter latches at the rear to allow it to tilt forward and out of the way of the chassis grill or a forward tilting hood.

AIR HORNS

There shall be no air horns provided on the completed vehicle.

MOTOR DRIVEN SIREN

No Federal Q2B siren shall be provided.

BUMPER GROUND LIGHTS

GROUND LIGHTS

- There shall be two (2) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

SIREN SPEAKER

One (1) Whelen model SA314B 100 watt aluminum, 6.4" x 6.1" x 3.1" deep siren speaker shall be provided and located behind grille or front bumper with black epoxy coated finish.

The solid state siren speaker shall be vibration resistant. The SA314A 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.

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

FRONT LED DRIVING LIGHTS

Two (2) Rigid Industries E-Series 3 x 4 LED diffused driving lights model 173513 with amber covers model 104933 and black housing shall be provided on front bumper. The E-Series light(s) shall have 3,100 lumen output each.

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 multiplex display(s) in the 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.

WARNING LIGHT: CHASSIS CAB

ZONE A - FRONT WARNING LIGHTS, UPPER

There shall be one (1) Whelen Freedom F4N0QLED LED 60" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

SECTION	INTERNAL COMPONENTS	LENS COLOR
1	Red Side LED	Clear
2	Red Front Corner LED	Clear
3	White Super Long-LED	Clear
4	**Red** Super Long-LED	Clear
5	Red Super Long-LED	Clear
6	Red Super Long-LED	Clear
7	**Red** Super Long-LED (Opticom if specified)	Clear
8	**Red** Super Long-LED (Opticom if specified)	Clear
9	Red Super Long-LED	Clear
10	Red Super Long-LED	Clear
11	**Red** Super Long-Led	Clear
12	White Super Long-LED	Clear
13	Red Front Corner LED	Clear
14	Red Side LED	Clear

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

The lightbar(s) shall be separately controlled at multiplex display(s) in the cab.

ZONE A - FRONT WARNING LIGHTS

There shall be two (2) Whelen M2 series Red Linear Super-LED lights (M2WRC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

Each light shall have a black flange.

- Flash Pattern shall be (factory default) Action Scan.

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

– Flash Pattern shall be DOUBLEFLASH 150, In/Out

The lights shall be controlled at the multiplex display(s) in the cab.

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

There shall be two (2) Whelen M2 series Red Linear Super-LED lights (M2WRC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

Each light shall have a black flange.

– Flash Pattern shall be DOUBLEFLASH 150, In/Out

- 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 multiplex display(s) in the cab.

ZONES B AND D - CAB INTERSECTOR LIGHT (CORNERING LIGHT FRONT BUMPER)

There shall be two (2) Whelen M2 series **Clear** Linear Super-LED lights (M2WC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.
This light will be on the front angle part of the bumper and will only come on with respective turn signal.

Each light shall have a black flange.

- The Low Power option will **NOT** be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

GROUND CLEARANCE

A 2" suspension leveling lift shall be installed to level vehicle and increase ground clearance. The components shall be readily available, and not custom built. Payload must not be adversely affected by any changes in the suspension. Drive lines must not be adversely affected by any changes in the suspension.

GROUND LIGHTS

- There shall be two (4) Tecniq 4" T44 white LED ground light(s) shall be provided.
- 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.

BACK-UP ALARM

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

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.
Alarm shall include the Awnings also.

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 Johnson County ESD 1 shall provide the whip.

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

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

Antenna #2 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 Johnson County ESD 1 shall provide the whip.

The end of antenna cable shall be routed to center dash. Cable shall be labeled.

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

SEATING MODIFICATION

The center portion of the 40/20/40 split bench seat shall be removed to accommodate the installation of the specified console.

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 Johnson County ESD 1 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 Johnson County ESD 1 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 Johnson County ESD 1 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.

CAB PAINT

The finish paint and color as provided from the cab/chassis manufacturer shall be provided. Cab shall not be repainted.

(Note: Most departments do NOT find that the fleet paint finish from a commercial cab/chassis manufacturer is acceptable. The Body Builder will NOT be responsible for paint quality and finish issues.)

REFLECTIVE STRIPE - CAB DOOR INTERIOR

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

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

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.

RELOCATE CHASSIS SUPPLIED JUMPER STUDS

Relocate the chassis supplied jumper studs to be in the streetside running board.

MUDFLAPS

There shall be 1/4" rubber mudflaps with 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.

FUEL FILL

There shall be one (1) chassis supplied fuel fill mounted above the streetside fender, behind the rear axle.

DEF FLUID FILL

The DEF fluid fill shall be as supplied by commercial cab/chassis manufacturer and located between the cab and body.

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 Johnson County ESD 1 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 Johnson County ESD 1 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.

10" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 10" and provide a rear step with a minimum of 1/2" space at body for water drainage.

REAR TOW EYES

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

- One (1) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

WHEEL WELL EXTERIOR PANEL

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

DIEFORMED BEADED EDGE BODY FENDERS

A die formed beaded edge shall be provided along the radius of the wheel well opening for a finished appearance.

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.

BODY PAINT SPECIFICATIONS

BODY PAINT PREPARATION

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

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

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

PAINT PROCESS

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

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

PAINT - ENVIRONMENTAL IMPACT

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

FASTENERS

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

ELECTROLYSIS CORROSION CONTROL

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

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

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution per Johnson County ESD 1 approved paint spray out provided.

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

RED FLNA 32528

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 Johnson County ESD 1 prior to installation. The graphics proof shall be submitted to Johnson County ESD 1 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.

SVI Manufacturer Badge

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

The vehicle shall be equipped with R•O•M Series IV roll-up exterior compartment doors. The R•O•M roll-up doors shall be complete with the following features;

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum. Shutter slats shall feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slats must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.
Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to resist water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4" in diameter and held in place by two (2) heavy duty 18 gauge zinc plated plates. Counter balance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

The R•O•M Series IV roll-up compartment doors shall be free of manufacturing defects for a period of up to 7 years from date of purchase provided doors are used under conditions of normal use, regular periodic maintenance and service is performed, and doors were installed in accordance with R•O•M's instructions.

ROM DOOR BOTTOM RAIL

All exterior compartment doors shall have the standard 3.0" tall bottom rail extrusion for easy one (1) hand opening and closing.

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

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	69.0"
B	Bottom of Subframe to Bottom of Body	18.0"

C	Vertical Door Opening	
	-with roll-up door	60.5"
	-with hinged door	64.0"

ABOVE REAR AXLE

	Description	Dimension
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	36.0"
	-with hinged door	39.5"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	15.0"
F	Vertical Door Opening	
	-with roll-up door	57.5"
	-with hinged door	61.0"

GENERAL

	Description	Dimension
G	Bottom or Drip Rail to Top of Body	18.5"

(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 49.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 42.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

COMPARTMENT LAYOUT

The following components shall be located upper section of compartment:

Reel Mounting: Reel #1

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator’s standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
    - The cable reel shall equipped with 200' of 10/3 SEOOW yellow cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted **at FINAL INSPECTION per.** Johnson County ESD 1.
- The fairlead roller shall be mounted directly to the reel.
- 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:

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 16" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
  - Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.
  - The above component(s) shall have a smooth un-painted finish.

– 3M™ Diamond Grade™ 2" wide conspicuity striping shall be provided on the front face of the tray.

- This reflective stripe shall be red/white in color.
- 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 **38**" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Slide base shall extend depth specified, less 4".Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

- Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.

The specified water tank shall be located in the upper center of the S1 & C1 transverse compartment.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- The controls for the specified light tower(s).
- 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 **aft wall up high.**
- There shall be one (1) 120 VAC outlet(s) located in compartment.
  Label shall be provide on outlet to which braker it is on, incase it were to trip.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

This Outlet needs to be GFCI.

  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on **aft wall by Fuse block.**
- One (1) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)

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

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 52.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

COMPARTMENT LAYOUT

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- The controls for the specified light tower(s).
  Front Light Tower Controller.
- There shall be two (2) 120 VAC outlet(s) located in compartment.
  Label shall be provided on outlet to which braker it is on, incase it were to trip.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

Outlet needs to be GFCI.

  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on forward wall, upper left area.
- A Bauer model BP-13H-E3 air compressor with a recharging rate of 13.0 SCFM @ 6,000 PSI shall be provided, . Compressor skid shall include 13 HP, 3-phase soft start electric motor, P5 Securus purification system, electronic CO monitor with calibration kit, and fill station inter-connecting harness. Compressor module shall be approximately 53.5" L x 33.5" W x 37.5" H and weigh 700 pounds.

High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

- An Appleton inlet and base shall be provided in compartment near compressor. The compressor shall have a 4 AWG SO cord with a matching Appleton plug for operating compressor from the on-board generator system. Another matching Appleton plug shall be provided with completed vehicle for operating the compressor from an in-house electrical system. All required building wiring shall be responsibility of Johnson County ESD 1.

The Appleton will actually be located in C2 compartment.

- Air storage shall consist of three (3) ASME 491 SCF @ 6,000 PSI, (does not require hydrostatic testing) shall be provided on completed vehicle complete with gauges and valves. Each cylinder shall measure 9.6" diameter x 55" long, and weigh 400 lbs.

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

  Air tanks shall be marked with a label that reads;

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

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

  - There will be a welded reinforcement above the body frame to carry specified DOT or ASME cylinders. The mounting of the cylinders will be with adjustable track and powder coated steel band straps to securely hold all cylinders in place.

- The Bauer compressor shall be free from defects in material and workmanship for a period of two (2) years. The foregoing warranty period shall be extended to five (5) years from the date of shipment from Bauer for Customers that are Municipal Fire Departments with respect to the compressor block (breathing air application), provided that such extended warranty period shall only apply to product parts with proof of proper maintenance being completed in accordance with published Bauer factory recommendations. To be eligible for this limited warranty to cover Customer's product, Customer must return a properly completed start-up/warranty registration form to Bauer within ninety (90) days from the date of start-up.

- One (1) day of training and instruction shall be provided by compressor manufacturer per NFPA 24.2.13 at Johnson County ESD 1 location on proper use of air compressor, purification system, filling of SCBA, and air reel operations, if specified.

- The NFPA required air quality test shall be completed by manufacturer prior to delivery. Complete results of test shall be provided to Johnson County ESD 1 upon delivery.

STREETSIDE COMPARTMENT - REAR (S3)

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

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 28.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

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:

- 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:

- There shall be one (1) 400 lbs. slide-out tray(s) approximately **21**" deep and as wide as the compartment layout or door opening permits. The tray shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
  - Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.

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

- 3M™ Diamond Grade™ 2" wide conspicuity striping shall be provided on the front face of the tray.

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

- There shall be one (1) 400 lbs. slide-out tray(s) approximately **21**" deep and as wide as the compartment layout or door opening permits. Each tray shall be vertically adjustable. Each tray shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  - Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.

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

BLUE TEK TRIO

There shall be a blue Tek trio water filter system installed.

The water provision shall utilize an external pressurized source and include a check valve, water system filter, and household hose type connection fitting with a cap and chain.

All water lines are to be wrapped with 12VDC Kompensator Heat lines and isulated. All Plumbing to be PEX type tubing with proper crimp style connections "NO SHARK" bite style fittings.

A manifold will be included for water intake.

A pressure reducer will be provided for the system.

EXTERIOR SHOWER

The apparatus shall be provided with a **garden hose hook up** installed inside the compartment.

WATER HEATER

An **2gal tank** water heater will be installed to provide both heat to the water supply. **Water heat shall be located high in compartment, and will be on its own outlet, also there will be a garden hose thread boiler valve.**

There shall be Heat pad style tank heaters on a 40 degree thermostat, 12v powered.

- One (1) OnScene Access white LED, full height compartment light, vertically mounted.

- There shall be one (1) 120 VAC outlet(s) located in compartment.
  Label shall be provided on outlet to which braker it is on, in case it were to trip.

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

Outlet needs to be GFCI.

- Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- The outlet shall be located on forward wall, upper left area.

- One (1) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 49.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 42.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

COMPARTMENT LAYOUT

The following components shall be located upper section of compartment:

Reel Mounting: Reel #1

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator’s standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
    - The cable reel shall equipped with 200' of 10/3 SEOOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1900. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
  - One (1) 120 VAC, 5-20 GFCI duplex straight-blade receptacle wired to protect all outlets in box.
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted **at FINAL Inspection** per Johnson County ESD 1.
- The fairlead roller shall be mounted directly to the reel.

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:

- 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 **52"** deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Slide base shall extend depth specified, less 4". Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.
  - Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.
- One (1) **C-Tech drawer cabinet, shall be provided in compartment. The cabinet shall be x 41" wide x 14" high x 20" deep. Cabinet shall have three (3) individual drawers as follows; one (1) 2", one (1) 2", and one (1) 3". Will be RED in color.**
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- There shall be one (1) 120 VAC outlet(s) located in compartment.
  Label shall be provided on outlet to which braker it is on, incase it were to trip.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

Outlet needs to be GFCI.

  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on forward wall, upper left area.

- One (1) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)

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

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 52.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

COMPARTMENT LAYOUT

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- 120/240 VAC load center location.
- The generator gauge panel.
- The controls for the specified light tower(s).
  Rear Light Tower Controller.
- There shall be one (1) 120 VAC outlet(s) located in compartment.
  Label shall be provided on outlet to which braker it is on, incase it were to trip.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on forward wall, upper left area.

CURBSIDE COMPARTMENT - REAR (C3)

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

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 28.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

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:

- 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 three (3) adjustable shelf/shelves approximately **21**" 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 Johnson County ESD 1 after delivery.
  - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately **21**" deep and as wide as the compartment layout or door opening permits. The tray shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded

corners to form a box type tray. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  - Any equipment mounting on slide tray shall be provided by Johnson County ESD 1 after delivery.
  - The above component(s) shall have a smooth un-painted finish.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- There shall be one (1) 120 VAC outlet(s) located in compartment.
  Label shall be provided on outlet to which braker it is on, in case it were to trip.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
  - The outlet shall be located on forward wall, upper left area.
- One (1) Tecniq 4" T44 white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

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 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 49.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 42.5" wide.
- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide elastic nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- One (1) Bauer model CFS5.5 2M, NFPA 1901 compliant containment type two (2) cylinder filling station with compressor controls rated for cylinder pressures up to 5,500 PSI shall be provided with proper reinforcement for weight of fill station and venting thru floor opening. Fill station will be approximately 35.5" wide x 50.25" high x 21" deep, and weigh approximately 863 lbs. High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.
  - Filling operation shall be controlled with manual controls mounted on front of fill station. An air flow selector valve to fill from either compressor or storage, and manual valves and gauges for each air storage cylinder (maximum of four (4).
  - An air storage refill port shall be provided on the fill station.

- There shall be a **50**' 7000psi refill hose supplied with the apparatus for connection between a station/facility compressor and the fill station/storage refill port.

Two (2) MSA503-253H-FILL Adaptor Quick Fill X CGA 347 Male Quick Fill Adaptor - Standard 347 Fill Whip X MSA Quick Fill. will be provided.

- One (1) fill station fill line(s) shall have a quick disconnect with 2,216 psi fill adapter(s), and SCUBA fill adapter(s) and pressure relief valve.
- The fill station fill whip(s) shall terminate in a high pressure CGA-347 threaded connectors for 4,500 - 5,500 PSI air pack cylinders.
- The fill station(s) shall be protected by a 6,000 psi relief valve.

There will/shall be two (2) Scott Quick adaptors supplied.

BODY OPTIONS AND UPGRADES

PLASTIC FLOOR AND SHELF TILE

Turtle Plastics 12" x 12" x 1/2", self-draining plastic inter-locking material shall be cut to size and cover all compartment floors, shelves, and trays.

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

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.

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

ROLL-OUT AWNING STREETSIDE

A 11.6ft Carefree Apex awning shall be installed on the roof streetside of the apparatus.

The Apex Patio Awning offers the coach owner an awning system that provides as much or as little shade as required. The canopies are housed in an aluminum case that easily blends in with the coach roof. The awning extends to a maximum of 10 feet from the side wall. The canopy is made from Acrylic fabric. Each unit is equipped with lateral support arms that are the strongest available on the market. No vertical arms interfere with coach sidewalls or equipment that may be mounted on the roof. These arms can also be adjusted to vary the canopy pitch up to 3 feet (it is strongly recommended that service and adjustments be performed by trained technicians). The unique and innovative 110V electronic control system provides Carefree's Direct Response system with interior touch pad controls for standard extend/retract functions. At the master control panel the auto-retract system can be engaged to automatically retract the awnings in windy conditions with sensitivity, set by the user, to respond to a variety of wind speed conditions. An RF remote is furnished with the Direct Response system. Apex Patio Awning Specifications The following information is for reference only.

LENGTHS: 11' 6" – 21' EXTENSIONS: 10' (standard) COLORS AVAILABLE: Case: Black Fabric: Woven Acrylic Fabric refer to order form for available colors MOTOR SPECIFICATIONS: Available in LH or RH configurations Type: Tubular Motor Power: 120V, 60HZ, 2.5A Torque: 60 nm Speed: 14 RPM Cycle: 40 Sec ON / 1 Min OFF APPROXIMATE WEIGHT (LBS.) Awning Length (ft.) Weight Awning Length (ft.) Weight Awning Length (ft.) Weight 12 155 16 192 20 227 13 162 17 198 21 234 14 169 18 205 15 185 19 216

- The TOPGUN FR LITE awning fabric color shall be silver-grey (#783-LT).

The specified awning above shall be surface mounted to upper body roof on the streetside.
There shall/will be a limb guard added to the front of awning. Reference #1178.

AWNING HOUSING COLOR

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

ROLL-OUT AWNING CURBSIDE

A 11.6ft Carefree Apex awning shall be installed on the roof curbside of the apparatus.

The Apex Patio Awning offers the coach owner an awning system that provides as much or as little shade as required. The canopies are housed in an aluminum case that easily blends in with the coach roof. The awning extends to a maximum of 10 feet from the side wall. The canopy is made from Acrylic fabric. Each unit is equipped with lateral support arms that are the strongest available on the market. No vertical arms interfere with coach sidewalls or equipment that may be mounted on the roof. These arms can also be adjusted to vary the canopy pitch up to 3 feet (it is strongly recommended that service and adjustments be performed by trained technicians). The unique and innovative 110V electronic control system provides Carefree's Direct Response system with interior touch pad controls for standard extend/retract functions. At the master control panel the auto-retract system can be engaged to automatically retract the awnings in windy conditions with sensitivity, set by the user, to respond to a variety of wind speed conditions. An RF remote is furnished with the Direct Response system. Apex Patio Awning Specifications The following information is for reference only.

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- The TOPGUN FR LITE awning fabric color shall be silver-grey (#783-LT).

The specified awning above shall be surface mounted to upper body roof on the curbside.
There shall/will be a limb guard added to the front of awning. Reference #1178.

AWNING HOUSING COLOR

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

REAR ROLL-OUT AWNING

A Girard G-2085, 12 VDC powered, automatic retractable lateral arm wall mount awning shall be provided and mounted on upper rear of truck. The cassette housing is made of corrosion-resistant, white powder-coated extruded aluminum with components made of stainless steel.

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

The unit shall measure eight **6'** x 5-1/4" deep x 7-3/8" high with a 5' outward projection, (length refers to box length; actual fabric length will be shorter).

The G-2085 shall deploy and retract using a 12V DC motor with the power controls located in compartment RC1.

The G-2000 has a Limited Lifetime Warranty. Wind and rain damage are not covered.

Rear Awning needs tobe tied to the park brake.

- The TOPGUN FR LITE awning fabric color shall be silver-grey (#783-LT).

AWNING HOUSING COLOR

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

ROOF ACCESS HATCH COVER

One (1) roof access hatch cover shall be provided in the roof structure to allow for installation or removal of large equipment into the compartment area. The roof around the hatch opening shall be reinforced as necessary to prevent deflection in the roof area. The hatch cover shall overlap a 2" vertical lip on the body roof to resist entry of moisture. It shall be sealed with automotive type rubber molding to provide a weather resistant seal.

The hatch cover shall have a lift-up type door hinged on the front side. The door shall be fabricated from 3/16" aluminum treadplate with a pair of pneumatic type cylinders mounted to hold the door in the open position. The door shall be mounted using a full length 14 gauge stainless steel hinge, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between the stainless steel hinge and any dissimilar metals as necessary to resist corrosion.

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.

CAB CONSOLE

A center cab console shall be provided between the Driver's and Officer's seats extending to rear wall of cab. 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;

- Forward section of cab console shall include;
  - **MULTIPLEX SYSTEM INTERFACE DISPLAY** Weldon V-MUX Vista IV multiplex system interface display(s) with push-button control shall be provided in cab easily accessible to driver and/or passenger. The full-color Vista interface display allows the user to control warning and scene lighting, HVAC controls (when specified), and view on-board diagnostics including service information. This display has a wide operating temperature range, automatic screen switching in response to current conditions, and a sleep mode option to eliminate night glare. The following features shall be included;
    - 800 x 480 resolution
    - Four video ports
    - Flash updates with USB memory stick
    - Display inside and outside temperature (when specified)
    - Automatic climate control (when specified)
    - 100% Configurable (OEM Level)
    - Field re-programmable
    - Peer to peer network
    - On-board diagnostics / service information
    - Colors change to indicate button status
    - Video Ready for: Backup camera, Thermal camera, DVD, GPS...
- 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.

Customer supplied and installed radio will be a Motorola APEX 8500.

ELECTRONIC SIREN

One (1) Whelen model 295SLSA1 electronic siren control with selectable 100 or 200 watt output, hands-free operation, user selectable siren tones, park kill, and standard hard wired 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;
- 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, panel position rearward shall include;
  - One (1) open storage pocket(s) shall be provided in console.
- Cab console, rear position shall include;

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

- Cab console, rear extension position shall include;
  - No components provided at this position.
  - 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.

The two (2) USB ports shall be located towards the rear of console, to accommodate both front and rear personnel.

- Power port shall be wired battery direct.
  - There shall be one (1) Hella goose neck 12 VDC halogen map light(s) provided and installed on the center cab console.

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 at Driver step area.

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

REAR VIEW CAMERA

There shall be one (1) ASA Voyager rear observation camera system provided and installed on completed unit. The system shall include one (1) model VCMS155 high resolution box style camera with white housing installed on rear of body.

The camera(s) shall be wired to the cab/chassis supplied single multiplex display. The rear camera shall activate when the transmission is placed in reverse. If a right camera is provided it shall activate with the right side turn signal and if a left camera is provided it shall activate with the left side turn signal. All camera(s) shall also be activated by a button on the display(s).

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;
Layout needs to match the 2D drawing.. and the turn signals need to be the arrows. (Flash pattern to be 80 flashes per minute)

- Two (2) Whelen M6 Series M6BTT red LED stop/tail/turn lights
- Two (2) Whelen M6 Series M6BUW clear LED back-up lights with clear lens

Each light shall have a black flange.

MIDSHIP TURN SIGNAL

Two (2) Tecniq S17 series amber LED midship turn signal lights shall be provided and installed, one (1) light on each side of forward rear wheel well area. Midship turn lights shall be wired to the turn signal circuit of the cab and chassis.
These need to be programmed with turn signal.

Each light shall have a chrome flange.

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.

FRONT SCENE LIGHT(S)

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

The front of the cab shall include one (1) HiViz model FireTech FT-B-46-B LED scene light provided and installed on the brow of the cab.

The light shall be low in profile with a mounting bracket allowing installation between the top edge of the windshield and the bottom of the light bar. The bar sshall be mounted using a adjustable mounting feet along the length of the extrusion to allow attachment to the face of the cab or body. Once mounted, the fixture shall be adjustable 50 total degrees.

The scene light shall be powered by the 12 VDC electrical system. and have 36 LEDs divided between three (3) independent circuits;

- Circuit 1 shall have 9 x 5 w LED’s passing light through individual 10 degree “spot” optics
- Circuit 2 shall have 18 x 5w LEDSs passing light through individual 25-40 degree "scene” optics
- Circuit 3 shall have 24 x 5w LEDs passing light through individual 60-90 degree "flood" optics

The housing shall be powdercoat painted black.

The lights shall be controlled at the multiplex display(s) in the cab.

SIDE LED SCENE LIGHTS

Four (4) Whelen Pioneer Plus model PCPSM1**B** 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 black finish and black mounting flange. Lights shall be 12 VDC, 6amp, 75 watt, with 8,875 useable lumens each.

The lights shall be controlled at the multiplex display(s) in the cab.

REAR LED SCENE LIGHTS

Two (2) Whelen Pioneer Plus model PCPSM2B dual combination Super LED flood/spot lights shall be installed on the upper body sides. Lights shall be divided equally per side. The PCPSM2C configuration shall consist of 24 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 48 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. Light(s) shall be 12 VDC, 12 amp, 154 watt, with 16,000 usable lumens each.

The PCPSM2B new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid with in a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

The lights shall be controlled at the multiplex display(s) in the cab.

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

TRAFFIC ADVISOR LIGHTS

A traffic advisor system shall be provided on rear of vehicle using; six (6) Whelen M2 series amber Super-LED lights with clear lens.

This will have Low-Power mode.

Each light shall have a chrome flange.

The lights shall be controlled by the multiplexing system and provide; Left Arrow, Right Arrow, Center Out, and Wig-Wag 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 "TRAFFIC ADVISOR" menu on the Multiplex display.

WARNING LIGHT PACKAGE

ALL Warning lights are to be in LOW power mode when in reverse.

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.

Control System: Whelen

No CORE System

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 M9 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

Each light shall have a black flange.

- Flash Pattern shall be DOUBLEFLASH 150, In/Out

- 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 multiplex display(s) in the cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen M9 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

Each light shall have a black flange.

– Flash Pattern shall be DOUBLEFLASH 150, In/Out

- 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 multiplex display(s) in the cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen M9 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:
- Clear Lens

Each light shall have a chrome flange.

– Red Light Streetside / Amber Light Curbside

– Flash Pattern shall be DOUBLEFLASH 150, In/Out

- 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 multiplex display(s) in the cab.

LOWER LEVEL OPTICAL WARNING DEVICES

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

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

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

ZONE A - FRONT WARNING LIGHTS, LOWER

See Chassis Modification section for cab mounted warning lights.

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

There shall be two (2) Whelen M2 series Red Linear Super-LED lights (M2WRC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

Each light shall have a chrome flange.

- Flash Pattern shall be (factory default) Action Scan.

- The Low Power option will **NOT** be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

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

There shall be two (2) Whelen M2 series Red Linear Super-LED lights (M2WRC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

Each light shall have a black flange.

- Flash Pattern shall be (factory default) Action Scan.

- The Low Power option will **NOT** be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

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:
- Clear Lens

Each light shall have a chrome flange.

- Amber Light Streetside / Red Light Curbside
    - Flash Pattern shall be (factory default) Action Scan.
- The Low Power option will **NOT** be provided for the above lighting group.

The lights shall be controlled at the multiplex display(s) in the cab.

LINE VOLTAGE ELECTRICAL SYSTEM

PTO GENERATOR

The vehicle shall be equipped with an PTO generator system with a capacity of 20,000 watts at 120/208 VAC, three phase. Current frequency shall be stable at 60 hertz.

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

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

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

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

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

GENERATOR BONDING

A minimum of four (4) 16" x 2 gauge copper ground straps shall be bolted to body sub-frame and chassis sub-frame for proper bonding of high voltage system. The conductor shall have a minimum amperage rating, as defined in 310.15,

“Ampacities for Conductors Rated 0–2000 Volts,” of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

GENERATOR ENGAGEMENT

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

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

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

WARRANTY PERIOD

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

GENERATOR CONTROL

The generator shall be engaged at the multiplex display(s) in the cab.

GENERATOR MOUNTING - ONAN PROTEC

The generator shall be mounted below the chassis frame rails. The generator mounting brackets shall be fabricated using steel plate and/or tubing and powder coat primed and painted black. The generator mounting shall be bolted to the side of the chassis frame rail and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

MANUALS AND SCHEMATICS

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

POWER-TAKE-OFF GENERATOR DRIVE

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

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

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

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

Model part number shall be Chelsea 210 series.

(Note: If diesel, the DEF tank may be relocated to outboard curbside frame.)

ENGINE SPEED CONTROL

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

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

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

LOADCENTER

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

GENERATOR MONITORING PANEL

An Accuenergy Acuvim II multifunction power and energy meter shall be provided to properly monitor the generator performance and load demand during operation. The Accuenergy Acuvim CL includes a digital RS485 communication port running Modbus protocol. The electrical parameters can be viewed on a backlit LCD screen. Unit shall be capable of displaying the following;

- Generator frequency in hertz
- Line voltage, phase to neutral or phase to phase, in volts
- Line current in amperes
- Meter running time

SHORE POWER INLET - BATTERY CHARGER

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

LINE VOLTAGE ELECTRICAL SYSTEM

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

Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

(a) Pictorial representations of circuit logic for all electrical components and wiring
(b) Circuit identification
(c) Connector pin identification
(d) Zone location of electrical components
(e) Safety interlocks
(f) Alternator–battery power distribution circuits
(g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

120 / 240 VOLT SCENE LIGHTING

LIGHT TOWER INSTALLATION

The completed vehicle shall shall be supplied with two (2) all-electric Command Light flood light tower(s). The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified.

The Command Light light tower(s) shall be purchased and supplied by the Johnson County ESD 1 or dealer to the OEM body builder. **Will be a Knight Light KL415A-W2**

The light tower controls shall be located per the itemized compartment list.

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 Mounting

The specified light tower(s) shall be mounted on the roof of the body.

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.

TREE LIMB GUARD

A three-sided tree limb guard shall be provided fabricated from 1/8" smooth aluminum and painted to match the upper paint color to provide protection to the specified roof mounted equipment from small tree branches.

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 Johnson County ESD 1 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 shipped loose with the completed apparatus.
  - Flashlight(s) shall be the responsibility of Johnson County ESD 1 after delivery of completed apparatus.

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 Johnson County ESD 1 before the unit is placed in emergency service.